APPENDIX "A"

STANDARD CLAUSES FOR ALL NEW YORK STATE STATE SUPERFUND ORDERS

APPENDIX A

STANDARD CLAUSES FOR ALL NEW YORK STATE SUPERFUND ADMINISTRATIVE ORDERS

The parties to the State Superfund Order (hereinafter "Order") agree to be bound by the following clauses which are hereby made a part of the Order. The word "Respondent" herein refers to any party to the Order, other than the New York State Department of Environmental Conservation (hereinafter "Department").

I. Citizen Participation Plan

Within twenty (20) days after the Department places the site on the registry, Respondent shall submit for review and approval a written citizen participation plan prepared in accordance with the requirements of ECL §27-1417 and 6 NYCRR sections 375-1.10 and 375-3.10. Upon approval, the Citizen Participation Plan shall be deemed to be incorporated into and made a part of this Order.

II. Initial Submittal

Within thirty (30) days after the effective date of this Order, Respondent shall submit to the Department a Records Search Report prepared in accordance with Exhibit “B” attached to the Order. The Records Search Report can be limited if the Department notifies Respondent that prior submissions satisfy specific items required for the Records Search Report.

III. Development, Performance, and Reporting of Work Plans

A. Work Plan Requirements

All activities at the Site that comprise any element of an Inactive Hazardous Waste Disposal Site Remedial Program shall be conducted pursuant to one or more Department-approved work plans (“Work Plan” or “Work Plans”) and this Order and all activities shall be consistent with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. Part 300, as required under CERCLA, 42 U.S.C. § 9600 *et seq*. The Work Plan(s) under this Order shall address both on-Site and off-Site conditions and shall be developed and implemented in accordance with 6 NYCRR § 375-1.6(a), 375-3.6, and 375-6. All Department-approved Work Plans shall be incorporated into and become enforceable parts of this Order. Upon approval of a Work Plan by the Department, Respondent shall implement such Work Plan in accordance with the schedule contained therein. Nothing in this Subparagraph shall mandate that any particular Work Plan be submitted.

The Work Plans shall be captioned as follows:

1. Site Characterization (“SC”) Work Plan: a Work Plan which provides for the identification of the presence of any hazardous waste disposal at the Site;

2. Remedial Investigation/Feasibility Study (“RI/FS”) Work Plan: a Work Plan which provides for the investigation of the nature and extent of contamination within the boundaries of the Site and emanating from such Site and a study of remedial alternatives to address such on-site and off-site contamination;

3. Remedial Design/Remedial Action (“RD/RA”) Work Plan: a Work Plan which provides for the development and implementation of final plans and specifications for implementing the remedial alternative set forth in the ROD;

4. "IRM Work Plan" if the Work Plan provides for an interim remedial measure;

5. "Site Management Plan" if the Work Plan provides for the identification and implementation of institutional and/or engineering controls as well as any necessary monitoring and/or operation and maintenance of the remedy; or

6. "Supplemental" if additional work plans other than those set forth in II.A.1-5 are required to be prepared and implemented.

B. Submission/Implementation of Work Plans

1. Respondent may opt to propose one or more additional or supplemental Work Plans (including one or more IRM Work Plans) at any time, which the Department shall review for appropriateness and technical sufficiency.

2. Any proposed Work Plan shall be submitted for the Department's review and approval and shall include, at a minimum, a chronological description of the anticipated activities, a schedule for performance of those activities, and sufficient detail to allow the Department to evaluate that Work Plan.

i. The Department shall notify Respondent in writing if the Department determines that any element of a Department-approved Work Plan needs to be modified in order to achieve the objectives of the Work Plan as set forth in Subparagraph III.A or to ensure that the Remedial Program otherwise protects human health and the environment. Upon receipt of such notification, Respondent shall, subject to dispute resolution pursuant to Paragraph XV, modify the Work Plan.

ii. The Department may request, subject to dispute resolution pursuant to Paragraph XV, that Respondent submit additional or supplemental Work Plans for the Site to complete the current remedial phase within thirty (30) Days after the Department's written request.

3. A Site Management Plan, if necessary, shall be submitted in accordance with the schedule set forth in the IRM Work Plan or Remedial Work Plan.

4. During all field activities conducted under a Department-approved Work Plan, Respondent shall have on-Site a representative who is qualified to supervise the activities undertaken in accordance with the provisions of 6 NYCRR 375-1.6(a)(3).

5. A Professional Engineer licensed and registered in New York State must stamp and sign all Work Plans other than SC or RI/FS Work Plans.

C. Submission of Final Reports and Periodic Reports

1. In accordance with the schedule contained in a Work Plan, Respondent shall submit a final report as provided at 6 NYCRR 375-1.6(b) and a final engineering report as provided at 6 NYCRR 375-1.6(c).

2. Any final report or final engineering report that includes construction activities shall include "as built" drawings showing any changes made to the remedial design or the IRM.

3. In the event that the final engineering report for the Site requires Site management, Respondent shall submit an initial periodic report by in accordance with the schedule in the Site Management Plan and thereafter in accordance with a schedule determined by the Department. Such periodic report shall be signed by a Professional Engineer or by such other qualified environmental professional as the Department may find acceptable and shall contain a certification as provided at 6 NYCRR 375-1.8(h)(3). Respondent may petition the Department for a determination that the institutional and/or engineering controls may be terminated. Such petition must be supported by a statement by a Professional Engineer that such controls are no longer necessary for the protection of public health and the environment. The Department shall not unreasonably withhold its approval of such petition.

4. Within sixty (60) days of the Department's approval of a Final Report, Respondent shall submit such additional Work Plans as is required by the Department in its approval letter of such Final Report. Failure to submit any additional Work Plans within such period shall be a violation of this Order.

D. Review of Submittals

1. The Department shall make a good faith effort to review and respond in writing to each submittal Respondent makes pursuant to this Order within sixty (60) Days. The Department's response shall include, in accordance with 6 NYCRR 375-1.6(d), an approval, modification request, or disapproval of the submittal, in whole or in part.

i. Upon the Department's written approval of a Work Plan, such Department-approved Work Plan shall be deemed to be incorporated into and made a part of this Order and shall be implemented in accordance with the schedule contained therein.

ii. If the Department modifies or requests modifications to a submittal, it shall specify the reasons for such modification(s). Within fifteen (15) Days after the date of the Department's written notice that Respondent's submittal has been disapproved, Respondent shall notify the Department of its election in accordance with 6 NYCRR 375-1.6(d)(3). If Respondent elects to modify or accept the Department's modifications to the submittal, Respondent shall make a revised submittal that incorporates all of the Department's modifications to the first submittal in accordance with the time period set forth in 6 NYCRR 375-1.6(d)(3). In the event that Respondent's revised submittal is disapproved, the Department shall set forth its reasons for such disapproval in writing and Respondent shall be in violation of this Order unless it invokes dispute resolution pursuant to Paragraph XV and its position prevails. Failure to make an election or failure to comply with the election is a violation of this Order.

iii. If the Department disapproves a submittal, it shall specify the reasons for its disapproval. Within fifteen (15) Days after the date of the Department's written notice that Respondent's submittal has been disapproved, Respondent shall notify the Department of its election in accordance with 6 NYCRR 375-1.6(d)(4). If Respondent elects to modify the submittal, Respondent shall make a revised submittal that addresses all of the Department's stated reasons for disapproving the first submittal in accordance with the time period set forth in 6 NYCRR 375-1.6(d)(4). In the event that Respondent's revised submittal is disapproved, the Department shall set forth its reasons for such disapproval in writing and Respondent shall be in violation of this Order unless it invokes dispute resolution pursuant to Paragraph XV and its position prevails. Failure to make an election or failure to comply with the election is a violation of this Order.

2. Within thirty (30) Days after the Department's approval of a final report, Respondent shall submit such final report, as well as all data gathered and drawings and submittals made pursuant to such Work Plan, in an electronic format acceptable to the Department. If any document cannot be converted into electronic format, Respondent shall submit such document in an alternative format acceptable to the Department.

E. <u>Department's Issuance of a ROD</u>

1. Respondent shall cooperate with the Department and provide reasonable assistance, consistent with the Citizen Participation Plan, in soliciting public comment on the proposed remedial action plan ("PRAP"), if any. After the close of the public comment period, the Department shall select a final remedial alternative for the Site in a ROD. Nothing in this Order shall be construed to abridge any rights of Respondent, as provided by law, to judicially challenge the Department's ROD.

2. Respondent shall have 60 days from the date of the Department's issuance of the ROD to notify the Department in writing whether it will implement the remedial activities required by such ROD. If the Respondent elects not to implement the required remedial activities, then this order shall terminate in accordance with Paragraph XIV.A. Failure to make an election or failure to comply with the election is a violation of this Order.

F. <u>Institutional/Engineering Control Certification</u>

In the event that the remedy for the Site, if any, or any Work Plan for the Site, requires institutional or engineering controls, Respondent shall submit a written certification in accordance with 6 NYCRR 375-1.8(h)(3) and 375-3.8(h)(2).

IV. Penalties

A. 1. Respondent's failure to comply with any term of this Order constitutes a violation of this Order, the ECL, and 6 NYCRR 375-2.11(a)(4). Nothing herein abridges Respondent's right to contest any allegation that it has failed to comply with this Order.

2. Payment of any penalties shall not in any way alter Respondent's obligations under this Order.

B. 1. Respondent shall not suffer any penalty or be subject to any proceeding or action in the event it cannot comply with any requirement of this Order as a result of any Force Majeure Event as provided at 6 NYCRR 375-1.5(b)(4). Respondent must use best efforts to anticipate the potential Force Majeure Event, best efforts to address any such event as it is occurring, and best efforts following the Force Majeure Event to minimize delay to the greatest extent possible. "Force Majeure" does not include Respondent's economic inability to comply with any obligation, the failure of Respondent to make complete and timely application for any required approval or permit, and non-attainment of the goals, standards, and requirements of this Order.

2. Respondent shall notify the Department in writing within five (5) Days of the onset of any Force Majeure Event. Failure to give such notice within such five (5) Day period constitutes a waiver of any claim that a delay is not subject to penalties. Respondent shall be deemed to know of any circumstance which it, any entity controlled by it, or its contractors knew or should have known.

3. Respondent shall have the burden of proving by a preponderance of the evidence that (i) the delay or anticipated delay has been or will be caused by a Force Majeure Event; (ii) the duration of the delay or the extension sought is warranted under the circumstances; (iii) best efforts were exercised to avoid and mitigate the effects of the delay; and (iv) Respondent complied with the requirements of Subparagraph IV.B.2 regarding timely notification.

4. If the Department agrees that the delay or anticipated delay is attributable to a Force Majeure Event, the time for performance of the obligations that are affected by the Force Majeure Event shall be extended for a period of time equivalent to the time lost because of the Force majeure event, in accordance with 375-1.5(4).

5. If the Department rejects Respondent's assertion that an event provides a defense to non-compliance with this Order pursuant to Subparagraph IV.B, Respondent shall be in violation of this Order unless it invokes dispute resolution pursuant to Paragraph XV and Respondent's position prevails.

V. Entry upon Site

A. Respondent hereby consents, upon reasonable notice under the circumstances presented, to entry upon the Site (or areas in the vicinity of the Site which may be under the control of Respondent) by any duly designated officer or employee of the Department or any State agency having jurisdiction with respect to matters addressed pursuant to this Order, and by any agent, consultant, contractor, or other person so authorized by the Commissioner, all of whom shall abide by the health and safety rules in effect for the Site, for inspecting, sampling, copying records related to the contamination at the Site, testing, and any other activities necessary to ensure Respondent's compliance with this Order. Upon request, Respondent shall (i) provide the Department with suitable work space at the Site, including access to a telephone, to the extent available, and (ii) permit the Department full access to all non-privileged records relating to matters addressed by this Order. Raw data is not considered privileged and that portion of any privileged document containing raw data must be provided to the Department. In the event Respondent is unable to obtain any authorization from third-party property owners necessary to perform its obligations under this Order, the Department may, consistent with its legal authority, assist in obtaining such authorizations.

B. The Department shall have the right to take its own samples and scientific measurements and the Department and Respondent shall each have the right to obtain split samples, duplicate samples, or both, of all substances and materials sampled. The Department shall make the results of any such sampling and scientific measurements available to Respondent.

VI. Payment of State Costs

A. Within forty-five (45) days after receipt of an itemized invoice from the Department, Respondent shall pay to the Department a sum of money which shall represent reimbursement for State Costs as provided by 6 NYCRR 375-1.5 (b)(3)(i). Failure to timely pay any invoice will be subject to late payment charge and interest at a rate of 9% from the date the payment is due until the date the payment is made.

B. Costs shall be documented as provided by 6 NYCRR 375-1.5(b)(3). The Department shall not be required to provide any other documentation of costs, provided however, that the Department's records shall be available consistent with, and in accordance with, Article 6 of the Public Officers Law.

C. Each such payment shall be made payable to the "Commissioner of NYSDEC" and shall be sent to:

Director, Bureau of Program Management
Division of Environmental Remediation
New York State Department of
Environmental Conservation
625 Broadway
Albany, New York 12233-7012

D. The Department shall provide written notification to the Respondent of any change in the foregoing addresses.

E. If Respondent objects to any invoiced costs under this Order, the provisions of 6 NYCRR 375-1.5 (b)(3)(v) and (vi) shall apply. Objections shall be sent to the Department as provided under subparagraph VI.C above.

F. In the event of non-payment of any invoice within the 45 days provided herein, the Department may seek enforcement of this provision pursuant to Paragraph IV or the Department may commence an enforcement action for non-compliance with ECL '27-1423 and ECL 71-4003.

VII. Release and Covenant Not to Sue

Upon the Department's issuance of a Certificate of Completion as provided at 6 NYCRR 375-1.9 and 375-2.9, Respondent shall obtain the benefits conferred by such provisions, subject to the terms and conditions described therein.

VIII. Reservation of Rights

A. Except as provided at 6 NYCRR 375-1.9 and 375-2.9, nothing contained in this Order shall be construed as barring, diminishing, adjudicating, or in any way affecting any of the Department's rights or authorities, including, but not limited to, the right to require performance of further investigations and/or response action(s), to recover natural resource damages, and/or to exercise any summary abatement powers with respect to any person, including Respondent.

B. Except as otherwise provided in this Order, Respondent specifically reserves all rights and defenses under applicable law respecting any Departmental assertion of remedial liability and/or natural resource damages against Respondent, and further reserves all rights respecting the enforcement of this Order, including the rights to notice, to be heard, to appeal, and to any other due process. The existence of this Order or Respondent's compliance with it shall not be construed as an admission of liability, fault, wrongdoing, or breach of standard of care by Respondent, and shall not give rise to any presumption of law or finding of fact, or create any rights, or grant any cause of action, which shall inure to the benefit of any third party. Further, Respondent reserves such rights as it may have to seek and obtain contribution, indemnification, and/or any other form of recovery from its insurers and from other potentially responsible parties or their insurers for past or future response and/or cleanup costs or such other costs or damages arising from the contamination at the Site as may be provided by law, including but not limited to rights of contribution under section 113(f)(3)(B) of CERCLA, 42 U.S.C. § 9613(f)(3)(B).

IX. Indemnification

Respondent shall indemnify and hold the Department, the State of New York, the Trustee of the State's natural resources, and their representatives and employees harmless as provided by 6 NYCRR 375-2.5(a)(3)(i).

X. Notice of Transfer

If Respondent proposes to transfer by sale or lease the whole or any part of Respondent's interest in the Site, or becomes aware of such transfer, Respondent shall, not fewer than forty-five (45) Days before the date of transfer, or within forty-five (45) Days after becoming aware of such conveyance, notify the Department in writing of the identity of the transferee and of the nature and proposed or actual date of the conveyance, and shall notify the transferee in writing, with a copy to the Department, of the applicability of this Order. However, such obligation shall not extend to a conveyance by means of a corporate reorganization or merger or the granting of any rights under any mortgage, deed, trust, assignment, judgment, lien, pledge, security agreement, lease, or any other right accruing to a person not affiliated with Respondent to secure the repayment of money or the performance of a duty or obligation.

XI. Change of Use

Applicant shall notify the Department at least sixty (60) days in advance of any change of use, as defined in 6 NYCRR 375-2.2(a), which is proposed for the Site, in accordance with the provisions of 6 NYCRR 375-1.11(d). In the event the Department determines that the proposed change of use is prohibited, the Department shall notify Applicant of such determination within forty-five (45) days of receipt of such notice.

XII. Environmental Easement

A. If a Record of Decision for the Site relies upon one or more institutional and/or engineering controls, Respondent (or the owner of the Site) shall submit to the Department for approval an Environmental Easement to run with the land in favor of the State which complies with the requirements of ECL Article 71, Title 36, and 6 NYCRR 375-1.8(h)(2). Upon acceptance of the Environmental Easement by the State, Respondent shall comply with the requirements of 6 NYCRR 375-1.8(h)(2).

B. If the ROD provides for no action other than implementation of one or more institutional controls, Respondent shall cause an environmental easement to be recorded under the provisions of Subparagraph XII.A.

C. If Respondent does not cause such environmental easement to be recorded in accordance with 6 NYCRR 375-1.8(h)(2), Respondent will not be entitled to the benefits conferred by 6 NYCRR 375-1.9 and 375-2.9 and the Department may file an Environmental Notice on the site.

XIII. Progress Reports

Respondent shall submit a written progress report of its actions under this Order to the parties identified in Subparagraph IV.A.1 of the Order by the 10th day of each month commencing with the month subsequent to the approval of the first Work Plan and ending with the Termination date as set forth in Paragraph XIV, unless a different frequency is set forth in a Work Plan. Such reports shall, at a minimum, include: all actions relative to the Site during the previous reporting period and those anticipated for the next reporting period; all approved activity modifications (changes of work scope and/or schedule); all results of sampling and tests and all other data received or generated by or on behalf of Respondent in connection with this Site, whether under this Order or otherwise, in the previous reporting period, including quality assurance/quality control information; information regarding percentage of completion; unresolved delays encountered or anticipated that may affect the future schedule and efforts made to mitigate such delays; and information regarding activities undertaken in support of the Citizen Participation Plan during the previous reporting period and those anticipated for the next reporting period.

XIV. Termination of Order

A. This Order will terminate upon the earlier of the following events:

1. Respondent's election in accordance with Paragraph III.E.2 not to implement the remedial activities required pursuant to the ROD. In the event of termination in accordance with this Subparagraph, this Order shall terminate effective the 5th Day after the Department's receipt of the written notification, provided, however, that if there are one or more Work Plan(s) for which a final report has not been approved at the time of Respondent's notification of its election not to implement the remedial activities in accordance with the ROD, Respondent shall complete the activities required by such previously approved Work Plan(s) consistent with the schedules contained therein. Thereafter, this Order shall terminate effective the 5th Day after the Department's approval of the final report for all previously approved Work Plans; or

2. The Department's written determination that Respondent has completed all phases of the Remedial Program (including Site Management), in which event the termination shall be effective on the 5th Day after the date of the Department's letter stating that all phases of the remedial program have been completed.

B. Notwithstanding the foregoing, the provisions contained in Paragraphs VI and IX shall survive the termination of this Order and any violation of such surviving Paragraphs shall be a violation of this Order, the ECL, and 6 NYCRR 375-2.11(a)(4), subjecting Respondent to penalties as provided under Paragraph IV so long as such obligations accrued on or prior to the Termination Date.

C. If the Order is terminated pursuant to Subparagraph XIV.A.1, neither this Order nor its termination shall affect any liability of Respondent for remediation of the Site and/or for payment of State Costs, including implementation of removal and remedial actions, interest, enforcement, and any and all other response costs as defined under CERCLA, nor shall it affect any defenses to such liability that may be asserted by Respondent. Respondent shall also ensure that it does not leave the Site in a condition, from the perspective of human health and environmental protection, worse than that which existed before any activities under this Order were commenced. Further, the Department's efforts in obtaining and overseeing compliance with this Order shall constitute reasonable efforts under law to obtain a voluntary commitment from Respondent for any further activities to be undertaken as part of a Remedial Program for the Site.

XV. Dispute Resolution

A. In the event disputes arise under this Order, Respondent may, within fifteen (15) Days after Respondent knew or should have known of the facts which are the basis of the dispute, initiate dispute resolution in accordance with the provisions of 6 NYCRR 375-1.5(b)(2).

B. All cost incurred by the Department associated with dispute resolution are State costs subject to reimbursement pursuant to this Order.

C. Nothing contained in this Order shall be construed to authorize Respondent to invoke dispute resolution with respect to the remedy selected by the Department in the ROD or any element of such remedy, nor to impair any right of Respondent to seek judicial review of the Department's selection of any remedy.

XVI. Miscellaneous

A. Respondent agrees to comply with and be bound by the provisions of 6 NYCRR Subparts 375-1 and 375-2; the provisions of such Subparts that are referenced herein are referenced for clarity and convenience only and the failure of this Order to specifically reference any particular regulatory provision is not intended to imply that such provision is not applicable to activities performed under this Order.

B. The Department may exempt Respondent from the requirement to obtain any state or local permit or other authorization for any activity conducted pursuant to this Order in accordance with 6 NYCRR 375-1.12(b), (c), and (d).

C. 1. Respondent shall use best efforts to obtain all Site access, permits, easements, approvals, institutional controls, and/or authorizations necessary to perform Respondent's obligations under this Order, including all Department-approved Work Plans and the schedules contained therein. If, despite Respondent's best efforts, any access, permits, easements, approvals, institutional controls, or authorizations cannot be obtained, Respondent shall promptly notify the Department and include a summary of the steps taken. The Department may, as it deems appropriate and within its authority, assist Respondent in obtaining same.

2. If an interest in property is needed to implement an institutional control required by a Work Plan and such interest cannot be obtained, the Department may require Respondent to modify the Work Plan pursuant to 6 NYCRR 375-1.6(d)(3) to reflect changes necessitated by Respondent's inability to obtain such interest.

D. The paragraph headings set forth in this Order are included for convenience of reference only and shall be disregarded in the construction and interpretation of any provisions of this Order.

E. 1. The terms of this Order shall constitute the complete and entire agreement between the Department and Respondent concerning the implementation of the activities required by this Order. No term, condition, understanding, or agreement purporting to modify or vary any term of this Order shall be binding unless made in writing and subscribed by the party to be bound. No informal advice, guidance, suggestion, or comment by the Department shall be construed as relieving Respondent of Respondent's obligation to obtain such formal approvals as may be required by this Order. In the event of a conflict between the terms of this Order and any Work Plan submitted pursuant to this Order, the terms of this Order shall control over the terms of the Work Plan(s). Respondent consents to and agrees not to contest the authority and jurisdiction of the Department to enter into or enforce this Order.

2. i. Except as set forth herein, if Respondent desires that any provision of this Order be changed, Respondent shall make timely written application to the Commissioner with copies to the parties listed in Subparagraph IV.A.1.

ii. If Respondent seeks to modify an approved Work Plan, a written request shall be made to the Department's project manager, with copies to the parties listed in Subparagraph IV.A.1.

iii. Requests for a change to a time frame set forth in this Order shall be made in writing to the Department's project attorney and project manager; such requests shall not be unreasonably denied and a written response to such requests shall be sent to Respondent promptly.

F. 1. If there are multiple parties signing this Order, the term "Respondent" shall be read in the plural, the obligations of each such party under this Order are joint and several, and the insolvency of or failure by any Respondent to implement any obligations under this Order shall not affect the obligations of the remaining Respondent(s) under this Order.

2. If Respondent is a partnership, the obligations of all general partners (including limited partners who act as general partners) under this Order are joint and several and the insolvency or failure of any general partner to implement any obligations under this Order shall not affect the obligations of the remaining partner(s) under this Order.

3. Notwithstanding the foregoing Subparagraphs XVI.F.1 and 2, if multiple parties sign this Order as Respondents but not all of the signing parties elect to implement a Work Plan, all Respondents are jointly and severally liable for each and every obligation under this Order through the completion of activities in such Work Plan that all such parties consented to; thereafter, only those Respondents electing to perform additional work shall be jointly and severally liable under this Order for the obligations and activities under such additional Work Plan(s). The parties electing not to implement the additional Work Plan(s) shall have no obligations under this Order relative to the activities set forth in such Work Plan(s). Further, only those Respondents electing to implement such additional Work Plan(s) shall be eligible to receive the release and covenant not to sue referenced in Paragraph VII.

G. Respondent shall be entitled to receive contribution protection and/or to seek contribution to the extent authorized by ECL 27-1421(6) and 6 NYCRR 375-1.5(b)(5).

H. Unless otherwise expressly provided herein, terms used in this Order which are defined in ECL Article 27 or in regulations promulgated thereunder shall have the meaning assigned to them under said statute or regulations.

I. Respondent's obligations under this Order represent payment for or reimbursement of response costs, and shall not be deemed to constitute any type of fine or penalty.

J. Respondent and Respondent's successors and assigns shall be bound by this Order. Any change in ownership or corporate status of Respondent shall in no way alter Respondent's responsibilities under this Order.

K. This Order may be executed for the convenience of the parties hereto, individually or in combination, in one or more counterparts, each of which shall be deemed to have the status of an executed original and all of which shall together constitute one and the same.

Exhibit B

P-SITE CHARACTERIZATION WORK PLAN
CORNING REFRACTORIES PLANT

NYSDEC Project ID 851048, Corning, New York

Prepared for
Corning Incorporated
Corning, NY

Prepared by

31 West 34th Street
Suite 7196
New York, NY 10001

April 14, 2022

CERTIFICATION

I, Marcia Greenblatt, Ph.D., P.E., certify that I am currently a Qualified Environmental Professional as defined in 6 New York Codes, Rules and Regulations Part 375 and that this Characterization Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

April 14, 2022

Signature　　　　　　　　　　Date

CONTENTS

LIST OF FIGURES

LIST OF TABLES

ACRONYMS AND ABBREVIATIONS

amsl	above mean sea level
bgs	below ground surface
CAMP	Community Air Monitoring Plan
Corning	Corning Incorporated
DUSR	data usability summary report
EDD	electronic data deliverable
ESA	environmental site assessment
Eurofins	Eurofins TestAmerica Laboratories, Inc. in Buffalo, New York
FEMA	Federal Emergency Management Agency
GPS	global positioning system
HASP	Health and Safety Plan
IDW	investigative-derived waste
Integral	Integral Engineering, P.C.
MGP	manufactured gas plant
NYCRR	New York Central Railroad
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSEG	New York State Electric & Gas Corporation
NTU	nephelometric turbidity units
PCE	tetrachloroethene
PFAS	per- and polyfluoroalkyl substances
PID	photoionization detector
PVC	polyvinyl chloride
QAPP	Quality Assurance Project Plan
QA/QC	quality assurance and quality control
REC	recognized environmental condition
Refractories	Corning Refractories Plant
SOP	standard operating procedure

SVOC	semivolatile organic compound
TAL	target analyte list
TCE	trichloroethene
TCL	target compound list
TCLP	toxicity characteristic leaching procedure
USCS	Unified Soil Classification System
USGS	U.S. Geological Survey
VOC	volatile organic compound
Work Plan	P-Site Characterization Work Plan: Corning Refractories Plant

1 INTRODUCTION

The Corning Refractories Plant (Refractories) is located at 1 Front Street in Corning, Steuben County, New York, as illustrated on Figure 1-1. The subject site consists of a ±102,882-ft^2 slab-on-grade structure situated on 3.87 acres of land. The structure comprises 13 interconnected buildings/additions shown on Figure 1-2 and was used by Corning for manufacture of refractory brick used at Corning glass making facilities (Haley and Aldrich 2014a). Refractory manufacturing occurred at this facility since the 1930s when Corning acquired the property. Historically, the property was used for industrial and residential purposes since the late 1800s. The historical industrial uses include a foundry, railroad tracks, and lumber yard.

The Refractories has been classified by the New York State Department of Environmental Conservation (NYSDEC) as a State Superfund Program Classification P (potential) site (NYSDEC 2015a). Corning Incorporated (Corning) has retained Integral Engineering, P.C. (Integral) to prepare the P-Site Characterization Work Plan: Corning Refractories Plant (Work Plan) for the characterization activities to be conducted at this property.

1.1 CHARACTERIZATION ACTIVITIES

The purpose of the characterization activities is to assess whether hazardous substances are present on the Refractories site, and, if present, to evaluate the nature and extent. The characterization activities described herein are designed to assess the presence of substances that may be encountered at the referenced property and to obtain data necessary for understanding the current conditions and associated potential exposure pathways.

1.2 WORK PLAN ORGANIZATION

This Work Plan follows the guidance for investigation work plans as described in Section 3.3 of DER-10. The Work Plan guides the field investigations and includes the following:

- Section 1—Introduction
- Section 2—Area Background
- Section 3—Environmental Setting
- Section 4—Characterization Activities
- Section 5—Project Management
- Section 6—References.

The following appendices are included in the Work Plan:

- Appendix A—Health and Safety Plan (HASP)
- Appendix B—Community Air Monitoring Plan (CAMP)
- Appendix C—Quality Assurance Project Plan (QAPP)
- Appendix D—Standard Operating Procedures (SOPs), including procedures for managing investigative-derived waste (IDW)
- Appendix E—Aerial Photographs and Sanborn Maps
- Appendix F—Refractories Plant Decommissioning Data.

2 AREA BACKGROUND

In 2015, the NYSDEC classified the Refractories as a State Superfund Program Classification P (potential) site. The Refractories was classified as a P site based on information received by NYSDEC including an environmental spill reported to NYSDEC Spills Division in June 2014 (Spills #1402937) and a 1967 document, "Report on Industrial Waste Water Discharges to the Chemung River from Corning Glass Works Plants Located in Corning, New York" (NYSDEC 2015b).

Historical operations, aerial photos, Sanborn maps, and the Phase I and Phase II Refractories Site Investigations have been reviewed in connection with the preparation of this Work Plan. A summary of the findings of these investigations/reviews are presented in the following subsections.

2.1 REFRACTORIES OPERATIONAL HISTORY

The Refractories Plant manufactured refractories materials from the 1930s until it was shut down in 2014. Operations consisted of mixing, forming, baking, and finishing refractory-type material (i.e., temperature-resistant material such as bricks to be used in kilns or furnaces) and using ceramic material in the production of cast items such as heater panels and drain casts (Corning 1967). Materials used in the manufacturing include alumina, zircon, and clay (Corning 1967). Rinse water from operations was discharged to dry wells and water from cooling operations was discharged to floor drains and/or sump pits (Corning 1967).

2.2 AERIAL PHOTOGRAPH AND SANBORN MAP REVIEW

Aerial photographs from the period of 1942 to 2011 were reviewed (Appendix E). The photographs were captured on the following dates:

May 11, 1942
April 16, 1952
May 04, 1960
March 30, 1968
April 16, 1995
January 01, 1999
2006
2008
2009
2011

In the 1942 photograph, the Chemung River and Bridge Street can be identified. A rail yard on the west side of Bridge Street is shown with rail track bisecting the Refractories property to cross over the river on the rail bridge. The 1952 photograph has better resolution and Bridge Street and the iron railroad bridge are better defined. The 1952 photograph also clearly shows there is a railroad line that bisects the property entering from the southwestern corner and turning to exit the Refractories property in the northeastern corner to cross over the Chemung River or transfer over to a rail track along the south shore of the river. Some large commercial/industrial buildings can also be seen on the northwestern and southeastern corners of the Refractories property. The 1960 and 1968 photographs also show these same features.

The next aerial image was taken in 1995 and shows the area underwent significant changes during the 27-year period. There is no longer a rail yard on the western side of Bridge Street and the railroad track that bisected the Refractories property had been removed along with the rail bridge over the river. The majority of the northern portion of the Refractories property is developed with buildings, and the southeastern corner of the Refractories property is undeveloped. The resolution of the 1999 photograph is poor, but the 2006 aerial image shows the current site layout and development (concrete access for loading) of the southeastern corner of the Refractories property.

The Sanborn Maps of the area were also reviewed from nine dates over the period of 1893 to 1968 (Appendix E). In the 1893 map, the Corning Stove Co. can be seen in the northeast corner of the property and J. I. Straton & Co Lumber building was adjacent to the Corning Stove Co. foundry and a lumber platform along the north side of the Fall Brook rail road track. The map shows multiple rail tracks south of the Refractories property converging down to one track to cross the bridge or continue along the south shore of the Chemung River (north of the present-day Front Street). The map also shows there is at least one rail line that bisects the Refractories property entering from the southeast corner under Bridge Street and turning northward exiting the Refractories property on the northeast corner to go over the Chemung River on the rail bridge. Electric Light Works has a building in the southeast corner of the Refractories property. Residential properties (dwellings) were shown along the north side of Front Street (adjacent to the Chemung River) and in the northeastern corner of the Refractories property (corner of Front Street and Chestnut). The map from 1898 was similar but the lumber building is labeled as vacant.

In 1903, the Corning Stove Co. appeared to have experienced a fire and is labeled as "ruins of fire" and "not in operation." Two dwellings were labeled adjacent to the ruins of the building along the south side of Front Street and east of the rail line, which remains the same and bisects the property. The southeastern corner of the property is labeled as Corning Gas & Electric Co., which includes structures labeled with coal, purifiers, and storage, as well as an iron gasometer located just northeast of the Gas & Electric Co. building. Three residential properties are shown on the northeastern corner of the Refractories property (corner of Front Street and Chestnut).

The 1908 map shows significant development of the site with multiple foundries. The Journal Box Plant occupies the northeastern-most buildings and a new and much larger foundry was constructed, now labeled as The T. H. Symington Co. The foundry extends from the south side of Front Street to the northern extent of the rail tracks. The Malleable Iron plant was constructed on the northern/northeastern side of the property and included the following buildings: shipping & supply room, annealing rooms, sand house, and two foundries. The two dwellings that were located on the west side of the rail line and south of Front Street have been removed to build the new foundry. Corning Gas & Electric Co. continues to occupy the southeastern corner of the Refractories property. Three residential properties are shown in the northeastern corner of the Refractories property (corner of Front Street and Chestnut).

In 1913, the northern-most buildings are labeled as "formerly the T. H. Symington Co." and "vacant foundry building." The rail line is still present dividing the Refractories property. The Corning Light & Power Corporation remains on the southeastern corner of the Refractories property. Four residential properties are shown in the northeastern corner of the Refractories property (corner of Front Street and Chestnut).

In 1921, some of the northern-most buildings were removed. On the northwestern-most corner of the Refractories property, one structure is labeled as Corning Glass Works Storage. The newer foundry buildings (first seen on the 1908 map) on the northwestern side of the Refractories property are now labeled as Hood Furnace & Supply Co. The rail line that bisects the property is labeled as NYCRR. The Corning Light & Power Corporation Gas Plant is labeled on the southeastern corner. A second iron gasometer was constructed in the southeastern corner of the Refractories property. It is located southwest of the first iron gasometer and appears to be smaller than the original. The four residential properties are shown in the northeastern corner of the Refractories property (corner of Front Street and Chestnut) and are outlined together.

In 1930, additional buildings (clay dryers) constructed on the northern portion of the Refractories property are labeled as Corning Glass Works. The NYCRR and Corning Light & Power Corporation Gas Plant remain the same. The four residential properties in the northeastern corner have been removed and only the outline remains.

In 1948, some additional buildings were added to the Corning Glass Works Clay Plant (stock shed, storage) along with propane gas tanks on the west side of the building between the building and Bridge Street. The NYCRR rail track is still present onsite. The two iron gasometers are no longer present onsite and the building in the southeastern corner is labeled as Corning Glass Works pilot plant. The northeastern corner of the Refractories property now includes a fenced transformer yard labeled as New York Electric Corporation along with automobile parking on the eastern-most side of the fenced area.

In the 1968 Sanborn map, several buildings were added onto the buildings at the northern extent of the property (north of the rail tracks) now labeled as the Corning Glass Works Refractories Plant. Corning Glass Works also built several buildings on the southeastern corner of the property. Additional buildings were added to the pilot plant including a facility building and two additional storage structures. The New York Electric & Gas Corporation fenced transformer yard was still positioned on the northeastern most corner of the Refractories property and a 6-ft wire fence enclosed the structures on the east side of the NYCRR line that bisects the Refractories property.

In summary, the Refractories property has undergone considerable changes in industrial use and development since the 1880s. In general, the historical use of the northern portion of the Refractories property was as a foundry (kilns, dryers, annealing room) and for more than 100 years, the NYCRR rail track bisected the property. The southeast corner of the Refractories property was used as a manufactured gas plant since at least 1898 when the first iron gasometer was shown on the Sanborn map. A second gasometer was installed in 1921; in 1948, both gasometers were removed and the New York Electric Corporation installed a transformer yard in the northeast corner of the Refractories property.

2.3 PHASE I/II ENVIRONMENTAL SITE ASSESSMENTS

Haley and Aldrich, on behalf of Corning, performed Phase I and Phase II environmental site assessments (ESAs) of the Refractories property (Haley and Aldrich 2014a,b). The Phase I ESA identified recognized environmental conditions (RECs) relating to former operations of the Refractories facility, as well as potential impacts from historical activities on and off the property. The RECs included subsurface drainage structures identified as suspected dry wells on a drawing provided by Corning, the unknown nature of surface soil fill material on the property from historical use and development, the possibility for the presence of waste material associated with a historical manufactured gas plant (MGP) near the property (Figure 1-2), and reported spills in the general area of the Refractories property associated with chlorinated solvents (trichloroethene [TCE] and tetrachloroethene [PCE]) from unidentified sources (Haley and Aldrich 2014a).

A Phase II ESA was performed to assess the potential for release of substances associated with the RECs identified in the Phase I ESA. The Phase II ESA included:

- Twenty-one soil borings to characterize depth of fill, depth to native material and presence of any staining. Locations were selected systematically around the property, and samples were analyzed for metals, cyanide, semivolatile organic compounds (SVOCs), and volatile organic compounds (VOCs).
- Eight wells developed as temporary wells and analyzed for metals, cyanide, SVOCs, and VOCs.

- Soil sampling of bottom material within three drywells.

Sample locations were selected within or proximate to the identified RECs. Sample analysis parameters were developed based on the reported material use at Refractories as well as what may be associated with possible impacts from adjacent property that included a broad suite of organic and inorganic substances.

Key findings of the Phase II ESA are as follows:

- Five interior and exterior drainage structures were identified as "suspected dry wells" in the Phase I ESA. One drainage structure had solid sidewalls and an open bottom. Two other contiguous structures appear to be interconnected and may function as a dry well possibly associated with stormwater discharge; one structure appears to have a solid concrete bottom and sidewalls (apparent sump) and one of the interior structures was previously closed and sealed/covered by concrete level with the floor surface. Additional assessment would be required to confirm construction of these structures as dry wells. Soil and groundwater sampling at these locations were mostly reported as non-detect with the exception of two metals and certain SVOCs detected in samples obtained within the drainage structures. These detections appear incidental lacking detection of any of these or other substances in soil and groundwater samples obtained from adjacent and nearby borings and temporary wells.
- Constituents were detected in soil and groundwater on the property that appear linked to MGP waste based on observations of naphthalene/tar-like odors and low-level photoionization detector (PID) readings during drilling. Cyanide was also detected and is linked to MGP as related to ferro-cyanide generation from gas filtration associated with the gas purification process. MGP impacts may extend broadly within the Refractories property based on the Phase II ESA.
- The comprehensive suite of VOCs, including the chlorinated substances associated with the reported spills in the area of the Refractories property, were analyzed in soil and groundwater samples obtained broadly across the Refractories property including in soil samples obtained from within the suspected dry wells. The groundwater samples were obtained from locations within and at each outside-perimeter boundary of the property. Other than the petroleum-related BTEX compounds obtained in the southern and eastern portions of the Refractories property that are located within the former MGP area, there were no VOCs detected above laboratory detection limits in any of the samples obtained during this investigation.
- Apparent petroleum was observed during the Phase II boring program that was reported to the NYSDEC Bureau of Spill Response upon discovery. NYSDEC Spill File Number 1402937 was assigned to this matter. Based on this Phase II, it appears the conditions reported are linked to the MGP waste and thus will be investigated and managed by the responsible party.

- Fill soil was composed predominantly of reworked soil with lesser amount of ash derived from coal and small to trace amount of red brick fragments at some locations. This material was encountered throughout the site at depths of 4 to 10 ft across the Refractories property. In general, results of composite samples intended to characterize the fill strata did not indicate detectable levels of the analyzed parameters with exception of slight exceedances of several naturally occurring metals. These detections appear to be indicative of ambient conditions and not related to the Refractories operation. Several discreet fill samples were also collected targeted to the locations where elevated PID readings and/or black staining was observed during drilling, indicating potentially impacted soil. The results of discreet fill samples did not indicate detectable levels of the analyzed parameters with the exception of select metals and SVOCs. A cyanide detection and select inorganics detections were above the comparison criteria as were the SVOCs. These substances are characteristic of MGP waste that were obtained from the southern and eastern portions of the Refractories property where the historical MGP waste is identified, and do not appear associated with the Refractories operation.

2.4 DATA GAPS

A review of the available information (historical photos, plant operations, historical discharge report) and previous studies (Phase I/II ESAs) indicated the following data gaps:

1. Confirmation that the dry wells have been identified and characterization of the dry well structures;
2. Completion of characterization of soil and groundwater beneath the dry wells;
3. Determination of groundwater flow direction and characterization of groundwater metals concentrations;
4. Characterization of shallow soil/fill.

The site characterization described in this Work Plan includes soil and groundwater sampling to address these data gaps.

2.5 FIELD RECONNAISSANCE

Integral performed a field reconnaissance and visual inspection of the Refractories property on April 13, 2021. The objective of the reconnaissance was to confirm the locations of the dry wells for sampling (Figure 2-1). The structures identified as "suspected dry wells" in the Phase II ESA (Haley and Aldrich 2014b) were inspected to determine whether they were actually used as dry wells. The following observations were made:

- Suspected dry well #1—This structure is located in the southeast of Building #1. It has a dirt bottom below concrete structure walls with little accumulated material. This structure is confirmed to be a dry well. No material was observed in this dry well.
- Suspected dry well #2—This structure is located in the north of Building #1, which conflicts with the location presented in the Phase II ESA. It has brick side walls and a hard bottom (likely brick) with accumulated material. This structure is confirmed not to be a dry well.
- Suspected dry wells #3&4—This structure is located outside of Building #7. It is a single structure with one cover and an internal cinder block baffle. The bottom appears to be soft with accumulated material. The bottom of the dry well (3&4) was probed, and a hard bottom could not be identified. This structure is suspected to be a single dry well. This dry well is referred to as dry well #3 in the remainder of this Work Plan.
- Suspected dry well #5—This structure is located in Building #8. It has concrete sidewalls and a concrete bottom. This structure is confirmed not to be a dry well.
- A crawl space beneath the slab in the vicinity of the boundary between Buildings #6 and #9 was observed during the field reconnaissance. This crawl space is located in the northwest corner of the Refractories facility. It is comprised of a solid brick wall, three open sides, and a hard bottom (likely concrete). Material was observed in this crawl space.

2.6 REFRACTORIES PLANT DECOMMISSIONING

Corning is performing decommissioning work in the Refractories Plant. The work includes the following:

- Removal, onsite staging, and offsite disposal of material from 11 sumps (including sumps previously identified as suspected dry wells #2 and #5)
- Removal, onsite staging, and offsite disposal of material from one dry well (dry well #3)
- Removal, onsite-staging, and offsite disposal of material from the crawl space located between Buildings #6 and #9 at the location of Sample Point BLDG6-SP-009.

Samples were collected for the purposes of waste characterization, and laboratory analyses included toxicity characteristic leaching procedure (TCLP) metals, TCLP pesticides, TCLP herbicides, TCLP VOCs, TCLP SVOCs, TCL VOCs, TCL SVOCs, Ignitability/Flashpoint, pH, and percent moisture. Sample points are shown in Figure 2-1. Materials are being excavated, staged in drums or lined and covered rolloffs within the Refractories property pending waste characterization, and will be disposed of at a licensed waste disposal facility. The results, including laboratory results, waste manifests, and/or Bills of Lading are presented in Appendix F.

3 ENVIRONMENTAL SETTING

3.1 LAND USE

The Refractories property consists of approximately 3.87 acres of land located on the eastern side of the City of Corning, New York, south of Front Street and approximately 350 ft south of the Chemung River (see Figure 1-1).

The Refractories property is composed of two different tax parcels, both of which are zoned as business development by the City of Corning. The northwestern portion of the property that contains the former Refractories Plant is approximately 3.21 acres and the site property class is high-tech manufacturing (Tax Map ID 317.08-01-057.000). The southeastern portion of the property, which was separated by the former NYCRR line until the mid-1990s, is approximately 0.66 acre and the site property class is vacant land in commercial area (Tax Map ID 317.08-01-053.200).

3.2 TOPOGRAPHY AND DRAINAGE

The Refractories property is generally flat, with gentle slope to the north toward the Chemung River. The Corning, New York, 1976 U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle map indicates that the Refractories is approximately 934 ft above mean sea level (amsl).

The USGS land cover maps classify the area land cover as "high intensity developed" (https://www.mrlc.gov/viewer/). The Refractories property is south of the Chemung River and the flood control berm. The property is not located within the Federal Emergency Management Agency (FEMA) 100-year or 500-year flood zones.

3.3 GEOLOGY AND SOILS

The Refractories property is located in the Chemung River valley and contains predominantly sand and gravel deposits of glaciofluvial origin and more recent alluvial deposits. In the vicinity of the Refractories property, a layer of high-permeability outwash sand and gravel appears to be present to a depth of approximately 30 ft below ground surface (bgs) with a low-permeability lens of lake silt and clay from 30 to 40 ft bgs estimated to be about 10 ft thick (Miller et al. 1982).

The area is underlain by shale or siltstone of the upper Devonian period. Depth to bedrock is in the vicinity of the Refractories site is on the order of 100 ft. The bedrock is overlain by alluvial silts and fine sand derived from post-glacial floodplain deposits, generally exhibiting relatively low permeability (Miller et al. 1982).

Shallow groundwater typically occurs within sands. Groundwater in the overburden is believed to be present within 20 ft of ground surface and flow direction is assumed north/northeasterly toward the Chemung River.

Soils at the Refractories property are mapped as Tioga silt loam. Tioga silt loam is described as deep, well-drained soils derived from loamy alluvium (USDA 2018).

3.4 HYDROGEOLOGY

The saturated portions of the Chemung River valley deposits are recharged principally through the infiltration of precipitation. This valley-filled glacial/alluvial aquifer is generally unconfined (i.e., the water table forms the upper boundary of the aquifer) and saturated approximately to the elevation of nearby rivers (Olcot 1995). At the Refractories property, the depth to the water table is expected to be on the order of 16 to 22 ft bgs; however, groundwater levels may vary depending on the location of water supply wells. Groundwater in the valley aquifer generally flows toward and discharges to nearby rivers.

4 CHARACTERIZATION ACTIVITIES

Characterization at the Refractories property will include surveying activities and sampling activities, as described in the sections below.

4.1 BOUNDARY SURVEY

Prior to sample collection, the Refractories property boundary will be surveyed by a professional land surveyor licensed in the State of New York.

4.2 SAMPLING ACTIVITIES

The subsections below include descriptions of the approaches and field investigation methodologies to be used for the characterization of the Refractories property. The methodologies may be adjusted in the field based on a variety of factors, including field conditions, selected contractor equipment availability, and other necessary adjustments. NYSDEC will be notified of any proposed substantial changes or deviations from the approved Work Plan (including any proposed use of investigation methodologies other than those described below), and NYSDEC approval will be obtained prior to implementation. Minor field adjustments or the addition of sampling locations that do not affect the project objectives will be discussed verbally with the NYSDEC project manager for their verbal concurrence, confirmed by subsequent email and/or documented in the field notes, and noted in the investigation summary report.

If MGP-related material is encountered during the Refractories Plant site characterization, NYSDEC will be notified, as required under NYSDEC regulations, and New York State Electric & Gas Corporation (NYSEG) will also be notified. No further investigation will be performed in that specific area as part of the site characterization for the Corning Refractories Plant.

Final locations will be established based on the results of the boundary survey, utility clearance, and accessibility. Utilities will be cleared using Dig Safely New York and other locating technologies, such as ground-penetrating radar, as necessary. Sample collection procedures, handling, and shipment are provided in the SOPs in Appendix D.

In this work plan, "fill" is used to refer to material that contains ash, brick, and/or glass. A "layer" of fill is defined as non-native material containing ash, brick, and/or glass with a thickness of greater than 1 in.

4.2.1 Surface and Shallow Soil Sampling

4.2.1.1 Sampling Locations

Seven shallow soil samples will be collected along the building exteriors to a depth of 2 ft bgs at the approximate locations shown on Figure 4-1. The rationale for each sample location is shown on Table 4-1.

4.2.1.2 Sampling Methods

Surface soil samples will be collected for analysis from 0 to 2 in. bgs, excluding the vegetative cover or sod layer. Shallow soil samples will be collected from 0 to 6 in. bgs, 6 to 12 in. bgs and 12 to 24 in. bgs, excluding the vegetative cover or sod layer. Prior to sample collection, visible vegetative matter (i.e., sod layer) will be removed. Surface soil and shallow soil samples will be collected using a small direct-push drill rig or a handheld coring device with an attached slide-hammer or other similar device in accordance with NYSDEC approval. The core tube with slide-hammer is advanced by repeatedly hitting the top of the core with the weighted hammer until the desired sampling depth of 2 ft has been achieved. Soil sampling methodologies will be employed that ensure that the soil structure will be retained to a 1-in. interval to identify ash, brick, and/or glass, if present. The soil will be described, noting the color, moisture content, texturing, layering, evidence of disturbance (foreign debris), and the distribution/abundance of roots, and screened with a PID. If present, layers of fill material containing ash, brick, and/or glass will be noted in the field logs. Individual surface and shallow soil samples will be thoroughly mixed (for analyses other than volatile compounds) and placed directly into appropriate laboratory-prepared sample containers. Excess soil will be containerized and managed as described in Section 4.4.

Surface soil and shallow soil sample locations will be recorded using a handheld global positioning system (GPS) unit with submeter accuracy. All non-dedicated sampling equipment will be decontaminated by washing with phosphate-free detergent and rinsing with distilled water prior to and between sampling locations, as described in SOP SL-01.[1] Alternatively, dedicated, disposable sampling equipment (e.g., scoops, plastic blending trays) may be used. Decontamination fluid handling and disposal is described in Section 4.4.

Soil samples and appropriate quality control samples (e.g., duplicate samples) will be placed in appropriate laboratory-prepared containers in iced coolers and shipped with completed chain-of-custody documentation to Eurofins TestAmerica Laboratories, Inc. in Buffalo, New York (Eurofins) for analysis, following the protocols in SOP SL-02, SOP AP-01, and SOP AP-03.

[1] Solvents will not be used unless materials are encountered in the field that cannot be cleaned with detergent and water.

Surface and shallow soil sample will be analyzed for target analyte list (TAL) metals, including mercury, and TCL VOCs and SVOCs. A subset of the surface and shallow soil samples (20 percent) will be analyzed for per- and polyfluoroalkyl substances (PFAS) and 1,4-dioxane. The analytical methods and protocols to be used during this project, as well as the expanded list of constituents for analysis, are provided in the QAPP (Appendix C), Tables C2-1 and C2-2, respectively.

4.2.2 Soil Boring Sampling

4.2.2.1 Soil Boring Locations

A total of six soil borings will be advanced, five of which will be completed as monitoring wells. The soil borings (SB1/MW1, SB2/MW2, and SB3/MW3) will be advanced at or adjacent to the structures identified as dry wells #1 and #3 and the observed crawl space (Section 2.5). Two additional borings will be advanced upgradient and downgradient of the others for completion as monitoring wells (SB4/MW4 and SB5/MW5). An additional soil boring (SB6) will be installed adjacent to the southeastern boundary of the site. The approximate locations are identified on Figure 4-1. The rationale for each sample location is provided in Table 4-1.

Soil boring locations will be cleared of buried utilities prior to drilling using various geophysical methods, as necessary, and the New York State One-Call system. Soil boring locations will be recorded using a handheld GPS unit with submeter accuracy.

4.2.2.2 Sample Collection Methods

Soil borings will be advanced to native material or until refusal, using direct-push (Geoprobe® or equivalent) or hollow-stem auger drilling technologies to characterize the subsurface soils, following the procedures described in SOP SL-07. Where possible, direct-push drilling technology will be utilized to minimize the quantity of IDW generated during field activities. A hollow-stem auger drill rig will be used to install borings in locations where direct-push cannot penetrate to the desired depth (up to 20 ft bgs). At locations SB1, SB2, SB3, and SB6, four samples will be collected per boring: 0 to 6 in. bgs, 6 to 12 in. bgs, 12 to 24 in. bgs, and a 24-in. interval immediately above the water table. Additional 12-in. interval samples will be collected if staining, elevated PID readings, and/or odor is observed. At locations MW4 and MW5, samples will be collected from 0 to 6 in. bgs, 6 to 12 in. bgs, and 12 to 24 in. bgs, excluding the vegetative cover or sod layer. If a layer of fill material containing ash, brick, and/or glass is encountered in a soil boring, up to five soil samples will be collected per boring: 0 to 6 in. bgs (excluding the ground cover or sod layer), and two shallow soil samples from 6 to 12 in. bgs and 12 to 24 in. bgs, or to the depth of the layer of fill material containing ash, brick, and/or glass; one from the layer of fill material containing ash, brick, and/or glass; and one from the native material beneath the layer of fill material containing ash, brick and/or glass, if present.

Additional 12-in. interval samples will be collected if staining, elevated PID reading, and/or odor is observed.

Boreholes will be sampled continuously from the ground surface to the bottom of the borehole.

- If direct-push technology is used, continuous samples will be collected using a 2-in., 4-ft-long MacroCore sampler.
- If a hollow-stem auger is used, continuous samples will be collected using a 2-ft-long split-spoon sampler.

Samples will be visually examined and logged by a qualified geologist in accordance with the procedures described in SOP SL-04 and SOP SL-06 (Appendix D). The description will generally be prepared using the Unified Soil Classification System (USCS) (ASTM D2487; ASTM 2017a), and will include color, moisture content, texture, layering, etc. Any non-native material containing ash, brick, and/or glass present in the sample will be noted and described in the field by the geologist (type, color, texture, moisture content, etc.). A layer of fill material is defined as a non-native material containing ash, brick, and/or glass with a thickness of greater than 1 in. Soil borings will be screened with a PID. Field observations, PID readings, and descriptions of the collected samples will be recorded in the field logbook or soil boring log form. Photographs of the soil cores will be taken.

Drilling equipment (including MacroCore sampler, rods, etc.) will be decontaminated using a pressure washer prior to the start of work and will also be cleaned between each borehole to minimize the potential for cross-contamination in accordance with SOP SL-01 (Appendix D). The pressure washing will be conducted in a self-contained decontamination trailer (or equivalent area) that will collect decontamination water.

Non-dedicated sampling equipment will be decontaminated prior to and between sampling locations in accordance with SOP SL-01 (Appendix D). Alternatively, dedicated, disposable sampling equipment (e.g., scoops, plastic blending trays) may be used.

Soil samples and appropriate quality control samples (e.g., duplicate samples) will be collected from the sampling cores, homogenized in the field, placed in appropriate sample containers in iced coolers, and shipped with completed chain-of-custody documentation to Eurofins for analysis.

Soil boring samples will be analyzed for TAL metals, VOCs, and SVOCs. Samples from one soil boring will be analyzed for PFAS and 1,4-dioxane. The analytical methods and protocols to be used during this project, as well as the expanded list of constituents for analysis, are provided in the QAPP (Appendix C), Tables C2-1 and C2-2, respectively. All excess soil cuttings will be containerized and managed as described in Section 4.4.

In the event that boreholes cannot be completed as monitoring wells, they will be backfilled with a cement/bentonite grout mixture using a tremie rod, or by placing dry bentonite pellets in the borehole, followed by water, to hydrate them in place. The surface will be restored with appropriate material (i.e., topsoil, sod, and grass seed). IDW from this investigation will be contained in sealed containers (e.g., drums or other appropriate containers) and staged onsite pending proper disposal.

4.2.3 Monitoring Well Installation Procedures

Five monitoring wells (MW1 through MW5) will be installed to estimate groundwater flow direction and/or for collection of groundwater samples. The wells will be installed at the five boring locations, as shown on Figure 4-1.

Groundwater monitoring wells will be installed using either direct-push or equivalent drilling techniques. The monitoring wells will be extended from ground surface to approximately 10 ft below the water table (estimated to be 16 to 22 ft bgs). Final well depths will be decided in the field based upon the estimated depth to water table as evident from the drill cuttings. Soil cores will be collected as described in Section 4.2.2.2.

Upon reaching the final depth, the monitoring well components will be advanced and will consist of 10 ft of 2-in.-diameter, 0.010-in. slot polyvinyl chloride (PVC) screen and the appropriate length of PVC riser piping. Following placement of the well components, a filter pack consisting of clean quartz sand will be placed from the bottom of the well screen to approximately 2 ft above the top of the well screen. A bentonite seal (approximately 2-ft thick) will then be placed above the filter pack. The remainder of the annular space above the bentonite seal will be backfilled with a cement/bentonite grout mixture to ground surface using a tremie rod. A concrete surface seal will be placed from ground surface to approximately 2 ft bgs. A lockable compression fitting well cap (or similar cap) will be installed at the top of the PVC well casing at each well. The wells will be finished with flush-mount traffic-rated 8-in.-diameter well monuments, if they are not installed in a dry well.

Detailed field notes, including well construction details, depth of first water encountered, and driller's observations, will be prepared for each monitoring well in accordance with SOP AP-02 (Appendix D).

After each new monitoring well is installed, it will be developed using a submersible pump to surge and pump the well until the purged groundwater is relatively clear (10 nephelometric turbidity units [NTU] or less), as practical. New monitoring wells will be allowed to set for at least 24 hours prior to development. Following well development, the new monitoring wells will be horizontally and vertically (top of casing and ground surface) located by a surveyor licensed in the State of New York.

Development water will be collected and contained in sealed containers as described in Section 4.4).

4.2.4 Groundwater Sampling

Groundwater sampling of the monitoring wells will be performed no sooner than 2 weeks from completion of new well development. Prior to sampling, water level measurements will be collected from each of the wells using an electronic water level sounder and measured from the top of the well casing in accordance with SOP GW-02 (Appendix D). The water level measurements will be collected from all wells to prepare representative groundwater elevation maps.

Following water level measurements, the monitoring wells will be purged and sampled using low-flow sampling techniques in accordance with SOP GW-03 (Appendix D). A peristaltic pump or equivalent pump will be used to purge and sample the wells. New low-density polyethylene tubing will be placed inside the wells to the approximate middle of the groundwater screen. Water quality parameters (temperature, pH, dissolved oxygen, and specific conductance) will be collected through a flow-through cell and allowed to stabilize in accordance with the criteria in SOP GW-03 (Appendix D) prior to sampling. Once the parameters have stabilized, the flow-through cell will be removed and the peristaltic pump will be used to transfer the groundwater directly to laboratory-supplied sample containers.

Groundwater samples will be collected from five monitoring wells (MW1 through MW5) utilizing low-flow, low-turbidity sampling procedures. Additional information regarding sampling techniques is included in the SOPs, which are provided in Appendix D. All samples will be analyzed for total and dissolved metals, VOCs, and SVOCs. One groundwater sample will be analyzed for PFAS and 1,4-dioxane. The analytical methods and protocols to be used during this sampling, as well as the expanded list of constituents for analysis, are provided in the QAPP (Appendix C) Tables C2-1 and C2-2, respectively. Purge water will be containerized for proper disposal (see Section 4.4). Groundwater samples and appropriate quality control samples will be placed in coolers with ice and shipped with completed chain-of-custody documents to Eurofins for analysis.

Four rounds of water level measurements will be collected from the monitoring wells on a quarterly frequency. A clean electronic water-level indicator will be lowered into each well to determine depth to water, and the top of casing elevation will be used to calculate groundwater level elevation amsl.

4.3 QUALITY ASSURANCE AND QUALITY CONTROL

To ensure quality throughout the project, trained and experienced personnel will be assigned appropriately, and SOPs and approved analytical methods will be employed for sample collection, preservation, analysis, and documentation. In addition to the laboratory quality assurance and quality control (QA/QC) samples analyzed in accordance with the laboratory QA/QC Plan, several field quality control samples will be collected and submitted for analysis throughout the course of the field investigation, to assess the quality of data obtained from the field sampling program. The quality control samples include:

- Duplicates: These samples are duplicate samples collected in the field and submitted to the laboratory without indication of the corresponding parent sample. These samples will be collected at a rate of one per every 20 samples and will provide a measure of laboratory precision and matrix variability.
- Field Rinsate Blanks: These samples will be collected to document the adequacy of field decontamination of reusable sampling equipment. Field rinsate blanks will be prepared by pouring deionized water over the sampling equipment after a decontamination procedure has been completed. This rinse water is then collected and submitted for analysis to provide an indication of the effectiveness of decontamination procedures. These samples will be prepared at a rate of one per 20 samples.

The number of QA/QC samples anticipated is tabulated in QAPP Table C2-3 Further descriptions of the QA/QC samples and analytical procedures are provided in the QAPP (Appendix C).

Laboratory data deliverable packages will meet the requirements of NYSDEC Analytical Services Protocol Category B (see DER-10 Appendix 2B, Section 1.0b). Validation of laboratory data deliverable packages will be performed as described in Section 5.2.4.

4.4 WASTE HANDLING

Soil and water IDW will be handled in accordance with DER-10 Section 3.3(e). Drill cuttings and other soil, water, and decontamination fluids generated during investigation activities (including dedicated/disposable sampling equipment and personal protective equipment) will be collected and placed in sealed containers (e.g., drums or other appropriate containers) daily. The filled containers will be staged onsite, pending offsite disposal, in accordance with regulatory requirements.

Non-dedicated sampling equipment will be decontaminated by washing with phosphate-free detergent and rinsing with distilled water prior to, and between, sampling locations. Decontamination procedures are described in Appendix D. Alternatively, dedicated, disposable sampling equipment (e.g., scoops, plastic bending trays) may be used. Drilling equipment (drill rods and MacroCore samplers) will be decontaminated by washing with a steam cleaner/pressure washer using the procedures described in Appendix D. All rinse water, well development water, and purge water will be containerized pending offsite disposal in accordance with regulatory requirements.

5 PROJECT MANAGEMENT

The following sections describe the schedule for implementing the Work Plan and the management of data and information generated for characterizing the Refractories property.

5.1 SCHEDULE

The activities described in this Work Plan are expected to be performed following the effective date of an Order of Consent between Corning and NYSDEC concerning characterization of the Refractories property. The anticipated project schedule is provided as Figure 5-1. The schedule will be updated as needed and submitted to NYSDEC and the New York State Department of Health (NYSDOH).

5.2 DOCUMENTATION

Essential project information related to field sampling and data analysis will be documented in logs and reports, which will be retained by Corning and/or its contractor(s). Corning will submit a Refractories P-site characterization report to NYSDEC following completion of the Refractories investigation.

5.2.1 Field Logs

Project information pertinent to field activities, including sampling, will be recorded in bound field logbooks with consecutively numbered pages and/or field data forms specific to a given activity. Information recorded in the field logbook will contain a variety of information such as:

- Date and time of logbook entry
- Names of all field personnel
- Weather conditions
- Field observations/measurements
- Ambient air monitoring data
- Summary of daily activities and significant events
- Description of samples and sampling locations
- Date and time of sample collection
- Collector's sample identification number(s) and/or name
- Name and affiliation of visiting personnel

- Decontamination activities
- Description of any problems or issues encountered and resolution
- Description of any deviations from this Work Plan.

Entries will be made in ink with no erasures. If an incorrect entry is made, the information will be marked with a single strike line, initialed, and dated. At regular intervals (e.g., daily or weekly), field staff will create scanned or photographed electronic copies of the field logbook pages and field data forms. Site and preventive measure protocols for COVID-19 (included in Appendix A) will be followed, consistent with New York State and U.S. Centers for Disease Control and Prevention protocols.

5.2.2 Photograph Log

A project photograph log will be prepared and maintained by the contractor(s) throughout the characterization activities to provide photographic documentation of field activities. In particular, photographs of each sample location and of the soil boring cores will be collected, logged, and retained.

5.2.3 Field Reports

Field contractors will prepare brief daily work activity reports summarizing the work performed each day. At the completion of the project, all documents will be provided to Corning. During the execution of the work described in this Work Plan, field contractors will periodically provide NYSDEC and NYSDOH representatives with verbal updates of the field activities, as well as electronic copies of work activity reports with supporting photographs. All ambient air monitoring data recorded in the field logbook or designated field sheets will be communicated by the field contractor to NYSDEC and NYSDOH on a scheduled basis (i.e., within 12 hours for levels which require actions, weekly for routine monitoring data).

5.2.4 Data Management

Field measurements and laboratory analytical data will be managed by contractors in an electronic database and will be uploaded in an electronic data deliverable (EDD) format.

Laboratory data deliverable packages will be reviewed for completeness, adherence to holding times, consistency with chains-of-custody, and consistency with planned analytical methods. A qualified contractor will perform data validation and prepare data usability summary reports (DUSRs) in accordance with procedures described in the QAPP (provided in Appendix C).

5.2.5 Reporting

Upon receipt of validated data, Corning will supply such validated data to NYSDEC in DUSRs. The DUSRs will include tables summarizing sample analytical results as well as tables summarizing QA/QC sample results. NYSDEC will review the data and Corning's transmittal letters before they are provided to individual property owners.

Following the completion of characterization activities, and upon NYSDEC acceptance of the DUSRs, a Refractories characterization report documenting the investigation and findings will be prepared and submitted to NYSDEC. This report will include a summary of all activities, including a description of any deviations from the Work Plan, as well as the submission of analytical results including the results of the QA/QC samples.

The Refractories characterization report will contain the following information:

- Summary tables of field and laboratory analytical data
- Maps and/or aerial photographs showing soil sampling locations
- Photo logs
- Soil boring logs
- Comparison to appropriate soil cleanup objectives
- Discussion of sampling results and significant findings.

5.3 HEALTH AND SAFETY PLAN

The health and safety of field personnel, clients, visitors, and the community are of utmost importance. It is anticipated that Level D personal protection (i.e., coverall or work clothes, work boots, safety glasses, and hard hat) will be utilized by workers during characterization activities. All field activities will be conducted in accordance with the HASP and CAMP provided in Appendix A and Appendix B, respectively. An addendum to the HASP provides COVID-19 protocols.

6 REFERENCES

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USDA. 2018. Web Soil Survey. Available at: https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx. U.S. Department of Agriculture, Natural Resources Conservation Service.

Figures

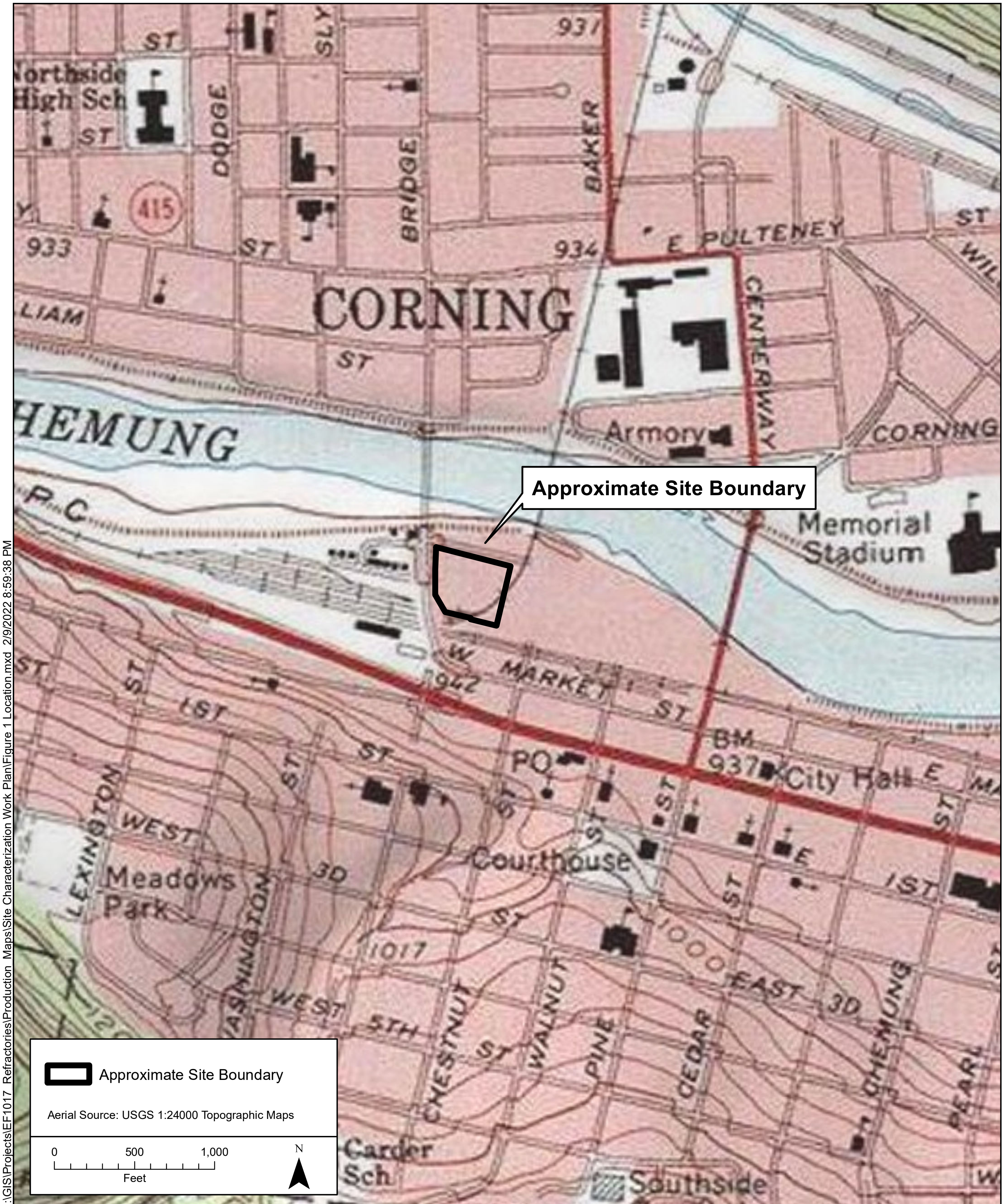

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Figure 1-1.
Location of Corning Refractories Plant
Refractories P-Site Characterization Work Plan

N:\GIS\Projects\EF1017_Refractories\Production_Maps\Site Characterization Work Plan\Figure 1-2 Plant Features_20210625.mxd 2/9/2022 9:01:21 PM

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Figure 1-2.
Refractories Plant Features
Refractories P-Site Characterization Work Plan

N:\GIS\Projects\EF1017_Refractories\Production_Maps\Site Characterization Work Plan\Figure 2-1 Decommissioning Sample Points_20210607.mxd 2/9/2022 8:55:41 PM

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Figure 2-1.
Decommissioning Sample Points
Refractories P-Site Characterization Work Plan

N:\GIS\Projects\EF1017_Refractories\Production_Maps\Site Characterization Work Plan\Figure 4-1 Proposed Sampling Locations.mxd 2/9/2022 8:58:01 PM

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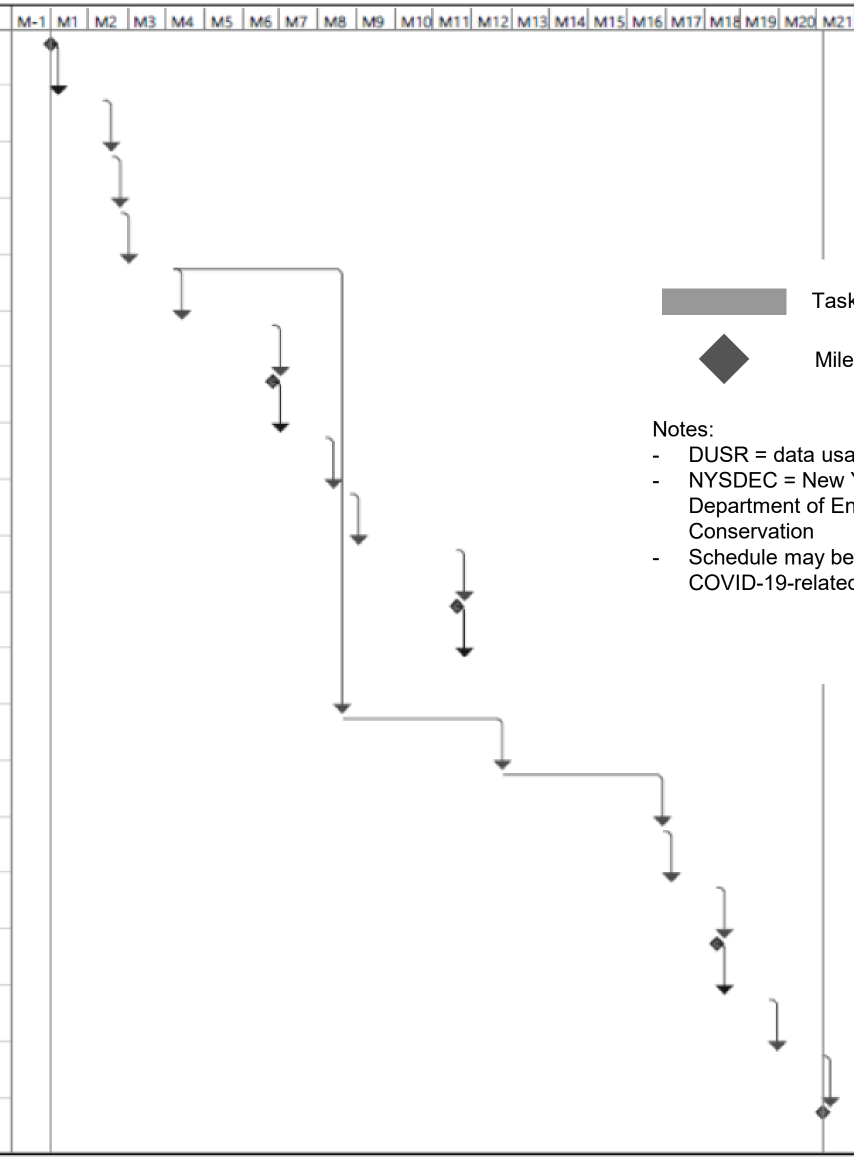
Figure 4-1.
Proposed Sampling Locations
Refractories P-Site Characterization Work Plan

ID	Task Name	Duration
1	NYSDEC Approval	0 days
2	Mobilization	30 days
3	Boundary Survey	5 days
4	Utility Clearances	5 days
5	Soi/Groundwater Sampling, Water Levels	30 days
6	Sample Analysis & Validation	56 days
7	Draft DUSR to NYSDEC	0 days
8	NYSDEC Review DUSR	30 days
9	Finalize DUSR	14 days
10	Prepare Draft Characterization Report	60 days
11	Draft to NYSDEC	0 days
12	NYSDEC Comments	30 days
13	Quarterly Water Levels - Second Round	1 day
14	Quarterly Water Levels - Third Round	1 day
15	Quarterly Water Levels - Fourth Round	1 day
16	Revise Draft Characterization Report	30 days
17	Revised Draft to NYSDEC	0 days
18	NYSDEC Comments	30 days
19	Prepare Final Characterization Report	30 days
20	Final Report to NYSDEC	0 days



Task

Milestone

Notes:
- DUSR = data usability summary report
- NYSDEC = New York State Department of Environmental Conservation
- Schedule may be impacted due to COVID-19-related protocols or delays

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Figure 5-1.
Project Schedule
Refractories P-Site Characterization Work Plan

Tables

Table 4-1. Sample Locations

			Target Coordinates	
Sample ID	Sample Location Rationale	Sample Type	Latitude	Longitude
SS1	Shallow soil characterization	Surface Soil	42.14610	-77.05900
SS2	Shallow soil characterization	Surface Soil	42.14630	-77.06060
SS3	Shallow soil characterization	Surface Soil	42.14570	-77.06050
SS4	Shallow soil characterization	Surface Soil	42.14530	-77.06040
SS5	Shallow soil characterization	Surface Soil	42.14540	-77.05940
SS6	Shallow soil characterization	Surface Soil	42.14561	-77.05907
SS7	Shallow soil characterization	Surface Soil	42.14517	-77.05968
SB1/MW1	Dry well characterization, groundwater flow direction, groundwater quality	Soil Boring/ Monitoring Well	42.14590	-77.05910
SB2/MW2	Crawl space characterization, groundwater flow direction, groundwater quality	Soil Boring/ Monitoring Well	42.14617	-77.06054
SB3/MW3	Dry well characterization, groundwater flow direction, groundwater quality	Soil Boring/ Monitoring Well	42.14590	-77.06040
SB4/MW4	Soil characterization, groundwater flow direction, groundwater quality	Soil Boring/ Monitoring Well	42.14630	-77.06000
SB5/MW5	Soil characterization, groundwater flow direction, groundwater quality	Soil Boring/ Monitoring Well	42.14530	-77.05980
SB6	Soil characterization	Soil Boring	42.14508	-77.05932

Notes:
Samples will undergo analyses listed in QAPP Table C2-2 (Appendix C).
QAPP = Quality Assurance Project Plan

Appendix A

Health and Safety Plan

P-SITE CHARACTERIZATION WORK PLAN: CORNING REFRACTORIES PLANT

NYSDEC Project ID 851048, 1 Front Street, Corning, New York
Health and Safety Plan

Prepared for
Corning Incorporated
Corning, NY

Prepared by

31 West 34th Street
Suite 7196
New York, NY 10001

April 14, 2022

Affiliated with Integral Consulting Inc.

CONTENTS

LIST OF ATTACHMENTS

ACRONYMS AND ABBREVIATIONS

CFR	Code of Federal Regulations
CHSM	corporate health and safety manager
COC	constituent of concern
CPR	cardiopulmonary resuscitation
HASP	health and safety plan
IDLH	immediately dangerous to life and health
Integral	Integral Engineering, P.C.
NYSDEC	New York State Department of Environmental Conservation
OSHA	Occupational Safety and Health Administration
PEL	permissible exposure limit
PID	photoionization detector
PPE	personal protective equipment
Refractories	Corning Refractories Plant
SSO	Corning Refractories Plant site safety officer
STEL	short-term exposure limit
VOC	volatile organic compound
Work Plan	P-Site Characterization Work Plan: Corning Refractories Plant

HEALTH AND SAFETY PLAN APPROVAL

This health and safety plan has been reviewed and approved for soil and groundwater sampling at the Corning Refractories Plant at 1 Front Street in Corning, Steuben County, NY.

Project Manager	Date
Corporate Health and Safety Manager	Date

HEALTH AND SAFETY PLAN ACKNOWLEDGMENT

In the absence of an appropriate subcontractor or consultant health and safety plan, and with the written approval of Integral Engineering, P.C. (Integral) corporate health and safety manager, the subcontractor or consultant may utilize the Integral health and safety plan (HASP), provided there is written concurrence from the subcontractor or consultant that they will directly administer the plan for their employees and assume all risks associated with any possible errors or omissions in the plan. This HASP does not cover any construction activities. The Integral HASP is a minimum standard for Refractories and will be strictly enforced for all Integral personnel, or its subcontractors or consultants where applicable.

I have reviewed the HASP prepared by Integral, dated May 7, 2021, for the Refractories fieldwork. I understand the purpose of the plan, and I consent to adhere to its policies, procedures, and guidelines while an employee of Integral, or its subcontractors or consultants. I have had an opportunity to ask questions regarding this plan, which have been answered satisfactorily by Integral.

Employee signature	Company	Date
Employee signature	Company	Date
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1 INTRODUCTION

It is the policy of Integral Engineering, P.C. (Integral) to provide a safe and healthful work environment that is compliant with applicable regulations. No aspect of the work is more important than protecting the health and safety of all workers.

This health and safety plan (HASP) provides general health and safety provisions to protect workers from potential hazards during field activities at the Corning Refractories Plant (Refractories) located in Corning, New York. This HASP has been prepared in accordance with federal Occupational Safety and Health Administration (OSHA) safety regulations (29 CFR [Code of Federal Regulations] 1910 and 29 CFR 1926).

Attachments to the HASP provide a Refractories site-specific map and specific routes to the hospital from the site (Attachment 1), regulatory notices (Attachment 2), safety procedures (Attachment 3), safety data sheets (Attachment 4), an employee exposure/injury incident report (Attachment 5), a near-miss incident report (Attachment 6), a field safety tailgate briefing form (Attachment 7), and COVID-19 site and preventative measures plans (Attachment 8).

This HASP has been prepared to identify potential Refractories site hazards to the extent possible based on information available to Integral. Integral cannot guarantee the health or safety of any person entering the Refractories. Strict adherence to the health and safety guidelines set forth herein will reduce the potential for injury and illness at the Refractories. The health and safety guidelines in this plan were prepared specifically for the Refractories and should not be used elsewhere without prior evaluation by trained health and safety personnel.

A copy of this HASP must be in the custody of the field crew during field activities. All individuals performing fieldwork must read, understand, and comply with this plan before undertaking field activities. Once the information has been read and understood, the individual must sign the Health and Safety Plan Acknowledgment form provided as part of this plan. The signed form will become part of the project file.

This plan may be modified at any time based on the judgment of the Integral Corning Refractories Plant site safety officer (SSO) in consultation with the project manager and Integral corporate health and safety manager (CHSM) or designee. Any modification will be presented to the Refractories site team during a safety briefing and will be recorded in the field logbook.

1.1 OBJECTIVES AND METHODS

Field activities referenced in this HASP are associated with the characterization of soil and groundwater at the Refractories, in the City of Corning, New York. This HASP outlines the health and safety considerations for field activities at the Refractories.

The P-Site Characterization Work Plan: Corning Refractories Plant (Work Plan) is the master document, which describes characterization activities, community air monitoring plan, quality assurance project plan, and implementation schedule. This HASP is incorporated into the Work Plan as Appendix A.

Fieldwork will be undertaken to meet requirements outlined in the Work Plan. Field activities may include but are not limited to the following:

- Perimeter and personal air monitoring activities.
- Soil borings will be advanced across the Refractories site for characterization purposes. The Work Plan details specifics regarding field and chemical analysis methods.
- Wastewater will be generated as a result of groundwater sampling and will need to be managed appropriately.
- Soil will be generated as a result of drilling and surface soil sampling and will need to be managed appropriately.
- Soil and groundwater waste disposal sampling will occur as described in the Work Plan.
- Compliance activities, Refractories site walks, observations, and other miscellaneous activities.

During field activities, drilling equipment and heavy machinery may be used for characterization purposes. Drilling equipment on the Refractories at any time may include Geoprobe™ or similar direct push rig and/or hollow stem auger.

Safety considerations when working around drill rigs and heavy machinery are presented in subsequent sections.

1.2 ORGANIZATION

This HASP covers a broad range of field activities as outlined in preceding sections. Chemical and physical hazard evaluations are presented in Sections 2 and 3, respectively. Specific health and safety guidelines associated with each task, including a brief description of the work, are discussed in Section 11 (Task-Specific Safety Procedure Summary).

1.3 ROLES AND RESPONSIBILITIES

All Integral personnel, subcontractors, or consultants and visitors on the Refractories must comply with the requirements of this HASP. The specific responsibilities and authority of management, safety and health, and other personnel are detailed in the following paragraphs.

1.3.1 Refractories Safety Officer

The SSO has full responsibility and authority to implement this HASP and to verify compliance. The SSO reports to the project manager and is on the Refractories or readily accessible to the Refractories during all work operations. The SSO is responsible for assessing the Refractories conditions and directing and controlling emergency response activities. The specific responsibilities of the SSO include:

- Managing the safety and health functions on the Refractories
- Serving as the point of contact for safety and health concerns
- Assessing Refractories conditions for unsafe acts and conditions and ensuring corrective action
- Ensuring that all Integral employees and subcontractors understand and follow the HASP
- Ensuring that daily work schedules and tasks are reasonable for the required levels of effort and weather conditions
- Confirming local emergency response phone numbers and locations
- Conducting and documenting the initial and daily or periodic health and safety briefings
- Evaluating and modifying the level of protective apparel and safety equipment, based on Refractories conditions
- Ensuring that the field team observes all necessary decontamination procedures.

If the SSO determines that Refractories conditions are unsafe, he or she has the authority to suspend field operations until the problem is corrected. The SSO can modify HASP procedures in the field. Any changes must be documented in the field logbook, and field staff must be immediately informed of the change. The project manager and Integral's CHSM must be notified by phone or email within 24 hours of any major changes to the HASP.

1.3.2 Project Manager

The project manager has overall responsibility to ensure that personnel working at Refractories are safe. The specific responsibilities of the project manager include:

- Ensuring that the HASP is developed prior to the fieldwork or Refractories visit
- Reviewing and approving the HASP prior to the fieldwork or Refractories visit
- Ensuring employee understanding of and compliance with the HASP.

1.3.3 Corporate Health and Safety Manager

The CHSM provides guidance to the project manager and SSO on HASP preparation and reviews and approves the HASP. The CHSM also serves as an arbitrator if there is a conflict between the project manager, SSO, and field personnel. In addition, the CHSM[1] conducts periodic unannounced audits of Integral field operations to ensure compliance with the HASP.

1.3.4 Field Personnel

All Integral personnel and subcontractors on the Refractories site are responsible for reading and complying with this HASP, using the proper personal protective equipment (PPE), reporting unsafe acts and conditions, and following the work and safety and health instructions of the project manager and SSO. All Integral personnel, subcontractors, or consultants can and are encouraged to suspend field operations if they feel conditions have become unsafe.

1.4 REFRACTORIES DESCRIPTION

The Refractories property consists of approximately 3.87 acres of land located on the eastern side of the City of Corning, New York, south of Front Street and approximately 350 ft south of the Chemung River. The subject site consists of a ±102,882-ft^2 slab-on-grade structure situated on 3.87 acres of land. The structure comprises 13 interconnected buildings/additions.

A Refractories map is provided in Attachment 1 to this HASP.

1.5 PROJECT MANAGER AND OTHER KEY CONTACTS

	Name (Affiliation)	Work Telephone	Cell Phone
Project Manager	Jeff Marsh (Integral)		(315) 651-2020
Refractories Safety Officer	TBD (Integral)		
Corporate Health and Safety Manager	Matt Behum (Integral)	(667) 225-5412	(443) 454-1615
Facility Contact	TBD		
Client Contact	TBD		

[1] The audit task may be delegated to an office health and safety representative by the CHSM.

2 CHEMICAL HAZARD EVALUATION

The following table lists the properties of constituents of concern (COCs), sample preservatives, and decontamination chemicals that may be used at Refractories (i.e., hydrochloric acid, methyl alcohol/methanol, Alconox®, etc.). The table also lists the chemical properties and OSHA permissible exposure limit (PEL), short-term exposure limit (STEL), and immediately dangerous to life and health (IDLH) level. Some chemicals used during equipment decontamination or sample preservation may volatilize and enter the field crew's breathing zone and be inhaled. Breathing zone air can be monitored to ensure that the chemicals do not exceed the PEL. If any of the chemicals exceed the PEL, immediate action is required (e.g., don respirators, leave Refractories) as designated in the "Air Monitoring" section (Section 5) of this HASP.

Chemical Properties

Chemical of Concern	Maximum Expected Concentration	Medium	PEL/REL (mg/m^3)	OSHA STEL (mg/m^3)	OSHA IDLH (mg/m^3)	IP (eV)	Carcinogen or Other Hazard
Arsenic (inorganic)	Unknown	Soil/Groundwater	0.010 (NIOSH TWA REL, 0.002 ceiling)	--	5	--	Ca
Cadmium (inorganic)	Unknown	Soil/Groundwater	0.005 (OSHA TWA PEL)	--	9	--	Ca
Hydrochloric Acid	Product (<10%)	Preservative	5	--	50	12.74	Corrosive
Lead (inorganic)	Unknown	Soil/Groundwater	0.05 (OSHA TWA PEL)	--	100	--	Irritant, possible carcinogen
Methanol	Product (<62%)	Preservative	200 (OSHA TWA PEL)	250 (NIOSH STEL)	6,000	10.84	Class IB flammable liquid
Nitric Acid	Product (<10%)	Preservative	2	4 (NIOSH STEL)	25	11.95	Corrosive
Alconox® (tetra sodium pyrophosphate)	Product	Decon	5 (NIOSH REL)	--	--	--	Irritant
Isobutylene gas	Product	Calibration Gas	--	--	--	9.43	Irritant

Notes:

-- = none established
Ca = carcinogen
Decon = decontamination
IDLH = immediately dangerous to life and health
IP(eV) = ionization potential (electron volts)
mg/kg = milligrams per kilogram
NIOSH = National Institute for Occupational Safety and Health
PEL = permissible exposure limit
mg/m^3 = milligrams per cubic meter
REL = recommended exposure limit
STEL = short-term exposure limit
TWA = time-weighted average

The table below summarizes the chemical characteristics and potential chemical exposure routes at Refractories.

	Likely	Possible	Unlikely
Potential Chemical Exposure Routes at Refractories:			
Inhalation		X[a,b,c]	
Ingestion			X[a,b,c]
Skin absorption		X[a,b,c]	
Skin contact		X[a,b,c]	
Eye contact		X[a,b,c]	
Chemical Characteristics:			
Corrosive	X[a]		X[b,c]
Flammable	X[b]		X[a,c]
Ignitable	X[b]		X[a,c]
Reactive	X[a]		X[b,c]
Volatile	X[a,b]		X[c]
Radioactive			X[a,b,c]
Explosive			X[a,b,c]
Biological agent			X[a,b,c]
Particulates or fibers		X[c]	X[a,b]
If likely, describe:	Sample preservatives may include hydrochloric acid, methyl alcohol/methanol, and nitric acid. These are used for sample preservation in small volumes. Methyl alcohol/methanol is volatile and flammable. Field personnel will stand upwind when using methyl alcohol. These chemicals will not be used unless area is well ventilated. Keep methyl alcohol away from ignition sources at all times. Avoid contact with skin and eyes. Nitric and hydrochloric acids are corrosive and volatile. Always wear goggles or safety glasses and nitrile gloves when filling preserved bottles. These chemicals will not be used unless area is well ventilated.		

Notes:

[a] Nitric and hydrochloric acid (preservatives)

[b] Methyl alcohol (preservative)

[c] Refractories chemicals

3 PHYSICAL HAZARD EVALUATION AND GUIDELINES

The following sections present general physical hazards and soil and groundwater sampling guidelines.

3.1 GENERAL PHYSICAL HAZARDS

The following table presents possible physical hazards that are expected to be present during field activities.

Possible Hazard	Yes	No	Proposed Safety Procedure
Heavy equipment	X		Stay back from operating equipment; wear safety vests and hard hats; coordinate and maintain eye contact with equipment operator. Large haul trucks may be on Refractories and have limited visibility. Be sure to maintain a safe distance from haul truck routes and maintain eye contact with the driver, or wave your hands to get their attention when walking around a truck being loaded. Be sure the operator acknowledges that you are seen.
Material handling	X		Lift properly; seek assistance if necessary; do not overfill coolers or boxes. Seek assistance if drums must be moved.
Adverse weather	X		Seek shelter during electrical storms; work in adverse weather conditions only with proper training and equipment.
Plant/animal hazards	X		Know local hazards and take appropriate precautions. Use insect repellent if mosquitoes are persistent.
Dust	X		Wet surfaces/work areas, reduce truck speeds, and stand upwind.
Hazardous material handling (sample preservative)	X		Wear proper PPE and do not allow volatile components to enter your breathing zone; work in well ventilated areas and upwind.
Uneven terrain/tripping	X		Use caution, wear properly fitting shoes or boots, and keep work area orderly. Do not obscure your view of the ground with carried loads
Noise	X		Wear ear protection when working around heavy equipment and other noise sources. Excavators, rock breaking equipment, and haul trucks are loud enough to damage your hearing. Wear hearing protection at all times when around heavy machinery.
Heat stress	X		Follow heat stress information (Attachment 3). *Note:* potential for heat stress will depend on ambient temperatures, PPE in use, activities, hydration, etc.
Cold/hypothermia	X		Keep warm and dry; bring changes of clothes; do not work in extreme conditions without proper equipment and training. Follow cold stress information (Attachment 3).

Possible Hazard	Yes	No	Proposed Safety Procedure
Falling objects	X		Wear hard hats in work areas (i.e., to protect from overhead hazards, mainly associated with operation of heavy equipment).
Drill rigs	X		Avoid all pinch points; do not operate or stand near rig during electrical storms; stay a safe distance (25 ft) from power lines; level drill rig.
Work near water	X		Pursuant to OSHA 1926.106(a)&(b), all staff working onsite in or near water will be required to wear buoyant work vests or life preservers, either of which will be inspected before and after use for defects that would alter strength and buoyancy. Defective units shall be immediately discarded and replaced with non-defective units prior to sampling.

Summary of potential physical hazards posed by proposed Refractories activities:

Activity	Potential Hazard
Sample handling	Hazardous material handling (sample preservatives), uneven terrain and tripping, heat stress, hypothermia, adverse weather, plant and animal hazards, drill rigs.
Air monitoring and observations	Heavy equipment, falling objects, uneven terrain and tripping, heat stress, hypothermia, adverse weather, excavations, plant and animal hazards, noise, dust.

4 PERSONAL PROTECTIVE EQUIPMENT AND SAFETY EQUIPMENT

The following sections address PPE and safety equipment required for completing the field activities.

4.1 PERSONAL PROTECTIVE EQUIPMENT

Based on the hazards identified above in Sections 2 and 3, the following table identifies the PPE required for Refractories activities.

	Level of Protection	
Refractories Activity	Initial	Contingency[a]
Air, soil, and groundwater sampling	D/MD	Temporarily stop work and assess situation[a]
Sample handling and decontamination	D	Temporarily stop work and assess situation[a]
Drilling oversight and core logging	D/MD	Temporarily stop work and assess situation[a]

Notes:
[a] Based on unexpected change in Refractories conditions

Each level of protection will incorporate the following PPE:

Level D	Long pants or work coveralls, shirt, hard hat (if heavy machinery is present at Refractories or when working near overhead hazards), traffic safety vest (if heavy machinery is present), latex or nitrile gloves, safety glasses, and steel-toe boots are required. Hearing protection, sunscreen, and rain gear are required as needed.
Level MD	Same as Level D with addition of rain gear and/or chest waders and personal flotation device, as necessary.

Respirator and Respirator Cartridge Information

Respirator use is not expected to be necessary for this project. However, there is potential to encounter volatile organic compounds (VOCs) and other unknown hazards as characterization of Refractories proceeds. If unexpected conditions are encountered resulting in an exceedance of the action level (see Section 5.4 below), work will be stopped, the situation assessed, and engineering controls potentially implemented.

If it is determined that respirators will need to be worn on specific portions of Refractories, change-out schedules and procedures for respirator use will be incorporated as an addendum to this HASP. Change-out schedules and calculation parameters for many chemicals can be calculated using the cartridge life calculator at the Mine Safety Appliances Company website (https://us.msasafety.com/).

4.2 SAFETY EQUIPMENT

The following safety equipment will be present at Refractories during the proposed field activities.

Air Monitoring: Check the items required for this project.

[ ]	OVM	[X]	PID
[ ]	LEL/O_2 meter	[X]	MiniRam (particle monitors)
[ ]	H_2S meter	[ ]	Radiation meter
[ ]	Detector pump and tubes (e.g., benzene)	[ ]	Other:

First Aid Kit: Mandatory, including absorbent compress, adhesive bandages, adhesive tape, antiseptic, burn treatment, medical exam gloves, sterile pad, cardiopulmonary resuscitation (CPR) shield, triangle bandage, scissors—for cutting off the PPE from an injured person. Check additional items required.

[X]	Emergency blanket	[X]	Sunscreen
[X]	Insect repellent	[ ]	Other: ____________________ ____________________

Other: Check the items required for this project.

[ ]	Eyewash	[ ]	Fit test supplies
[X]	Drinking water	[X]	Fire extinguisher (drill rigs and onboard larger sampling vessels)
[ ]	Stopwatch for monitoring heart rate for heat stress monitoring[2]	[ ]	Windsock
[X]	Thermoscan® thermometer for heat stress monitoring	[X]	Cellular phone
		[ ]	Radio sets
[ ]	Survival kit[3]	[X]	Global positioning system
[ ]	Personal flotation device	[ ]	Other: ________________________

[2] Heart rate monitoring requires special training.
[3] Consult the CHSM for guidance for Refractories-specific survival kits.

5 AIR MONITORING

This section covers personal air monitoring for field personnel. A community air monitoring plan is included as Appendix B to the Work Plan. Air monitoring will be conducted when entering previously uncharacterized areas, when working in the vicinity of uncontained chemicals or spills, when opening containers and well casings, and prior to opening confined spaces. (Note: Integral personnel are not trained or authorized to enter confined spaces under any circumstances.) Air monitoring must be conducted to identify potentially hazardous environments and determine reference or background concentrations. Air monitoring can sometimes be used to augment judgment in defining exclusion zones.

Air monitoring may be discontinued at locations where there have been multiple sampling events in the same area/media during similar activities with no action level exceedances. In such instances, the air monitoring results must be well documented and there must be approval from the CHSM prior to discontinuing the air monitoring. Air monitoring must be reinstated for fieldwork in different areas of Refractories or when sampling new media.

5.1 INTRODUCTION

Personal air monitoring involves collection of samples within the breathing zone of the field personnel to better understand exposures, ensure appropriate levels of PPE, and document compliance with regulation. Such samples may be full shift, for comparison to PELs (or other applicable occupational exposure limits), or short term, for comparison to STELs. Some chemicals in soil or aqueous media may volatilize or become aerosolized and be inhaled by field personnel.

Breathing zone air can be monitored to ensure that the chemicals do not exceed a regulatory or project-specific action level (generally 50 percent of the PEL). Integral commonly uses photoionization detectors (PIDs) and dust meters (e.g., MiniRam) for monitoring VOCs and particle constituents, respectively. In practice, the air directly in the field personnel's breathing zone is monitored with the PID or dust meter for 10–15 seconds. The highest reading is recorded in the project logbook and checked against the Refractories-specific action level in the table below. If any of the constituents exceed the action level presented in Section 5.4, immediate action is required (e.g., don respirators, leave Refractories, etc.), as designated.

The following sections provide general guidance on the selection and calibration of PIDs and dust meters, which are typically rented for field projects.

5.2 PHOTOIONIZATION DETECTORS

It is critical to order a PID with a detector lamp with the appropriate ionization energy to detect constituents of interest at Refractories. The ionization energy of the lamp must be greater than the ionization potential of the constituents of interest (ionization potentials are listed in the National Institute for Occupational Safety and Health pocket guide to chemicals and are presented in Section 2). Be sure that the meter arrives at least a day prior to the start of the fieldwork so field personnel can familiarize themselves with the operation of the meter and confirm that it was not damaged during shipping. Field personnel must also read the operation manual to become familiar with its operation prior to use in the field. Note that moisture may damage the detector lamp and/or provide erroneous readings, so a moisture filter is used on the probe. Also note that the PID will only accurately quantitate the material used in the calibration process. A response factor is used to measure the sensitivity of the PID to a particular chemical present at Refractories. Response factors are normally presented in the operation manual for the PID.

As VOCs with a higher ionization energy are not initially expected to be of concern at Refractories, a 10.6 eV lamp PID will be used unless site observations and/or data indicate that a lamp with a higher ionization energy needs to be used.

The PID must be calibrated daily in accordance with the manufacturer's specifications, which are provided in the operation manual. The calibration typically requires the use of a span gas (generally 100 parts per million isobutylene) and zero gas (generally fresh air). Be sure that all the required calibration equipment/supplies are provided with the PID (e.g., span gas cylinder, regulator, tubing, and Tedlar™ bag). Record calibration data in the field logbook.

5.3 DUST METERS

The principal particle size of concern at Refractories is PM10. Air monitoring will be performed with a MiniRam or equivalent device, which is capable of detecting PM10 in air.

It is critical that the dust meter is capable of measuring the concentrations of airborne dust that are at or below Refractories-specific action levels presented below. Be sure that the meter arrives at least a day prior to the start of the fieldwork so field personnel can familiarize themselves with the operation of the meter and confirm that it was not damaged during shipping. Field personnel must also read the operation manual to become familiar with its operation prior to use in the field.

The dust meter must be field checked (i.e., zeroed) daily in accordance with the manufacture's specifications, which are provided in the operation manual. The dust meter field check typically involves zeroing the meter with ambient or filtered air. Be sure that all the required zeroing and operational equipment/supplies are provided with the dust meter. Record field-check data in the field logbook.

5.4 ACTION LEVELS

The following is a summary of personal air monitoring to be conducted at Refractories.

Instrument	Observation	Action	Comments
PID	<5 ppm	Continue working.	At the boring/sampling location or Refractories perimeter and sustained for 5 minutes.
PID	≥5 ppm	Work will stop and operations will be reviewed.	Steps will be taken to reduce emissions, such as placement of tarps or suppressants over the open work area, and the areas will be retested.
MiniRam	≤50 μg/m^3	Continue working.	
MiniRam	>50 μg/m^3 (At the boring/sampling location or Refractories perimeter and sustained for 5 minutes)	Implement additional dust control measures.	
MiniRam	>150 μg/m^3 (at Refractories property perimeter and sustained for 5 minutes)	Operations will temporarily cease while additional dust control measures are identified and implemented.	If >150 μg/m^3 is detected at the perimeter of Refractories, operations will slow while the optimal additional dust control measures are identified.

Notes:
ppm = parts per million
μg/m^3 = micrograms per cubic meter

Air monitoring will be conducted at least every 30 minutes, or more frequently if odors are observed by the field crew. Maintenance, calibration, and field checks of all air monitoring equipment will be performed in accordance with manufacturer recommendations. Further details regarding community air monitoring are provided in the community air monitoring plan (Appendix B to the Work Plan).

6 HEALTH AND SAFETY TRAINING AND MEDICAL MONITORING

The following sections present requirements for health and safety training and medical monitoring.

6.1 HEALTH AND SAFETY TRAINING AND MEDICAL MONITORING

Integral and subcontractor personnel are required to complete the following training requirements prior to working at Refractories.

6.1.1 Training Requirements

Task	No Training	24-hour	40-hour[a]	Supervisor[b]	First Aid/CPR[c]	Medical Monitoring
Integral Field Personnel						
TBD			X	X	X	X
TBD			X	X	X	X
TBD			X	X	X	X
Integral Subcontractors[d]						

Notes:

[a] Must have current OSHA 8-hour refresher if it has been more than a year since the OSHA 40-hour training.
[b] At least one person at Refractories must be OSHA HAZWOPER supervisor trained if this is a hazardous waste site.
[c] At least one member of each team of two or more people at Refractories must be First Aid/CPR trained.
[d] Integral subcontractors and consultants may have requirements that are more stringent than those listed above. These are minimum training and monitoring requirements required to work at Refractories.

6.1.2 Refractories Safety Meetings

Refractories safety meetings must be held before beginning new tasks or when new staff enter Refractories. Refractories safety meetings should be held at a minimum of once a week and should be held daily on complex or high hazard projects. Tailgate safety meetings must occur every morning during review of the day’s work plan, covering specific hazards that may be encountered. Additional meetings will be held at any time health and safety concerns are raised by any of the personnel. Attendance and topics covered are to be documented in the field logbook.

6.2 MEDICAL MONITORING

OSHA requires medical monitoring for personnel potentially exposed to chemical hazards in concentrations in excess of the PEL for more than 30 days per year and for personnel who must use respiratory protection for more than 30 days per year. Integral requires medical monitoring for all employees potentially exposed to chemical hazards.

Will personnel working at Refractories be enrolled in a medical monitoring program? Yes ___X___ No ________

7 EMERGENCY RESPONSE PLAN

The following sections discuss emergency recognition and prevention, emergency response and notification, emergency decontamination, Refractories communications, and use of the buddy system.

7.1 EMERGENCY RECOGNITION AND PREVENTION

It is the responsibility of all personnel to monitor work at Refractories for potential safety hazards. All personnel are required to immediately report any unsafe conditions to the SSO. The SSO is responsible to immediately take steps to remedy any unsafe conditions observed at Refractories.

The following are examples of some emergency situations that could occur during the characterization field activities:

- Slips, trips, and falls (on sloped areas, uneven terrain, etc.)
- Lacerations from scrap metal (in soil, etc.)
- The air monitoring action level is exceeded
- Entrainment of clothes or objects in moving equipment or parts
- Serious injury or illness (e.g., physical injury, heart attack)
- Severe thunderstorm with lightning.

Immediate actions will be taken by the field team under the leadership of the SSO in response to these emergencies.

7.2 EMERGENCY RESPONSE AND NOTIFICATION

If an emergency at Refractories warrants it, all personnel must immediately evacuate the affected work area and report to the SSO at the predetermined emergency assembly location:

Field vehicle

In case of injury, field personnel should take precautions to protect the victim from further harm and notify local or facility emergency services. In remote areas, it will be necessary to have first aid-trained personnel on the field team. The victim may require decontamination prior to treatment if practicable—requirements will vary based on Refractories conditions.

Emergency medical care will be provided by:

- [X] Local emergency medical provider (i.e., fire department)
- [ ] Facility emergency medical provider
- [ ] First aid-trained field staff (for remote areas only)

Local Resources	Name	Telephone	Notified Prior to Work (Yes/No)?
Fire	Corning Fire Department	911	No
Police	Corning Police Department	911	No
Ambulance	Not available	911	No
Hospital	Guthrie Corning Hospital	607-937-7200	No
Directions to the hospital:	Consult attached hospital route map.		

The SSO must confirm that the hospital listed is still in operation and that it has an emergency room. **It is required that the SSO drive to the hospital so that the directions are practiced and understood prior to initiating fieldwork.**

Corporate Resource	Name	Work Telephone	Cell Phone
Integral CHSM[a]	Matt Behum	Office: (667) 225-5412	(443) 454-1615
Integral President	Bill Locke	Office: (720) 465-3315	(303) 548-1111
Integral Human Resources Manager	Joseph Drew	Office: (206) 957-0330	(206) 379-1289
Medical consultant	Tony Vo (WorkCare)	Office: (657) 549-3265	NA

Notes:

[a] If the CHSM cannot be reached, call Eron Dodak [Office: (503) 943-3614; Cell: (503) 407-2933]. If Eron Dodak cannot be reached, call David Livermore [Office: (503) 943-3613; Cell: (503) 806-4665].

In case of serious injuries, death, or other emergency, the Integral CHSM must be notified immediately at the phone numbers listed above. The Integral CHSM will notify the project manager and Integral's President. The project manager will notify the client.

7.3 EMERGENCY DECONTAMINATION PROCEDURES

In case of an emergency, if possible, gross decontamination procedures will be promptly implemented. If a life-threatening injury occurs and the injured person cannot undergo decontamination procedures at Refractories, then the medical facility will be informed that the injured person has not been decontaminated and given information regarding the most probable COCs.

Decontamination procedures will only be used if practical and if they will not further injure the person or delay treatment. Decontamination procedures should not be implemented if there is not a reasonable possibility that the injured party requires such intervention. The SSO will make the determination whether or not to decontaminate the injured person. The following steps will be followed for decontaminating injured personnel while in Refractories:

- If it will not injure the person further, cut off PPE using scissors or scrub the gross contamination from the injured person's PPE (e.g., Tyvek® coveralls, work boots) with a Liquinox® or Alconox® solution followed by a rinse with tap or deionized/distilled water.
- Remove PPE if feasible without further injuring the person.

7.4 REFRACTORIES COMMUNICATIONS

Each field team will carry a cell phone or satellite phone that is in good working order. If there is any type of emergency that requires Refractories to be evacuated (e.g., severe thunderstorm with lightening, chemical release), the field team leader will blow an air horn three times. When the horn sounds, all personnel will meet at the predetermined emergency assembly location, provided the muster point is in safe territory (field vehicle). All other emergency notifications that do not require evacuation (e.g., a person falling overboard) will be conducted using a cell or satellite phone. Emergency phone numbers are listed above in Section 7.2.

7.5 BUDDY SYSTEM

The buddy system will be used at Refractories at all times. The buddy system is a system of organizing employees into field teams in such a manner that each employee of the field team is designated to be observed by at least one other employee in the field team. The purpose of the buddy system is to provide rapid assistance to employees in the event of an emergency.

Integral field staff will always have someone else on Refractories with them. It is Integral's policy that the buddy system will be used at all times. If Integral personnel are unable to team with other Integral staff, contractors will be retained to maintain the buddy system. Working alone at a specific area of Refractories should be avoided given the potential hazards. Sometimes it is necessary for one member of the field team to be temporarily out of the visual sight of the other, and when this must occur, contact will be made with Refractories personnel during regularly agreed upon intervals by cell phone or radio.

8 WORK ZONES

Work zones are defined as follows:

Exclusion zone	Any area of Refractories where hazardous substances are present, or are reasonably suspected to be present, and pose an exposure hazard to personnel
Contamination reduction zone	Area between the exclusion and support zones that provides a transition between contaminated and clean zones
Support zone	Any area of Refractories, so designated, that is outside the exclusion and contamination reduction zones

Refractories control measures in work zones are described below for upland sampling and broken further down into specific field activities.

8.1 DRILLING AND SAMPLING

These activities include oversight of the installation of boreholes and associated soil and groundwater sampling.

Exclusion zone: An approximate 12-ft radius around the drill rig will be marked with orange traffic safety cones or caution tape. Only properly equipped and trained personnel (i.e., wearing modified D protective clothing) will be allowed in this area.

Contamination reduction zone: After drilling and/or sampling is completed at a station, the exclusion zone will become the contamination reduction zone.

Support zone: All areas outside the exclusion and contamination reduction zones.

Controls to be used to prevent entry by unauthorized persons: No unauthorized personnel will be allowed into the exclusion/contaminant reduction zones.

9 EQUIPMENT DECONTAMINATION AND PERSONAL HYGIENE

The following sections describe equipment decontamination and personal hygiene procedures.

9.1 EQUIPMENT DECONTAMINATION PROCEDURES

After sampling is completed, the exclusion zone will be used as the contaminant reduction zone for decontamination activities.

To minimize or prevent personal exposure to hazardous materials, all personnel working in the exclusion zone and contamination reduction zone will comply with the following decontamination procedures:

- All personnel will wash soil and chemicals from their rain gear or clothing before leaving the exclusion zone. All gloves, rain gear, and outer boots will be removed prior to entering the field vehicle. When that is impractical, lay down plastic sheeting over the seat and use a disposable floor mat or plastic sheeting for the floor of the vehicle to reduce the possibility of soiled material becoming adhered to the interior of the car.

Decontamination equipment required at the Refractories includes the following:

- Buckets or tubs
- Distilled/deionized water
- Scrub brushes (long-handled)
- Liquinox® or Alconox® detergent
- Plastic bags
- Foil
- Paper towels
- Garbage bags
- Clean garden sprayer.

All non-disposable components of the sampling equipment (e.g., stainless-steel spoons and bowls used for sample compositing) that contact the soil or groundwater will be decontaminated using the following steps:

1. Rinse with tap water
2. Wash with Alconox® or Liquinox® detergent

3. Rinse with tap water
4. Rinse with distilled/deionized water using a garden sprayer (compositing equipment only)
5. Allow to air dry
6. Wrap up compositing equipment in aluminum foil or place in a sealed plastic bag.

Decontamination wastewater containing solvent rinsate will be collected in plastic tubs and allowed to evaporate in an area downwind of the field crew during the course of the decontamination activity. Any solvent rinsate that has not evaporated by the end of the decontamination activity will be containerized and disposed of in accordance with applicable regulations.[4]

9.2 PERSONAL HYGIENE

The following personal hygiene practices will be used at Refractories to reduce exposure to chemicals.

- Long hair will be secured away from the face so it does not interfere with any activities.
- All personnel leaving potentially contaminated areas will wash their hands, forearms, and faces in the contaminant reduction zone prior to entering any clean areas or eating areas.
- Personnel leaving potentially contaminated areas will shower (including washing hair) and change to clean clothing as soon as possible after leaving Refractories.
- No person will eat, drink, or chew gum or tobacco in potentially contaminated areas. Single portion drink containers and drinking of replacement fluids for heat stress control will be permitted only in support areas.
- Smoking is prohibited by Integral personnel and subcontractors in all areas of Refractories because of the potential for contaminating samples and for the health of the field team.

[4] Integral personnel are not allowed to sign hazardous waste manifests. Hazardous waste manifests must be signed by the client or client's representative.

10 VEHICLE SAFETY, SPILL CONTAINMENT, AND SHIPPING INSTRUCTIONS

The following sections describe vehicle safety, spill containment, and shipping instructions.

10.1 VEHICLE SAFETY

Integral's vehicle safety program requires the following:

- Cell phone usage while driving is not allowed, including the use of hands-free devices. If it is not feasible to wait to use the cell phone until arriving at the destination, pull off the road and park in a safe location to use the cell phone. Do not pull to the side of the road to use a cell phone because this significantly increases the risk of a rear-end collision.
- All vehicles are to be operated in a safe manner and in compliance with local traffic regulations and ordinances.
- Drivers are to practice defensive driving and drive in a courteous manner.
- Drivers are required to have a valid driver's license and liability insurance (per local state laws).
- Seat belts are to be worn by the driver and all passengers.
- No persons are allowed to ride in the back of any trucks or vans, unless equipped with seatbelts.
- Vehicles are to be driven in conformance with local speed limits.
- Personnel who are impaired by fatigue, illness, alcohol, illegal or prescription drugs, or who are otherwise physically unfit, are not allowed to drive or work on Integral field locations.
- Personnel are to avoid engaging in other distractions such as changing radio stations while driving.
- Motor vehicle accidents are to be reported to the responsible law enforcement agency, the Integral human resources manager, and the Integral CHSM on the same day of occurrence. Documentation of damage should be photographed.
- Personnel who have experienced work-related vehicle accidents or citations may be required to complete a defensive driving program.

10.2 SPILL CONTAINMENT

Decontamination chemicals to be used at Refractories will be either Liquinox® or Alconox®. These chemicals will be dispensed from capped or disposable containers directly into plastic pails or shallow Rubbermaid® tubs that are marked as used for decontamination. Plastic sheeting should be laid down beneath the decontamination buckets and care will be taken to reduce spillage and splashing during decontamination. Any spills will be cleaned up and disposed of in accordance with applicable regulations.

10.3 SHIPPING INFORMATION

Federal laws and international guidelines place restrictions on what materials may be shipped by passenger and cargo aircraft. In addition, 49 CFR regulates labeling, manifesting, and shipment of all packages containing potentially hazardous materials. In the course of these field activities, the following items will be shipped to and from Refractories as shown below:

Item	Hazardous Constituent	Quantity	Packaging	How Shipped
Soil samples	None	Approx. 100	Coolers	Field vehicle or courier
Calibration gas (isobutylene)	Isobutylene	(1) 17 L	Steel cylinder	Field vehicle

A 24-hour emergency response number (on any shipping documents such as a Uniform Hazardous Waste Manifest, Shipper's Declaration of Dangerous Goods, etc.) is required for shipments of all dangerous or hazardous goods. Integral does not have a 24-hour emergency contact number for dangerous or hazardous goods shipment. No dangerous or hazardous goods may be shipped by Integral until an account is set up with a 24-hour emergency response service such as CHEM-TEL (1-813-248-0573). If any hazardous or dangerous goods need to be shipped for a project, they must be shipped directly to Refractories by the supplier. Any hazardous or dangerous goods that are not used in the course of the field effort must remain at Refractories.

The samples will be prepared and labeled for shipment in accordance with the sampling and analysis plan developed for Refractories.

Air shipment of equipment with lithium batteries is required to note the presence of these batteries. Warning labels are available from the equipment rental agency and can be copied.

Do not ship any isobutylene containers (empty or not) back to the vendor.

11 TASK-SPECIFIC SAFETY PROCEDURE SUMMARY

The following sections briefly describe general procedures, and task-specific soil and groundwater sampling safety procedures.

11.1 GENERAL PROCEDURES

The following safety procedures are applicable to all Refractories activities.

11.1.1 Trespassers

Trespassing may be a concern at the Refractories. Always use the buddy system at the Refractories. Personnel should avoid trespassers, if possible, and not actively engage with trespassers unless the trespasser is affecting the work activity, and/or to avoid hostility. If a situation occurs that results in an unsafe confrontation, personnel should immediately enter a locked vehicle, leave Refractories, and call law enforcement authorities.

11.1.2 Weather Extremes

Fieldwork may occur during warm temperatures. An information sheet on heat stress is included in Attachment 3 and should be reviewed prior to working in conditions where heat stress is a potential risk to personnel.

11.2 SOIL AND GROUNDWATER SAMPLING

The Dig Safely New York one-call utility locating service (1-800-962-7962) will be notified at least 48 hours (2 full working days) prior, and not more than 10 days prior, to any subsurface characterization work. Confirm the absence of underground and overhead utilities before starting subsurface activities. Assure that all utilities are marked or have a designation that they are not present in the area. The utility locating service should have marked all utilities present in the area. It may be necessary to hire a private utility locator as work occurring on private property may not be adequately marked. Take a few minutes to examine the locations of fire hydrants, gas meters, etc. to make sure that the utility locating marks make sense. If there is any doubt as to the location of underground utilities, call the public or a private utility locator. Finally, check for overhead utilities and obstructions such as trees.

Personnel will wear safety glasses and steel-toe boots at all times. Hard hats and traffic safety vests will be worn when heavy equipment or drill rigs are present, or where overhead hazards exist. The exclusion zone around the drill rig or excavation will be marked with orange traffic cones or caution tape, as practicable, and personnel will police the area to make sure no unauthorized personnel enter the exclusion zone. Avoid getting soil and sample preservatives (hydrochloric acid, methanol, and nitric acid) on your clothes or skin. Exercise care when lifting, assembling, and decontaminating equipment. Always stay clear of the drill rig and other heavy machinery. Be aware of your surroundings and understand that blind spots do exist with heavy machinery, so always be aware of their location. Keep in eye contact with the driller and/or equipment operator/driver. Stay away from pinch points. Know the location of the "kill switch" on the rig. Avoid haul truck routes and make sure the operator sees you at all times even when not working in an excavation area. When in an excavation area, ensure that you are well outside of the swing radius of the excavator. While excavation is occurring, ensure airborne dust is kept to a minimum by wetting surfaces to suppress dust.

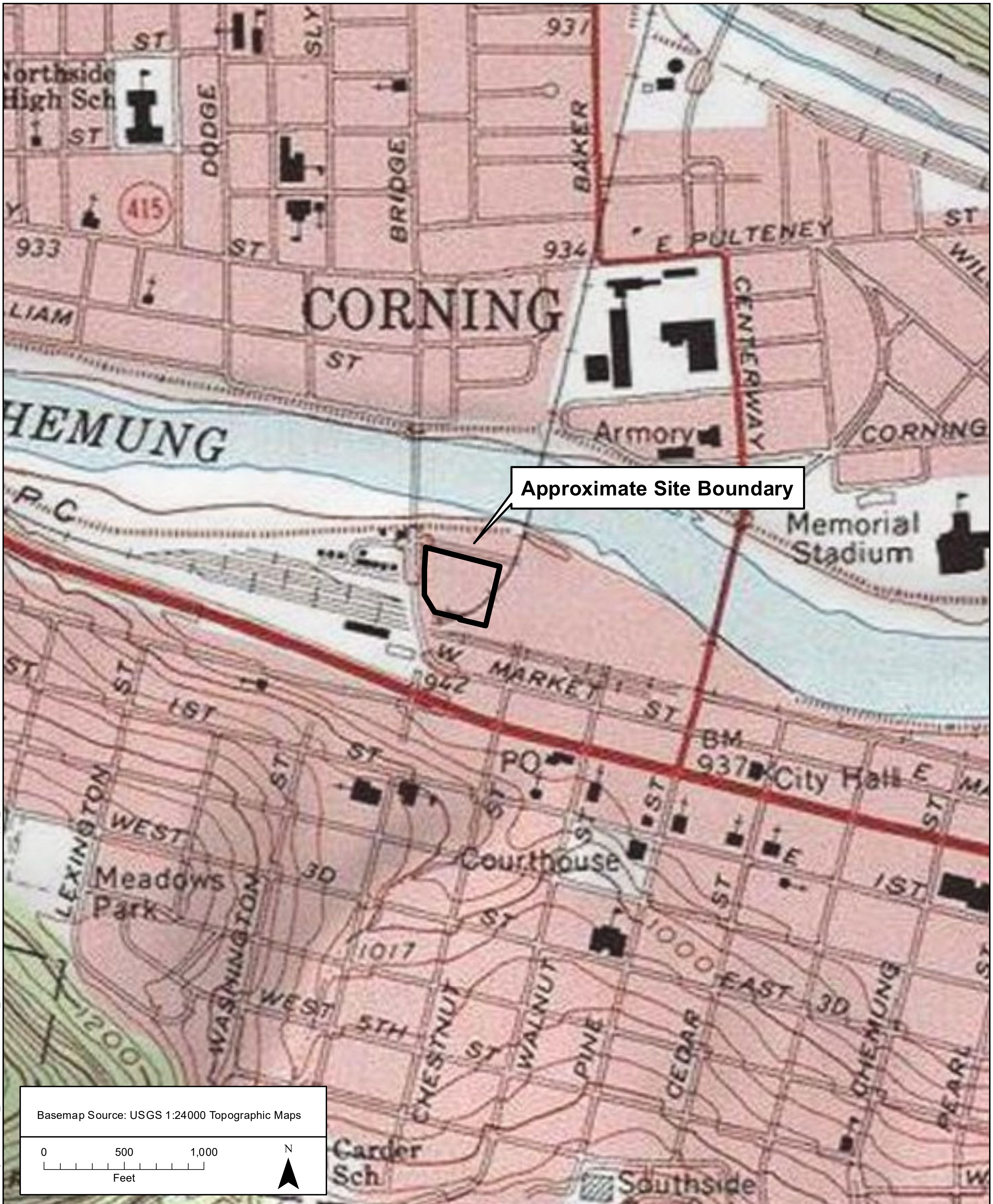
Always wear safety glasses, nitrile gloves, high-visibility safety vest, and steel toed boots during groundwater monitoring activities. Exercise care when carrying heavy equipment to the wells. Use proper lifting techniques when transferring purge water into 55-gallon drums. Always wear nitrile gloves when handling sampling equipment, samples, or purge/decontamination water. Avoid splashing purge, decontamination, or development water onto your clothes or skin.

11.3 OBSERVATION AND GENERAL REFRACTORIES ACTIVITIES

Be aware of your surroundings and the potential for uneven terrain. Wear appropriate PPE (safety glasses, nitrile gloves, etc.) depending on conditions and at all times when sampling. Steel-toe boots will be worn at all times while at Refractories.

Attachment 1

Refractories Map and Hospital Route

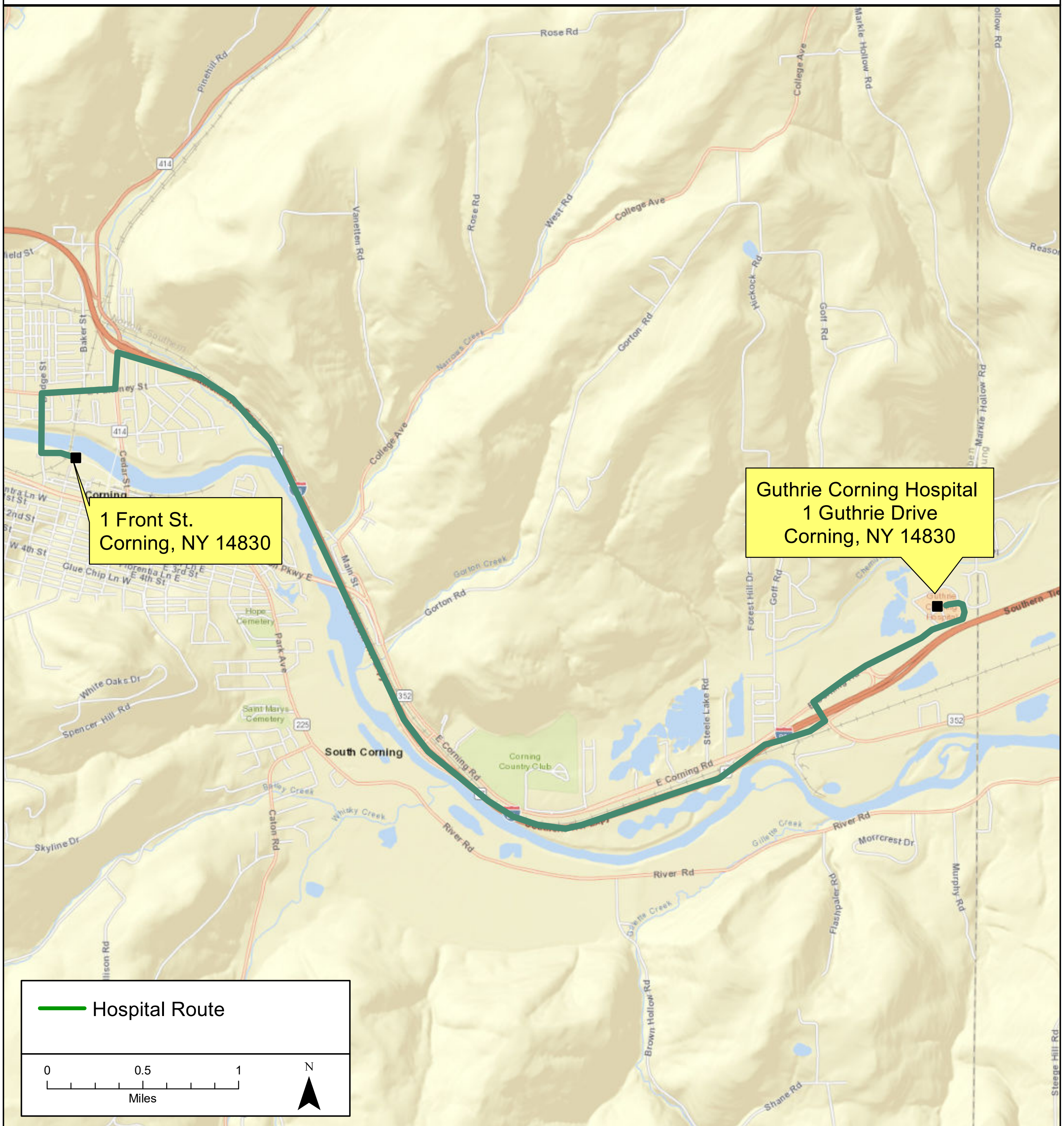


N:\GIS\Projects\EF1017_Refractories\Production_Maps\Site Characterization Work Plan\AppA_Attachment.mxd 5/6/2021 11:20:33 PM

integral engineering p.c.
31 West 34th Street
Suite 7196
New York, NY 10001
www.integral-corp.com

Location of Corning Refractories Plant
Refractories P-Site Characterization Work Plan

1. Head west on Front Street.
2. Turn right onto Bridge Street.
3. Turn right onto E. Pulteney Street.
4. Turn left onto Center Way
5. Turn right to merge onto I-86 E/NY-17 E.
6. Take exit 48 for NY-352 toward E Corning.
7. At the top of the ramp, turn left onto NY-352 W.
8. At the stop light turn right.
9. The hospital will be on the left.



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integral consulting inc.
31 West 34th Street
Suite 7196
New York, NY 10001
www.integral-corp.com

Hospital Route Map

Attachment 2

Regulatory Notices

You Have a Right to a Safe and Healthful Workplace.

IT'S THE LAW!

- You have the right to notify your employer or OSHA about workplace hazards. You may ask OSHA to keep your name confidential.
- You have the right to request an OSHA inspection if you believe that there are unsafe and unhealthful conditions in your workplace. You or your representative may participate in the inspection.
- You can file a complaint with OSHA within 30 days of discrimination by your employer for making safety and health complaints or for exercising your rights under the *OSH Act.*
- You have a right to see OSHA citations issued to your employer. Your employer must post the citations at or near the place of the alleged violation.
- Your employer must correct workplace hazards by the date indicated on the citation and must certify that these hazards have been reduced or eliminated.
- You have the right to copies of your medical records or records of your exposure to toxic and harmful substances or conditions.
- Your employer must post this notice in your workplace.

The *Occupational Safety and Health Act of 1970 (OSH Act),* P.L. 91-596, assures safe and healthful working conditions for working men and women throughout the Nation. The Occupational Safety and Health Administration, in the U.S. Department of Labor, has the primary responsibility for administering the *OSH Act.* The rights listed here may vary depending on the particular circumstances. To file a complaint, report an emergency, or seek OSHA advice, assistance, or products, call 1-800-321-OSHA or your nearest OSHA office: • Atlanta (404) 562-2300 • Boston (617) 565-9860 • Chicago (312) 353-2220 • Dallas (214) 767-4731 • Denver (303) 844-1600 • Kansas City (816) 426-5861 • New York (212) 337-2378 • Philadelphia (215) 861-4900 • San Francisco (415) 975-4310 • Seattle (206) 553-5930. Teletypewriter (TTY) number is 1-877-889-5627. To file a complaint online or obtain more information on OSHA federal and state programs, visit OSHA's website at **www.osha.gov**. If your workplace is in a state operating under an OSHA-approved plan, your employer must post the required state equivalent of this poster.

1-800-321-OSHA

www.osha.gov

U.S. Department of Labor • Occupational Safety and Health Administration • OSHA 3165

Attachment 3

Safety Procedures

FROSTBITE

What happens to the body:

Freezing in deep layers of skin and tissue; pale, waxy-white skin color; skin becomes hard and numb; usually affects fingers, hands, toes, feet, ears, and nose.

What to do: (land temperatures)

- Move the person to a warm, dry area. Don't leave the person alone.
- Remove wet or tight clothing that may cut off blood flow to the affected area.
- **Do not** rub the affected area because rubbing damaged the skin and tissue.
- Gently place the affected area in a warm water bath (105°) and monitor the water temperature to **slowly** warm the tissue. Don't pour warm water directly on the affected area because it will warm the tissue too fast, causing tissue damage. Warming takes 25-40 minutes.
- After the affected area has been warmed, it may become puffy and blister. The affected area may have a burning feeling or numbness. When normal feeling, movement, and skin color have returned, the affected area should be dried and wrapped to keep it warm. **Note:** If there is a chance the affected area may get cold again, do not warm the skin. If the skin is warmed and then becomes cold again, it will cause severe tissue damage.
- Seek medical attention as soon as possible.

How to Protect Workers

- Recognize the environmental and workplace conditions that lead to potential cold-induced illnesses and injuries.
- Learn the signs and symptoms of cold-induced illnesses/injuries and what to do to help the worker.
- Train workers about cold-induced illnesses and injuries.
- Select proper clothing for cold, wet, and windy conditions. Layer clothing to adjust to changing environmental temperatures. Wear a hat and gloves, in addition to underwear that will keep water away from the skin (polypropylene.)
- Take frequent short breaks in warm, dry shelters to allow the body to warm up.
- Perform work during the warmest part of the day.
- Avoid exhaustion or fatigue because energy is needed to keep muscles warm.
- Use the buddy system (work in pairs.)
- Drink warm, sweet beverages (sugar water, sports-type drinks.) **Avoid drinks with caffeine** (coffee, tea, or hot chocolate) **or alcohol**.
- Eat warm, high-calorie foods like hot pasta dishes.

Workers are at increased risk when...

- They have predisposing health conditions such as cardiovascular disease, diabetes, and hypertension.
- They take certain medications. Check with your doctor, nurse, or pharmacy and ask if medicines you take affect you while working in cold environments.
- They are in poor physical condition, have a poor diet, or are older.

HYPOTHERMIA - (Medical Emergency)

What happens to the body:

Normal body temperature (98.6°F/37°C) drops to or below 95°F/35°C; fatigue or drowsiness; uncontrolled shivering; cool, bluish skin; slurred speech; clumsy movements; irritable, irrational, or confused behavior.

What to do: (land temperatures)

- Call for emergency help (i.e., ambulance or 911).
- Move the person to a warm, dry area. Don't leave the person alone.
- Remove wet clothing and replace with warm, dry clothing or wrap the person in blankets.
- Have the person drink warm, sweet drinks (sugar water or sports-type drinks) if he is alert. **Avoid drinks with caffeine** (coffee, tea, or hot chocolate) **or alcohol**.
- Have the person move his arms and legs to create muscle heat. If he is unable to do this, place warm bottles or hot packs in the armpits, groin, neck, and head areas. **Do not** rub the person's body or place him in a warm water bath. This may stop his heart.

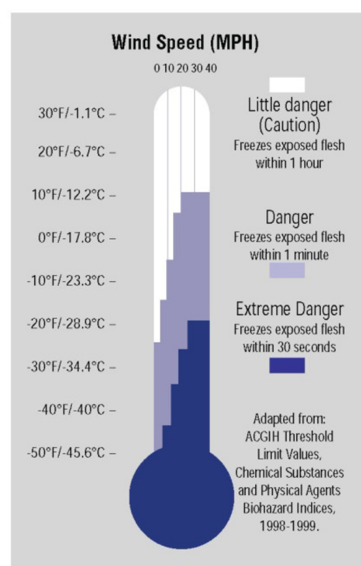
What to do: (water temperatures)

- Call for emergency help (i.e., ambulance or 911). Body heat is lost up to 25 times faster in water.
- **Do not** remove any clothing. Button, buckle, zip, and tighten any collars, cuffs, shoes, and hoods because the layer of trapped water closest to the body provides a layer of insulation that slows the loss of heat. Keep the head out of the water and put on a hat or hood.
- Get out of the water as quickly as possible or climb on anything floating. **Do not** attempt to swim unless a floating object or another person can be reached because swimming or other physical activity uses body heat and reduces survival time by about 50 percent.
- If getting out of the water is not possible, wait quietly and conserve body heat by folding arms across the chest, keeping thighs together, bending knees, and crossing ankles. If another person is in the water, huddle together with chests held closely.

THE COLD STRESS EQUATION

LOW TEMPERATURE + WIND SPEED + WETNESS = INJURIES & ILLNESS

When the body is unable to warm itself, serious cold-related illnesses and injuries may occur, and permanent tissue damage and death may result. **Hypothermia** can occur when *land temperatures* are **above** freezing or *water temperatures* are below 98.6°F/37°C. Cold-related illnesses can slowly overcome a person who has been chilled by low temperatures, brisk winds, or wet clothing.



Oregon Occupational Safety & Health Division
440-3336E-S (9/03)

HEAT EXHAUSTION

What happens to the body:

Headaches, dizziness, or light-headedness, weakness, mood changes, irritability or confusion, feeling sick to your stomach, vomiting, fainting, decreased and dark-colored urine, and pale, clammy skin.

What should be done:

- Move the person to a cool shaded area. Don't leave the person alone. If the person is dizzy or light-headed, lay him on his back and raise his legs about 6-8 inches. If the person is sick to his stomach, lay him on his side.
- Loosen and remove heavy clothing.
- Have the person drink some cool water (a small cup every 15 minutes) if he is not feeling sick to his stomach.
- Try to cool the person by fanning him. Cool the skin with a cool spray mist of water or wet cloth.
- If the person does not feel better in a few minutes call for emergency help (ambulance or call 911.)

(If heat exhaustion is not treated, the illness may advance to heat stroke.)

How to Protect Workers

- Learn the signs and symptoms of heat-induced illnesses and what to do to help the worker.
- Train workers about heat-induced illnesses.
- Perform the heaviest work during the coolest part of the day.
- Slowly build up tolerance to the heat and the work activity (usually takes up to 2 weeks.)
- Use the buddy system (work in pairs.)
- Drink plenty of cool water (one small cup every 15-20 minutes.)
- Wear light, loose-fitting, breathable (like cotton) clothing.
- Take frequent short breaks in cool, shaded areas (allow your body to cool down.)
- Avoid eating large meals before working in hot environments.
- Avoid caffeine and alcoholic beverages (these beverages make the body lose water and increase the risk of heat illnesses.)

Workers are at increased risk when…

- They take certain medications. Check with your doctor, nurse, or pharmacy to see if medicines you take affect you when working in hot environments.
- They have had a heat-induced illness in the past.
- They wear personal protective equipment.

HEAT STROKE - A Medical Emergency

What happens to the body:

Dry, pale skin (no sweating); hot red skin (looks like a sunburn); mood changes; irritability, confusion, and not making any sense; seizures or fits, and collapse (will not respond).

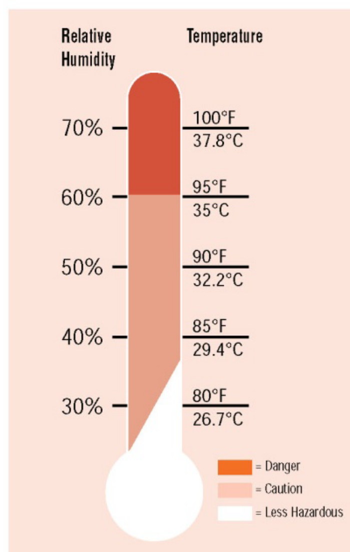
What should be done:

- Call for emergency help (i.e., ambulance or 911.)
- Move the person to a cool, shaded area. Don't leave the person alone. Lay him on his back and if the person is having seizures, remove objects close to him so he won't hit them. If the person is sick to his stomach, lay him on his side.
- Remove heavy and outer clothing.
- Have the person drink some cool water (a small cup every 15 minutes) if he is alert enough to drink anything and not feeling sick to his stomach.
- Try to cool the person by fanning him or her. Cool the skin with a cool spray mist of water, wet cloth, or wet sheet.
- If ice is available, place ice packs in armpits and groin area.

THE HEAT EQUATION

HIGH TEMPERATURE + HIGH HUMIDITY + PHYSICAL WORK = HEAT ILLNESS

When the body is unable to cool itself through sweating, **serious** heat illnesses may occur. The most severe heat-induced illnesses are **heat exhaustion** and **heat stroke**. If actions are not taken to treat heat exhaustion, the illness could progress to heat stroke and **death**.



Oregon Occupational Safety & Health Division
440-3333E-S(9/03)

Attachment 4

Safety Data Sheets

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

Effective date: 10.18.2017 **Revision**: 10.18.2017

Trade Name: Alconox

1 Identification of the substance/mixture and of the supplier

1.1 Product identifier

Trade Name: Alconox

Synonyms:

Product number: 1104-1, 1104, 1125, 1150, 1101, 1103, 1112-1, 1112

1.2 Application of the substance / the mixture : Cleaning material/Detergent

1.3 Details of the supplier of the Safety Data Sheet

Manufacturer **Supplier**

Alconox, Inc.
30 Glenn Street
White Plains, NY 10603
1-914-948-4040

Emergency telephone number:

ChemTel Inc

North America: 1-800-255-3924
International: 01-813-248-0585

2 Hazards identification

2.1 Classification of the substance or mixture:

In compliance with EC regulation No. 1272/2008, 29CFR1910/1200 and GHS Rev. 3 and amendments.

Hazard-determining components of labeling:

Tetrasodium Pyrophosphate
Sodium tripolyphosphate
Sodium Alkylbenzene Sulfonate

2.2 Label elements:

Skin irritation, category 2.
Eye irritation, category 2A.

Hazard pictograms:

Signal word: Warning

Hazard statements:

H315 Causes skin irritation.
H319 Causes serious eye irritation.

Precautionary statements:

P264 Wash skin thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352 If on skin: Wash with soap and water.
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P321 Specific treatment (see supplemental first aid instructions on this label).
P332+P313 If skin irritation occurs: Get medical advice/attention.
P362 Take off contaminated clothing and wash before reuse.
P501 Dispose of contents and container as instructed in Section 13.

Additional information: None.

Hazard description

Hazards Not Otherwise Classified (HNOC): None

Information concerning particular hazards for humans and environment:

The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.

Classification system:

The classification is according to EC regulation No. 1272/2008, 29CFR1910/1200 and GHS Rev. 3 and amendments, and extended by company and literature data. The classification is in accordance with the latest editions of international substances lists, and is supplemented by information from technical literature and by information provided by the company.

3 Composition/information on ingredients

3.1 Chemical characterization : None

3.2 Description : None

3.3 Hazardous components (percentages by weight)

Identification	Chemical Name	Classification	Wt. %
CAS number: 7758-29-4	Sodium tripolyphosphate	Skin Irrit. 2 ; H315 Eye Irrit. 2; H319	12-28
CAS number: 68081-81-2	Sodium Alkylbenzene Sulfonate	Acute Tox. 4; H303 Skin Irrit. 2 ; H315 Eye Irrit. 2; H319	8-22
CAS number: 7722-88-5	Tetrasodium Pyrophosphate	Skin Irrit. 2 ; H315 Eye Irrit. 2; H319	2-16

3.4 Additional Information : None.

4 First aid measures

4.1 Description of first aid measures

General information: None.

After inhalation:

Maintain an unobstructed airway.
Loosen clothing as necessary and position individual in a comfortable position.

After skin contact:

Wash affected area with soap and water.
Seek medical attention if symptoms develop or persist.

After eye contact:

Rinse/flush exposed eye(s) gently using water for 15-20 minutes.
Remove contact lens(es) if able to do so during rinsing.
Seek medical attention if irritation persists or if concerned.

After swallowing:

Rinse mouth thoroughly.
Seek medical attention if irritation, discomfort, or vomiting persists.

4.2 Most important symptoms and effects, both acute and delayed

None

4.3 Indication of any immediate medical attention and special treatment needed:

No additional information.

5 Firefighting measures

5.1 Extinguishing media

Suitable extinguishing agents:

Use appropriate fire suppression agents for adjacent combustible materials or sources of ignition.

For safety reasons unsuitable extinguishing agents : None

5.2 Special hazards arising from the substance or mixture :

Thermal decomposition can lead to release of irritating gases and vapors.

5.3 Advice for firefighters

Protective equipment:

Wear protective eye wear, gloves and clothing.
Refer to Section 8.

5.4 Additional information :

Avoid inhaling gases, fumes, dust, mist, vapor and aerosols.
Avoid contact with skin, eyes and clothing.

6 Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures :

Ensure adequate ventilation.
Ensure air handling systems are operational.

6.2 Environmental precautions :

Should not be released into the environment.
Prevent from reaching drains, sewer or waterway.

6.3 Methods and material for containment and cleaning up :

Wear protective eye wear, gloves and clothing.

6.4 Reference to other sections : None

7 Handling and storage

7.1 Precautions for safe handling :

Avoid breathing mist or vapor.
Do not eat, drink, smoke or use personal products when handling chemical substances.

7.2 Conditions for safe storage, including any incompatibilities :

Store in a cool, well-ventilated area.

7.3 Specific end use(s):

No additional information.

Safety Data Sheet
according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

Effective date: 10.18.2017 **Revision**: 10.18.2017

Trade Name: Alconox

8 Exposure controls/personal protection

8.1 Control parameters :

a) 7722-88-5, Tetrasodium Pyrophosphate, OSHA TWA 5 mg/m3
b) Dusts, non-specific OEL, Irish Code of Practice
  (i) Total inhalable 10 mg/m3 (8hr)
  (ii) Respirible 4mg/m3 (8hr)
  (iii) Tetrasodium Pyrophosphate, OSHA TWA 5 mg/m3, (8hr)

8.2 Exposure controls

Appropriate engineering controls:

Emergency eye wash fountains and safety showers should be available in the immediate vicinity of use or handling.

Respiratory protection:

Not needed under normal use conditions.

Protection of skin:

Select glove material impermeable and resistant to the substance or preparation. Protective gloves recommended to comply with EN 374. Take note of break through times, permeability, and special workplace conditions, such as mechanical strain, duration of contact, etc. Protective gloves should be replaced at the first sign of wear.

Eye protection:

Safety goggles or glasses, or appropriate eye protection. Recommended to comply with ANSI Z87.1 and/or EN 166.

General hygienic measures:

Wash hands before breaks and at the end of work.
Avoid contact with skin, eyes and clothing.

9 Physical and chemical properties

Appearance (physical state, color):	White and cream colored flakes - powder	**Explosion limit lower:** **Explosion limit upper:**	Not determined or not available. Not determined or not available.
Odor:	Not determined or not available.	**Vapor pressure at 20°C:**	Not determined or not available.
Odor threshold:	Not determined or not available.	**Vapor density:**	Not determined or not available.
pH-value:	9.5 (aqueous solution)	**Relative density:**	Not determined or not available.
Melting/Freezing point:	Not determined or not available.	**Solubilities:**	Not determined or not available.
Boiling point/Boiling range:	Not determined or not available.	**Partition coefficient (n-octanol/water):**	Not determined or not available.
Flash point (closed cup):	Not determined or not available.	**Auto/Self-ignition temperature:**	Not determined or not available.
Evaporation rate:	Not determined or not available.	**Decompositio n**	Not determined or not available.

Flammability (solid, gaseous):	Not determined or not available.	**Viscosity**:	a. Kinematic: Not determined or not available. b. Dynamic: Not determined or not available.
Density at 20°C:	Not determined or not available.		

10 Stability and reactivity

10.1 Reactivity : None

10.2 Chemical stability : None

10.3 Possibility hazardous reactions : None

10.4 Conditions to avoid : None

10.5 Incompatible materials : None

10.6 Hazardous decomposition products : None

11 Toxicological information

11.1 Information on toxicological effects :

Acute Toxicity:

Oral:

: LD50 > 5000 mg/kg oral rat - Product .

Chronic Toxicity: No additional information.

Skin corrosion/irritation:

Sodium Alkylbenzene Sulfonate: Causes skin irritation. .

Serious eye damage/irritation:

Sodium Alkylbenzene Sulfonate: Causes serious eye irritation .

Tetrasodium Pyrophosphate: Rabbit - Risk of serious damage to eyes .

Respiratory or skin sensitization: No additional information.

Carcinogenicity: No additional information.

IARC (International Agency for Research on Cancer): None of the ingredients are listed.

NTP (National Toxicology Program): None of the ingredients are listed.

Germ cell mutagenicity: No additional information.

Reproductive toxicity: No additional information.

STOT-single and repeated exposure: No additional information.

Additional toxicological information: No additional information.

12 Ecological information

12.1 Toxicity:

Sodium Alkylbenzene Sulfonate: Fish, LC50 1.67 mg/l, 96 hours.
Sodium Alkylbenzene Sulfonate: Aquatic invertebrates, EC50 Daphnia 2.4 mg/l, 48 hours. Sodium Alkylbenzene Sulfonate: Aquatic Plants, EC50 Algae 29 mg/l, 96 hours.
Tetrasodium Pyrophosphate: Fish, LC50 - other fish - 1,380 mg/l - 96 h.
Tetrasodium Pyrophosphate: Aquatic invertebrates, EC50 - Daphnia magna (Water flea) - 391 mg/l - 48 h.

12.2 Persistence and degradability: No additional information.

12.3 Bioaccumulative potential: No additional information.

12.4 Mobility in soil: No additional information.

General notes: No additional information.

12.5 Results of PBT and vPvB assessment:

PBT: No additional information.

vPvB: No additional information.

12.6 Other adverse effects: No additional information.

13 Disposal considerations

13.1 Waste treatment methods (consult local, regional and national authorities for proper disposal)

Relevant Information:

It is the responsibility of the waste generator to properly characterize all waste materials according to applicable regulatory entities. (US 40CFR262.11).

14 Transport information

14.1 UN Number: ADR, ADN, DOT, IMDG, IATA	None
14.2 UN Proper shipping name: ADR, ADN, DOT, IMDG, IATA	None
14.3 Transport hazard classes: ADR, ADN, DOT, IMDG, IATA	**Class:** None **Label:** None **LTD. QTY:** None

US DOT
Limited Quantity Exception: None

Bulk:
RQ (if applicable): None
Proper shipping Name: None
Hazard Class: None
Packing Group: None
Marine Pollutant (if applicable): No additional information.

Non Bulk:
RQ (if applicable): None
Proper shipping Name: None
Hazard Class: None
Packing Group: None
Marine Pollutant (if applicable): No additional information.

	Comments: None	**Comments:** None
14.4	**Packing group:** ADR, ADN, DOT, IMDG, IATA	None
14.5	**Environmental hazards :**	None
14.6	**Special precautions for user:**	None
	Danger code (Kemler):	None
	EMS number:	None
	Segregation groups:	None
14.7	**Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code:** Not applicable.	
14.8	**Transport/Additional information:**	
	Transport category:	None
	Tunnel restriction code:	None
	UN "Model Regulation":	None

15 Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture.

North American

SARA

Section 313 (specific toxic chemical listings): None of the ingredients are listed.
Section 302 (extremely hazardous substances): None of the ingredients are listed.

CERCLA (Comprehensive Environmental Response, Clean up and Liability Act) Reportable Spill Quantity: None of the ingredients are listed.

TSCA (Toxic Substances Control Act):

Inventory: All ingredients are listed.
Rules and Orders: Not applicable.

Proposition 65 (California):

Chemicals known to cause cancer: None of the ingredients are listed.

Chemicals known to cause reproductive toxicity for females: None of the ingredients are listed.

Chemicals known to cause reproductive toxicity for males: None of the ingredients are listed.

Chemicals known to cause developmental toxicity: None of the ingredients are listed.

Canadian

Canadian Domestic Substances List (DSL):
All ingredients are listed.

EU

REACH Article 57 (SVHC): None of the ingredients are listed.

Germany MAK: Not classified.

EC 648/2004 – This is an industrial detergent. Contains >30% phosphate, 15-30% anionic surfactant, <5% EDTA salts

EC 551/2009 – This is not a laundry or dishwasher detergent

EC 907/2006 – Contains no enzymes, optical brighteners, perfumes, allergenic fragrances, or preservative agents

Asia Pacific

Australia

Australian Inventory of Chemical Substances (AICS): All ingredients are listed.

China

Inventory of Existing Chemical Substances in China (IECSC): All ingredients are listed.

Japan

Inventory of Existing and New Chemical Substances (ENCS): All ingredients are listed.

Korea

Existing Chemicals List (ECL): All ingredients are listed.

New Zealand

New Zealand Inventory of Chemicals (NZOIC): All ingredients are listed.

Philippines

Philippine Inventory of Chemicals and Chemical Substances (PICCS): All ingredients are listed.

Taiwan

Taiwan Chemical Substance Inventory (TSCI): All ingredients are listed.

16 Other information

Abbreviations and Acronyms: None

Summary of Phrases

Hazard statements:

H315 Causes skin irritation.

H319 Causes serious eye irritation.

NFPA: 1-0-0

HMIS: 1-0-0

Precautionary statements:

P264 Wash skin thoroughly after handling.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P302+P352 If on skin: Wash with soap and water.

P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.

P321 Specific treatment (see supplemental first aid instructions on this label).

P332+P313 If skin irritation occurs: Get medical advice/attention.

P362 Take off contaminated clothing and wash before reuse.

P501 Dispose of contents and container as instructed in Section 13.

Manufacturer Statement:

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

SAFETY DATA SHEET
according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

SECTION 1.Identification

Product identifier

Product number	HX0607
Product name	Hydrochloric Acid 34-37% OmniTrace®

Relevant identified uses of the substance or mixture and uses advised against

Identified uses	Reagent for research and development

Details of the supplier of the safety data sheet

Company	EMD Millipore Corporation | 290 Concord Road, Billerica, MA 01821, United States of America | General Inquiries: +1-978-715-4321 | Monday to Friday, 9:00 AM to 4:00 PM Eastern Time (GMT-5)
Emergency telephone	800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2. Hazards identification

GHS Classification

Corrosive to Metals, Category 1, H290
Skin corrosion, Category 1B, H314
Serious eye damage, Category 1, H318
Specific target organ systemic toxicity - single exposure, Category 3, Respiratory system, H335

For the full text of the H-Statements mentioned in this Section, see Section 16.

GHS-Labeling

Hazard pictograms

Signal Word
Danger

Hazard Statements
H290 May be corrosive to metals.
H314 Causes severe skin burns and eye damage.
H335 May cause respiratory irritation.

Precautionary Statements
P234 Keep only in original container.
P261 Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
P264 Wash skin thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER or doctor/ physician.
P321 Specific treatment (see supplemental first aid instructions on this label).
P363 Wash contaminated clothing before reuse.
P390 Absorb spillage to prevent material damage.
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.
P406 Store in corrosive resistant stainless steel container with a resistant inliner.
P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards

None known.

SECTION 3. Composition/information on ingredients

Chemical nature Aqueous solution

Hazardous ingredients

Chemical Name (Concentration)
CAS-No.
hydrochloric acid (>= 30 % - < 50 %)
7647-01-0

Exact percentages are being wihtheld as a trade secret.

SECTION 4. First aid measures

Description of first-aid measures

General advice
First aider needs to protect himself.

Inhalation
After inhalation: fresh air. Call in physician.

Skin contact
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Call a physician immediately.

Eye contact
After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist.

Ingestion
After swallowing: make victim drink water (two glasses at most), avoid vomiting (risk of perforation!). Call a physician immediately. Do not attempt to neutralize.

Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed
Irritation and corrosion, Cough, Shortness of breath, cardiovascular disorders, Risk of blindness!

Indication of any immediate medical attention and special treatment needed
No information available.

SECTION 5. Fire-fighting measures

Extinguishing media
Suitable extinguishing media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media
For this substance/mixture no limitations of extinguishing agents are given.

Special hazards arising from the substance or mixture
Not combustible.
Ambient fire may liberate hazardous vapors.
Fire may cause evolution of:
Hydrogen chloride gas

Advice for firefighters
Special protective equipment for fire-fighters
Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

Further information
Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures
Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders: Protective equipment see section 8.

Environmental precautions
Do not empty into drains.

Methods and materials for containment and cleaning up
Cover drains. Collect, bind, and pump off spills.
Observe possible material restrictions (see sections 7 and 10).
Take up with liquid-absorbent and neutralizing material (e.g. Chemizorb® H^+, Art. No. 101595).
Dispose of properly. Clean up affected area.

SECTION 7. Handling and storage

Precautions for safe handling

Observe label precautions.

Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers

No metal containers.

Tightly closed.

Store at room temperature.

SECTION 8. Exposure controls/personal protection

Exposure limit(s)

Ingredients

Basis	Value	Threshold limits	Remarks
hydrochloric acid 7647-01-0			
ACGIH	Ceiling Limit Value:	2 ppm	
NIOSH/GUIDE	Ceiling Limit Value and Time Period (if specified):	5 ppm 7 mg/m³	
OSHA_TRANS	Ceiling Limit Value:	5 ppm 7 mg/m³	
Z1A	Ceiling Limit Value:	5 ppm 7 mg/m³	

Engineering measures

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

Individual protection measures

Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled. The chemical resistance of the protective equipment should be inquired at the respective supplier.

Hygiene measures

Immediately change contaminated clothing. Apply skin- protective barrier cream. Wash hands and face after working with substance.

Eye/face protection

Tightly fitting safety goggles

Hand protection

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Other protective equipment:

Acid-resistant protective clothing.

Respiratory protection
required when vapors/aerosols are generated.
Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

SECTION 9. Physical and chemical properties

Physical state	liquid
Color	colorless
Odor	stinging
Odor Threshold	0.8 - 5 ppm Gaseous hydrogen chloride (HCl).
pH	< 1 at 68 °F (20 °C)
Solidification point	-30 °C
Boiling point	No information available.
Flash point	Not applicable
Evaporation rate	No information available.
Flammability (solid, gas)	No information available.
Lower explosion limit	Not applicable
Upper explosion limit	Not applicable
Vapor pressure	190 hPa at 68 °F (20 °C)
Relative vapor density	No information available.
Density	ca.1.19 g/cm³ at 68 °F (20 °C)
Relative density	No information available.
Water solubility	at 68 °F (20 °C) soluble
Partition coefficient: n-octanol/water	Not applicable

Autoignition temperature	No information available.
Decomposition temperature	No information available.
Viscosity, dynamic	2.3 mPa.s at 59 °F (15 °C)
Explosive properties	Not classified as explosive.
Oxidizing properties	none
Ignition temperature	Not applicable
Corrosion	May be corrosive to metals.

SECTION 10. Stability and reactivity

Reactivity
Corrosive in contact with metals

Chemical stability
The product is chemically stable under standard ambient conditions (room temperature) .

Possibility of hazardous reactions
Exothermic reaction with:

Amines, potassium permanganate, salts of oxyhalogenic acids, semimetallic oxides, semimetallic hydrogen compounds, Aldehydes, vinylmethyl ether

Risk of ignition or formation of inflammable gases or vapors with:

carbides, lithium silicide, Fluorine

Generates dangerous gases or fumes in contact with:

Aluminum, hydrides, formaldehyde, Metals, strong alkalis, Sulfides

Risk of explosion with:

Alkali metals, conc. sulfuric acid

Conditions to avoid
Heating.

Incompatible materials
Metals, metal alloys
Gives off hydrogen by reaction with metals.

Hazardous decomposition products
in the event of fire: See section 5.

SECTION 11. Toxicological information

Information on toxicological effects

Likely route of exposure
Inhalation, Eye contact, Skin contact

Target Organs
Eyes
Skin
Respiratory system
Cornea

Acute oral toxicity
Symptoms: If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the esophagus and the stomach.

Acute toxicity estimate: 1,892 mg/kg
Calculation method

Acute inhalation toxicity

Symptoms: mucosal irritations, Cough, Shortness of breath, Possible damages:, damage of respiratory tract

Acute toxicity estimate: 6.41 mg/l; 4 h
Calculation method

Skin irritation
Mixture causes burns.

Eye irritation
Mixture causes serious eye damage. Risk of blindness!

Specific target organ systemic toxicity - single exposure
Target Organs: Respiratory system
Mixture may cause respiratory irritation.

Specific target organ systemic toxicity - repeated exposure
The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Aspiration hazard
Regarding the available data the classification criteria are not fulfilled.

Carcinogenicity

IARC	No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
OSHA	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
NTP	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
ACGIH	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

Further information

After uptake:
After a latency period:
cardiovascular disorders
Handle in accordance with good industrial hygiene and safety practice.

Ingredients

hydrochloric acid
No information available.

SECTION 12. Ecological information

Ecotoxicity

No information available.

Persistence and degradability

No information available.

Bioaccumulative potential

Partition coefficient: n-octanol/water
Not applicable

Mobility in soil

No information available.

Additional ecological information
Forms corrosive mixtures with water even if diluted. Harmful effect due to pH shift.
Discharge into the environment must be avoided.

Ingredients

hydrochloric acid

Substance does not meets the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.

SECTION 13. Disposal considerations

The information presented only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Disposal should be in accordance with applicable regional, national and local laws and regulations.

SECTION 14. Transport information

Land transport (DOT)

UN number	UN 1789
Proper shipping name	HYDROCHLORIC ACID
Class	8
Packing group	II
Environmentally hazardous	--

Air transport (IATA)

UN number	UN 1789
Proper shipping name	HYDROCHLORIC ACID
Class	8
Packing group	II
Environmentally hazardous	--
Special precautions for user	no

Sea transport (IMDG)

UN number	UN 1789
Proper shipping name	HYDROCHLORIC ACID
Class	8
Packing group	II
Environmentally hazardous	--
Special precautions for user	yes
EmS	F-A S-B

SECTION 15. Regulatory information

United States of America

SARA 313

The following components are subject to reporting levels established by SARA Title III, Section 313:

Ingredients		
hydrochloric acid	7647-01-0	*37 %*

SARA 302

The following components are subject to reporting levels established by SARA Title III, Section 302:

Ingredients	
hydrochloric acid	7647-01-0

Clean Water Act

The following Hazardous Substances are listed under the U.S. CleanWater Act, Section 311, Table 116.4A:
Ingredients
hydrochloric acid

The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:
Ingredients
hydrochloric acid

DEA List I
Not listed

DEA List II
Listed
Ingredients

hydrochloric acid	7647-01-0

US State Regulations

Massachusetts Right To Know
Ingredients
hydrochloric acid

Pennsylvania Right To Know
Ingredients
hydrochloric acid

New Jersey Right To Know
Ingredients
hydrochloric acid

California Prop 65 Components
This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

Notification status

TSCA:	All components of the product are listed in the TSCA-inventory.
DSL:	All components of this product are on the Canadian DSL.
KOREA:	Not in compliance with the inventory

SECTION 16. Other information

Training advice
Provide adequate information, instruction and training for operators.

Labeling

Hazard pictograms

Signal Word
Danger

Hazard Statements
H290 May be corrosive to metals.
H314 Causes severe skin burns and eye damage.
H335 May cause respiratory irritation.

Precautionary Statements
Prevention
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P310 IF exposed or concerned: immediately call a POISON CENTER or doctor/ physician.

Full text of H-Statements referred to under sections 2 and 3.

H290	May be corrosive to metals.
H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage.
H335	May cause respiratory irritation.

Key or legend to abbreviations and acronyms used in the safety data sheet
Used abbreviations and acronyms can be looked up at www.wikipedia.org.

Revision Date01/27/2015

SECTION 1: Identification

1.1. Identification

Product form	:	Mixtures
Product name	:	Isobutylene (0.0005% - 1.34%), Oxygen (19.5 - 23.5%) in balance Nitrogen

1.2. Recommended use and restrictions on use

Use of the substance/mixture	:	Test gas/Calibration gas.

1.3. Supplier

Calgaz, division of Airgas USA LLC
821 Chesapeake Drive
Cambridge, 21613 - USA
T 1-410-228-6400 - F 1-410-228-4251
info@Calgaz.com - www.Calgaz.com

1.4. Emergency telephone number

Emergency number	:	CHEMTREC: 1-800-424-9300 Internationally: 1-703-527-3887

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS-US classification

Gases under pressure Compressed gas	H280	Contains gas under pressure; may explode if heated

Full text of H statements : see section 16

2.2. GHS Label elements, including precautionary statements

GHS-US labeling

Hazard pictograms (GHS-US) :

GHS04

Signal word (GHS-US)	:	Warning
Hazard statements (GHS-US)	:	H280 - Contains gas under pressure; may explode if heated
Precautionary statements (GHS-US)	:	P202 - Do not handle until all safety precautions have been read and understood. P271 - Use only outdoors or in a well-ventilated area. P403 - Store in a well-ventilated place. CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52°C/125 °F CGA-PG05 - Use a back flow preventive device in the piping CGA-PG06 - Close valve after each use and when empty CGA-PG10 - Use only with equipment rated for cylinder pressure CGA-PG14 - Approach suspected leak area with caution CGA-PG21 - Open valve slowly

2.3. Other hazards which do not result in classification

No additional information available

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%	GHS-US classification
Nitrogen	(CAS-No.) 7727-37-9	75.16 - 80.4995	Press. Gas (Comp.), H280
Oxygen	(CAS-No.) 7782-44-7	19.5 - 23.5	Ox. Gas 1, H270 Press. Gas (Comp.), H280
Isobutylene	(CAS-No.) 115-11-7	0.0005 - 1.34	Press. Gas (Liq.), H280

Full text of hazard classes and H-statements : see section 16

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures general : Adverse effects not expected from this product. If you feel unwell, seek medical advice (show the label where possible).

First-aid measures after inhalation : Adverse effects not expected from this product.

First-aid measures after skin contact : Adverse effects not expected from this product.

First-aid measures after eye contact : Adverse effects not expected from this product.

First-aid measures after ingestion : Ingestion is not considered a potential route of exposure.

4.2. Most important symptoms and effects (acute and delayed)

Symptoms/effects after inhalation : Adverse effects not expected from this product.

Symptoms/effects after skin contact : Adverse effects not expected from this product.

Symptoms/effects after eye contact : Adverse effects not expected from this product.

Symptoms/effects after ingestion : Ingestion is not considered a potential route of exposure.

Symptoms/effects upon intravenous administration : Not known.

Chronic symptoms : Adverse effects not expected from this product.

Most important symptoms and effects, both acute and delayed : No effect on living tissue. Refer to section 11.

4.3. Immediate medical attention and special treatment, if necessary

If you feel unwell, seek medical advice. If breathing is difficult, give oxygen.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : Use extinguishing media appropriate for surrounding fire.

Unsuitable extinguishing media : Do not use water jet to extinguish.

5.2. Specific hazards arising from the chemical

Fire hazard : The product is not flammable.

Explosion hazard : Product is not explosive. Heat may build pressure, rupturing closed containers, spreading fire and increasing risk of burns and injuries.

Reactivity : None known.

Hazardous combustion products : None known

5.3. Special protective equipment and precautions for fire-fighters

Firefighting instructions : In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion. Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire.

Protection during firefighting : Standard protective clothing and equipment (e.g, Self Contained Breathing Apparatus) for fire fighters. Do not enter fire area without proper protective equipment, including respiratory protection.

Specific methods : Exposure to fire may cause containers to rupture/explode. Continue water spray from protected position until container stays cool. Move containers away from the fire area if this can be done without risk.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Ensure adequate ventilation.

6.1.1. For non-emergency personnel

Protective equipment : Wear protective equipment consistent with the site emergency plan.

Emergency procedures : Evacuate personnel to a safe area. Close doors and windows of adjacent premises. Keep containers closed. Mark the danger area. Seal off low-lying areas. Keep upwind.

6.1.2. For emergency responders

Protective equipment : Standard protective clothing and equipment (e.g, Self Contained Breathing Apparatus) for fire fighters. Equip cleanup crew with proper protection.

Emergency procedures : Evacuate and limit access. Ventilate area.

6.2. Environmental precautions

Try to stop release if without risk.

6.3. Methods and material for containment and cleaning up

For containment : Try to stop release if without risk.

Methods for cleaning up : Dispose of contents/container in accordance with local/regional/national/international regulations.

Methods and material for containment and cleaning up : None.

6.4. Reference to other sections

See also Sections 8 and 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed : Pressurized container: Do not pierce or burn, even after use. Use only with equipment rated for cylinder pressure.

Precautions for safe handling : Do not handle until all safety precautions have been read and understood. Use only outdoors or in a well-ventilated area.

Safe handling of the gas receptacle : Protect cylinders from physical damage; do not drag, roll, slide or drop. Do not remove or deface labels provided by the supplier for the identification of the cylinder contents.

Safe use of the product : The product must be handled in accordance with good industrial hygiene and safety procedures. Only experienced and properly instructed persons should handle gases under pressure. Consider pressure relief device(s) in gas installations. Ensure the complete gas system was (or is regularily) checked for leaks before use. Do not remove or deface labels provided by the supplier for the identification of the cylinder contents. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.

Hygiene measures : Do not eat, drink or smoke when using this product.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures : None known.

Storage conditions : Do not expose to temperatures exceeding 52 °C/ 125 °F. Keep container closed when not in use. Protect cylinders from physical damage; do not drag, roll, slide or drop. Store in well ventilated area.

Incompatible products : None known.

Incompatible materials : Flammable materials.

Conditions for safe storage, including any incompatibilities : Observe all regulations and local requirements regarding storage of containers. Containers should not be stored in conditions likely to encourage corrosion. Container valve guards or caps should be in place. Containers should be stored in the vertical position and properly secured to prevent them from falling over. Stored containers should be periodically checked for general condition and leakage. Keep container below 50°C in a well ventilated place. Store containers in location free from fire risk and away from sources of heat and ignition. Keep away from combustible materials.

Storage area : Store away from heat. Store in a well-ventilated place.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Isobutylene (115-11-7)		
ACGIH	ACGIH TWA (ppm)	250 ppm

Oxygen (7782-44-7)
Not applicable

Nitrogen (7727-37-9)		
ACGIH	Remark (ACGIH)	Simple Asphyxiant

8.2. Appropriate engineering controls

Appropriate engineering controls : Provide adequate general and local exhaust ventilation. Systems under pressure should be regularly checked for leakages. Consider the use of a work permit system e.g. for maintenance activities. Ensure exposure is below occupational exposure limits (where available).

Environmental exposure controls : Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.

8.3. Individual protection measures/Personal protective equipment

Hand protection:

Wear working gloves when handling gas containers. 29 CFR 1910.138: Hand protection

Eye protection:

Wear safety glasses with side shields. 29 CFR 1910.133: Eye and Face Protection

Skin and body protection:

Wear suitable protective clothing, e.g. lab coats, coveralls or flame resistant clothing.

Respiratory protection:

None necessary during normal and routine operations. See Sections 5 & 6.

Thermal hazard protection:

None necessary during normal and routine operations.

Other information:

Wear safety shoes while handling containers. 29 CFR 1910.136: Foot Protection.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Gas

Appearance : Clear, colorless gas.

Color : Colorless

Odor : Coal gas Odorless

Odor threshold : No data available

pH : No data available

Melting point : No data available

Freezing point : No data available

Boiling point : No data available

Flash point : No data available

Relative evaporation rate (butyl acetate=1) : No data available

Flammability (solid, gas) : No data available

Vapor pressure : No data available

Relative vapor density at 20 °C : No data available

Relative density : No data available

Relative gas density : Lighter or similar to air

Solubility : Water: No data available

Log Pow : Not applicable for gas-mixtures.
Not applicable for gas-mixtures.

Auto-ignition temperature : No data available

Decomposition temperature : No data available

Viscosity, kinematic	:	No data available
Viscosity, dynamic	:	No data available
Explosion limits	:	No data available
Explosive properties	:	Not applicable (non-flammable gas).
Oxidizing properties	:	Supports combustion. Not combustible but enhances combustion of other substances.

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

None known.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Can form explosive mixtures with flammable materials.

10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

10.5. Incompatible materials

Flammable materials.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified

Isobutylene (115-11-7)	
LC50 inhalation rat (mg/l)	620 mg/l/4h
LC50 inhalation rat (ppm)	239620.46 ppm/4h
ATE US (gases)	239620.460 ppmV/4h
ATE US (vapors)	620.000 mg/l/4h
ATE US (dust, mist)	620.000 mg/l/4h
Oxygen (7782-44-7)	
LC50 inhalation rat (ppm)	800000 ppm/4h
ATE US (gases)	800000.000 ppmV/4h
Nitrogen (7727-37-9)	
LC50 inhalation rat (ppm)	820000 ppm/4h
ATE US (gases)	820000.000 ppmV/4h

Skin corrosion/irritation	:	Not classified
Serious eye damage/irritation	:	Not classified
Respiratory or skin sensitization	:	Not classified
Germ cell mutagenicity	:	Not classified
Carcinogenicity	:	Not classified

Isobutylene (115-11-7)	
National Toxicology Program (NTP) Status	1 - Evidence of Carcinogenicity

Reproductive toxicity	:	Not classified
Specific target organ toxicity – single exposure	:	Not classified
Specific target organ toxicity – repeated exposure	:	Not classified

Aspiration hazard	:	Not classified
Symptoms/effects after inhalation	:	Adverse effects not expected from this product.
Symptoms/effects after skin contact	:	Adverse effects not expected from this product.
Symptoms/effects after eye contact	:	Adverse effects not expected from this product.
Symptoms/effects after ingestion	:	Ingestion is not considered a potential route of exposure.
Symptoms/effects upon intravenous administration	:	Not known.
Chronic symptoms	:	Adverse effects not expected from this product.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : No ecological damage caused by this product.

12.2. Persistence and degradability

Isobutylene (0.0005% - 1.34%), Oxygen (19.5 - 23.5%) in balance Nitrogen	
Persistence and degradability	No data available.
Isobutylene (115-11-7)	
Persistence and degradability	The substance is readily biodegradable. Unlikely to persist.
Oxygen (7782-44-7)	
Persistence and degradability	No ecological damage caused by this product.
Nitrogen (7727-37-9)	
Persistence and degradability	No ecological damage caused by this product.

12.3. Bioaccumulative potential

Isobutylene (0.0005% - 1.34%), Oxygen (19.5 - 23.5%) in balance Nitrogen	
Log Pow	Not applicable for gas-mixtures.
Log Kow	Not applicable for gas-mixtures.
Bioaccumulative potential	No data available.
Isobutylene (115-11-7)	
Log Pow	2.35
Bioaccumulative potential	Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9.
Oxygen (7782-44-7)	
Log Pow	Not applicable for inorganic gases.
Bioaccumulative potential	No ecological damage caused by this product.
Nitrogen (7727-37-9)	
Log Pow	Not applicable for inorganic gases.
Bioaccumulative potential	No ecological damage caused by this product.

12.4. Mobility in soil

Isobutylene (0.0005% - 1.34%), Oxygen (19.5 - 23.5%) in balance Nitrogen	
Mobility in soil	No data available
Isobutylene (115-11-7)	
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution.
Oxygen (7782-44-7)	
Ecology - soil	No ecological damage caused by this product.
Nitrogen (7727-37-9)	
Ecology - soil	No ecological damage caused by this product.

12.5. Other adverse effects

Effect on ozone layer	:	None
Effect on global warming	:	No known effects from this product.
GWPmix comment	:	No known effects from this product.

SECTION 13: Disposal considerations

13.1. Disposal methods

Waste treatment methods : Contact supplier if guidance is required. Do not discharge into any place where its accumulation could be dangerous. Ensure that the emission levels from local regulations or operating permits are not exceeded.

Product/Packaging disposal recommendations : Refer to the CGA Pamphlet P-63 "Disposal of Gases" available at www.cganet.com for more guidance on suitable disposal methods.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Transport document description : UN1956 Compressed gas, n.o.s., 2.2

UN-No.(DOT) : UN1956

Proper Shipping Name (DOT) : Compressed gas, n.o.s.

Hazard labels (DOT) : 2.2 - Non-flammable gas

DOT Packaging Non Bulk (49 CFR 173.xxx) : 302;305

DOT Packaging Bulk (49 CFR 173.xxx) : 314;315

DOT Symbols : G - Identifies PSN requiring a technical name

DOT Packaging Exceptions (49 CFR 173.xxx) : 306;307

DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : 75 kg

DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : 150 kg

DOT Vessel Stowage Location : A - The material may be stowed ‘‘on deck’’ or ‘‘under deck’’ on a cargo vessel and on a passenger vessel.

Other information : No supplementary information available.

Special transport precautions : Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency. Before transporting product containers: - Ensure there is adequate ventilation. - Ensure that containers are firmly secured. - Ensure cylinder valve is closed and not leaking. - Ensure valve outlet cap nut or plug (where provided) is correctly fitted. - Ensure valve protection device (where provided) is correctly fitted.

Transportation of Dangerous Goods

Transport by sea

Transport document description (IMDG) : UN 1956 Compressed gas, n.o.s., 2.2

UN-No. (IMDG) : 1956

Proper Shipping Name (IMDG) : Compressed gas, n.o.s.

Class (IMDG) : 2.2 - Non-flammable, non-toxic gases

Limited quantities (IMDG) : 120 ml

Air transport

Transport document description (IATA) : UN 1956 Compressed gas, n.o.s., 2.2

UN-No. (IATA) : 1956

Proper Shipping Name (IATA) : Compressed gas, n.o.s.

Class (IATA) : 2

SECTION 15: Regulatory information

15.1. US Federal regulations

Isobutylene (115-11-7)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

Oxygen (7782-44-7)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

Nitrogen (7727-37-9)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. International regulations

CANADA

Isobutylene (115-11-7)
Listed on the Canadian DSL (Domestic Substances List)

Oxygen (7782-44-7)
Listed on the Canadian DSL (Domestic Substances List)

Nitrogen (7727-37-9)
Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

Isobutylene (115-11-7)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

Oxygen (7782-44-7)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

Nitrogen (7727-37-9)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

National regulations

Isobutylene (115-11-7)
Listed on the AICS (Australian Inventory of Chemical Substances) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory Listed on the Japanese ISHL (Industrial Safety and Health Law) Listed on the Korean ECL (Existing Chemicals List) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances) Listed on INSQ (Mexican National Inventory of Chemical Substances) Listed on the TCSI (Taiwan Chemical Substance Inventory)

Oxygen (7782-44-7)
Listed on the AICS (Australian Inventory of Chemical Substances) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on the Korean ECL (Existing Chemicals List) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances) Listed on INSQ (Mexican National Inventory of Chemical Substances) Listed on the TCSI (Taiwan Chemical Substance Inventory)

Nitrogen (7727-37-9)
Listed on the AICS (Australian Inventory of Chemical Substances) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on the Korean ECL (Existing Chemicals List) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances) Listed on INSQ (Mexican National Inventory of Chemical Substances) Listed on the TCSI (Taiwan Chemical Substance Inventory)

15.3. US State regulations

Isobutylene (115-11-7)
U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List

Oxygen (7782-44-7)
U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List

Nitrogen (7727-37-9)
U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List

SECTION 16: Other information

Revision date : 03/01/2018

Other information : This Safety Data Sheet is offered pursuant to OSHA's Hazard Communication Standard, 29 CFR, 1910.1200. Other government regulations must be reviewed for applicability to this product.

Full text of H-phrases:

H270	May cause or intensify fire; oxidizer
H280	Contains gas under pressure; may explode if heated

SDS US (GHS HazCom 2012)

This Safety Data Sheet is offered pursuant to OSHA's Hazard Communication Standard, 29 CFR, 1910.1200. Other government regulations must be reviewed for applicability to this gas mixture. To the best of Calgaz's knowledge, the information contained herein is reliable and accurate as of this date; however, accruacy, suitability or completeness are not guaranteed and no warranties of any type, either express or implied, are provided. The information contained herein relates only to this specific product. If this gas mixture is combined with other materials, all component properties must be considered. Data may be changed from time to time. Be sure to consult the latest edition.

SAFETY DATA SHEET

Version 6.4
Revision Date 11/04/2019
Print Date 04/04/2020

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name	:	Liqui-nox® phosphate-free liquid detergent
Product Number	:	Z273279
Brand	:	Aldrich

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses	:	Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company	:	Sigma-Aldrich Inc. 3050 Spruce Street ST. LOUIS MO 63103 UNITED STATES
Telephone	:	+1 314 771-5765
Fax	:	+1 800 325-5052

1.4 Emergency telephone number

Emergency Phone #	:	+1-703-527-3887

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Skin irritation (Category 2), H315
Serious eye damage (Category 1), H318
Specific target organ toxicity - repeated exposure, Inhalation (Category 2), Respiratory Tract, H373
Short-term (acute) aquatic hazard (Category 3), H402
Long-term (chronic) aquatic hazard (Category 3), H412

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram

Signal word: Danger

Hazard statement(s)
H315 Causes skin irritation.

H318	Causes serious eye damage.
H373	May cause damage to organs (Respiratory Tract) through prolonged or repeated exposure if inhaled.
H412	Harmful to aquatic life with long lasting effects.

Precautionary statement(s)

P260	Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P264	Wash skin thoroughly after handling.
P273	Avoid release to the environment.
P280	Wear protective gloves/ eye protection/ face protection.
P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
P305 + P351 + P338 + P310	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.
P314	Get medical advice/ attention if you feel unwell.
P332 + P313	If skin irritation occurs: Get medical advice/ attention.
P362	Take off contaminated clothing and wash before reuse.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

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SECTION 3: Composition/information on ingredients

3.2 Mixtures

Component		Classification	Concentration
Sodium xylenesulphonate			
CAS-No. EC-No.	1300-72-7 215-090-9	Skin Irrit. 2; Eye Irrit. 2A; STOT SE 3; H315, H319, H335	>= 5 - < 10 %
Alcohols, C12-14-secondary, ethoxylated			
CAS-No.	84133-50-6	Skin Irrit. 2; Eye Dam. 1; H315, H318	>= 5 - < 10 %
Coconut diethanolamide			
CAS-No. EC-No.	8051-30-7 232-483-0	Skin Irrit. 2; Eye Dam. 1; Aquatic Acute 2; Aquatic Chronic 2; H315, H318, H401, H411	>= 5 - < 10 %
tripotassium hydrogen ethylenediaminetetraacetate			
CAS-No. EC-No.	17572-97-3 241-543-5	Acute Tox. 4; STOT RE 2; H332, H373	>= 5 - < 10 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Carbon oxides, Nitrogen oxides (NOx), Sulphur oxides, Potassium oxides, Sodium oxides

5.3 Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information
No data available

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.
For personal protection see section 8.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up
Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Storage class (TRGS 510): 10: Combustible liquids

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Components with workplace control parameters

Contains no substances with occupational exposure limit values.

8.2 Exposure controls

Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment

Eye/face protection

Tightly fitting safety goggles. Faceshield (8-inch minimum). Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Body Protection

Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: liquid
b)	Odour	No data available
c)	Odour Threshold	No data available
d)	pH	No data available
e)	Melting point/freezing point	No data available
f)	Initial boiling point and boiling range	No data available
g)	Flash point	()No data available
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	No data available
j)	Upper/lower flammability or explosive limits	No data available
k)	Vapour pressure	No data available
l)	Vapour density	No data available
m)	Relative density	No data available
n)	Water solubility	No data available
o)	Partition coefficient: n-octanol/water	No data available
p)	Auto-ignition temperature	No data available
q)	Decomposition temperature	No data available
r)	Viscosity	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	No data available

9.2 Other safety information
No data available

SECTION 10: Stability and reactivity

10.1 Reactivity
No data available

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
No data available

10.5 Incompatible materials
No data available

10.6 Hazardous decomposition products
Other decomposition products - No data available
Hazardous decomposition products formed under fire conditions. - Carbon oxides, Nitrogen oxides (NOx), Sulphur oxides, Potassium oxides, Sodium oxides
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
No data available

Dermal: No data available

No data available

Skin corrosion/irritation
No data available

Serious eye damage/eye irritation
No data available

Respiratory or skin sensitisation
No data available

Germ cell mutagenicity
No data available

Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

Additional Information
RTECS: Not available

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

SECTION 12: Ecological information

12.1 Toxicity
No data available

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Harmful to aquatic life.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging
Dispose of as unused product.

SECTION 14: Transport information

DOT (US)
Not dangerous goods

IMDG
Not dangerous goods

IATA
Not dangerous goods

SECTION 15: Regulatory information

SARA 302 Components
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Massachusetts Right To Know Components
No components are subject to the Massachusetts Right to Know Act.

No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know Components

Water	CAS-No. 7732-18-5	Revision Date
Benzenesulfonic acid, mono-C10-16-alkyl derivs., sodium salts	68081-81-2	
Sodium xylenesulphonate	1300-72-7	
Alcohols, C12-14-secondary, ethoxylated	84133-50-6	
Coconut diethanolamide	8051-30-7	
tripotassium hydrogen ethylenediaminetetraacetate	17572-97-3	

Water	CAS-No. 7732-18-5	Revision Date
Benzenesulfonic acid, mono-C10-16-alkyl derivs., sodium salts	68081-81-2	
Sodium xylenesulphonate	1300-72-7	
Alcohols, C12-14-secondary, ethoxylated	84133-50-6	
Coconut diethanolamide	8051-30-7	
tripotassium hydrogen ethylenediaminetetraacetate	17572-97-3	

New Jersey Right To Know Components

Water	CAS-No. 7732-18-5	Revision Date
Benzenesulfonic acid, mono-C10-16-alkyl derivs., sodium salts	68081-81-2	
Sodium xylenesulphonate	1300-72-7	
Alcohols, C12-14-secondary, ethoxylated	84133-50-6	

Coconut diethanolamide	8051-30-7
tripotassium hydrogen ethylenediaminetetraacetate	17572-97-3

SECTION 16: Other information

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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Version: 6.4 Revision Date: 11/04/2019 Print Date: 04/04/2020

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Methanol (230, 232, 233)

MSDS Number : 000000011383

Product Use Description : Solvent

Manufacturer or supplier's details : Honeywell International Inc.
115 Tabor Road
Morris Plains, NJ 07950-2546

For more information call : 1-800-368-0050
+1-231-726-3171
(Monday-Friday, 9:00am-5:00pm)

In case of emergency call : **Medical: 1-800-498-5701 or +1-303-389-1414**
: **Transportation (CHEMTREC): 1-800-424-9300 or +1-703-527-3887**
:
: (24 hours/day, 7 days/week)

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Form : liquid, clear

Color : colourless

Odor : slight alcohol-like

Classification of the substance or mixture

Classification of the substance or mixture : Flammable liquids, Category 2
Eye irritation, Category 2A
Reproductive toxicity, Category 2
Specific target organ toxicity - single exposure, Category 1, Eyes, Nervous system, Systemic toxicity

GHS Label elements, including precautionary statements

Symbol(s) :

Signal word : Danger

Hazard statements : Highly flammable liquid and vapour.
Causes serious eye irritation.
Suspected of damaging fertility or the unborn child.
Causes damage to organs.

Precautionary statements : **Prevention:**
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Keep container tightly closed.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ ventilating/ lighting/ equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
Wash skin thoroughly after handling.
Do not eat, drink or smoke when using this product.
Wear protective gloves/ eye protection/ face protection.

Response:
IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF exposed: Call a POISON CENTER or doctor/ physician.
If eye irritation persists: Get medical advice/ attention.
In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

Storage:
Store in a well-ventilated place. Keep cool.

Store locked up.

Disposal:
Dispose of contents/ container to an approved waste disposal plant.

Carcinogenicity

No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP, IARC, or OSHA.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Formula : CH4O

Chemical nature : Substance

Chemical Name	CAS-No.	Concentration
Methanol	67-56-1	100.00 %

SECTION 4. FIRST AID MEASURES

Inhalation : Call a physician immediately. Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Use oxygen as required, provided a qualified operator is present.

Skin contact : Wash off immediately with plenty of water for at least 15 minutes. Take off contaminated clothing and shoes immediately. Wash contaminated clothing before re-use. Call a physician.

Eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Call a physician.

Ingestion : Call a physician immediately. Do NOT induce vomiting. Immediate medical attention is required. Never give anything by mouth to an unconscious person.

Notes to physician

Treatment : Treat symptomatically.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Alcohol-resistant foam
Carbon dioxide (CO_2)
Dry chemical
Cool closed containers exposed to fire with water spray.

Unsuitable extinguishing media : Do not use a solid water stream as it may scatter and spread fire.

Specific hazards during firefighting : Flammable.
Vapours may form explosive mixtures with air.
Vapours are heavier than air and may spread along floors.
Vapors may travel to areas away from work site before igniting/flashing back to vapor source.
In case of fire hazardous decomposition products may be produced such as:
Carbon monoxide
Carbon dioxide (CO_2)
Formaldehyde

Special protective equipment for firefighters : Wear self-contained breathing apparatus and protective suit.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions : Wear personal protective equipment.
Immediately evacuate personnel to safe areas.
Keep people away from and upwind of spill/leak.
Ensure adequate ventilation.
Remove all sources of ignition.
Do not swallow.
Do not breathe vapours or spray mist.
Avoid contact with skin, eyes and clothing.

Environmental precautions : Prevent further leakage or spillage if safe to do so.

Prevent product from entering drains.
Discharge into the environment must be avoided.
Do not flush into surface water or sanitary sewer system.
Do not allow run-off from fire fighting to enter drains or water courses.

Methods for cleaning up : Ventilate the area.
No sparking tools should be used.
Use explosion-proof equipment.
Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).

SECTION 7. HANDLING AND STORAGE

Handling

Handling : Wear personal protective equipment.
Use only in well-ventilated areas.
Keep container tightly closed.
Do not smoke.
Do not swallow.
Do not breathe vapours or spray mist.
Avoid contact with skin, eyes and clothing.

Advice on protection against fire and explosion : Keep away from fire, sparks and heated surfaces.
Take precautionary measures against static discharges.
Ensure all equipment is electrically grounded before beginning transfer operations.
Use explosion-proof equipment.
Keep product and empty container away from heat and sources of ignition.
No sparking tools should be used.
No smoking.

Storage

Requirements for storage areas and containers : Store in area designed for storage of flammable liquids.
Protect from physical damage.
Keep containers tightly closed in a dry, cool and well-ventilated place.
Containers which are opened must be carefully resealed and

kept upright to prevent leakage.
Keep away from heat and sources of ignition.
Keep away from direct sunlight.
Store away from incompatible substances.
Container hazardous when empty.
Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Protective measures	:	Ensure that eyewash stations and safety showers are close to the workstation location.
Engineering measures	:	Use with local exhaust ventilation. Prevent vapour buildup by providing adequate ventilation during and after use.
Eye protection	:	Do not wear contact lenses. Wear as appropriate: Safety glasses with side-shields If splashes are likely to occur, wear: Goggles or face shield, giving complete protection to eyes
Hand protection	:	Solvent-resistant gloves Gloves must be inspected prior to use. Replace when worn.
Skin and body protection	:	Wear as appropriate: Solvent-resistant apron Flame retardant antistatic protective clothing. If splashes are likely to occur, wear: Protective suit
Respiratory protection	:	In case of insufficient ventilation, wear suitable respiratory equipment. For rescue and maintenance work in storage tanks use self-contained breathing apparatus. Use NIOSH approved respiratory protection.
Hygiene measures	:	When using do not eat, drink or smoke. Wash hands before breaks and immediately after handling the product. Keep working clothes separately.

Do not swallow.
Do not breathe vapours or spray mist.
Avoid contact with skin, eyes and clothing.
This material has an established AIHA ERPG exposure limit.
The current list of ERPG exposure limits can be found at
http://www.aiha.org/insideaiha/GuidelineDevelopment/ERPG/Documents/2011erpgweelhandbook_table-only.pdf.

Exposure Guidelines

Components	CAS-No.	Value	Control parameters	Update	Basis
Methanol	67-56-1	TWA : time weighted average	(200 ppm)	2008	ACGIH:US. ACGIH Threshold Limit Values
Methanol	67-56-1	STEL : Short term exposure limit	(250 ppm)	2008	ACGIH:US. ACGIH Threshold Limit Values
Methanol	67-56-1	SKIN_DES : Skin designation:	Can be absorbed through the skin.	2008	ACGIH:US. ACGIH Threshold Limit Values
Methanol	67-56-1	REL : Recommended exposure limit (REL):	260 mg/m3 (200 ppm)	2005	NIOSH/GUIDE:US. NIOSH: Pocket Guide to Chemical Hazards
Methanol	67-56-1	SKIN_DES : Skin designation:	Can be absorbed through the skin.	2005	NIOSH/GUIDE:US. NIOSH: Pocket Guide to Chemical Hazards

Methanol	67-56-1	STEL : Short term exposure limit	325 mg/m3 (250 ppm)	2005	NIOSH/GUIDE:US. NIOSH: Pocket Guide to Chemical Hazards
Methanol	67-56-1	PEL : Permissible exposure limit	260 mg/m3 (200 ppm)	02 2006	OSHA_TRANS:US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)
Methanol	67-56-1	TWA : time weighted average	260 mg/m3 (200 ppm)	1989	Z1A:US. OSHA Table Z-1-A (29 CFR 1910.1000)
Methanol	67-56-1	STEL : Short term exposure limit	325 mg/m3 (250 ppm)	1989	Z1A:US. OSHA Table Z-1-A (29 CFR 1910.1000)
Methanol	67-56-1	SKIN_FINAL : Skin designation (Final Rule Limit applies):	Can be absorbed through the skin.	1989	Z1A:US. OSHA Table Z-1-A (29 CFR 1910.1000)

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	:	liquid, clear
Color	:	colourless
Odor	:	slight alcohol-like
pH	:	Note: Not applicable

Melting point/freezing point	:	Note: Not applicable
Boiling point/boiling range	:	64.7 °C
Flash point	:	52 °F (11 °C) Method: closed cup
Evaporation rate	:	ca. 5 Method: Compared to Butyl acetate.
Lower explosion limit	:	6 %(V)
Upper explosion limit	:	36 %(V)
Vapor pressure	:	129.32 hPa at 20 °C(68 °F)
Vapor density	:	1.11 Note: (Air = 1.0)
Density	:	0.792 g/cm3 at 20 °C
Water solubility	:	Note: completely soluble
Ignition temperature	:	464 °C
Molecular weight	:	32.04 g/mol

SECTION 10. STABILITY AND REACTIVITY

Chemical stability	: Stable under recommended storage conditions.
Possibility of hazardous reactions	: Hazardous polymerisation does not occur.
Conditions to avoid	: Heat, flames and sparks. Keep away from direct sunlight.
Incompatible materials to avoid	: Strong oxidizing agents Aluminium Magnesium May attack many plastics, rubbers and coatings.
Hazardous decomposition products	: In case of fire hazardous decomposition products may be produced such as: Carbon monoxide Carbon dioxide (CO_2) Formaldehyde

SECTION 11. TOXICOLOGICAL INFORMATION

Acute oral toxicity	: LD50: 5,628 mg/kg Species: Rat
Acute inhalation toxicity	: LC50: 64000 ppm Exposure time: 4 h Species: Rat
Acute dermal toxicity	: LD50: 15,800 mg/kg Species: Rabbit
Skin irritation	: Species: Rabbit Classification: irritating Exposure time: 24 h

Eye irritation	:	Species: rabbit eye Classification: irritating
Repeated dose toxicity	:	Species: Rat Application Route: Inhalation Test substance: Methanol Note: Developmental Toxicity NOAEL (maternal toxicity) 10,000 ppm NOAEL (developmental toxicity) 5,000 ppm Skeletal and visceral malformations.
Genotoxicity in vitro	:	Note: In vitro tests did not show mutagenic effects
Genotoxicity in vivo	:	Note: In vivo tests did not show mutagenic effects

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity effects

Toxicity to fish	:	LC50: 29,400 mg/l Exposure time: 96 h Species: Fathead minnow
Toxicity to daphnia and other aquatic invertebrates	:	LC50: 10,000 mg/l Exposure time: 24 h Species: Daphnia (water flea)
Toxicity to bacteria	:	EC50: 43,000 mg/l Exposure time: 5 min Species: Photobacterium phosphoreum
	:	EC50: 40,000 mg/l Exposure time: 15 min Species: Photobacterium phosphoreum
	:	EC50: 39,000 mg/l Exposure time: 25 min Species: Photobacterium phosphoreum

Further information on ecology

Additional ecological information	:	Accumulation in aquatic organisms is unlikely. The product is readily degradable in the environment.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods	:	Observe all Federal, State, and Local Environmental regulations.

SECTION 14. TRANSPORT INFORMATION

DOT	UN/ID No.	:	UN 1230
	Proper shipping name	:	METHANOL
	Class		3
	Packing group		II
	Hazard Labels		3

IATA	UN/ID No.	:	UN 1230
	Description of the goods	:	METHANOL
	Class	:	3
	Packaging group	:	II
	Hazard Labels	:	3 (6.1)
	Packing instruction (cargo aircraft)	:	364
	Packing instruction (passenger aircraft)	:	352
	Packing instruction (passenger aircraft)	:	Y341

IMDG	UN/ID No.	:	UN 1230
	Description of the goods	:	METHANOL
	Class	:	3
	Packaging group	:	II
	Hazard Labels	:	3 (6.1)
	EmS Number	:	F-E, S-D
	Marine pollutant	:	no

SECTION 15. REGULATORY INFORMATION

Inventories

US. Toxic Substances Control Act	:	On TSCA Inventory
Australia. Industrial Chemical (Notification and Assessment) Act	:	On the inventory, or in compliance with the inventory
Canada. Canadian Environmental Protection Act (CEPA). Domestic Substances List (DSL)	:	All components of this product are on the Canadian DSL.
Japan. Kashin-Hou Law List	:	On the inventory, or in compliance with the inventory
Korea. Toxic Chemical Control Law (TCCL) List	:	On the inventory, or in compliance with the inventory
Philippines. The Toxic Substances and Hazardous and Nuclear Waste Control Act	:	On the inventory, or in compliance with the inventory
China. Inventory of Existing Chemical Substances	:	On the inventory, or in compliance with the inventory
New Zealand. Inventory of Chemicals (NZIoC), as published by ERMA New Zealand	:	On the inventory, or in compliance with the inventory

National regulatory information

US. EPA CERCLA Hazardous Substances (40 CFR 302)	:	The following component(s) of this product is/are subject to release reporting under 40 CFR 302 when release exceeds the Reportable Quantity (RQ): Reportable quantity: 5000 lbs

: Methanol 67-56-1

SARA 302 Components : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components : The following components are subject to reporting levels established by SARA Title III, Section 313:
: Methanol 67-56-1

SARA 311/312 Hazards : Fire Hazard
Acute Health Hazard
Chronic Health Hazard

CERCLA Reportable Quantity : 5000 lbs

California Prop. 65 : WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.
Methanol 67-56-1

Massachusetts RTK : Methanol 67-56-1

New Jersey RTK : Methanol 67-56-1

Pennsylvania RTK : Methanol 67-56-1

WHMIS Classification : B2: Flammable liquid
D1B: Toxic Material Causing Immediate and Serious Toxic Effects
D2A: Very Toxic Material Causing Other Toxic Effects
D2B: Toxic Material Causing Other Toxic Effects
This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

SECTION 16. OTHER INFORMATION

		HMIS III	**NFPA**
Health hazard	:	2*	1
Flammability	:	3	3
Physical Hazard	:	0	
Instability	:		0

* - Chronic health hazard

Hazard rating and rating systems (e.g. HMIS® III, NFPA): This information is intended solely for the use of individuals trained in the particular system.

Further information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. Final determination of suitability of any material is the sole responsibility of the user. This information should not constitute a guarantee for any specific product properties.

Changes since the last version are highlighted in the margin. This version replaces all previous versions.
Previous Issue Date: 03/19/2014
Prepared by Honeywell Performance Materials and Technologies Product Stewardship Group

SAFETY DATA SHEET

1. Identification

Product identifier: NITRIC ACID

Other means of identification
Synonyms: Aqua Fortis, Azotic Acid
Product No.: 9604, V471, V231, V230, V077, 6623, 2712, 2707, 2706, 2704, H988, 5876, 5856, 5801, 5796, 1409, 9761, 9670, 9618, 9617, 9616, 9615, 9612, 9607, 9606, 9601, 9598, 9597, 5371, 20758, 20754, 20752, 20750

Recommended use and restriction on use
Recommended use: Not available.
Restrictions on use: Not known.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

Company Name:	Avantor Performance Materials, Inc.
Address:	3477 Corporate Parkway, Suite 200 Center Valley, PA 18034
Telephone:	Customer Service: 855-282-6867
Fax:	
Contact Person:	Environmental Health & Safety
e-mail:	info@avantormaterials.com

Emergency telephone number:
24 Hour Emergency: 908-859-2151

Chemtrec: 800-424-9300

2. Hazard(s) identification

Hazard classification

Physical hazards

Oxidizing liquids	Category 3
Corrosive to metals	Category 1

Health hazards

Skin corrosion/irritation	Category 1A

Unknown toxicity

Acute toxicity, oral	65 %
Acute toxicity, dermal	65 %
Acute toxicity, inhalation, vapor	100 %
Acute toxicity, inhalation, dust or mist	100 %

Unknown toxicity

Acute hazards to the aquatic environment	65 %
Chronic hazards to the aquatic environment	65 %

Label elements

Hazard symbol:

Signal word: Danger

Hazard statement: May intensify fire; oxidizer.
May be corrosive to metals.
Causes severe skin burns and eye damage.

Precautionary statement

Prevention: Wear protective gloves/protective clothing/eye protection/face protection. Wash hands thoroughly after handling. Keep only in original container. Keep away from heat. Keep/Store away from clothing/combustible materials. Take any precaution to avoid mixing with combustibles. Use only outdoors or in a well-ventilated area.

Response: In case of fire: Use water spray, foam, dry powder or carbon dioxide for extinction. Immediately call a POISON CENTER/doctor. IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Absorb spillage to prevent material damage.

Storage: Store locked up. Store in corrosive resistant container with a resistant inner liner. Store in a well-ventilated place. Keep container tightly closed.

Disposal: Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Other hazards which do not result in GHS classification: None.

3. Composition/information on ingredients

Mixtures

Chemical identity	Common name and synonyms	CAS number	Content in percent (%)*
NITRIC ACID		7697-37-2	65 - 70%

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

General information: Get medical advice/attention if you feel unwell. Show this safety data sheet to the doctor in attendance.

Ingestion: Call a physician or poison control center immediately. Do NOT induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.

Inhalation: Move to fresh air. Call a physician or poison control center immediately. If breathing stops, provide artificial respiration. If breathing is difficult, give oxygen.

Skin contact: Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician or poison control center immediately. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes.

Eye contact: Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Call a physician or poison control center immediately. In case of irritation from airborne exposure, move to fresh air. Get medical attention immediately.

Most important symptoms/effects, acute and delayed

Symptoms: Corrosive to skin and eyes. Causes digestive tract burns. Spray mists may cause respiratory tract irritation.

Indication of immediate medical attention and special treatment needed

Treatment: Treat symptomatically. Symptoms may be delayed.

5. Fire-fighting measures

General fire hazards: Strong oxidizer - contact with other material may cause fire.

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: Water spray, fog, CO2, dry chemical, or regular foam.

Unsuitable extinguishing media: None known.

Specific hazards arising from the chemical: Oxidizing Contact with combustible material may cause fire. Fire may produce irritating, corrosive and/or toxic gases.

Special protective equipment and precautions for firefighters

Special fire fighting procedures: Move containers from fire area if you can do so without risk. Use water spray to keep fire-exposed containers cool. Cool containers exposed to flames with water until well after the fire is out.

Special protective equipment for fire-fighters: Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA. Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures: Keep unauthorized personnel away. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Use personal protective equipment. See Section 8 of the MSDS for Personal Protective Equipment. Ventilate closed spaces before entering them. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

Methods and material for containment and cleaning up: Keep combustibles (wood, paper, oil, etc.) away from spilled material. Stop leak if possible without any risk. Do not absorb in sawdust or other combustible materials. Absorb spill with vermiculite or other inert material. Collect in a non-combustible container for prompt disposal. Clean surface thoroughly to remove residual contamination. Dike far ahead of larger spill for later recovery and disposal.

Notification Procedures: Dike for later disposal. Prevent entry into waterways, sewer, basements or confined areas. Stop the flow of material, if this is without risk. Inform authorities if large amounts are involved.

Environmental precautions: Do not contaminate water sources or sewer. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling: Keep away from combustible material. Do not get in eyes, on skin, on clothing. Wash hands thoroughly after handling. Do not eat, drink or smoke when using the product. Do not taste or swallow. Never add water to acid! Never pour water into acid/base. Dilute by slowly pouring the product into water while stirring.

Conditions for safe storage, including any incompatibilities: Do not store in metal containers. Store away from heat and light. Keep away from combustible material. Keep containers closed when not in use. Store in a cool, dry place. Keep container in a well-ventilated place.

8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Chemical identity	Type	Exposure Limit values		Source
NITRIC ACID	TWA	2 ppm		US. ACGIH Threshold Limit Values (2011)
	STEL	4 ppm		US. ACGIH Threshold Limit Values (2011)
	STEL	4 ppm	10 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2010)
	REL	2 ppm	5 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2010)
	PEL	2 ppm	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	TWA	2 ppm	5 mg/m3	US. OSHA Table Z-1-A (29 CFR 1910.1000) (1989)
	STEL	4 ppm	10 mg/m3	US. OSHA Table Z-1-A (29 CFR 1910.1000) (1989)

Appropriate engineering controls No data available.

Individual protection measures, such as personal protective equipment

General information: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. An eye wash and safety shower must be available in the immediate work area.

Eye/face protection: Wear safety glasses with side shields (or goggles) and a face shield.

Skin protection

Hand protection: Chemical resistant gloves

Other:	Wear suitable protective clothing.
Respiratory protection:	In case of inadequate ventilation use suitable respirator. Chemical respirator with acid gas cartridge.
Hygiene measures:	Provide eyewash station and safety shower. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing to remove contaminants. Discard contaminated footwear that cannot be cleaned.

9. Physical and chemical properties

Appearance

Physical state:	Liquid
Form:	Liquid
Color:	Colorless to slightly yellow
Odor:	Pungent
Odor threshold:	No data available.
pH:	1 (0.1 molar aqueous solution)
Melting point/freezing point:	-42 °C
Initial boiling point and boiling range:	122 °C
Flash Point:	Not applicable
Evaporation rate:	No data available.
Flammability (solid, gas):	No data available.
Upper/lower limit on flammability or explosive limits	
Flammability limit - upper (%):	No data available.
Flammability limit - lower (%):	No data available.
Explosive limit - upper (%):	No data available.
Explosive limit - lower (%):	No data available.
Vapor pressure:	6.4 kPa
Vapor density:	2.5
Relative density:	1.41 (20 °C)
Solubility(ies)	
Solubility in water:	Soluble
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	No data available.
Auto-ignition temperature:	No data available.
Decomposition temperature:	No data available.
Viscosity:	No data available.

10. Stability and reactivity

Reactivity:	Reacts violently with strong alkaline substances.
Chemical stability:	Material is stable under normal conditions.
Possibility of hazardous reactions:	Hazardous polymerization does not occur. Decomposes on heating.
Conditions to avoid:	Reacts violently with strong alkaline substances. Avoid contact with strong reducing agents. Excessive heat. Contact with incompatible materials.
Incompatible materials:	Alcohols. Reducing agents. Metals. Alkalies.
Hazardous decomposition products:	Nitrogen Oxides By heating and fire, corrosive vapors/gases may be formed.

11. Toxicological information

Information on likely routes of exposure

Ingestion:	May cause burns of the gastrointestinal tract if swallowed.
Inhalation:	May cause damage to mucous membranes in nose, throat, lungs and bronchial system.
Skin contact:	Causes severe skin burns.
Eye contact:	Causes serious eye damage.

Information on toxicological effects

Acute toxicity (list all possible routes of exposure)

Oral
Product: No data available.

Dermal
Product: No data available.

Inhalation
Product: No data available.

Specified substance(s):
NITRIC ACID LC 50 (Rat, 4 h): 65 mg/l

Repeated dose toxicity
Product: No data available.

Skin corrosion/irritation
Product: Causes severe skin burns.

Serious eye damage/eye irritation
Product: Causes serious eye damage.

Respiratory or skin sensitization
Product: Not a skin nor a respiratory sensitizer.

Carcinogenicity
Product: This substance has no evidence of carcinogenic properties.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:
No carcinogenic components identified

US. National Toxicology Program (NTP) Report on Carcinogens:
No carcinogenic components identified

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):
No carcinogenic components identified

Germ cell mutagenicity

In vitro
Product: No mutagenic components identified

In vivo
Product: No mutagenic components identified

Reproductive toxicity
Product: No components toxic to reproduction

Specific target organ toxicity - single exposure
Product: None known.

Specific target organ toxicity - repeated exposure
Product: None known.

Aspiration hazard
Product: Not classified

Other effects: None known.

12. Ecological information

Ecotoxicity:

Acute hazards to the aquatic environment:

Fish
Product: No data available.

Specified substance(s):
NITRIC ACID LC 50 (Fish, 48 h): 100 - 330 mg/l Mortality

Aquatic invertebrates
Product: No data available.

Specified substance(s):
NITRIC ACID LC 50 (Cockle (Cerastoderma edule), 48 h): 330 - 1,000 mg/l Mortality
LC 50 (Green or European shore crab (Carcinus maenas), 48 h): 180 mg/l Mortality

Chronic hazards to the aquatic environment:

Fish
Product: No data available.

Aquatic invertebrates
Product: No data available.

Toxicity to Aquatic Plants
Product: No data available.

Persistence and degradability

Biodegradation
Product: Expected to be readily biodegradable.

BOD/COD ratio
Product: No data available.

Bioaccumulative potential
Bioconcentration factor (BCF)
Product: No data available on bioaccumulation.

Partition coefficient n-octanol / water (log Kow)

Product:	No data available.

Mobility in soil:	The product is water soluble and may spread in water systems.
Other adverse effects:	The product may affect the acidity (pH-factor) in water with risk of harmful effects to aquatic organisms.

13. Disposal considerations

Disposal instructions:	Discharge, treatment, or disposal may be subject to national, state, or local laws.
Contaminated packaging:	Since emptied containers retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

UN number:	UN 2031
UN proper shipping name:	Nitric acid
Transport hazard class(es)	
Class(es):	8, 5.1
Label(s):	8, 5.1
Packing group:	II
Marine Pollutant:	No

IMDG

UN number:	UN 2031
UN proper shipping name:	NITRIC ACID
Transport hazard class(es)	
Class(es):	8, 5.1
Label(s):	8, 5.1
EmS No.:	F-A, S-Q
Packing group:	II
Marine Pollutant:	No

IATA

UN number:	UN 2031
Proper Shipping Name:	Nitric acid
Transport hazard class(es):	
Class(es):	8, 5.1
Label(s):	8, 5.1
Marine Pollutant:	No
Packing group:	II

15. Regulatory information

US federal regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

None present or none present in regulated quantities.

CERCLA Hazardous Substance List (40 CFR 302.4):

NITRIC ACID	Reportable quantity: 1000 lbs.

Superfund amendments and reauthorization act of 1986 (SARA)

Hazard categories

X	Acute (Immediate)	X	Chronic (Delayed)	X	Fire		Reactive		Pressure Generating

SARA 302 Extremely hazardous substance

Chemical identity	RQ	Threshold Planning Quantity
NITRIC ACID	1000 lbs.	1000 lbs.

SARA 304 Emergency release notification

Chemical identity	RQ
NITRIC ACID	1000 lbs.

SARA 311/312 Hazardous chemical

Chemical identity	Threshold Planning Quantity
NITRIC ACID	500lbs

SARA 313 (TRI reporting)

Chemical identity	Reporting threshold for other users	Reporting threshold for manufacturing and processing
NITRIC ACID	10000 lbs	25000 lbs.

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)

NITRIC ACID Reportable quantity: 1000 lbs.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):

NITRIC ACID Threshold quantity: 15000 lbs

US state regulations

US. California Proposition 65

No ingredient regulated by CA Prop 65 present.

US. New Jersey Worker and Community Right-to-Know Act

NITRIC ACID Listed

US. Massachusetts RTK - Substance List

NITRIC ACID Listed

US. Pennsylvania RTK - Hazardous Substances

NITRIC ACID Listed

US. Rhode Island RTK

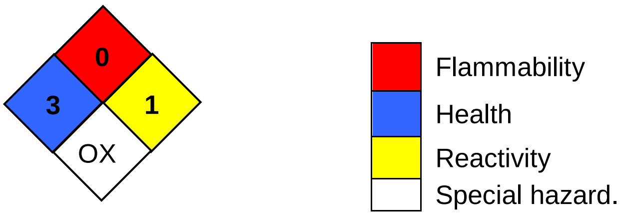
NITRIC ACID Listed

Inventory Status:

Australia AICS:	On or in compliance with the inventory
Canada DSL Inventory List:	On or in compliance with the inventory
EINECS, ELINCS or NLP:	On or in compliance with the inventory
Japan (ENCS) List:	On or in compliance with the inventory
China Inv. Existing Chemical Substances:	Not in compliance with the inventory.
Korea Existing Chemicals Inv. (KECI):	On or in compliance with the inventory
Canada NDSL Inventory:	Not in compliance with the inventory.
Philippines PICCS:	On or in compliance with the inventory
US TSCA Inventory:	On or in compliance with the inventory
New Zealand Inventory of Chemicals:	On or in compliance with the inventory
Japan ISHL Listing:	Not in compliance with the inventory.
Japan Pharmacopoeia Listing:	Not in compliance with the inventory.

16.Other information, including date of preparation or last revision

NFPA Hazard ID



Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe
OXY: Oxidizer

Issue date:	06-04-2014
Revision date:	No data available.
Version #:	2.0
Further information:	No data available.

Disclaimer:

THE INFORMATION PRESENTED IN THIS MATERIAL SAFETY DATA SHEET (MSDS/SDS) WAS PREPARED BY TECHNICAL PERSONNEL BASED ON DATA THAT THEY BELIEVE IN THEIR GOOD FAITH JUDGMENT IS ACCURATE. HOWEVER, THE INFORMATION PROVIDED HEREIN IS PROVIDED "AS IS," AND AVANTOR PERFORMANCE MATERIALS MAKES AND GIVES NO REPRESENTATIONS OR WARRANTIES WHATSOEVER, AND EXPRESSLY DISCLAIMS ALL WARRANTIES REGARDING SUCH INFORMATION AND THE PRODUCT TO WHICH IT RELATES, WHETHER EXPRESS, IMPLIED, OR STATUTORY, INCLUDING WITHOUT LIMITATION, WARRANTIES OF ACCURACY, COMPLETENESS, MERCHANTABILITY, NON-INFRINGEMENT, PERFORMANCE, SAFETY, SUITABILITY, STABILITY, AND FITNESS FOR A PARTICULAR PURPOSE, AND ANY WARRANTIES ARISING FROM COURSE OF DEALING, COURSE OF PERFORMANCE, OR USAGE OF TRADE. THIS MSDS/SDS IS INTENDED ONLY AS A GUIDE TO THE APPROPRIATE PRECAUTIONARY HANDLING OF THE MATERIAL BY A PROPERLY TRAINED PERSON USING THIS PRODUCT, AND IS NOT INTENDED TO BE COMPREHENSIVE AS TO THE MANNER AND CONDITIONS OF USE, HANDLING, STORAGE, OR DISPOSAL OF THE PRODUCT. INDIVIDUALS RECEIVING THIS MSDS/SDS MUST ALWAYS EXERCISE THEIR OWN INDEPENDENT JUDGMENT IN DETERMINING THE APPROPRIATENESS OF SUCH ISSUES. ACCORDINGLY, AVANTOR PERFORMANCE MATERIALS ASSUMES NO LIABILITY WHATSOEVER FOR THE USE OF OR RELIANCE UPON THIS INFORMATION. NO SUGGESTIONS FOR USE ARE INTENDED AS, AND NOTHING HEREIN SHALL BE CONSTRUED AS, A RECOMMENDATION TO INFRINGE ANY EXISTING PATENTS OR TO VIOLATE ANY FEDERAL, STATE, LOCAL, OR FOREIGN LAWS. AVANTOR PERFORMANCE MATERIALS REMINDS YOU THAT IT IS YOUR LEGAL DUTY TO MAKE ALL INFORMATION IN THIS MSDS/SDS AVAILABLE TO YOUR EMPLOYEES.

Attachment 5

Employee Exposure/Injury
Incident Report

Employee Exposure/Injury Incident Report

(completed by the CHSM or designee)

Employee:		
Office or field location:		
Incident:		
Potential or known exposure (describe):		
Physical injury or illness (describe):		
Location (city and state):	Project and Contract No.	
Date of incident:	Time of incident:	
Date incident reported:	Person to whom incident was reported:	
Weather condition during incident:	Temperature:	Precipitation:
Wind speed and direction:	Cloud cover:	
Name of materials potentially encountered (chemical exposure):		
Chemical and phase (i.e., liquid, solid, gas, vapor, fume, mist), radiological, etc.:		
Describe the exposure/injury in detail and the parts of the body affected (attach extra sheets if necessary):		
Describe exact location where the incident occurred:		
What was the employee doing when the exposure/injury occurred? (Describe briefly as Refractories reconnaissance, soil sampling, etc.):		

How did the incident occur? Describe fully the factors that led to or contributed to the incident:					
Was medical treatment given? ☐ Yes ☐ No If yes, when?					
By whom?			Name of paramedic:		
			Name of physician:		
			Other:		
Where?	On Refractories			Off Refractories	
If off Refractories, name of hospital or clinic:					
Length of inpatient stay (dates):					
Was Integral management notified? ☐ Yes ☐ No If yes, when?					
Name and title of manager(s) notified:					
Did the exposure/injury result in permanent disability or death? ☐ Yes ☐ No					
If yes, explain:					
Number of days away from work				Number of days of restricted work activity:	
Has the employee returned to work? (Yes / No) If yes, date:					
Names of other persons affected during the incident:					
Names of persons who witnessed the incident:					
Name and title of field team leader or immediate supervisor at Refractories:					
Was the operation being conducted under an established safety plan? ☐ Yes ☐ No					

If yes, attach a copy. If no, explain:	
Was personal protective equipment (PPE) used by the employee? ☐ Yes ☐ No	
If yes, list items:	
Did any limitations in safety equipment or PPE affect or contribute to exposure? ☐ Yes ☐ No	
If yes, explain:	

Attachments to this report:		Medical report(s) (if not confidential)		Health and safety plan
		Other relevant information		

Employee's signature		Date
Refractories safety officer's signature		Date
Project manager's signature		Date

Corporate health and safety manager review and comments

Corrective action/procedure changes carried out on the project:
Corrective actions to be taken to prevent similar incidents at other locations:

Corporate Health and Safety Manager's signature	Date

Attachment 6

Near-Miss Incident Report

Near-Miss Incident Report

(completed by field staff)

Employee:			
Office or Refractories location:			
Near-Miss Incident (check one or more): Exposure ☐ Physical injury ☐ Property damage ☐			
Location (city and state):		Project and Contract No.	
Date of incident:		Time of incident:	
Fully describe the incident, including how it happened, persons involved, if chemicals were involved in the incident, etc.:			
Was the operation being conducted under an established safety plan? ☐ Yes ☐ No			
If yes, attach a copy. If no, explain:			
Employee's signature	Date		
Project Manager's signature	Date		
Refractories safety officer's signature	Date		

Corporate health and safety manager review and comments

Corrective action/procedure changes carried out at the Refractories:	
Corrective actions to be taken to prevent similar incidents at other locations:	
Corporate Health and Safety Manager's signature	Date

Attachment 7

Field Safety Tailgate Briefing Form

FIELD SAFETY TAILGATE BRIEFING FORM

Corporate Health and Safety Manager:
Matthew Behum
(410) 573-1982 ext. 512

Date: ____________ Project name: ______________________________ Project number: ______________

Meeting conductor: ____________________ Site safety officer: ____________________ Project manager: ____________________

Items discussed (check all that apply):

- ☐ HSP review and location
- ☐ Lines of authority
- ☐ Chemical hazards and exposure routes
- ☐ Flammable hazards
- ☐ Lifting techniques
- ☐ Buddy system
- ☐ Self and coworker monitoring
- ☐ Biological/plant/animal hazards
- ☐ Slips, trips, and falls
- ☐ Heat and cold stress
- ☐ Overhead hazards
- ☐ Vessel safety protocols
- ☐ Proper use of PPE
- ☐ Safety equipment location
- ☐ Proper safety equipment use
- ☐ Fire extinguisher location
- ☐ Eye wash station location
- ☐ Emergency procedures and evacuation route
- ☐ Directions to hospital
- ☐ Emergency decontamination procedures
- ☐ Site communication
- ☐ Work zones
- ☐ Vehicle safety and driving/road conditions
- ☐ Other: ______________________________
  ____

Daily work scope: ____________________
____
____
____

Site-specific hazards: ____________________
____
____
____

Weather conditions: ____________________
____
____

Field staff health and safety concerns: ____________________
____
____
____
____
____

Attendees

Printed Name	Signature

Attachment 8

COVID-19 Site and Preventative Measures Plans

COVID-19 Field Program Management Plan

COVID-19 Site and Preventive Measure Plans

Integral Engineering, P.C. (Integral) and its subcontractors will take proper precautions to minimize to every extent possible the transmission of the SARS-CoV-2 virus (COVID-19) during site investigation activities. These activities may include site visits, construction oversight, sediment and soil sampling, groundwater monitoring, and the deployment and retrieval of in-water remote sensing instrumentation. This Field Program Management Plan may be used as an addendum to the existing project-specific Health and Safety Plan and shall remain in effect until superseded by further updates.

Guidelines presented herein are consistent with the preventive recommendations provided by the Centers for Disease Control and Prevention (CDC) (https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/), the COVID-19 planning guidance provided by the Occupational Safety and Health Administration (http://www.osha.gov/Publications/OSHA3990.pdf), and the New York State Department of Health Interim Guidance for Construction Activities during the COVID-19 Public Health Emergency (https://www.governor.ny.gov/sites/governor.ny.gov/files/atoms/files/ConstructionMasterGuidance.pdf).

Each field effort will require discussions between the project manager and client to address specific requirements associated with local orders and directives that could impact travel and health and safety. The following lists general CDC recommendations followed by steps Integral and its subcontractors will take to reduce the transmission of COVID-19.

As a precautionary measure to avoid delays, a stockpile containing 2 weeks' worth of necessary personal protective equipment (PPE) will be procured prior to mobilization and maintained onsite.

Traveling to Site

Staff on business travel will not be permitted to use public transportation until otherwise notified. Business travel by air is not recommended unless absolutely necessary. Contact Bill Locke (Integral President) or Laura Jones (Integral Vice President) for work-related air travel authorization. In most instances, staff will require rental car use for offsite commuting. In this case, Integral recommends physical distancing during travel (i.e., more than one person in a typical passenger car is not allowed).

Staff requiring rental cars for any sort of business travel, including fieldwork, are to take the following precautions when taking possession of the vehicle for the first time, and at the start of each day while renting the vehicle:

- Use a disinfecting wipe to wipe down main contact areas, including:
  - Door handles (inside and outside)
  - Steering wheel
  - Dashboard
  - Clock and entertainment surface, including knobs
  - Gear shifting knob
  - Blinker and windshield wiper knob
  - Window control switch or lever
  - Rear view mirror and mirror control knobs
  - Center console
  - Odometer acrylic screen
  - Glove compartment external door.
- Refrain from wearing the same unwashed clothes the following day or subsequent days after using a rental vehicle.
- Sanitize hands immediately after refueling and after returning the rental vehicle.

Before Entering Site

Field staff will be required to undergo body temperature screening prior to entering the site. If an individual chooses not to participate, the individual should discuss the decision with the project manager, field lead, or site safety officer. Client has the right to deny access to the facility if a temperature scan is refused.

Other actions to be taken before entering a site include the following:

- Learn the travel history of all employees and visitors to understand potential exposure. If an individual has traveled internationally or has had exposure to infected individuals within the U.S., the individual will need to self-quarantine for a minimum of 14 days. A positive COVID-19 test will also prevent staff from entering the field.
- If a staff member is feeling well but has a sick family member at home, the staff member should notify the project manager and follow CDC-recommended care (https://www.cdc.gov/coronavirus/2019-ncov/if-you-are-sick/).

- If a staff member shows any signs of a respiratory ailment (cough, sore throat, fever), he or she is required to stay home and not report to work. Symptoms of COVID-19 include fever (>100.0 °F), cough, and shortness of breath as described on the CDC website (https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html). It is recommended that the individual contact a health care provider for medical advice. If COVID-19 is suspected or confirmed, staff must stay home for a minimum of 14 days.

Minimizing Chance of Exposure on the Site

- Information needed to minimize exposure and prevent the spread of COVID-19 will be included in each day's health and safety meeting. Field crew meetings should be conducted outside, if possible.
- Workers will follow site-specific Health and Safety Plan requirements for the use of PPE. PPE is not to be shared.
- If symptoms consistent with COVID-19 are noticeable during the sampling day, the employee or subcontractor should excuse him- or herself from further work, leave the site immediately, and follow CDC guidance (https://www.cdc.gov/coronavirus/2019-ncov/if-you-are-sick/).
- Workers will wash hands often with soap and water for at least 20 seconds. If soap and water are not available, hand sanitizer with at least 60 percent alcohol will be made available in multiple locations, as needed. Frequent hand-washing is recommended throughout the day (https://www.cdc.gov/handwashing/).
- Workers are to avoid touching eyes, nose, and mouth with unwashed hands.
- Workers who cough or sneeze should cover mouth and nose with a tissue or use the inside of one's elbow.
- Frequently touched objects and surfaces, such as workstations, keyboards, telephones, handrails, and doorknobs, will be cleaned and disinfected. The frequency and scope of the cleaning program for project facilities (office trailers, bathrooms, other buildings, and work areas) will be reviewed and increased as necessary. Cleaning products used will be those recommended by EPA and deemed as effective against the SARS-CoV-2 virus (https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2).
- Workers will avoid using other employees' phones or other work tools and equipment, when possible. If necessary, workers will clean and disinfect them before and after use.

Managing Visitor Access and Movement in Sampling Area

- Only staff directly involved in sample collection or equipment deployment will be permitted within the sampling zone.
- All visitors present outside the collection or deployment area will maintain at least a 6-ft distance from fellow visitors or sampling staff, even after operations are complete.
- Sequential work practices with appropriate physical distancing are to be considered and implemented wherever possible.
- Group meetings are to be minimized whenever possible. Meetings that are conducted are limited to <10 people.

Implementing Environmental Control

- Appropriate disinfectant wipes and cleaners and hand sanitizer will be made available at each job site.
- Sampling staff will clean the sampling zone and surrounding environment to ensure no sampling waste or other trash is left behind. After trash is bagged, staff will sanitize hands and exit the sampled property.

Wearing Face Coverings

The use of face coverings is another line of defense against the spread of COVID-19. On April 3, 2020, the CDC published guidelines for wearing cloth face coverings when physical distancing measures are difficult to maintain in public and work settings (https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/diy-cloth-face-coverings.html). Cloth face coverings may help slow the spread of the SARS-CoV-2 virus by individuals who do not have symptoms of illness but may be infected. The CDC has indicated that asymptomatic individuals are capable of transmitting the virus to others, especially when people are interacting in close physical proximity. Members of the sampling team are required to wear masks while onsite. Wearing a face covering, however, is not a substitute for staying home when ill, practicing good hygiene, and physical distancing whenever practical.

Cloth face coverings include nonsurgical, washable double-layered cloth masks, bandanas, and neck gators and disposable cloth masks. Individuals wearing and handling cloth masks should adhere to the following guidance:

- Wash or sanitize hands before donning or removing the covering.
- Only touch the face covering by the ear loops, ties, or bands.
- Do not put the outer surface against the face.

- Wash or sanitize hands after removing the face covering.
- Throw disposable face coverings in the trash.
- Wash reusable masks per manufacturer instructions.
- Store clean cloth masks in bags or face down on a clean surface.

Cloth masks should be replaced if they become wet in the field or when the field effort is completed.

Other face masks that offer greater protection against viruses may be available for specific field events on a case-by-case basis. An example of this type of field event may involve emergency sampling in areas of significant community-based transmission where physical distancing measures are difficult to maintain. Integral's Corporate Health and Safety Officer will work with the field team lead to identify the best type of face covering for use on the project.

COVID-19 Confirmed Case Response Plan

This section describes the management actions to be taken by field staff under different potential COVID-19 exposure scenarios. Prompt identification and isolation of potentially infectious individuals is critical in the protection of workers and visitors at the worksite.

Any individual who presents with symptoms of COVID-19 is to contact his or her personal healthcare provider. Decisions about COVID-19 confirmatory testing is at the discretion of state and local health departments or clinicians. As indicated on the CDC website, a negative test result does not rule out that an individual will not become sick later. A diagnosis of COVID-19 may not involve testing. Carriers of the virus may also be asymptomatic. As a result, this section does not differentiate between people who may or may not have symptoms.

Exposure Scenarios and Specific Actions

Person-to-person transmission of COVID-19 can occur via primary, secondary, and tertiary exposure pathways:

- Primary exposure—Employee tested positive for the virus.
- Secondary exposure—Employee who within the last 14 days had direct contact with someone outside of the field team who has been diagnosed with COVID-19.
- Tertiary exposure—Employee had direct contact with someone outside of the field team who has been quarantined as a result of close contact within the last 14 days with someone who has been diagnosed with or is being tested for COVID-19.

In the event there is a confirmed case of an employee becoming infected with COVID-19 (primary exposure), the field lead and site safety officer will take the following immediate actions:

- Instruct the employee, if still at the site, to enter home isolation immediately.
- Notify Integral's COVID-19 Response Team immediately.
- Notify those who may have been exposed to the virus based on close prolonged contact with the diagnosed individual, while maintaining confidentiality as required by the Americans with Disabilities Act (ADA).
- Restrict access to areas where the employee worked and mark them as off limits to all site personnel. Areas will be disinfected following CDC guidelines.
- Ask field staff who were in close contact with the individual to self-quarantine for 14 days (see management actions for Secondary Exposure). This scenario may delay the field event.

In the event of secondary exposure, the employee will be sent home immediately to enter a 14-day self-quarantine where the individual will self-monitor. Self-monitoring means the individual will take temperature readings twice daily to monitor for fever and remain alert to cough or difficulty breathing.

- The field lead or site safety officer will notify Integral's COVID-19 Response Team immediately.
- The field team will continue cleaning common touch areas with recommended disinfectants.
- If the employee is confirmed positive, this becomes a primary exposure scenario. Staff who were in close contact will be notified, and procedures for primary exposure will be followed.

In the event of tertiary exposure, communication with the field team is recommended. The individual will be asked to self-monitor.

- The field lead or site safety officer will notify Integral's COVID-19 Response Team immediately.
- The field team will continue cleaning common touch areas with recommended disinfectants.
- If the acquaintance is confirmed to be infected, this becomes a secondary exposure scenario. Steps for secondary exposure will be followed going forward.

All employees need to be vigilant regarding potential exposure and transmission of COVID-19. Curbing this outbreak is considered a team effort as much as the field event is itself.

Discontinuation of Home Isolation

For individuals with symptoms who are confirmed or suspected of having COVID-19, home isolation may be discontinued in accordance with CDC guidelines (https://www.cdc.gov/coronavirus/2019-ncov/if-you-are-sick/).

COVID-19 Field Program Management Plan Acknowledgement

Project Number: ______________________________

Project Name: ______________________________

My signature below certifies that I have read and understand the policies and procedures specified in this COVID-19 Field Management Plan.

Date	Name	Signature	Company

Appendix B

Community Air Monitoring Plan

COMMUNITY AIR MONITORING PLAN

This community air monitoring plan (CAMP) has been prepared by Integral Engineering, P.C. on behalf of Corning Incorporated to detail the dust control and air monitoring procedures to be performed during characterization activities at the Corning Refractories Plant (Refractories), located in Corning, New York. The Refractories property consists of approximately 3.87 acres of land located on the eastern side of the City of Corning, New York, south of Front Street and approximately 350 ft south of the Chemung River. The subject site consists of a ±102,882-ft^2 slab-on-grade structure situated on 3.87 acres of land. The structure comprises 13 interconnected buildings/additions. This CAMP is included as Appendix B, supplementing the P-Site Characterization Work Plan: Corning Refractories Plant (Work Plan).

As described in the Work Plan, subsurface characterization activities are planned at the Refractories. These activities may include sampling of soil and groundwater.

METHODS AND MITIGATION

Perimeter air monitoring generally will be conducted at two stations. One upwind and one downwind station will be established in the vicinity of characterization activities that have the potential to disturb and mobilize soil particulate matter and/or volatile organic compounds (VOCs). These are theoretical "stations" and may either be personnel with a mobile dust monitor and photoionization detector (PID) collecting data at a specified interval, or a semi-permanent but mobile fixture. The upwind and downwind locations will be modified as conditions warrant and placed in an area representative of air quality conditions. The perimeter air monitoring will be conducted in addition to the personal air monitoring described in the Section 5 of the Health and Safety Plan, included as Appendix A to the Work Plan.

Work will be generally conducted from Monday through Friday during business hours, 8 a.m. to 6 p.m. No visible dust will leave the work area, and the measures described below will ensure the safety of personnel and the community.

Water may be used for dust suppression where circumstances arise warranting such measures. Windy conditions, increased vehicle traffic, and subsurface characterization activities can cause increased suspension of particulate matter. Temporary stop work orders may be issued if conditions warrant.

Particulate monitoring is the measurement of fine particles that can include dust, smoke, and other particulate matter with a diameter less than or equal to 10 microns, also known as PM10. Air monitoring will be performed during activities that have the potential to disturb the subsurface and suspend particles. To accurately measure PM10, a device such as miniRAM™, dataRAM™, sidePAK™, or equivalent will be used. The selected equipment will perform within the range of specifications outlined in the New York State Department of Environmental Conservation (NYSDEC) DER-10 *Technical Guidance for Site Investigation and Remediation* (NYSDEC 2010)[1].

CALIBRATION

Calibration of monitoring equipment will be performed on a daily basis prior to the start of intrusive work activities. Calibration data will be documented appropriately.

DOCUMENTATION

Data collection during monitoring will be used to provide personnel with real-time information about air quality and enable prompt mitigation actions to be undertaken if certain action levels are exceeded (outlined below in the "Action Levels" section). Data will be logged on appropriate field forms approximately every 30 minutes, or more frequently as conditions warrant during the monitoring program. Data will be provided to the regulatory agency either weekly or daily in the event action levels are exceeded and protective actions undertaken. Exceedances will be reported to NYSDEC and the New York State Department of Health (NYSDOH) within 12 hours, along with the reason for the exceedance, what was done to correct it, and whether the correction action was effective. Reporting associated with daily CAMP activities will be conducted in accordance with NYSDEC DER-10 *Technical Guidance for Site Investigation and Remediation* (NYSDEC 2010).

ACTION LEVELS

The following action levels are based on NYSDEC recommendations. Any exceedance of these action levels is an indicator that excessive PM10 or VOC migration may be taking place and will prompt immediate mitigation activities.

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[1] NYSDEC. 2010. DER-10, Technical Guidance for Site Investigation and Remediation. New York State Department of Environmental Conservation, Division of Environmental Remediation. Updated May 3, 2010.

Concentration as Measured at Downwind Location	Duration	Action
100 µg/m^3 greater than background (upwind location) (PM10)	15 minutes sustained	Implement engineering control(s).
150 µg/m^3 greater than background (upwind location) (PM10)	Instantaneous	Stop work and reevaluate engineering control(s).
5 ppm above background (VOCs)	15-minute average	Halt activities and continue monitoring. Resume activities if level drops.
Greater than 5 but less than 25 ppm above background (VOCs)	15-minute average	Halt activities, identify vapor source, take corrective actions, and continue monitoring. Resume activities when level drops.
Greater than 25 ppm above background (VOCs)	Instantaneous	Shutdown work.

Notes:
ppm = parts per million

The safety officer and other personnel have the ability to stop work at any time if conditions warrant such action. The corporate health and safety manager and/or project manager may be consulted for feedback on mitigation actions as appropriate. The corporate health and safety manager and project manager will be informed of adverse conditions where mitigation is necessary in order to provide feedback and improvement to processes.

Appendix C

Quality Assurance Project Plan

P-SITE CHARACTERIZATION WORK PLAN: CORNING REFRACTORIES PLANT

NYSDEC Project ID 851048, 1 Front Street, Corning, New York

Quality Assurance Project Plan

Prepared for
Corning Incorporated
Corning, NY

Prepared by

integral engineering p.c.
31 West 34th Street
Suite 7196
New York, NY 10001

April 14, 2022

Affiliated with Integral Consulting Inc.

CONTENTS

LIST OF TABLES

ACRONYMS AND ABBREVIATIONS

ASP	Analytical Services Protocol
DQO	data quality objective
DUSR	data usability summary report
EDD	electronic data deliverable
ELAP	Environmental Laboratory Accreditation Program
EPA	U.S. Environmental Protection Agency
HASP	health and safety plan
Integral	Integral Engineering, P.C.
LC-MS/MS	liquid chromatography-tandem mass spectrometry
LIMS	Laboratory Information Management System
MDL	method detection limit
MRL	method reporting limit
NYSDEC	New York State Department of Environmental Conservation
PARCC	precision, accuracy, representativeness, completeness, and comparability
PFAS	per- and polyfluoroalkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
PTFE	polytetrafluoroethylene
QA/QC	quality assurance and quality control
QAPP	quality assurance project plan
Refractories	Corning Refractories Plant
RPD	relative percent difference
SOP	standard operating procedure
SVOC	semivolatile organic compound
TAL	Target Analyte List
VOC	volatile organic compound
Work Plan	P-Site Characterization Work Plan: Corning Refractories Plant

SECTION A: PROJECT MANAGEMENT

A1 INTRODUCTION

This quality assurance project plan (QAPP) describes quality assurance and quality control (QA/QC) procedures that will be used to ensure that the Corning Refractories Plant (Refractories) characterization data results are defensible and usable for their intended purpose. The purpose of the QAPP is to provide confidence in the project data results through a system of quality control performance checks of field data entry, laboratory analysis and laboratory data reporting, and appropriate corrective actions to achieve compliance with established performance and data quality criteria. This QAPP is Appendix C to the P-Site Characterization Work Plan: Corning Refractories Plant (Work Plan). This QAPP has been prepared in accordance with U.S. Environmental Protection Agency (EPA) guidance for the preparation of QAPPs (USEPA 2002a).

A1.1 Project Scope and Goals

The goal of the characterization activities detailed in the Work Plan is to assess whether hazardous substances are present on the Refractories site, and, if present, to determine the nature and extent. The Refractories property consists of approximately 3.87 acres of land located on the eastern side of the City of Corning, New York, south of Front Street and approximately 350 ft south of the Chemung River. The subject site consists of a ±102,882-ft^2 slab-on-grade structure situated on 3.87 acres of land. The structure comprises 13 interconnected buildings/additions.

The Work Plan includes descriptions of various characterization activities, including but not limited to soil borings, soil sampling, groundwater sampling, equipment decontamination, investigation-derived waste management, and reporting.

Additional details, including figures of proposed sampling locations, are included in the Work Plan.

A1.2 Project Data Quality Objectives

This QAPP documents the QA/QC measures that will be followed during the implementation of the Work Plan activities. The objective of the data collection is to support the characterization activities at the Refractories. The overall quality objective for the Refractories characterization is to develop and implement procedures that will ensure the collection of representative data of known and acceptable quality.

The QAPP provides a description of the analytical and reporting procedures that may be used by Integral Engineering, P.C. (Integral) and its subcontractors within the Refractories for the following activities. Descriptions of field procedures are detailed in in the Work Plan:

- Shallow soil sampling
- Soil borings
- Groundwater sampling
- Laboratory analysis
- Report preparation.

The purpose of the QA/QC program is to produce analytical measurement data of known quality that satisfy the project data quality objectives (DQOs). DQOs are data quality planning and evaluation tools for sampling and analysis activities. A consistent and comprehensive approach for developing and using these tools is necessary to ensure that enough data are produced and they are of sufficient quality to make decisions for the project. The DQOs process is described in the subsequent subsection.

A1.2.1 Data Quality Objectives

The DQO process and quality assurance objectives for the project are presented in this section. The QA/QC procedures were developed to ensure that the analytical data collected through implementation of the Work Plan are of known and acceptable quality.

Primary DQOs will include completion of the Refractories characterization activities to adequately confirm the presence or absence of constituents of concern at concentrations greater than reasonable quantitation limits, and evaluate the chemical analysis results against background levels and against applicable regulatory criteria or guidance. Soil analysis results will be compared to 6 NYCRR Table 375-6.8(b) and groundwater analysis results will be compared to New York State Ambient Water Quality Standards and Guidance Values.

To achieve the DQOs, quality assurance measures will be implemented throughout the project to ensure that the data meet selectivity, precision, accuracy/bias, representativeness, comparability, and completeness criteria. This will be accomplished through the collection of field quality control samples, including field replicate samples, and the calibration of field and laboratory equipment.

The DQOs will be accomplished by ensuring the following analytical and quality assurance objectives are met:

- Standard methods to prepare and analyze samples are used
- Usable and defensible analytical results are obtained

- Procedures for the ongoing control and evaluation of measurement data quality are in place
- Data quality measures in terms of selectivity, precision, accuracy, completeness, representativeness, and comparability are assessed to determine whether the data meet the project objectives and can be used for their intended purpose.

The Integral quality assurance chemist will track data, from collection of samples through login at the laboratory to delivery by results report and electronic data deliverable (EDD); oversee data usability summary report (DUSR) preparation; and coordinate laboratory corrective actions.

The following sections discuss the steps to be taken to ensure the quality of data acquired during the work. The representativeness of the measurement data is a function of the sampling strategy and will be achieved by following the procedures in the Work Plan. The quality of the analytical results is a function of the analytical system and will be achieved by using standard methods and the quality control practices discussed in this section. The basis for assessing selectivity, precision, accuracy, representativeness, comparability, and completeness is discussed in the laboratory quality assurance manual (Attachment 1 of this QAPP).

A2 PROJECT ORGANIZATION

This section presents the organizational structure for the field activities, including task management, oversight, field and laboratory management, data management, and health and safety. Task roles and associated responsibilities are described below.

A2.1 Key Task Personnel

- Integral Principal-in-Charge—Marcia Greenblatt is the principal-in-charge and has overall responsibility for senior technical review and oversight of the field activities, ensuring appropriate design, and implementation of the characterization to meet feasibility project objectives.
- Integral Project Manager—Jeff Marsh is the project manager. Mr. Marsh will work closely with all other team members and serve as the primary point of contact to ensure coordination between the New York State Department of Environmental Conservation (NYSDEC) and the Integral team.
- Integral Field Manager—The field manager, TBD, is responsible for overseeing the planning and coordination of the field activities and for all aspects of sample collection activities to ensure that appropriate sampling, quality assurance, and documentation procedures are used. Field team leaders will be assigned for individual tasks, as appropriate. The field manager will report to Integral's project manager.

- Integral Quality Assurance Chemist—Glenn Esler is responsible for providing overall quality assurance support for the field activities and for coordinating with the analytical lab(s) to ensure that QAPP requirements are followed. Mr. Esler is responsible for coordinating the validation of laboratory data, communicating data quality issues to the data users, and working with data users and the project manager to address any data limitations. Mr. Esler is also responsible for coordinating with the laboratory and tracking the laboratory's progress, verifying that the laboratory has implemented the requirements of the QAPP, addressing quality assurance issues related to the laboratory analyses, ensuring that laboratory capacity is sufficient to undertake the required analyses in a timely manner, and addressing scheduling issues related to laboratory analyses. Mr. Esler will report directly to Integral's project manager, and will work closely with Integral's field manager to ensure that the objectives of the QAPP are met. Resumes of Integral data validation personnel are included as Attachment 2.
- Integral Database Administrator—The database administrator, TBD, will have primary responsibility for data management and database maintenance and development. The database administrator will be responsible for overseeing and/or conducting the following activities: establishing storage formats and procedures appropriate for all data collected during the field activities; working with the field crew, laboratory, and data validator to ensure all data entries are correct and complete and are delivered in the correct format; maintaining the integrity and completeness of the database; and providing data summaries to data users in the required formats for interpretation and reporting. The database administrator will report directly to Integral's project manager and will work closely with the field manager and quality assurance chemist.
- Integral Corporate Health and Safety Manager—Matt Behum is Integral's corporate health and safety manager and will be responsible for oversight of the health and safety program that will be implemented during the field activities.
- Integral Refractories Safety Officer—The Refractories safety officer, TBD, will serve as the point of contact for safety and health concerns and will be responsible for the implementation and compliance of the health and safety plan (HASP) by all Integral staff and subcontractors.
- Eurofins TestAmerica Project Manager—Brian Fischer, Eurofins TestAmerica's project manager, will be responsible for the oversight of all laboratory functions and operations, including coordination with/between Integral and the laboratory quality manager.
- Eurofins TestAmerica Laboratory Quality Manager—The Eurofins TestAmerica laboratory quality manager's, Brad Prinzi, responsibilities include the oversight of the laboratory's quality systems and ensuring that all tasks performed by the laboratory and Eurofins TestAmerica field personnel are conducted in compliance with state, federal, and industry standards, as well as the requirements of this QAPP.

A2.2 Subcontractors

If subcontractors are required, the project manager will coordinate with the subcontractors. The field team manager will direct the subcontractors in the field in accordance with their specific scope of work.

A3 TRAINING AND CERTIFICATION

Integral has assembled a project team with the requisite experience and technical skills to successfully complete the Refractories characterization. All consultant team personnel involved in sample collection have extensive environmental sampling experience. Minimum training and certification requirements for laboratory personnel are described in the laboratory quality assurance manual (Attachment 1 of this QAPP).

Information pertaining to project-specific training and certification, including medical monitoring, the Occupational Safety and Health Administration's Hazardous Waste Operations and Emergency Response standard training, first aid/cardiopulmonary resuscitation, equipment operation, and associated records and documentation, can be found in the HASP. Documentation of training will be maintained in personnel files.

SECTION B: DATA GENERATION AND ACQUISITION

B1 SAMPLING METHODS

Sampling and decontamination methods used to collect samples are described in detail in Section 4 of the Work Plan.

Per- and polyfluoroalkyl substances (PFAS) sampling and analysis procedures will conform to the guidelines provided in *Sampling, Analysis and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) NYSDEC's Part 375 Remedial Programs* (NYSDEC 2021), and 1,4-dioxane sampling and analysis procedures will conform to the guidelines provided in *Sampling for 1,4-Dioxane and PFAS under DEC's Part 375 Remedial Programs* (NYSDEC 2019)[1].

The laboratory holds Environmental Laboratory Accreditation Program (ELAP) certification for perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) in drinking water by EPA Method 537.1 and their standard operating procedure (SOP) for PFAS analysis is included in Attachment 1. Samples will be analyzed for the compounds listed in Table C2-1 by liquid chromatography-tandem mass spectrometry (LC-MS/MS) using methodologies based on EPA Method 537.1. The method detection limits (MDLs) for the PFAS compounds are also included in Table C2-1.

Precautions regarding sampling for PFAS will include the following:

- Use of new clothing or footwear, clothing containing polytetrafluoroethylene (PTFE), or clothing treated with PFAS materials will be avoided.
- Items such as insect repellents, fluorinated hygiene products, waterproof gear, and stain-resistant materials are prohibited in the sampling area.
- Acceptable materials for sampling collection are stainless steel, polyvinyl chloride, silicone, and polypropylene.
- Stainless-steel hand augers or shovels with no coatings are permitted for soil sample collection.
- Soil samples must be mixed in a stainless-steel bowl before being placed in sample containers.
- Teflon™-free sampling equipment must be used.
- Chemical ice bags are prohibited.
- Nitrile gloves must worn at all times.

[1] The 2021 guidelines supersede the 2019 guidelines for PFAS sampling.

- Food is not allowed in the sampling area.

Soil samples will be collected with a cleaned trowel and placed into high-density polyethylene containers. Sampling equipment will be decontaminated in the standard two-step process of washing with detergent (Alconox® or Liquinox®, only) and rinsing with laboratory-certified PFAS-free water. Equipment blank samples will be collected once per day for PFAS and samples will be shipped using only regular (water) ice.

B2 SAMPLE HANDLING AND CUSTODY

The principal documents used to identify samples and document sample possession will be field logbooks and chain-of-custody records. Custody will be documented for all samples at all stages of the analytical or transfer process. Samples are in custody if they are in the view of the field team, stored in a secure place with restricted access, or placed in a container secured with custody seals. A chain-of-custody record will be signed by each person who has custody of the samples and will accompany the samples at all times. Copies of the chain-of-custody will be included in laboratory and QA/QC reports. Additional details regarding chain-of-custody procedures to be followed for this sampling event are provided in SOP AP-03 (Appendix D of the Work Plan).

Upon receipt of samples at the laboratory, the physical integrity of the containers and seals will be checked, and the samples will be inventoried by comparing sample labels to those on the chain-of-custody forms. The laboratory will include a copy of the chain-of-custody and shipping container receipt forms in the final data package. Any breaks in the chain-of-custody or nonconformances will be noted and reported in writing to Integral's quality assurance chemist within 24 hours of receipt of the samples, and Corning Incorporated will be notified. The laboratory quality assurance plan (Attachment 1 of this QAPP) includes procedures used for accepting custody of samples and documenting samples at the laboratory. The laboratory project manager will ensure that a sample-tracking record is maintained that follows each sample through all stages of sample processing at the laboratory. A copy of a Eurofins TestAmerica chain-of-custody form is found in Attachment 3 of the QAPP.

All samples will be stored in accordance with Table C2-2. A subsample of each sample will be archived frozen for possible future analysis. The laboratory will maintain chain-of-custody documentation and documentation of proper storage conditions for the entire time that the samples are in its possession.

The laboratory will not dispose of the samples for any of the phases of this project until authorized to do so by Integral's quality assurance chemist. After authorization is obtained, the laboratory will dispose of samples, as appropriate, based on matrix, analytical results, and information received from the client.

B3 ANALYTICAL METHODS

Samples to be collected for the Refractories characterization include surface soil, shallow soil, subsurface soil, and groundwater. The specific analyses to be measured, analytical methods, and holding times are presented in Table C2-2. The following is a summary of laboratory analyses for each matrix to be sampled:

- **Surface, shallow, and subsurface soil samples**—Target Analyte List (TAL) metals, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs). 1,4-dioxane and PFAS for 20 percent of samples.
- **Groundwater**—TAL metals (total and dissolved), VOCs, SVOCs, and one groundwater sample will be analyzed for PFAS, and 1,4-dioxane. The following field parameters will also be measured: temperature, pH, dissolved oxygen, and specific conductance.

Eurofins TestAmerica Buffalo, New York will be responsible for performing the majority of analyses. If necessary, other certified laboratories in the Eurofins TestAmerica network may be used to meet analytical capacity and project objectives.

B4 QUALITY CONTROL

Processes established to ensure quality both in the field and in the laboratory are described below.

B4.1 Field Quality Control Samples

Field quality control samples will be used to assess sample variability and evaluate potential sources of contamination. The types of quality control samples that will be collected for the field activities are described in this section. If quality control problems are encountered, they will be brought to the attention of Integral's quality assurance chemist. Corrective actions, if appropriate, will be implemented to meet the project's data quality indicators.

Field quality control samples for soil and groundwater will be field duplicate samples, field blanks, trip blanks, equipment rinsate blanks, and temperature blanks. The frequency of collection of the field quality control samples is outlined in Table C2-3. The following quality control samples will be collected in the field and analyzed by the analytical laboratory:

- Field duplicate samples will be collected and analyzed to assess the variability associated with sample processing and laboratory variability. Blind field split samples will be collected at a minimum frequency of 1 field split sample per 20 soil and groundwater samples. Samples will be assigned unique numbers and will not be identified as field splits to the laboratory.

- Equipment rinsate blanks will be collected to help identify possible contamination from the sampling environment or from the sampling equipment. All equipment rinsate blank samples will be clearly noted in the field logbook (e.g., sample identifier, equipment type, date and time of collection, and analysis).
  - A minimum of one equipment blank (rinsate) will be collected for each kind of sampling equipment used for chemical analyses. A rinsate blank will be collected at every 20 locations per type of equipment used. For PFAS, an equipment blank will be collected daily, with a minimum of 1 per 20 samples. One equipment rinsate blank will be prepared for each individual analysis.
- Deionized water (field) blanks are prepared in the field to evaluate potential background concentrations present in laboratory-grade deionized water used for the equipment rinsate blank. Field blanks will be collected at a minimum frequency of one per day.
- Trip blanks will be used to monitor cross-contamination during sample shipment and storage. Trip blanks will be used only for aqueous samples that will be analyzed for VOCs. Trip blanks will consist of laboratory-prepared volatile organic analysis vials filled with distilled/deionized water. Three trip blanks will be transported unopened to and from the field in the cooler with the VOC sample containers, and will be included in the sample cooler shipped to the testing laboratory.
- Temperature blanks will be used by the laboratory to verify the temperature of the samples upon receipt at the testing laboratory. Temperature blanks will be prepared at the testing laboratory by pouring distilled/deionized water into a vial and tightly closing the lid. The blanks will be transported unopened to and from the field in the cooler with the sample containers. A temperature blank will be included with each sample cooler shipped to the testing laboratory.

B4.2 Laboratory Quality Control

Extensive and detailed requirements for laboratory quality control procedures are provided in the EPA method protocols that will be used for this project (Table C2-2). Every method protocol includes descriptions of quality control procedures, and many incorporate additional quality control requirements by reference to separate quality control chapters in the protocols. Quality control requirements include control limits and requirements for corrective action in many cases. Quality control procedures will be completed by the laboratory, as required in each protocol and as indicated in this QAPP.

For chemical analyses, the frequency of analysis for laboratory control samples, matrix spike samples, matrix spike duplicates or laboratory duplicates, and method blanks will be 1 for every 20 samples or 1 per extraction batch, whichever is more frequent. Internal standards and/or surrogates will be added to every field sample and quality control sample, as required by the analytical methods. Calibration procedures will be completed at the frequency specified in each method description. As required for EPA SW-846 methods, performance-based control limits have been established by the laboratory (USEPA 2014). These and all other control limits specified in the method descriptions will be used by the laboratory to establish the acceptability of the data or the need for reanalysis of the samples.

B5 DATA QUALITY INDICATORS

Data quality indicators, such as the precision, accuracy, representativeness, completeness, and comparability (PARCC) parameters (USEPA 2002a), and analytical sensitivity will be used to assess conformance of data with quality control criteria. PARCC parameters are commonly used to assess the quality of environmental data.

B5.1 Precision

Precision reflects the reproducibility between individual measurements of the same property. Precision will be evaluated using the results of matrix spike duplicates, laboratory duplicates, and field duplicates. Precision is expressed in terms of the relative standard deviation for three or more measurements and the relative percent difference (RPD) for two measurements. The following equation is used to calculate the RPD between measurements:

$$\text{RPD} = \frac{|C_1 - C_2|}{\frac{(C_1 + C_2)}{2}} \times 100$$

Where:

RPD	=	relative percent difference
C_1	=	first measurement
C_2	=	second measurement

The relative standard deviation is the ratio of the standard deviation of three or more measurements to the average of the measurements, expressed as a percentage.

B5.2 Accuracy

Accuracy or bias represents the degree to which a measured concentration conforms to the reference value. The results for matrix spikes, laboratory control samples, field blanks, and method blanks will be reviewed to evaluate bias of the data. The following calculation is used to determine percent recovery for a matrix spike sample:

$$\%\text{R} = \frac{M - U}{C} \times 100$$

Where:

%R	=	percent recovery
M	=	measured concentration in the spiked sample
U	=	measured concentration in the unspiked sample
C	=	concentration of the added spike

The following calculation is used to determine percent recovery for a laboratory control sample or reference material:

$$\%R = \frac{M}{C} \times 100$$

Where:

%R	=	percent recovery
M	=	measured concentration in the reference material
C	=	established reference concentration

Results for field and method blanks can reflect systematic bias that results from contamination of samples during collection or analysis. Any analytes detected in field or method blanks will be evaluated as potential indicators of bias.

B5.3 Representativeness

Representativeness is the degree to which data represent a characteristic of an environmental condition. In the field, representativeness will be addressed primarily in the sampling design by the selection of sampling stations and sample collection procedures. In the laboratories, representativeness will be ensured by the proper handling and storage of samples and initiation of analysis within holding times.

B5.4 Completeness

Completeness will be calculated as the ratio of usable data (i.e., unqualified data and J-qualified data) to generated data, expressed as a percentage. Completeness will be calculated for each suite of analytes for each sample type and sampling event. The target for completeness for all components of this project is 90 to 100 percent.

B5.5 Comparability

Comparability is the qualitative similarity of one data set to another (i.e., the extent to which different data sets can be combined for use). Comparability will be addressed through the use of field and laboratory methods that are consistent with methods and procedures recommended by EPA, and by statistical evaluation of the data.

Additional laboratory quality control procedures will be evaluated to provide supplementary information regarding overall quality of the data, performance of instruments and measurement systems, and sample-specific matrix effects.

Quality control samples and procedures are specified in each method protocol (Table C2-2). All quality control requirements will be completed by the laboratory as described in the protocols, including the following (as applicable):

- Instrument tuning
- Initial calibration
- Initial calibration verification
- Continuing calibration
- Calibration or instrument blanks
- Method blanks
- Laboratory control samples
- Surrogates
- Internal standards
- Serial dilutions
- Matrix spikes
- Matrix spike duplicates or laboratory duplicates.

To alert the data user to possible bias or imprecision, data qualifiers will be applied to reported analyte concentrations when associated quality control samples or procedures do not meet control limits. Laboratory control limits for the methods that will be used for this project are provided in the laboratory's quality assurance plan (to be provided under separate cover, as requested).

MDLs are statistically derived and reflect the minimum measured concentration at which an analyte can be detected in a clean matrix with 99 percent confidence that a false positive result has not been reported (i.e., that the measured concentration is distinguishable from method blank results). Method reporting limits (MRLs) will be established at levels above the MDLs for the project analytes. These values are based on the laboratory's experience analyzing environmental samples and reflect the typical sensitivity obtained by the analytical system. The concentration of the lowest standard in the initial calibration curve for each analysis is at the level of the MRL. This allows reliable quantification of concentrations to the MRL. Test methods will be in accordance with the 2017 Clean Water Act Method Update Rule, effective September 27, 2017, which contains revised MDL definitions.

Analyte concentrations for this project will be reported to the MDL. Analytes detected at concentrations between the MRL and the MDL will be reported with a "J" qualifier to indicate that the value is an estimate (i.e., the analyte concentration is below the calibration range). Non-detects will be reported at the MRL. The MDL will be adjusted by the laboratory, as necessary, to reflect sample dilution or matrix interference. Laboratory MRLs and MDLs are found in Table C2-1 and laboratory control sample limits are shown in Table C2-4.

B6 INSTRUMENT/EQUIPMENT TESTING, INSPECTION, AND MAINTENANCE

Analytical instrument testing, inspection, maintenance, setup, and calibration will be conducted by the laboratory in accordance with the requirements identified in the laboratory SOPs and manufacturer instructions. In addition, each of the specified analytical methods provides protocols for proper instrument setup and tuning, and critical operating parameters. Instrument maintenance and repair will be documented in the maintenance log or record books.

Maintenance and calibration of the instruments to be used for field parameter measurements will be completed, as described in the manufacturers' instructions and the SOPs for their use (to be provided under separate cover, as requested).

B7 INSTRUMENT/EQUIPMENT CALIBRATION AND FREQUENCY OF CALIBRATION

Laboratory instruments will be properly calibrated, and the calibration will be verified with appropriate check standards and calibration blanks for each parameter before beginning each analysis. Instrument calibration procedures and schedules will conform to analytical protocol requirements and descriptions provided in the laboratory's quality assurance plan.

All calibration standards will be obtained from either the EPA repository or a commercial vendor, and the laboratory will maintain traceability back to the National Institute of Standards and Technology. Stock standards will be used to make intermediate standards and calibration standards. Special attention will be given to expiration dating, proper labeling, proper refrigeration, and prevention of contamination. Documentation relating to the receipt, mixing, and use of standards will be recorded in a laboratory logbook. All calibration and spiking standards will be checked against standards from another source.

B8 INSPECTION/ACCEPTANCE OF SUPPLIES AND CONSUMABLES

The quality of supplies and consumables used during sample collection and laboratory analysis can affect the quality of the project data. All equipment that comes into contact with the samples and extracts must be sufficiently clean to prevent detectable contamination, and the analyte concentrations must be accurate in all standards used for calibration and quality control purposes.

The quality of laboratory water used for decontamination will be documented at the laboratory. Certifiably clean and documented sample containers will be provided by the laboratory. All containers will be visually inspected prior to use by field staff, and any suspect containers will be discarded.

Reagents of appropriate purity and suitably cleaned laboratory equipment will also be used for all stages of laboratory analyses. Details for acceptance requirements for supplies and consumables at the laboratory are provided in the quality assurance plan (Attachment 1 of this QAPP). All supplies will be obtained from reputable suppliers with appropriate documentation or certification. Supplies will be inspected to confirm that they meet use requirements, and certification records will be retained by Integral (for supplies used in the field) or the laboratory.

B9 NON-DIRECT MEASUREMENTS

In order to inform and support the field sampling plan approach and methodology, a records review and preliminary review of historical aerial photos have been conducted. Existing chemical data from previous samples collected by NYSDEC were also used to design this characterization. Historical data were not reviewed for quality assurance.

B10 DATA MANAGEMENT

Data for this project will be generated in the field and at the laboratory. The final repository for all sample information will be a project database. Procedures to be used to transfer data from the point of generation to the project database are described in this section.

B10.1 Field Data

Data that are generated during sample collection will be manually entered into the field logbook and field sampling forms. Additional details regarding field documentation procedures to be followed for this sampling event are provided in SOP AP-02 (Appendix D of the Work Plan). Data from these sources will be entered into the project database directly from the field logbook and field sampling forms. These data include station location coordinates, station names, sampling dates, sample identification codes, additional station and sample information (e.g., sample type, field duplicate number), and results. All entries will be reviewed for accuracy and completeness by a second individual, and any errors will be corrected before the data are approved for release to data users.

B10.2 Laboratory Data

Laboratory data deliverables will consist of analytical data in tabulated forms as well as the complete laboratory data deliverable package. Eurofins TestAmerica will produce laboratory data packages that meet the requirements of NYSDEC Analytical Services Protocol (ASP) Category B (see DER-10 Appendix 2B Section 1.0b; NYSEDC 2010).

In addition, Eurofins TestAmerica will provide an EDD that complies with NYSDEC's Electronic Warehouse Standards for all samples, with quality control sample data to be utilized during the data review/validation activities. The EDD with validated data will be provided to NYSDEC.

A variety of manually entered and electronic instrument data are generated at the laboratory. Data are manually entered into:

- Standard logbooks
- Storage temperature logs
- Balance calibration logs
- Instrument logs
- Sample preparation and analysis worksheets
- Maintenance logs
- Individual laboratory notebooks
- Tables of results for conventional analyses (i.e., total solids).

The Laboratory Information Management System (LIMS) is the central data management tool for the laboratory data. All manual data entry into the LIMS is reviewed at the laboratory. All data collected from each laboratory instrument, either manually or electronically, are reviewed and confirmed by analysts before reporting. The LIMS is used for every aspect of sample processing, including sample log-in and tracking, instrument data storage and processing, generation of data reports for sample and quality control results, and preparation of EDDs.

Laboratory data will be entered directly into the project database from the EDD. A database printout will be used to verify 10 percent of the database entries against the laboratory data packages.

SECTION C: ASSESSMENT AND OVERSIGHT

A formal chain of communication has been established for this project to optimize the flow of information and to keep the management team apprised of activities and events. The field team leaders and the chemical laboratory will stay in close verbal contact with the Integral project manager and quality assurance chemist, respectively, during all phases of the project. This level of communication will serve to keep the management team appraised of activities and events, and will allow for informal but continuous project oversight.

Assessment activities will include readiness reviews prior to sampling and prior to release of the final data to the data users, and internal review while work is in progress. An informal technical systems audit may be conducted if problems are encountered during any phase of this project.

Readiness reviews are conducted to ensure that all necessary preparations have been made for efficient and effective completion of each phase of project work. The first readiness review will be conducted prior to field sampling. The field coordinator will verify that all field equipment is ready for transfer to the Refractories. The field coordinator will also verify that the field team and any subcontractors have been scheduled and fully briefed on field methods and objectives, and that the contracts for the subcontractors have been signed by both parties. Any deficiencies noted during this readiness review will be corrected prior to initiation of sampling activities.

The second readiness review will be completed before final data are released for use. The database administrator (or designee) will verify that all results have been received from the laboratory, data validation and data quality assessments have been completed for all of the data, and that data qualifiers have been entered into the database and verified. Any deficiencies noted during this review will be corrected by the data manager (or designee) or the Integral quality assurance chemist (or designee). All data included in the data reports will have been verified and validated. No report will be prepared in conjunction with the readiness reviews. However, the project manager and the data users will be notified when the data are ready for use.

Technical review of intermediate and final work products generated for this project will be completed throughout the course of all sampling, laboratory, data validation, data management, and data interpretation activities to ensure that every phase of work is accurate and complete and follows the quality assurance procedures outlined in this QAPP. Any problems that are encountered will be resolved between the reviewer and the person completing the work. Any problems that cannot be easily resolved or that affect the final quality of the work product will be brought to the attention of the Integral project manager. NYSDEC will be notified of any problems that may affect the final outcome of the project.

The laboratory has implemented a review system that serves as a formal surveillance mechanism for all laboratory activities. Each phase of work is reviewed by a supervisor before it is approved for release. Details are provided in the laboratory's quality assurance manual (Attachment 1 of this QAPP).

Technical system audits may be conducted if serious problems are encountered during sampling or analysis operations. If completed, these audits will be conducted by the Integral quality assurance chemist or his/her designee or by the laboratory's quality assurance manager. These audits may consist of on-location reviews of any phase of field or laboratory activities or data management. Results of any audits will be provided in the final data report.

Corrective actions will be required if deviations from the methods or quality assurance requirements established in this QAPP are encountered. When a nonconformance is identified, corrective action will be taken immediately, if possible. The project manager will be contacted and, if necessary, will provide assistance in resolving the issue. A formal corrective action plan is not required for this project. However, any nonconformance issue that ultimately affects the quality of the data or results in a change of scope in the work described in the QAPP will be documented in the field log or in a memorandum to the project manager. This documentation will serve as a corrective action report. A description of the nonconformance issue, the attempted resolution, and any effects on data quality or usability will be provided in the appropriate data report.

The laboratory has implemented a routine system of reporting nonconformance issues and their resolution. These procedures are described in the laboratory's quality assurance manual (Attachment 1 of this QAPP). Laboratory nonconformance issues will also be described in the data report if they affect the quality of the project data.

SECTION D: DATA VALIDATION AND USABILITY

D1 DATA VALIDATION AND USABILITY

Data generated in the field and at the laboratory will be verified and validated according to criteria and procedures described in this section. Data quality and usability will be evaluated, and a discussion will be included in a DUSR. The data validation reports will summarize all significant data quality issues for the sampling event and will be attached to the project characterization report.

D1.1 Data Review, Verification, and Validation

Field and laboratory data for this project will undergo a formal verification and validation process. All entries into the database will be verified. All errors found during the verification of field data, laboratory data, and the database will be corrected prior to release of the final data.

Data verification and validation of laboratory data will be performed in accordance with DER-10 Appendix 2B, EPA *Guidance on Environmental Data Verification and Validation* (USEPA 2002b), EPA *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (USEPA 2009), and EPA inorganic and organic data validation methods, using USEPA Region 2 SOP modifications (USEPA 2017a,b).

Laboratory control limits will be used during data validation to assess laboratory control samples, matrix spike samples, and matrix spike or laboratory duplicates. Data may be qualified as estimated if control limits for any other quality control sample or procedure do not meet laboratory control limits.

Results for field duplicates will be evaluated using a target control limit of 50 percent. Data will not be qualified as estimated if the target control limit is exceeded, but RPD results will be tabulated, and any exceedances will be discussed in the data report. Equipment and field blanks will be evaluated and data qualifiers will be applied in the same manner as method blanks, as described in the EPA functional guidelines and Region 2 SOP modifications for data review (USEPA 2017a,b). Sample preparation blanks will be reviewed and qualified in accordance with the EPA functional guidelines and Region 2 SOP modifications for data review (USEPA 2017a,b).

Data will be rejected if control limits for acceptance of data are not met, as described in the EPA functional guidelines and Region 2 SOP modifications for data review (USEPA 2017a,b).

D1.2 Verification and Validation Methods

Field data will be verified during preparation of samples and chain-of-custody forms. Field data and chain-of-custody forms will be reviewed by the field coordinator on a daily basis and/or after the field effort is complete. After field data are entered into the project database, 100-percent verification of the entries will be completed to ensure the accuracy and completeness of the database. Any discrepancies will be resolved before the final database is released for use.

The accuracy and completion of laboratory entries to the database will be verified at the laboratory when the EDDs are prepared and again as part of data validation. Ten percent of entries to the database from laboratory EDDs will be checked against laboratory data report packages. In addition to verification of field and laboratory data and information, data qualifier entries into the database will be verified. Any discrepancies will be resolved before the final database is released for use.

D1.3 Reconciliation with User Requirements

The goal of data validation is to determine the quality of each data point and to identify data points that do not meet the project criteria. Nonconforming data may be qualified as estimated, or rejected as unusable, during data validation if criteria for data quality are not met. An explanation of the rejected data will be included in the DUSR. Rejected data will not be used for any purpose. An explanation of the rejected data will be included in the DUSR, as applicable.

Data qualified as estimated will be appropriately qualified in the final project database. These data may be less precise or less accurate than unqualified data. Rejected data will not be used for any purpose. The data users, in cooperation with the Integral project manager and quality assurance chemist, are responsible for assessing the effect of the inaccuracy or imprecision of the qualified data on statistical procedures and other data uses for this characterization. The data quality discussion in the DUSR will include available information regarding the direction or magnitude of bias or the degree of imprecision for qualified data to facilitate the assessment of data usability and will include an explanation of any rejected data. The DUSR and characterization report will also include a discussion of data limitations and their effect on data interpretation activities.

D2 DATA REPORTING

The DUSR will be prepared in accordance with NYSDEC DER-10 Appendix 2B. The DUSR will provide the assessment included in the initial data review discussed above, with further related QA/QC information consideration, enabling full evaluation of the analytical data's usability and quality.

Final and validated/reviewed analytical data, including applicable qualifiers, will be summarized in tables for associated project characterization summary reports.

SECTION E: REFERENCES

NYSDEC. 2010. DER-10, Technical Guidance for Site Investigation and Remediation. New York State Department of Environmental Conservation, Division of Environmental Remediation. Updated May 3, 2010.

NYSDEC. 2019. Sampling for 1,4-Dioxane and PFAS under DEC's Part 375 Remedial Programs. New York State Department of Environmental Conservation. June 2019.

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USEPA. 2002b. Guidance on environmental data verification and validation. EPA AQ/G-8. U.S. Environmental Protection Agency, Office of Environmental Information, Washington, DC.

USEPA. 2009. Guidance for labeling externally validated laboratory analytical data for Superfund use. USEPA-540-R-08-005. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, DC.

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USEPA. 2017a. National functional guidelines for inorganic superfund methods data review (using USEPA Region 2 SOP modifications). EPA-540-R-2017-001. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation, Washington, DC.

USEPA. 2017b. National functional guidelines for organic superfund methods data review (using USEPA Region 2 SOP modifications). EPA-540-R-2017-002. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation, Washington, DC.

Tables

Table C2-1. Analytes, Method Reporting Limits, and Method Detection Limits[a]

Analyte	Analytical Method	Soil MDL	Soil MRL	Water MDL	Water MRL
TAL Metals		**mg/kg**		**mg/L**	
Aluminum	SW846 6010C	4.4	10	0.06	0.2
Antimony	SW846 6010C	0.4	15	0.00679	0.02
Arsenic	SW846 6010C	0.4	2	0.00555	0.015
Barium	SW846 6010C	0.11	0.5	0.0007	0.002
Beryllium	SW846 6010C	0.028	0.2	0.0003	0.002
Cadmium	SW846 6010C	0.03	0.2	0.0005	0.002
Calcium	SW846 6010C	3.3	50	0.1	0.5
Chromium	SW846 6010C	0.2	0.5	0.001	0.004
Cobalt	SW846 6010C	0.05	0.5	0.00063	0.004
Copper	SW846 6010C	0.21	1	0.0016	0.01
Iron	SW846 6010C	3.5	10	0.0193	0.05
Lead	SW846 6010C	0.24	1	0.003	0.01
Magnesium	SW846 6010C	0.927	20	0.0434	0.2
Manganese	SW846 6010C	0.032	0.2	0.0004	0.003
Mercury	SW846 7471A(soil)/SW846 7470A (water)	0.0081	0.02	0.00012	0.0002
Nickel	SW846 6010C	0.23	5	0.00126	0.01
Potassium	SW846 6010C	20	30	0.1	0.5
Selenium	SW846 6010C	0.4	4	0.0087	0.025
Silver	SW846 6010C	0.2	0.6	0.0017	0.006
Sodium	SW846 6010C	13	140	0.324	1
Thallium	SW846 6010C	0.3	6	0.0102	0.02
Vanadium	SW846 6010C	0.11	0.5	0.0015	0.005
Zinc	SW846 6010C	0.64	2	0.0015	0.01

Table C2-1. Analytes, Method Reporting Limits, and Method Detection Limits[a]

Analyte	Analytical Method	Soil MDL	Soil MRL	Water MDL	Water MRL
Semivolatile Organic Compounds (SVOCs)		**µg/kg**		**µg/L**	
Atrazine	SW846 8270D	59	170	0.46	5
Biphenyl	SW846 8270D	25	170	0.653	5
bis(2-chloroisopropyl)ether [2,2'-Oxybis(1-chloropropane)]	SW846 8270D	34	170	0.52	5
1,4-Dioxane	SW846 8270D(soil)/SW846 8270D SIM ID (water)	55	100	0.1	0.2
2,4,5-Trichlorophenol	SW846 8270D	46	170	0.48	5
2,4,6-Trichlorophenol	SW846 8270D	34	170	0.61	5
2,4-Dichlorophenol	SW846 8270D	18	170	0.51	5
2,4-Dimethylphenol	SW846 8270D	41	170	0.5	5
2,4-Dinitrophenol	SW846 8270D	784	1660	2.22	10
2,4-Dinitrotoluene	SW846 8270D	35	170	0.447	5
2,6-Dinitrotoluene	SW846 8270D	20	170	0.4	5
2-Chloronaphthalene	SW846 8270D	28	170	0.46	5
2-Chlorophenol	SW846 8270D	31	170	0.53	5
2-Methylphenol	SW846 8270D	20	170	0.4	5
2-Methylnaphthalene	SW846 8270D	34	170	0.6	5
2-Nitroaniline	SW846 8270D	25	330	0.42	10
2-Nitrophenol	SW846 8270D	48	170	0.48	5
3,3'-Dichlorobenzidine	SW846 8270D	200	330	0.4	5
3-Nitroaniline	SW846 8270D	47	330	0.48	10
4,6-Dinitro-2-methylphenol	SW846 8270D	170	330	2.2	10
4-Bromophenyl phenyl ether	SW846 8270D	24	170	0.45	5
4-Chloro-3-methylphenol	SW846 8270D	42	170	0.45	5
4-Chloroaniline	SW846 8270D	42	170	0.59	5
4-Chlorophenyl phenyl ether	SW846 8270D	21	170	0.35	5
4-Methylphenol	SW846 8270D	20	330	0.36	10
4-Nitroaniline	SW846 8270D	89	330	0.25	10
4-Nitrophenol	SW846 8270D	119	330	1.52	10
Acenaphthene	SW846 8270D	25	170	0.41	5
Acenaphthylene	SW846 8270D	22	170	0.38	5
Acetophenone	SW846 8270D	23	170	0.54	5
Anthracene	SW846 8270D	42	170	0.28	5
Atrazine	SW846 8270D	59	170	0.46	5
Benzaldehyde	SW846 8270D	135	170	0.267	5
Benzo[a]anthracene	SW846 8270D	17	170	0.36	5
Benzo[a]pyrene	SW846 8270D	25	170	0.47	5
Benzo[b]fluoranthene	SW846 8270D	27	170	0.34	5

Table C2-1. Analytes, Method Reporting Limits, and Method Detection Limits[a]

		Soil		Water	
Analyte	Analytical Method	MDL	MRL	MDL	MRL
Benzo[g,h,i]perylene	SW846 8270D	18	170	0.35	5
Benzo[k]fluoranthene	SW846 8270D	22	170	0.73	5
Bis(2-chloroethoxy)methane	SW846 8270D	36	170	0.35	5
Bis(2-chloroethyl)ether	SW846 8270D	22	170	0.4	5
Bis(2-ethylhexyl)phthalate	SW846 8270D	58	170	1.8	5
Butylbenzylphthalate	SW846 8270D	28	170	0.42	5
Caprolactam	SW846 8270D	51	170	2.2	5
Carbazole	SW846 8270D	20	170	0.3	5
Chrysene	SW846 8270D	38	170	0.33	5
Dibenz[a,h]anthracene	SW846 8270D	30	170	0.42	5
Di-n-butylphthalate	SW846 8270D	29	170	0.31	5
Di-n-octylphthalate	SW846 8270D	20	170	0.47	5
Dibenzofuran	SW846 8270D	20	170	0.51	10
Diethylphthalate	SW846 8270D	22	170	0.22	5
Dimethylphthalate	SW846 8270D	20	170	0.36	5
Fluoranthene	SW846 8270D	18	170	0.4	5
Fluorene	SW846 8270D	20	170	0.36	5
Hexachlorobenzene	SW846 8270D	23	170	0.51	5
Hexachlorobutadiene	SW846 8270D	25	170	0.68	5
Hexachlorocyclopentadiene	SW846 8270D	23	170	0.59	5
Hexachloroethane	SW846 8270D	22	170	0.59	5
Indeno[1,2,3-cd]pyrene	SW846 8270D	21	170	0.47	5
Isophorone	SW846 8270D	36	170	0.43	5
N-Nitrosodi-n-propylamine	SW846 8270D	29	170	0.54	5
N-Nitrosodiphenylamine	SW846 8270D	138	170	0.51	5
Naphthalene	SW846 8270D	22	170	0.76	5
Nitrobenzene	SW846 8270D	19	170	0.29	5
Pentachlorophenol	SW846 8270D	170	330	2.2	10
Phenanthrene	SW846 8270D	25	170	0.44	5
Phenol	SW846 8270D	26	170	0.39	5
Pyrene	SW846 8270D	20	170	0.34	5

Table C2-1. Analytes, Method Reporting Limits, and Method Detection Limits[a]

Analyte	Analytical Method	Soil		Water	
		MDL	MRL	MDL	MRL
Per- and polyfluoroalkyl substances (PFAS)		**µg/kg**		**ng/L**	
Perfluorobutanoic acid (PFBA)	EPA 537.1M	0.19	0.5	1.13	5
Perfluoropentanoic acid (PFPeA)	EPA 537.1M	0.018	0.2	1.08	2
Perfluorohexanoic acid (PFHxA)	EPA 537.1M	0.024	0.2	0.83	2
Perfluoroheptanoic acid (PFHpA)	EPA 537.1M	0.023	0.2	0.46	2
Perfluorooctanoic acid (PFOA)	EPA 537.1M	0.014	0.2	0.98	2
Perfluorononanoic acid (PFNA)	EPA 537.1M	0.02	0.2	0.58	2
Perfluorodecanoic acid (PFDA)	EPA 537.1M	0.021	0.2	0.46	2
Perfluoroundecanoic acid (PFUnA)	EPA 537.1M	0.024	0.2	0.73	2
Perfluorododecanoic acid (PFDoA)	EPA 537.1M	0.015	0.2	0.46	2
Perfluorotridecanoic acid (PFTriA)	EPA 537.1M	0.013	0.2	0.43	2
Perfluorotetradecanoic acid (PFTeA)	EPA 537.1M	0.019	0.2	0.59	2
Perfluorobutanesulfonic acid (PFBS)	EPA 537.1M	0.0088	0.2	0.63	2
Perfluorohexanesulfonic acid (PFHxS)	EPA 537.1M	0.015	0.2	0.67	2
Perfluoroheptanesulfonic Acid (PFHpS)	EPA 537.1M	0.015	0.2	0.39	2
Perfluorooctanesulfonic acid (PFOS)	EPA 537.1M	0.067	0.2	0.87	2
Perfluorodecanesulfonic acid (PFDS)	EPA 537.1M	0.019	0.2	0.48	2
Perfluorooctanesulfonamide (FOSA)	EPA 537.1M	0.0088	0.2	0.57	2
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	EPA 537.1M	0.034	2	0.79	5
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	EPA 537.1M	0.03	2	0.93	5
6:2 FTS	EPA 537.1M	0.022	2	0.72	5
8:2 FTS	EPA 537.1M	0.029	2	0.66	2

Table C2-1. Analytes, Method Reporting Limits, and Method Detection Limits[a]

		Soil		Water	
Analyte	Analytical Method	MDL	MRL	MDL	MRL

Notes:
-- = not applicable
ASTM = American Society of Testing and Materials
EPA = U.S. Environmental Protection Agency
ID = isotope dilution
MDL = method detection limit
MRL = method reporting limit
SIM = selected ion monitoring
SM = Standard Method
SW846 = Test Methods for Evaluating Solid Waste: Physical/Chemical Methods
TAL = Target Analyte List
TBD = to be determined

[a] The MDLs and MRLs reflect TestAmerica (TA) Buffalo limits at the time the QAPP was prepared. MDLs and MRLs reported may differ from these limits. MDLs and MRLs may change over the span of the project. If other TA network laboratories are utilized for the project; MDLs and MRLs may differ.

Table C2-2. Analytical Methods, Preservation, and Holding Times

Analysis	Analytical Methods	Minimum Volume and Container	Preservation	Hold Time
Soil				
TAL Metals	SW846 6010C/7471A	10 grams, wide-mouth glass w/fluoropolymer resin / Teflon®-lined lid	4±2ºC	180 days
PFAS	EPA Method 537.1 mod.	100 grams, wide-mouth LDPE plastic	4±2ºC	14/28 days[a]
SVOCs inc. 1,4-Dioxane	SW846 8270D	50 grams, wide-mouth glass w/fluoropolymer resin / Teflon®-lined lid	4±2ºC	14/40 days[b]
VOCs	SW846 8260C	5 grams, 40 mL, glass vial w/reagent water and Teflon®-lined septum (Terracore kit)	4±2ºC	14 days if samples received at lab within 48 hours of collection and frozen to <-7ºC. Analysis must be completed within 48 hours if samples are not frozen prior to the expiration of the 48 hour period.
Groundwater/Field Blanks/Trip Blanks[c]				
1,4-Dioxane	SW846 8270D SIM ID	Two 1,000-mL wide-mouth glass w/Teflon®-lined cap	4±2ºC	7/40 days[d]
TAL Metals (total)	SW846 6010C/7470A	250 mL, polyethlyene	4±2ºC, HNO_3 to pH < 2	180 days
TAL Metals (dissolved)	SW846 6010C/7470A	250 mL, polyethlyene	4±2ºC, Field filtered, HNO_3 to pH < 2	180 days
PFAS	EPA Method 537.1 mod.	Two 250-mL HDPE plastic	4±2ºC	14/28 days[a]
SVOCs	SW846 8270D	1,000 mL wide-mouth glass w/Teflon®-lined cap	4±2ºC	7/40 days[d]

Table C2-2. Analytical Methods, Preservation, and Holding Times

Analysis	Analytical Methods	Minimum Volume and Container	Preservation	Hold Time
VOCs	SW846 8260C	Three 40-mL glass vials w/Teflon®-lined septum	4±2ºC, HCl to pH < 2	14 days

Notes:
ASTM = American Society of Testing and Materials
EPA = U.S. Environmental Protection Agency
HDPE = high-density polyethylene
ID = isotope dilution
PFAS = per- and polyfluoroalkyl substances
SIM = selected ion monitoring
SM = Standard Method
SVOC = semivolatile organic compound
SW846 = Test Methods for Evaluating Solid Waste: Physical/Chemical Methods
TAL = target analyte list
TAL Metals = Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Hg, K, Mg, Mn, Na, Ni, Pb, Sb, Se, Tl, V, Zn
VOC = volatile organic compound

[a] 14 days to extraction, 28 days from extraction to analysis
[b] 14 days to extraction, 40 days from extraction to analysis
[c] Trip blanks will only be analyzed for VOCs and are only required if aqueous samples are collected for VOC analysis
[d] 7 days to extraction, 40 days from extraction to analysis
[e] Method modified for soil analysis

Table C2-3. Sampling Locations, Analysis, and Quality Control Samples

						Estimated No. QC Samples				
Sample Type	Estimated No. Samples per Location	Sample Interval	Number of Subareas / Locations	Analysis	No. Primary Samples	Field Duplicate Samples (FDUP)	Equipment Rinsate Blanks (ERB)	Field Blank (FB)	Trip Blanks (TB)	MS/MSD
Surface Soil	One discrete	0-2 in.	7	TAL Metals	7	1	1	1 per day	NA	1
				SVOCs[a]	7		1			
				VOCs[a]	7		1			
				PFAS	2		1			
Shallow Soil	Three discrete	0-6 in. 6-12 in. 12-24 in.	7	TAL Metals	21	2	1	1 per day	NA	1
				SVOCs[a]	21		1			
				VOCs	21		1			
				PFAS	5		1			
Soil Borings	Four discrete[b]	0-6 in. 6-12 in. 12-24 in. 24 in. above WT	6	TAL Metals	24	2	2	1 per day	NA	1
				SVOCs[a]	24		2			
				VOCs	24		1			
				PFAS	5		1			
Groundwater	One discrete	NA	5	TAL Metals (Total)	5	1	1	1 per day	NA	1
				TAL Metals (Dissolved)	5		1		NA	
				SVOCs	5		1		NA	
				VOCs	5		1		1 per day	
				1,4-dioxane	1		1		NA	
				PFAS	1		1		NA	
				DO[c]	5	NA	NA	NA	NA	NA
				pH[c]	5	NA	NA	NA	NA	NA
				Temperature[c]	5	NA	NA	NA	NA	NA
				Specific Conductivity[c]	5	NA	NA	NA	NA	NA

Notes:

DO = dissolved oxygen
MS/MSD = matrix spike/matrix spike duplicate
NA = not applicable
PFAS = per- and polyfluoroalkyl substances
SVOC = semivolatile organic compound
TAL = Target Analyte List
TAL Metals = Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Hg, K, Mg, Mn, Na, Ni, Pb, Sb, Se, Tl, V, Zn
VOC = volatile organic compound
WT = water table

[a] 1,4-dioxane will be reported for 20% of the samples.
[b] The fourth sample will be collected from the interval 24 in. above the water table.
[c] Field parameter

Table C2-4. Laboratory Control Sample Limits

Analysis Group	Method Description	Method Code	Prep Method	Analyte Description	CAS Number	LCS—Low	LCS—High	LCS—RPD %	MS—Low	MS—High	MS—RPD %
Soil Samples	Volatile Organic Compounds by GC/MS	8260C	5035FP_Calc	1,1,1-Trichloroethane	71-55-6	77	121	20	77	121	30
				1,1,1,2-Tetrachloroethane	630-20-6	74	127	20	74	127	30
				1,1,2,2-Tetrachloroethane	79-34-5	80	120	20	80	120	30
				1,1,2-Trichloroethane	79-00-5	78	122	20	78	122	30
				1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	60	140	20	60	140	30
				1,1-Dichloroethane	75-34-3	73	126	20	73	126	30
				1,1-Dichloroethene	75-35-4	59	125	20	59	125	30
				1,2,4-Trichlorobenzene	120-82-1	64	120	20	64	120	30
				1,2-Dibromo-3-Chloropropane	96-12-8	63	124	20	63	124	30
				1,2-Dichlorobenzene	95-50-1	75	120	20	75	120	30
				1,2-Dichloroethane	107-06-2	77	122	20	77	122	30
				1,2-Dichloropropane	78-87-5	75	124	20	75	124	30
				1,2,3-Trimethylbenzene	526-73-8						
				1,3-Dichlorobenzene	541-73-1	74	120	20	74	120	30
				1,4-Dichlorobenzene	106-46-7	73	120	20	73	120	30
				2-Butanone (MEK)	78-93-3	70	134	20	70	134	30
				1,2,4-Trimethylbenzene	95-63-6	74	120	20	74	120	30
				2-Hexanone	591-78-6	59	130	20	59	130	30
				4-Methyl-2-pentanone (MIBK)	108-10-1	65	133	20	65	133	30
				Acetone	67-64-1	61	137	20	61	137	30
				Benzene	71-43-2	79	127	20	79	127	30
				Bromodichloromethane	75-27-4	80	122	20	80	122	30
				Bromoform	75-25-2	68	126	20	68	126	30
				Bromomethane	74-83-9	37	149	20	37	149	30
				Carbon disulfide	75-15-0	64	131	20	64	131	30
				1,3,5-Trimethylbenzene	108-67-8	74	120	20	74	120	30
				Carbon tetrachloride	56-23-5	75	135	20	75	135	30
				Chlorobenzene	108-90-7	76	124	20	76	124	30
				Dibromochloromethane	124-48-1	76	125	20	76	125	30
				Chloroethane	75-00-3	69	135	20	69	135	30
				Chloroform	67-66-3	80	120	20	80	120	30
				Chloromethane	74-87-3	63	127	20	63	127	30
				cis-1,2-Dichloroethene	156-59-2	81	120	20	80	120	30
				cis-1,3-Dichloropropene	10061-01-5	80	120	20	80	120	30
				Cyclohexane	110-82-7	65	120	20	65	120	30
				Dichlorodifluoromethane	75-71-8	57	142	20	57	142	30
				Ethylbenzene	100-41-4	80	120	20	80	120	30
				1,2-Dibromoethane	106-93-4	78	120	20	78	120	30
				Isopropylbenzene	98-82-8	72	120	20	72	120	30
				Methyl acetate	79-20-9	55	136	20	55	136	30
				Methyl tert-butyl ether	1634-04-4	63	125	20	63	125	30
				Methylcyclohexane	108-87-2	60	140	20	60	140	30
				Methylene Chloride	75-09-2	61	127	20	61	127	30
				Styrene	100-42-5	80	120	20	80	120	30
				Tetrachloroethene	127-18-4	74	122	20	74	122	30
				Toluene	108-88-3	74	128	20	74	128	30
				trans-1,2-Dichloroethene	156-60-5	78	126	20	78	126	30
				trans-1,3-Dichloropropene	10061-02-6	73	123	20	73	123	30
				Trichloroethene	79-01-6	77	129	20	77	129	30
				Trichlorofluoromethane	75-69-4	65	146	20	65	146	30
				Vinyl chloride	75-01-4	61	133	20	61	133	30
				Xylenes, Total	1330-20-7						
				m,p-Xylene	179601-23-1	70	130	20	70	130	30
				n-Butylbenzene	104-51-8	70	120	20	70	120	30
				N-Propylbenzene	103-65-1	70	130	20	70	130	30
				o-Xylene	95-47-6	70	130	20	70	130	30
				sec-Butylbenzene	135-98-8	74	120	20	74	120	30

Table C2-4. Laboratory Control Sample Limits

Analysis Group	Method Description	Method Code	Prep Method	Analyte Description	CAS Number	LCS—Low	LCS—High	LCS—RPD %	MS—Low	MS—High	MS—RPD %
				tert-Butylbenzene	98-06-6	73	120	20	73	120	30
				Toluene-d8 (Surr)	2037-26-5						
				1,2-Dichloroethane-d4 (Surr)	17060-07-0						
				4-Bromofluorobenzene (Surr)	460-00-4						
				Dibromofluoromethane (Surr)	1868-53-7			20			30
Soil Samples	Semivolatile Organic Compounds (GC/MS)	8270D	3550C	Biphenyl	92-52-4	59	120	20	58	120	20
				bis (2-chloroisopropyl) ether	108-60-1	44	120	24	31	120	24
				2,4,5-Trichlorophenol	95-95-4	59	126	18	46	120	18
				2,4,6-Trichlorophenol	88-06-2	59	123	19	41	123	19
				2,4-Dichlorophenol	120-83-2	61	120	19	45	120	19
				2,4-Dimethylphenol	105-67-9	59	120	42	52	120	42
				2,4-Dinitrophenol	51-28-5	41	146	22	41	146	22
				2,4-Dinitrotoluene	121-14-2	63	120	20	63	125	20
				2,6-Dinitrotoluene	606-20-2	66	120	15	66	120	15
				2-Chloronaphthalene	91-58-7	57	120	21	57	120	21
				1,4-Dioxane	123-91-1	23	120	50	13	120	50
				2-Chlorophenol	95-57-8	53	120	25	43	120	25
				2-Methylnaphthalene	91-57-6	59	120	21	55	120	21
				2-Methylphenol	95-48-7	54	120	27	48	120	27
				2-Nitroaniline	88-74-4	61	120	15	61	120	15
				2-Nitrophenol	88-75-5	56	120	18	37	120	18
				3,3'-Dichlorobenzidine	91-94-1	54	120	25	37	126	25
				3-Nitroaniline	99-09-2	48	120	19	48	120	19
				4,6-Dinitro-2-methylphenol	534-52-1	49	122	15	23	149	15
				4-Bromophenyl phenyl ether	101-55-3	58	120	15	58	120	15
				4-Chloro-3-methylphenol	59-50-7	61	120	27	49	125	27
				4-Chloroaniline	106-47-8	38	120	22	38	120	22
				4-Chlorophenyl phenyl ether	7005-72-3	63	124	16	63	124	16
				4-Methylphenol	106-44-5	55	120	24	50	120	24
				4-Nitroaniline	100-01-6	56	120	24	47	120	24
				4-Nitrophenol	100-02-7	43	147	25	31	147	25
				Acenaphthene	83-32-9	62	120	35	60	120	35
				Acenaphthylene	208-96-8	58	121	18	58	121	18
				Acetophenone	98-86-2	54	120	20	47	120	20
				Anthracene	120-12-7	62	120	15	62	120	15
				Atrazine	1912-24-9	60	127	20	60	150	20
				Benzaldehyde	100-52-7	10	150	20	10	150	20
				Benzo[a]anthracene	56-55-3	65	120	15	65	120	15
				Benzo[a]pyrene	50-32-8	64	120	15	64	120	15
				Benzo[b]fluoranthene	205-99-2	64	120	15	10	150	15
				Benzo[g,h,i]perylene	191-24-2	45	145	15	45	145	15
				Benzo[k]fluoranthene	207-08-9	65	120	22	23	150	22
				Bis(2-chloroethoxy)methane	111-91-1	55	120	17	52	120	17
				Bis(2-chloroethyl)ether	111-44-4	45	120	21	45	120	21
				Bis(2-ethylhexyl) phthalate	117-81-7	61	133	15	61	133	15
				Butyl benzyl phthalate	85-68-7	61	129	16	61	120	16
				Caprolactam	105-60-2	47	120	20	37	133	20
				Carbazole	86-74-8	65	120	20	59	120	20
				Chrysene	218-01-9	64	120	15	64	120	15
				Di-n-butyl phthalate	84-74-2	58	130	15	58	130	15
				Di-n-octyl phthalate	117-84-0	57	133	16	57	133	16
				Dibenz(a,h)anthracene	53-70-3	54	132	15	54	132	15
				Dibenzofuran	132-64-9	63	120	15	62	120	15
				Diethyl phthalate	84-66-2	66	120	15	66	120	15
				Dimethyl phthalate	131-11-3	65	124	15	65	124	15
				Fluoranthene	206-44-0	62	120	15	62	120	15
				Fluorene	86-73-7	63	120	15	63	120	15

Table C2-4. Laboratory Control Sample Limits

Analysis Group	Method Description	Method Code	Prep Method	Analyte Description	CAS Number	LCS—Low	LCS—High	LCS—RPD %	MS—Low	MS—High	MS—RPD %
				Hexachlorobenzene	118-74-1	60	120	15	60	120	15
				Hexachlorobutadiene	87-68-3	45	120	44	45	120	44
				Hexachlorocyclopentadiene	77-47-4	47	120	49	31	120	49
				Hexachloroethane	67-72-1	41	120	46	21	120	46
				Indeno[1,2,3-cd]pyrene	193-39-5	56	134	15	56	134	15
				Isophorone	78-59-1	56	120	17	56	120	17
				N-Nitrosodi-n-propylamine	621-64-7	52	120	31	46	120	31
				N-Nitrosodiphenylamine	86-30-6						
				Naphthalene	91-20-3	55	120	29	46	120	29
				Nitrobenzene	98-95-3	54	120	24	49	120	24
				Pentachlorophenol	87-86-5	51	120	35	25	136	35
				Phenanthrene	85-01-8	60	120	15	60	122	15
				Phenol	108-95-2	53	120	35	50	120	35
				Pyrene	129-00-0	61	133	35	61	133	35
				2,4,6-Tribromophenol	118-79-6						
				2-Fluorobiphenyl	321-60-8						
				2-Fluorophenol	367-12-4						
				Nitrobenzene-d5	4165-60-0						
				p-Terphenyl-d14	1718-51-0						
				Phenol-d5	4165-62-2						
Soil Samples	Metals (ICP)	6010C	3050B	Aluminum	7429-90-5	41	160	20	75	125	20
				Antimony	7440-36-0	25	272	20	75	125	20
				Arsenic	7440-38-2	69	131	20	75	125	20
				Barium	7440-39-3	72	127	20	75	125	20
				Beryllium	7440-41-7	73	127	20	75	125	20
				Cadmium	7440-43-9	73	127	20	75	125	20
				Calcium	7440-70-2	74	126	20	75	125	20
				Chromium	7440-47-3	68	132	20	75	125	20
				Cobalt	7440-48-4	75	125	20	75	125	20
				Copper	7440-50-8	74	126	20	75	125	20
				Iron	7439-89-6	31	169	20	75	125	20
				Lead	7439-92-1	70	130	20	75	125	20
				Magnesium	7439-95-4	64	136	20	75	125	20
				Manganese	7439-96-5	74	125	20	75	125	20
				Nickel	7440-02-0	70	130	20	75	125	20
				Potassium	7440-09-7	61	139	20	75	125	20
				Selenium	7782-49-2	64	137	20	75	125	20
				Silver	7440-22-4	66	135	20	75	125	20
				Sodium	7440-23-5	27	174	20	75	125	20
				Thallium	7440-28-0	67	132	20	75	125	20
				Vanadium	7440-62-2	54	146	20	75	125	20
				Zinc	7440-66-6	67	133	20	75	125	20
Soil Samples	Mercury (CVAA)	7471B	7471B_Prep	Mercury	7439-97-6	51	149	20	80	120	20
Soil Samples	Fluorinated Alkyl Substances	PFC_IDA	Shake_Bath_14D	Perfluorobutanoic acid (PFBA)	375-22-4	70	130	20	70	130	20
				Perfluoropentanoic acid (PFPeA)	2706-90-3	70	130	20	70	130	20
				Perfluorohexanoic acid (PFHxA)	307-24-4	70	130	20	70	130	20
				Perfluoroheptanoic acid (PFHpA)	375-85-9	70	130	20	70	130	20
				Perfluorooctanoic acid (PFOA)	335-67-1	70	130	20	70	130	20
				Perfluorononanoic acid (PFNA)	375-95-1	70	130	20	70	130	20
				Perfluorodecanoic acid (PFDA)	335-76-2	70	130	20	70	130	20
				Perfluoroundecanoic acid (PFUnA)	2058-94-8	70	130	20	70	130	20
				Perfluorododecanoic acid (PFDoA)	307-55-1	70	130	20	70	130	20
				Perfluorotridecanoic acid (PFTriA)	72629-94-8	70	130	20	70	130	20
				Perfluorotetradecanoic acid (PFTeA)	376-06-7	70	130	20	70	130	20
				Perfluorobutanesulfonic acid (PFBS)	375-73-5	70	130	20	70	130	20
				Perfluorohexanesulfonic acid (PFHxS)	355-46-4	70	130	20	70	130	20
				Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	70	130	20	70	130	20

Table C2-4. Laboratory Control Sample Limits

Analysis Group	Method Description	Method Code	Prep Method	Analyte Description	CAS Number	LCS—Low	LCS—High	LCS—RPD %	MS—Low	MS—High	MS—RPD %
				Perfluorooctanesulfonic acid (PFOS)	1763-23-1	70	130	20	70	130	20
				Perfluorodecanesulfonic acid (PFDS)	335-77-3	70	130	20	70	130	20
				Perfluorooctanesulfonamide (PFOSA)	754-91-6	70	130	20	70	130	20
				N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2355-31-9	70	130	20	70	130	20
				N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2991-50-6	70	130	20	70	130	20
				1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	27619-97-2	70	130	20	70	130	20
				1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	39108-34-4	70	130	20	70	130	20
				18O2 PFHxS	STL00994						
				13C4 PFHpA	STL01892						
				13C4 PFOA	STL00990						
				13C4 PFOS	STL00991						
				13C5 PFNA	STL00995						
				13C4 PFBA	STL00992						
				13C2 PFHxA	STL00993						
				13C2 PFDA	STL00996						
				13C2 PFUnA	STL00997						
				13C2 PFDoA	STL00998						
				13C8 FOSA	STL01056						
				13C5 PFPeA	STL01893						
				13C2 PFTeDA	STL02116						
				d3-NMeFOSAA	STL02118						
				d5-NEtFOSAA	STL02117						
				M2-6:2 FTS	STL02279						
				M2-8:2 FTS	STL02280						
				13C3 PFBS	STL02337						
				13C2 PFOA	STL00623						
Soil Samples	Metals (ICP)	6010C	3010A/1311T_M	Arsenic	7440-38-2	80	120	20	75	125	20
				Barium	7440-39-3	80	120	20	75	125	20
				Cadmium	7440-43-9	80	120	20	75	125	20
				Chromium	7440-47-3	80	120	20	75	125	20
				Lead	7439-92-1	80	120	20	75	125	20
				Selenium	7782-49-2	80	120	20	75	125	20
				Silver	7440-22-4	80	120	20	75	125	20
Soil Samples	Mercury (CVAA)	7470A	7470A_Prep_L/1311T_Hg	Mercury	7439-97-6	80	120	20	80	120	20
Soil Samples	Chromium, Hexavalent	7196A	3060A	Cr (VI)	18540-29-9	80	120				20
Soil Samples	HEM and SGT-HEM	9071B	9071B_P_Sox/ISM_AC	SGT-HEM	STL00240	64	132	34	64	132	34

Table C2-4. Laboratory Control Sample Limits

Analysis Group	Method Description	Method Code	Prep Method	Analyte Description	CAS Number	LCS—Low	LCS—High	LCS—RPD %	MS—Low	MS—High	MS—RPD %
Groundwater Samples	Volatile Organic Compounds by GC/MS	8260C	5030C	1,1,1,2-Tetrachloroethane	630-20-6	80	120	20	80	120	20
				1,1,1-Trichloroethane	71-55-6	73	126	15	73	126	15
				1,1,2,2-Tetrachloroethane	79-34-5	76	120	15	76	120	15
				1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	61	148	20	61	148	20
				1,1,2-Trichloroethane	79-00-5	76	122	15	76	122	15
				1,1-Dichloroethane	75-34-3	77	120	20	77	120	20
				1,1-Dichloroethene	75-35-4	66	127	16	66	127	16
				1,2,3-Trimethylbenzene	526-73-8						
				1,2,4-Trichlorobenzene	120-82-1	79	122	20	79	122	20
				1,2,4-Trimethylbenzene	95-63-6	76	121	20	76	121	20
				1,2-Dibromo-3-Chloropropane	96-12-8	56	134	15	56	134	15
				1,2-Dichlorobenzene	95-50-1	80	124	20	80	124	20
				1,2-Dichloroethane	107-06-2	75	120	20	75	120	20
				1,2-Dichloropropane	78-87-5	76	120	20	76	120	20
				1,3,5-Trimethylbenzene	108-67-8	77	121	20	77	121	20
				1,3-Dichlorobenzene	541-73-1	77	120	20	77	120	20
				1,4-Dichlorobenzene	106-46-7	80	120	20	78	124	20
				2-Butanone (MEK)	78-93-3	57	140	20	57	140	20
				2-Hexanone	591-78-6	65	127	15	65	127	15
				4-Methyl-2-pentanone (MIBK)	108-10-1	71	125	35	71	125	35
				Acetone	67-64-1	56	142	15	56	142	15
				Benzene	71-43-2	71	124	13	71	124	13
				Bromoform	75-25-2	61	132	15	61	132	15
				Bromomethane	74-83-9	55	144	15	55	144	15
				Carbon disulfide	75-15-0	59	134	15	59	134	15
				Carbon tetrachloride	56-23-5	72	134	15	72	134	15
				Chlorobenzene	108-90-7	80	120	25	80	120	25
				Dibromochloromethane	124-48-1	75	125	15	75	125	15
				Chloroethane	75-00-3	69	136	15	69	136	15
				Chloroform	67-66-3	73	127	20	73	127	20
				Chloromethane	74-87-3	68	124	15	68	124	15
				cis-1,2-Dichloroethene	156-59-2	74	124	15	74	124	15
				Cyclohexane	110-82-7	59	135	20	59	135	20
				Bromodichloromethane	75-27-4	80	122	15	80	122	15
				Dichlorodifluoromethane	75-71-8	59	135	20	59	135	20
				Ethylbenzene	100-41-4	77	123	15	77	123	15
				1,2-Dibromoethane	106-93-4	77	120	15	77	120	15
				Isopropylbenzene	98-82-8	77	122	20	77	122	20
				Methyl acetate	79-20-9	74	133	20	74	133	20
				Methyl tert-butyl ether	1634-04-4	77	120	37	77	120	37
				Methylcyclohexane	108-87-2	68	134	20	68	134	20
				Methylene Chloride	75-09-2	75	124	15	75	124	15
				m,p-Xylene	179601-23-1	76	122	16	76	122	16
				n-Butylbenzene	104-51-8	71	128	15	71	128	15
				N-Propylbenzene	103-65-1	75	127	15	75	127	15
				o-Xylene	95-47-6	76	122	16	76	122	16
				sec-Butylbenzene	135-98-8	74	127	15	74	127	15
				Tetrachloroethene	127-18-4	74	122	20	74	122	20
				Toluene	108-88-3	80	122	15	80	122	15
				trans-1,2-Dichloroethene	156-60-5	73	127	20	73	127	20
				trans-1,3-Dichloropropene	10061-02-6	80	120	15	80	120	15
				Trichloroethene	79-01-6	74	123	16	74	123	16
				Trichlorofluoromethane	75-69-4	62	150	20	62	150	20
				Vinyl chloride	75-01-4	65	133	15	65	133	15
				Xylenes, Total	1330-20-7						
				cis-1,3-Dichloropropene	10061-01-5	74	124	15	74	124	15
				Styrene	100-42-5	80	120	20	80	120	20

Table C2-4. Laboratory Control Sample Limits

Analysis Group	Method Description	Method Code	Prep Method	Analyte Description	CAS Number	LCS—Low	LCS—High	LCS—RPD %	MS—Low	MS—High	MS—RPD %
				tert-Butylbenzene	98-06-6	75	123	15	75	123	15
				1,2-Dichloroethane-d4 (Surr)	17060-07-0						
				4-Bromofluorobenzene (Surr)	460-00-4						
				Toluene-d8 (Surr)	2037-26-5						
				Dibromofluoromethane (Surr)	1868-53-7			20			20
Groundwater Samples	Semivolatile Organic Compounds (GC/MS)	8270D	3510C_LVI	Biphenyl	92-52-4	59	120	20	57	120	20
				bis (2-chloroisopropyl) ether	108-60-1	21	136	24	28	121	24
				2,4,5-Trichlorophenol	95-95-4	65	126	18	65	126	18
				2,4,6-Trichlorophenol	88-06-2	64	120	19	64	120	19
				2,4-Dichlorophenol	120-83-2	63	120	19	48	132	19
				2,4-Dimethylphenol	105-67-9	47	120	42	39	130	42
				2,4-Dinitrophenol	51-28-5	31	137	22	21	150	22
				2,4-Dinitrotoluene	121-14-2	69	120	20	54	138	20
				2,6-Dinitrotoluene	606-20-2	68	120	15	17	150	15
				2-Chloronaphthalene	91-58-7	58	120	21	52	124	21
				2-Chlorophenol	95-57-8	48	120	25	48	120	25
				2-Methylnaphthalene	91-57-6	59	120	21	34	140	21
				2-Methylphenol	95-48-7	39	120	27	46	120	27
				2-Nitroaniline	88-74-4	54	127	15	44	136	15
				2-Nitrophenol	88-75-5	52	125	18	38	141	18
				3,3'-Dichlorobenzidine	91-94-1	49	135	25	10	150	25
				3-Nitroaniline	99-09-2	51	120	19	32	150	19
				4,6-Dinitro-2-methylphenol	534-52-1	46	136	15	38	150	15
				4-Bromophenyl phenyl ether	101-55-3	65	120	15	63	126	15
				4-Chloro-3-methylphenol	59-50-7	61	123	27	64	127	27
				4-Chloroaniline	106-47-8	30	120	22	16	124	22
				4-Chlorophenyl phenyl ether	7005-72-3	62	120	16	61	120	16
				4-Methylphenol	106-44-5	29	131	24	36	120	24
				4-Nitroaniline	100-01-6	65	120	24	32	150	24
				4-Nitrophenol	100-02-7	45	120	48	23	132	48
				Acenaphthene	83-32-9	60	120	24	48	120	24
				Acenaphthylene	208-96-8	63	120	18	63	120	18
				Acetophenone	98-86-2	45	120	20	53	120	20
				Anthracene	120-12-7	67	120	15	65	122	15
				Atrazine	1912-24-9	71	130	20	50	150	20
				Benzaldehyde	100-52-7	10	140	20	10	150	20
				Benzo(a)anthracene	56-55-3	70	121	15	43	124	15
				Benzo(a)pyrene	50-32-8	60	123	15	23	125	15
				Benzo(b)fluoranthene	205-99-2	66	126	15	27	127	15
				Benzo(g,h,i)perylene	191-24-2	66	150	15	16	147	15
				Benzo(k)fluoranthene	207-08-9	65	124	22	20	124	22
				Bis(2-chloroethoxy)methane	111-91-1	50	128	17	44	128	17
				Bis(2-chloroethyl)ether	111-44-4	44	120	21	45	120	21
				Bis(2-ethylhexyl) phthalate	117-81-7	63	139	15	16	150	15
				Butyl benzyl phthalate	85-68-7	70	129	16	51	140	16
				Caprolactam	105-60-2	22	120	20	10	120	20
				Carbazole	86-74-8	66	123	20	16	148	20
				Chrysene	218-01-9	69	120	15	44	122	15
				Di-n-butyl phthalate	84-74-2	69	131	15	65	129	15
				Di-n-octyl phthalate	117-84-0	63	140	16	16	150	16
				Dibenz(a,h)anthracene	53-70-3	65	135	15	16	139	15
				Dibenzofuran	132-64-9	66	120	15	60	120	15
				Diethyl phthalate	84-66-2	59	127	15	53	133	15
				Dimethyl phthalate	131-11-3	68	120	15	59	123	15
				Fluoranthene	206-44-0	69	126	15	63	129	15
				Fluorene	86-73-7	66	120	15	62	120	15
				Hexachlorobenzene	118-74-1	61	120	15	57	121	15

Table C2-4. Laboratory Control Sample Limits

Analysis Group	Method Description	Method Code	Prep Method	Analyte Description	CAS Number	LCS—Low	LCS—High	LCS—RPD %	MS—Low	MS—High	MS—RPD %
				Hexachlorobutadiene	87-68-3	35	120	44	37	120	44
				Hexachlorocyclopentadiene	77-47-4	31	120	49	21	120	49
				Hexachloroethane	67-72-1	43	120	46	16	130	46
				Indeno(1,2,3-cd)pyrene	193-39-5	69	146	15	16	140	15
				Isophorone	78-59-1	55	120	17	48	133	17
				N-Nitrosodi-n-propylamine	621-64-7	32	140	31	49	120	31
				N-Nitrosodiphenylamine	86-30-6						
				Naphthalene	91-20-3	57	120	29	45	120	29
				Nitrobenzene	98-95-3	53	123	24	45	123	24
				Pentachlorophenol	87-86-5	29	136	37	23	149	37
				Phenanthrene	85-01-8	68	120	15	65	122	15
				Phenol	108-95-2	17	120	34	16	120	34
				Pyrene	129-00-0	70	125	19	58	128	19
				2,4,6-Tribromophenol	118-79-6						
				2-Fluorobiphenyl	321-60-8						
				2-Fluorophenol	367-12-4						
				Nitrobenzene-d5	4165-60-0						
				p-Terphenyl-d14	1718-51-0						
				Phenol-d5	4165-62-2						
Groundwater Samples	Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)	8270D_SIM_MS_ID	3510C	1,4-Dioxane	123-91-1	40	140	20	40	140	20
				1,4-Dioxane-d8	17647-74-4						
Groundwater Samples	Metals (ICP)	6010C	3005A_TOT	Aluminum	7429-90-5	80	120	20	75	125	20
				Antimony	7440-36-0	80	120	20	75	125	20
				Arsenic	7440-38-2	80	120	20	75	125	20
				Barium	7440-39-3	80	120	20	75	125	20
				Beryllium	7440-41-7	80	120	20	75	125	20
				Cadmium	7440-43-9	80	120	20	75	125	20
				Calcium	7440-70-2	80	120	20	75	125	20
				Chromium	7440-47-3	80	120	20	75	125	20
				Cobalt	7440-48-4	80	120	20	75	125	20
				Copper	7440-50-8	80	120	20	75	125	20
				Iron	7439-89-6	80	120	20	75	125	20
				Lead	7439-92-1	80	120	20	75	125	20
				Magnesium	7439-95-4	80	120	20	75	125	20
				Manganese	7439-96-5	80	120	20	75	125	20
				Nickel	7440-02-0	80	120	20	75	125	20
				Potassium	7440-09-7	80	120	20	75	125	20
				Selenium	7782-49-2	80	120	20	75	125	20
				Silver	7440-22-4	80	120	20	75	125	20
				Sodium	7440-23-5	80	120	20	75	125	20
				Thallium	7440-28-0	80	120	20	75	125	20
				Vanadium	7440-62-2	80	120	20	75	125	20
				Zinc	7440-66-6	80	120	20	75	125	20
Groundwater Samples	Mercury (CVAA)	7470A	7470A_Prep	Mercury	7439-97-6	80	120	20	80	120	20

Table C2-4. Laboratory Control Sample Limits

Analysis Group	Method Description	Method Code	Prep Method	Analyte Description	CAS Number	LCS—Low	LCS—High	LCS—RPD %	MS—Low	MS—High	MS—RPD %
Groundwater Samples	Fluorinated Alkyl Substances	PFC_IDA	3535_IVWT	Perfluoroheptanoic acid (PFHpA)	375-85-9	70	130	20	40	160	20
				Perfluorooctanoic acid (PFOA)	335-67-1	70	130	20	40	160	20
				Perfluorononanoic acid (PFNA)	375-95-1	70	130	20	40	160	20
				Perfluorobutanesulfonic acid (PFBS)	375-73-5	70	130	20	40	160	20
				Perfluorohexanesulfonic acid (PFHxS)	355-46-4	70	130	20	40	160	20
				Perfluorooctanesulfonic acid (PFOS)	1763-23-1	70	130	20	40	160	20
				18O2 PFHxS	STL00994				25	150	
				13C4 PFHpA	STL01892				25	150	
				13C4 PFOA	STL00990				25	150	
				13C4 PFOS	STL00991				25	150	
				13C5 PFNA	STL00995				25	150	
				Perfluorobutanoic acid (PFBA)	375-22-4	50	150	30	40	160	30
				Perfluoropentanoic acid (PFPeA)	2706-90-3	50	150	30	40	160	30
				Perfluorohexanoic acid (PFHxA)	307-24-4	70	130	20	40	160	20
				Perfluoroundecanoic acid (PFUnA)	2058-94-8	70	130	20	40	160	20
				Perfluorodecanoic acid (PFDA)	335-76-2	70	130	20	40	160	20
				Perfluorododecanoic acid (PFDoA)	307-55-1	70	130	20	40	160	20
				Perfluorotridecanoic acid (PFTriA)	72629-94-8	70	130	20	40	160	20
				Perfluorotetradecanoic acid (PFTeA)	376-06-7	70	130	20	40	160	20
				Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5	50	150	30	40	160	30
				Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6	50	150	30	40	160	30
				Perfluorooctanesulfonamide (PFOSA)	754-91-6	50	150	30	40	160	30
				Perfluorodecanesulfonic acid (PFDS)	335-77-3	50	150	30	40	160	30
				Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	50	150	30	40	160	30
				N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2355-31-9	70	130	20	40	160	20
				N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2991-50-6	70	130	20	40	160	20
				1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	27619-97-2	50	150	30	40	160	30
				1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	39108-34-4	50	150	30	40	160	30
				1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)	757124-72-4	50	150	30	40	160	30
				13C4 PFBA	STL00992				25	150	
				13C2 PFHxA	STL00993				25	150	
				13C2 PFDA	STL00996				25	150	
				13C2 PFUnA	STL00997				25	150	
				13C2 PFDoA	STL00998				25	150	
				13C8 FOSA	STL01056				25	150	
				13C5 PFPeA	STL01893				25	150	
				13C2 PFOA	STL00623						
				13C2 PFHxDA	STL02115				25	150	
				13C2 PFTeDA	STL02116				25	150	
				d3-NMeFOSAA	STL02118				25	150	
				d5-NEtFOSAA	STL02117				25	150	
				M2-6:2 FTS	STL02279				25	150	
				M2-8:2 FTS	STL02280				25	150	
				13C3 PFBS	STL02337				25	150	
				Total PFOA and PFOS	STL02406						
				Perfluorononanesulfonic acid	68259-12-1	50	150	30	40	160	30
				Perfluoropentanesulfonic acid	2706-91-4	50	150	30	40	160	30
				DONA	919005-14-4	50	150	30	40	160	30
				9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	756426-58-1	50	150	30	40	160	30
				11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	763051-92-9	50	150	30	40	160	30

Table C2-4. Laboratory Control Sample Limits

Analysis Group	Method Description	Method Code	Prep Method	Analyte Description	CAS Number	LCS—Low	LCS—High	LCS—RPD %	MS—Low	MS—High	MS—RPD %
				F-53B	STL02459						
				HFPO-DA	13252-13-6	50	150	30	40	160	30
				13C3 HFPO-DA	STL02255				25	150	
				M2-4:2 FTS	STL02395				25	150	
				10:2 FTS	120226-60-0	50	150	30	40	160	30
				Perfluorododecanesulfonic acid (PFDoS)	79780-39-5	50	150	30	40	160	30
Groundwater Samples	Metals (ICP)	6010C	3005A/FIELD_FLTRD	Aluminum	7429-90-5	80	120	20	75	125	20
				Antimony	7440-36-0	80	120	20	75	125	20
				Arsenic	7440-38-2	80	120	20	75	125	20
				Barium	7440-39-3	80	120	20	75	125	20
				Beryllium	7440-41-7	80	120	20	75	125	20
				Cadmium	7440-43-9	80	120	20	75	125	20
				Calcium	7440-70-2	80	120	20	75	125	20
				Chromium	7440-47-3	80	120	20	75	125	20
				Cobalt	7440-48-4	80	120	20	75	125	20
				Copper	7440-50-8	80	120	20	75	125	20
				Iron	7439-89-6	80	120	20	75	125	20
				Lead	7439-92-1	80	120	20	75	125	20
				Magnesium	7439-95-4	80	120	20	75	125	20
				Manganese	7439-96-5	80	120	20	75	125	20
				Nickel	7440-02-0	80	120	20	75	125	20
				Potassium	7440-09-7	80	120	20	75	125	20
				Selenium	7782-49-2	80	120	20	75	125	20
				Silver	7440-22-4	80	120	20	75	125	20
				Sodium	7440-23-5	80	120	20	75	125	20
				Thallium	7440-28-0	80	120	20	75	125	20
				Vanadium	7440-62-2	80	120	20	75	125	20
				Zinc	7440-66-6	80	120	20	75	125	20
Groundwater Samples	Mercury (CVAA)	7470A	7470A_Prep/FIELD_FLTRD	Mercury	7439-97-6	80	120	20	80	120	20
Groundwater Samples	Chromium, Hexavalent	7196A		Chromium, hexavalent	18540-29-9	85	115	20	85	115	20

Source: Eurofins TestAmerica (2021)

Notes:
- CAS = Chemical Abstracts Service
- CVAA = cold vapor atomic absorption
- GC = gas chromatography
- GC/MS = gas chromatography/mass spectrometry
- HEM = hexane extractable material
- ICP = inductively coupled plasma
- LCS = laboratory control sample
- MS = matrix spike
- RPD = relative percent difference
- SGT-HEM = silica gel treated hexane extractable material

Attachment 1

Laboratory Quality Assurance Manual

Cover Page:

Quality Assurance Manual

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Title Page:
Quality Assurance Manual
Approval Signatures

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SECTION 2

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

REFERENCED CORPORATE SOPs AND POLICIES

SOP / Policy Reference	Title
CA-I-P-002	Electronic Reporting and Signature Policy

CA-L-P-002	Contract Compliance Policy
CW-L-S-004	Subcontracting Procedures
CA-Q-M-002	Corporate Quality Management Plan
CA-Q-S-001	Solvent and Acid Lot Testing and Approval
CA-Q-S-002	Acceptable Manual Integration Practices
CA-Q-S-006	Detection Limits
CA-Q-S-009	Root Cause Analysis
CA-T-P-001	Qualified Products List
CW-E-M-001	Corporate Environmental Health & Safety Manual
CW-F-P-002	Company-Wide Authorization Matrix
CW-F-P-004	Procurement and Contracts Policy
CW-F-S-007	Capital Expenditure, Controlled Purchase Requests and Fixed Asset Capitalization
CW-L-P-004	Ethics Policy
CW-L-S-002	Internal Investigation
CW-Q-S-001	Corporate Document Control and Archiving
CW-Q-S-002	Writing a Standard Operating Procedure (SOPs)
CW-Q-S-003	Internal Auditing
CW-Q-S-004	Management Systems Review
CW-Q-S-005	Data Recall Process
CA-C-S-001	Work Sharing Process

REFERENCED LABORATORY SOPs

SOP Reference	Title
BF-GP-001	Calibration of Autopipettes and Repipetters
BF-GP-002	Support Equipment: Maintenance, Record Keeping and Corrective Actions
BF-GP-005	Sample Homogenization and Subsampling
BF-GP-012	Technical Data Review
BF-GP-013	Manual Integration
BF-GP-015	Record Storage and Retention
BF-GP-018	Strict Internal Chain or Custody
`BF-GP-019	Standard Traceability and Preparation
BF-GP-020	Thermometer Calibration

BF-PM-001	Project Information Requirements
BF-PM-003	Bottle Order Set-up
BF-PM-005	Correctness of Analysis
BF-PM-008	Massachusetts DEP Notification Procedures
BF-QA-001	Determination of Method Detection Limits
BF-QA-002	Quality Control Limits
BF-QA-003	Procedure for Writing, Reviewing and Revising Controlled Documents
BF-QA-004	Laboratory Personnel Training
BF-QA-005	Preventative and Corrective Action
BF-QA-006	Data Quality Review
BF-SR-001	Cooler Shipping - Bottle Kits and Samples
BF-SR-002	Receipt of Analytical Samples

- The full list of Laboratory SOPs is maintained in the Quality Assurance Department
- The full list of analytical methods performed in the Laboratory is can be exported from the Laboratory Information Management System's Total Access Database

SECTION 3

INTRODUCTION, SCOPE AND APPLICABILITY

3.1 INTRODUCTION AND COMPLIANCE REFERENCES

TestAmerica Buffalo's Quality Assurance Manual (QAM) is a document prepared to define the overall policies, organization objectives and functional responsibilities for achieving TestAmerica's data quality goals. The laboratory maintains a local perspective in its scope of services and client relations and maintains a national perspective in terms of quality.

The QAM has been prepared to assure compliance with 2003 National Environmental Laboratory Accreditation Conference (NELAC) standards, The NELAC Institute (TNI) Standard, dated 2009, Volume 1 Modules 2 and 4, and ISO/IEC Guide 17025:2005(E) In addition, the policies and procedures outlined in this manual are compliant with TestAmerica's Corporate Quality Management Plan (CQMP) and the various accreditation and certification programs listed in Appendix 3. The CQMP provides a summary of TestAmerica's quality and data integrity system. It contains requirements and general guidelines under which all TestAmerica facilities shall conduct their operations.

The QAM has been prepared to be consistent with the requirements of the following documents:

- ANSI/ASQC, E4-1994, "Specifications and Guidelines for Quality Management Systems for Environmental Data Collection and Environmental Technology Programs" (American National Standard, January 5, 1995, or most recent version)
- "EPA Requirements for Quality Management Programs" (QA/R-2) (EPA/240/B-01/002, May 31, 2006).
- EPA 600/4-88/039, *Methods for the Determination of Organic Compounds in Drinking Water,* EPA, Revised July 1991.
- EPA 600/R-95/131, *Methods for the Determination of Organic Compounds in Drinking Water,* Supplement III, EPA, August 1995.
- EPA 600/4-79-019, *Handbook for Analytical Quality Control in Water and Wastewater Laboratories,* EPA, March 1979.
- Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW846), Third Edition September 1986, Final Update I, July 1992, Final Update II A, August 1993, Final Update II, September 1994; Final Update IIB, January 1995; Final Update III, December 1996; Final Update IV, January 2008; Final Update V, August 2015
- Federal Register, 40 CFR Parts 136, 141, 172, 173, 178, 179 and 261. New York State Analytical Services Protocol, July 2005
- Manual for the Certification of Laboratories Analyzing Drinking Water (EPA 815-R-05-004, January 2005).
- Statement of Work for Inorganics & Organics Analysis, SOM and ISM, current versions, USEPA Contract Laboratory Program Multi-media, Multi-concentration.
- APHA, *Standard Methods for the Examination of Water and Wastewater,* 18th Edition, 19th, 20th, and on-line Editions. 21st.

- *U.S. Department of Energy* Order 414.1B, *Quality Assurance*, Approved April 29, 2004.
- *U.S. Department of Energy* Order 414.1C, *Quality Assurance*, June 17, 2005.
- *U.S. Department of Energy Order 414.1D, Quality Assurance, Aril, 25, 2011.*
- Toxic Substances Control Act (TSCA).

3.2 TERMS AND DEFINITIONS

A Quality Assurance Program is a company-wide system designed to ensure that data produced by the laboratory conforms to the standards set by state and/or federal regulations. The program functions at the management level through company goals and management policies, and at the analytical level through Standard Operating Procedures (SOPs) and quality control. The TestAmerica program is designed to minimize systematic error, encourage constructive, documented problem solving, and provide a framework for continuous improvement within the organization.

Refer to Appendix 2 for the Glossary/Acronyms.

3.3 SCOPE / FIELDS OF TESTING

The laboratory analyzes a broad range of environmental and industrial samples every month. Sample matrices vary among air, drinking water, effluent water, groundwater, hazardous waste, sludge and soils. The Quality Assurance Program contains specific procedures and methods to test samples of differing matrices for chemical, physical and biological parameters. The Program also contains guidelines on maintaining documentation of analytical processes, reviewing results, servicing clients and tracking samples through the laboratory. The technical and service requirements of all analytical requests are thoroughly evaluated before commitments are made to accept the work. Measurements are made using published reference methods or methods developed and validated by the laboratory.

The methods covered by this manual include the most frequently requested methodologies needed to provide analytical services in the United States and its territories. The specific list of test methods used by the laboratory can be found in Section 19.0. The approach of this manual is to define the minimum level of quality assurance and quality control necessary to meet these requirements. All methods performed by the laboratory shall meet these criteria as appropriate. In some instances, quality assurance project plans (QAPPs), project specific data quality objectives (DQOs) or local regulations may require criteria other than those contained in this manual. In these cases, the laboratory will abide by the requested criteria following review and acceptance of the requirements by the Laboratory Director and the Quality Assurance (QA) Manager. In some cases, QAPPs and DQOs may specify less stringent requirements. The Laboratory Director and the QA Manager must determine if it is in the lab's best interest to follow the less stringent requirements.

3.4 MANAGEMENT OF THE MANUAL

3.4.1 Review Process

The template on which this manual is based is reviewed annually by Corporate Quality Management Personnel to assure that it remains in compliance with Section 3.1. The manual itself is reviewed every two years by senior laboratory management to assure that it reflects current practices and meets the requirements of the laboratory's clients and regulators as well as the CQMP. Occasionally, the manual may need changes in order to meet new or changing regulations and operations. The QA Manager will review the changes in the normal course of business and incorporate changes into revised sections of the document. All updates will be reviewed by the senior laboratory management staff. The laboratory updates and approves such changes according to our Document Control & updating procedures (refer to BF-QA-003)

SECTION 4

MANAGEMENT REQUIREMENTS

4.1 OVERVIEW

TestAmerica Buffalo is a local operating unit of TestAmerica Laboratories, Inc. The organizational structure, responsibilities and authorities of the corporate staff of TestAmerica Laboratories, Inc. are presented in the CQMP. The laboratory has day-to-day independent operational authority overseen by corporate officers (e.g., President and Chief Executive Officer (CEO), Chief Operating Officer (COO), Executive VP Operations, Corporate Quality, etc.). The laboratory operational and support staff work under the direction of the Laboratory Director. The organizational structure for both Corporate & TestAmerica Buffalo is presented in Figure 4-1.

4.2 Roles and Responsibilities

In order for the Quality Assurance Program to function properly, all members of the staff must clearly understand and meet their individual responsibilities as they relate to the quality program. The following descriptions briefly define each role in its relationship to the Quality Assurance Program.

4.2.1 Additional Requirements for Laboratories

The responsibility for quality resides with every employee of the laboratory. All employees have access to the QAM, are trained to this manual and are responsible for upholding the standards therein. Each person carries out his/her daily tasks in a manner consistent with the goals and in accordance with the procedures in this manual and the laboratory's SOPs. Role descriptions for corporate personnel are defined in the CQMP. This manual is specific to the operations of TestAmerica's Buffalo laboratory.

4.2.2 Laboratory Director

TestAmerica Buffalo's Laboratory Director is responsible for the overall quality, safety, financial, technical, human resource and service performance of the whole laboratory and reports to their respective GM. The Laboratory Director provides the resources necessary to implement and maintain an effective and comprehensive Quality Assurance and Data Integrity Program.

The Laboratory Director has the authority to affect those policies and procedures to ensure that only data of the highest level of excellence are produced. As such, the Laboratory Director is responsible for maintaining a working environment which encourages open, constructive problem solving and continuous improvement.

Specific responsibilities include, but are not limited to:

- Provides one or more department managers for the appropriate fields of testing. If the Department Manager is absent for a period of time exceeding 15 consecutive calendar days, the Laboratory Director must designate another full time staff member meeting the qualifications of the Department Manager to temporarily perform this function. If the absence exceeds 65 consecutive calendar days, the primary NELAP accrediting authority must be notified in writing.

- Ensures that all analysts and supervisors have the appropriate education and training to properly carry out the duties assigned to them and ensures that this training has been documented.
- Ensures that personnel are free from any commercial, financial and other undue pressures which might adversely affect the quality of their work.
- Ensures TestAmerica's human resource policies are adhered to and maintained.
- Ensures that sufficient numbers of qualified personnel are employed to supervise and perform the work of the laboratory.
- Ensures that appropriate corrective actions are taken to address analyses identified as requiring such actions by internal and external performance or procedural audits. Procedures that do not meet the standards set forth in the QAM or laboratory SOPs may be temporarily suspended by the Laboratory Director.
- Reviews and approves all SOPs prior to their implementation and ensures all approved SOPs are implemented and adhered to.
- Pursues and maintains appropriate laboratory certification and contract approvals. Supports ISO 17025 requirements.
- Ensures client specific reporting and quality control requirements are met.
- Leads the management team, consisting of the QA Manager, the Technical Manager, and the Operations Manager as direct reports.

4.2.3 Quality Assurance (QA) Manager or Designee

The QA manager has responsibility and authority to ensure the continuous implementation of the quality system.

The QA Manager reports directly to the Laboratory Director and their Corporate Quality Director. This position is able to evaluate data objectively and perform assessments without outside (i.e., managerial) influence. Corporate QA may be used as a resource in dealing with regulatory requirements, certifications and other quality assurance related items. The QA Manager directs the activities of the QA department to accomplish specific responsibilities, which include, but are not limited to:

- Serves as the focal point for QA/QC in the laboratory.
- Having functions independent from laboratory operations for which he/she has quality assurance oversight.
- Maintaining and updating the QAM.

- Monitoring and evaluating laboratory certifications; scheduling proficiency testing samples.
- Monitoring and communicating regulatory changes that may affect the laboratory to management.
- Training and advising the laboratory staff on quality assurance/quality control procedures that are pertinent to their daily activities.
- Have documented training and/or experience in QA/QC procedures and the laboratory's Quality System.
- Having a general knowledge of the analytical test methods for which data audit/review is performed (and/or having the means of getting this information when needed).
- Arranging for or conducting internal audits on quality systems, data authenticity and the technical operation.
- The laboratory QA Manager will maintain records of all ethics-related training, including the type and proof of attendance.
- Maintain, improve, and evaluate the corrective action and preventive action systems.
- Notifying laboratory management of deficiencies in the quality system and ensuring corrective action is taken. Procedures that do not meet the standards set forth in the QAM or laboratory SOPs shall be investigated following procedures outlined in Section 12 and if deemed necessary may be temporarily suspended during the investigation.
- Objectively monitor standards of performance in quality control and quality assurance without outside (e.g., managerial) influence.
- Coordinating of document control of SOPs, MDLs, control limits, and miscellaneous forms and information.
- Review a subset of all final data reports for internal consistency. Review of Chain of Custody (COC), correspondence with the analytical request, batch QC status, completeness of any corrective action statements, evaluate manual calculations, format, holding time, sensibility and completeness of the project file contents.
- Review of external audit reports and data validation requests.
- Follow-up with audits to ensure client QAPP requirements are met.
- Establishment of reporting schedule and preparation of various quality reports for the Laboratory Director, clients and/or Corporate QA.
- Development of suggestions and recommendations to improve quality systems.
- Research of current state and federal requirements and guidelines.
- Leads the QA team to enable communication and to distribute duties and responsibilities.
- Ensuring Communication & monitoring standards of performance to ensure that systems are in place to produce the level of quality as defined in this document.

- Notifying laboratory management of deficiencies in the quality system and ensuring corrective action is taken. Procedures that do not meet the standards set forth in the QAM or laboratory SOPs are temporarily suspended following the procedures outlined in Section 12.
- Evaluation of the thoroughness and effectiveness of training.
- Compliance with ISO 17025.

4.2.4 Technical Manager or Designee

The Technical Manager(s) report(s) directly to the Laboratory Director. He/she is accountable for all analyses and analysts under their experienced supervision and for compliance with the ISO 17025 Standard. The scope of responsibility ranges from the new-hire process and existing technology through the ongoing training and development programs for existing analysts and new instrumentation. Specific responsibilities include, but are not limited to:

- Exercises day-to-day supervision of laboratory operations for the appropriate field of accreditation and reporting of results. Coordinating, writing, and reviewing preparation of all test methods, i. e., SOPs, with regard to quality, integrity, regulatory and optimum and efficient production techniques, and subsequent analyst training and interpretation of the SOPs for implementation and unusual project samples. He/she insures that the SOPs are properly managed and adhered to at the bench. He/she develops standard costing of SOPs to include supplies, labor, overhead, and capacity (design vs. demonstrated versus first-run yield) utilization.
- Reviewing and approving, with input from the QA Manager, proposals from marketing, in accordance with an established procedure for the review of requests and contracts. This procedure addresses the adequate definition of methods to be used for analysis and any limitations, the laboratory's capability and resources, the client's expectations. Differences are resolved before the contract is signed and work begins. A system documenting any significant changes is maintained, as well as pertinent discussions with the client regarding their requirements or the results of the analyses during the performance of the contract. All work subcontracted by the laboratory must be approved by the client. Any deviations from the contract must be disclosed to the client. Once the work has begun, any amendments to the contract must be discussed with the client and so documented.
- Monitoring the validity of the analyses performed and data generated in the laboratory. This activity begins with reviewing and supporting all new business contracts, insuring data quality, analyzing internal and external non-conformances to identify root cause issues and implementing the resulting corrective and preventive actions, facilitating the data review process (training, development, and accountability at the bench), and providing technical and troubleshooting expertise on routine and unusual or complex problems.
- Providing training and development programs to applicable laboratory staff as new hires and, subsequently, on a scheduled basis. Training includes instruction on calculations, instrumentation management to include troubleshooting and preventive maintenance.

- Enhancing efficiency and improving quality through technical advances and improved LIMS utilization. Capital forecasting and instrument life cycle planning for second generation methods and instruments as well as asset inventory management.
- Coordinating sample management from "cradle to grave," insuring that no time is lost in locating samples.
- Scheduling all QA/QC-related requirements for compliance, e.g., MDLs, etc..
- Captains department personnel to communicate quality, technical, personnel, and instrumental issues for a consistent team approach.
- Coordinates audit responses with the QA Manager.

4.2.5 Operations Manager

The Operations Manager manages and directs the analytical production sections of the laboratory. He/She reports directly to the Laboratory Director. He/She assists the Technical Manager in determining the most efficient instrument utilization. More specifically, he/she:

- Evaluates the level of internal/external non-conformances for all departments.
- Continuously evaluates production capacity and improves capacity utilization.
- Continuously evaluates turnaround time and addresses any problems that may hinder meeting the required and committed turnaround time from the various departments.
- Develops and improves the training of all analysts in cooperation with the Technical Manager and QA Manager and in compliance with regulatory requirements.
- Is responsible for efficient utilization of supplies.
- Constantly monitors and modifies the processing of samples through the departments.
- Fully supports the quality system and, if called upon in the absence of the QA Manager, serves as his substitute in the interim.

4.2.6 Department Managers

Department Managers report to the Operations Manager. The Department Managers serve as the technical experts on assigned projects, provide technical liaison, assist in resolving any technical issues within the area of their expertise; and implement established policies and procedures to assist the Operations Manager in achieving section goals. Each one is responsible to:

- Ensure that analysts in their department adhere to applicable SOPs and the QA Manual. They perform frequent SOP and QA Manual review to determine if analysts are in compliance and if new, modified, and optimized measures are feasible and should be added to these documents.
- With regard to analysts, participates in the selection, training, and development of performance objectives and standards of performance, appraisal (measurement of objectives), scheduling, counseling, discipline, and motivation of analysts and documents these activities in accordance with systems developed by the QA and Human Resources

Departments. They evaluate staffing sufficiency and overtime needs. Training consists of familiarization with SOP, QC, Safety, and computer systems.

- Encourage the development of analysts to become cross-trained in various methods and/or operate multiple instruments efficiently while performing maintenance and documentation, self-supervise, and function as a department team.
- Provide guidance to analysts in resolving problems encountered daily during sample prep/analysis in conjunction with the Technical Manager, Operations Manager, and/or QA Manager. Each is responsible for 100% of the data review and documentation, non-conformance and CPAR issues, the timely and accurate completion of performance evaluation samples and MDLs, for his department.
- Ensure all logbooks are maintained, current, and properly labeled or archived.
- Report all non-conformance conditions to the QA Manager, Technical Manager, Operations Manager, and/or Laboratory Director.
- Ensure that preventive maintenance is performed on instrumentation as detailed in the QA Manual or SOPs. He is responsible for developing and implementing a system for preventive maintenance, troubleshooting, and repairing or arranging for repair of instruments.
- Maintain adequate and valid inventory of reagents, standards, spare parts, and other relevant resources required to perform daily analysis.
- Achieve optimum turnaround time on analyses and compliance with holding times.
- Conduct efficiency and cost control evaluations on an ongoing basis to determine optimization of labor, supplies, overtime, first-run yield, capacity (designed vs. demonstrated), second- and third-generation production techniques/instruments, and long-term needs for budgetary planning.
- Develop, implement, and enhance calibration programs.
- Provide written responses to external and internal audit issues.

4.2.7 Hazardous Waste Coordinator

The Hazardous Waste Coordinator reports directly to the Laboratory Director. The duties consist of:

- Staying current with the hazardous waste regulations.
- Continuing training on hazardous waste issues.
- Reviewing and updating annually the Hazardous Waste Contingency Plan in the Environmental Health & Safety Manual.
- Auditing the staff with regard to compliance with the Hazardous Waste Contingency Plan.
- Contacting the hazardous waste subcontractors for review of procedures and opportunities for minimization of waste.

4.2.8 Environmental Health & Safety Coordinator

The Environmental Health and Safety Coordinator reports to the Laboratory Director and ensures that systems are maintained for the safe operation of the laboratory. The Safety Officer is responsible to:

- Conduct ongoing, necessary safety training and conduct new employee safety orientation.
- Assist in developing and maintaining the Chemical Hygiene/Safety Manual.
- Administer dispersal of all Safety Data Sheet (SDS) information.
- Perform regular chemical hygiene and housekeeping instruction.
- Give instruction on proper labeling and practice.
- Serve as chairman of the laboratory safety committee.
- Provide and train personnel on protective equipment.
- Oversee the inspection and maintenance of general safety equipment – fire extinguishers, safety showers, eyewash fountains, etc. and ensure prompt repairs as needed.
- Supervise and schedule fire drills and emergency evacuation drills.
- Determine what initial and subsequent exposure monitoring, if necessary to determine potential employee exposure to chemicals used in the laboratory.
- When determined necessary, conduct exposure monitoring assessments.
- Determine when a complaint of possible over-exposure is “reasonable” and should be referred for medical consultation.
- Assist in the internal and external coordination of the medical consultation/monitoring program conducted by TestAmerica’s medical consultants.

4.2.9 Laboratory Analysts

Laboratory analysts are responsible for conducting analysis and performing all tasks assigned to them by the group leader or supervisor. The responsibilities of the analysts are listed below:

- Perform analyses by adhering to analytical and quality control protocols prescribed by current SOPs, this QA Manual, and project-specific plans honestly, accurately, timely, safely, and in the most cost-effective manner.
- Document standard and sample preparation, instrument calibration and maintenance, data calculations, sample matrix effects, and any observed non-conformance on worklists, benchsheets, lab notebooks and/or the Non-Conformance Database.
- Report all non-conformance situations, instrument problems, matrix problems and QC failures, which might affect the reliability of the data, to their supervisor, the Technical Manager, and/or the QA Manager or member of QA staff.

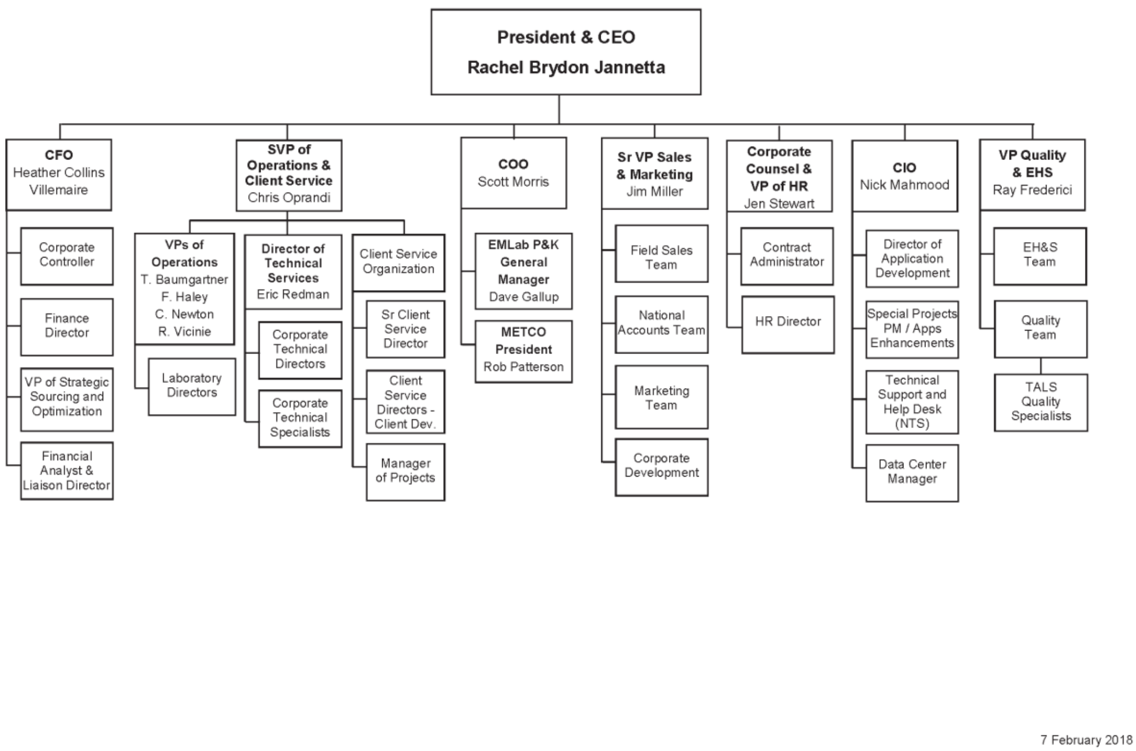
- Perform 100% review of the data generated prior to entering and submitting for secondary level review.
- Suggest method improvements to their supervisor, the Technical Manager, and the QA Manager. These improvements, if approved, will be incorporated. Ideas for the optimum performance of their assigned area, for example, through the proper cleaning and maintenance of the assigned instruments and equipment, are encouraged.
- Work cohesively as a team in their department to achieve the goals of accurate results, optimum turnaround time, cost effectiveness, cleanliness, complete documentation, and personal knowledge of environmental analysis.

4.3 DEPUTIES

The following table defines who assumes the responsibilities of key personnel in their absence:

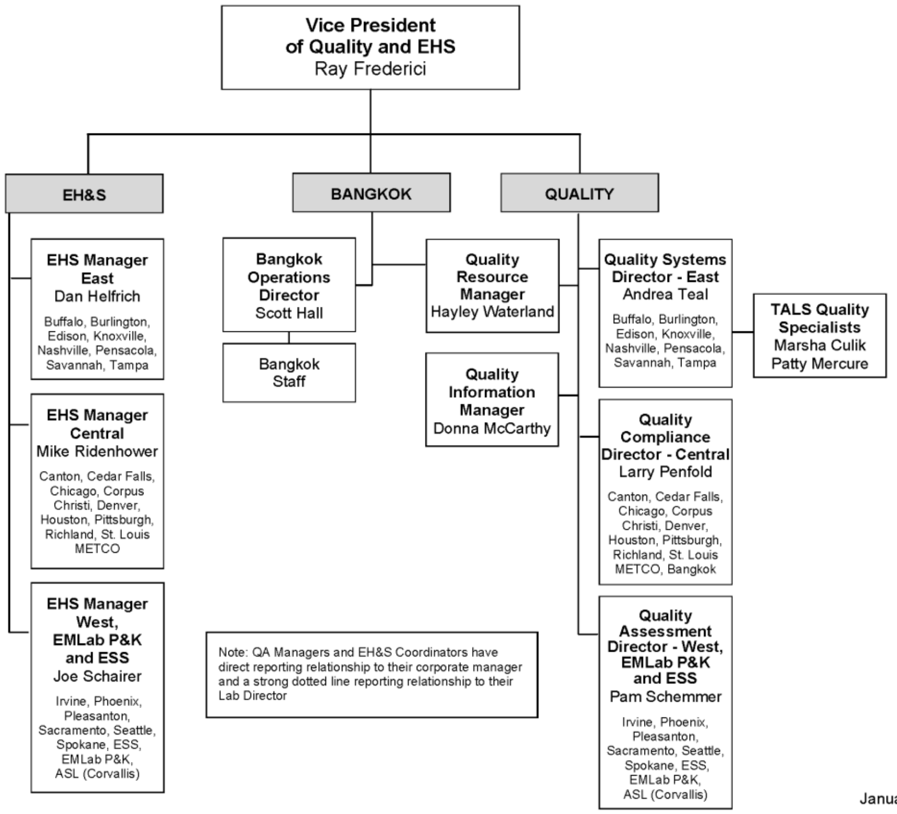
Key Personnel	Deputy	Comment
Laboratory Director	Operations Manager (1) Technical Manager (2)	
QA Manager	QA Specialist (1) Operations Manager (2)	
Technical Manager	Laboratory Director (1) Operations Manager (2)	
Operations Manager	Department Manager (1) Department Manager (2)	Selected based on availability
Manager of Project Management	Project Manager (1) Client Services Director (2)	Selected based on availability
Project Manager	Project Manager (1) Project Management Asst. (2)	(1) 2° team PM (2) Team PMA
Organic Department Manager	Analyst (1) Analyst (2)	Selected based on department, experience and availability
Inorganic Department Manager	Analyst (1) Analyst (2)	Selected based on department, experience and availability
Data Validation / Data Packaging Manager	Data Validation Specialist Data Packaging Specialist	Selected based on department and availability
EHS Coordinator	Laboratory Director (1) EHS Manager (2)	
Sample Management Manager	Sample Custodian (1) EHS Coordinator (2)	
Bottle Preparation / Shipping Manager	Bottle Prep Technician (1) Sample Mng't Manager (2)	

Figure 4-1.
Corporate and Laboratory Organization Charts



THE LEADER IN ENVIRONMENTAL TESTING

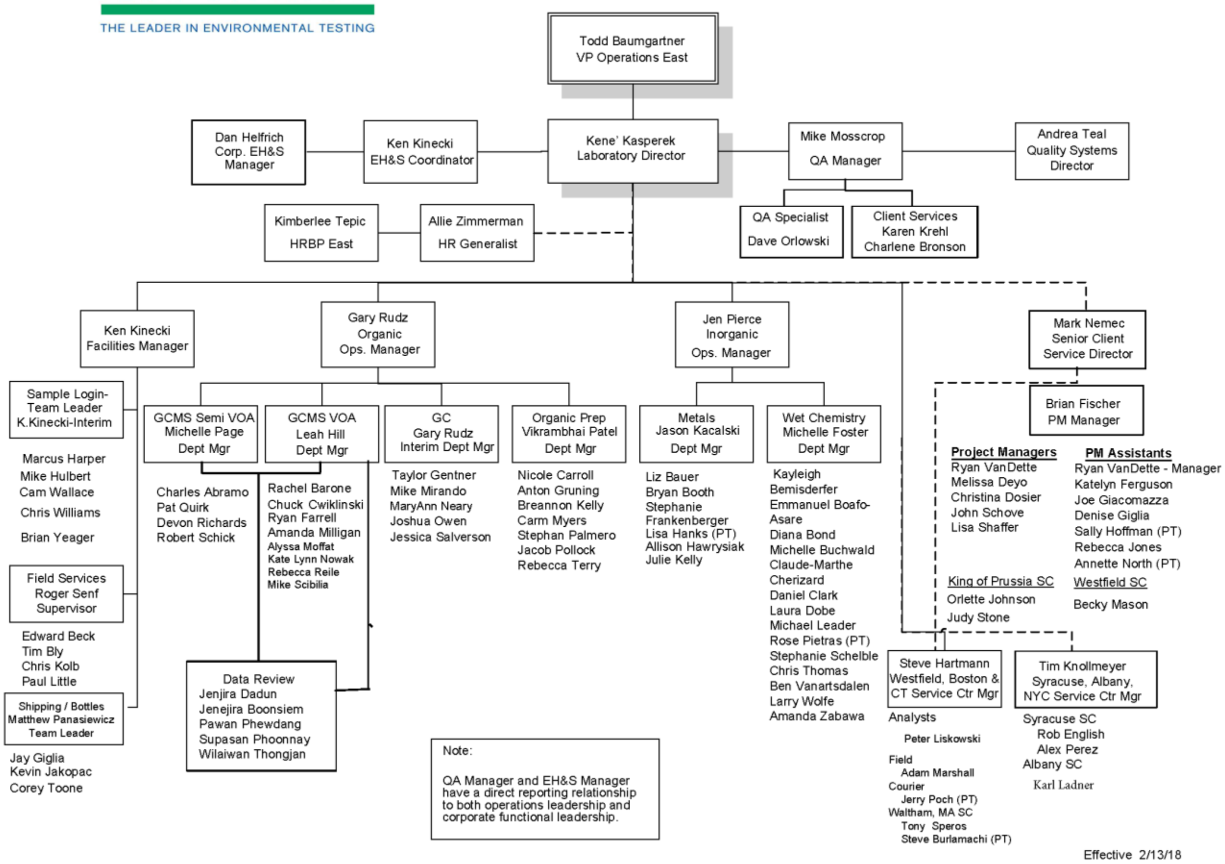
Quality, EHS, Bangkok



January 3, 2018

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Buffalo Laboratory Organization



Note: Organizational Charts are current at the date of publication of this manual. Updated charts may be obtained by contacting the TestAmerica Buffalo Quality Department.

SECTION 5

QUALITY SYSTEM

5.1 QUALITY POLICY STATEMENT

It is TestAmerica's Policy to:

- Provide data of known quality to its clients by adhering to approved methodologies, regulatory requirements and the QA/QC protocols.
- Effectively manage all aspects of the laboratory and business operations by the highest ethical standards.
- Continually improve systems and provide support to quality improvement efforts in laboratory, administrative and managerial activities. TestAmerica recognizes that the implementation of a quality assurance program requires management's commitment and support as well as the involvement of the entire staff.
- Provide clients with the highest level of professionalism and the best service practices in the industry.
- To comply with the NELAC Standards (2003), ISO/IEC 17025:2005(E) International Standard, the 2009 TNI Standard and to continually improve the effectiveness of the management system.

Every staff member at the laboratory plays an integral part in quality assurance and is held responsible and accountable for the quality of their work. It is, therefore, required that all laboratory personnel are trained and agree to comply with applicable procedures and requirements established by this document.

5.2 ETHICS AND DATA INTEGRITY

TestAmerica is committed to ensuring the integrity of its data and meeting the quality needs of its clients. The 7 elements of TestAmerica's Ethics and Data Integrity Program include:

- An Ethics Policy (Corporate Policy No. CW-L-P-004) and Employee Ethics Statements.
- Ethics and Compliance Officers (ECOs).
- A training program.
- Self-governance through disciplinary action for violations.
- A confidential mechanism for anonymously reporting alleged misconduct and a means for conducting internal investigations of all alleged misconduct. (Corporate SOP No. CW-L-S-002)
- Procedures and guidance for recalling data if necessary (Corporate SOP No. CW-Q-S-005).

- Effective external and internal monitoring system that includes procedures for internal audits (Section 15).
- Produce results, which are accurate and include QA/QC information that meets client pre-defined Data Quality Objectives (DQOs).
- Present services in a confidential, honest and forthright manner.
- Provide employees with guidelines and an understanding of the Ethical and Quality Standards of our industry.
- Operate our facilities in a manner that protects the environment and the health and safety of employees and the public.
- Obey all pertinent federal, state and local laws and regulations and encourage other members of our industry to do the same.
- Educate clients as to the extent and kinds of services available.
- Assert competency only for work for which adequate personnel and equipment are available and for which adequate preparation has been made.
- Promote the status of environmental laboratories, their employees, and the value of services rendered by them.

5.3 QUALITY SYSTEM DOCUMENTATION

The laboratory's Quality System is communicated through a variety of documents:

- Quality Assurance Manual – Each laboratory has a lab specific quality assurance manual.
- Corporate SOPs and Policies - Corporate SOPs and Policies are developed for use by all relevant laboratories. They are incorporated into the laboratories normal SOP distribution, training and tracking system. Corporate SOPs may be general or technical.
- Work Instructions - A subset of procedural steps, tasks or forms associated with an operation of a management system (e.g., checklists, preformatted bench sheets, forms).
- Laboratory SOPs – General and Technical
- Laboratory QA/QC Policy Memorandums

5.3.1 Order of Precedence

In the event of a conflict or discrepancy between policies, the order of precedence is as follows:

- Corporate Quality Management Plan (CQMP)
- Corporate SOPs and Policies
- Laboratory QA/QC Policy Memorandum
- Laboratory Quality Assurance Manual (QAM)
- Laboratory SOPs and Policies
- Other (Work Instructions (WI), memos, flow charts, etc.)

Note: The laboratory has the responsibility and authority to operate in compliance with regulatory requirements of the jurisdiction in which the work is performed. Where the CQMP conflicts with those regulatory requirements, the regulatory requirements of the jurisdiction shall hold primacy. The laboratory's QAM shall take precedence over the CQMP in those cases.

5.4 QA/QC OBJECTIVES FOR THE MEASUREMENT OF DATA

Quality Assurance (QA) and Quality Control (QC) are activities undertaken to achieve the goal of producing data that accurately characterize the sites or materials that have been sampled. Quality Assurance is generally understood to be more comprehensive than Quality Control. Quality Assurance can be defined as the integrated system of activities that ensures that a product or service meets defined standards.

Quality Control is generally understood to be limited to the analyses of samples and to be synonymous with the term *"analytical quality control"*. QC refers to the routine application of statistically based procedures to evaluate and control the accuracy of results from analytical measurements. The QC program includes procedures for estimating and controlling precision and bias and for determining reporting limits.

Request for Proposals (RFPs) and Quality Assurance Project Plans (QAPP) provide a mechanism for the client and the laboratory to discuss the data quality objectives in order to ensure that analytical services closely correspond to client needs. The client is responsible for developing the QAPP. In order to ensure the ability of the laboratory to meet the Data Quality Objectives (DQOs) specified in the QAPP, clients are advised to allow time for the laboratory to review the QAPP before being finalized. Additionally, the laboratory will provide support to the client for developing the sections of the QAPP that concern laboratory activities.

Historically, laboratories have described their QC objectives in terms of precision, accuracy, representativeness, comparability, completeness, selectivity and sensitivity (PARCCSS).

5.4.1 Precision

The laboratory objective for precision is to meet the performance for precision demonstrated for the methods on similar samples and to meet data quality objectives of the EPA and/or other regulatory programs. Precision is defined as the degree of reproducibility of measurements under a given set of analytical conditions (exclusive of field sampling variability). Precision is documented on the basis of replicate analysis, usually duplicate or matrix spike (MS) duplicate samples.

5.4.2 Accuracy

The laboratory objective for accuracy is to meet the performance for accuracy demonstrated for the methods on similar samples and to meet data quality objectives of the EPA and/or other regulatory programs. Accuracy is defined as the degree of bias in a measurement system. Accuracy may be documented through the use of laboratory control samples (LCS) and/or MS.

A statement of accuracy is expressed as an interval of acceptance recovery about the mean recovery.

5.4.3 Representativeness

The laboratory objective for representativeness is to provide data which is representative of the sampled medium. Representativeness is defined as the degree to which data represent a characteristic of a population or set of samples and is a measurement of both analytical and field sampling precision. The representativeness of the analytical data is a function of the procedures used in procuring and processing the samples. The representativeness can be documented by the relative percent difference between separately procured, but otherwise identical samples or sample aliquots.

The representativeness of the data from the sampling sites depends on both the sampling procedures and the analytical procedures. The laboratory may provide guidance to the client regarding proper sampling and handling methods in order to assure the integrity of the samples.

5.4.4 Comparability

The comparability objective is to provide analytical data for which the accuracy, precision, representativeness and reporting limit statistics are similar to these quality indicators generated by other laboratories for similar samples, and data generated by the laboratory over time.

The comparability objective is documented by inter-laboratory studies carried out by regulatory agencies or carried out for specific projects or contracts, by comparison of periodically generated statements of accuracy, precision and reporting limits with those of other laboratories.

5.4.5 Completeness

The completeness objective for data is 90% (or as specified by a particular project), expressed as the ratio of the valid data to the total data over the course of the project. Data will be considered valid if they are adequate for their intended use. Data usability will be defined in a QAPP, project scope or regulatory requirement. Data validation is the process for reviewing data to determine its usability and completeness. If the completeness objective is not met, actions will be taken internally and with the data user to improve performance. This may take the form of an audit to evaluate the methodology and procedures as possible sources for the difficulty or may result in a recommendation to use a different method.

5.4.6 Selectivity

Selectivity is defined as: The capability of a test method or instrument to respond to a target substance or constituent in the presence of non-target substances. Target analytes are separated from non-target constituents and subsequently identified/detected through one or more of the following, depending on the analytical method: extractions (separation), digestions (separation), interelement corrections (separation), use of matrix modifiers (separation), specific retention times (separation and identification), confirmations with different columns or detectors (separation and identification), specific wavelengths (identification), specific mass spectra (identification), specific electrodes (separation and identification), etc..

5.4.7 Sensitivity

Sensitivity refers to the amount of analyte necessary to produce a detector response that can be reliably detected (Method Detection Limit) or quantified (Reporting Limit).

5.5 CRITERIA FOR QUALITY INDICATORS

The laboratory maintains Quality Control Limit Data in their LIMS system. A summary report is generated from LIMS to check the precision and accuracy acceptability limits for performed analyses on request. The summary report is generated and is managed by the laboratory's QA department. Some acceptability limits are derived from US EPA methods when they are required. Where US EPA method limits are not required, the laboratory has developed limits from evaluation of data from similar matrices. Criteria for development of control limits are contained in Section 24.

5.6 STATISTICAL QUALITY CONTROL

Statistically-derived precision and accuracy limits are required by selected methods (such as SW-846) and programs [such as the Ohio Voluntary Action Plan (VAP)]. The laboratory routinely utilizes statistically-derived limits to evaluate method performance and determine when corrective action is appropriate. The procedure for determining the statistical limits may be found in SOP BF-QA-002, Quality Control Limits. The analysts are instructed to use the current limits in the laboratory (dated and approved the QA Manager) and entered into the Laboratory Information Management System (LIMS). The Quality Assurance department maintains an archive of all limits used within the laboratory through date sensitive tables within the LIMS System. If a method defines the QC limits, the method limits are used.

If a method requires the generation of historical limits, the lab develops such limits from recent data in the QC database of the LIMS following the guidelines described in Section 24. All calculations and limits are documented and dated when approved and effective. On occasion, a client requests contract-specified limits for a specific project.

Surrogate recoveries are determined for a specific time period as defined above. The resulting ranges are entered in LIMS.

Current QC limits are entered and maintained in the LIMS analyte database. As sample results and the related QC are entered into LIMS, the sample QC values are compared with the limits in LIMS to determine if they are within the acceptable range. The analyst then evaluates if the sample needs to be rerun or re-extracted/rerun or if a comment should be added to the report explaining the reason for the QC outlier.

5.6.1 QC Charts

The QA Manager periodically evaluates these to determine if adjustments need to be made or for corrective actions to methods (SOP No. BF-QA-002). All findings are documented and kept on file.

5.7 QUALITY SYSTEM METRICS

In addition to the QC parameters discussed above, the entire Quality System is evaluated on a monthly basis through the use of specific metrics (refer to Section 16). These metrics are used to drive continuous improvement in the laboratory's Quality System.

SECTION 6

DOCUMENT CONTROL

6.1 OVERVIEW

The QA Department is responsible for the control of documents used in the laboratory to ensure that approved, up-to-date documents are in circulation and out-of-date (obsolete) documents are archived or destroyed. The following documents, at a minimum, must be controlled:

- Laboratory Quality Assurance Manual
- Laboratory Standard Operating Procedures (SOP)
- Laboratory Policies
- Work Instructions and Forms
- Corporate Policies and Procedures distributed outside the intranet

Corporate Quality posts Corporate Manuals, SOPs, Policies, Work Instructions, White Papers and Training Materials on the company intranet site. These Corporate documents are only considered controlled when they are read on the intranet site. Printed copies are considered uncontrolled unless the laboratory physically distributes them as controlled documents. A detailed description of the procedure for issuing, authorizing, controlling, distributing, and archiving corporate documents is found in Corporate SOP No. CW-Q-S-001, Corporate Document Control and Archiving. The laboratory's internal document control procedure is defined in SOP No. BF-QA-003.

The laboratory QA Department also maintains access to various references and document sources integral to the operation of the laboratory. This includes reference methods and regulations. Instrument manuals (hard or electronic copies) are also maintained by the laboratory.

The laboratory maintains control of records for raw analytical data and supporting records such as audit reports and responses, logbooks, standard logs, training files, MDL studies, Proficiency Testing (PT) studies, certifications and related correspondence, and corrective action notices. Raw analytical data consists of bound logbooks, instrument printouts, any other notes, magnetic media, electronic data and final reports.

6.2 DOCUMENT APPROVAL AND ISSUE

The pertinent elements of a document control system for each document include a unique document title and number, pagination, the total number of pages of the item, or an 'end of document' page, the effective date, revision number and the laboratory's name. The Quality personnel are responsible for the maintenance of the system.

Controlled documents are authorized by the QA Department. In order to develop a new document, a Department Manager submits an electronic draft to the QA Department for suggestions and approval before use. Upon approval, QA personnel add the identifying version information to the document and retain that document as the official document on file. That document is then provided to all applicable operational units. Controlled documents are identified as such and records of their distribution are kept by the QA Department. Document control may be achieved by either electronic or hardcopy distribution.

The QA Department maintains a list of the official versions of controlled documents.

Quality System Policies and Procedures will be reviewed at a minimum of every two years for the majority of procedures. Exceptions include review every 1 year for Drinking Water programs and the Kentucky CWA program. Changes to documents occur when a procedural change warrants.

6.3 PROCEDURES FOR DOCUMENT CONTROL POLICY

For changes to the QA Manual, refer to SOP No. BF-QA-003, "Writing, Reviewing and Revising Controlled Documents". Uncontrolled copies must not be used within the laboratory. Previous revisions and back-up data are stored by the QA department. A controlled electronic copy of the current version is maintained on the laboratory public storage server (L: drive) or through the TALS File Share menu within the LIMS, and is available to all personnel.

For changes to SOPs, refer to SOP No. BF-QA-003, "Writing, Reviewing and Revising Controlled Documents".

Forms, worksheets, work instructions and information are organized by department and are maintained electronically by QA. There is a table of contents. As revisions are required, a new version number and revision date is assigned. Controlled electronic copies are made available on a public server for laboratory staff to access.

6.4 OBSOLETE DOCUMENTS

When revisions are implemented for an SOP, form or work instruction, the previous document becomes obsolete and is archived. All invalid or obsolete documents are removed, or otherwise prevented from unintended use. The laboratory has specific procedures as described above to accomplish this. In general, obsolete documents are collected from employees according to distribution lists and are destroyed. At least one copy of the obsolete document is archived according to SOPs No. BF-GP-015 and BF-QA-003. All archived SOPs, manuals, forms or work instructions are considered obsolete.

SECTION 7

SERVICE TO THE CLIENT

7.1 OVERVIEW

The laboratory has established procedures for the review of work requests and contracts, oral or written. The procedures include evaluation of the laboratory's capability and resources to meet the contract's requirements within the requested time period. All requirements, including the methods to be used, must be adequately defined, documented and understood. For many environmental sampling and analysis programs, testing design is site or program specific and does not necessarily "fit" into a standard laboratory service or product. It is the laboratory's intent to provide both standard and customized environmental laboratory services to our clients.

A thorough review of technical and QC requirements contained in contracts is performed to ensure project success. The appropriateness of requested methods, and the lab's capability to perform them must be established. Projects, proposals and contracts are reviewed for adequately defined requirements and the laboratory's capability to meet those requirements. Alternate test methods that are capable of meeting the clients' requirements may be proposed by the lab. A review of the lab's capability to analyze non-routine analytes is also part of this review process.

All projects, proposals and contracts are reviewed for the client's requirements in terms of compound lists, test methodology requested, sensitivity (detection and reporting levels), accuracy, and precision requirements (% Recovery and RPD). The reviewer ensures that the laboratory's test methods are suitable to achieve these requirements and that the laboratory holds the appropriate certifications and approvals to perform the work. The laboratory and any potential subcontract laboratories must be certified, as required, for all proposed tests.

The laboratory must determine if it has the necessary physical, personnel and information resources to meet the contract, and if the personnel have the expertise needed to perform the testing requested. Each proposal is checked for its impact on the capacity of the laboratory's equipment and personnel. As part of the review, the proposed turnaround time will be checked for feasibility.

Electronic or hard copy deliverable requirements are evaluated against the laboratory's capacity for production of the documentation.

If the laboratory cannot provide all services but intends to subcontract such services, whether to another TestAmerica facility or to an outside firm, this will be documented and discussed with the client prior to contract approval. (Refer to Section 8 for Subcontracting Procedures.)

The laboratory informs the client of the results of the review if it indicates any potential conflict, deficiency, lack of accreditation, or inability of the lab to complete the work satisfactorily. Any discrepancy between the client's requirements and the laboratory's capability to meet those requirements is resolved in writing before acceptance of the contract. It is necessary that the contract be acceptable to both the laboratory and the client. Amendments initiated by the client and/or TestAmerica, are documented in writing.

All contracts, QAPPs, Sampling and Analysis Plans (SAPs), contract amendments, and documented communications become part of the project record.

The same contract review process used for the initial review is repeated when there are amendments to the original contract by the client and the participating personnel are informed of the changes.

7.2 REVIEW SEQUENCE AND KEY PERSONNEL

Appropriate personnel will review the work request at each stage of evaluation.

For routine projects and other simple tasks, a review by the Project Manager (PM) is considered adequate. The PM confirms that the laboratory has any required certifications, that it can meet the clients' data quality and reporting requirements and that the lab has the capacity to meet the clients turn around needs. It is recommended that, where there is a sales person assigned to the account, an attempt should be made to contact that sales person to inform them of the incoming samples.

For new, complex or large projects, the proposed contract is given to the Client Relations Manager or Proposal Team, who will decide which lab will receive the work based on the scope of work and other requirements, including certification, testing methodology, and available capacity to perform the work. The contract review process is outlined in TestAmerica's Corporate SOP No. CA-L-P-002**,** Contract Compliance Policy.

This review encompasses all facets of the operation. The scope of work is distributed to the appropriate personnel, as needed based on scope of contract, to evaluate all of the requirements shown above (not necessarily in the order below):

- Contact Administrator
- VP of Operations
- Laboratory Project Manager
- Laboratory and/or Corporate Technical Managers
- Corporate Information Technology Managers/Directors
- Regional and/or National Account representatives
- Laboratory and/or Corporate Quality
- Laboratory and/or Corporate Environmental Health and Safety Managers/Directors
- The Laboratory Director reviews the formal laboratory quote and makes final acceptance for their facility.

The Sales Director, Contract Administrator, Account Executive or Proposal Coordinator then submits the final proposal to the client.

In the event that one of the above personnel is not available to review the contract, his or her back-up will fulfill the review requirements.

The Contracts Department maintains copies of all signed contracts. The Project Managers at the TestAmerica Buffalo facility also maintains copies of these documents.

7.3 DOCUMENTATION

Appropriate records are maintained for every contract or work request. All stages of the contract review process are documented and include records of any significant changes.

The contract will be distributed to and maintained by the appropriate sales/marketing personnel and the Account Executive. A copy of the contract and formal quote will be filed with the laboratory PM and the Laboratory Director.

Records are maintained of pertinent discussions with a client relating to the client's requirements or the results of the work during the period of execution of the contract. The PM keeps a phone log of conversations with the client.

7.3.1 Project-Specific Quality Planning

Communication of contract specific technical and QC criteria is an essential activity in ensuring the success of site specific testing programs. To achieve this goal a PM is assigned to each client. The PM is the first point of contact for the client. It is the PM's responsibility to ensure that project specific technical and QC requirements are effectively evaluated and communicated to the laboratory personnel before and during the project. QA department involvement may be needed to assist in the evaluation of custom QC requirements. Specific information related to project planning may be found in SOP BF-PM-001, Project Information Requirements.

PM's are the primary client contact and they ensure resources are available to meet project requirements. Although PM's do not have direct reports or staff in production, they coordinate opportunities and work with laboratory management staff to ensure available resources are sufficient to perform work for the client's project. Project management is positioned between the client and laboratory resources.

Prior to work on a new project, the dissemination of project information and/or project opening meetings may occur to discuss schedules and unique aspects of the project. Items to be discussed may include the project technical profile, turnaround times, holding times, methods, analyte lists, reporting limits, deliverables, sample hazards, or other special requirements. The PM introduces new projects to the laboratory staff through project kick-off meetings or to the management staff during production meetings. These meetings provide direction to the laboratory staff in order to maximize production and client satisfaction, while maintaining quality. In addition, project notes may be associated with each sample batch as a reminder upon sample receipt and analytical processing.

During the project, any change that may occur within an active project is agreed upon between the client/regulatory agency and the PM/laboratory. These changes (e.g., use of a non-standard method or modification of a method) and approvals must be documented prior to implementation. Documentation pertains to any document, e.g., letter, e-mail, variance, contract addendum, which has been signed by both parties.

Such changes are also communicated to the laboratory during production meetings. Such changes are updated to the project notes and are introduced to the managers at these meetings. The laboratory staff is then introduced to the modified requirements via the PM or the individual laboratory Department Manager. After the modification is implemented into the laboratory process, documentation of the modification is made in the case narrative of the data report(s).

The laboratory strongly encourages client visits to the laboratory and for formal/informal information sharing session with employees in order to effectively communicate ongoing client needs as well as project specific details for customized testing programs.

7.4 SPECIAL SERVICES

The laboratory cooperates with clients and their representatives to monitor the laboratory's performance in relation to work performed for the client. It is the laboratory's goal to meet all client requirements in addition to statutory and regulatory requirements. The laboratory has procedures to ensure confidentiality to clients (Section 15 and 25).

The laboratory's standard procedures for reporting data are described in Section 25. Special services are also available and provided upon request. These services include:

- Reasonable access for our clients or their representatives to the relevant areas of the laboratory for the witnessing of tests performed for the client.
- Assist client-specified third party data validators as specified in the client's contract.
- Supplemental information pertaining to the analysis of their samples. Note: An additional charge may apply for additional data/information that was not requested prior to the time of sample analysis or previously agreed upon.

7.5 CLIENT COMMUNICATION

Project managers are the primary communication link to the clients. They shall inform their clients of any delays in project completion as well as any non-conformances in either sample receipt or sample analysis. Project management will maintain ongoing client communication throughout the entire client project.

Technical Managers/Designees are available to discuss any technical questions or concerns that the client may have.

7.6 REPORTING

The laboratory works with our clients to produce any special communication reports required by the contract.

7.7 CLIENT SURVEYS

The laboratory assesses both positive and negative client feedback. The results are used to improve overall laboratory quality and client service.

TestAmerica's Sales and Marketing teams periodically develops lab and client specific surveys to assess client satisfaction.

SECTION 8

SUBCONTRACTING OF TESTS

8.1 OVERVIEW

For the purpose of this quality manual, the phrase subcontract laboratory refers to a laboratory external to the TestAmerica laboratories. The phrase “work sharing” refers to internal transfers of samples between the TestAmerica laboratories. The term outsourcing refers to the act of subcontracting tests.

When contracting with our clients, the laboratory makes commitments regarding the services to be performed and the data quality for the results to be generated. When the need arises to outsource testing for our clients because project scope, changes in laboratory capabilities, capacity or unforeseen circumstances, we must be assured that the subcontractors or work sharing laboratories understand the requirements and will meet the same commitments we have made to the client. Refer to TestAmerica’s Corporate SOP’s on Subcontracting Procedures (CW-L-S-004) and the Work Sharing Process (CA-C-S-001).

When outsourcing analytical services, the laboratory will assure, to the extent necessary, that the subcontract or work sharing laboratory maintains a program consistent with the requirements of this document, the requirements specified in TNI/ISO 17025 and/or the client’s Quality Assurance Project Plan (QAPP). All QC guidelines specific to the client’s analytical program are transmitted to the subcontractor and agreed upon before sending the samples to the subcontract facility. Additionally, work requiring accreditation will be placed with an appropriately accredited laboratory. The laboratory performing the subcontracted work will be identified in the final report, as will non-TNI accredited work where required.

Project Managers (PMs), Client Service Managers (CSM), or Account Executives (AE) for the Export Lab (TestAmerica laboratory that transfers samples to another laboratory) are responsible for obtaining client approval prior to subcontracting any samples. The laboratory will advise the client of a subcontract or work sharing arrangement in writing and when possible approval from the client shall be retained in the project folder. Standard TestAmerica Terms & Conditions include the flexibility to subcontract samples within the TestAmerica laboratories. Therefore, additional advance notification to clients for intra-laboratory subcontracting is not necessary unless specifically required by a client contract.

Note: In addition to the client, some regulating agencies, such as the Department of Energy and the USDA, may require notification prior to placing such work**.**

Approval may be documented through reference in a quote / contract or e-mail correspondence.

8.2 QUALIFYING AND MONITORING SUBCONTRACTORS

Whenever a PM, Account Executive (AE) or Client Service Manager (CSM) becomes aware of a client requirement or laboratory need where samples must be outsourced to another laboratory, the other laboratory(s) shall be selected based on the following:

- The first priority is to attempt to place the work in a qualified TestAmerica laboratory.
- Subcontractors specified by the client - In these circumstances, the client assumes responsibility for the quality of the data generated from the use of a subcontractor. Documentation that a subcontractor was designated by the client must be maintained with the project file. This documentation can be as simple as placing a copy of an e-mail from the client in the project folder.
- Subcontractors reviewed by TestAmerica – Firms which have been reviewed by the company and are known to meet standards for accreditations (e.g., State, TNI); technical specifications; legal and financial information.

A listing of vendors is available on the TestAmerica intranet site.

All TestAmerica laboratories are pre-qualified for work-sharing provided they hold the appropriate accreditations, can adhere to the project/program requirements, and the client approved sending samples to that laboratory. The client must provide acknowledgement that the samples can be sent to that facility (an e-mail is sufficient documentation or if acknowledgement is verbal, the date, time, and name of person providing acknowledgement must be documented). The originating laboratory is responsible for communicating all technical, quality, and deliverable requirements as well as other contract needs. (Corporate SOP No. CA-C-S-001, Work Sharing Process).

8.2.1 When the potential sub-contract laboratory has not been previously approved, Account Executives or PMs may nominate a laboratory as a subcontractor based on need. The decision to nominate a laboratory must be approved by the Laboratory Director. The Laboratory Director requests that the QA Manager/Designee begin the process of approving the subcontract laboratory as outlined in Corporate SOP No. CA-L-S-004, Subcontracting Procedures.

Once the appropriate accreditation and legal information is received by the laboratory, it is evaluated for acceptability (where applicable) and forwarded to the Corporate Quality Information Manager (QIM) for review. Once all documents are reviewed for completeness, the Corporate QIM will forward the documents to the Purchasing Manager for formal signature and contracting with the laboratory. The approved vendor will be added to the approved subcontractor list on the intranet site and the finance group is concurrently notified for JD Edwards.

8.2.2 The client will assume responsibility for the quality of the data generated from the use of a subcontractor they have requested the lab to use. The qualified subcontractors on the intranet site are known to meet minimal standards. TestAmerica does not certify laboratories. The subcontractor is on our approved list and can only be recommended to the extent that we would use them.

8.3 OVERSIGHT AND REPORTING

8.3.1 The status and performance of qualified subcontractors will be monitored periodically by the Corporate Contracts and/or Corporate Quality Departments. Any problems identified will be brought to the attention of TestAmerica's Corporate Finance or Corporate Quality personnel.

- Complaints shall be investigated. Documentation of the complaint, investigation and Corrective action will be maintained in the subcontractor's file on the intranet site. Complaints are posted using the Vendor Performance Report (Form No. CW-F-WI-009)**.**
- Information shall be updated on the intranet when new information is received from the subcontracted laboratories.
- Subcontractors in good standing will be retained on the intranet listing. The CSO personnel will notify all TestAmerica laboratories and Corporate Quality and Corporate Contracts if any laboratory requires removal from the intranet site. This notification will be posted on the intranet site and e-mailed to all CSO Personnel, Laboratory Directors/Managers, QA Managers and Sales Personnel.

Prior to initially sending samples to the subcontracted laboratory, the PM confirms their certification status to determine if it's current and scope-inclusive. The information is documented within the project records.

8.3.2 For continued use of a subcontractor, verification of certification is placed upon the subcontractor for the defined project. Samples are subcontracted under Chain of Custody with the program defined as 'Accreditation Required' and the following statement for verification upon sample receipt:

> **Note:** Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under Chain of Custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analytes/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

For TestAmerica laboratories, certifications can be viewed on the company TotalAccess Database.

8.3.3 The Sample Control department is responsible for ensuring compliance with QA requirements and applicable shipping regulations when shipping samples to a subcontracted laboratory. All subcontracted samples must be accompanied by a TestAmerica Chain of Custody (COC). A copy of the original COC sent by the client must be available in TALS for all samples workshared within TestAmerica. Client COCs are only forwarded to external subcontractors when samples are shipped directly from the project site to the subcontractor lab. Under routine circumstances, client COCs are not provided to external subcontractors

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Through communication with the subcontracted laboratory, the PM monitors the status of the subcontracted analyses, facilities successful execution of the work, and ensures the timeliness and completeness of the analytical report.

Non-TNI accredited work must be identified in the subcontractor's report as appropriate. If TNI accreditation is not required, the report does not need to include this information.

Reports submitted from subcontractor laboratories are not altered and are included in their original form in the final project report. This clearly identifies the data as being produced by a subcontractor facility. If subcontract laboratory data are incorporated into the laboratories EDD (i.e. imported), the report must explicitly indicate which lab produced the data for which methods and samples.

Note: The results submitted by TestAmerica work sharing laboratory may be transferred electronically and the results reported by the TestAmerica work sharing lab are identified on the final report. The report must explicitly indicate which lab produced the data for which methods and samples. The final report must include a copy of the completed COC for all work sharing reports.

8.4 CONTINGENCY PLANNING

The Laboratory Director may waive the full qualification of a subcontractor process temporarily to meet emergency needs; however, this decision & justification must be documented in the project files, and the 'Purchase Order Terms And Conditions For Subcontracted Laboratory Services' must be sent with the samples and Chain-of-Custody.

In the event this provision is utilized, the laboratory (e.g., PM) will be required to verify and document the applicable accreditations of the subcontractor. All other quality and accreditation requirements will still be applicable, but the subcontractor need not have signed a subcontract with TestAmerica at this time. The use of any emergency subcontractor will require the PM to complete a JDE New Vendor Add Form in order to process payment to the vendor and add them to TALS. This form requires the user to define the subcontractor's category/s of testing and the reason for testing.

SECTION 9

PURCHASING SERVICES AND SUPPLIES

9.1 OVERVIEW

Evaluation and selection of suppliers and vendors is performed, in part, on the basis of the quality of their products, their ability to meet the demand for their products on a continuous and short term basis, the overall quality of their services, their past history, and competitive pricing. This is achieved through evaluation of objective evidence of quality furnished by the supplier, which can include certificates of analysis, recommendations, and proof of historical compliance with similar programs for other clients. To ensure that quality critical consumables and equipment conform to specified requirements, which may affect quality, all purchases from specific vendors are approved by a member of the supervisory or management staff. Capital expenditures are made in accordance with TestAmerica's Capital Expenditure, Controlled Purchase Requests and Fixed Asset Capitalization, SOP No. CW-F-S-007.

Contracts will be signed in accordance with TestAmerica's Company-Wide Authorization Matrix Policy, Policy No. CW-F-P-002. Request for Proposals (RFP's) will be issued where more information is required from the potential vendors than just price. Process details are available in TestAmerica's Corporate Procurement and Contracts Policy (Policy No. CW-F-P-004). RFP's allow TestAmerica to determine if a vendor is capable of meeting requirements such as supplying all of the TestAmerica facilities, meeting required quality standards and adhering to necessary ethical and environmental standards. The RFP process also allows potential vendors to outline any additional capabilities they may offer.

9.2 GLASSWARE

Glassware used for volumetric measurements must be Class A or verified for accuracy according to laboratory procedure. Pyrex (or equivalent) glass should be used where possible. For safety purposes, thick-wall glassware should be used where available.

9.3 REAGENTS, STANDARDS & SUPPLIES

Purchasing guidelines for equipment, consumables and reagents must meet the requirements of the specific method and testing procedures for which they are being purchased. Solvents and acids are pre-tested in accordance with TestAmerica's Corporate SOP on Solvent & Acid Lot Testing & Approval, SOP No. CA-Q-S-001 and TestAmerica Buffalo SOP on Solvent Purity, SOP BF-OP-013. Approval information for the solvents and acids tested under SOP CA-Q-S-001 is stored on the TestAmerica Sharepoint, under Solvent Approvals. A master list of all tested materials, as well as the certificates of analysis for the materials, is stored in the same location.

9.3.1 Purchasing

Chemical reagents, solvents, glassware and general supplies are ordered as needed to maintain sufficient quantities on hand. Materials used in the analytical process must be of a known quality. The wide variety of materials and reagents available makes it advisable to specify recommendations for the name, brand, and grade of materials to be used in any determination. This information is contained in the method SOP. Purchase requisitions are placed into the J.D. Edwards system by designated departmental personnel. The listing of items available in the J.D. Edwards system has been approved for use by the corporate purchasing staff. Each purchase requisition receives final approval by the laboratory Operations Manager or purchasing coordinator before the order is submitted.

The analyst may also check the item out of the on-site consignment system that contains items approved for laboratory use.

9.3.2 Receiving

It is the responsibility of the purchasing manager/designee to receive the shipment. It is the responsibility of the department that ordered the materials to document the date the materials were received. Once the ordered reagents or materials are received, the department that submitted the order compares the information on the label or packaging to the original order to ensure that the purchase meets quality level specified. This is documented through the addition of the received date and initials to the information present on the daily order log.

The purchasing manager/designee verifies the lot numbers of received solvents and acids against the pre-approval lists. If a received material is listed as unapproved, or is not listed, it is sequestered and returned to the vendor. Alternatively, the laboratory may test the material for the intended use, and if it is acceptable, document the approval on the approval list. Records of any testing performed locally are maintained on the shared “public” folder on the computer network.

Materials may not be released for use in the laboratory until they have been inspected, verified as suitable for use, and the inspection/verification has been documented.

Safety Data Sheets (SDSs) are available online through the Company’s intranet website. Anyone may review these for relevant information on the safe handling and emergency precautions of on-site chemicals

9.3.3 Specifications

Methods in use in the laboratory specify the grade of reagent that must be used in the procedure. If the quality of the reagent is not specified, analytical reagent grade will be used. It is the responsibility of the analyst to check the procedure carefully for the suitability of grade of reagent.

Chemicals must not be used past the manufacturer's expiration date and must not be used past the expiration time noted in a method SOP. If expiration dates are not provided, the laboratory may contact the manufacturer to determine an expiration date.

The laboratory assumes a five year expiration date on inorganic dry chemicals and solvents unless noted otherwise by the manufacturer or by the reference source method. Chemicals/solvents should not be used past the manufacturer's or SOP expiration date unless 'verified' (refer to item 3 listed below).

- An expiration date cannot not be extended if the dry chemical/solvent is discolored or appears otherwise physically degraded, the dry chemical/solvent must be discarded.

- Expiration dates can be extended if the dry chemical/solvent is found to be satisfactory based on acceptable performance of quality control samples (Continuing Calibration Verification (CCV), Blanks, Laboratory Control Sample (LCS), etc.).

- If the dry chemical/solvent is used for the preparation of standards, the expiration dates can be extended 6 months if the dry chemical/solvent is compared to an unexpired independent source in performing the method and the performance of the dry chemical/solvent is found to be satisfactory. The comparison must show that the dry chemical meets CCV limits. The comparison studies are maintained along with the calibration raw data for which the reagent was used.

Wherever possible, standards must be traceable to national or international standards of measurement or to national or international reference materials. Records to that effect are available to the user.

Compressed gases in use are checked for pressure and secure positioning daily. To prevent a tank from going to dryness or introducing potential impurities, the pressure should be closely watched as it decreases to approximately 15% of the original reading, at which point it should be replaced. For example, a standard sized laboratory gas cylinder containing 3,000 psig of gas should be replaced when it drops to approximately 500 psig. The quality of the gases must meet method or manufacturer specification or be of a grade that does not cause any analytical interference.

Water used in the preparation of standards or reagents must have a specific conductivity of less than 1- umho/cm (or specific resistivity of greater than 1.0 megohm-cm) at 25°C. The specific conductivity is checked and recorded daily. If the water's specific conductivity is greater than the specified limit, the Facility Manager and appropriate Department Managers/Supervisors must be notified immediately in order to notify all departments, decide on cessation (based on intended use) of activities, and make arrangements for correction.

The laboratory may purchase reagent grade (or other similar quality) water for use in the laboratory. This water must be certified "clean" by the supplier for all target analytes or otherwise verified by the laboratory prior to use. This verification is documented.

Standard lots are verified before first time use if the laboratory switches manufacturers or has historically had a problem with the type of standard.

Purchased bottleware used for sampling must be certified clean and the certificates must be maintained. If uncertified sampling bottleware is purchased, all lots must be verified clean prior to use. This verification must be maintained.

Records of manufacturer's certification and traceability statements are maintained in the LIMS system, files or binders in each laboratory section. These records include date of receipt, lot number (when applicable), and expiration date (when applicable). Incorporation of the item into the record indicates that the analyst has compared the new certificate with the previous one for the same purpose and that no difference is noted, unless approved and so documented by the Technical Manager or QA Manager.

9.3.4 Storage

Reagent and chemical storage is important from the aspects of both integrity and safety. Light-sensitive reagents may be stored in brown-glass containers. Storage conditions are per the Corporate Environmental Health & Safety Manual (Corp. DOC No. CW-E-M-001) and method SOPs or manufacturer instructions.

9.4 PURCHASE OF EQUIPMENT/INSTRUMENTS/SOFTWARE

When a new piece of equipment is needed, either for additional capacity or for replacing inoperable equipment, the analyst or supervisor makes a supply request to the Technical Manager and/or the Laboratory Director. If they agree with the request the procedures outlined in TestAmerica's Corporate Policy No. CA-T-P-001, Qualified Products List, is followed. A decision is made as to which piece of equipment can best satisfy the requirements. The appropriate written requests are completed and purchasing places the order.

Upon receipt of a new or used piece of equipment, an identification name is assigned and added to the equipment list. IT must also be notified so that they can synchronize the instrument for back-ups. Its capability is assessed to determine if it is adequate or not for the specific application. For instruments, a calibration curve is generated, followed by MDLs, Demonstration of Capabilities (DOCs), and other relevant criteria (refer to Section 19). For software, its operation must be deemed reliable and evidence of instrument verification must be retained by the IT Department or QA Department. Software certificates supplied by the vendors are filed with the LIMS Administrator. The manufacturer's operation manual is retained at the bench.

9.5 SERVICES

Service to analytical instruments (except analytical balances) is performed on an as needed basis. Routine preventative maintenance is discussed in Section 20. The need for service is determined by analysts and/or Department Managers. The service providers that perform the services are approved by the Department Managers, Operations Manager and/or Technical Manager.

Analytical balances are serviced and calibrated annually in accordance with SOP BF-GP-002,. The calibration and maintenance services are performed on-site, and the balances are returned to use immediately following successful calibration. When the calibration certificates are received (usually within two weeks of the service), they are reviewed, and documentation of the review is filed with the certificates. If the calibration was unsuccessful, the balance is immediately removed from service and segregated pending either further maintenance or disposal.

Calibration services for support equipment such as NIST thermometers, weight sets, etc, are obtained from vendors with current and valid ISO 17025 accreditation for calibration of the specific piece of equipment. Prior to utilizing the vendor's services, the vendor's accreditation status is verified. Once the equipment has been calibrated, the calibration certificates are reviewed by the QA department, and documentation of the review is filed with the calibration certificates. The equipment is then returned to service within the laboratory

9.6 SUPPLIERS

TestAmerica selects vendors through a competitive proposal / bid process, strategic business alliances or negotiated vendor partnerships (contracts). This process is defined in the Procurements & Contracts Policy (Policy No. CW-F-P-004). The level of control used in the selection process is dependent on the anticipated spending amount and the potential impact on TestAmerica business. Vendors that provide test and measuring equipment, solvents, standards, certified containers, instrument related service contracts or subcontract laboratory services shall be subject to more rigorous controls than vendors that provide off-the-shelf items of defined quality that meet the end use requirements. The JD Edwards purchasing system includes all suppliers /vendors that have been approved for use.

Evaluation of suppliers is accomplished by ensuring the supplier ships the product or material ordered and that the material is of the appropriate quality. This is documented by signing off on packing slips or other supply receipt documents. The purchasing documents contain the data that adequately describe the services and supplies ordered.

Any issues of vendor performance are to be reported immediately by the laboratory staff to the Corporate Purchasing Group by completing a Vendor Performance Report.

The Corporate Purchasing Group will work through the appropriate channels to gather the information required to clearly identify the problem and will contact the vendor to report the problem and to make any necessary arrangements for exchange, return authorization, credit, etc.

As deemed appropriate, the Vendor Performance Reports will be summarized and reviewed to determine corrective action necessary, or service improvements required by vendors

The laboratory has access to a listing of all approved suppliers of critical consumables, supplies and services. This information is provided through the JD Edwards purchasing system.

9.6.1 New Vendor Procedure

TestAmerica employees who wish to request the addition of a new vendor must complete a J.D. Edwards Vendor Add Request Form (available on the intranet site).

New vendors are evaluated based upon criteria appropriate to the products or services provided as well as their ability to provide those products and services at a competitive cost. Vendors are also evaluated to determine if there are ethical reasons or potential conflicts of interest with TestAmerica employees that would make it prohibitive to do business with them as well as their financial stability. The QA Department and/or the Technical Manager are consulted with vendor and product selection that have an impact on quality.

SECTION 10

COMPLAINTS

10.1 OVERVIEW

The laboratory considers an effective client complaint handling processes to be of significant business and strategic value. Listening to and documenting client concerns captures 'client knowledge' that enables our operations to continually improve processes and client satisfaction. An effective client complaint handling process also provides assurance to the data user that the laboratory will stand behind its data, service obligations and products.

A client complaint is any expression of dissatisfaction with any aspect of our business services, e.g., communications, responsiveness, data, reports, invoicing and other functions expressed by any party, whether received verbally or in written form. Client inquiries, complaints or noted discrepancies are documented, communicated to management, and addressed promptly and thoroughly.

The laboratory has procedures for addressing with both external and internal complaints with the goal of providing satisfactory resolution to complaints in a timely and professional manner.

The nature of the complaint is identified, documented and investigated, and an appropriate action is determined and taken. In cases where a client complaint indicates that an established policy or procedure was not followed, the QA Department must evaluate whether a special audit must be conducted to assist in resolving the issue. A written confirmation or letter to the client, outlining the issue and response taken is recommended as part of the overall action taken.

The process of complaint resolution and documentation utilizes the procedures outlined in Section 12 (Corrective Actions) and is documented in the laboratory SOP related Corrective Action (BF-QA-005).

10.2 EXTERNAL COMPLAINTS

An employee that receives a complaint initiates the complaint resolution process by first documenting the complaint according to BF-QA-005.

Complaints fall into two categories: correctable and non-correctable. An example of a correctable complaint would be one where a report re-issue would resolve the complaint. An example of a non-correctable complaint would be one where a client complains that their data was repeatedly late. Non-correctable complaints should be reviewed for preventive action measures to reduce the likely hood of future occurrence and mitigation of client impact.

The general steps in the complaint handling process are:

- Receiving and Documenting Complaints
- Complaint Investigation and Service Recovery

- Process Improvement

The laboratory shall inform the initiator of the complaint of the results of the investigation and the corrective action taken, if any.

10.3 INTERNAL COMPLAINTS

Internal complaints include, but are not limited to: errors and non-conformances, training issues, internal audit findings, and deviations from methods. Corrective actions may be initiated by any staff member who observes a nonconformance and shall follow the procedures outlined in Section 13. In addition, Corporate Management, Sales and Marketing and Information Technology (IT) may initiate a complaint by contacting the laboratory or through the corrective action system described in Section 12.

10.4 MANAGEMENT REVIEW

The number and nature of client complaints is reported by the QA Manager to the laboratory and Quality Director in the QA Monthly report. Monitoring and addressing the overall level and nature of client complaints and the effectiveness of the solutions is part of the Annual Management Review (Section 16)

SECTION 11

CONTROL OF NON-CONFORMING WORK

11.1 OVERVIEW

When data discrepancies are discovered or deviations and departures from laboratory standard procedures, policies and/or client requests have occurred, corrective action is taken immediately. First, the laboratory evaluates the significance of the nonconforming work. Then, a corrective action plan is initiated based on the outcome of the evaluation. If it is determined that the nonconforming work is an isolated incident, the plan could be as simple as adding a qualifier to the final results and/or making a notation in the case narrative. If it is determined that the nonconforming work is a systematic or improper practices issue, the corrective action plan could include a more in depth investigation and a possible suspension of an analytical method. In all cases, the actions taken are documented using the laboratory's corrective action system (refer to Section 12).

Due to the frequently unique nature of environmental samples, sometimes departures from documented policies and procedures are needed. When an analyst encounters such a situation, the problem is presented to the department manager for resolution. The department manager may elect to discuss it with the Technical Manager, QA Manager or have a representative contact the client to decide on a logical course of action. Once an approach is agreed upon, the analyst documents it using the laboratory's non-conformance and corrective action system described in Section 12. This information can then be supplied to the client in the form of a footnote or a case narrative with the report.

Project Management may encounter situations where a client may request that a special procedure be applied to a sample that is not standard lab practice. Based on a technical evaluation, the lab may accept or opt to reject the request based on technical or ethical merit. An example might be the need to report a compound that the lab does not normally report. The lab would not have validated the method for this compound following the procedures in Section 19. The client may request that the compound be reported based only on the calibration. Such a request would need to be approved by the Laboratory Director, Technical Manager, Operations Manager or QA Manager, documented and included in the project folder. Deviations must also be noted on the final report with a statement that the compound is not reported in compliance with the analytical method requirements and the reason.

11.2 RESPONSIBILITIES AND AUTHORITIES

Under certain circumstances the Laboratory Director, the Technical Manager, the Operations Manager or a member of the QA team may exceptionally authorize departures from documented procedures or policies. The departures may be a result of procedural changes due to the nature of the sample; a one-time procedure for a client; QC failures with insufficient sample to reanalyze, etc. In most cases, the client will be informed of the departure prior to the reporting of the data. Any departures must be well documented using the laboratory's non-conformance and corrective action procedures described in Section 12. This information may also need to be documented in logbooks and/or data review checklists as appropriate. Any impacted data must be referenced in a case narrative and/or flagged with an appropriate data qualifier.

Any misrepresentation or possible misrepresentation of analytical data discovered by any laboratory staff member must be reported to facility senior laboratory management within 24-hours. The Senior Management staff is comprised of the Laboratory Director, Technical Manager, and QA Manager. Suspected misrepresentation issues may also be reported to any member of the corporate staff as identified in Ethics Policy, CW-L-P-004. The data integrity hotline (1-800-736-9407) may also be used. The reporting of issues involving alleged violations of the company's Data Integrity or Manual Integration procedures must be conveyed to an Ethics and Compliance Officer (ECO), (e.g., the VP-QA/EHS) and the laboratory's Quality Director within 24 hours of discovery.

Whether an inaccurate result was reported due to calculation or quantitation errors, data entry errors, improper practices, or failure to follow SOPs, the data must be evaluated to determine the possible effect.

The Laboratory Director, QA Manager, ECOs, Corporate Quality, Executive VP of Operations and the Quality Directors have the authority and responsibility to halt work, withhold final reports, or suspend an analysis for due cause as well as authorize the resumption of work.

11.3 EVALUATION OF SIGNIFICANCE AND ACTIONS TAKEN

For each nonconforming issue reported, an evaluation of its significance and the level of management involvement needed is made. This includes reviewing its impact on the final data, whether or not it is an isolated or systematic issue, and how it relates to any special client requirements.

Corporate SOP entitled Data Recalls (CW-Q-S-005) is the procedure to be followed when it is discovered that erroneous or biased data may have been reported to clients or regulatory agencies.

Corporate SOP entitled Internal Investigations (CW-L-S-002) is the procedure to be followed for investigation and correction of situations involved alleged incidents of misconduct or violation of the company's ethics policy.

Laboratory level decisions are documented and approved using the laboratory's standard nonconformance/corrective action reporting in lieu of the data recall determination form contained in TestAmerica's Corporate SOP No. CW-Q-S-005.

11.4 PREVENTION OF NONCONFORMING WORK

If it is determined that the nonconforming work could recur, further corrective actions must be made following the laboratory's corrective action system. Periodically as defined by the laboratory's preventive action schedule, the QA Department evaluates non-conformances to determine if any nonconforming work has been repeated multiple times. If so, the laboratory's corrective action process may be followed.

11.5 METHOD SUSPENSION/RESTRICTION (STOP WORK PROCEDURES)

In some cases it may be necessary to suspend/restrict the use of a method or target compound which constitutes significant risk and/or liability to the laboratory. Suspension/restriction procedures can be initiated by any of the persons noted in Section 11.2, Paragraph 5.

Prior to suspension/restriction, confidentiality will be respected, and the problem with the required corrective and preventive action will be stated in writing and presented to the Laboratory Director.

The Laboratory Director shall arrange for the appropriate personnel to meet with the QA Manager as needed. This meeting shall be held to confirm that there is a problem, that suspension/restriction of the method is required and will be concluded with a discussion of the steps necessary to bring the method/target or test fully back on line. In some cases that may not be necessary if all appropriate personnel have already agreed there is a problem and there is agreement on the steps needed to bring the method, target or test fully back on line.

The QA Manager will also initiate a corrective action report as described in Section 12 if one has not already been started. A copy of any meeting notes and agreed upon steps should be faxed or e-mailed by the laboratory to the appropriate VP of Operations and member of Corporate QA. This fax/e-mail acts as notification of the incident.

After suspension/restriction, the lab will hold all reports to clients pending review. No faxing, mailing or distributing through electronic means may occur. The report must not be posted for viewing on the internet. It is the responsibility of the Laboratory Director to hold all reporting and to notify all relevant laboratory personnel regarding the suspension/restriction (i.e., Project Management, Log-in, etc…). Clients will NOT generally be notified at this time. Analysis may proceed in some instances depending on the non-conformance issue.

Within 72 hours, the QA Manager will determine if compliance is now met and reports can be released, OR determine the plan of action to bring work into compliance, and release work. A team, with all principals involved (Laboratory Director, Technical Manager, Operations Manager, QA Manager, Department Manager) can devise a start-up plan to cover all steps from client notification through compliance and release of reports. Project Management and the Directors of Client Services and Sales and Marketing must be notified if clients must be notified or if the suspension/restriction affects the laboratory's ability to accept work. The QA Manager must approve start-up or elimination of any restrictions after all corrective action is complete. This approval is given by final signature on the completed corrective action report.

SECTION 12

CORRECTIVE ACTION

12.1 OVERVIEW

A major component of TestAmerica's Quality Assurance (QA) Program is the problem investigation and feedback mechanism designed to keep the laboratory staff informed on quality related issues and to provide insight to problem resolution. When nonconforming work or departures from policies and procedures in the quality system or technical operations are identified, the corrective action procedure provides a systematic approach to assess the issues, restore the laboratory's system integrity, and prevent reoccurrence. Corrective actions are documented using Non-Conformance Memo (NCM) and Corrective Action Reports (CAR) (refer to Figure 12-1).

12.2 GENERAL

Problems within the quality system or within analytical operations may be discovered in a variety of ways, such as QC sample failures, internal or external audits, proficiency testing (PT) performance, client complaints, staff observation, etc.

The purpose of a corrective action system is to:

- Identify non-conformance events and assign responsibility for investigating.
- Resolve non-conformance events and assign responsibility for any required corrective action.
- Identify systematic problems before they become serious.
- Identify and track client complaints and provide resolution

12.2.1 Non-Conformance Memo (NCM) - is used to document the following types of corrective actions:

- Deviations from an established procedure or SOP
- QC outside of limits (non matrix related)
- Isolated reporting / calculation errors
- Client complaints
- Project Management concerns regarding specific analytical results
- Discrepancies in materials / goods received vs. manufacturer packing slips.

12.2.2 Corrective Action Report (CAR) - is used to document the following types of corrective actions:

- Questionable trends that are found in the monthly review of NCMs.
- Issues found while reviewing NCMs that warrant further investigation.

- Internal and External Audit Findings
- Failed or Unacceptable PT results.
- Corrective actions that cross multiple departments in the laboratory.
- Systematic Reporting / Calculation Errors
- Client complaints
- Data recall investigations
- Identified poor process or method performance trends
- Excessive revised reports

This will provide background documentation to enable root cause analysis and preventive action.

12.3 CLOSED LOOP CORRECTIVE ACTION PROCESS

Any employee in the company can initiate a corrective action. There are four main components to a closed-loop corrective action process once an issue has been identified: Cause Analysis, Selection and Implementation of Corrective Actions (both short and long term), Monitoring of the Corrective Actions, and Follow-up.

12.3.1 Cause Analysis

- Upon discovery of a non-conformance event, the event must be defined and documented. A NCM or CAR must be initiated, someone is assigned to investigate the issue and the event is investigated for cause. Table 12-1 provides some general guidelines on determining responsibility for assessment.
- The cause analysis step is the key to the process as a long term corrective action cannot be determined until the cause is determined.
- If the cause is not readily obvious, the Department Manager, Operations Manager, Technical Manager, or QA Manager (or QA designee) is consulted.

12.3.2 Selection and Implementation of Corrective Actions

- Where corrective action is needed, the laboratory shall identify potential corrective actions. The action(s) most likely to eliminate the problem and prevent recurrence are selected and implemented. Responsibility for implementation is assigned.
- Corrective actions shall be to a degree appropriate to the magnitude of the problem identified through the cause analysis.
- Whatever corrective action is determined to be appropriate, the laboratory shall document and implement the changes. The NCM or CAR is used for this documentation.

12.3.3 Root Cause Analysis

Root Cause Analysis is a class of problem solving (investigative) methods aimed at identifying the basic or causal factor(s) that underlie variation in performance or the occurrence of a significant failure. The root cause may be buried under seemingly innocuous events, many steps preceding the perceived failure. At first glance, the immediate response is typically directed at a symptom and not the cause. Typically, root cause analysis would be best with three or more incidents to triangulate a weakness. Corporate SOP Root Cause Analysis (No. CA-Q-S-009) describes the procedure.

Systematically analyze and document the Root Causes of the more significant problems that are reported. Identify, track, and implement the corrective actions required to reduce the likelihood of recurrence of significant incidents. Trend the Root Cause data from these incidents to identify Root Causes that, when corrected, can lead to dramatic improvements in performance by eliminating entire classes of problems.

Identify the one event associated with problem and ask why this event occurred. Brainstorm the root causes of failures; for example, by asking why events occurred or conditions existed; and then why the cause occurred 5 consecutive times until you get to the root cause. For each of these sub events or causes, ask why it occurred. Repeat the process for the other events associated with the incident.

Root cause analysis does not mean the investigation is over. Look at technique, or other systems outside the normal indicators. Often creative thinking will find root causes that ordinarily would be missed, and continue to plague the laboratory or operation.

12.3.4 Monitoring of the Corrective Actions

- The Department Manager, Operations Manager and QA Manager are responsible to ensure that the corrective action taken was effective.
- Ineffective actions are documented and re-evaluated until acceptable resolution is achieved. Department Managers and the Operations Manager are accountable to the Laboratory Director to ensure final acceptable resolution is achieved and documented appropriately.
- Each NCM is entered into the Laboratory Information Management System (LIMS) and each CAR is entered into the Incident and Corrective Action Tracker (iCAT) database for tracking and trending purposes for review to aid in ensuring that the corrective actions have taken effect.
- TestAmerica laboratories began using the Incident/Corrective Action Tracker (iCAT) database developed by the company in 2015. (Previously, a local spreadsheet database served this purpose.) An incident is an event triggering the need for one or more corrective actions as distinct from a corrective action, a potential deficiency stemming from an incident that requires investigation and possibly fixing. The database is independent of TALS, available to all local and corporate managers, and capable of notifying and tracking multiple corrective actions per event, dates, and personnel. iCAT allows associated document

upload, categorization (such as, external/internal audit, client service concerns, data quality issues, proficiency testing, etc.), and trend analysis. Refer to Figure 12-1.

- The QA Manager reviews monthly NCMs and CARs for trends. Highlights are included in the QA monthly report (refer to Section 16). If a significant trend develops that adversely affects quality, an audit of the area is performed and corrective action implemented.
- Any out-of-control situations that are not addressed acceptably at the laboratory level may be reported to the Corporate Quality Director by the QA Manager, indicating the nature of the out-of-control situation and problems encountered in solving the situation.

12.3.5 Follow-up Audits

- Follow-up audits may be initiated by the QA Manager and shall be performed as soon as possible when the identification of a nonconformance casts doubt on the laboratory's compliance with its own policies and procedures, or on its compliance with state or federal requirements.
- These audits often follow the implementation of the corrective actions to verify effectiveness. An additional audit would only be necessary when a critical issue or risk to business is discovered.
- Also refer to Section 15.1.4, Special Audits)

12.4 TECHNICAL CORRECTIVE ACTIONS

In addition to providing acceptance criteria and specific protocols for technical corrective actions in the method SOPs the laboratory has general procedures to be followed to determine when departures from the documented policies and procedures and quality control have occurred (refer to Section 11). The documentation of these procedures is through the use of a NCM or CAR.

Table 12-1 includes examples of general technical corrective actions. For specific criteria and corrective actions refer to the analytical methods or specific method SOPs. The laboratory may also maintain Work Instructions on these items that are available upon request.

Table 12-1 provides some general guidelines for identifying the individual(s) responsible for assessing each QC type and initiating corrective action. The table also provides general guidance on how a data set should be treated if associated QC measurements are unacceptable. Specific procedures are included in Method SOPs, work instructions, QAM Sections 19 and 20. All corrective actions are reviewed monthly at a minimum by the QA Manager and highlights are included in the QA monthly report.

To the extent possible, samples shall be reported only if all quality control measures are acceptable. If the deficiency does not impair the usability of the results, data will be reported with an appropriate data qualifier and/or the deficiency will be noted in the case narrative. Where sample results may be impaired, the Project Manager is notified by an NCM and appropriate corrective action (e.g., reanalysis) is taken and documented.

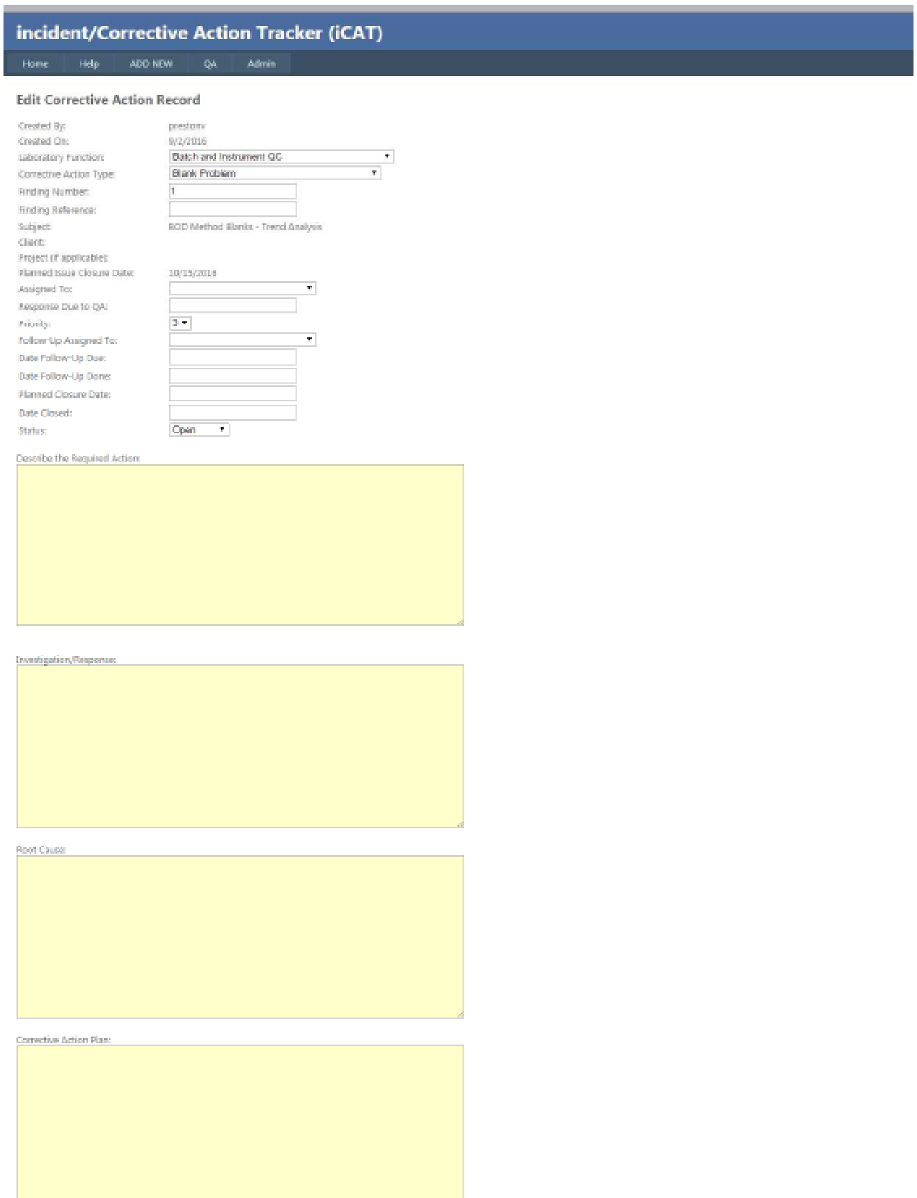
12.5 BASIC CORRECTIONS

When mistakes occur in records, each mistake shall be crossed-out, not obliterated (e.g. no white-out), and the correct value entered alongside. All such corrections shall be initialed (or signed) and dated by the person making the correction. In the case of records stored electronically, the original "uncorrected" file must be maintained intact and a second "corrected" file is created.

This same process applies to adding additional information to a record. All additions made later than the initial must also be initialed (or signed) and dated.

When corrections are due to reasons other than obvious transcription errors, the reason for the corrections (or additions) shall also be documented.

Figure 12-1.
Example – iCAT Corrective Action Notice


incident/Corrective Action Tracker (iCAT)

Home | Help | ADD NEW | QA | Admin

Edit Corrective Action Record

Created By: prestonv
Created On: 9/2/2016
Laboratory Function: Batch and Instrument QC
Corrective Action Type: Blank Problem
Finding Number: 1
Finding Reference:
Subject: BOD Method Blanks - Trend Analysis
Client:
Project (if applicable):
Planned Issue Closure Date: 10/15/2016
Assigned To:
Response Due to QA:
Priority: 3
Follow-Up Assigned To:
Date Follow-Up Due:
Date Follow-Up Done:
Planned Closure Date:
Date Closed:
Status: Open

Describe the Required Action:

Investigation/Response:

Root Cause:

Corrective Action Plan:

Table 12-1. Example – General Corrective Action Procedures

QC Activity ***(Individual Responsible for Initiation/Assessment)***	**Acceptance Criteria**	**Recommended Corrective Action**
Initial Instrument Blank *(Analyst)*	- Instrument response < MDL.	- Prepare another blank. - If same response, determine cause of contamination: reagents, environment, instrument equipment failure, etc.
Initial Calibration Standards *(Analyst, Department Manager)*	- Correlation coefficient > 0.99 or standard concentration value. - % Recovery within acceptance range. - See details in Method SOP.	- Reanalyze standards. - If still unacceptable, remake standards and recalibrate instrument.
Independent Calibration Verification (Second Source) *(Analyst, Department Manager)*	- % Recovery within control limits.	- Remake and reanalyze standard. - If still unacceptable, then remake calibration standards or use new primary standards and recalibrate instrument.
Continuing Calibration Standards *(Analyst, Data Reviewer)*	% Recovery within control limits.	- Reanalyze standard. - If still unacceptable, then recalibrate and rerun affected samples.
Matrix Spike / Matrix Spike Duplicate (MS/MSD) *(Analyst, Data Reviewer)*	- % Recovery within limits documented in LIMs.	- If the acceptance criteria for duplicates or matrix spikes are not met because of matrix interferences, the acceptance of the analytical batch is determined by the validity of the LCS. - If the LCS is within acceptable limits the batch is acceptable. - The results of the duplicates, matrix spikes and the LCS are reported with the data set. -For matrix spike or duplicate results outside criteria the data for the data for that sample shall be reported with qualifiers.

QC Activity *(Individual Responsible for Initiation/Assessment)*	Acceptance Criteria	Recommended Corrective Action
Laboratory Control Sample (LCS) *(Analyst, Data Reviewer)*	- % Recovery within limits specified in LIMs.	- Batch must be re-prepared and re-analyzed. This includes any allowable marginal exceedance. When not using marginal exceedances, the following exceptions apply: 1) when the acceptance criteria for the positive control are exceeded high (i.e., high bias) and there are associated samples that are non-detects, then those non-detects may be reported with data qualifying codes; 2) When the acceptance criteria for the positive control are exceeded low (i.e., low bias), those sample results may be reported if they exceed a maximum regulatory limit/decision level with data qualifying codes. **Note:** If there is insufficient sample or the holding time cannot be met, contact client and report with flags.
Surrogates *(Analyst, Data Reviewer)*	- % Recovery within limits of method or within three standard deviations of the historical mean.	- Individual sample must be repeated. Place comment in LIMS. - Surrogate results outside criteria shall be reported with qualifiers.
Method Blank (MB) *(Analyst, Data Reviewer)*	< Reporting Limit [1]	- Reanalyze blank. - If still positive, determine source of contamination. If necessary, reprocess (i.e. digest or extract) entire sample batch. Report blank results. - Qualify the result(s) if the concentration of a targeted analyte in the MB is at or above the reporting limit AND is > 1/10 of the amount measured in the sample.
Proficiency Testing (PT) Samples *(QA Manager, Department Manager)*	- Criteria supplied by PT Supplier.	- Any failures or warnings must be investigated for cause. Failures may result in the need to repeat a PT sample to show the problem is corrected.

QC Activity ***(Individual Responsible for Initiation/Assessment)***	**Acceptance Criteria**	**Recommended Corrective Action**
Internal / External Audits *(QA Manager, Department Manager, Operations Manager, Technical Manager, Laboratory Director)*	- Defined in Quality System documentation such as SOPs, QAM, etc.	- Non-conformances must be investigated through CAR system and necessary corrections must be made.
Reporting / Calculation Errors *(Depends on issue – possible individuals include: Analysts, Data Reviewers, Project Managers, Department Manager, QA Manager, Corporate QA, Corporate Management)*	- SOP CW-Q-S-005, Data Recall.	- Corrective action is determined by type of error. Follow the procedures in SOP CW-Q-S-005 or lab SOP BF-QA-005
Client Complaints *(Project Managers, Lab Director, Sales and Marketing, QA Manager)*	-	- Corrective action is determined by the type of complaint. For example, a complaint regarding an incorrect address on a report will result in the report being corrected and then follow-up must be performed on the reasons the address was incorrect (e.g., database needs to be updated).
QA Monthly Report (Refer to Section 17 for an example) *(QA Manager, Lab Director, Operations Manager Department Managers)*	- QAM, SOPs.	- Corrective action is determined by the type of issue. For example, CARs for the month are reviewed and possible trends are investigated.
Health and Safety Violation *(EH&S Coordinator, Lab Director, Operations Manager, Department Manager)*	- Environmental Health and Safety (EHS) Manual.	- Non-conformance is investigated and corrected through EH&S office.

Note: 1. Except as noted below for certain compounds, the method blank should be below the reporting limit. Concentrations up to five times the reporting limit will be allowed for the ubiquitous laboratory and reagent contaminants: methylene chloride, acetone, 2-butanone and phthalates provided they appear in similar levels in the reagent blank and samples. This allowance presumes that the reporting limit is significantly below any regulatory limit to which the data are to be compared and that blank subtraction will not occur. For benzene and ethylene dibromide (EDB) and the other analytes for which regulatory limits are extremely close to the detection limit, the method blank must be below the method detection limit.

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SECTION 13.0

PREVENTIVE ACTION / IMPROVEMENT

13.1 OVERVIEW

The laboratory's preventive action programs improve, or eliminate potential causes of nonconforming product and/or nonconformance to the quality system. This preventive action process is a proactive and continuous process of improvement activities that can be initiated through feedback from clients, employees, business providers, and affiliates. The QA Department has the overall responsibility to ensure that the preventive action process is in place, and that relevant information on actions is submitted for management review.

Dedicating resources to an effective preventive action system emphasizes the laboratory's commitment to its Quality Program. It is beneficial to identify and address negative trends before they develop into complaints, problems and corrective actions. Additionally, the laboratory continually strives to improve customer service and client satisfaction through continuous improvements to laboratory systems.

Opportunities for improvement may be discovered through any of the following:

- review of the monthly QA Metrics Report,
- trending NCMs,
- review of control charts and QC results,
- trending proficiency testing (PT) results,
- performance of management system reviews,
- trending client complaints,
- review of processing operations, or
- staff observations.

The monthly Management Systems Metrics Report shows performance indicators in all areas of the laboratory and quality system. These areas include revised reports, corrective actions, audit findings, internal auditing and data authenticity audits, client complaints, PT samples, holding time violations, SOPs, ethics training, etc. The metrics report is reviewed monthly be the laboratory management, Corporate QA and TestAmerica's Executive Committee. These metrics are used in evaluating the management and quality system performance on an ongoing basis and provide a tool for identifying areas for improvement.

Items identified as continuous improvement opportunities to the management system may be issued as goals from the annual management systems review, recommendations from internal audits, white papers, Lesson Learned, Technical Services audit report, Technical Best Practices, or as Corporate or management initiatives.

The laboratory's Corrective Action process is integral to implementation of preventive actions. A critical piece of the corrective action process is the implementation of actions to prevent further occurrence of a non-compliance event. Historical review of corrective action and non-conformances provides a valuable mechanism for identifying preventive action opportunities.

13.1.1 The following elements are part of a preventive action system/process improvement system:

- Identification of an opportunity for preventive action or process improvement.
- Process for the preventive action or improvement.
- Define the measurements of the effectiveness of the process once undertaken.
- Execution of the preventive action or improvment.
- Evaluation of the plan using the defined measurements.
- Verification of the effectiveness of the preventive action or improvement.
- Close-Out by documenting any permanent changes to the Quality System as a result of the Preventive Action or Process Improvement. Documentation of Preventive Action/Process Improvement is incorporated into the monthly QA reports, corrective action process and management review

13.1.2 Any Preventive Actions/Process Improvements undertaken or attempted shall be taken into account during the Annual Management Systems Review (Section 17). A highly detailed report is not required; however a summary of success and failure within the preventive action program is sufficient to provide management with a measurement for evaluation.

13.2 MANAGEMENT OF CHANGE

The Management of Change process is designed to manage significant events and changes that occur within the laboratory. Through these procedures, the potential risks inherent with a new event or change are identified and evaluated. The risks are minimized or eliminated through pre-planning and the development of preventive measures. The types of changes covered under this system include: Facility Changes, Major Accreditation Changes, Addition or Deletion to Division's Capabilities or Instrumentation, Key Personnel Changes, Laboratory Information Management System (LIMS) changes.

SECTION 14.0

CONTROL OF RECORDS

The laboratory maintains a records management system appropriate to its needs and that complies with applicable standards or regulations as required. The system produces unequivocal, accurate records that document all laboratory activities. The laboratory retains all original observations, calculations and derived data, calibration records and a copy of the analytical report for a minimum of five years after it has been issued. Exceptions for programs with longer retention requirements are discussed in Section 14.1.2. TestAmerica Buffalo SOP BF-GP-015, Record Storage and Retention, specifies additional storage, archiving and retention procedures.

14.1 OVERVIEW

The laboratory has established procedures for identification, collection, indexing, access, filing, storage, maintenance and disposal of quality and technical records. A record index is listed in Table 14-1. . More detailed information on retention of specific records is provided in CW-L-P-001, Records Retention Policy and CW-L-WI-001, TestAmerica Records Retention/Storage Schedule. Quality records are maintained by the QA department in a database which is backed up as past of the regular laboratory backup. Records are of two types; either electronic or hard copy paper formats depending on whether the record is computer or hand generated (some records may be in both formats). Hardcopy technical records are maintained by the Laboratory Director and the QA Department while electronic technical records are maintained by the IT Administrator.

14.1.1 All records are stored and retained according to BF-GP-015 and in such a way that they are secure and readily retrievable at the laboratory facility that provides a suitable environment to prevent damage or deterioration and to prevent loss.. All records shall be protected against fire, theft, loss, environmental deterioration and vermin. In the case of electronic records, electronic or magnetic sources, storage media are protected from deterioration caused by magnetic fields and/or electronic deterioration.

Access to the data is limited to laboratory and company employees and shall be documented with an access log.

If records are archived off-site they are to be stored in a secure location where a record is maintained of any entry into the storage facility. Records are maintained for a minimum of five years unless other wise specified by a client or regulatory requirement

For raw data and project records, record retention shall be calculated from the date the project report is issued. For other records, such as Controlled Documents, QA, or Administrative Records, the retention time is calculated from the date the record is formally retired. Records related to the programs listed in Table 14-2 have lengthier retention requirements and are subject to the requirements in Section 14.1.3.

Table 14-1. Record Index[1]

	Record Types [1]:	Retention Time:
Technical Records	- Raw Data - Logbooks[2] - Standards - Certificates - Analytical Records - MDLs/IDLs/DOCs - Lab Reports	5 Years from analytical report issue*
Official Documents	- Quality Assurance Manual (QAM) - Work Instructions - Policies - Policy Memorandums - SOPs - Manuals - Published Methods	Indefinitely
QA Records	- Certifications - Method & Software Validation / Verification Data	Indefinitely
	- Internal & External Audits/Responses - Corrective/Preventive Actions - Management Reviews - Data Investigation	5 Years from archival* **Data Investigation:** 5 years or the life of the affected raw data storage whichever is greater (beyond 5 years if ongoing project or pending investigation)
Project Records	- Sample Receipt & COC Documents - Contracts and Amendments - Correspondence - QAPP / SAP - Telephone Logbooks - Lab Reports	5 Years from analytical report issue*
Administrative Records	Financial and Business Operations	Refer to CW-L-WI-001
	EH&S Manual, Permits	Indefinitely
	Disposal Records	Indefinitely
	Employee Handbook	Indefinitely
	Personnel files, Employee Signature & Initials, Administrative Training Records (e.g., Ethics)	All HR docs have different retention times: Refer to HR Manual
	Administrative Policies	Indefinitely
	Technical Training Records	7 years
	Legal Records	Indefinitely
	HR Records	Refer to CW-L-WI-001
	IT Records	Refer to CW-L-WI-001
	Corporate Governance Records	Refer to CW-L-WI-001
	Sales & Marketing	5 years
	Real Estate	Indefinitely

[1] Record Types encompass hardcopy and electronic records.
[2] Examples of Logbook types: Maintenance, Instrument Run, Preparation (standard & sample), Standard & Reagent Receipt, Archiving, Balance Calibration, Temperature (hardcopy or electronic records).
* Exceptions listed in Table 14-2.

14.1.2 Programs with Longer Retention Requirements

Some regulatory programs have longer record retention requirements than the standard record retention time. These are detailed in Table 14-2 with their retention requirements. In these cases, the longer retention requirement is enacted. If special instructions exist such that client data cannot be destroyed prior to notification of the client, the container or box containing that data is marked as to who to contact for authorization prior to destroying the data. Specific Information related to archival of data for greater than 5 years may be found in TestAmerica Buffalo SOP BF-GP-015.

Table 14-2. Special Record Retention Requirements

Program	[1]Retention Requirement
Drinking Water – All States	10 years (lab reports and raw data) 10 years-Radiochemistry (project records)
Drinking Water Lead and Copper Rule	12 years (project records)
Commonwealth of MA – All environmental data 310 CMR 42.14	10 years
FIFRA – 40 CFR Part 160	Retain for life of research or marketing permit for pesticides regulated by EPA
Housing and Urban Development (HUD) Environmental Lead Testing	10 years
Alaska	10 years
Louisiana – All	10 years
Michigan Department of Environmental Quality – all environmental data	10 years
Navy Facilities Engineering Service Center (NFESC)	5 years
NY Potable Water NYCRR Part 55-2	10 years
TSCA - 40 CFR Part 792	10 years after publication of final test rule or negotiated test agreement
OSHA	30 years

[1]Note: Extended retention requirements are noted with the archive documents or addressed in TestAmerica Buffalo facility-specific records retention procedure BF-GP-015.

14.1.3 The laboratory has procedures to protect and back-up records stored electronically and to prevent unauthorized access to or amendment of these records. All analytical data is maintained as hard copy or in a secure readable electronic format. TestAmerica Buffalo SOP BF-GP-015 also contains specific information for archival of scanned data.

14.1.4 The record keeping system allows for historical reconstruction of all laboratory activities that produced the analytical data, as well as rapid recovery of historical data (any records stored off site should be accessible within 2 business days of a request for such records). The history of the sample from when the laboratory took possession of the samples must be readily understood through the documentation. This shall include inter-laboratory transfers of samples and/or extracts.

- The records include the identity of personnel involved in sampling, sample receipt, preparation, or testing. All analytical work contains the initials (at least) of the personnel involved. The laboratory's copy of the chain of custody is stored with the project file and the Job Number in TALS. The chain of custody would indicate the name of the sampler. If any sampling notes are provided with a work order, they are kept with this package.

- All information relating to the laboratory facilities equipment, analytical test methods, and related laboratory activities, such as sample receipt, sample preparation, or data verification are documented.

- The record keeping system facilitates the retrieval of all working files and archived records for inspection and verification purposes (e.g., set format for naming electronic files, set format for what is included with a given analytical data set). Instrument data is stored sequentially by instrument. Calibration data for a given sequence are maintained in the order of the analysis. Sample data are stored on a job number basis in the project file or as part of the daily batch or sequence. Run logs are maintained for each instrument or method; a copy of each day's run log or instrument sequence is stored with the data to aid in re-constructing an analytical sequence. Where an analysis is performed without an instrument, bound logbooks, bench sheets or excel spreadsheets are used to record and file data. Standard and reagent information is recorded in logbooks or on the raw data for each method as required.

- Changes to hardcopy records shall follow the procedures outlined in Section 13 and 20. Changes to electronic records in LIMS or instrument data are recorded in audit trails.

- The reason for a signature or initials on a document is clearly indicated in the records such as "sampled by," "prepared by," "reviewed by", or "analyzed by".

- All generated data except those that are generated by automated data collection systems, are recorded directly, promptly and legibly in permanent dark ink.

- Hard copy data may be scanned into PDF format for record storage as long as the scanning process can be verified in order to ensure that no data is lost and the data files and storage media must be tested to verify the laboratory's ability to retrieve the information prior to the destruction of the hard copy that was scanned. The procedure for this verification can be found in TestAmerica SOP BF-GP-015.

- Also refer to Section 19.14.1 'Computer and Electronic Data Related Requirements'**.**

14.2 <u>TECHNICAL AND ANALYTICAL RECORDS</u>

14.2.1 The laboratory retains records of original observations, derived data and sufficient information to establish an audit trail, calibration records, staff records and a copy of each analytical report issued, for a minimum of five years unless otherwise specified by a client or regulatory requirement. The records for each analysis shall contain sufficient information to enable the analysis to be repeated under conditions as close as possible to the original. The records shall include the identity of laboratory personnel responsible for the sampling, performance of each analysis and reviewing of results.

14.2.2 Observations, data and calculations are recorded real-time.

14.2.3 Changes to hardcopy records shall follow the procedures outlined in Section 13 and 20. Changes to electronic records in LIMS or instrument data are recorded in audit trails.
The essential information to be associated with analysis, such as strip charts, tabular printouts, computer data files, analytical notebooks, and run logs, include:

- laboratory sample ID code**;**
- Date of analysis; time of analysis is also required if the holding time is seventy-two (72) hours or less, or when time critical steps are included in the analysis (e.g., drying times, incubations, etc.); instrumental analyses have the date and time of analysis recorded as part of their general operations. Where a time critical step exists in an analysis, location for such a time is included as part of the documentation in a specific logbook or on a bench sheet.
- Instrumentation identification and instrument operating conditions/parameters. Operating conditions/parameters are typically recorded in the method specific SOPs, in the instrument method detail records or the instrument maintenance logs where available.
- analysis type**;**
- all manual calculations and manual integrations**;**
- analyst's or operator's initials/signature**;**
- sample preparation including cleanup, separation protocols, incubation periods, ID codes, volumes, weights, instrument printouts, meter readings, temperatures, calculations, reagents**;**
- test results**;**
- standard and reagent origin, receipt, preparation, and use**;**
- calibration criteria, frequency and acceptance criteria**;**
- data and statistical calculations, review, confirmation, interpretation, assessment and reporting conventions**;**
- quality control protocols and assessment**;**
- electronic data security, software documentation and verification, software and hardware audits, backups, and records of any changes to automated data entries.
- Method performance criteria including expected quality control requirements. These are indicated both in the LIMS and on specific analytical report formats**.**

14.3 LABORATORY SUPPORT ACTIVITIES

In addition to documenting all the above-mentioned activities, the following are retained QA records and project records (previous discussions in this section relate where and how these data are stored):

- all original raw data, whether hard copy or electronic, for calibrations, samples and quality control measures, including analysts' work sheets and data output records (chromatograms, strip charts, and other instrument response readout records);
- a written description or reference to the specific test method used which includes a description of the specific computational steps used to translate parametric observations into a reportable analytical value;
- copies of final reports;
- archived SOPs;
- correspondence relating to laboratory activities for a specific project;
- all corrective action reports, audits and audit responses;
- proficiency test results and raw data; and
- results of data review, verification, and crosschecking procedures

14.3.1 Sample Handling Records

Records of all procedures to which a sample is subjected while in the possession of the laboratory are maintained. These include but are not limited to records pertaining to:

- sample preservation including appropriateness of sample container and compliance with holding time requirement;
- sample identification, receipt, acceptance or rejection and login;
- sample storage and tracking including shipping receipts, sample transmittal / COC forms; and
- Procedures for the receipt and retention of samples, including all provisions necessary to protect the integrity of samples.

14.4 ADMINISTRATIVE RECORDS

The laboratory also maintains the administrative records in either electronic or hard copy form. Refer to Table 14-1.

14.5 RECORDS MANAGEMENT, STORAGE AND DISPOSAL

14.5.1 All records (including those pertaining to test equipment), certificates and reports are safely stored, held secure and in confidence to the client. Certification related records are available upon request.

14.5.2 All information necessary for the historical reconstruction of data is maintained by the laboratory. Records that are stored only on electronic media must be supported by the hardware and software necessary for their retrieval.

14.5.3 Records that are stored or generated by computers or personal computers have hard copy, write-protected backup copies, or an electronic audit trail controlling access**.**

14.5.4 The laboratory has a record management system (also known as document control) for control of laboratory notebooks, instrument logbooks, standards logbooks, and records for data reduction, validation, storage and reporting. Laboratory notebooks are issued on a per instrument or analysis basis, and are numbered sequentially as they are issued. No instrument or analysis has more than one active notebook at a time, so all data are recorded sequentially within a series of sequential notebooks. Bench sheets and raw data sequence files are filed sequentially by date. Standard and reagent information is maintained in LIMS and logbooks which are maintained on a departmental basis and are numbered sequentially as they are issued or as they are archived by QA.

14.5.5 Records are considered archived when noted as such in the records management system (also known as document control). Access to archived hard-copy information is documented with an access log and in/out records is used to note data that is removed and returned.

14.5.6 Transfer of Ownership

In the event that the laboratory transfers ownership or goes out of business, the laboratory shall ensure that the records are maintained or transferred according to client's instructions. Upon ownership transfer, record retention requirements shall be addressed in the ownership transfer agreement and the responsibility for maintaining archives is clearly established. In addition, in cases of bankruptcy, appropriate regulatory and state legal requirements concerning laboratory records must be followed. In the event of the closure of the laboratory, all records will revert to the control of the corporate headquarters. Should the entire company cease to exist, as much notice as possible will be given to clients and the accrediting bodies who have worked with the laboratory during the previous 5 years of such action.

14.5.7 Records Disposal

14.5.7.1 Records are removed from the archive and destroyed after 5 years unless otherwise specified by a client or regulatory requirement. On a project specific or program basis, clients may need to be notified prior to record destruction. Records are destroyed in a manner that ensures their confidentiality such as shredding, mutilation or incineration. (Refer to Tables 14-1 and 14-2).

14.5.7.2 Electronic copies of records must be destroyed by erasure or physically damaging off-line storage media so no records can be read. If a third party records Management Company is hired to dispose of records, a "Certificate of Destruction" is required**.**

SECTION 15

AUDITS

15.1 INTERNAL AUDITS

Internal audits are performed to verify that laboratory operations comply with the requirements of the lab's quality system and with the external quality programs under which the laboratory operates. Audits are planned and organized by the QA staff. Personnel conducting the audits should be independent of the area being evaluated. Auditors will have sufficient authority, access to work areas, and organizational freedom necessary to observe all activities affecting quality and to report the assessments to laboratory management and when requested to corporate management.

Audits are conducted and documented as described in the TestAmerica Corporate SOP on performing Internal Auditing, SOP No. CW-Q-S-003. The types and frequency of routine internal audits are described in Table 15-1. Special or ad hoc assessments may be conducted as needed under the direction of the QA staff.

Table 15-1. Types of Internal Audits and Frequency

Description	Performed by	Frequency
Quality Systems Audits	QA Department, QA approved designee or Corporate QA	All areas of the laboratory annually
Method Audits QA Technical Data Audits SOP Compliance Audits	Joint responsibility: a) QA Manager or designee b) Technical Manager or Designee (Refer to CW-Q-S-003)	QA Methods Audits Frequency: All methods are reviewed annually. 50% of methods receive a QA Technical Audit 50% of methods receive a SOP Method Compliance Audit
Special	QA Department or Designee	Surveillance or spot checks performed as needed to monitor specific issues
Performance Testing	Coordinated by Corporate QA	Two successful per year for each TNI - NELAP field of testing or as dictated by regulatory requirements

15.1.1 Annual Quality Systems Audit

An annual quality systems audit is required to ensure compliance to analytical methods and SOPs, TestAmerica's Data Integrity and Ethics Policies, TNI quality systems, client and state requirements, and the effectiveness of the internal controls of the analytical process, including but not limited to data review, quality controls, preventive action and corrective action. The completeness of earlier corrective actions is assessed for effectiveness & sustainability. The audit is divided into sections for each operating or support area of the lab, and each section is comprehensive for a given area. The area audits may be performed on a rotating schedule throughout the year to ensure adequate coverage of all areas. This schedule may change as situations in the laboratory warrant.

15.1.2 QA Technical Audits

QA technical audits assess data authenticity and analyst integrity. These audits are based on client projects, associated sample delivery groups, and the methods performed. Reported results are compared to raw data to verify the authenticity of results. The validity of calibrations and QC results are compared to data qualifiers, footnotes, and case narratives. Documentation is assessed by examining run logs and records of manual integrations. Manual calculations are checked. Where possible, Chrom AuditMiner is used to identify unusual manipulations of the data deserving closer scrutiny. QA technical audits will include all methods within a two-year period. All analysts should be reviewed over the course of a two year period through at least one QA Technical Audit

15.1.3 SOP Method Compliance

Compliance of all SOPs with the source methods and compliance of the operational groups with the SOPs will be assessed by the Technical Manager or qualified designee at least every two years. It is also recommended that the work of each newly hired analyst assessed within 3 months of working independently, (e.g., completion of method IDOC). In addition, as analysts add methods to their capabilities, (new IDOC) reviews of the analyst work products will be performed within 3 months of completing the documented training.

15.1.4 Special Audits

Special audits are conducted on an as needed basis, generally as a follow up to specific issues such as client complaints, corrective actions, PT results, data audits, system audits, validation comments, regulatory audits or suspected ethical improprieties. Special audits are focused on a specific issue, and report format, distribution, and timeframes are designed to address the nature of the issue.

15.1.5 Performance Testing

The laboratory participates semi-annually in performance audits conducted through the analysis of PT samples provided by a third party. The laboratory generally participates in the following types of PT studies: Drinking Water, Non-potable Water, Soil, and Air.

It is TestAmerica's policy that PT samples be treated as typical samples in the production process. Furthermore, where PT samples present special or unique problems, in the regular production process they may need to be treated differently, as would any special or unique request submitted by any client. The QA Manager must be consulted and in agreement with any decisions made to treat a PT sample differently due to some special circumstance.

Written responses to unacceptable PT results are required. In some cases it may be necessary for blind QC samples to be submitted to the laboratory to show a return to control.

15.2 EXTERNAL AUDITS

External audits are performed when certifying agencies or clients conduct on-site inspections or submit performance testing samples for analysis. It is TestAmerica's policy to cooperate fully with regulatory authorities and clients. The laboratory makes every effort to provide the auditors with access to personnel, documentation, and assistance. Laboratory supervisors are responsible for providing corrective actions to the QA Manager who coordinates the response for any deficiencies discovered during an external audit. Audit responses are due in the time allotted by the client or agency performing the audit. When requested, a copy of the audit report and the labs corrective action plan will be forwarded to Corporate Quality.

The laboratory cooperates with clients and their representatives to monitor the laboratory's performance in relation to work performed for the client. The client may only view data and systems related directly to the client's work. All efforts are made to keep other client information confidential.

15.2.1 Confidential Business Information (CBI) Considerations

During on-site audits, auditors may come into possession of information claimed as business confidential. A business confidentiality claim is defined as "a claim or allegation that business information is entitled to confidential treatment for reasons of business confidentiality or a request for a determination that such information is entitled to such treatment." When information is claimed as business confidential, the laboratory must place on (or attach to) the information at the time it is submitted to the auditor, a cover sheet, stamped or typed legend or other suitable form of notice, employing language such as "trade secret", "proprietary" or "company confidential". Confidential portions of documents otherwise non-confidential must be clearly identified. CBI may be purged of references to client identity by the responsible laboratory official at the time of removal from the laboratory. However, sample identifiers may not be obscured from the information. Additional information regarding CBI can be found in within the 2009 TNI standards.

15.3 AUDIT FINDINGS

Audit findings are documented using the corrective action process and database. The laboratory's corrective action responses for both types of audits may include action plans that could not be completed within a predefined timeframe. In these instances, a completion date must be set and agreed to by operations management and the QA Manager.

Developing and implementing corrective actions to findings is the responsibility of the Department Manager where the finding originated. Findings that are not corrected by specified due dates are reported monthly to management in the QA monthly report. When requested, a copy of the audit report and the labs corrective action plan will be forwarded to Corporate Quality.

If any audit finding casts doubt on the effectiveness of the operations or on the correctness or validity of the laboratory's test results, the laboratory shall take timely corrective action, and shall notify clients in writing if the investigations show that the laboratory results have been affected. Once corrective action is implemented, a follow-up audit is scheduled to ensure that the problem has been corrected.

Clients must be notified promptly in writing, of any event such as the identification of defective measuring or test equipment that casts doubt on the validity of results given in any test report or amendment to a test report. The investigation must begin within 24-hours of discovery of the problem and all efforts are made to notify the client within two weeks after the completion of the investigation.

SECTION 16

MANAGEMENT REVIEWS

16.1 QUALITY ASSURANCE REPORT

A comprehensive QA Report shall be prepared each month by the laboratory's QA Department and forwarded to the Laboratory Director, Technical Managers, their Quality Director as well as the VP of Operations. All aspects of the QA system are reviewed to evaluate the suitability of policies and procedures. During the course of the year, the Laboratory Director, General Manager or Corporate QA may request that additional information be added to the report.

On a monthly basis, Corporate QA compiles information from all the monthly laboratory reports. The Corporate Quality Director prepares a report that includes a compilation of all metrics and notable information and concerns regarding the QA programs within the laboratories. The report also includes a listing of new regulations that may potentially impact the laboratories. This report is presented to the Senior Management Team and VPs of Operations.

16.2 ANNUAL MANAGEMENT REVIEW

The senior lab management team (Laboratory Director, Technical Manager, Operations Manager, and QA Manager) conducts a review annually of its quality systems and LIMS to ensure its continuing suitability and effectiveness in meeting client and regulatory requirements and to introduce any necessary changes or improvements. It will also provide a platform for defining goals, objectives and action items that feed into the laboratory planning system. Corporate Operations and Corporate QA personnel may be included in this meeting at the discretion of the Laboratory Director. The LIMS review consists of examining any audits, complaints or concerns that have been raised through the year that are related to the LIMS. The laboratory will summarize any critical findings that can not be solved by the lab and report them to Corporate IT.

This management systems review (Corporate SOP No. CW-Q-S-004 & Work Instruction No. CW-Q-WI-003) uses information generated during the preceding year to assess the "big picture" by ensuring that routine actions taken and reviewed on a monthly basis are not components of larger systematic concerns. The monthly review should keep the quality systems current and effective; therefore, the annual review is a formal senior management process to review specific existing documentation. Significant issues from the following documentation are compiled or summarized by the QA Manager prior to the review meeting:

- Matters arising from the previous annual review.
- Prior Monthly QA Reports issues.
- Laboratory QA Metrics.
- Review of report reissue requests.
- Review of client feedback and complaints.
- Issues arising from any prior management or staff meetings.

- Minutes from prior senior lab management meetings. Issues that may be raised from these meetings include:
  - Adequacy of staff, equipment and facility resources.
  - Adequacy of policies and procedures.
  - Future plans for resources and testing capability and capacity.

- The annual internal double blind PT program sample performance (if performed),
- Compliance to the Ethics Policy and Data Integrity Plan. Including any evidence/incidents of inappropriate actions or vulnerabilities related to data Integrity.

A report is generated by the QA Manager and management. The report is distributed to the appropriate VP of Operations and the Quality Director. The report includes, but is not limited to:

- The date of the review and the names and titles of participants.
- A reference to the existing data quality related documents and topics that were reviewed.
- Quality system or operational changes or improvements that will be made as a result of the review [e.g., an implementation schedule including assigned responsibilities for the changes.

Changes to the quality systems requiring update to the laboratory QA Manual shall be included in the next revision of the QA Manual.

16.3 POTENTIAL INTEGRITY RELATED MANAGERIAL REVIEWS

Potential integrity issues (data or business related) must be handled and reviewed in a confidential manner until such time as a follow-up evaluation, full investigation, or other appropriate actions have been completed and issues clarified. The TestAmerica Corporate Internal Investigations SOP shall be followed (SOP No. CW-L-S-002). All investigations that result in finding of inappropriate activity are documented and include any disciplinary actions involved, corrective actions taken, and all appropriate notifications of clients.

TestAmerica's President and CEO, COO, Technical & Operations Support, VP of Client and Technical Services, VPs of Operations and Quality Directors receive a monthly report from the VP QA/EHS summarizing any current data integrity or data recall investigations. The VPs of Operations are also made aware of progress on these issues for their specific labs.

SECTION 17

PERSONNEL

17.1 OVERVIEW

The laboratory's management believes that its highly qualified and professional staff is the single most important aspect in assuring a high level of data quality and service. The staff consists of professionals and support personnel as outlined in the organization chart in Figure 4-1.

All personnel must demonstrate competence in the areas where they have responsibility. Any staff that is undergoing training shall have appropriate supervision until they have demonstrated their ability to perform their job function on their own. Staff shall be qualified for their tasks based on appropriate education, training, experience and/or demonstrated skills as required.

The laboratory employs sufficient personnel with the necessary education, training, technical knowledge and experience for their assigned responsibilities.

All personnel are responsible for complying with all QA/QC requirements that pertain to the laboratory and their area of responsibility. Each staff member must have a combination of experience and education to adequately demonstrate a specific knowledge of their particular area of responsibility. Technical staff must also have a general knowledge of lab operations, test methods, QA/QC procedures and records management.

Laboratory management is responsible for formulating goals for lab staff with respect to education, training and skills and ensuring that the laboratory has a policy and procedures for identifying training needs and providing training of personnel. The training shall be relevant to the present and anticipated responsibilities of the lab staff.

The laboratory only uses personnel that are employed by or under contract to, the laboratory. Contracted personnel, when used, must meet competency standards of the laboratory and work in accordance to the laboratory's quality system.

17.2 EDUCATION AND EXPERIENCE REQUIREMENTS FOR TECHNICAL PERSONNEL

The laboratory makes every effort to hire analytical staff that possesses a college degree (AA, BA, BS) in an applied science with some chemistry in the curriculum. Exceptions can be made based upon the individual's experience and ability to learn. Selection of qualified candidates for laboratory employment begins with documentation of minimum education, training, and experience prerequisites needed to perform the prescribed task. Minimum education and training requirements for TestAmerica employees are outlined in job descriptions and are generally summarized for analytical staff in the table below.

The laboratory maintains job descriptions for all personnel who manage, perform or verify work affecting the quality of the environmental testing the laboratory performs. Job Descriptions are located in the TestAmerica intranet site's Human Resources web-page (Also see Section 4 for position descriptions/responsibilities).

Experience and specialized training are occasionally accepted in lieu of a college degree (basic lab skills such as using a balance, pipette, quantitation techniques, etc. are also considered).

As a general rule for analytical staff:

Specialty	Education	Experience
Extractions, Digestions, some electrode methods (pH, DO, Redox, etc.), or Titrimetric and Gravimetric Analyses	H.S. Diploma	On the job training (OJT)
CVAA, Single component or short list Chromatography (e.g., Fuels, BTEX-GC, IC)	A college degree in an applied science or 2 years of college and at least 1 year of college chemistry	Or 2 years prior analytical experience is required
ICP, ICPMS, Long List or complex chromatography (e.g., Pesticides, PCB, Herbicides, HPLC, etc.), GCMS	A college degree in an applied science or 2 years of college chemistry	or 5 years of prior analytical experience
Spectra Interpretation	A college degree in an applied science or 2 years of college chemistry	And 2 years relevant experience Or 5 years of prior analytical experience
Technical Managers/Department Managers – **General**	Bachelors Degree in an applied science or engineering with 24 semester hours in chemistry An advanced (MS, PhD.) degree may substitute for one year of experience	And 2 years experience in environmental analysis of representative analytes for which they will oversee

When an analyst does not meet these requirements, they can perform a task under the direct supervision of a qualified analyst, peer reviewer or Department Manager, and are considered an analyst in training. The person supervising an analyst in training is accountable for the quality of the analytical data and must review and approve data and associated corrective actions.

17.3 TRAINING

The laboratory is committed to furthering the professional and technical development of employees at all levels.

Orientation to the laboratory's policies and procedures, in-house method training, and employee attendance at outside training courses and conferences all contribute toward employee proficiency. Below are examples of various areas of required employee training:

Required Training	**Time Frame**	**Employee Type**
Environmental Health & Safety	Prior to lab work	All
Ethics – New Hires	1 week of hire	All
Ethics - Comprehensive	90 days of hire	All
Data Integrity	30 days of hire	Technical and PMs
Quality Assurance	90 days of hire	All
Ethics – Comprehensive Refresher	Annually	All
Initial Demonstration of Capability (DOC)	Prior to unsupervised method performance	Technical

The laboratory maintains records of relevant authorization/competence, education, professional qualifications, training, skills and experience of technical personnel (including contracted personnel) as well as the date that approval/authorization was given. These records are kept on file at the laboratory. Also refer to "Demonstration of Capability" in Section 19.

The training of technical staff is kept up to date by:

- Each employee must have documentation in their training file that they have read, understood and agreed to follow the most recent version of the laboratory QA Manual and SOPs in their area of responsibility. This documentation is updated as SOPs are updated.
- Documentation from any training courses or workshops on specific equipment, analytical techniques or other relevant topics are maintained in their training file.
- Documentation of proficiency (refer to Section 20).
- An Ethics Agreement signed by each staff member (renewed each year) and evidence of annual ethics training.
- A Confidentiality Agreement signed by each staff member signed at the time of employment.
- The Human Resource office maintains documentation and attestation forms on employment status & records; benefit programs; timekeeping/payroll; and employee conduct (e.g., ethics violations). This information is maintained in the employee's secured personnel file.

Further details of the laboratory's training program are described in TestAmerica Buffalo SOP BF-QA-004, Laboratory Personnel Training.

17.4 DATA INTEGRITY AND ETHICS TRAINING PROGRAM

Establishing and maintaining a high ethical standard is an important element of a Quality System. Ethics and data integrity training is integral to the success of TestAmerica and is provided for each employee at TestAmerica. It is a formal part of the initial employee orientation within 1 week of hire followed by technical data integrity training within 30 days, comprehensive training within 90 days, and an annual refresher for all employees. Senior management at each facility performs the ethics training for their staff.

In order to ensure that all personnel understand the importance TestAmerica places on maintaining high ethical standards at all times; TestAmerica has established a Corporate Ethics Policy No. CW-L-P-004 and an Ethics Statement. All initial and annual training is documented by signature on the signed Ethics demonstrating that the employee has participated in the training and understands their obligations related to ethical behavior and data integrity.

Violations of this Ethics Policy will not be tolerated. Employees who violate this policy will be subject to disciplinary actions up to and including termination. Criminal violations may also be referred to the Government for prosecution. In addition, such actions could jeopardize TestAmerica's ability to do work on Government contracts, and for that reason, TestAmerica has a Zero Tolerance approach to such violations.

Employees are trained as to the legal and environmental repercussions that result from data misrepresentation. Key topics covered in the presentation include:

- Organizational mission and its relationship to the critical need for honesty and full disclosure in all analytical reporting.
- Ethics Policy
- How and when to report ethical/data integrity issues. Confidential reporting.
- Record keeping.
- Discussion regarding data integrity procedures.
- Specific examples of breaches of ethical behavior (e.g. peak shaving, altering data or computer clocks, improper macros, etc., accepting/offering kickbacks, illegal accounting practices, unfair competition/collusion)
- Internal monitoring. Investigations and data recalls.
- Consequences for infractions including potential for immediate termination, debarment, or criminal prosecution.
- Importance of proper written narration / data qualification by the analyst and project manager with respect to those cases where the data may still be usable but are in one sense or another partially deficient.

Additionally, a data integrity hotline (1-800-736-9407) is maintained by TestAmerica and administered by the Corporate Quality Department.

SECTION 18

ACCOMMODATIONS AND ENVIRONMENTAL CONDITIONS

18.1 OVERVIEW

TestAmerica Buffalo is a 32,000 ft^2 secure laboratory facility with controlled access and designed to accommodate an efficient workflow and to provide a safe and comfortable work environment for employees. All visitors sign in and are escorted by laboratory personnel. Access is controlled by various measures.

The laboratory is equipped with structural safety features. Each employee is familiar with the location, use, and capabilities of general and specialized safety features associated with their workplace. The laboratory provides and requires the use of protective equipment including safety glasses, protective clothing, gloves, etc. OSHA and other regulatory agency guidelines regarding required amounts of bench and fume hood space, lighting, ventilation (temperature and humidity controlled), access, and safety equipment are met or exceeded.

Traffic flow through sample preparation and analysis areas is minimized to reduce the likelihood of contamination. Adequate floor space and bench top area is provided to allow unencumbered sample preparation and analysis space. Sufficient space is also provided for storage of reagents and media, glassware, and portable equipment. Ample space is also provided for refrigerated sample storage before analysis and archival storage of samples after analysis. Laboratory HVAC and deionized water systems are designed to minimize potential trace contaminants.

The laboratory is separated into specific areas for field operations, bottle kit preparation, sample receiving, sample preparation, volatile organic sample analysis, non-volatile organic sample analysis, inorganic sample analysis and administrative functions.

18.2 ENVIRONMENT

Laboratory accommodation, test areas, energy sources, lighting are adequate to facilitate proper performance of tests. The facility is equipped with heating, ventilation, and air conditioning (HVAC) systems appropriate to the needs of environmental testing performed at this laboratory.

The environment in which these activities are undertaken does not invalidate the results or adversely affect the required accuracy of any measurements.

The laboratory provides for the effective monitoring, control and recording of environmental conditions that may affect the results of environmental tests as required by the relevant specifications, methods, and procedures. Such environmental conditions include humidity, voltage, temperature, and vibration levels in the laboratory. Key equipment has been provided with back-up power supply in the event of a power outage.

When any of the method or regulatory required environmental conditions change to a point where they may adversely affect test results, analytical testing will be discontinued until the environmental conditions are returned to the required levels.

Environmental conditions of the facility housing the computer network and LIMS are regulated to protect against raw data loss.

18.3 WORK AREAS

There is effective separation between neighboring areas when the activities therein are incompatible with each other. Examples include:

- Volatile organic chemical handling areas, including sample preparation and waste disposal, and volatile organic chemical analysis areas.

Access to and use of all areas affecting the quality of analytical testing is defined and controlled by secure access to the laboratory building as described below in the Building Security section.

Adequate measures are taken to ensure good housekeeping in the laboratory and to ensure that any contamination does not adversely affect data quality. These measures include regular cleaning to control dirt and dust within the laboratory.

Work areas are available to ensure an unencumbered work area. Work areas include:

- Access and entryways to the laboratory.
- Sample receipt areas.
- Sample storage areas.
- Chemical and waste storage areas.
- Data handling and storage areas.
- Sample processing areas.
- Sample analysis areas.

18.4 FLOOR PLAN

A floor plan can be found in Appendix 1.

18.5 BUILDING SECURITY

Building pass cards and alarm codes are distributed to all facility employees.

Visitors to the laboratory sign in and out in a visitor's logbook. A visitor is defined as any person who visits the laboratory who is not an employee of the laboratory. [The reason for this is that it is important to know who is in the building in case of a safety emergency. The visitors logbook is used to ensure that everyone got out of the building safely.] In addition to signing into the laboratory, the Environmental, Health and Safety Manual contains requirements for visitors and vendors. There are specific safety forms that must be reviewed and signed. Visitors (with the exception of company employees) are escorted by laboratory personnel at all times, or the location of the visitor is noted in the visitor's logbook.

SECTION 19.0

TEST METHODS AND METHOD VALIDATION

19.1 OVERVIEW

The laboratory uses methods that are appropriate to meet our clients' requirements and that are within the scope of the laboratory's capabilities. These include sampling, handling, transport, storage and preparation of samples, and, where appropriate, an estimation of the measurement of uncertainty as well as statistical techniques for analysis of environmental data.

Instructions are available in the laboratory for the operation of equipment as well as for the handling and preparation of samples. All instructions, Standard Operating Procedures (SOPs), reference methods and manuals relevant to the working of the laboratory are readily available to all staff. Deviations from published methods are documented (with justification) in the laboratory's approved SOPs. SOPs are submitted to clients for review at their request. Significant deviations from published methods require client approval and regulatory approval where applicable.

19.2 STANDARD OPERATING PROCEDURES (SOPs)

The laboratory maintains SOPs that accurately reflect all phases of the laboratory such as assessing data integrity, corrective actions, handling customer complaints as well as all analytical methods and sampling procedures. The method SOPs are derived from the most recently promulgated/approved, published methods and are specifically adapted to the laboratory facility. Modifications or clarifications to published methods are clearly noted in the SOPs. All SOPs are controlled in the laboratory:

- All SOPs contain a revision number, effective date, and appropriate approval signatures. Controlled copies are available to all staff.
- Procedures for writing an SOP are incorporated by reference to TestAmerica's Corporate SOP CW-Q-S-002, Writing a Standard Operating Procedure (SOP) and Laboratory SOP BF-QA-003, Procedure for Writing, Reviewing and Revising Controlled Quality Documents (QAM, SOP, etc)
- SOPs are reviewed at a minimum of every 2 years (annually for Drinking Water SOPs), and where necessary, revised to ensure continuing suitability and compliance with applicable requirements.

19.3 LABORATORY METHODS MANUAL

For each test method, the laboratory shall have available the published referenced method as well as the laboratory developed SOP.

Note: If more stringent standards or requirements are included in a mandated test method or regulation than those specified in this manual, the laboratory shall demonstrate that such requirements are met. If it is not clear which requirements are more stringent, the standard from

the method or regulation is to be followed. Any exceptions or deviations from the referenced methods or regulations are noted in the specific analytical SOP.
The laboratory maintains an SOP Index for both technical and non-technical SOPs. Technical SOPs are maintained to describe a specific test method. Non-technical SOPs are maintained to describe functions and processes not related to a specific test method.

19.4 SELECTION OF METHODS

Since numerous methods and analytical techniques are available, continued communication between the client and laboratory is imperative to assure the correct methods are utilized. Once client methodology requirements are established, this and other pertinent information is summarized by the Project Manager. These mechanisms ensure that the proper analytical methods are applied when the samples arrive for log-in. For non-routine analytical services (e.g., special matrices, non-routine compound lists, etc.), the method of choice is selected based on client needs and available technology. The methods selected should be capable of measuring the specific parameter of interest, in the concentration range of interest, and with the required precision and accuracy.

19.4.1 Sources of Methods

Routine analytical services are performed using standard EPA-approved methodology. In some cases, modification of standard approved methods may be necessary to provide accurate analyses of particularly complex matrices. When the use of specific methods for sample analysis is mandated through project or regulatory requirements, only those methods shall be used.

When clients do not specify the method to be used or methods are not required, the methods used will be clearly validated and documented in an SOP and available to clients and/or the end user of the data.

19.4.1.1 The analytical methods used by the laboratory are those currently accepted and approved by the U. S. EPA and the state or territory from which the samples were collected. Reference methods include:

- *Method 1664, Revision A: N-Hexane Extractable Material (HEM; Oil and Grease) and Silica Gel Treated N-Hexane Extractable Material (SGT-HEM); Non-polar Material) by Extraction and Gravimetry, EPA-821-R-98-002, February 1999*
- *Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, US EPA, January 1996.*
- *Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act; Analysis and Sampling Procedures; 40CFR Part 136 as amended by Method Update Rule; May 18, 2012 and/or August 28 , 2017 (depending on state implementation timelines).*
- *Methods for Chemical Analysis of Water and Wastes, EPA 600 (4-79-020), 1983.*
- *Methods for the Determination of Inorganic Substances in Environmental Samples, EPA-600/R-93/100, August 1993.*

- *Methods for the Determination of Metals in Environmental Samples, EPA/600/4-91/010, June 1991. Supplement I: EPA-600/R-94/111, May 1994.*
- *Methods for the Determination of Organic Compounds in Drinking Water, EPA-600/4-88-039, December 1988, Revised, July 1991, Supplement I, EPA-600-4-90-020, July 1990, Supplement II, EPA-600/R-92-129, August 1992. Supplement III EPA/600/R-95/131 - August 1995 (EPA 500 Series) (EPA 500 Series methods)*
- *Technical Notes on Drinking Water Methods, EPA-600/R94-173, October 1994*
- *NIOSH Manual of Analytical Methods, 4th ed., August 1994.*
- *Statement of Work for Inorganics & Organics Analysis, SOM and ISM, current versions, USEPA Contract Laboratory Program Multi-media, Multi-concentration.*
- *Standard Methods for the Examination of Water and Wastewater, 18th/19th /20th / 21st/ 22nd/on-line edition; Eaton, A.D. Clesceri, L.S. Greenberg, A.E. Eds; American Water Works Association, Water Pollution Control Federation, American Public Health Association: Washington, D.C.*
- *Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW846), Third Edition, September 1986, Final Update I, July 1992, Final Update IIA, August 1993, Final Update II, September 1994; Final Update IIB, January 1995; Final Update III, December 1996; Final Update IV, January 2008; Final Update V, August 2015.*
- *Annual Book of ASTM Standards, American Society for Testing & Materials (ASTM), Philadelphia, PA.*
- *National Status and Trends Program, National Oceanographic and Atmospheric Administration, Volume I-IV, 1985-1994.*
- *Manual for the Certification of Laboratories Analyzing Drinking Water (EPA 815-R-05-004, January 2005)* ***(DW labs only)***
- *Code of Federal Regulations (CFR) 40, Parts 136, 141, 172, 173, 178, 179 and 261*
- *New York State DEC Analytical Services Protocol, 2005*
- *New York State DOH Methods Manual*
- *Massachusetts Contingency Plan 310 CMR 40, April 25, 2014*
- *Connecticut Reasonable Confidence Protocol, July 2006*

The laboratory reviews updated versions to all the aforementioned references for adaptation based upon capabilities, instrumentation, etc., and implements them as appropriate. As such, the laboratory strives to perform only the latest versions of each approved method as regulations allow or require.

Other reference procedures for non-routine analyses may include methods established by specific states (e.g., Underground Storage Tank methods), ASTM or equipment manufacturers. Sample type, source, and the governing regulatory agency requiring the analysis will determine the method utilized.

The laboratory shall inform the client when a method proposed by the client may be inappropriate or out of date. After the client has been informed, and they wish to proceed contrary to the laboratory's recommendation, it will be documented.

19.4.2 Demonstration of Capability

Before the laboratory may institute a new method and begin reporting results, the laboratory shall confirm that it can properly operate the method. In general, this demonstration does not test the performance of the method in real world samples, but in an applicable and available clean matrix sample. If the method is for the testing of analytes that are not conducive to spiking, demonstration of capability may be performed on quality control samples.

19.4.2.1 A demonstration of capability (BF-QA-004) is performed whenever there is a significant change in instrument type (e.g., new instrumentation), method or personnel.

Note: The laboratory shall have a DOC for all analytes included in the methods that the laboratory performs, and proficiency DOCs for each analyst shall include all analytes that the laboratory routinely performs. Addition of non-routine analytes does not require new DOCs for all analysts if those analysts are already qualified for routine analytes tested using identical chemistry and instrument conditions.

19.4.2.2 The initial demonstration of capability must be thoroughly documented and approved by the Operations Manager/Designee and QA Manager prior to independently analyzing client samples. All associated documentation must be retained in accordance with the laboratories archiving procedures.

19.4.2.3 The laboratory must have an approved SOP, demonstrate satisfactory performance, and conduct a method detection limit study (when applicable). There may be other requirements as stated within the published method or regulations (i.e., retention time window study).

Note: In some instances, a situation may arise where a client requests that an unusual analyte be reported using a method where this analyte is not normally reported. If the analyte is being reported for regulatory purposes, the method must meet all procedures outlined within this QA Manual (SOP, MDL, and Demonstration of Capability). If the client states that the information is not for regulatory purposes, the result may be reported as long as the following criteria are met:

- The instrument is calibrated for the analyte to be reported using the criteria for the method and ICV/CCV criteria are met (unless an ICV/CCV is not required by the method or criteria are per project DQOs).
- The laboratory's nominal or default reporting limit (RL) is equal to the quantitation limit (QL), must be at or above the lowest non-zero standard in the calibration curve and must be reliably determined. Project RLs are client specified reporting levels which may be higher than the QL. Results reported below the QL must be qualified

as estimated values. Also see Section 19.6.1.3, Relationship of Limit of Detection (LOD) to Quantitation Limit (QL).

- The client request is documented and the lab informs the client of its procedure for working with unusual compounds. The final report must be footnoted: *Reporting Limit based on the low standard of the calibration curve.*

19.4.3 <u>Initial Demonstration of Capability (IDOC) Procedures</u>

Procedures for generation of IDOCs are detailed below and in laboratory SOP BF-QA-004, Laboratory Personnel Training.

19.4.3.1 The spiking standard used must be prepared independently from those used in instrument calibration.

19.4.3.2 The analyte(s) shall be diluted in a volume of clean matrix sufficient to prepare four aliquots at the concentration specified by a method or the laboratory SOP.

19.4.3.3 At least four aliquots shall be prepared (including any applicable clean-up procedures) and analyzed according to the test method (either concurrently or over a period of days).

19.4.3.4 Using all of the results, calculate the mean recovery in the appropriate reporting units and the standard deviations for each parameter of interest.

19.4.3.5 When it is not possible to determine the mean and standard deviations, such as for presence, absence and logarithmic values, the laboratory will assess performance against criteria described in the Method SOP.

19.4.3.6 Compare the information obtained above to the corresponding acceptance criteria for precision and accuracy in the test method (if applicable) or in laboratory generated acceptance criteria (LCS or interim criteria) if there is no mandatory criteria established. If any one of the parameters do not meet the acceptance criteria, the performance is unacceptable for that parameter.

19.4.3.7 When one or more of the tested parameters fail at least one of the acceptance criteria, the analyst must proceed according to either option listed below:

- Locate and correct the source of the problem and repeat the test for all parameters of interest beginning with 19.4.3.3 above.
- Beginning with 19.4.3.3 above, repeat the test for all parameters that failed to meet criteria. Repeated failure, however, will confirm a general problem with the measurement system. If this occurs, locate and correct the source of the problem and repeat the test for all compounds of interest beginning with 19.4.3.1 above.

Note: Results of successive LCS analyses can be used to fulfill the DOC requirement.

A certification statement (see Figure 19-1) shall be used to document the completion of each initial demonstration of capability. A copy of the certification is archived in the analyst's training folder.

19.5 LABORATORY DEVELOPED METHODS AND NON-STANDARD METHODS

Any new method developed by the laboratory must be fully defined in an SOP and validated by qualified personnel with adequate resources to perform the method. Method specifications and the relation to client requirements must be clearly conveyed to the client if the method is a non-standard method (not a published or routinely accepted method). The client must also be in agreement to the use of the non-standard method.

19.6 VALIDATION OF METHODS

Validation is the confirmation by examination and the provision of objective evidence that the particular requirements for a specific intended use are fulfilled.

All non-standard methods, laboratory designed/developed methods, standard methods used outside of their scope, and major modifications to published methods must be validated to confirm they are fit for their intended use. The validation will be as extensive as necessary to meet the needs of the given application. The results are documented with the validation procedure used and contain a statement as to the fitness for use.

19.6.1 Method Validation and Verification Activities for All New Methods

While method validation can take various courses, the following activities can be required as part of method validation. Method validation records are designated QC records and are archived accordingly.

19.6.1.1 Determination of Method Selectivity

Method selectivity is the demonstrated ability to discriminate the analyte(s) of interest from other compounds in the specific matrix or matrices from other analytes or interference. In some cases to achieve the required selectivity for an analyte, a confirmation analysis is required as part of the method.

19.6.1.2 Determination of Method Sensitivity

Sensitivity can be both estimated and demonstrated. Whether a study is required to estimate sensitivity depends on the level of method development required when applying a particular measurement system to a specific set of samples. Where estimations and/or demonstrations of sensitivity are required by regulation or client agreement, such as the procedure in 40 CFR Part 136 Appendix B, under the Clean Water Act, these shall be followed.

19.6.1.3 Relationship of Limit of Detection (LOD) to the Quantitation Limit (QL)

An important characteristic of expression of sensitivity is the difference in the LOD and the QL. The LOD is the minimum level at which the presence of an analyte can be reliably concluded. The QL is the minimum concentration of analyte that can be quantitatively determined with acceptable precision and bias. For most instrumental measurement systems, there is a region where semi-quantitative data is generated around the LOD (both above and below the estimated MDL or LOD) and below the QL. In this region, detection of an analyte may be confirmed but quantification of the analyte is unreliable within the accuracy and precision guidelines of the measurement system. When an analyte is detected below the QL, and the presence of the analyte is confirmed by meeting the qualitative identification criteria for the analyte, the analyte can be reliably reported, but the amount of the analyte can only be estimated. If data is to be reported in this region, it must be done so with a qualification that denotes the semi-quantitative nature of the result.

19.6.1.4 Determination of Interferences

A determination that the method is free from interferences in a blank matrix is performed.

19.6.1.5 Determination of Range

Where appropriate to the method, the quantitation range is determined by comparison of the response of an analyte in a curve to established or targeted criteria. Generally the upper quantitation limit is defined by highest acceptable calibration concentration. The lower quantitation limit or QL cannot be lower than the lowest non-zero calibration level, and can be constrained by required levels of bias and precision.

19.6.1.6 Determination of Accuracy and Precision

Accuracy and precision studies are generally performed using replicate analyses, with a resulting percent recovery and measure of reproducibility (standard deviation, relative standard deviation) calculated and measured against a set of target criteria.

19.6.1.7 Documentation of Method

The method is formally documented in an SOP. If the method is a minor modification of a standard laboratory method that is already documented in an SOP, an SOP Attachment describing the specific differences in the new method is acceptable in place of a separate SOP.

19.6.1.8 Continued Demonstration of Method Performance

Continued demonstration of Method Performance is addressed in the SOP. Continued demonstration of method performance is generally accomplished by batch specific QC samples such as LCS, method blanks or PT samples.

19.7 METHOD DETECTION LIMITS (MDL)/ LIMITS OF DETECTION (LOD)

Method detection limits (MDL) are initially determined in accordance with 40 CFR Part 136, Appendix B or alternatively by other technically acceptable practices that have been accepted by regulators. MDL is also sometimes referred to as Limit of Detection (LOD). The MDL theoretically represents the concentration level for each analyte within a method at which the

Analyst is 99% confident that the true value can be differentiated from blanks. The MDL is determined for each analyte initially during the method validation process and updated as required in the analytical methods, regulations, whenever there is a significant change in the procedure or equipment, or based on project specific requirements (refer to 19.7.10). Generally the analyst prepares at least seven replicates of solution spiked at one to five times the estimated method detection limit (most often at the lowest standard in the calibration curve) into the applicable matrix with all the analytes of interest. Each of these aliquots is extracted (including any applicable clean-up procedures) and analyzed in the same manner as the samples. Where possible, the seven replicates should be analyzed over several days to provide a more realistic MDL. In addition, a larger number of data points may be used if the appropriate t-value multiplier is used. Where required by 40 CFR Part 136, Appendix B, continuing MDLs will be calculated from a minimum of 7 spiked replicates analyzed quarterly and compared to statistical method blank data to determine the final updated MDL.

Refer to the Corporate SOP No. CA-Q-S-006 or the laboratory's SOP No. BF-QA-001 for details on the laboratory's MDL process.

19.8 INSTRUMENT DETECTION LIMITS (IDL)

19.8.1 The IDL is sometimes used to assess the reasonableness of the MDLs or in some cases required by the analytical method or program requirements. IDLs are most used in metals analyses but may be useful in demonstration of instrument performance in other areas.

19.8.2 IDLs are calculated to determine an instrument's sensitivity independent of any preparation method. IDLs are calculated either using 7 replicate spike analyses, like MDL but without sample preparation, or by the analysis of 10 instrument blanks and calculating 3 x the absolute value of the standard deviation. (For CLP procedures, the IDL is determined using the standard deviation of 7 replicate spike analyses on each of 3 non-consecutive days.)

19.8.3 If IDL is > than the MDL, it may be used as the reported MDL.

19.9 VERIFICATION OF DETECTION AND REPORTING LIMITS

19.9.1 Once an MDL is established, it must be verified, on each instrument, by analyzing a quality control sample (prepared as a sample) at no more than 3 times the calculated MDL for single analyte analyses (e.g. most wet chemistry methods, CVAA, etc.) and no more than 4 times the calculated MDL for multiple analyte methods (e.g. GC, GCMS, ICP, etc.). The analytes must be qualitatively identified or see section 20.7.9 for other options. This verification does not apply to methods that are not readily spiked (e.g. pH, turbidity, etc.) or where the lab does not report to the MDL. If the MDL does not verify, then the lab will not report to the MDL, or redevelop their MDL or use the level where qualitative identification is established. MDLs must be verified at least annually.

19.9.2 When the laboratory establishes a quantitation limit, it must be initially verified by the analysis of a low level standard or QC sample at 1-2 the reporting limit and annually thereafter. The annual requirement is waved for methods that have an annually verified MDL. The laboratory will comply with any regulatory requirement.

19.10 RETENTION TIME WINDOWS

Most organic analyses and some inorganic analyses use chromatography techniques for qualitative and quantitative determinations. For every chromatography analysis each analyte will have a specific time of elution from the column to the detector. This is known as the analyte's retention time. The variance in the expected time of elution is defined as the retention time window. As the key to analyte identification in chromatography, retention time windows must be established on every column for every analyte used for that method. These records are kept with the files associated with an instrument for later quantitation of the analytes. Complete details are available in the laboratory's SOPs.

19.11 EVALUATION OF SELECTIVITY

The laboratory evaluates selectivity by following the checks within the applicable analytical methods, which include mass spectral tuning, second column confirmation, ICP interelement interference checks, chromatography retention time windows, sample blanks, and specific electrode response factors.

19.12 ESTIMATION OF UNCERTAINTY OF MEASUREMENT

19.12.1 Uncertainty is "a parameter associated with the result of a measurement, that characterizes the dispersion of the values that could reasonably be attributed to the measurand" (as defined by the International Vocabulary of Basic and General Terms in Metrology, ISO Geneva, 1993, ISBN 92-67-10175-1). Knowledge of the uncertainty of a measurement provides additional confidence in a result's validity. Its value accounts for all the factors which could possibly affect the result, such as adequacy of analyte definition, sampling, matrix effects and interferences, climatic conditions, variances in weights, volumes, and standards, analytical procedure, and random variation. Some national accreditation organizations require the use of an "expanded uncertainty": the range within which the value of the measurand is believed to lie within at least a 95% confidence level with the coverage factor k=2.

19.12.2 Uncertainty is not error. Error is a single value, the difference between the true result and the measured result. On environmental samples, the true result is never known. The measurement is the sum of the unknown true value and the unknown error. Unknown error is a combination of systematic error, or bias, and random error. Bias varies predictably, constantly, and independently from the number of measurements. Random error is unpredictable, assumed to be Gaussian in distribution, and reducible by increasing the number of measurements.

19.12.3 The minimum uncertainty associated with results generated by the laboratory can be determined by using the Laboratory Control Sample (LCS) accuracy range for a given analyte. The LCS limits are used to assess the performance of the measurement system since they take into consideration all of the laboratory variables associated with a given test over time (except for variability associated with the sampling and the variability due to matrix effects). The percent recovery of the LCS is compared either to the method-required LCS accuracy limits or to the statistical, historical, in-house LCS accuracy limits.

19.12.4 To calculate the uncertainty for the specific result reported, multiply the result by the decimal of the lower end of the LCS range percent value for the lower end of the uncertainty range, and multiply the result by the decimal of the upper end of the LCS range percent value for the upper end of the uncertainty range. These calculated values represent uncertainties at approximately the 99% confidence level with a coverage factor of k = 3. As an example, for a reported result of 1.0 mg/L with an LCS recovery range of 50 to 150%, the estimated uncertainty in the result would be 1.0 ±0.5 mg/L.

19.12.5 In the case where a well recognized test method specifies limits to the values of major sources of uncertainty of measurement (e.g. 524.2, 525, etc) and specifies the form of presentation of calculated results, no further discussion of uncertainty is required.

19.13 SAMPLE REANALYSIS GUIDELINES

Because there is a certain level of uncertainty with any analytical measurement, a sample re-preparation (where appropriate) and subsequent analysis (hereafter referred to as "reanalysis") may result in either a higher or lower value from an initial sample analysis. There are also variables that may be present (e.g., sample homogeneity, analyte precipitation over time, etc.) that may affect the results of a reanalysis. Based on the above comments, the laboratory will reanalyze samples at a client's request with the following caveats. Client specific Contractual Terms & Conditions for reanalysis protocols may supersede the following items.

- Homogenous samples: If a reanalysis agrees with the original result to within the RPD limits for MS/MSD or Duplicate analyses, or within $\pm$ 1 reporting limit for samples $\leq$ 5x the reporting limit, the original analysis will be reported. At the client's request, both results may be reported on the same report but not on two separate reports.

- If the reanalysis does not agree (as defined above) with the original result, then the laboratory will investigate the discrepancy and reanalyze the sample a third time for confirmation if sufficient sample is available.

- Any potential charges related to reanalysis are discussed in the contract terms and conditions or discussed at the time of the request. The client will typically be charged for reanalysis unless it is determined that the lab was in error.

- Due to the potential for increased variability, reanalysis may not be applicable to Non-homogenous, Encore, and Sodium Bisulfate preserved samples. See the Department Supervisor or Laboratory Director/Manager if unsure.

19.14 CONTROL OF DATA

The laboratory has policies and procedures in place to ensure the authenticity, integrity, and accuracy of the analytical data generated by the laboratory.

19.14.1 Computer and Electronic Data Related Requirements

The three basic objectives of our computer security procedures and policies are shown below. The laboratory is currently running the 'TALS Data System' which is a LIMS system that has been highly customized to meet the needs of the laboratory. It is referred to as LIMS for the remainder of this section. The LIMS utilizes a SQL server which is an industry standard relational database platform. It is referred to as Database for the remainder of this section.

19.14.1.1 Maintain the Database Integrity

Assurance that data is reliable and accurate through data verification (review) procedures, password-protecting access, anti-virus protection, and data change requirements, as well as an internal LIMS permissions procedure.

- LIMS Database Integrity is achieved through data input validation, internal user controls, and data change requirements.
- Spreadsheets and other software developed in-house must be verified with documentation through hand calculations prior to use. Cells containing calculations must be lock-protected and controlled.
- Instrument hardware and software adjustments are safeguarded through maintenance logs, audit trails and controlled access.

19.14.1.2 Ensure Information Availability

Protection against loss of information or service is ensured through scheduled back-ups, stable file server network architecture, storage of media, line filter, Uninterruptible Power Supply (UPS), and maintaining older versions of software as revisions are implemented.

19.14.1.3 Maintain Confidentiality

Ensure data confidentiality through physical access controls such as password protection or website access approval, when electronically transmitting data.

19.14.2 Data Reduction

The complexity of the data reduction depends on the analytical method and the number of discrete operations involved (e.g., extractions, dilutions, instrument readings and concentrations). The analyst calculates the final results from the raw data or uses appropriate computer programs to assist in the calculation of final reportable values.

For manual data entry, e.g., Wet Chemistry, the data is reduced by the analyst and then verified by the Department Manager or alternate analyst prior to updating the data in LIMS. The data review sheets, or any other type of applicable documents, are signed by both the analyst and alternate reviewer to confirm the accuracy of the manual entry(s).

Manual integration of peaks will be documented and reviewed and the raw data will be flagged in accordance with the TestAmerica Corporate SOP CA-Q-S-002, *Acceptable Manual Integration Practices*.

Analytical results are reduced to appropriate concentration units specified by the analytical method, taking into account factors such as dilution, sample weight or volume, etc. Blank correction will be applied only when required by the method or per manufacturer's indication; otherwise, it should not be performed. Calculations are independently verified by appropriate laboratory staff. Calculations and data reduction steps for various methods are summarized in the respective analytical SOPs or program requirements.

19.14.2.1 All raw data must be retained in the project job folder, computer file, and/or run log. All criteria pertinent to the method must be recorded. The documentation is recorded at the time observations or calculations are made and must be signed or initialed/dated (month/day/year). It must be easily identifiable who performed which tasks if multiple people were involved.

19.14.2.2 In general, concentration results are reported in milligrams per liter (mg/l) or micrograms per liter (µg/l) for liquids and milligrams per kilogram (mg/kg) or micrograms per kilogram (µg/kg) for solids. For values greater than 10,000 mg/l, results can be reported in percent, i.e., 10,000 mg/l = 1%. Units are defined in each lab SOP.

19.14.2.3 In reporting, the analyst or the instrument output records the raw data result using values of known certainty plus one uncertain digit. If final calculations are performed external to LIMS, the results should be entered in LIMS with at least three significant figures. In general, final inorganic results are reported to 2 significant figures for values less than 10 and 3 significant figures for values greater than 10 on the final report. Organic results are generally reported to 1 significant figure for values less than 10 and 2 significant figures for values greater than 10 on the final report. The number of significant figures may be adjusted based on client or project requirements.

19.14.2.4 For those methods that do not have an instrument printout, an instrumental output or a calculation spreadsheet upload compatible with the LIMS System, the final results and dilution factors are entered directly into LIMS by the analyst, and the software formats the final result for the analytical report. LIMS has a defined significant figure criterion for each analyte.

19.14.2.5 The laboratory strives to import data directly from instruments or calculation spreadsheets to ensure that the reported data are free from transcription and calculation errors. For those analyses with an instrumental output compatible with the LIMS, the raw results and dilution factors are transferred into LIMS electronically after reviewing the quantitation report, and removing unrequested or poor spectrally-matched compounds. The analyst prints a copy of what has been entered to check for errors. This printout and the instrument's printout of calibrations, concentrations, retention times, chromatograms, and mass spectra, if applicable, are retained with the data file. The data file is automatically transferred to the network server and, eventually, to a back-up tape file.

19.14.3 Logbook / Worksheet Use Guidelines

Logbooks and worksheets are filled out 'real time' and have enough information on them to trace the events of the applicable analysis/task. (e.g. calibrations, standards, analyst, sample ID, date, time on short holding time tests, temperatures when applicable, calculations are traceable, etc.)

- Corrections are made following the procedures outlined in Section 12.
- Logbooks are controlled by the QA department. A record is maintained of all logbooks in the lab.
- Unused portions of pages must be "Z"'d out, signed and dated.
- Worksheets are created with the approval of the Technical Manager/QA Manager at the facility. The QA Manager controls all worksheets following the procedures in Section 6.

19.14.4 Review / Verification Procedures

Review procedures are out lined in several laboratory SOPs (e.g. BF-SR-002, "Receipt of Analytical Samples", BF-GP-012, "Technical Data Review", and BF-PM-001, "Project Information Requirements") to ensure that reported data are free from calculation and transcription errors, that QC parameters have been reviewed and evaluated before data is reported. The laboratory also has an SOP discussing Manual Integrations to ensure the authenticity of the data (BF-GP-013, Manual Integration). The general review concepts are discussed below, more specific information can be found in the SOPs.

19.14.4.1 Log-In Review - The data review process starts at the sample receipt stage. Sample control personnel review chain-of-custody forms and project instructions from the project management group. This is the basis of the sample information and analytical instructions entered into the LIMS. The log-in instructions are reviewed by the personnel entering the information, and a second level review is conducted by the project management staff.

19.14.4.2 First Level Data Review –The next level of data review occurs with the analysts. As data are generated, analysts review their work to ensure that the results meet project and SOP requirements. First level reviews include inspection of all raw data (e.g., instrument output for continuous analyzers, chromatograms, spectra, and manual integrations), evaluation of calibration/calibration verification data in the day's analytical run, evaluation of QC data, and reliability of sample results. The analyst transfers data into LIMS, data qualifiers are added as needed. All first level reviews are documented.

19.14.4.3 Second Level Data Review – All analytical data are subject to review by a second qualified analyst or supervisor. Second level reviews include inspection of all raw data (e.g., instrument output, chromatograms, and spectra) including 100% of data associated with any changes made by the primary analyst, such as manual integrations or reassignment of peaks to different analytes, or elimination of false negative analytes. The second review also includes evaluation of initial calibration/calibration verification data in the day's analytical run, evaluation of QC data, reliability of sample results, qualifiers and NCM narratives. Manual calculations are checked in second level review. All second level reviews are documented.

Issues that deem further review include the following:

- QC data are outside the specified control limits for accuracy and precision
- Reviewed sample data does not match with reported results
- Unusual detection limit changes are observed
- Samples having unusually high results
- Samples exceeding a known regulatory limit
- Raw data indicating some type of contamination or poor technique
- Inconsistent peak integration
- Transcription errors
- Results outside of calibration range

19.14.4.4 Unacceptable analytical results may require reanalysis of the samples. Any problems are brought to the attention of the Laboratory Director, Project Manager, Quality Director/Manager, Technical Manager, or Supervisor for further investigation. Corrective action is initiated whenever necessary.

19.14.4.5 The results are then entered or directly transferred into the computer database and a hard copy (or .pdf) is printed for the client.

19.14.4.6 As a final review prior to the release of the report, the Project Manager reviews the results for appropriateness and completeness. This review and approval ensures that client requirements have been met and that the final report has been properly completed. The process includes, but is not limited to, verifying that COC is followed, cover letters/ narratives are present, flags are appropriate, and project specific requirements are met. The Project Manager may also evaluate the validity of results for different test methods given expected chemical relationships.

19.14.4.7 Any project that requires a data package is subject to a tertiary data review for transcription errors and acceptable quality control requirements. The Project Manager then signs the final report and creates the invoice. When complete, the report is issued to the client.

19.14.5 Manual Integrations

Computerized data systems provide the analyst with the ability to re-integrate raw instrument data in order to optimize the interpretation of the data. Though manual integration of data is an invaluable tool for resolving variations in instrument performance and some sample matrix problems, when used improperly, this technique would make unacceptable data appear to meet quality control acceptance limits. Improper re-integrations lead to legally indefensible data, a poor reputation, or possible laboratory decertification. Because guidelines for re-integration of data are not provided in the methods and most methods were written prior to widespread implementation of computerized data systems, the laboratory trains all analytical staff on proper manual integration techniques using SOP CA-Q-S-002 as the guidelines.

19.14.5.1 The analyst must adjust baseline or the area of a peak in some situations, for example when two compounds are not adequately resolved or when a peak shoulder needs to be separated from the peak of interest. The analyst must use professional judgment and common sense to determine when manual integrating is required. Analysts are encouraged to ask for assistance from a senior analyst or manager when in doubt.

19.14.5.2 Analysts shall not increase or decrease peak areas for the sole purpose of achieving acceptable QC recoveries that would have otherwise been unacceptable. The intentional recording or reporting of incorrect information (or the intentional omission of correct information) is against company principles and policy and is grounds for immediate termination.

19.14.5.3 Client samples, performance evaluation samples, and quality control samples are all treated equally when determining whether or not a peak area or baseline should be manually adjusted.

19.14.5.4 All manual integrations receive a second level review. Manual integrations must be indicated on an expanded scale “after” chromatograms such that the integration performed can be easily evaluated during data review. Expanded scale “before” chromatograms are also required for all manual integrations on QC parameters (calibrations, calibration verifications, laboratory control samples, internal standards, surrogates, etc.) unless the laboratory has another documented corporate approved procedure in place that can demonstrate an active process for detection and deterrence of improper integration practices.

Figure 19-1.
Example - Demonstration of Capability Documentation

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

BF-QA-DOC-004
DOC Cert. Statement
Rev. 3 9/28/2016

TESTAMERICA LABORATORIES, INC.

DEMONSTRATION OF CAPABILITY CERTIFICATION STATEMENT

Employee Name (print): ______________________________

Method Number: ______________ Matrix (circle): water / soil / air

Parameters or Analytes: ______________________________

Date Submitted: ______________________________

Initial Demonstration of Capability:

SOP Number: ______________Revision # ________ Date Read___________

Trained By (print name): ______________________________

Date training began: ______________

Date training completed: ______________

Continued Demonstration of Capability:

SOP Number: ______________Revision # __________ Date Read___________

Demonstration of Capability Reviewed and Analyst Authorized to Perform Method:

______________	______________	______
Department Manager/Designee	Signature	Date
______________	______________	______
QA Manager/Designee	Signature	Date

SECTION 20

EQUIPMENT (AND CALIBRATIONS)

20.1 OVERVIEW

The laboratory purchases the most technically advanced analytical instrumentation for sample analyses. Instrumentation is purchased on the basis of accuracy, dependability, efficiency and sensitivity. Each laboratory is furnished with all items of sampling, preparation, analytical testing and measurement equipment necessary to correctly perform the tests for which the laboratory has capabilities. Each piece of equipment is capable of achieving the required accuracy and complies with specifications relevant to the method being performed. Before being placed into use, the equipment (including sampling equipment) is calibrated and checked to establish that it meets its intended specification. The calibration routines for analytical instruments establish the range of quantitation. Calibration procedures are specified in laboratory SOPs. A list of laboratory equipment and instrumentation is presented in Table 20-1*.*

Equipment is only operated by authorized and trained personnel. Manufacturer's instructions for equipment use are readily accessible to all appropriate laboratory personnel.

20.2 PREVENTIVE MAINTENANCE

20.2.1 The laboratory follows a well-defined maintenance program to ensure proper equipment operation and to prevent the failure of laboratory equipment or instrumentation during use. This program of preventive maintenance helps to avoid delays due to instrument failure.

20.2.2 Routine preventive maintenance procedures and frequency, such as lubrication, cleaning, and replacements, should be performed according to the procedures outlined in the manufacturer's manual. Qualified personnel must also perform maintenance when there is evidence of degradation of peak resolution, a shift in the calibration curve, loss of sensitivity, or failure to continually meet one of the quality control criteria.

20.2.3 Table 20-2 lists examples of scheduled routine maintenance. It is the responsibility of each Department Manager to ensure that instrument maintenance logs are kept for all equipment in his/her department. Preventative maintenance procedures may also be outlined in analytical SOPs or instrument manuals. (Note: for some equipment, the log used to monitor performance is also the maintenance log. Multiple pieces of equipment may share the same log as long as it is clear as to which instrument is associated with an entry.)

20.2.4 Instrument maintenance logs are controlled and are used to document instrument problems, instrument repair and maintenance activities. Maintenance logs shall be kept for all major pieces of equipment. Instrument maintenance logs may also be used to specify instrument parameters.

20.2.4.1 Documentation must include all major maintenance activities such as contracted preventive maintenance and service and in-house activities such as the replacement of electrical components, lamps, tubing, valves, columns, detectors, cleaning and adjustments.

20.2.4.2 Each entry in the instrument log includes the Analyst's initials, the date, a detailed description of the problem (or maintenance needed/scheduled), a detailed explanation of the solution or maintenance performed, and a verification that the equipment is functioning properly (state what was used to determine a return to control. e.g. CCV run on *'date'* was acceptable, or instrument recalibrated on 'date' with acceptable verification, etc.) must also be documented in the instrumentation records.

20.2.4.3 When maintenance or repair is performed by an outside agency, service receipts detailing the service performed can be affixed into the logbooks adjacent to pages describing the maintenance performed. This stapled in page must be signed across the page entered and the logbook so that it is clear that a page is missing if only half a signature is found in the logbook.

20.2.5 If an instrument requires repair (subjected to overloading or mishandling, gives suspect results, or otherwise has shown to be defective or outside of specified limits) it shall be taken out of operation and tagged as out of service or otherwise isolated until such a time as the repairs have been made and the instrument can be demonstrated as operational by calibration and/or verification or other test to demonstrate acceptable performance. The laboratory shall examine the effect of this defect on previous analyses

20.2.6 In the event of equipment malfunction that cannot be resolved, service shall be obtained from the instrument vendor manufacturer, or qualified service technician, if such a service can be tendered. If on-site service is unavailable, arrangements shall be made to have the instrument shipped back to the manufacturer for repair. Back up instruments, which have been approved, for the analysis shall perform the analysis normally carried out by the malfunctioning instrument. If the back up is not available and the analysis cannot be carried out within the needed timeframe, the samples shall be subcontracted.

At a minimum, if an instrument is sent out for service or transferred to another facility, it must be recalibrated and the laboratory MDL verified (using an MDLV) prior to return to lab operations.

20.3 SUPPORT EQUIPMENT

This section applies to all devices that may not be the actual test instrument, but are necessary to support laboratory operations. These include but are not limited to: balances, ovens, refrigerators, freezers, incubators, water baths, field sampling devices, temperature measuring devices and volumetric dispensing devices if quantitative results are dependent on their accuracy, as in standard preparation and dispensing or dilution into a specified volume. All raw data records associated with the support equipment are retained to document instrument performance.

Laboratory SOPs BF-GP-001,"Calibration of Autopipettes and Repipetters" and BF-GP-002, "Support Equipment: Maintenance, Record Keeping and Corrective Actions of Analytical Balances, Temperature Control Devises and Reagent Water" provide additional detail on the monitoring and record keeping for support equipment.

20.3.1 Weights and Balances

The accuracy of the balances used in the laboratory is checked every working day, before use. All balances are placed on stable counter tops.

Each balance is checked prior to initial serviceable use with at least two certified ASTM type 1 weights spanning its range of use (weights that have been calibrated to ASTM type 1 weights may also be used for daily verification). ASTM type 1 weights used only for calibration of other weights (and no other purpose) are inspected for corrosion, damage or nicks at least annually and if no damage is observed, they are calibrated at least every 5 years by an outside calibration laboratory. Any weights (including ASTM Type 1) used for daily balance checks or other purposes are recalibrated/recertified annually to NIST standards (this may be done internally if laboratory maintains "calibration only" ASTM type 1 weights).

All balances are serviced annually by a qualified service representative, who supplies the laboratory with a certificate that identifies traceability of the calibration to the NIST standards.

All of this information is recorded in logs, and the recalibration/recertification certificates are kept on file.

20.3.2 pH, Conductivity, and Turbidity Meters

The pH meters used in the laboratory are accurate to ± 0.1 pH units, and have a scale readability of at least 0.05 pH units. The meters automatically compensate for the temperature, and are calibrated with at least two working range buffer solutions before each use.

Conductivity meters are also calibrated before each use with a known standard to demonstrate the meters do not exceed an error of 1% or one umhos/cm.

Turbidity meters are also calibrated before each use. All of this information is documented in logs.

Consult pH and Conductivity, and Turbidity SOPs for further information.

20.3.3 Thermometers

All reusable thermometers are calibrated on an annual basis with a NIST-traceable thermometer.

- If the temperature measuring device is used over a range of 10°C or less, then a single point verification within the range of use is acceptable;
- If the temperature measuring device is used over a range of greater than 10°C, then the verification must bracket the range of use.

IR thermometers should be calibrated over the full range of use, including ambient, iced (4 degrees) and frozen (0 to -5 degrees), per the Drinking Water Manual. The IR thermometers are verified daily and calibrated quarterly. Digital probes and thermocouples are calibrated quarterly. Disposable thermometers are discarded upon expiration and replaced with newly purchased thermometers.

The NIST Mercury thermometer is recalibrated every five years (unless thermometer has been exposed to temperature extremes or apparent separation of internal liquid) by an approved outside service and the provided certificate of traceability is kept on file. The NIST digital thermometer is recalibrated every one year (unless thermometer has been exposed to temperature extremes or apparent separation of internal liquid) by an approved outside service and the provided certificate of traceability is kept on file The NIST thermometer(s) have increments of 1 degree (0.5 degree or less increments are required for drinking water microbiological laboratories) and have ranges applicable to method and certification requirements. The NIST traceable thermometer is used for no other purpose than to calibrate other thermometers.

All of this information is documented in logbooks. Monitoring method-specific temperatures, including incubators, heating blocks, water baths, and ovens, is documented in method-specific logbooks. More information on this subject can be found in the laboratory SOP BF-GP-020, “Thermometer Calibration”.

20.3.4 Refrigerators/Freezer Units, Waterbaths, Ovens and Incubators

The temperatures of all refrigerator units and freezers used for sample and standard storage are monitored each working day.

Ovens, waterbaths and incubators are monitored on days of use.

All of this equipment has a unique identification number, and is assigned a unique thermometer for monitoring.

Sample storage refrigerator temperatures are kept between > 0ºC and ≤ 6 ºC.

Specific temperature settings/ranges for other refrigerators, ovens waterbaths, and incubators can be found in method specific SOPs.

All of this information is documented in Daily Temperature Logbooks and method-specific logbooks.

20.3.5 Autopipettors, Dilutors, and Syringes

Mechanical volumetric dispensing devices including burettes (except Class A Glassware and Glass microliter syringes) are given unique identification numbers and the delivery volumes are verified gravimetrically at a minimum on a quarterly basis.

For those dispensers that are not used for analytical measurements, a label is applied to the device stating that it is not calibrated. Any device not regularly verified can not be used for any quantitative measurements.

Micro-syringes are purchased from Hamilton Company. Each syringe is traceable to NIST. The laboratory keeps on file an "Accuracy and Precision Statement of Conformance" from Hamilton attesting established accuracy.

20.3.6 Field Sampling Devices (Isco Auto Samplers)

Each Auto Sampler (ISCO) is assigned a unique identification number in order to keep track of the calibration. This number is also recorded on the sampling documentation.

The Auto Sampler is calibrated monthly (or if not utilized monthly, immediately prior to its usage) by setting the sample volume to 100ml and recording the volume received. The results are filed in a logbook/binder. The Auto Sampler is programmed to run three (3) cycles and each of the three cycles is measured into a graduated cylinder to verify 100ml are received.

If the RSD (Relative Standard Deviation) between the 3 cycles is greater than 10%, the procedure is repeated and if the result is still greater than 10%, then the Auto Sampler is taken out of service until it is repaired and calibration verification criteria can be met. The results of this check are kept in a logbook/binder.

Additional calibration and use information is detailed in laboratory SOP BF-FS-006, "Calibration of Field Meter".

20.4 INSTRUMENT CALIBRATIONS

Calibration of analytical instrumentation is essential to the production of quality data. Strict calibration procedures are followed for each method. These procedures are designed to determine and document the method detection limits, the working range of the analytical instrumentation and any fluctuations that may occur from day to day.

Sufficient raw data records are retained to allow an outside party to reconstruct all facets of the initial calibration. Records contain, but are not limited to, the following: calibration date, method, instrument, analyst(s) initials or signatures, analysis date, analytes, concentration, response, type of calibration (Avg RF, curve, or other calculations that may be used to reduce instrument responses to concentration.)

Sample results must be quantitated from the initial calibration and may not be quantitated from any continuing instrument calibration verification unless otherwise required by regulation, method or program.

If the initial calibration results are outside of the acceptance criteria, corrective action is performed and any affected samples are reanalyzed if possible. If the reanalysis is not possible, any data associated with an unacceptable initial calibration will be reported with appropriate data qualifiers (refer to Section 12).

Note: Instruments are calibrated initially and as needed after that and at least annually.

20.4.1 Calibration Standards

Calibration standards are prepared using the procedures indicated in the Reagents and Standards section of the determinative method SOP. If a reference method does not specify the number of calibration standards, a minimum of 3 calibration points will be used.

20.4.1.1 Standards for instrument calibration are obtained from a variety of sources. All standards are traceable to national or international standards of measurement, or to national or international standard reference materials.

20.4.1.2 The lowest concentration calibration standard that is analyzed during an initial calibration must be at or below the stated reporting limit for the method based on the final volume of extract (or sample).

20.4.1.3 The other concentrations define the working range of the instrument/method or correspond to the expected range of concentrations found in actual samples that are also within the working range of the instrument/method. Results of samples not bracketed by initial instrument calibration standards (within calibration range to at least the same number of significant figures used to report the data) must be reported as having less certainty, e.g., defined qualifiers or flags (additional information may be included in the case narrative). The exceptions to these rules is ICP and ICPMS methods which define the working range with periodic linear dynamic range studies, rather than through the range of concentrations of daily calibration standards.

20.4.1.4 All initial calibrations are verified with a standard obtained from a second source and traceable to a national standard, when available (or vendor certified different lot if a second source is not available). For unique situations, such as air analysis where no other source or lot is available, a standard made by a different analyst would be considered a second source. This verification occurs immediately after the calibration curve has been analyzed, and before the analysis of any samples.

20.4.2 Calibration Verification

The calibration relationship established during the initial calibration must be verified at least daily as specified in the laboratory method SOPs in accordance with the referenced analytical methods and 2009 TNI Std. EL-V1M4, section 1.7.1. The process of calibration verification applies to both external standard and internal standard calibration techniques, as well as to linear and non-linear calibration models. Initial calibration verification is with a standard source secondary (second source standard) to the calibration standards, but continuing calibration verifications may use the same source standards as the calibration curve.

Note: The process of calibration verification referred to is fundamentally different from the approach called "calibration" in some methods. As described in those methods, the calibration factors or response factors calculated during calibration are used to update the calibration factors or response factors used for sample quantitation. This approach, while employed in other EPA programs, amounts to a daily single-point calibration.

All target analytes and surrogates, including those reported as non-detects, must be included in periodic calibration verifications for purposes of retention time confirmation and to demonstrate that calibration verification criteria are being met i.e., RPD, per NELAC (2003) Standard, Section 5.5.5.10 and 2009 TNI Std. EL-V1M4 Sec. 1.7.2.

All samples must be bracketed by periodic analyses of standards that meet the QC acceptance criteria (e.g., calibration and retention time). The frequency is found in the determinative methods or SOPs.

Note: If an internal standard calibration is being used then bracketing calibration verification standards are not required, only daily verifications are needed. The results from these verification standards must meet the calibration verification criteria and the retention time criteria (if applicable).

Generally, the initial calibrations must be verified at the beginning of each 12-hour analytical shift during which samples are analyzed. (Some methods may specify more or less frequent verifications). The 12-hour analytical shift begins with the injection of the calibration verification standard (or the MS tuning standard in MS methods). The shift ends after the completion of the analysis of the last sample, QC, or standard that can be injected within 12 hours of the beginning of the shift.

A continuing instrument calibration verification (CCV) must be repeated at the beginning and, for methods that have quantitation by external calibration models, at the end of each analytical batch. Some methods have more frequent CCV requirements see specific SOPs. Most Inorganic methods require the CCV to be analyzed after ever 10 samples or injections, including matrix or batch QC samples.

Note: If an internal standard calibration is being used (basically GCMS) then bracketing standards are not required, only daily verifications are needed. The results from these verification standards must meet the calibration verification criteria and the retention time criteria (if applicable).

If the results of a CCV are outside the established acceptance criteria and analysis of a second consecutive (and immediate) CCV fails to produce results within acceptance criteria, corrective action shall be performed. Once corrective actions have been completed & documented, the laboratory shall demonstrate acceptable instrument / method performance by analyzing two consecutive CCVs, or a new initial instrument calibration shall be performed.

Sample analyses and reporting of data may not occur or continue until the analytical system is calibrated or calibration verified. However, data associated with an unacceptable calibration verification may be fully useable under the following special conditions:

a).when the acceptance criteria for the CCV are exceeded high (i.e., high bias) and the associated samples within the batch are non-detects, then those non-detects may be reported with a footnote or case narrative explaining the high bias. Otherwise the samples affected by the unacceptable CCV shall be re-analyzed after a new calibration curve has been established, evaluated and accepted; or

b).when the acceptance criteria for the CCV are exceeded low (i.e., low bias), those sample results may be reported if they exceed a maximum regulatory limit/decision level. Otherwise the samples affected by the unacceptable CCV shall be re-analyzed after a new calibration curve has been established, evaluated and accepted.

Samples reported by the 2 conditions identified above will be appropriately flagged.

20.4.2.1 <u>Verification of Linear and Non-Linear Calibrations</u>

Calibration verification for calibrations involves the calculation of the percent drift or the percent difference of the instrument response between the initial calibration and each subsequent analysis of the verification standard. (These calculations are available in the laboratory method SOPs.) Verification standards are evaluated based on the % Difference from the average CF or RF of the initial calibration or based on % Drift or % Recovery if a linear or quadratic curve is used.

Regardless of whether a linear or non-linear calibration model is used, if initial verification criterion is not met, then no sample analyses may take place until the calibration has been verified or a new initial calibration is performed that meets the specifications listed in the method SOPs. If the calibration cannot be verified after the analysis of a single verification standard, then adjust the instrument operating conditions and/or perform instrument maintenance, and analyze another aliquot of the verification standard. If the calibration cannot be verified with the second standard, then a new initial calibration is performed.

- When the acceptance criteria for the calibration verification are exceeded high, i.e., high bias, and there are associated samples that are non-detects, then those non-detects may be reported. Otherwise, the samples affected by the unacceptable calibration verification shall be reanalyzed after a new calibration curve has been established, evaluated and accepted.

- When the acceptance criteria for the calibration verification are exceeded low, i.e., low bias, those sample results may be reported if they exceed a maximum regulatory limit/decision level. Otherwise, the samples affected by the unacceptable verification shall be reanalyzed after a new calibration curve has been established, evaluated and accepted. Alternatively, a reporting limit standard may be analyzed to demonstrate that the laboratory can still support non-detects at their reporting limit.

20.5 TENTATIVELY IDENTIFIED COMPOUNDS (TICS) – GC/MS ANALYSIS

For samples containing components not associated with the calibration standards, a library search may be made for the purpose of tentative identification. The necessity to perform this type of identification will be determined by the purpose of the analyses being conducted. Data system library search routines should not use normalization routines that would misrepresent the library or unknown spectra when compared to each other.

Note: If the TIC compound is not part of the client target analyte list but is calibrated by the laboratory and is both qualitatively and/or quantitatively identifiable, it should not be reported as a TIC. If the compound is reported on the same form as true TICs, it should be qualified and/or narrated that the reported compound is qualitatively and quantitatively (if verification in control) reported compared to a known standard that is in control (where applicable).

For example, the RCRA permit or waste delisting requirements may require the reporting of non-target analytes. Only after visual comparison of sample spectra with the nearest library searches may the analyst assign a tentative identification. See laboratory SOP's BF-MB-005 and BF-MV-007 for guidelines for making tentative identifications

Note:
For general reporting if TICs are requested, the ten (10), largest non-target analyte peaks whose area count exceeds 10% of the nearest internal standard will be termed "Tentatively Identified Compounds" (TICs). More or fewer TICs may be identified based on client requirements.

20.6 GC/MS TUNING

Prior to any GCMS analytical sequence, including calibration, the instrument parameters for the tune and subsequent sample analyses within that sequence must be set.

Prior to tuning/auto-tuning the mass spec, the parameters may be adjusted within the specifications set by the manufacturer or the analytical method. These generally don't need any adjustment but it may be required based on the current instrument performance. If the tune verification does not pass it may be necessary to clean the source or perform additional maintenance. Any maintenance is documented in the maintenance log.

Table 20-1. Laboratory Equipment and Instrumentation
TestAmerica Buffalo, rev. 11-3-2017

Equipment/ Instrument	Manufacturer	Model Number	Serial Number	Year Put into Service	Condition When Received

Equipment/ Instrument	Manufacturer	Model Number	Serial Number	Year Put into Service	Condition When Received
GC/MS Instrumentation	Agilent	5975	US83110163	2013	good
GC/MS Instrumentation	Agilent	5973	US02450141	2012	good
GC/MS Instrumentation	Agilent	5975	US83130241	2013	good
GC/MS Instrumentation	Agilent	5975	US80838844	2008	good
GC/MS Instrumentation	Agilent	5973	US44621446	2005	good
GC/MS Instrumentation	Agilent	5973	US52420646	2005	good
GC/MS Instrumentation	Agilent	5973	US41720721	2004	good
GC/MS Instrumentation	Agilent	5973	US35120354	2004	good
GC/MS Instrumentation	Agilent	5973	US41720707	2004	good
GC/MS Instrumentation	Agilent	5973	US21854062	2003	good
GC/MS Instrumentation	Agilent	5973	US30965634	2003	good
GC/MS Instrumentation	Agilent	5973	US03965692	2003	good
GC/MS Instrumentation	Agilent	5973	US05605976	2001	good
GC/MS Instrumentation	Agilent	5973	US05060084	2001	good
GC/MS Instrumentation	Agilent	5973	US03950346	2001	good
GC/MS Instrumentation	Agilent	5973	US82321636	2001	good
GC Instrumentation	Perkin Elmer	Clarus 608 dual uECD	680S10101807	2013	good
GC Instrumentation	Perkin Elmer	Clarus 600 dual FID	665S10020401	2012	good
GC Instrumentation	Agilent	6890 dual uECD	CN10839003	2005	good
GC Instrumentation	Agilent	6890 dual uECD	CN10833020	2005	good
GC Instrumentation	Agilent	6890 dual uECD	CN10448015	2005	good
GC Instrumentation	Hewlett Packard	5890II dual ECD	3336A53126	1994	good
GC Instrumentation	Hewlett Packard	5890II dual ECD	3336A63465	1994	good
GC Instrumentation	Hewlett Packard	5890II dual ECD	3336A53464	1994	good

Equipment/ Instrument	Manufacturer	Model Number	Serial Number	Year Put into Service	Condition When Received
GC Instrumentation	Hewlett Packard	5890II dual ECD	3336A53463	1994	good
GC Instrumentation	Hewlett Packard	5890II dual ECD	3336A54409	1994	good
GC Instrumentation	Hewlett Packard	5890II dual ECD	3336A54408	1994	good
GC Instrumentation	Hewlett Packard	5890II FID/FID	3115A34892	1994	good
GC Instrumentation	Hewlett Packard	5890II PID/FID	3336A60622	1994	good
GC Instrumentation	Hewlett Packard	5890II Hall/PID	3235A54089	1994	good
GC Instrumentation	Hewlett Packard	5890II PID/FID	3336A53465	1994	good
GC Instrumentation	Hewlett Packard	5890II dual FID	3336A53727	1994	good
GC Instrumentation	Hewlett Packard	580II FID/FID	3336A53729	1994	good
GC Instrumentation	Hewlett Packard	580II FID/FID	3336A53728	1994	good
GC Instrumentation	Hewlett Packard	5890II dual ECD	3310A47661	1993	good
GC Instrumentation	Hewlett Packard	5890II dual ECD	3336A53325	1993	good
GC Instrumentation	Hewlett Packard	5890II PID/FID	3133A37157	1993	good
GC Instrumentation	Hewlett Packard	5890II dual ECD	3203A42206	1992	good
GC Instrumentation	Hewlett Packard	5890II dual FID	3019A28433	1991	good
GC Instrumentation	Hewlett Packard	5890II Hall/PID	3121A35782	1990	good
Metals Instrumentation	Perkin Elmer	Elan 9000 ICP-MS	P0230202	2002	good
Metals Instrumentation	Leeman	PS200 II	HG9045	2000	good
Metals Instrumentation	Leeman	PS200 II	HG0033	2000	good
Metals Instrumentation	Thermo	ICAP 6000 Duo	ICP-20094603	2010	good
Metals Instrumentation	Thermo	ICAP 6000 Duo	ICP-20094602	2010	good
Metals Instrumentation	Environmental Express	AutoBlock Plus	AB4001-1213-042	2013	good
Water Quality Instrumentation	ManTech	PC Titrator	PCM-PSDT/CA	2015	good
Water Quality Instrumentation	Metrohm	IC Model 881	4111	2013	good

Equipment/ Instrument	Manufacturer	Model Number	Serial Number	Year Put into Service	Condition When Received
Water Quality Instrumentation	Konelab	Aqua20	SEA032	2009	good
Water Quality Instrumentation	Flash Point Analyzer	HFP 339	73390092	2007	good
Water Quality Instrumentation	Flash Point Analyzer	Optiflash 104002	Herzog PAC 000334	2015	good
Water Quality Instrumentation	OI	Carbon Analyzer Model 1030	A549730578	2006	good
Water Quality Instrumentation	OI	Carbon Analyzer Model 1030	E616730030	2006	good
Water Quality Instrumentation	OI	Carbon Analyzer Model 1030	P410730479	2003	good
Water Quality Instrumentation	Thermo	ECA 1200 TOX	2006.0373	2006	good
Water Quality Instrumentation	Horizon	Speed Vap	03-0415	2005	good
Water Quality Instrumentation	Konelab	20XT	E3719731	2005	good
Water Quality Instrumentation	Thermo	ECA 1200 TOX	2004.901	2004	good
Water Quality Instrumentation	Metrohm	881 Compact IC Pro	36756	2014	good
Water Quality Instrumentation	Dionex	Ion Chromatograph #DX-120	20126	2004	good
Water Quality Instrumentation	Konelab	20	S5019455	2004	good
Water Quality Instrumentation	Glastron	CN Midi-distillation	2502	2003	good
Water Quality Instrumentation	Glastron	Phenol Midi-distillation	2069	2003	good
Water Quality Instrumentation	Glastron	Phenol Midi-distillation	2053	2003	good
Water Quality Instrumentation	Mantech	BOD Autoanalyzer	MS-1LO-157	2004	good
Water Quality Instrumentation	Mantech	BOD Autoanalyzer	MT-0**B**4-215	2015	good
Water Quality Instrumentation	Mantech	PC Titrator	MS-OK2-607	2003	good
Water Quality Instrumentation	HACH	Spectrophotometer #DR/2500	30200004886	2003	good
Water Quality Instrumentation	Dionex	Ion Chromatograph #DX-120	2060196	2002	good
Water Quality Instrumentation	Spectronic	Genesis 4001/4	3SGC199091	2000	good
Water Quality Instrumentation	Lachat	Quickchem 8000 Autoanalyzer	A83000-1527	2000	good
Water Quality Instrumentation	Lachat	Quickchem 8500 Autoanalyzer	40300001665	2014	good

Equipment/ Instrument	Manufacturer	Model Number	Serial Number	Year Put into Service	Condition When Received
Water Quality Instrumentation	Lachat	Quickchem 8500 Autoanalyzer	11060001336	2013	good
Water Quality Instrumentation	Dionex	Ion Chromatograph #DX-120	99010157	1999	good
Water Quality Instrumentation	Dionex	Ion Chromatograph #DX-120	99110569	1999	good
Water Quality Instrumentation	BOD chamber		Revco	1994	good
Sample Preparation Equipment	CEM	Microwave MARS	MD3978	2013	good
Sample Preparation Equipment	Gilson	Fractionator Model GX-274	40579	2013	good
Sample Preparation Equipment	TurboVap	II	TV0529N12427	2006	good
Sample Preparation Equipment	TurboVap	II	TV0529N12428	2006	good
Sample Preparation Equipment	TurboVap	II	TV9445N5816	1996	good
Sample Preparation Equipment	TurboVap	II	TV9427N4133	1996	good
Sample Preparation Equipment	TurboVap	II	TV944N5819	1996	good
Sample Preparation Equipment	TurboVap	II	TV944N5820	1996	good
Sample Preparation Equipment	TurboVap	II	TV0024N9623	2000	good
Sample Preparation Equipment	TurboVap	II	TV0022N9604	2000	good
Sample Preparation Equipment	TurboVap	II	TV0312N11592	2003	good
Sample Preparation Equipment	TurboVap	II	TV0312N11591	2003	good
Sample Preparation Equipment	Heat Systems	Sonicator #XL-2020	G1647/C5659	1994	good

Equipment/ Instrument	Manufacturer	Model Number	Serial Number	Year Put into Service	Condition When Received
Sample Preparation Equipment	Heat Systems	Sonicator #XL-2020	G2665/C5674	1994	good
Sample Preparation Equipment	Heat Systems	Sonicator #XL-2020	G2620/C5660	1994	good
Sample Preparation Equipment	Heat Systems	Sonicator #XL-2020	G2245/C6328	1995	good
Sample Preparation Equipment	Heat Systems	Sonicator #XL-2020	G2621/C6733	1995	good
Sample Preparation Equipment	Heat Systems	Sonicator #XL-2020	G2713/C6732	1995	good
Sample Preparation Equipment	Heat Systems	Sonicator #XL-2020	G1643/C6837	1995	good
Sample Preparation Equipment	Heat Systems	Sonicator #XL-2020	G2742/C6842	1995	good
Sample Preparation Equipment	Organomation	Rot-X-Tractor	169902	1999	good
Sample Preparation Equipment	Organomation	Rot-X-Tractor	16907	1999	good
Sample Preparation Equipment	Organomation	Rot-X-Tractor	16913	1999	good

Note: The Equipment List is current at the date of publication of this manual. An updated list may be obtained by contacting the TestAmerica Buffalo Quality Department.

Table 20-2.

Schedule of Routine Maintenance

Instrument	Procedure	Frequency
Leeman Mercury Analyzer	Check tubing for wear Fill rinse tank with 10% HCl Change dryer tube Fill reductant bottle with 10% Stannous Chloride	Daily Daily As Needed Daily
ICP & ICP/MS	Check pump tubing Check liquid argon supply Check fluid level in waste container Check re-circulator levels Clean or replace filters Check torch Check sample spray chamber for debris Clean and align nebulizer Change pump oil Change Cones Change printer cartridge Replace pump tubing	Daily Daily Daily Monthly As required Daily Monthly Monthly Monthly As required As required As required
UV-Vis Spectrophotometer	Clean ambient flow cell Precision check/alignment of flow cell Wavelength verification check	As required As required Annually
Auto Analyzers	Clean sampler Check all tubing Clean inside of colorimeter Clean pump well and pump rollers Clean wash fluid receptacle Oil rollers/chains/side rails Clean optics and cells	Daily Daily Daily Quarterly Weekly Weekly Quarterly
Agilent GC/MS	Pump oil-level check Pump oil changing Analyzer bake-out Analyzer cleaning Resolution adjustment COMPUTER SYSTEM AND PRINTER: Air filter cleaning Change data system air filter Printer head carriage lubrication Paper sprocket cleaning Drive belt lubrication	Monthly Annually As required As required As required As required As required As required As required As required

Instrument	Procedure	Frequency
Gas Chromatograph	Compare standard response to previous day or since last initial calibration Check carrier gas flow rate in column Check temp. of detector, inlet, column oven Septum replacement Glass wool replacement Check system for gas leaks with SNOOP Check for loose/frayed power wires and insulation Bake injector/column Change/remove sections of guard column Replace connectors/liners Change/replace column(s)	Daily Daily via use of known compound retention Daily As required As required W/cylinder change as required As Required As Required As Required As Required As Required
Electron Capture Detector (ECD)	Detector wipe test (Ni-63) Detector cleaning	Semi-annually As required
Flame Ionization Detector (FID)	Detector cleaning	As required
Photoionization Detector (PID)	Change O-rings Clean lamp window	As required As required
HPLC	Change guard columns Change lamps Change pump seals Replace tubing Change fuses in power supply Filter all samples and solvents Change autosampler rotor/stator	As required As required Semi-annually or as required As required As required Daily As required
Vacuum Pumps/ Air Compressor	Drained Belts checked Lubricated	Weekly Monthly Semi-annually
Centrifuge	Check brushes and bearings	Every 6 months or as needed

Table 20-3.

Periodic Calibration

Instrument	Type of Calibration/ Number of Standards	Frequency	Acceptance Limits	Corrective Action
Analytical Balance	Accuracy determined using "S" NIST traceable weights. Minimum of 2 standards bracketing the weight of interest. Inspected and calibrated by A2LA accredited person annually.	Daily, when used Annual	± 0.2%	Clean, check level, insure lack of drafts, and that unit is warmed up, recheck. If fails, call service.
Top Loading Balance	Accuracy determined using "S" NIST traceable. Minimum of 2 standards bracketing the weight of interest. Inspected and calibrated by A2LA accredited person annually.	Daily, when used Annual	± 0.5%	Clean. Replace.
NIST Certified Weights	Accuracy determined by accredited weights and measurement laboratory.	1 year	As per certificate.	Replace.
NIST-Traceable Thermometer-Mercury	Accuracy determined by accredited measurement laboratory.	3 years	As per certificate.	Replace.
NIST-Traceable Thermometer-Digital	Accuracy determined by accredited measurement laboratory.	1 year	As per certificate	Replace.
Thermometer	Against NIST-traceable thermometer	Yearly at appropriate temperature range for intended use	± 2.0°C	Replace
Minimum-Maximum Thermometers	Against NIST-traceable thermometer	Yearly	± 2.0°C	Replace

Instrument	Type of Calibration/ Number of Standards	Frequency	Acceptance Limits	Corrective Action
InfraRed Temperature Guns	Against NIST-traceable thermometer Accuracy determined by accredited measurement laboratory.	Daily at appropriate temperature range for intended use. Annual	± 2.0°C	Repair/replace
Dial-type Thermometers	Against NIST-traceable thermometer	Quarterly at appropriate temperature range for intended use.	± 2.0°C	Replace
Refrigerator	Temperature checked using NIST-traceable thermometer.	Daily. If out of range, check again in two hours.	0-6°C	Adjust. Repair. While waiting for repair, seal door, attach “Out of Service” sign, move items to functional unit. Notify supervisor.
Freezer	Temperature checked using NIST-traceable thermometer	Daily. If out of range, check again in two hours.	(-10)-(-20)°C	Adjust. Repair. While waiting for repair, seal door, attach “Out of Service” sign, move items to functional unit. Notify supervisor.
Oven	Temperature checked using NIST-traceable thermometer.	When in use.	104 ± 1°C (drying) 180 ± 2°C (TDS)	Adjust. Replace.
Water Bath	Temperature checked using NIST-traceable thermometer.	When in use.	± 2°C	Adjust. Replace.
Volumetric Dispensing Devices (Eppendorf ® pipette, automatic dilutor or dispensing devices)	One delivery by weight. Using DI water or solvent of use, dispense into tared vessel. Record weight with device ID number. Calibrate using 4 replicate gravimetric measurements	Each day of use Quarterly	± 2% Calculate accuracy by dividing weight by stated volume times 100 for percent.	Adjust. Replace.

Instrument	Type of Calibration/ Number of Standards	Frequency	Acceptance Limits	Corrective Action
Glass Microliter Syringes	None	Accuracy must be initially demonstrated if syringe was not received with a certificate attesting to established accuracy.	± 1%	Not applicable.
Deionized Water	Check in-line conductivity meter on system with conductivity meter in Inorganics Department.	Daily	<1.0 μmho at 25°C	Record on log. Report discrepancies to QA Manager, Operations Manager or Technical Manager.

SECTION 21

MEASUREMENT TRACEABILITY

21.1 OVERVIEW

Traceability of measurements shall be assured using a system of documentation, calibration, and analysis of reference standards. Laboratory equipment that are peripheral to analysis and whose calibration is not necessarily documented in a test method analysis or by analysis of a reference standard shall be subject to ongoing certifications of accuracy. At a minimum, these must include procedures for checking specifications of ancillary equipment: balances, thermometers, temperature, Deionized (DI) and Reverse Osmosis (RO) water systems, automatic pipettes and other volumetric measuring devices. (Refer to Section 20.3). With the exception of Class A Glassware and Glass microliter syringes, quarterly accuracy checks are performed for all mechanical volumetric devices. For certain programs Microsyringes are verified semi-annually or disposed of after 6 months of use. Wherever possible, subsidiary or peripheral equipment is checked against standard equipment or standards that are traceable to national or international standards. Class A Glassware and Glass microliter syringes should be routinely inspected for chips, acid etching or deformity (e.g. bent needle). If the Class A glassware or syringe is suspect, the accuracy of the glassware will be assessed prior to use.

21.2 NIST-TRACEABLE WEIGHTS AND THERMOMETERS

Reference standards of measurement shall be used for calibration only and for no other purpose, unless it can be shown that their performance as reference standards would not be invalidated.

For NIST-traceable weights and thermometers, the laboratory requires that all calibrations be conducted by a calibration laboratory accredited by A2LA, NVLAP (National Voluntary Laboratory Accreditation Program), or another accreditation organization that is a signatory to a MRA (Mutual Recognition Arrangement) of one or more of the following cooperations – ILAC (International Laboratory accreditation Cooperation) or APLAC (Asia – Pacific Laboratory Accreditation Cooperation)..A certificate and scope of accreditation is kept on file at the laboratory.

The calibration report or certificate submitted to ***TestAmerica Buffalo*** contains, in a well designed format, a traceability statement, the conditions under which the calibrations were made in the context of any potential influence, a compliance statement with an identified metrological specification and the pertinent clauses, a clearly identified record of the quantities and functional test results before and after re-calibration, and no recommendation on the calibration interval. Opinions and interpretations of results are presented along with the basis upon which they were made and identified as such. The report may be submitted by facsimile or other electronic means as long as the requirements of the International Standard are achieved. If significant amendments are made to a calibration certificate, a supplemental certificate for the serial-number-specified piece of equipment is so identified. When a new certificate is offered, it uniquely identifies and references the one it replaces. All calibration reports are filed in the QA Office.

An external certified service engineer services laboratory balances on an annual basis. This service is documented on each balance with a signed and dated certification sticker. Balance calibrations are checked each day of use. All mercury thermometers are calibrated annually against a traceable reference thermometer. Temperature readings of ovens, refrigerators, and incubators are checked on each day of use.

21.3 REFERENCE STANDARDS / MATERIALS

Reference standards/materials, where commercially available, are traceable to certified reference materials. Commercially prepared standard materials are purchased from vendors accredited by ISO Guide 34 and ISO/IEC Guide 17025. All reference standards from commercial vendors shall be accompanied with a certificate that includes at least the following information:

- Manufacturer
- Analytes or parameters calibrated
- Identification or lot number
- Calibration method
- Concentration with associated uncertainties
- Purity

If a standard cannot be purchased from a vendor that supplies a Certificate of Analysis, the purity of the standard is documented by analysis. The receipt of all reference standards must be documented. Reference standards are labeled with a unique Standard Identification Number and expiration date. All documentation received with the reference standard is retained as a QC record and references the Standard Identification Number.

All reference, primary and working standards/materials, whether commercially purchased or laboratory prepared, must be checked regularly to ensure that the variability of the standard or material from the 'true' value does not exceed method requirements. The accuracy of calibration standards is checked by comparison with a standard from a second source. In cases where a second standard manufacturer is not available, a vendor certified different lot is acceptable for use as a second source. For unique situations, such as air analysis where no other source or lot is available, a standard made by a different analyst would be considered a second source. The appropriate Quality Control (QC) criteria for specific standards are defined in laboratory SOPs. In most cases, the analysis of an Initial Calibration Verification (ICV) or LCS (where there is no sample preparation) is used as the second source confirmation. These checks are generally performed as an integral part of the analysis method (e.g. calibration checks, laboratory control samples).

All standards and materials must be stored and handled according to method or manufacturer's requirements in order to prevent contamination or deterioration. Refer to the Corporate Environmental Health & Safety Manual or laboratory SOPs. Method specific information may also be found in the laboratory method SOPs in the "Standards and Reagents" sections. For safety requirements, please refer to method SOPs and the laboratory Environmental Health and Safety Manual.

Standards and reference materials shall not be used after their expiration dates unless their reliability is verified by the laboratory and their use is approved by the Quality Assurance Manager. The laboratory must have documented contingency procedures for re-verifying expired standards.

21.4 DOCUMENTATION AND LABELING OF STANDARDS, REAGENTS, AND REFERENCE MATERIALS

Reagents must be at a minimum the purity required in the test method. The date of reagent receipt and the expiration date are documented. The lots for most of the common solvents and acids are tested for acceptability prior to company wide purchase. Refer to SOP No. CA-Q-S-001, Solvent and Acid Lot Testing and Approval.

All manufacturer or vendor supplied Certificate of Analysis or Purity must be retained, stored appropriately, and readily available for use and inspection. These records are maintained by each department in bound or electronic folders. Records must be kept of the date of receipt and date of expiration of standards, reagents and reference materials. In addition, records of preparation of laboratory standards, reagents, and reference materials must be retained, stored appropriately, and be readily available for use and inspection. For detailed information on documentation and labeling, please refer laboratory SOP BF-GP-019, "Standard Traceability and Preparation" and also to the method specific SOPs.

Commercial materials purchased for preparation of calibration solutions, spike solutions, etc.., are usually accompanied with an assay certificate or the purity is noted on the label. If the assay purity is 96% or better, the weight provided by the vendor may be used without correction. If the assay purity is less than 96% a correction will be made to concentrations applied to solutions prepared from the stock commercial material. Blended gas standard cylinders use a nominal concentration if the certified value is within +/-15%, otherwise the certified values is used for the canister concentration.

21.4.1 All standards, reagents, and reference materials must be labeled in an unambiguous manner. Standards are logged into the laboratory's LIMS system or department's chemical history log and are assigned a unique identification number. Preparation of working standards or reagents prepared from the stock is documented in the laboratory Department's Standard Preparation Log. The following information is typically recorded in the electronic database within the LIMS:

- Standard ID
- Description of Standard
- Department
- Preparer's name
- Final volume and number of vials prepared
- Solvent type and lot number

- Preparation Date
- Expiration Date
- Standard source type (stock or daughter)
- Standard type (spike, surrogate, other)
- Parent standard ID (if applicable)
- Parent Standard Analyte Concentration (if applicable)
- Parent Standard Amount used (if applicable)
- Component Analytes
- Final concentration of each analyte
- Comment section

Records are maintained for standard and reference material preparation. These records show the traceability to purchased stocks or neat compounds. These records also include method of preparation, date of preparation, expiration date and preparer's name or initials. Preparation procedures are provided in the Method SOPs.

21.4.2 All standards, reagents, and reference materials must be clearly labeled with a minimum of the following information:

- Expiration Date
- Standard ID from LIMS.
- Special Health/Safety warnings if applicable

Records must also be maintained of the date of receipt for commercially purchased items or date of preparation for laboratory prepared items. Special Health/Safety warnings must also be available to the analyst. This information is maintained in the LIMS system.

21.4.3 In addition, the following information may be helpful:

- Date of receipt for commercially purchased items or date of preparation for laboratory prepared items
- Date opened (for multi-use containers, if applicable)
- Description of standard (if different from manufacturer's label or if standard was prepared in the laboratory)
- Recommended Storage Conditions
- Concentration (if applicable)
- Initials of analyst preparing standard or opening container

All containers of prepared reagents must include an expiration date and an ID number to trace back to preparation.

Procedures for preparation of reagents can be found in the Method SOPs.

Standard ID numbers must be traceable through associated logbooks, worksheets and preparation/analytical batch records.

All reagents and standards must be stored in accordance to the following priority: 1) with the manufacturer's recommendations; 2) with requirements in the specific analytical methods as specified in the laboratory SOPs.

SECTION 22.0

SAMPLING

22.1 OVERVIEW

The laboratory provides sampling services. Sampling procedures are described in the following SOPs:

BF-FS-001	Chain of Custody Documentation
BF-FS-003	Groundwater Sampling Field Data Collection
BF-FS-004	Equipment Decontamination
BF-FS-005	Groundwater/Surface Water Sampling
BF-FS-006	Calibration of Field Meter
BF-FS-007	Low Flow Sampling Procedures
BF-FS-008	Surface and Subsurface Soil/Sediment Sampling

22.2 SAMPLING CONTAINERS

The laboratory offers clean sampling containers for use by clients. These containers are obtained from reputable container manufacturers and meet EPA specifications as required. Certificates of cleanliness for bottles and preservatives are provided by the supplier and are maintained at the laboratory. Alternatively, the certificates may be maintained by the supplier and available to the laboratory online.

22.2.1 Preservatives

Upon request, preservatives are provided to the client in pre-cleaned sampling containers. In some cases containers may be purchased pre-preserved from the container supplier. Whether prepared by the laboratory or bought pre-preserved, the grades of the preservatives are at a minimum:

- Hydrochloric Acid – Reagent ACS (Certified VOA Free) or equivalent
- Methanol – Purge and Trap grade
- Nitric Acid – Instra-Analyzed or equivalent
- Sodium Bisulfate – ACS Grade or equivalent
- Sodium Hydroxide – Instra-Analyzed or equivalent
- Sulfuric Acid – Instra-Analyzed or equivalent
- Sodium Thiosulfate – ACS Grade or equivalent

22.3 DEFINITION OF HOLDING TIME

The date and time of sampling documented on the chain-of-custody (COC) form establishes the day and time zero. As a general rule, when the maximum allowable holding time is expressed in "days" (e.g. 14 days, 28 days), the holding time is based on calendar day measured. Holding times expressed in "hours" (e.g. 6 hours, 24 hours, etc.) are measured from date and time zero. Holding times for analysis include any necessary reanalysis. However there are some programs that determine holding time compliance based on the date and specific time of analysis compared to the time of sampling regardless of how long the holding time is. These programs will be addressed on a case-by-case basis.

22.4 SAMPLING CONTAINERS, PRESERVATION REQUIREMENTS, HOLDING TIMES

The preservation and holding time criteria specified in the laboratory SOPs are derived from the source documents for the methods. If method required holding times, this info is in the SOP or preservation requirements are not met, the reports will be qualified using a flag, footnote or case narrative. As soon as possible or "ASAP" is an EPA designation for tests for which rapid analysis is advised, but for which neither EPA nor the laboratory have a basis for a holding time.

22.5 SAMPLE ALIQUOTS / SUBSAMPLING

Taking a representative sub-sample from a container is necessary to ensure that the analytical results are representative of the sample collected in the field. The size of the sample container, the quantity of sample fitted within the container, and the homogeneity of the sample need consideration when sub-sampling for sample preparation. It is the laboratory's responsibility to take a representative subsample or aliquot of the sample provided for analysis.

Analysts should handle each sample as if it is potentially dangerous. At a minimum, safety glasses, gloves, and lab coats must be worn when preparing aliquots for analysis.

The following information provides general guidance for homogenization and subsampling. For laboratory specific procedures refer to SOP BF-GP-005, "Sample Homogenization and Subsampling".

SECTION 23

HANDLING OF SAMPLES

Sample management procedures at the laboratory ensure that sample integrity and custody are maintained and documented from sampling/receipt through disposal.

23.1 CHAIN OF CUSTODY (COC)

The COC form is the written documented history of any sample and is initiated when bottles are sent to the field, or at the time of sampling. This form is completed by the sampling personnel and accompanies the samples to the laboratory where it is received and stored under the laboratory's custody. The purpose of the COC form is to provide a legal written record of the handling of samples from the time of collection until they are received at the laboratory. It also serves as the primary written request for analyses from the client to the laboratory. The COC form acts as a purchase order for analytical services when no other contractual agreement is in effect. An example of a COC form may be found in Figure 23-1.

23.1.1 Field Documentation

The information the sampler needs to provide at the time of sampling on the container label is:

- Sample identification
- Date and time
- Preservative

During the sampling process, the COC form is completed and must be legible (see Figure 23-1). This form includes information such as:

- Client name, address, phone number and fax number (if available)
- Project name and/or number
- The sample identification
- Date, time and location of sampling
- Sample collectors name
- The matrix description
- The container description
- The total number of each type of container
- Preservatives used
- Analysis requested
- Requested turnaround time (TAT)
- Any special instructions
- Purchase Order number or billing information (e.g. quote number) if available
- The date and time that each person received or relinquished the sample(s), including their signed name.

When the sampling personnel deliver the samples directly to TestAmerica personnel the samples are stored in a cooler with ice, as applicable, and remain solely in the possession of the client's field technician until the samples are delivered to the laboratory. The sample collector must assure that each container is in his/her physical possession or in his/her view at all times, or stored in such a place and manner to preclude tampering. The field technician relinquishes the samples in writing on the COC form to the sample control personnel at the laboratory or to a TestAmerica courier. When sampling personnel deliver the samples through a common carrier (Fed-Ex, UPS), the CoC relinquished date/time is completed by the field personnel and samples are released to the carrier. Samples are only considered to be received by lab when personnel at the fixed laboratory facility have physical contact with the samples.

Note: Independent couriers are not required to sign the COC form. The COC is usually kept in the sealed sample cooler. The shipping documents are retained with the project files.

23.1.2 Legal / Evidentiary Chain-of-Custody

If samples are identified for legal/evidentiary purposes on the COC or in the project notes, sample management will initiate Strict Chain of Custody procedures as defined in SOP BF-GP-018, "Strict Internal Chain-of-Custody".

23.2 SAMPLE RECEIPT

Samples are received at the laboratory by designated sample receiving personnel and a unique laboratory project identification number is assigned. Each sample container shall be assigned a unique sample identification number that is cross-referenced to the client identification number such that traceability of test samples is unambiguous and documented. Each sample container is affixed with a durable sample identification label. Sample acceptance, receipt, tracking and storage procedures are summarized in the following sections.

23.2.1 Laboratory Receipt

When samples arrive at the laboratory, sample receiving personnel inspect the coolers and samples. The integrity of each sample must be determined by comparing sample labels or tags with the COC and by visual checks of the container for possible damage. Any non-conformance, irregularity, or compromised sample receipt must be documented on the Sample Login Form – and brought to the immediate attention of the client. The COC, shipping documents, documentation of any non-conformance, irregularity, or compromised sample receipt, record of client contact, and resulting instructions become part of the project record.

23.2.1.1 Unique Sample Identification

All samples that are processed through the laboratory receive a unique sample identification to ensure that there can be no confusion regarding the identity of such samples at anytime. This system includes identification for all samples, subsamples and subsequent extracts and/or digestates.

The laboratory assigns a unique identification (e.g., Sample ID) code to each sample container received at the laboratory. This Primary ID is made up of the following information (consisting of 4 components):

Example: 480 - 9608 - A - 1

Location ID (480) | Login ID | Container Occurrence | Sample Number

The above example states that TestAmerica Buffalo Laboratory (Location 480). Login ID is 9608 (unique to a particular client/job occurrence). The container code indicates it is the first container ("A") of Sample #1.

If the primary container goes through a prep step that creates a "new" container, then the new container is considered secondary and gets another ID. An example of this being a client sample in a 1-Liter amber bottle is sent through a Liquid/Liquid Extraction and an extraction vial is created from this step. The vial would be a SECONDARY container. The secondary ID has 5 components.

Example: XXX - 9608 - A - 1 - **A** ← **Secondary Container Occurrence**

Example: 220-9608-A-1-A, would indicate the PRIMARY container listed above that went through a step that created the 1st occurrence of a Secondary container.

With this system, a client sample can literally be tracked throughout the laboratory in every step from receipt to disposal.

23.3 SAMPLE ACCEPTANCE POLICY

The laboratory has a written sample acceptance policy (Figure 23-2) that clearly outlines the circumstances under which samples shall be accepted or rejected. These include:

- a COC filled out completely;
- samples must be properly labeled;
- proper sample containers with adequate volume for the analysis (Sampling Guide) and necessary QC;
- samples must be preserved according to the requirements of the requested analytical method (Sampling Guide);
- sample holding times must be adhered to (Sampling Guide);

- every sample cooler is given a radiation screen with a standardized Radiation Monitor (Monitor 4 model). This screen has no analytical repercussions; it is just a gross screen for employee safety purposes. Contact TestAmerica Buffalo's Technical Manager, Environmental Health and Safety Coordinator or Sample Control Manager immediately if screening indicates radioactivity in excess of 0.02 mR/hr.;
- The project manager will be notified if any sample is received in damaged condition.

Data from samples which do not meet these criteria are flagged and the nature of the variation from policy is defined.

23.3.1 After inspecting the samples, the sample receiving personnel sign and date the COC form, make any necessary notes of the samples' conditions and store them in appropriate refrigerators or storage locations.

23.3.2 Any deviations from these checks described in Section 23.1.1.1 that question the suitability of the sample for analysis, or incomplete documentation as to the tests required will be resolved by consultation with the client. If the sample acceptance policy criteria are not met, the laboratory shall either:

- Retain all correspondence and/or records of communications with the client regarding the disposition of rejected samples, or
- Fully document any decision to proceed with sample analysis that does not meet sample acceptance criteria.

Once sample acceptance is verified, the samples are logged into the LIMS according SOP No. BF-SR-002.

23.4 SAMPLE STORAGE

In order to avoid deterioration, contamination or damage to a sample during storage and handling, from the time of receipt until all analyses are complete, samples are stored in refrigerators, freezers or protected locations suitable for the sample matrix. Aqueous samples designated for metals analysis are stored at ambient temperature. In addition, samples to be analyzed for volatile organic parameters are stored in separate refrigerators designated for volatile organic parameters only. Samples are never to be stored with reagents, standards or materials that may create contamination.

To ensure the integrity of the samples during storage, refrigerator blanks are maintained in the volatile sample refrigerators and analyzed at a minimum of every two weeks.

Analysts and technicians provide a request form to the cooler custodian who then retrieves the requested samples. In the absence of the cooler custodian, the analysts may personally retrieve the sample containers allocated to their analysis from the designated refrigerator. The samples are placed on carts, transported the analytical area and analyzed. Following analysis the remaining sample is returned to the refrigerator from which it originally came. All unused portions of samples are returned to the secure sample control area. All samples are kept in the refrigerators for two to four weeks after analysis, which meets or exceeds most sample holding times. After two to four weeks the samples are moved to dry room temperature, sample archive area where they are retained a minimum of 2 weeks after the final report has been issued to the client at which time disposal occurs. Special arrangements may be made to store samples for longer periods of time. Extended archival periods allow additional metal analyses to be performed on the archived sample and assists clients in dealing with legal matters or regulatory issues*.*

Access to the laboratory is controlled such that sample storage need not be locked at all times unless a project specifically demands it. Samples are accessible to laboratory personnel only. Visitors to the laboratory are prohibited from entering the refrigerator and laboratory areas unless accompanied by an employee of TestAmerica.

23.5 HAZARDOUS SAMPLES AND FOREIGN SOILS

To minimize exposure to personnel and to avoid potential accidents, samples which are known or suspected to be hazardous are segregated and a notification is issued to all laboratory personnel.

All hazardous samples are either returned to the client or disposed of appropriately through a hazardous waste disposal firm. All soil samples, including foreign soil samples are heat treated or incinerated in accordance with USDA permit requirements and are transported / disposed by USEPA approved facilities.

Unused portions of samples found or suspected to be hazardous according to state or federal guidelines may be returned to the client upon completion of the analytical work.

23.6 SAMPLE SHIPPING

In the event that the laboratory needs to ship samples, the samples are placed in a cooler with enough ice to ensure the samples remain just above freezing and at or below 6.0°C during transit. The samples are carefully surrounded by packing material to avoid breakage (yet maintain appropriate temperature). For sample shipments which include water/solid volatile organic analyses (see Note), a trip blank is enclosed when required by method specifications or state or regulatory programs. The chain-of-custody form is signed by the sample control technician and attached to the shipping paperwork. Samples are generally shipped overnight express or hand-delivered by a TestAmerica courier to maintain sample integrity. All personnel involved with shipping and receiving samples must be trained to maintain the proper chain-of-custody documentation and to keep the samples intact and on ice. The Environmental, Health and Safety Manual contains additional shipping requirements.

Note: If a client does not request trip blank analysis on the COC or other paperwork, the laboratory will analyze the trip blanks that were supplied.

23.7 SAMPLE DISPOSAL

Samples should be retained for a minimum of 30 days after the project report is sent, however, provisions may be made for earlier disposal of samples once the holding time is exceeded. Some samples are required to be held for longer periods based on regulatory or client requirements (e.g., 60 days after project report is sent). The laboratory must follow the longer sample retention requirements where required by regulation or client agreement. Several possibilities for sample disposal exist: the sample may be consumed completely during analysis, the sample may be returned to the customer or location of sampling for disposal, or the sample may be disposed of in accordance with the laboratory's waste disposal procedures (SOP: BF-WM-001, "Waste Management".) All procedures in the laboratory Environmental, Health and Safety Manual are followed during disposal. Samples are normally maintained in the laboratory no longer than six weeks from receipt unless otherwise requested. Unused portions of samples found or suspected to be hazardous according to state or federal guidelines may be returned to the client upon completion of the analytical work.

If a sample is part of a known litigation, the affected legal authority, sample data user, and/or submitter of the sample may request to participate in the decision about the sample's disposal. All documentation and correspondence concerning the disposal decision process must be kept on file. Pertinent information includes the date of disposal and nature of disposal (such as sample depletion, hazardous waste facility disposal, and return to client). All disposal of sample containers is accomplished through incineration. A Waste Disposal Record should be completed.

Figure 23-1.

Example: Chain of Custody (COC)

Chain of Custody Record XXXXXX

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
TAL-8210

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager:	Site Contact:	Date:	COC No:
Company Name:	Tel/Fax:	Lab Contact:	Carrier:	____ of ____ COCs
Address:	Analysis Turnaround Time			Sampler:
City/State/Zip:	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone:	TAT if different from Below ______			Walk-in Client:
Fax:	☐ 2 weeks			Lab Sampling:
Project Name:	☐ 1 week			
Site:	☐ 2 days			Job / SDG No.:
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	Sample Specific Notes:

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other ____________

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☐ Disposal by Lab ☐ Archive for________ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd:________ Corr'd:_________ Therm ID No.:___________

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Figure 23-2. Example: Sample Acceptance Policy

All incoming work will be evaluated against the criteria listed below. Where applicable, data from any samples that do not meet the criteria listed below will be noted on the laboratory report defining the nature and substance of the variation. In addition the client will be notified either by telephone, fax or e-mail ASAP after the receipt of the samples.

1) Samples must arrive with labels intact with a Chain of Custody filled out completely. The following information must be recorded.
   - *Client name, address, phone number and fax number (if available)*
   - *Project name and/or number*
   - *The sample identification*
   - *Date, time and location of sampling*
   - *The collectors name*
   - *The matrix description*
   - *The container description*
   - *The total number of each type of container*
   - *Preservatives used*
   - *Analysis requested*
   - *Requested turnaround time (TAT)*
   - *Any special instructions*
   - *Purchase Order number or billing information (e.g. quote number) if available*
   - *The date and time that each person received or relinquished the sample(s), including their signed name.*
   - ***The date and time of receipt must be recorded between the last person to relinquish the samples and the person who receives the samples in the lab, and they must be exactly the same.***
   - **Information must be legible**

2) Every sample cooler is given a radiation screen with a standardized Radiation Monitor (Monitor 4 model). This screen has no analytical repercussions; it is just a gross screen for employee safety purposes. Contact TestAmerica Buffalo's Technical Manager, Environmental Health and Safety Coordinator or Sample Control Manager immediately if screening indicates radioactivity in excess of 0.02 mR/hr.

3) Per State and/or Federal Regulation, the client is responsible to ensure that samples are shipped in accordance with DOT/IATA requirements, and that radioactive materials may only be delivered to licensed facilities. Any samples containing (or suspected to contain) Source, Byproduct, or Special Nuclear Material as defined by 10 CFR should be delivered directly to facilities licensed to handle such radioactive material. Natural material or ores containing naturally occurring radionuclides may be delivered to any TestAmerica facility or courier as long as the activity concentration of the material does not exceed 270 pCi/g alpha or 2700 pCi/g beta (49 CFR Part 173).

4) Samples must be properly labeled.
   - Use durable labels (labels provided by TestAmerica are preferred)
   - Include a unique identification number
   - Include sampling date and time & sampler ID
   - Include preservative used.
   - Use indelible ink
   - **Information must be legible**

5) Proper sample containers with adequate volume for the analysis and necessary QC are required for each analysis requested.

6) Samples must be preserved according to the requirements of the requested analytical method. See lab Sampling Guide.

   Note: Samples that are hand delivered to the laboratory immediately after collection may not have had time to cool sufficiently. In this case the samples will be considered acceptable as long as there is evidence that the chilling process has begun (arrival on ice).

   - Chemical preservation (pH) will be verified prior to analysis and documented, either in sample control or at the analyst's level. The project manager will be notified immediately if there is a discrepancy. If analyses will still be performed, all affected results will be flagged to indicate improper preservation.

   - For Volatile Organic analyses in drinking water (Method 524.2). Residual chlorine must be neutralized prior to preservation. If there is prior knowledge that the samples are not chlorinated, state it on the COC and use the VOA vials pre-preserved with HCl. The following are other options for a sampler and laboratory where the presence of chlorine is not known:
     - 1. Test for residual chlorine in the field prior to sampling.
       - If no chlorine is present, the samples are to be preserved using HCl as usual.
       - If chlorine is present, add either ascorbic acid or sodium thiosulfate prior to adding HCl.
     - 2. Use VOA vials pre-preserved with sodium thiosulfate or ascorbic acid and add HCl after filling the VOA vial with the sample.

   - **FOR WATER SAMPLES TESTED FOR CYANIDE – for NPDES samples by Standard Methods or EPA 335**
     - In the Field: Samples are to be tested for Sulfide using lead acetate paper prior to the addition of Sodium Hydroxide (NaOH). If sulfide is present, the sample must be treated with Cadmium Chloride and filtered prior to the addition of NaOH.

       - If the sulfide test and treatment is not performed in the field, the lab will test the samples for sulfide using lead acetate paper at the time of receipt and if sulfide is present in the sample, the client will be notified and given the option of retaking the sample and treating in the field per the method requirements or the laboratory can analyze the samples as delivered and qualify the results in the final report.

- It is the responsibility of the client to notify the laboratory if thiosulfate, sulfite, or thiocyanate are known or suspected to be present in the sample. This notification may be on the chain of custody. The samples may need to be subcontracted to a laboratory that performs a UV digestion. If the lab does not perform the UV digestion on samples that contain these compounds, the results must be qualified in the final report.

- The laboratory must test the sample for oxidizing agents (e.g. Chlorine) prior to analysis and treat according to the methods prior to distillation. (ascorbic acid or sodium arsenite are the preferred choice).

7) Sample Holding Times

- TestAmerica will make every effort to analyze samples within the regulatory holding time. Samples must be received in the laboratory with enough time to perform the sample analysis. Except for short holding time samples (< 48hr HT) sample must be received with at least 48 hrs (2 working days) remaining on the holding time to ensure analysis.

- Analyses that are designated as “field” analyses (Odor, pH, Dissolved Oxygen, Disinfectant Residual; a.k.a. Residual Chlorine, and Redox Potential) should be analyzed ASAP by the field sampler prior to delivering to the lab (within 15 minutes). However, if the analyses are to be performed in the laboratory, TestAmerica will make every effort to analyze the samples within 24 hours from receipt of the samples in the testing laboratory. Samples for “field” analyses received after 4:00 pm on Friday or on the weekend will be analyzed no later than the next business day after receipt (Monday unless a holiday). Samples will remain refrigerated and sealed until the time of analysis.

8) All samples submitted for Volatile Organic analyses must have a Trip Blank submitted at the same time. TestAmerica will supply this blank with the bottle order.

9) The project manager will be notified if any sample is received in damaged condition. TestAmerica will request that a sample be resubmitted for analysis.

10) Recommendations for packing samples for shipment.

- Pack samples in Ice rather than “Blue” ice packs.

- Soil samples should be placed in plastic zip-lock bags. The containers often have dirt around the top and do not seal very well and are prone to intrusion from the water from melted ice.

- Water samples would be best if wrapped with bubble-wrap or paper (newspaper, or paper towels work) and then placed in plastic zip-lock bags.

- Fill extra cooler space with bubble wrap.

Figure 23-3.
Example: Cooler Receipt Form (Optional)

BF-SC-LF-003
Rev.2 8/28/2017

SAMPLE LOGIN

Project____________Event ____

Analysis Groups____

TAT _____ # **SAMPLES**: ____________ **TRIP BLANK? Y/N** ___ **#/date** __________

Custody Seal Intact Y/N NONE **Rad Check <0.02 mR/hr Y/N**

Residual Chlorine Check Y/N/ NA **Pres Checked Y/N/NA**

Workshare/Subcontract Y/N Lab_________ _________ **SO/ICOC #**___________

Received out of hold: Samples ____________________**Analysis**_______________

Checklist/NCM's____

Temperature(s) **#of coolers**______ **IR Gun 1 2 3**

SECTION 24.0

ASSURING THE QUALITY OF TEST RESULTS

24.1 OVERVIEW

In order to assure our clients of the validity of their data, the laboratory continuously evaluates the quality of the analytical process. The analytical process is controlled not only by instrument calibration as discussed in Section 20, but also by routine process quality control measurements (e.g. Blanks, Laboratory Control Samples (LCS), Matrix Spikes (MS), duplicates (DUP), surrogates, Internal Standards (IS)). These quality control checks are performed as required by the method or regulations to assess precision and accuracy. Quality control samples are to be treated in the exact same manner as the associated field samples being tested. In addition to the routine process quality control samples, Proficiency Testing (PT) Samples (concentrations unknown to laboratory) are analyzed to help ensure laboratory performance.

24.2 CONTROLS

Sample preparation or pre-treatment is commonly required before analysis. Typical preparation steps include homogenization, grinding, solvent extraction, sonication, acid digestion, distillation, reflux, evaporation, drying and ashing. During these pre-treatment steps, samples are arranged into discreet manageable groups referred to as preparation (prep) batches. Prep batches provide a means to control variability in sample treatment. Control samples are added to each prep batch to monitor method performance and are processed through the entire analytical procedure with investigative/field samples.

24.3 NEGATIVE CONTROLS

Table 24-1.

Control Type	Details
Method Blank (MB)	Are used to assess preparation and analysis for possible contamination during the preparation and processing steps.
	The specific frequency of use for method blanks during the analytical sequence is defined in the specific standard operating procedure for each analysis. Generally it is 1 for each batch of samples; not to exceed 20 environmental samples.
	The method blank is prepared from a clean matrix similar to that of the associated samples that is free from target analytes (e.g., Reagent water, Ottawa sand, glass beads, etc.) and is processed along with and under the same conditions as the associated samples. The method blank goes through all of the steps of the process (including as necessary: filtration, clean-ups, etc.).
	Reanalyze or qualify associated sample results when the concentration of a targeted analyte in the blank is at or above the reporting limit as established by the method or by regulation, AND is greater than 1/10 of the amount measured in the sample.
Calibration Blanks	Are prepared and analyzed along with calibration standards where applicable. They are prepared using the same reagents that are used to prepare the standards. In some analyses the calibration blank may be included in the calibration curve.

Table 24-1.

Control Type	Details
Instrument Blanks	Are blank reagents or reagent water that may be processed during an analytical sequence in order to assess contamination in the analytical system. In general, instrument blanks are used to differentiate between contamination caused by the analytical system and that caused by the sample handling or sample prep process. Instrument blanks may also be inserted throughout the analytical sequence to minimize the effect of carryover from samples with high analyte content.
Trip Blank [1]	Are required to be submitted by the client with each shipment of samples requiring aqueous and solid volatiles analyses (or as specified in the client's project plan) Additionally, trip blanks may be prepared and analyzed for volatile analysis of air samples, when required by the client. A trip blank may be purchased (certified clean) or is prepared by the laboratory by filling a clean container with pure deionized water that has been purged to remove any volatile compounds. Appropriate preservatives are also added to the container. The trip blank is sent with the bottle order and is intended to reflect the environment that the containers are subjected to throughout shipping and handling and help identify possible sources if contamination is found. The field sampler returns the trip blank in the cooler with the field samples.
Field Blanks [1]	Are sometimes used for specific projects by the field samplers. A field blank prepared in the field by filling a clean container with pure reagent water and appropriate preservative, if any, for the specific sampling activity being undertaken. (EPA OSWER)
Equipment Blanks [1]	Are also sometimes created in the field for specific projects. An equipment blank is a sample of analyte-free media which has been used to rinse common sampling equipment to check effectiveness of decontamination procedures. (TNI)
Holding Blanks	also referred to as refrigerator or freezer blanks, are used to monitor the sample storage units for volatile organic compounds during the storage of VOA samples in the laboratory

[1] When known, these field QC samples should not be selected for matrix QC as it does not provide information on the behavior of the target compounds in the field samples. Usually, the client sample ID will provide information to identify the field blanks with labels such as "FB", "EB", or "TB."

Evaluation criteria and corrective action for these controls are defined in the specific standard operating procedure for each analysis.

24.4 POSITIVE CONTROLS

Control samples (e.g., QC indicators) are analyzed with each batch of samples to evaluate data based upon (1) Method Performance (Laboratory Control Sample (LCS) or Blank Spike (BS)), which entails both the preparation and measurement steps; and (2) Matrix Effects (Matrix Spike (MS) (Matrix spikes are not applicable to air) or Sample Duplicate (MD, DUP), which evaluates field sampling accuracy, precision, representativeness, interferences, and the effect of the matrix on the method performed. Each regulatory program and each method within those programs specify the control samples that are prepared and/or analyzed with a specific batch

Note that frequency of control samples vary with specific regulatory, methodology and project specific criteria. Complete details on method control samples are as listed in each analytical SOP.

24.4.1 Method Performance Control - Laboratory Control Sample (LCS)

24.4.1.1 The LCS measures the accuracy of the method in a blank matrix and assesses method performance independent of potential field sample matrix affects in a laboratory batch.

24.4.1.2 The LCS is prepared from a clean matrix similar to that of the associated samples that is free from target analytes (for example: Reagent water, Ottawa sand, glass beads, etc.) and is processed along with and under the same conditions as the associated samples. The LCS is spiked with verified known amounts of analytes or is made of a material containing known and verified amounts of analytes, taken through all preparation and analysis steps along with the field samples. Where there is no preparation taken for an analysis (such as in aqueous volatiles), or when all samples and standards undergo the same preparation and analysis process (such as Phosphorus), a calibration verification standard may be reported as the LCS. In some instances where there is no practical clean solid matrix available, aqueous LCS's may be processed for solid matrices; final results may be calculated as mg/kg or ug/kg, assuming 100% solids and a weight equivalent to the aliquot used for the corresponding field samples, to facilitate comparison with the field samples.

24.4.1.3 Certified pre-made reference material purchased from a NIST/A2LA accredited vendor may also be used for the LCS when the material represents the sample matrix or the analyte is not easily spiked (e.g. solid matrix LCS for metals, TDS, etc.).

24.4.1.4 The specific frequency of use for LCS during the analytical sequence is defined in the specific standard operating procedure for each analysis. It is generally 1 for each batch of samples; not to exceed 20 environmental samples.

24.4.1.5 If the mandated or requested test method, or project requirements, do not specify the spiking components, the laboratory shall spike all reportable components to be reported in the Laboratory Control Sample (and Matrix Spike) where applicable (e.g. no spike of pH). In order to meet this requirement, TestAmerica Buffalo spikes with the Corporate Standard Standards primary mix for each analysis. However, in cases where the components interfere with accurate assessment (such as simultaneously spiking chlordane, toxaphene and PCBs in Method 608), the test method has an extremely long list of components or components are incompatible, at a minimum, a representative number of the listed components (see below) shall be used to control the test method. The selected components of each spiking mix shall represent all chemistries, elution patterns and masses, permit specified analytes and other client requested components. However, the laboratory shall ensure that all reported components are used in the spike mixture within a two-year time period.

24.4.1.5.1 For methods that have 1-10 target analytes, spike all components.

24.4.1.5.2 For methods that include 11-20 target analytes, spike at least 10 or 80%, whichever is greater.

24.4.1.5.3 For methods with more than 20 target analytes, spike at least 16 components.

24.4.1.5.4 Exception: Due to analyte incompatibility in pesticides, Toxaphene and Chlordane are only spiked at client request based on specific project needs.

24.4.1.5.5 Exception: Due to analyte incompatibility between the various PCB aroclors, aroclors 1016 and 1260 are used for spiking as they cover the range of all of the aroclors. Specific aroclors may be used by request on a project specific basis.

24.5 SAMPLE MATRIX CONTROLS

Table 24-5. Sample Matrix Control

Control Type	Details	
Matrix Spikes (MS)	Use	Used to assess the effect sample matrix of the spiked sample has on the precision and accuracy of the results generated by the method used;
	Typical Frequency [1]	At a minimum, with each matrix-specific batch of samples processed, an MS is carried through the complete analytical procedure. Unless specified by the client, samples used for spiking are randomly selected and rotated between different client projects. If the mandated or requested test method does not specify the spiking components, the laboratory shall spike all reportable components to be reported in the Laboratory Control Sample and Matrix Spike. Refer to the method SOP for complete details
	Description	Essentially a sample fortified with a known amount of the test analyte(s).
Surrogate	Use	Measures method performance to sample matrix (organics only).
	Typical Frequency [1]	Are added to all samples, standards, and blanks, for all organic chromatography methods except when the matrix precludes its use or when a surrogate is not available. The recovery of the surrogates is compared to the acceptance limits for the specific method. Poor surrogate recovery may indicate a problem with sample composition and shall be reported, with data qualifiers, to the client whose sample produced poor recovery.
	Description	Are similar to matrix spikes except the analytes are compounds with properties that mimic the analyte of interest and are unlikely to be found in environment samples.
Duplicates[2]	Use	For a measure of analytical precision, with each matrix-specific batch of samples processed, a matrix duplicate (MD or DUP) sample, matrix spike duplicate (MSD), or LCS duplicate (LCSD) is carried through the complete analytical procedure.
	Typical Frequency [1]	Duplicate samples are usually analyzed with methods that do not require matrix spike analysis.
	Description	Performed by analyzing two aliquots of the same field sample independently or an additional LCS.
Internal Standards	Use	Are spiked into all environmental and quality control samples (including the initial calibration standards) to monitor the qualitative aspect of organic and some inorganic analytical measurements.
	Typical Frequency [1]	All organic and ICP methods as required by the analytical method.
	Description	Used to correct for matrix effects and to help troubleshoot variability in analytical response and are assessed after data acquisition. Possible sources of poor internal standard response are sample matrix, poor analytical technique or instrument performance.

[1] See the specific analytical SOP for type and frequency of sample matrix control samples.

[2] LCSD's are normally not performed except when regulatory agencies or client specifications require them. The recoveries for the spiked duplicate samples must meet the same laboratory established recovery limits as the accuracy QC samples. If an LCSD is analyzed both the LCS and LCSD must meet the same recovery criteria and be included in the final report. The precision measurement is reported as "Relative Percent Difference" (RPD). Poor precision between duplicates (except LCS/LCSD) may indicate non-homogeneous matrix or sampling.

24.6 ACCEPTANCE CRITERIA (CONTROL LIMITS)

24.6.1 As mandated by the test method and regulation, each individual analyte in the LCS, MS, or Surrogate Spike is evaluated against the control limits published in the test method. Where there are no established acceptance criteria, the laboratory calculates in-house control limits with the use of control charts or, in some cases, utilizes client project specific control limits. When this occurs, the regulatory or project limits will supersede the laboratory's in-house limits.

Note: For methods, analytes and matrices with very limited data (e.g., unusual matrices not analyzed often), interim limits are established using available data or by analogy to similar methods or matrices.

24.6.2 Once control limits have been established, they are verified, reviewed, and updated if necessary on an annual basis unless the method requires more frequent updating. Control limits are established per method (as opposed to per instrument) regardless of the number of instruments utilized.

24.6.3 Laboratory generated % Recovery acceptance (control) limits are generally established by taking $\pm$ 3 Standard Deviations (99% confidence level) from the average recovery of a minimum of 20-30 data points (more points are preferred).

24.6.3.1 Regardless of the calculated limit, the limit should be no tighter than the Calibration Verification (ICV/CCV). (Unless the analytical method specifies a tighter limit).

24.6.3.2 In-house limits cannot be any wider than those mandated in a regulated analytical method. Client or contract required control limits are evaluated against the laboratory's statistically derived control limits to determine if the data quality objectives (DQOs) can be achieved. If laboratory control limits are not consistent with DQOs, then alternatives must be considered, such as method improvements or use of an alternate analytical method.

24.6.3.3 The lowest acceptable recovery limit will be 10% (the analyte must be detectable). Exception: The lowest acceptable recovery limit for Benzidine will be 5% and the analyte must be detectable.

24.6.3.4 The maximum acceptable recovery limit will be 150%.

24.6.3.5 The maximum acceptable RPD limit will be 35% for waters and 40% for soils. The minimum RPD limit is 10%.

24.6.3.6 If either the high or low end of the control limit changes by $\leq$ 5% from previous, the data points are inspected and, using professional judgment, the limits may be left unchanged if there is no affect on laboratory ability to meet the existing limits.

24.6.4 The lab must be able to generate a current listing of their control limits and track when the updates are performed. In addition, the laboratory must be able to recreate historical control limits. This process is outlined in BF-QA-002.

24.6.4.1 The control limits are maintained in the laboratory LIMS system. The limits for each analyte/method/matrix combination are assigned effective and expiration dates. The QA department is able to query the LIMS system and print an active list of control limits based on this database. The most current laboratory limits (based on the effective/expiration dates) are reflected on the laboratory worksheets and final reports unless superseded by project specific limits.

24.6.5 A LCS that is within the acceptance criteria establishes that the analytical system is in control and is used to validate the process. Samples that are analyzed with an LCS with recoveries outside of the acceptance limits may be determined as out of control and should be reanalyzed if possible. If reanalysis is not possible, then the results for all affected analytes for samples within the same batch must be qualified when reported. The internal corrective action process (see Section 13) is also initiated if an LCS exceeds the acceptance limits. Sample results may be qualified and reported without reanalysis if:

24.6.5.1 The analyte results are below the reporting limit and the LCS is above the upper control limit.

24.6.5.2 If the analytical results are above the relevant regulatory limit and the LCS is below the lower control limit.

24.6.6 If the MS/MSDs do not meet acceptance limits, the MS/MSD and the associated spiked sample is reported with a qualifier for those analytes that do not meet limits. If obvious preparation errors are suspected, or if requested by the client, unacceptable MS/MSDs are reprocessed and reanalyzed to prove matrix interference. A more detailed discussion of acceptance criteria and corrective action can be found in the lab's method SOPs and in Section 12.

24.6.7 If a surrogate standard falls outside the acceptance limits, if there is not obvious chromatographic matrix interference, reanalyze the sample to confirm a possible matrix effect. If the recoveries confirm or there was obvious chromatographic interference, results are reported from the original analysis and a qualifier is added. If the reanalysis meets surrogate recovery criteria, the second run is reported (or both are reported if requested by the client). Under certain circumstances, where all of the samples are from the same location and share similar chromatography, the reanalysis may be performed on a single sample rather than all of the samples and if the surrogate meets the recovery criteria in the reanalysis, all of the affected samples would require reanalysis.

24.7 ADDITIONAL PROCEDURES TO ASSURE QUALITY CONTROL

24.7.1 The laboratory has written and approved method SOPs to assure the accuracy of the test method including calibration (see Section 20), use of certified reference materials (see Section 21) and use of PT samples.

24.7.2 A discussion regarding MDLs, Limit of Detection (LOD) and Limit of Quantitation (LOQ) can be found in Section 19.

24.7.3 Use of formulae to reduce data is discussed in the method SOPs and in Section 20.

24.7.4 Selection of appropriate reagents and standards is included in Section 9 and 22.

24.7.5 A discussion on selectivity of the test is included in Section 5.

24.7.6 Constant and consistent test conditions are discussed in Section 19.

24.7.7 The laboratories sample acceptance policy is included in Section 23.

SECTION 25.0

REPORTING RESULTS

25.1 OVERVIEW

The results of each test are reported accurately, clearly, unambiguously, and objectively in accordance with State and Federal regulations as well as client requirements. A variety of report formats are available to meet specific needs. Analytical results are issued in a format that is intended to satisfy customer and laboratory accreditation requirements as well as provide the end user with the information needed to properly evaluate the results. Where there is conflict between client requests and laboratory ethics or regulatory requirements, the laboratory's ethical and legal requirements are paramount, and the laboratory will work with the client during project set up to develop an acceptable solution. Refer to Section 7.

In cases where a client asks for simplified reports, there must be a written request from the client. There still must be enough information that would show any analyses that were out of conformance (QC out of limits) and there should be a reference to a full report that is made available to the client.

The laboratory complies with any state reporting requirements. An example is located in BF-PM-008 – Massachusetts DEP Notification Procedures.

Review of reported data is included in Section 19.

25.2 TEST REPORTS

Analytical results are reported in a format that is satisfactory to the client and meets all requirements of applicable accrediting authorities and agencies. A variety of report formats are available to meet specific needs. The report is printed on laboratory letterhead, reviewed, and signed by the appropriate project manager. At a minimum, the standard laboratory report shall contain the following information:

25.2.1 A report title (e.g. Analytical Report) with a “sample results” column header.

25.2.2 Each report cover page is printed on company letterhead which includes the laboratory name, address and telephone number.

25.2.3 A unique identification of the report (e.g. job number) and on each page an identification in order to ensure the page is recognized as part of the report and a clear identification of the end.

Note: Page numbers of report are represented as # / ##. Where the first number is the page number and the second is the total number of pages.

25.2.4 A copy of the chain of custody (COC).

- Any COCs involved with Subcontracting are included.

25.2.5 The name and address of client and a project name/number, if applicable.

25.2.6 Client project manager or other contact

25.2.7 Description and unambiguous identification of the tested sample(s) including the client identification code.

25.2.8 Date of receipt of sample, date and time of collection, and date(s) of test preparation and performance, and time of preparation or analysis if the required holding time for either activity is less than or equal to 72 hours.

25.2.9 Date reported or date of revision, if applicable.

25.2.10 Method of analysis including method code (EPA, Standard Methods, etc).

25.2.11 Laboratory Practical quantitation limits or client reporting limit.

25.2.12 Method detection limits (if requested)

25.2.13 Definition of Data qualifiers and reporting acronyms (e.g. ND).

25.2.14 Sample results.

25.2.15 QC data consisting of method blank, surrogate, LCS, and MS/MSD recoveries and control limits (if requested).

25.2.16 Condition of samples at receipt including temperature. This may be accomplished in a narrative or by attaching sample login sheets (Refer to Sec. 25.2.4 – Item 3 regarding additional addenda). Sample temperatures are recorded in the report case narrative and on the COC. Deviations from normal conditions (e.g., preservation, breakage) are recorded in the report case narrative.

25.2.17 A statement expressing the validity of the results, that the source methodology was followed and all results were reviewed for error.

25.2.18 A statement to the effect that the results relate only to the items tested and the sample as received by the laboratory.

25.2.19 A statement that the report shall not be reproduced except in full, without prior express written approval by the laboratory coordinator.

25.2.20 A signature and title of the person(s) accepting responsibility for the content of the report and date of issue. Authorized signatories are qualified Project Managers appointed by the Manager of Project Managers.

25.2.21 When NELAP accreditation is required, the lab shall certify that the test results meet all requirements of NELAP or provide reasons and/or justification if they do not.

25.2.22 The laboratory includes a cover letter.

25.2.23 Where applicable, a narrative to the report that explains the issue(s) and corrective action(s) taken in the event that a specific accreditation or certification requirement was not met.

25.2.24 When Soil samples are analyzed, a specific identification as to whether soils are reported on a “wet weight” or “dry weight” basis.

25.2.25 Appropriate laboratory certification number for the state of origin of the sample if applicable.

25.2.26 If only part of the report is provided to the client (client requests some results before all of it is complete), it must be clearly indicated on the report (e.g, partial report). A complete report must be sent once all of the work has been completed.

25.2.27 Any non-TestAmerica subcontracted analysis results are provided as an addendum to the report on the official letterhead of the subcontractor. All TestAmerica subcontracting is clearly identified on the report as to which laboratory performed a specific analysis.

25.2.28 Certification Summary report, where required, will document that unless otherwise noted, all analytes tested and reported by the laboratory were covered by the noted certifications.

25.3 REPORTING LEVEL OR REPORT TYPE

TestAmerica Buffalo offers four levels of quality control reporting. Each level, in addition to its own specific requirements, contains all the information provided in the preceding level. The packages provide the following information in addition to the information described above:

- Level 1 is a report with all of the elements outlined in Section 25.2 above, excluding 25.2.15 (QC data)
- Level II is a Level I report plus summary information, including results for the method blank, percent recovery for laboratory control samples and matrix spike samples, and the RPD values for all MSD and sample duplicate analyses.
- Level III contains all the information supplied in Level II, but presented on CLP-like summary forms, and relevant calibration information. A Level II report is not included, unless specifically requested. No raw data is provided.
- Level IV is the same as Level III with the addition of all raw supporting data.

In addition to the various levels of QC packaging, the laboratory also provides reports in diskette deliverable form. Initial reports may be provided to clients by facsimile. Procedures used to ensure client confidentiality are outlined in Section 26.7.

25.3.1 Electronic Data Deliverables (EDDs)

EDDs are routinely offered as part of TestAmerica's services in addition to the test report as described in section 25.2. When NELAP accreditation is required and both a test report and EDD are provided to the client, the official version of the test report will be the combined information of the report and the EDD . TestAmerica Buffalo offers a variety of EDD formats including Environmental Restoration Information Management System (ERPIMS), Excel, Dbase, GISKEY, and Text Files.

EDD specifications are submitted to the IT department by the PM for review and undergo the contract review process. Once the facility has committed to providing data in a specific electronic format, the coding of the format may need to be performed. This coding is documented and validated. The validation of the code is retained by the IT staff coding the EDD.

EDDs shall be subject to a review to ensure their accuracy and completeness. If EDD generation is automated, review may be reduced to periodic screening if the laboratory can demonstrate that it can routinely generate that EDD without errors. Any revisions to the EDD format must be reviewed until it is demonstrated that it can routinely be generated without errors. If the EDD can be reproduced accurately and if all subsequent EDDs can be produced error-free, each EDD does not necessarily require a review.

25.4 SUPPLEMENTAL INFORMATION FOR TEST

The lab identifies any unacceptable QC analyses or any other unusual circumstances or observations such as environmental conditions and any non-standard conditions that may have affected the quality of a result. This is typically in the form of a footnote or a qualifier and/or a narrative explaining the discrepancy in the front of the report

25.4.1 Numeric results with values outside of the calibration range, either high or low are qualified as 'estimated'.

25.4.2 Where quality system requirements are not met, a statement of compliance/non-compliance with requirements and/or specifications is required, including identification of test results derived from any sample that did not meet TNI sample acceptance requirements such as improper container, holding time, or temperature.

25.4.3 Where applicable, a statement on the estimated uncertainty of measurements; information on uncertainty is needed when a client's instructions so require.

25.4.4 Opinions and Interpretations - The test report contains objective information, and generally does not contain subjective information such as opinions and interpretations. If such information is required by the client, the Laboratory Director will determine if a response can be prepared. If so, the Laboratory Director will designate the appropriate member of the management team to prepare a response. The response will be fully documented, and reviewed by the Laboratory Director, before release to the client. There may be additional fees charged to the client at this time, as this is a non-routine function of the laboratory.

Note: Review of data deliverable packages for submittal to regulatory authorities requires responses to non-conforming data concerning potential impact on data quality. This necessitates a limited scope of interpretation, and this work is performed by the QA Department. This is the only form of "interpretation" of data that is routinely performed by the laboratory.

When opinions or interpretations are included in the report, the laboratory provides an explanation as to the basis upon which the opinions and interpretations have been made. Opinions and interpretations are clearly noted as such and where applicable, a comment should be added suggesting that the client verify the opinion or interpretation with their regulator.

25.5 ENVIRONMENTAL TESTING OBTAINED FROM SUBCONTRACTORS

If the laboratory is not able to provide the client the requested analysis, the samples would be subcontracted following the procedures outlined in Section 8.

Data reported from analyses performed by a subcontractor laboratory are clearly identified as such on the analytical report provided to the client. Results from a subcontract laboratory outside of TestAmerica are reported to the client on the subcontract laboratory's original report stationary and the report includes any accompanying documentation.

25.6 CLIENT CONFIDENTIALITY

In situations involving the transmission of environmental test results by telephone, facsimile or other electronic means, client confidentiality must be maintained.

TestAmerica will not intentionally divulge to any person (other than the Client or any other person designated by the Client in writing) any information regarding the services provided by TestAmerica or any information disclosed to TestAmerica by the Client. Furthermore, information known to be potentially endangering to national security or an entity's proprietary rights will not be released.

Note: This shall not apply to the extent that the information is required to be disclosed by TestAmerica under the compulsion of legal process. TestAmerica will, to the extent feasible, provide reasonable notice to the client before disclosing the information.

Note: Authorized representatives of an accrediting authority are permitted to make copies of any analyses or records relevant to the accreditation process, and copies may be removed from the laboratory for purposes of assessment.

Report deliverable formats are discussed with each new client. If a client requests that reports be faxed or e-mailed, the reports are to meet all requirements of this document, include cover letter.

25.7 FORMAT OF REPORTS

The format of reports is designed to accommodate each type of environmental test carried out and to minimize the possibility of misunderstanding or misuse.

25.8 AMENDMENTS TO TEST REPORTS

Corrections, additions, or deletions to reports are only made when justification arises through supplemental documentation. Justification is documented using the laboratory's corrective action system (refer to Section 12).

The revised report is retained on the Archive data server, as is the original report. The revised report is stored in the Archive data server under the sample number followed by "R". The revised report will have the word "revised" appended to the cover letter.

When the report is re-issued, a notation of "revised" is placed on the cover/signature page of the report. A brief explanation of reason for the re-issue is included in the report case narrative.

25.9 POLICIES ON CLIENT REQUESTS FOR AMENDMENTS

25.9.1 Policy on Data Omissions or Reporting Limit Increases

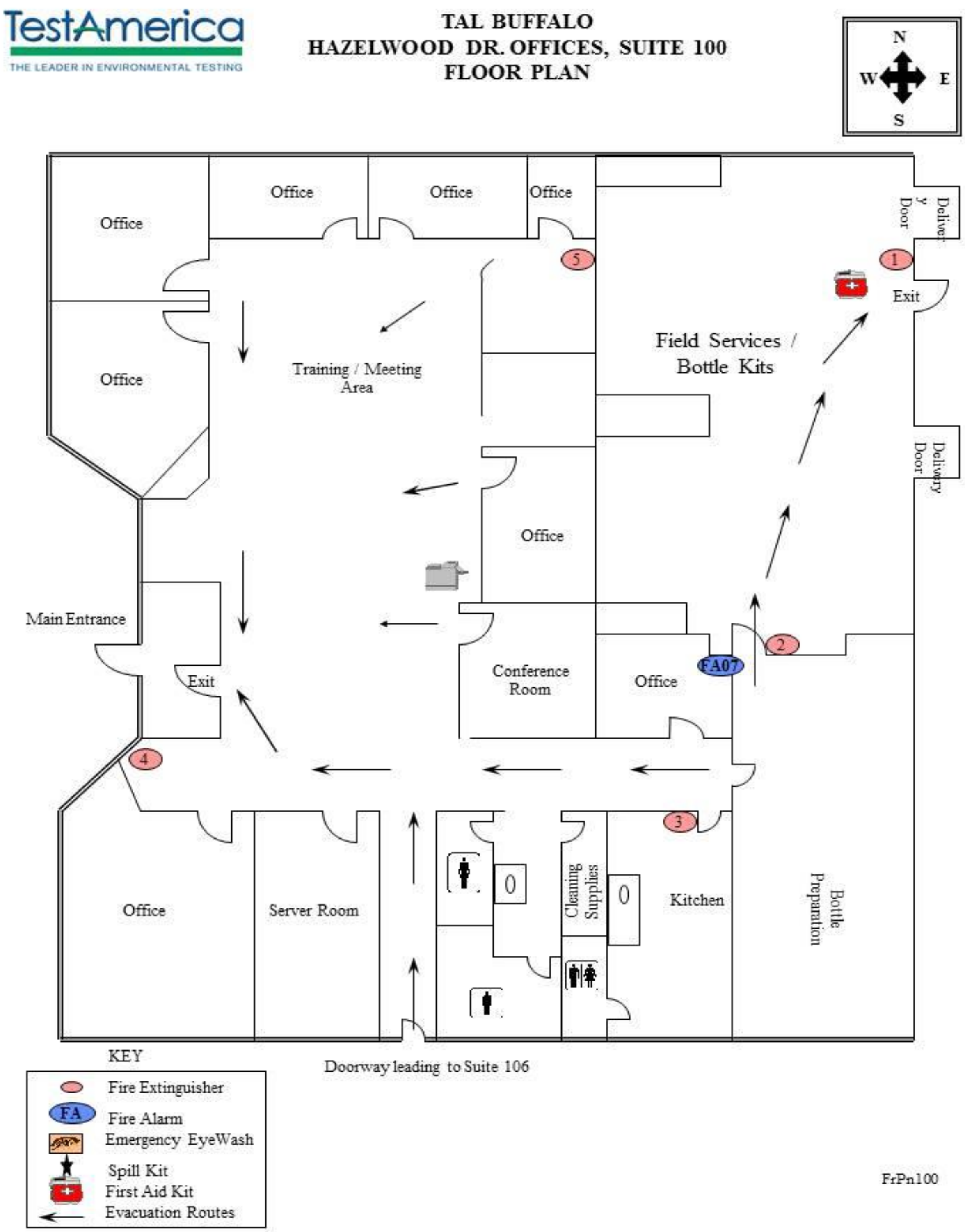
Fundamentally, our policy is simply to not omit previously reported results (including data qualifiers) or to not raise reporting limits and report sample results as ND. This policy has few exceptions. Exceptions are:

- Laboratory error.
- Sample identification is indeterminate (confusion between COC and sample labels).
- An incorrect analysis (not analyte) was requested (e.g., COC lists 8315 but client wanted 8310). A written request for the change is required.
- Incorrect limits reported based on regulatory requirements.
- The requested change has absolutely *no possible* impact on the interpretation of the analytical results and there is *no possibility* of the change being interpreted as misrepresentation by anyone inside or outside of our company.

25.9.2 Multiple Reports

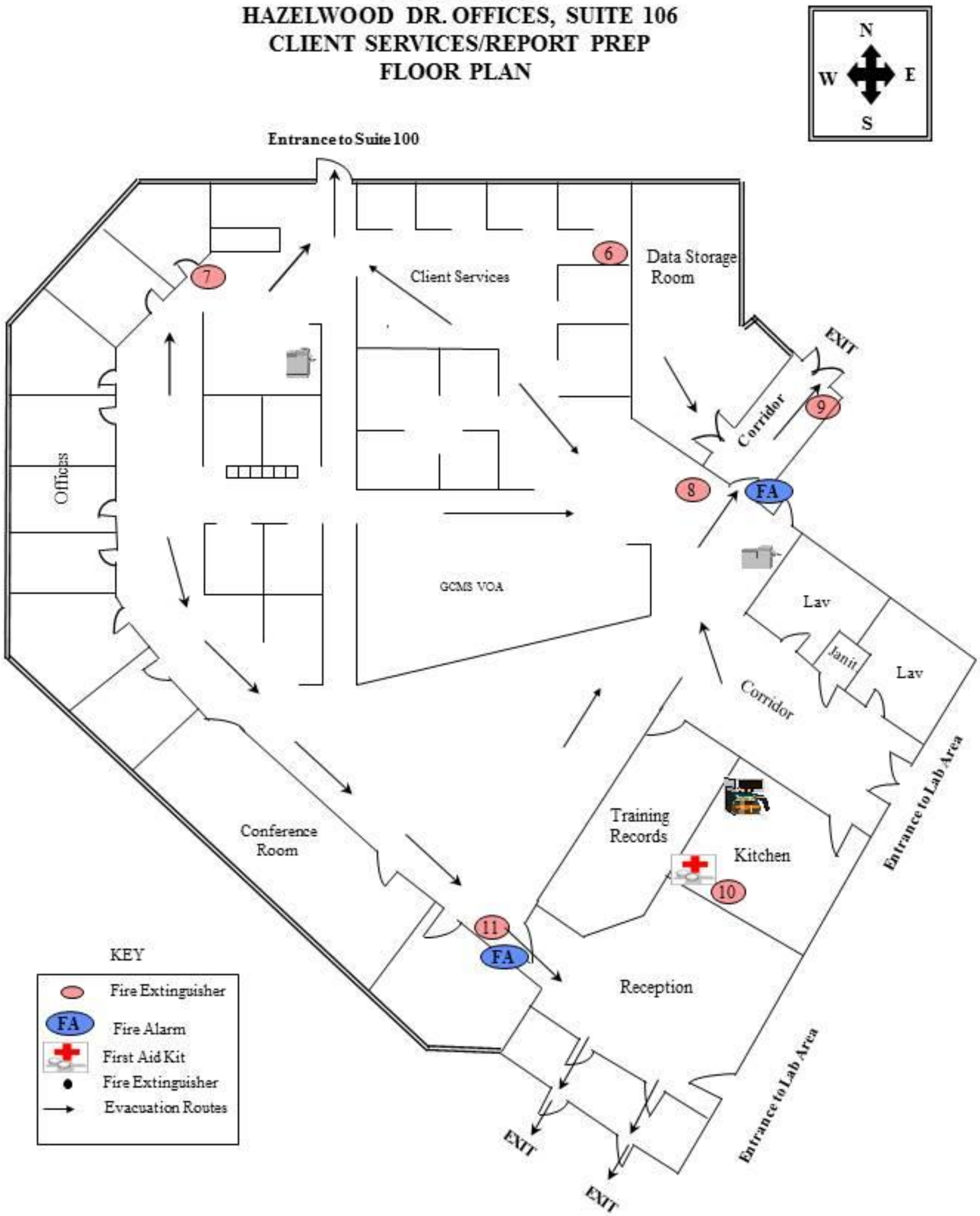
TestAmerica does not issue multiple reports for the same workorder where there is different information on each report (this does not refer to copies of the same report) unless required to meet regulatory needs and approved by QA.

Appendix 1. Laboratory Floor Plan



TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TAL BUFFALO
HAZELWOOD DR. OFFICES, SUITE 106
CLIENT SERVICES/REPORT PREP
FLOOR PLAN



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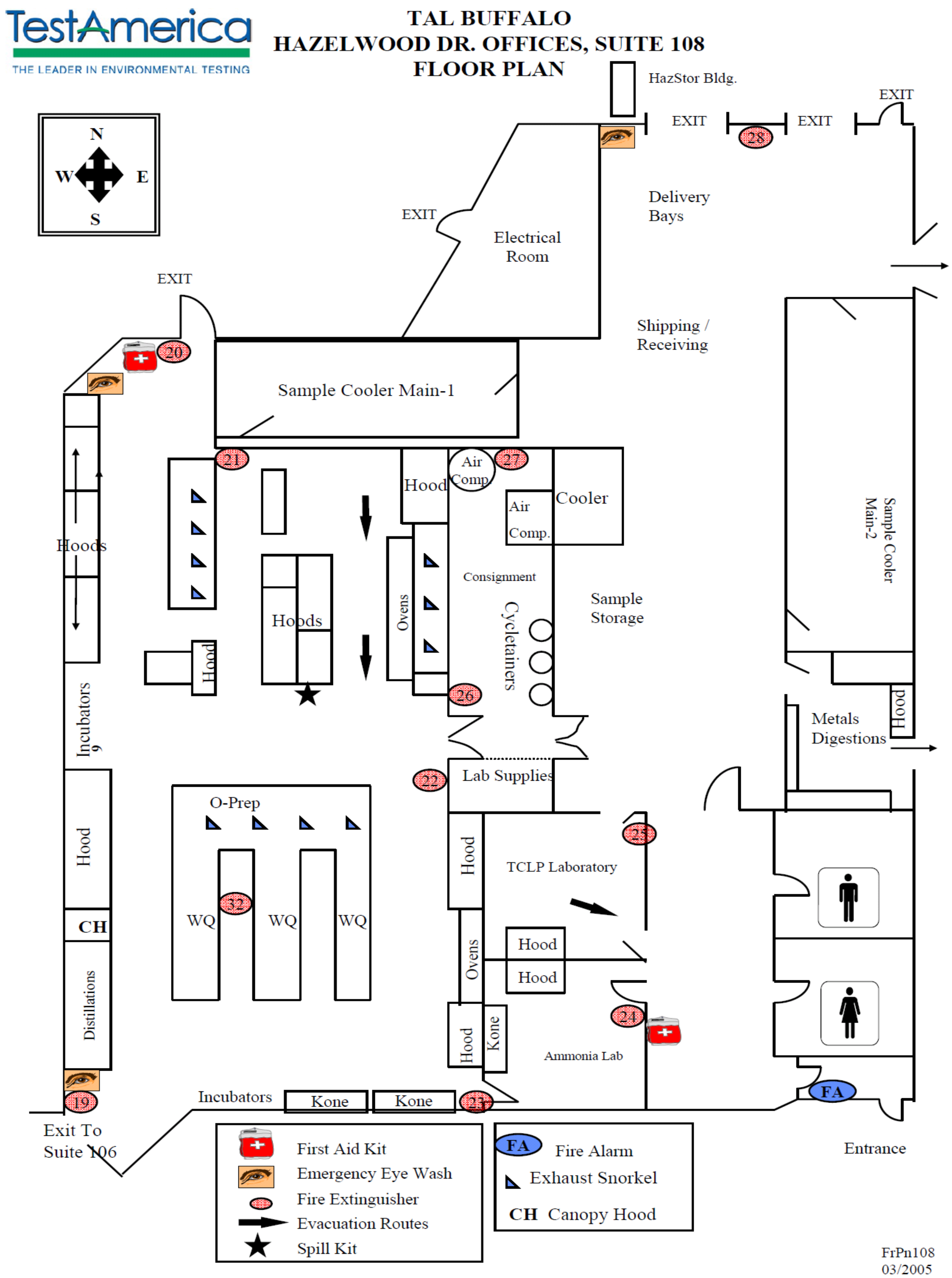
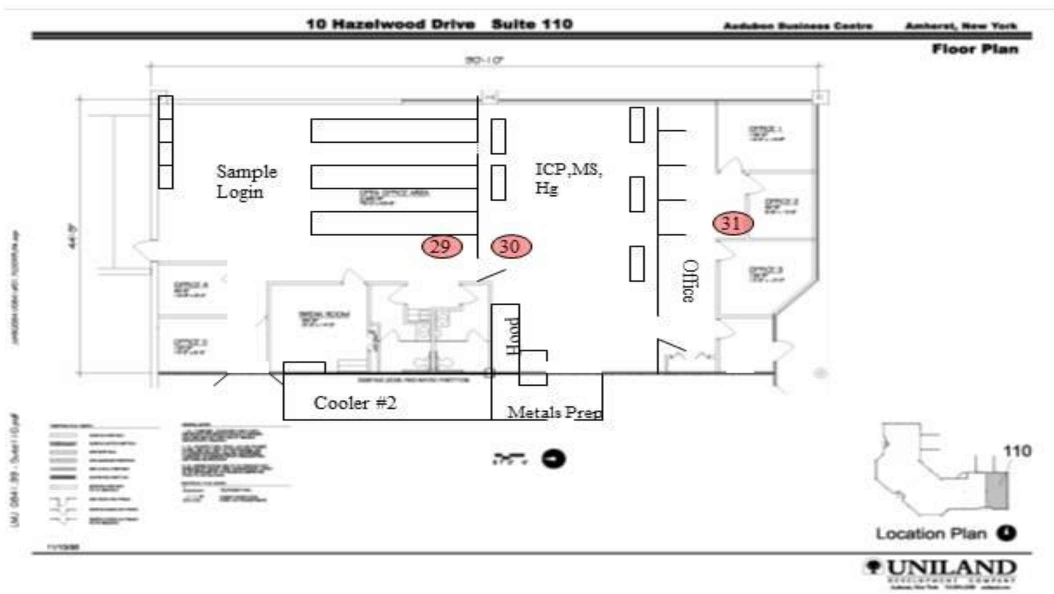
TAL BUFFALO
HAZELWOOD DR. NY OFFICES, SUITE 106
LABORATORY AREA
FLOOR PLAN


TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TAL BUFFALO
HAZELWOOD DR. OFFICES, SUITE 108
FLOOR PLAN
N
W
E
S
HazStor Bldg.
EXIT
EXIT
EXIT
EXIT
EXIT
Electrical Room
Delivery Bays
Shipping / Receiving
Sample Cooler Main-1
Sample Cooler Main-2
Hoods
Hood
Air Comp
Air Comp.
Cooler
Consignment
Cycletainers
Sample Storage
Ovens
Hoods
Hood
Incubators 9
Metals Digestions
Lab Supplies
O-Prep
WQ
WQ
WQ
TCLP Laboratory
Hood
CH
Distillations
Ovens
Hood
Hood
Hood
Kone
Ammonia Lab
Incubators
Kone
Kone
FA
Exit To Suite 106
Entrance
20
21
22
23
24
25
26
27
28
19
32
First Aid Kit
Emergency Eye Wash
Fire Extinguisher
Evacuation Routes
Spill Kit
Fire Alarm
Exhaust Snorkel
CH Canopy Hood
FrPn108
03/2005


10 Hazelwood Drive Suite 110
Floor Plan
Sample Login
ICP,MS, Hg
29
30
31
Office
Hood
Cooler #2
Metals Prep
110
Location Plan
UNILAND

Appendix 2. Glossary/Acronyms

Glossary:

Acceptance Criteria: Specified limits placed on characteristics of an item, process, or service defined in requirement documents. (ASQC)

Accreditation: The process by which an agency or organization evaluates and recognizes a laboratory as meeting certain predetermined qualifications or standards, thereby accrediting the laboratory. In the context of the National Environmental Laboratory Accreditation Program (NELAP), this process is a voluntary one. (TNI)

Accrediting Authority: The Territorial, State, or Federal Agency having responsibility and accountability for environmental laboratory accreditation and which grants accreditation (TNI)

Accuracy: The degree of agreement between an observed value and an accepted reference value. Accuracy includes a combination of random error (precision) and systematic error (bias) components which are due to sampling and analytical operations; a data quality indicator. (QAMS)

Analyst: The designated individual who performs the “hands-on” analytical methods and associated techniques and who is the one responsible for applying required laboratory practices and other pertinent quality controls to meet the required level of quality. (TNI)

Analytical Uncertainty: A subset of Measurement Uncertainty that includes all laboratory activities performed as part of the analysis. (TNI)

Anomaly: A condition or event, other than a deficiency, that may affect the quality of the data, whether in the laboratory’s control or not.

Assessment: The evaluation process used to measure or establish the performance, effectiveness, and conformance of an organization and/or its systems to defined criteria (to the standards and requirements of laboratory accreditation). (TNI)

Audit: A systematic and independent examination of facilities, equipment, personnel, training, procedures, record-keeping, data validation, data management, and reporting aspects of a system to determine whether QA/QC and technical activities are being conducted as planned and whether these activities will effectively achieve quality objectives. (TNI)

Batch: Environmental samples which are prepared and/or analyzed together with the same process and personnel, using the same lot(s) of reagents. A **preparation batch** is composed of one to 20 environmental samples of the same matrix, meeting the above mentioned criteria and with a maximum time between the start of processing of the first and last sample in the batch to be 24 hours. An **analytical batch** is composed of prepared environmental samples (extracts, digestates or concentrates) and /or those samples not requiring preparation, which are analyzed together as a group using the same calibration curve or factor. An analytical batch can include samples originating from various environmental matrices and can exceed 20 samples. (TNI)

Blank: A sample that has not been exposed to the analyzed sample stream in order to monitor contamination during sampling, transport, storage or analysis. The blank is subjected to the usual analytical and measurement process to establish a zero baseline or background value and is sometimes used to adjust or correct routine analytical results. (ASQC)

Calibration: A set of operations that establish, under specified conditions, the relationship between values of quantities indicated by a measuring instrument or measuring system, or values represented by a material measure or a reference material, and the corresponding values realized by standards. (TNI)

1) In calibration of support equipment the values realized by standards are established through the use of reference standards that are traceable to the International System of Units (SI).

2) In calibration according to methods, the values realized by standards are typically established through the use of Reference Materials that are either purchased by the laboratory with a certificate of analysis or purity, or prepared by the laboratory using support equipment that has been calibrated or verified to meet specifications.

Calibration Curve: The mathematical relationship between the known values, such as concentrations, of a series of calibration standards and their instrument response. (TNI)

Calibration Standard: A substance or reference material used to calibrate an instrument (QAMS)

Certified Reference Material (CRM): A reference material, accompanied by a certificate, having a value, measurement uncertainty, and stated metrological traceability chain to a national metrology institute. (TNI).

Chain of Custody (COC) Form: Record that documents the possession of the samples from the time of collection to receipt in the laboratory. This record generally includes: the number and types of containers; the mode of collection; the collector; time of collection; preservation; and requested analyses. (TNI)

Compromised Samples: Those samples which are improperly sampled, insufficiently documented (chain of custody and other sample records and/or labels), improperly preserved, collected in improper containers, or exceeding holding times when delivered to a laboratory. Under normal conditions, compromised samples are not analyzed. If emergency situation require analysis, the results must be appropriately qualified. (TNI)

Confidential Business Information (CBI): Information that an organization designates as having the potential of providing a competitor with inappropriate insight into its management, operation or products. TNI and its representatives agree to safeguarding identified CBI and to maintain all information identified as such in full confidentiality.

Confirmation: Verification of the identity of a component through the use of an approach with a different scientific principle from the original method. These may include, but are not limited to:

Second column confirmation
Alternate wavelength
Derivitization
Mass spectral interpretation
Alternative detectors or
Additional Cleanup procedures
(TNI)

Conformance: An affirmative indication or judgment that a product or service has met the requirements of the relevant specifications, contract, or regulation; also the state of meeting the requirements. (ANSI/ASQC E4-1994)

Correction: Actions necessary to correct or repair analysis specific non-conformances. The acceptance criteria for method specific QC and protocols as well as the associated corrective actions. The analyst will most frequently be the one to identify the need for this action as a result of calibration checks and QC sample analysis**.** No significant action is taken to change behavior, process or procedure.

Corrective Action: The action taken to eliminate the causes of an existing nonconformity, defect or other undesirable situation in order to prevent recurrence. (ISO 8402)

Data Audit: A qualitative and quantitative evaluation of the documentation and procedures associated with environmental measurements to verify that the resulting data re of acceptable quality (i.e., that they meet specified acceptance criteria). (TNI)

Data Reduction: The process of transforming the number of data items by arithmetic or statistical calculations, standard curves, concentration factors, etc., and collation into a more useable form. (TNI)

Deficiency: An unauthorized deviation from acceptable procedures or practices, or a defect in an item (ASQC), whether in the laboratory's control or not.

Demonstration of Capability: A procedure to establish the ability of the analyst to generate analytical results of acceptable accuracy and precision. (TNI)

Document Control: The act of ensuring that documents (and revisions thereto) are proposed, reviewed for accuracy, approved for release by authorized personnel, distributed properly, and controlled to ensure use of the correct version at the location where the prescribed activity if performed. (ASQC)

Duplicate Analyses: The analyses or measurements of the variable of interest performed identically on two subsamples of the same sample. The results from duplicate analyses are used to evaluate analytical or measurement precision but not the precision of sampling, preservation or storage internal to the laboratory. (EPA-QAD)

Equipment Blank: Sample of analyte-free media which has been used to rinse common sampling equipment to check effectiveness of decontamination procedures. (TNI)

External Standard Calibration: Calibrations for methods that do not utilize internal standards to compensate for changes in instrument conditions.

Field Blank: Blank prepared in the field by filing a clean container with pure de-ionized water and appropriate preservative, if any, for the specific sampling activity being undertaken (EPA OSWER)

Field of Accreditation: Those matrix, technology/method, and analyte combinations for which the accreditation body offers accreditation.

Holding Times: The maximum time that samples may be held prior to analyses and still be considered valid or not compromised. (40 CFR Part 136)

Internal Standard: A known amount of standard added to a test portion of a sample as a reference for evaluating and controlling the precision and bias of the applied analytical test method. (TNI)

Internal Standard Calibration: Calibrations for methods that utilize internal standards to compensate for changes in instrument conditions.

Instrument Blank: A clean sample (e.g., distilled water) processed through the instrumental steps of the measurement process; used to determine instrument contamination. (EPA-QAD)

Instrument Detection Limit (IDL): The minimum amount of a substance that can be measured with a specified degree of confidence that the amount is greater than zero using a specific instrument. The IDL is associated with the instrumental portion of a specific method only, and sample preparation steps are not considered in its derivation. The IDL is a statistical estimation at a specified confidence interval of the concentration at which the relative uncertainty is ± 100%. The IDL represents a range where qualitative detection occurs on a specific instrument. Quantitative results are not produced in this range.

Laboratory Control Sample (however named, such as laboratory fortified blank, spiked blank, or QC check sample): A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes, taken through all preparation and analysis steps of the procedure unless otherwise noted in a reference method. It is generally used to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system.

An LCS shall be prepared at a minimum of 1 per batch of 20 or less samples per matrix type per sample extraction or preparation method except for analytes for which spiking solutions are not available such as total suspended solids, total dissolved solids, total volatile solids, total solids, pH, color, odor, temperature, dissolved oxygen or turbidity. The results of these samples shall be used to determine batch acceptance.

Least Squares Regression (1st Order Curve): The least squares regression is a mathematical calculation of a straight line over two axes. The y axis represents the instrument response (or Response ratio) of a standard or sample and the x axis represents the concentration. The regression calculation will generate a correlation coefficient (r) that is a measure of the "goodness of fit" of the regression line to the data. A value of 1.00 indicates a perfect fit. In order to be used for quantitative purposes, r must be greater than or equal to 0.99 for organics and 0.995 for Inorganics.

Limit(s) of Detection (LOD) [a.k.a., Method Detection Limit (MDL)]: A laboratory's estimate of the minimum amount of an analyte in a given matrix that an analytical process can reliably detect in their facility. (TNI)

LOD Verification [a.k.a., MDL Verification]: A processed QC sample in the matrix of interest, spiked with the analyte at no more than 3X the LOD for single analyte tests and 4X the LOD for multiple analyte tests and processed through the entire analytical procedure.

Limit(s) of Quantitation (LOQ) [a.k.a., Reporting Limit]: The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. (TNI)

(QS) Matrix: The component or substrate that contains the analyte of interest. For purposes of batch and QC requirement determinations, the following matrix distinctions shall be used:

> *Aqueous*: Any aqueous sample excluded from the definition of Drinking Water matrix or Saline/Estuarine source. Includes surface water, groundwater, effluents, and TCLP or other extracts.
>
> *Drinking Water*: any aqueous sample that has been designated as a potable or potential potable water source.
>
> *Saline/Estuarine*: any aqueous sample from an ocean or estuary, or other salt water source such as the Great Salt Lake.
>
> *Non-aqueous Liquid*: any organic liquid with <15% Settleable solids.
>
> *Biological Tissue*: any sample of a biological origin such as fish tissue, shellfish, or plant material. Such samples shall be grouped according to origin.
>
> *Solids*: includes soils, sediments, sludges, and other matrices with >15% Settleable solids.
>
> *Chemical Waste*: a product or by-product of an industrial process that results in a matrix not previously defined.

Air & Emissions: Whole gas or vapor samples including those contained in flexible or rigid wall containers and the extracted concentrated analytes of interest from a gas or vapor that are collected with a sorbant tube, impinger solution, filter, or other device. (TNI)

Matrix Spike (spiked sample or fortified sample): A sample prepared, taken through all sample preparation and analytical steps of the procedure unless otherwise noted in a referenced method, by adding a known amount of target analyte to a specified amount of sample for which an independent test result of target analyte concentration is available. Matrix spikes are used, for example, to determine the effect of the matrix on a method's recovery efficiency.

Matrix Spike Duplicate (spiked sample or fortified sample duplicate): A replicate matrix spike prepared and analyzed to obtain a measure of the precision of the recovery for each analyte.

Method Blank: A sample of a matrix similar to the batch of associated samples (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedures, and in which no target analytes or interferences are present at concentrations that impact the analytical results for sample analyses. (TNI)

Method Detection Limit: The minimum concentration of a substance (an analyte) that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing the analyte. (40 CFR Part 136, Appendix B)

Negative Control: Measures taken to ensure that a test, its components, or the environment do not cause undesired effects, or produce incorrect test results. (TNI)

Non-conformance: An indication, judgment, or state of not having met the requirements of the relevant specifications, contract, or regulation.

Observation: A record of phenomena that (1) may assist in evaluation of the sample data; (2) may be of importance to the project manager and/or the client, and yet not at the time of the observation have any known effect on quality.

Performance Audit: The routine comparison of independently obtained qualitative and quantitative measurement system data with routinely obtained data in order to evaluate the proficiency of an analyst or laboratory. (TNI)

Positive Control: Measures taken to ensure that a test and/or its components are working properly and producing correct or expected results from positive test subjects. (TNI)

Precision: The degree to which a set of observations or measurements of the same property, obtained under similar conditions, conform to themselves; a data quality indicator. Precision is usually expressed as standard deviation, variance or range, in either absolute or relative terms. (TNI)

Preservation: Any conditions under which a sample must be kept in order to maintain chemical and/or biological integrity prior to analysis. (TNI)

Proficiency Testing: A means of evaluating a laboratory's performance under controlled conditions relative to a given set of criteria through analysis of unknown samples provided by an external source. (TNI) [2.1]

Proficiency Testing Program: The aggregate of providing rigorously controlled and standardized environmental samples to a laboratory for analysis, reporting of results, statistical evaluation of the results and the collective demographics and results summary of all participating laboratories. (TNI)

Proficiency Test Sample (PT): A sample, the composition of which is unknown to the laboratory and is provided to test whether the analyst/laboratory can produce analytical results within specified acceptance criteria. (TNI)

Quality Assurance: An integrated system of management activities involving planning, implementation, assessment, reporting and quality improvement to ensure that a process, item, or service is of the type of quality needed and expected by the client. (TNI)

Quality Assurance [Project] Plan (QAPP): A formal document describing the detailed quality control procedures by which the quality requirements defined for the data and decisions pertaining to a specific project are to be achieved. (EAP-QAD)

Quality Control: The overall system of technical activities that measures the attributes and performance of a process, item, or service against defined standards to verify that they meet the stated requirements established by the customer; operational techniques and activities that are used to fulfill requirements for quality; also the system of activities and checks used to ensure that measurement systems are maintained within prescribed limits, providing protection against "out of control" conditions and ensuring that the results are of acceptable quality. (TNI)

Quality Control Sample: A sample used to assess the performance of all or a portion of the measurement system. One of any number of samples, such as Certified Reference Materials, a quality system matrix fortified by spiking, or actual samples fortified by spiking, intended to demonstrate that a measurement system or activity is in control. (TNI)

Quality Manual: A document stating the management policies, objectives, principles, organizational structure and authority, responsibilities, accountability, and implementation of an agency, organization, or laboratory, to ensure the quality of its product and the utility of its product to its users. (TNI)

Quality System: A structured and documented management system describing the policies, objectives, principles, organizational authority, responsibilities, accountability, and implementation plan of an organization for ensuring quality in its work processes, products (items), and services. The quality system provides the framework for planning, implementing, and assessing work performed by the organization and for carrying out required QA and QC activities. (TNI)

Raw Data: The documentation generated during sampling and analysis. This documentation includes, but is not limited to, field notes, electronic data, magnetic tapes, untabulated sample results, QC sample results, print outs of chromatograms, instrument outputs, and handwritten records. (TNI)

Record Retention: The systematic collection, indexing and storing of documented information under secure conditions.

Reference Material: Material or substance one or more properties of which are sufficiently well established to be used for the calibration of an apparatus, the assessment of a measurement method, or for assigning values to materials. (TNI)

Reference Standard: Standard used for the calibration of working measurement standards in a given organization or a given location. (TNI)

Sampling: Activity related to obtaining a representative sample of the object of conformity assessment, according to a procedure.

Second Order Polynomial Curve (Quadratic): The 2nd order curves are a mathematical calculation of a slightly curved line over two axis. The y axis represents the instrument response (or Response ratio) of a standard or sample and the x axis represents the concentration. The 2nd order regression will generate a coefficient of determination (COD or r^2) that is a measure of the "goodness of fit" of the quadratic curvature the data. A value of 1.00 indicates a perfect fit. In order to be used for quantitative purposes, r^2 must be greater than or equal to 0.99.

Selectivity: The ability to analyze, distinguish, and determine a specific analyte or parameter from another component that may be a potential interferent or that may behave similarly to the target analyte or parameter within the measurement system. (TNI)

Sensitivity: The capability of a method or instrument to discriminate between measurement responses representing different levels (e.g., concentrations) of a variable of interest. (TNI)

Spike: A known mass of target analyte added to a blank, sample or sub-sample; used to determine recovery efficiency or for other quality control purposes.

Standard: The document describing the elements of laboratory accreditation that has been developed and established within the consensus principles of standard setting and meets the approval requirements of standard adoption organizations procedures and policies. (TNI)

Standard Operating Procedures (SOPs): A written document which details the method for an operation, analysis, or action with thoroughly prescribed techniques and steps. SOPs are officially approved as the methods for performing certain routine or and which is accepted as the method for performing certain routine or repetitive tasks. (TNI)

Storage Blank: A blank matrix stored with field samples of a similar matrix (volatiles only) that measures storage contribution to any source of contamination.

Surrogate: A substance with properties that mimic the analyte of interest. It is unlikely to be found in environment samples and is added to them for quality control purposes.

Surrogate compounds must be added to all samples, standards, and blanks, for all organic chromatography methods except when the matrix precludes its use or when a surrogate is not available. Poor surrogate recovery may indicate a problem with sample composition and shall be reported to the client whose sample produced poor recovery. (QAMS)

Systems Audit (also Technical Systems Audit): A thorough, systematic, qualitative on-site assessment of the facilities, equipment, personnel, training, procedures, record keeping, data validation, data management, and reporting aspects of a total measurement system. (EPA-QAD)

Technical Manager: A member of the staff of an environmental laboratory who exercises actual day-to-day supervision of laboratory operations for the appropriate fields of accreditation and reporting of results

Technology: A specific arrangement of analytical instruments, detection systems, and/or preparation techniques.

Traceability: The ability to trace the history, application, or location of an entity by means of recorded identifications. In a calibration sense, traceability relates measuring equipment to national or international standards, primary standards, basic physical constants or properties, or reference materials. In a data collection sense, it relates calculations and data generated throughout the project back to the requirements for the quality of the project. (TNI)

Uncertainty: A parameter associated with the result of a measurement that characterizes the dispersion of the value that could reasonably be attributed to the measured value.

Acronyms:

CAR – Corrective Action Report
CCV – Continuing Calibration Verification
CF – Calibration Factor
CFR – Code of Federal Regulations
COC – Chain of Custody
DOC – Demonstration of Capability
DQO – Data Quality Objectives
DUP - Duplicate
EHS – Environment, Health and Safety
EPA – Environmental Protection Agency
GC - Gas Chromatography
GC/MS - Gas Chromatography/Mass Spectrometry
HPLC - High Performance Liquid Chromatography
ICP - Inductively Coupled Plasma Atomic Emission Spectroscopy
ICP/MS-ICP/Mass Spectrometry

ICV – Initial Calibration Verification
IDL – Instrument Detection Limit
IH – Industrial Hygiene
IS – Internal Standard
LCS – Laboratory Control Sample
LCSD – Laboratory Control Sample Duplicate
LIMS – Laboratory Information Management System
LOD – Limit of Detection
LOQ – Limit of Quantitation
MDL – Method Detection Limit
MDLCK – MDL Check Standard
MDLV – MDL Verification Check Standard
MRL – Method Reporting Limit Check Standard
MS – Matrix Spike
MSD – Matrix Spike Duplicate
NELAP - National Environmental Laboratory Accreditation Program
PT – Performance Testing
QAM – Quality Assurance Manual
QA/QC – Quality Assurance / Quality Control
QAPP – Quality Assurance Project Plan
RF – Response Factor
RPD – Relative Percent Difference
RSD – Relative Standard Deviation
SD – Standard Deviation
SDS - Safety Data Sheet
SOP: Standard Operating Procedure
TAT – Turn-Around-Time
TNI – The NELAC Institute
VOA – Volatiles
VOC – Volatile Organic Compound

Appendix 3. Laboratory Certifications, Accreditations, Validations

TestAmerica Buffalo maintains accreditations, certifications, and validations with numerous state and national entities. Programs vary but may include on-site audits, reciprocal agreements with another entity, performance testing evaluations, review of the QA Manual, Standard Operating Procedures, Method Detection Limits, training records, etc. At the time of this QA Manual revision, the laboratory has accreditation/certification/licensing with the following organizations:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Certifications

Laboratory	Program	Authority	Identification	Expiration Date
TestAmerica Buffalo	Federal	USDA	P330-11-00386	02/06/2021
TestAmerica Buffalo	NELAP	Florida	E87672	06/30/2018
TestAmerica Buffalo	NELAP	Illinois	200003	09/30/2018
TestAmerica Buffalo	NELAP	Kansas	E-10187	01/31/2019
TestAmerica Buffalo	NELAP	Louisiana	02031	06/30/2018
TestAmerica Buffalo	NELAP	Minnesota	036-999-337	12/31/2018
TestAmerica Buffalo	NELAP	New Hampshire	2337	11/17/2018
TestAmerica Buffalo	NELAP	New Hampshire	2973	09/11/2018
TestAmerica Buffalo	NELAP	New Jersey	NY455	06/30/2018
TestAmerica Buffalo	NELAP	New York	10026	03/31/2018
TestAmerica Buffalo	NELAP	Oregon	NY200003	06/09/2018
TestAmerica Buffalo	NELAP	Pennsylvania	68-00281	07/31/2018
TestAmerica Buffalo	NELAP	Texas	T104704412-15-6	07/31/2018
TestAmerica Buffalo	NELAP	Virginia	460185	09/14/2018
TestAmerica Buffalo	State Program	Arkansas DEQ	88-0686	07/06/2018
TestAmerica Buffalo	State Program	California	2931	04/01/2018
TestAmerica Buffalo	State Program	Connecticut	PH-0568	09/30/2018
TestAmerica Buffalo	State Program	Georgia	10026 (NY)	03/31/2018
TestAmerica Buffalo	State Program	Georgia	956	03/31/2018
TestAmerica Buffalo	State Program	Iowa	374	03/01/2019
TestAmerica Buffalo	State Program	Kentucky (DW)	90029	12/31/2018
TestAmerica Buffalo	State Program	Kentucky (UST)	30	03/31/2018
TestAmerica Buffalo	State Program	Kentucky (WW)	90029	12/31/2018
TestAmerica Buffalo	State Program	Maine	NY00044	12/04/2018
TestAmerica Buffalo	State Program	Maryland	294	03/31/2018
TestAmerica Buffalo	State Program	Massachusetts	M-NY044	06/30/2018
TestAmerica Buffalo	State Program	Michigan	9937	03/31/2018
TestAmerica Buffalo	State Program	North Dakota	R-176	03/31/2018
TestAmerica Buffalo	State Program	Oklahoma	9421	08/31/2018
TestAmerica Buffalo	State Program	Rhode Island	LAO00328	12/30/2018
TestAmerica Buffalo	State Program	Tennessee	TN02970	03/31/2018
TestAmerica Buffalo	State Program	Washington	C784	02/10/2019
TestAmerica Buffalo	State Program	Wisconsin	998310390	08/31/2018

Page 1 of 1 3/21/18

* Certification Valid - Laboratory is Pending Renewal with the Program Authority

For more information, or to contact a local TestAmerica representative nearest you, please visit our website at www.testamericainc.com

The certificates and accredited parameter lists are available for each State/Program at www.testamericainc.com under Analytical Services Search – Certifications.

Title: Per- and Polyfluorinated Substances (PFAS) in Potable Water

[Method ISO 25101:2009]

Approval Signatures:

Don Dawicki Laboratory Director	Kristine Dusablon Quality Assurance Manager
Matthew Kirk Operations Mgr./EHS Coordinator	Mark Fausel Department Supervisor

Facility Distribution No. Electronic **Distributed To: Facility Intranet**

1.0 Scope and Application

This SOP describes the laboratory procedure for the preparation and analysis of per- and polyfluorinated substances using liquid chromatography/tandem mass spectrometry (LC/MS/MS).

1.1 Analytes, Matrices, and Reporting Limits

This procedure applies to potable water samples only.

The list of target compounds that may be determined from this procedure is provided below. Table 1 presents the compounds along with their associated reporting limits (RL).

Compound Name	Abbreviation	CAS #
Perfluoroalkylcarboxylic acids (PFCAs)		
*Perfluoro-n-butanoic acid	PFBA	375-22-4
*Perfluoro-n-pentanoic acid	PFPeA	2706-90-3
*Perfluoro-n-hexanoic acid	PFHxA	307-24-4
*Perfluoro-n-heptanoic acid	PFHpA	375-85-9
Perfluoro-n-octanoic acid	PFOA	335-67-1
*Perfluoro-n-nonanoic acid	PFNA	375-95-1
*Perfluoro-n-decanoic acid	PFDA	335-76-2
*Perfluoro-n-undecanoic acid	PFUnA	2058-94-8
*Perfluoro-n-dodecanoic acid	PFDoA	307-55-1
*Perfluoro-n-tridecanoic acid	PFTrDA	72629-94-8
*Perfluoro-n-tetradecanoic acid	PFTeDA	376-06-7
Perfluorinated sulfonic acids (PFSAs)		
*Perfluoro-1-butanesulfonic acid	PFBS	375-73-5
*Perfluoro-1-pentanesulfonic acid	PFPeS	2706-91-4
*Perfluoro-1-hexanesulfonic acid	PFHxS	355-46-4
*Perfluoro-1-heptanesulfonic acid	PFHpS	375-92-8
Perfluoro-1-octanesulfonic acid	PFOS	1763-23-1
*Perfluoro-1-nonanesulfonic acid	PFNS	68259-12-1
*Perfluoro-1-decanesulfonic acid	PFDS	335-77-3
Perfluorinated sulfonamides (FOSA)		
*Perfluoro-1-octanesulfonamide	FOSA	754-91-6
Perfluorinated sulfonamidoacetic acids (FOSAA)		
*N-ethylperfluoro-1-octanesulfonamidoacetic acid	EtFOSAA	2991-50-6
*N-methylperfluoro-1-octanesulfonamidoacetic acid	MeFOSAA	2355-31-9
Fluorotelomer sulfonates (FTS)		
*1H,1H,2H,2H-perfluorohexanesulfonic acid *(4:2)*	4:2 FTS	757124-72-4
*1H,1H,2H,2H-perfluorooctanesulfonic acid *(6:2)*	6:2 FTS	27619-97-2
*1H,1H,2H,2H-perfluorodecanesulfonic acid *(8:2)*	8:2 FTS	39108-34-4
Fluorinated Replacement Chemicals		
Hexafluoropropylene oxide dimer acid	HFPO-DA	13252-13-6

4,8-dioxa-3H-perfluorononanoic acid	DONA	919005-14-4
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	F53B Major (9Cl-PF3ONS)	756426-58-1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	F53B Minor (11Cl-PF3OUdS)	763051-58-1

*Certification not offered by PAB (NYSDOH)

The working range of the method is listed below. The linear range can be extended by diluting the extracts.

Matrix	Nominal Sample Size	Working Range
Water	250 mL	2.0 ng/L - 400 µg/L

2.0 Summary of Method

Samples are extracted using a solid phase extraction (SPE) cartridge. PFAS are eluted from the cartridge with an [redacted] solution.

The final [redacted] extracts are analyzed by LC/MS/MS operated in electrospray (ESI) negative ion mode. PFAS are separated from other components on a C18 column with a solvent gradient program using [redacted] and methanol.

An isotope dilution technique is employed with this method for the compounds of interest. The isotope dilution analytes (IDAs) consist of carbon-13 labeled analogs, oxygen-18 labeled analogs, or deuterated analogs of the compound of interest, and they are spiked into the samples at the time of extraction. This technique allows for the correction for analytical bias encountered when analyzing more chemically complex environmental samples. The isotopically labeled compounds are chemically similar to the compounds of concern and are therefore affected by sample-related interferences to the same extent as the compounds of concern. Compounds that do not have an identically labeled analog are quantified by the IDA method using a closely related labeled analog.

Quantitation by the internal standard method is employed for the IDA analytes/recoveries. Peak response is measured as the area of the peak.

This SOP is based on the following reference methods:

- Method ISO 25101, “Water quality – Determination of perfluorooctanesulfonate (PFOS) and perfluorooctanoate (PFOA) – Method for unfiltered samples using solid phase extraction and liquid chromatography/mass spectrometry”, First Edition, 2009-03-01, International Organization for Standardization, Technical Committee ISO/TC 147, Water Quality, Subcommittee SC 2, Physical, chemical and biochemical methods.

If the laboratory’s SOP is modified from the reference method, a list of method modifications along with technical justification may be found in Section 16. Modifications to this SOP may be applied on a project specific basis to meet project data quality objectives. Project specific modifications are documented in the project record.

3.0 Definitions

Refer to the Laboratory's Quality Assurance Manual (QAM) for the Glossary of Terms, Definitions and Acronyms except as follows:

Definitions of terms used in this SOP may be found in Appendix A.

4.0 Interferences

PFAS have been used in a wide variety of manufacturing processes, and laboratory supplies should be considered potentially contaminated until they have been tested and shown to be otherwise. The materials and supplies used during the method validation process have been tested and shown to be clean. These items are listed below in Section 6.

To avoid contamination of samples, standards are prepared in a ventilation hood in an area separate from where samples are extracted.

PTFE products can be a source of PFOA contamination. The use of PTFE in the procedure should be avoided or at least thoroughly tested before use. Polypropylene (PP) or polyethylene (PE, HDPE) products may be used in place of PTFE products to minimize PFAS contamination.

Standards and samples are injected from polypropylene autosampler vials with polyethylene screw caps once. Multiple injections may be performed on Primers when conditioning the instrument for analysis.

Random evaporation losses have been observed with the polyethylene caps causing high IDA recovery after the vial was punctured and sample re-injected. For this reason, it is best to inject standards and samples once in the analytical sequence.

Teflon-lined screw caps have detected PFAS at low concentrations. Repeated injection from the same Teflon-lined screw cap have detected PFNA at increasing concentration as each repeated injection was performed, therefore, it is best to use polyethylene screw caps.

Volumetric glassware and syringes are difficult to clean after being used for solutions containing high levels of PFAS. These items should be labeled for use only with similarly concentrated solutions or verified clean prior to re-use. To the extent possible, disposable labware is used.

Both branched and linear isomers of PFOS, PFOA, PFHxS, PFBS, EtFOSAA and MeFOSAA can potentially be found in the environment, based upon scientific literature. If multiple isomers are present for one of these PFAS, these adjacent peaks are either completely resolved or not resolved but with a profound deflection that can be resolved during peak integration. The later of the peaks matches the retention time of the single labeled PFAS peak. In general, earlier peaks are branched isomers and are not a result of peak splitting, and all the chromatographic peaks observed in the standard and/or sample must be integrated and the areas included.

When reference standards of technical mixtures of specific PFAS area available, they should be used to ensure that all appropriate peaks are included during peak integration (at this time, only PFOS, PFOA, PFHxS, EtFOSAA and MeFOSAA are available as technical mixtures). Refer to Section 7, Reagents, for the available technical mixtures utilized by this SOP.

In an attempt to reduce PFOS bias, it is required that m/z 449>80 transition be used as the quantitation transition.

5.0 Safety

Employees must abide by the policies and procedures in the Corporate Environmental Health and Safety Manual (CW-E-M-001) and this document. This procedure may involve hazardous material, operations and equipment. This SOP does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of the method to follow appropriate safety, waste disposal and health practices under the assumption that all samples and reagents are potentially hazardous. Safety glasses, gloves, lab coats and closed-toe, nonabsorbent shoes are a minimum.

5.1 Specific Safety Concerns or Requirements

Preliminary toxicity studies indicate that PFAS could have significant toxic effects. In the interest of keeping exposure levels as low as reasonably achievable, PFAS must be handled in the laboratory as hazardous and toxic chemicals.

Exercise caution when using syringes with attached filter disc assemblies. Application of excessive force has, upon occasion, caused a filter disc to burst during the process.

Laboratory procedures such as the use of pipets and transferring of extracts represent a significant potential for repetitive motion or other ergonomic injuries. Laboratory associates performing these procedures are in the best position to realize when they are at risk for these types of injuries. Whenever a situation is found in which an employee is performing the same repetitive motion, the employee shall immediately bring this to the attention of their supervisor, manager or the EH&S staff. The task will be analyzed to determine a better means of accomplishing it.

Eye protection that satisfies ANSI Z87.1 (as per the Eurofins TestAmerica Corporate Safety Manual), a laboratory coat and nitrile gloves must be worn while handling samples, standards, solvents and reagents. Disposable gloves that have been contaminated will be removed and discarded; other gloves will be cleaned immediately.

Perfluorocarboxylic acids are acids and are not compatible with strong bases.

The use of vacuum systems presents the risk of imploding glassware. All glassware used during vacuum operations must be thoroughly inspected prior to each use. Glass that is chipped, scratched, cracked, rubbed or marred in any manner must not be used under vacuum. It must be removed from service and replaced.

The HPLC and MS/MS have areas of high voltage. Depending on the type of work involved, the instrument should be turned off or disconnected from its source of power prior to extensive maintenance.

5.2 Primary Materials Used

Table 2 lists those materials used in this procedure that have a serious or significant hazard rating along with the exposure limits and primary hazards associated with that material as identified in the SDS. **Note: This list does not include all materials used in the method. The table contains a summary of the primary hazards listed in the SDS for each of the materials listed in the table.** A complete list of materials used in the method can be found in the reagents and materials section. Employees must review the information in the SDS for each material before using it for the first time or when there are major changes to the SDS.

6.0 Equipment and Supplies

Catalog numbers listed in this SOP are subject to change at the discretion of the vendor. Analysts are cautioned to be sure equipment used meets the specification of this SOP.

6.1 Miscellaneous

- 15 mL polypropylene test tubes with screw caps, Fisherbrand 05-539-5 or equivalent.
- 250-mL HDPE wide-mouth bottles with screw caps (ESS 0250-1901-).
- Analytical balance capable of weighing to the nearest 0.01g, and checked for accuracy each day it is used in accordance with BR-GT-008.
- SPE Vacuum manifold, 24-port, [redacted] or equivalent.
- 1/8” OD Poly siphon lines, 30” long for sample loading.
- SPE Adaptor Caps for 1, 3, and 6 mL SPE Tubes, Polyethylene, [redacted], or equivalent.
- SPE Stopcocks, Polyethylene and Polypropylene, [redacted], or equivalent.
- Stainless steel solvent guide needles, [redacted], or equivalent.
- Heavy-Wall filter flask, Fisherbrand 4000mL, [redacted], or equivalent.
- Polypropylene Syringe, 10 mL with luer-lok or luer slip tips, Norm-Ject AB10LL or equivalent.
- Volumetric Syringes, Class “A” (25µL, 50µL 100µL, and 500µL), Hamilton or equivalent.
- Automatic Pipettor, Finnpette, 1-5mL.
- Polypropylene autosampler vials, 300µL, 700µL and 2mL with polyethylene screw caps.
- Waters Oasis [redacted]) or equivalent.
- Vacuum manifold for Solid Phase Extraction (SPE).
- 250mL Poly bottles containing 1.25g of Trizma Pre-Set Crystals, used for batch QC for samples received with Trizma preservation.
- 500ml Polyethylene wash bottle
- 4, 6, and 12ml Class A Volumetric Pipette
- Miscellaneous laboratory apparatus (beakers, test tubes, volumetric flasks, pipettes, etc). These should be disposable wherever possible, or marked and segregated for high-level versus low-level use.

6.2 Analytical System

Liquid Chromatography/Tandem Mass Spectrometer (LC/MS/MS)-as described below. The use of a column heater is required to maintain a stable temperature throughout the analytical run. Data is processed using Chrom Peak Review, version 2.1 or equivalent

- [redacted] LC/MS/MS

  This system consists of a [redacted] HPLC interfaced with a [redacted] Triple Quad MS. The instrument control and data acquisition software is SCIEX Analyst, version 1.6.3 or equivalvent.

  [redacted] HPLC equipped with [redacted] pumps and one [redacted] degassing unit or equivalent. [redacted] Column Oven.

  [redacted], or equivalent.

  PFAS Isolator column. Restek Ultra C18 5µm, 10 x 2.1mm, two aligned in series. These are plumbed between the pump's mixing valve and the autosampler to minimized the HPLC-based PFAS background from injection-based PFAS.

7.0 Reagents and Standards

7.1 Reagents

All reagents must follow traceability guidelines found in SOP BR-QA-002.

- Ammonium acetate Stock Solution, [redacted]
- [redacted]-[redacted].
- Ammonium hydroxide, concentrated, JT Baker or equivalent.
- Ammonium hydroxide (NH_4OH) [redacted].
- Reagent Water, house reverse-osmosis reagent water ("PFAS-Free" via in-house testing).
- Hexane, Ultra-Resi Analyzed, JT Baker or equivalent.
- Methanol, HPLC JT Baker or equivalent.
- Sodium hydroxide, pellets, JT Baker or equivalent.
- Sodium hydroxide (NaOH), [redacted]
- Acetonitrile, Optima Grade, Fisherbrand or equivalent.

7.2 Standards

Purchase high purity, technical grade solids (96% or greater) or certified solutions from commercial vendors. Standard materials are verified compared to a second source material at the time of initial calibration. The solid stock material is stored at room temperature or as specified by the manufacturer or vendor. If solid material is used for preparing a standard, stock standard solutions are prepared from the solids and are stored at 4 $\pm$ 2°C. Stock standard solutions should be brought to room temperature before using. Standards are monitored for signs of degradation or evaporation. Standard solutions must be replaced at least annually from the date of preparation.

As of this writing, only PFOS, PFOA, PFHxS, MeFOSAA and EtFOSAA are commercially available as technical mixtures. These reference standards of the technical mixtures for these specific PFAS are used to ensure that all appropriate peaks are included during peak integration.

PFBS, PFHxS, PFHpS, PFOS, PFDS, and many other PFAS are not available in the acid form, but rather as their corresponding salts, such as sodium or potassium. The standards are prepared and corrected for their salt content according to the equation below.

$$Mass_{acid} = \text{Measured } Mass_{salt} \times MW_{acid} / MW_{salt}$$

Where: MW_{acid} is the molecular weight of PFAA

MW_{salt} is the molecular weight of the purchased salt.

For example, the molecular weight of PFOS is 500.1295 and the molecular weight of NaPFOS is 523.1193. Therefore, the amount of NaPFOS used must be multiplied by a factor of 0.956 to account for the amount of PFOS in the final solution.

While PFAS standards commercially purchased are supplied in glass ampoules, all subsequent transfers or dilutions performed by the analyst must be prepared and stored in polypropylene or HDPE containers.

Prepare calibration and working standards by diluting a known volume of stock standard in an appropriate solvent to the final volume needed to achieve the desired concentration. The recommended formulation for each standard used in this procedure is provided in Appendix B along with the recommended source materials, expiration dates and storage conditions.

A technical (qualitative) grade PFOA standard is analyzed initially, then after initial calibration when a new column is installed or when significant changes are made to the HPLC parameters. This solution is used as a reference for the PFOA isomers (branched and linear) retention times.

A second source solution for PFAS is purchased from the same vendor; the PFC-MXB contains most of the target analytes in this mixture and is used as an ICV. For those compounds not available in this mixture or are not available from another vendor, a second analyst may prepare a second source standard from the same source as the ICAL to produce an ICV. The recommended concentration of the ICV standard should be in the mid-range of the calibration curve. The concentration may be adjusted if the initial calibration levels are changed or altered. The IDA and ISTD are added at a fixed concentration (2.5 ng/mL in extract).

7.3 Extraction Spiking Solutions

PFAS LCS/Matrix Spike Solution, 400 ng/mL

The PFAS spike solution is prepared by diluting all PFAS to produce a solution containing each PFAS at a concentration of 400 ng/mL in methanol.

PFAS High Level LCS Solution, 1000 ng/mL

The PFAS spike solution is prepared by diluting all PFAS to produce a solution containing each PFAS at a concentration of 1000 ng/mL in methanol.

PFAS Isotope Dilution Analyte Solution, 1000 ng/mL

The PFAS-IDA solution is prepared by diluting all labeled PFAS to produce a solution containing each IDA compound at a concentration of 1000 ng/mL in methanol.

Internal Standard Solution, $^{13}C_2$-PFOA, 2500 ng/mL

The internal standard solution is prepared by diluting the stock 50 µg/mL $^{13}C_2$-PFOA 20-fold in methanol.

See Appendix B for analyte lists and concentrations.

8.0 Sample Collection, Preservation, Shipment and Storage

The laboratory does not perform sample collection so these procedures are not included in this SOP, sampling requirements may be found in the published reference method.

Sample container, preservation techniques and holding times may vary and are dependent on sample matrix, method of choice, regulatory compliance, and/or specific contract or client requests. Listed below are the holding times and the references that include preservation requirements.

Matrix	Sample Container	Minimum Sample Size	Preservation	Holding Time[1]
Drinking Water	250 mL HDPE Bottle	250 mL	0-6°C Trizma (5g/L) (if from a known chlorinated source)	14 days from collection
Extract	700 µL Polypropylene (PP) Vial with HDPE Screw cap	NA	0-6°C	40 days from extraction

[1] *Extraction holding time is calculated from date of collection. Analytical holding time is determined from date of extraction.*

[2] *TestAmerica Sacramento has conducted holding time studies that support a 14 day holding time for aqueous samples. The 14 /40 day holding times given above are based on the holding time study and general EPA convention for the holding time of extractable organic compounds in water and soil.*

Unless otherwise specified by client or regulatory program, after analysis, samples and extracts are retained for a minimum of 30 days after provision of the project report and then disposed of in accordance with applicable regulations.

9.0 Quality Control

9.1 Sample QC

When samples contain the preservative Trizma, all associated QC must be treated with the same preservative.

Initial Demonstration of Capability (IDOC) and Method Detection Limit (MDL) studies described in Section 12 must be acceptable before analysis of samples may begin.

Batches are defined at the sample preparation step. Batches should be kept together through the whole analytical process as far as possible, but it is not mandatory to analyze prepared extracts on the same instrument or in the same sequence.

The laboratory prepares the following sample QC for each extraction batch (an extraction batch is limited to a maximum of 20 field samples of the same matrix processed using the same procedure and reagents within the same time period):

QC Item	Frequency	Acceptance Criteria
Method Blank (MB)	1 per extraction batch	See Table 3
Laboratory Control Sample (LCS)	1 per extraction batch	See Table 3
Laboratory Control Sample Duplicate (LCSD)	1 per extraction batch whenever sufficient sample is available for an MS/MSD	See Table 3
Matrix Spike (MS/MSD)	1 per extraction batch (if sufficient sample is available)	See Table 3
Sample Duplicate (SD)	Client Request	See Table 3

Note: When samples are received with Trizma preservation, the MB, LCS and LCSD (if needed) must be prepared in reagent blank aliquots that have been Trizma preserved. It is recommended to keep Trizma and non-Trizma samples segregated in separate preparation batches.

9.2 Instrument QC

The following instrument QC is performed:

QC Item	Frequency	Acceptance Criteria
Initial Calibration (ICAL)	Initially, when CCV fails and after major instrument maintenance	See Table 3
Initial Calibration Blank (ICB)	Immediately after ICAL	See Table 3
Second Source Verification (ICV)	Immediately after ICB	See Table 3
Continuing Calibration Verification (CCV)	Beginning, end and after every 10 field samples. Alternate between ICAL Levels 4, and 5 (in order) throughout sequence	See Table 3
Continuing Calibration Verification Low (CCVL)	Immediately prior to Level 4 CCV at beginning of every non-ICAL analytical sequence	See Table 3
Isotope Dilution Analytes (IDA)	Added to Every injection (Standards, QC and Field Samples) at the same concentration	See Table 3

10.0 <u>Procedure</u>

One-time procedural variations are allowed only if deemed necessary in the professional judgment of a supervisor to accommodate variation in sample matrix, chemistry, sample size, or other parameters. Any variation in procedure shall be completely documented using a Non-Conformance Memo (NCM). The NCM process is described in more detail in SOP BR-QA-0016. The NCM shall be filed in the project file and addressed in the case narrative.

Any deviations from this procedure identified after the work has been completed must be documented in an NCM, with a cause and corrective action described.

10.1 Sample Preparation

If samples are not collected in 250 mL HDPE bottles, transfer approximately 250 mL of each sample into a new, labeled 16 oz. polyethylene (HDPE) bottle and write an NCM in the preparation batch indicating that the sample was collected in the wrong container, and the container walls could not be extracted. Prepare additional aliquots of a field sample for the MS/MSD, if requested.

Prepare two 250 mL aliquots of HPLC-grade water for the method blank and LCS. NOTE: If any of the samples in a job have been collected in Trizma preserved bottles, separate batch QC (MB, LCS and LCSD, if necessary) must be prepared using Trizma preserved bottles in a separate prep batch.

Weigh each container to determine its pre-extraction mass (Gross Weight). Record this value directly into the TALS batch.

Spike the LCS and MS/MSD (if requested) with 0.025 mL (25 µL) of the PFAS LCS/Matrix Spike solution (Section 7.2). This will result in a sample concentration of 40 ng/L.

Add [redacted] of the PFAS-IDA solution (Section 7.2) into each sample and QC sample, for a fixed concentration of 50 ng/mL in the final sample vial.

Recap the bottles and shake to mix the contents. After the extraction has been completed, allow the container to completely dry (uncapped). Replace the cap and reweigh the container to determine the container mass (Tare Weight). The sample volume extracted can be determined by subtracting the Tare Weight from the Gross Weight. These calculations are captured in the PFAS water sample prep module (25101_2009_SPE).

Due to the surface active nature of the PFAS analytes, it is necessary to extract the entire sample as well as the container walls to maximize recovery. It is therefore ideal to receive full 250 mL HDPE bottles for each sample (and MS/MSD when requested) so the entire sample can be processed from that container.

If the sample is received with sediment, it may not be possible to extract the entire sample. In this case the laboratory will spike the entire volume received and will attempt to extract at least 50mL of sample. If the SPE cartridge clogs prior to the entire sample eluting through, the container walls will not be extracted. The reduced extraction volume will be noted with an NCM.

10.2 Solid Phase Extraction (SPE)

Condition the SPE cartridges [redacted] by passing the following without drying the column.

WARNING: The use of a vacuum system creates the risk of glassware implosion. Inspect all glassware prior to use. Glassware with chips, scratches, rub marks or cracks must not be used.

Wash with 5.0 mL of [redacted].

Wash with 5.0 mL of 0.1N NaOH/water. Close valve when ~ 1 mL remains on top to keep column wet. After this step, the columns should not go dry until the completion of loading and rinsing samples.

Appropriately label the SPE cartridges.

Add a poly siphon line to an adapter which has been firmly inserted into the SPE cartridge and place the other end of the line into the corresponding sample container.

Turn on the vacuum and pull the entire sample volume (minimum of 250 mL) through the cartridge at rate of approximately [redacted].

Stop the sample elution when ~0.1 mL remains. Add ~5 mL of water to the SPE column and restart the elution to complete the loading process. The added water volume ensures there are no small sample droplets remaining that may be clinging to the wall of the SPE cartridge.

After the sample and water rinse has passed through the cartridge, allow the cartridge to completely dry with vacuum (this could take up to 90 minutes). The cartridge should return to a uniform color. NOTE: Remove and replace each cartridge during the drying process to ensure any water droplets that may be in the flow path are eliminated.

10.3 SPE Column Wash of with Hexane

Add [redacted] to each SPE column and let the column become fully saturated with solvent. Close the stopcock and allow the column to soak for five minutes, then elute to waste.

Load a second [redacted] and elute to waste (without a soaking period).

Allow the column to dry with vacuum for 5 to 10 minutes. Columns must be dried thoroughly before continuing. The cartridge should return to a uniform color. Wipe any remaining water droplets from the bottom of the stainless steel guide needles using a fresh Kimwipe for each needle prior to proceeding to the next step.

10.4 SPE Elution

Note: the use of glass should be avoided where able. However, disposable glass pipettes have a much narrower opening, which is necessary to reduce spillage during the following transfer steps.

Place labeled 15 mL polypropylene test tubes containing [redacted] of Reagent Water as receiving tubes in the SPE manifold.

Rinse the dried sample bottles with [redacted] and transfer to the corresponding SPE cartridge using a disposable glass pipet (NOTE: the sample container has molded ridges in the neck that can trap up to 0.5mL of the solvent rinsate; make sure to tip the container slightly to draw the rinsate out of the ridges). Allow the solution to soak the cartridge for

5 minutes and then elute into the 15 mL collection tube.

Repeat the sample bottle rinse to cartridge elution process with a [redacted] (without the soaking period) The total collection should be approximately 10 mL. Adjust to 10 mL with methanol.

10.5 Internal Standard Addition

Add [redacted] internal standard to each extract and vortex to mix well.

Transfer a portion of the extract to a labeled 300µL polypropylene autosampler vial (6 drops or approximately 60µL). Archive the rest of the extract in the event the sample needs re-injection and/or dilution.

Seal the vials with polyethylene screw caps. Note: Teflon lined caps may not be used due to detection of low level concentration of PFAS.

10.6 Instrument Operating Conditions

Suggested operating conditions are listed below for the [redacted] LCMS system:

Recommended Instrument Operating Conditions						
HPLC Conditions ([redacted] HPLC)						
Column (Column temp = 45°C)	Phenomenex Gemini C18 3um, 3.0mm x 100mm					
Mobile Phase Composition	A=20mM Ammonium Acetate (90/10 water/methanol) B=Methanol					
Gradient Program	**Time**	**%A**	**%B**	**Curve**	**Flow Rate mL/min.**	
	[redacted]			6	0.60	
				6	0.60	
				6	0.60	
				6	0.60	
				6	0.60	
				6	0.60	
	Maximum pressure limit = 5,000 psi					
Injection Size	[redacted]					
Run Time	[redacted]					
Mass Spectrometer Interface Settings [redacted]						
MS Interface Mode	[redacted]					
Ionspray (volts)	[redacted]					
Declustering Potential-DP (volts)	[redacted]					
Entrance Potential-EP (volts)	[redacted]					
Source Temp (TEM)	[redacted]					
Curtain Gas (CUR)	[redacted]					
Collision Gas (CAD)	[redacted]					
Ion Source Gas 1 (GS1)	[redacted]					
Ion Source Gas 2 (GS2)	[redacted]					
Collision Energy-CE (volts)	[redacted]					

Collision Cell Exit Potential-CXP (volts)	[redacted]

Recommended Instrument Operating Conditions

Mass Spectrometer Scan Settings (SCIEX 5500 QQQ)

Compound	Comments	Reaction (MRM)	Dwell (sec)	DP(v)	EP(v)	CE(v)	CXP(v)
PFBA	Native analyte	212.9 > 169.0	0.011	[redacted]			
13C4 PFBA	IDA	217.0 > 172.0	0.011				
PFPeA	Native analyte	262.9 > 219.0	0.011				
13C5 PFPeA	IDA	267.9 > 223.0	0.011				
PFBS	Native analyte	298.9 > 80.0	0.011				
PFBS_2	Native analyte	298.9 > 99.0	0.011				
13C3 PFBS	IDA	301.9 > 80.0	0.011				
PFHxA	Native analyte	313.0 > 269.0	0.011				
PFHxA_2	Native analyte	313.0 > 119.0	0.011				
13C2 PFHxA	IDA	315.0 > 270.0	0.011				
4:2FTS	Native analyte	327.0 > 307.0	0.011				
M2-4:2FTS	IDA	329.0 > 81.0	0.011				
PFPeS	Native analyte	349.0 > 80.0	0.011				
PFPeS_2	Native analyte	349 > 99.0	0.011				
HFPO-DA	Native analyte	329.1 > 285	0.011				
13C3 HFPO-DA	IDA	332.1 > 287	0.011				
PFHpA	Native analyte	363.0 > 319.0	0.011				
PFHpA_2	Native analyte	363.0 > 169.0	0.011				
13C4 PFHpA	IDA	367.0 > 322.0	0.011				
PFHxS	Native analyte	399.0 > 80.0	0.011				
PFHxS_2	Native analyte	399.0 > 99.0	0.011				
18O2 PFHxS	IDA	403.0 > 84.0	0.011				
DONA	Native analyte	377 > 251	0.011				
DONA_2	Native analyte	377 > 85	0.011				
PFOA	Native analyte	413.0 > 369.0	0.011				
PFOA_2	Native analyte	413.0 > 169.0	0.011				
13C2 PFOA	Internal Std	415.0 > 370.0	0.011				
13C4 PFOA	IDA	417.0 > 372.0	0.011				
6:2FTS	Native analyte	427.0 > 407.0	0.011				
M2-6:2FTS	IDA	429.0 > 81.0	0.011				
PFHpS	Native analyte	449.0 > 80.0	0.011				
PFHpS_2	Native analyte	449.0 > 99.0	0.011				
PFNA	Native analyte	463.0 > 419.0	0.011				
PFNA_2	Native analyte	463.0 > 169.0	0.011				
13C5 PFNA	IDA	468.0 > 423.0	0.011				
PFOS	Native analyte	499.0 > 80.0	0.011				
PFOS_2	Native analyte	499.0 > 99.0	0.011				
9Cl-PF3ONS	Native analyte	531 > 351	0.011				

13C4 PFOS	IDA	503.0 > 80.0	0.011	[redacted]
PFDA	Native analyte	513.0 > 469.0	0.011	[redacted]
PFDA_2	Native analyte	513.0 > 169.0	0.011	[redacted]
13C2 PFDA	IDA	515.0 > 470.0	0.011	[redacted]
8:2FTS	Native analyte	527.0 > 507.0	0.011	[redacted]
M2-8:2FTS	IDA	529.0 > 81.0	0.011	[redacted]
PFNS	Native analyte	549.0 > 80.0	0.011	[redacted]
PFNS_2	Native analyte	549.0 > 99.0	0.011	[redacted]
MeFOSAA	Native analyte	570 > 419.0	0.011	[redacted]
d3-MeFOSAA	IDA	573.0 > 419.0	0.011	[redacted]
11Cl-PF3OUdS	Native analyte	631 > 451	0.011	[redacted]
FOSA	Native analyte	498.0 > 78.0	0.011	[redacted]
13C8 FOSA	IDA	506.0 > 78.0	0.011	[redacted]
PFUdA	Native analyte	563.0 > 519.0	0.011	[redacted]
PFUdA_2	Native analyte	563.0 > 169.0	0.011	[redacted]
13C2 PFUdA	IDA	565.0 > 520.0	0.011	[redacted]
EtFOSAA	Native analyte	584.0 > 419.0	0.011	[redacted]
d5-EtFOSAA	IDA	589.0 > 419.0	0.011	[redacted]
PFDS	Native analyte	599.0 > 80.0	0.011	[redacted]
PFDS_2	Native analyte	599.0 > 99.0	0.011	[redacted]
PFDoA	Native analyte	613.0 > 569.0	0.011	[redacted]
PFDoA_2	Native analyte	613.0 > 169.0	0.011	[redacted]
13C2 PFDoA	IDA	615.0 > 570.0	0.011	[redacted]
PFTrDA	Native analyte	663.0 > 619.0	0.011	[redacted]
PFTrDA_2	Native analyte	663.0 > 169.0	0.011	[redacted]
PFTeDA	Native analyte	713.0 > 669.0	0.011	[redacted]
PFTeDA_2	Native analyte	713.0 > 169.0	0.011	[redacted]
13C2 PFTeDA	IDA	715.0 > 670.0	0.011	[redacted]

Recommended Instrument Operating Conditions				
Retention Times & Quantitation [redacted]				
Native Compounds	**Typical Native RT (minutes)**	**IS analog**	**Typical IDA RT (minutes)**	**Quantitation Method**
PFBA	[redacted]	13C4 PFBA	[redacted]	Isotope Dilution
PFPeA		13C5 PFPeA		Isotope Dilution
PFBS		13C3 PFBS		Isotope Dilution
4:2FTS		M2-4:2FTS		Internal Standard
PFHxA		13C2 PFHxA		Isotope Dilution
PFPeS		13C3 PFBS		Internal Standard
HFPO-DA		13C3 HFPO-DA		Isotope Dilution
PFHpA		13C4 PFHpA		Isotope Dilution
PFHxS		18O2 PFHxS		Isotope Dilution
DONA		13C4 PFOS		Internal Standard
6:2FTS		M2-6:2FTS		Isotope Dilution
PFOA		13C4 PFOA		Isotope Dilution
PFHpS		13C4 PFOS		Internal Standard
PFNA		13C5 PFNA		Isotope Dilution
PFOS		13C4 PFOS		Isotope Dilution
9Cl-PF3ONS		13C4 PFOS		Internal Standard
8:2FTS		M2-8:2FTS		Isotope Dilution
PFDA		13C2 PFDA		Isotope Dilution
PFNS		13C4 PFOS		Internal Standard
MeFOSAA		d3-MeFOSAA		Isotope Dilution
11Cl-PF3OUdS		13C4 PFOS		Internal Standard
EtFOSAA		d5-EtFOSAA		Isotope Dilution
PFDS		13C4 PFOS		Internal Standard
PFUdA		13C2 PFUdA		Isotope Dilution
FOSA		13C8 FOSA		Isotope Dilution
PFDoA		13C2 PFDoA		Isotope Dilution
PFTrDA		13C2 PFTeDA		Internal Standard
PFTeDA		13C2 PFTeDA		Isotope Dilution

Note: clients must be notified when the quantitation of an analyte is performed using an Internal standard. Changes to these IDA/ISTD associations may be necessary when sources of IDAs are updated: this may include additions as new IDAs become available, or subtractions if IDAs are unavailable.

10.7 Instrument Tuning

Instrument tuning is done initially when the method is first developed and thereafter as needed to maintain the sensitivity and selectivity of the method. Tuning is done by infusing each individual compound (native and IDA) into the MS/MS electrospray probe. The responses for the parent and daughter ions for each compound are observed and optimized for sensitivity and resolution. Mass assignments are reviewed and calibrated if necessary. The mass assignments must be within ± 0.5 amu of the values shown in the table above.

10.8 Instrument Calibration

Perform initial calibration with a minimum of five calibration standards before any sample analysis (initial method set-up), whenever a new column is installed, when significant instrument maintenance has been performed, and when the CCV does not meet acceptance criteria. Significant instrument maintenance includes installing a new column, changing the proportioning valve, or changing components of the MS/MS system. A new calibration is not required following minor maintenance.

With the exception of the circumstances delineated in policy CA-Q-P-003, it is not acceptable to remove points from a calibration curve. In any event, at least five points must be included in the calibration curve. Average Response Factor and linear fit calibrations require five points, whereas Quadratic (second order) calibrations require six points. The same injection volume must be used for all injections (standards and extracts).

Calibration is by average response factor, linear fit, or by quadratic fit. Quadratic fit is used for the analyte if the response is non-linear.

For average response factor (RFa), the relative standard deviation (RSD) for all compounds quantitated by isotope dilution must be < 20% for the curve to be valid.

For average response factor (RFa), the relative standard deviation (RSD) for all compounds quantitated by internal standard (i.e. those compounds that do not have corresponding isotopically labeled analogs) must be < 25% for the curve to be valid.

For linear fit, the intercept of the line must be less than ½ the reporting limit, and the coefficient of determination (r2) must be greater than or equal to 0.990 for the curve to be considered valid (or the correlation coefficient (r) > 0.995).

Evaluation of Calibration Curves

The following requirements must be met for any calibration to be used:

-Response must increase with increasing concentration.

-The absolute value of the intercept of a regression line (linear or non-linear) at zero response must be less than the reporting limit.

-There should be no carryover at or above 1/2 MRL after a high CAL standard.

-The low cal. point must recover to within 50-150%, and all others must recover to within 70-130%.

If these criteria are not met, instrument conditions and standards will be checked, and the ICAL successfully repeated before continuing.

Weighting of Calibration Points

In linear and quadratic calibration fits, the points at the lower end of the calibration curve have less absolute variance than points at the high concentration end of the curve. This can cause severe errors in quantitation at the low end of the calibration. Because accuracy at the low end of the curve is very important for this analysis, it is preferable to increase the weighting of the lower concentration points. 1/concentration or 1/x weighting is encouraged. Visual inspection of the line fitted to the data is important in selecting the best fit.

10.8.1 Initial Calibration

Prepare the working calibration standards using the recommended formulations given in Appendix B ensuring the lowest calibration standard for each analyte is equal to or below the established RL. Unless otherwise specified on a project basis, use calibration levels 1 to 6 to establish the calibration curve for each analyte.

Prime the instrument by analyzing a minimum of 4 “primer” solutions consisting of 80/20 methanol/water. In general, an HPLC contains components made from PTFE, which enable the pumps to work with many types of organic solvents. Despite efforts to remove as much PTFE as possible, certain components cannot be replaced and contribute PFAS. The longer the system remains idle, the more PFAS that is yielded. Therefore these primers serve to reduce and stabilize the amount of PFAS that are contributed. Immediately following the primers is a Blank, the ICAL sequence (run in ascending order of Level 1 to Level 6), the ICB, the ICV and the first analytical window of extracts (up to 10 field samples). The data is acquired using using Sciex’s Analyst 1.6.

The Chrom Review data system generates calibration data by generating relative response factors (RRFs) based on the response of the target analyte and its corresponding Isotope Dilution Analyte (or Internal Standard) as well as their injection concentrations to ultimately generate Mean Response Factors. PFOA and PFOS calibrated using IDA must have RSD values <20% (<35 for all other IDA calibrated analytes), Compounds calibrated using ISTD must have RSD values < 50%. The IDA compounds are also calibrated using an internal standard.. The IDA RSD for ^{13}C labeled PFOA and PFOS must be <20% (the RSD for all other labeled PFAS must be < 50%). Alternatively, a linear regression curve of concentration vs. peak area for each analyte relative to their corresponding IDA/ISTD and their concentrations calculates the correlation coefficient with 1/concentration weighting. The calibration must have a correlation coefficient (r) $\geq$ 0.995 ($r^2 \geq 0.990$). If criteria are not met, correct the problem and repeat calibration. Further analysis may not proceed without valid calibration.

10.8.2 Initial Calibration Blank (ICB)

Immediately following the ICAL, a calibration blank is analyzed that consists of an injection of [redacted]ortified with IDA solution and ISTD solution at 50 ng/mL

The result for the calibration blank must be less than the reporting limit.

If the ICB is greater than the reporting limit then the source of contamination must be identified and any necessary cleaning completed, and then the instrument should be recalibrated.

10.8.3 Second Source Calibration Verification (ICV)

Following the ICAL and the ICB, an ICV standard obtained from a different source or vendor than the ICAL standards is analyzed. This ICV standard is a mid-range standard.

The recovery for the ICV must meet the appropriate following criteria:

The native analyte must be within or equal to 70-130% for all native analytes quantitated by isotope dilution.

The native analyte must be within or equal to 70-130% for all native analytes quantitated by internal standard (i.e. those compounds that do not have corresponding isotopically labeled analogs).

The IDA recovery must be within or equal to 50-150%.

See Table 3 for corrective actions in the event that the ICV does not meet the criteria above.

10.8.4 Continuing Calibration Verification (CCV)

Analyze a CCV at the beginning of a run, the end of a run, and after every 10 samples to determine if the calibration is still valid. The exception is after an acceptable curve and ICV are run 10 samples can be analyzed before a CCV is required. The CCVs are usually at the mid-level range of the curve and should vary throughout the run. The curve and ICV do not need to be run every day. To start an analytical run a CCV can be analyzed and if it meets acceptance criteria a run can be started. In addition, the low standard in the curve must be analyzed and must be within ± 50% of the expected value.

The native PFOA and PFOS recovery for the CCV standards must be 80-120% (70-130% for all other natives quantitated by isotope dilution) and 60-140% for all natives quantitated by internal standard. The recovery for ^{13}C labeled PFOA and PFOS must be 80-120% (the other IDA must be within or equal to 50-150%).

If this is not achieved, the instrument has drifted outside the calibration limits. If the CCV fails again following minor maintenance, the instrument must be recalibrated.

10.8.5 Isotope Dilution Analytes (IDA)

The IDA solution is added to each field and QC sample at the time of extraction, as described in Section 10.1. As described in Section 7, this solution consists of isotopically labeled analogs of the analytes of interest.

IDA recoveries are flagged if they are outside of the acceptance limits (70-130% for ^{13}C PFOA/PFOS and 25–150% for all other labeled PFAS). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to IDA recoveries being outside of the acceptance limits as long as the signal-to-noise ratio is greater than 10:1.

Evaluate data quality for usability, flag and submit a non-conformance memo for any analytes outside of the recovery criteria, and report if data is deemed not adversely effected.

Re-extraction of samples should be performed if the signal-to-noise for any IDA is less than 10:1 or if the IDA recoveries fall below 10%.

Re-extraction may be necessary under other circumstances when data quality has been determined to be adversely affected.

10.9 Troubleshooting:

Check the following items in case of calibration failures:

Evaluate the failure to determine whether it affects all of the compounds in the ICAL equally. If one ICAL point appears low or high, re-prep the curve and rerun, as the error was most likely prep-based. If only a subset of the analytes are affected, check the integration and chromatography to see if there are anomalies; if justifiable, correct the integration so it is consistent with the other ICAL levels.

If there are no peaks for all compounds or no peaks after a specific retention time, ensure that the HPLC pump is pumping properly; it may have shut down due to overpressure or has a leak. If the pump has shut down, confirm it is primed and replace the in-line filter. If the pressure climbs above expected levels, changing the guard column and even analytical column may be necessary. It's best to chase high pressure sources from the pump forward (ie the post-pump in-line filter, isolator column, post-autosampler in-line filter, guard column, analytical column and MSMS inlet. If the pump is still pumping, check the system pressure. If it is lower than expected, check for leaks. Start with all connections, then move on to pump seals, especially if there are wide variations in pressure when pumping the same solvents at the same flow rates. If the pump is still pumping and the pressure is normal, check to make sure the MSMS is still functioning properly. Most issues with the MSMS system will be noted by the instrument software.

If there are peaks for all analytes, evaluate the peak shapes by comparing them to the ICAL chromatography. If the peaks have changed (shorter and wider), a new guard column may improve peak shape and bring the system back into compliance. If a new column is necessary, a new ICAL will be needed.

Preventive and routine maintenance is described in the table below

HPLC/MS/MS Preventative Maintenance
As Needed: Change pump seals. Change in-line filters in autosampler (HPLC). Check/replace in-line frit if excessive pressure or poor performance. Replace column if no change following in-line frit change. Replace fused silica tube in ESI interface. Clean lenses. Clean skimmer. Ballast rough pump 30 minutes.
Daily (When in use) Check solvent reservoirs for sufficient level of solvent. Verify that pump is primed, operating pulse free. Check needle wash reservoir for sufficient solvent. Verify capillary heater temperature functioning. Verify vaporizer heater temperature. Verify rough pump oil levels. Verify turbo-pump functioning. Verify nitrogen pressure for auxiliary and sheath gasses. Verify that multiplier is functioning.

10.10 Sample Analysis

Place the field and QC samples in a sequence that begins with the calibration standards followed by the analysis of QC samples, field samples and continuing calibration verification standards (CCVs).

An example analytical sequence that includes initial calibration (ICAL) is provided below.

Injection Number	Lab Description
1	Primer 1
2	Primer 2
3	Primer 3
4	Primer 4
5	Blank
6	Calibration Level 1
7	Calibration Level 2
8	Calibration Level 3
9	Calibration Level 4 (ICIS)
10	Calibration Level 5
11	Calibration Level 6
12	ICB
13	ICV
14	T-PFOA
15	MB
16	LCS
17-26	(up to) 10 Field samples
27	CCV L4
28-37	(up to) 10 Field samples
38	MS
39	MSD
40	CCV L5
41	MB
42	LCS
43-52	(up to) 10 Field samples
53	CCV L4
54-63	(up to) 10 Field samples
65	MS
66	MSD
67	CCV L5

An example analytical sequence without ICAL:

Injection Number	Lab Description
1	Primer 1
2	Primer 2
3	Primer 3
4	Primer 4

5	CCB
6	CCVL (LOQV)
7	CCVIS (L4)
8	MB
9	LCS
10-19	(up to) 10 Field samples
20	CCV L5
21-30	(up to) 10 Field samples
31	MS
32	MSD
33	CCV L4
34	MB
35	LCS
36-45	(up to) 10 Field samples
46	CCV L5
47-56	(up to) 10 Field samples
57	MS
58	MSD
59	CCV L4

Enter the sample ID's into the data acquisition program in the order the samples were placed in the autosampler and initiate the analytical sequence.

11.0 <u>Corrective Action</u>

When an out-of-control situation occurs that is not delineated in this corrective action table or the corrective actions listed do not adequately address the circumstances, a Corrective Action Report (CAR) (NCM), etc., must be developed (see SOP BR-QA-016) and the analyst must use his/her best analytical judgment and available resources to determine the corrective action to be taken. The out-of-control situation may be caused by more than one variable. The analyst should seek the assistance of his/her immediate supervisor, QA manager or other experienced staff if they are uncertain of the cause of the out-of-control situation. The analysis must not be resumed until the source of the problem and an in-control status is re-established. All samples associated with the out-of-control situation must be reanalyzed after in-control status has been re-established or if authorization is received from the supervisor or QA Manager for release with data qualification.

12.0 <u>Calculations / Data Reduction</u>

12.1 Qualitative Identification

The data processing system identifies the target analytes by comparing the retention time of the peaks to the retention times of the initial calibration standards. The retention times of PFAS with labeled standards must be the same as that of the labeled IDA's to within 0.05 min. For PFAS with no labeled standards, the RT must be within $\pm$ 0.3 minutes of the ICV and CCV standards. *Note: The IS RT and native RT may be offset by 0.02 to 0.04 minutes.*

Quantitative Identification

The ICAL established in Section 10.7 is used to calculate concentrations for the extracts. The data processing system determines on-column concentration. Final results are calculated by the laboratory's LIMS information system (TALS).

Dilute and reanalyze samples whose results exceed the calibration range. The diluted analysis should result in a determination within the upper half of the calibration curve.

Check the results of samples analyzed immediately after high concentration samples (those with results above calibration range) for signs of carry-over. Reanalyze all samples suspected of carry -over.

12.2 Calculations

See Appendix C.

12.3 Data Review

Refer to laboratory SOP BR-QA-019 for additional instruction on the requirements for data review. The following sections summarize the general procedure as described in the data review SOP.

12.3.1 Primary Review

Review the chromatography and quantitation in the data processing system to confirm quantitative and qualitative identification of each target analyte. Perform and document manual integrations only if needed per the instructions in corporate policy CA-Q-S-002, Acceptable Manual Integration Practices.

Upload the data files to TALS and process the batch. Enter job information into the batch editor and add the standards and reagent additions to the worksheet, if necessary. Review the results against acceptance criteria. If acceptance criteria are not met, perform corrective action or make arrangements for corrective action with another analyst.

Set results to primary, secondary, acceptable or rejected. Set results to be reported to a status of primary and secondary. Set results that meet criteria but will not be reported to acceptable. Set results that do not meet criteria to rejected, to prevent inadvertent reporting of data.

Verify that all appropriate QC were performed and acceptable. If insufficient volume is received (MS, MSD, FRB, etc…) document in an NCM. Record all instances where acceptance criteria are not met in a nonconformance memo (NCM).

Verify that all project requirements or program specific requirements were followed. If not, immediately notify the project manager to determine an appropriate course of action. Record decisions made in the data review checklist.

Set the batch to 1st level review. Complete the data review checklist and make arrangements for secondary review by a peer analyst.

12.3.2 Secondary Data Review (Performed by Peer Analyst)

Record review using the data review checklist.

Verify that all project requirements or program specific requirements were followed. If not, consult with the primary analyst to determine cause. Any decisions made should be recorded on the data review checklist and retained as part of the analytical record.

Review the TALS batch editor to verify ancillary information for the work performed is filled in.

Verify that that the procedures in this SOP were followed. If discrepancy between the SOP and the analytical record is found, consult with the primary analyst to determine the source of the discrepancy. Resolve the discrepancy and verify any modifications to the SOP are properly documented and were approved by laboratory management. Record all SOP deviations in an NCM.

Spot-check ~15% of samples in the batch to verify quantitative and qualitative identification.

If manual integrations were performed:

- Review each manual integration to verify that the integration is consistent and compliant with the requirements specified in SOP CA-Q-S-002.
- Check to ensure an appropriate technical reason code is provided for each manual integration. Acceptable technical reason codes are provided in SOP CA-Q-S-002.
- If an error is suspected, the reviewer must consult with the analyst that performed the integration to determine if a correction is necessary. Input from the Technical Manager (TM), Department Manager (DM), or QA Manager (QAM) may be sought as necessary. **The reviewer may not reintegrate except in those circumstances approved by laboratory management**, such as when the analyst that performed the integration is on vacation. If re-integration is performed by the reviewer, the reviewer is now considered the “primary analyst” and the re-integration is subject to the same review and documentation requirements as the original integration.

Verify acceptance criteria were met. If not, verify that corrective actions were performed and the nonconformance was documented with an NCM. Review the NCM to verify the form is filled out and the requisite information has been included in the internal comments tab. If corrective action was not performed and the failure not documented, consult with the primary analyst to determine cause. Consult with the primary analyst and department management to determine what actions should be taken, then follow-through with the decision made.

Run the QC checker and fix any problems found. Run and review the deliverable for gross error such as missing data. Fix any problems found.

When review is complete set the method chain to lab complete. Complete the data review checklist and forward associated paperwork to report/project management.

12.3.3 Data Reporting & Record Retention

The specifications for data reporting are set by the project manager and are performed by TALS using the formatter selected by the PM. The type of deliverable is also set by the PM based on various deliverable options in the TALS system. The formatters and deliverables are programmed into TALS by corporate IT staff and cannot be modified locally.

The following sections describe the default reporting scheme set for this method in TALS:

Data is retained, managed and archived as specified in laboratory SOP BR-QA-014 Laboratory Records.

13.0 Method Performance

13.1 Method Detection Limit Study (MDL)

The method detection limit (MDL) is the lowest concentration that can be detected for a given analytical method and sample matrix with 99% confidence that the analyte is present. MDLs reflect a calculated (statistical) value determined under ideal laboratory conditions in a clean matrix, and may not be achievable in all environmental matrices. An initial method detection limit study is performed in accordance with SOP BR-QA-005. The laboratory maintains MDL studies for analyses performed; these are verified at least annually unless method or program requirements require a greater frequency.

13.2 Demonstration of Capabilities

All personnel are required to perform an initial demonstration of proficiency (IDOC) on the instrument they will be using for analysis prior to testing samples. On-going proficiency must be demonstrated annually. IDOCs and on-going proficiency demonstrations are conducted as follows.

13.2.1 Four aliquots of the QC check sample are analyzed using the same procedures used to analyze samples, including sample preparation. The concentration of the QC check sample can be equivalent to a mid- level calibration.

13.2.2 Calculate the average recovery and standard deviation of the recovery for each analyte of interest.

13.2.3 If any analyte does not meet the acceptance criteria, the test must be repeated. Only those analytes that did not meet criteria in the first test need to be evaluated. TNI 2016 requires consecutive passing results. Repeated failure for any analyte indicates the need for the laboratory to evaluate the analytical procedure and take corrective action.

13.2.4 Until the IDOC is approved by the QA Manager (or designee); the trainer and trainee must be identified in the batch record.

13.3 Training Requirements

The Group Leader is responsible for ensuring that this procedure is performed by an associate who has been properly trained in its use and has the required experience. A new analyst must be working under documented supervision prior to approval of the IDOC. Documentation that a new analyst is performing under supervision must be entered into the batch record (View Batch Information) until that analyst's IDOC has been approved by the QA Manager (or designee). See requirements for demonstration of analyst proficiency in SOP BR-QA-011.

14.0 Pollution Control

It is Test America's policy to evaluate each method and look for opportunities to minimize waste generated (i.e., examine recycling options, ordering chemicals based on quantity needed, preparation of reagents based on anticipated usage and reagent stability). Employees must abide by the policies in Section 13 of the Corporate Safety Manual for "Waste Management and Pollution Prevention."

15.0 Waste Management

Waste management practices are conducted consistent with all applicable rules and regulations. Excess reagents, samples and method process wastes are disposed of in an accepted manner. Waste description rules and land disposal restrictions are followed. Waste disposal procedures are incorporated by reference to BR-EH-001. The following waste streams are produced when this method is carried out.

- Vials containing sample extracts: Satellite Container: 30 gallon poly barrel located under GC-Semi prep hood.
- Solvent Waste: Satellite Container: 5 gallon poly carboy located under LCMSMS.

16.0 References / Cross References

- TestAmerica Sacramento SOP WS-DW-0005r1.1, "Per- and Polyfluorinated Substances (PFAS) in Potable Water [Method ISO 25101:2009]".
- Method ISO 25101, "Water quality – Determination of perfluorooctanesulfonate (PFOS) and perfluorooctanoate (PFOA) – Method for unfiltered samples using solid phase extraction and liquid chromatography/mass spectrometry", First Edition, 2009-03-01, International Organization for Standardization, Technical Committee ISO/TC 147, Water Quality, Subcommittee SC 2, Physical, chemical and biochemical methods.
- Laboratory SOP BR-QA-005 *Procedures for the Determination of Limits of Detection (LOD), Limits of Quantitation (LOQ) and Reporting Limits (RL).*
- Laboratory SOP BR-QA-011 *Employee Training*
- Laboratory SOP BR-EH-001 *Hazardous Waste*
- Laboratory SOP BR-QA-014 *Laboratory Records*
- Corporate SOP CA-Q-S-002 *Manual Integration*
- Laboratory Quality Assurance Manual (QAM)

17.0 Method Modifications

Modification Number	Method Reference	Modification & Technical Justification
1	Section 7.2	Method 25101 specifies that the values reported for PFOA and PFOS shall be the linear isomer only. In keeping with the dictates of USEPA 537 and other US conventions, the laboratory reports both the branched (when present) and linear isomers as a single value for these compounds.
2	Section 10.1	Method 25101 specifies that 500mL of sample be extracted. The laboratory extracts 250mL of sample and has demonstrated the ability to produce the desired 2 ng/L reporting limit for PFOA and PFOS
3	Section 10.1	A different SPE cartridge, Waters OASIS WAX, is used for the extraction process. As a result, solvents and elution procedures are different.
4	Section 10.5	The HPLC Column, Eluents and gradient conditions have changed.
5	Section 10.5	The analyte list has expanded. The number of labeled analytes has also expanded to improve quantitation.

6	Section 10.7.1	The acceptance criteria for both the initial and continuing Calibration has changed due to the use of IDA and external standard quantitation.
7	Table 1	The reporting limits have changed to a consistent value.
8	Appendix B	Calibration levels have been changed so all levels have the same analyte concentration.

18.0 Attachments

- Table 1: Routine Compound List and LOQ
- Table 2: Primary Materials Used
- Table 3: QC Summary & Recommended Corrective Action
- Table 4: Control Limits
- Appendix A: Terms and Definitions
- Appendix B: Standard Preparation Tables
- Appendix C: Equations

19.0 Revision History

Rev 3.0

- Updated title page, signatures, and dates
- Section 1.1: Changed Fluorotelomer sulfonates (FTS) to acid forms.
- Section 11.0: Added corrective action requirement as it is a corporate requirement to include.
- Extended analyte list to 28 native compounds and 20 IDAs.
- Updated instrument profiles and operating procedures to include the Sciex 5500
- Updated spiking levels and calibration solutions in alignment with the Sciex 5500 capabilities which eliminates the need for extract concentration
- Removed all references to Waters instrumentation and extract concentration

Rev 2.0

- Extended analyte list to 21 native compounds and 18 IDAs.
- Altered concentration step in extract preparation by employing a reagent water keeper instead of concentrating to dryness.
- Incorporated use of internal standard for IDA recovery calculation.

Rev 1.0

- Updated title page, signatures, and dates
- Throughout: added analytes.
- Throughout: added note that TA Burlington is not certified for the additional analytes.
- Added statement of incomplete volume extraction procedure

Previous revisions are retained by the QA department.

Table 1: Routine Compound List & Limit of Quantitation (LOQ)

Compound Name	Abbreviation	CAS #	Water (ng/L)
Perfluoroalkylcarboxylic acids (PFCAs)			
Perfluoro-n-butanoic acid	PFBA	375-22-4	2.0
Perfluoro-n-pentanoic acid	PFPeA	2706-90-3	2.0
Perfluoro-n-hexanoic acid	PFHxA	307-24-4	2.0
Perfluoro-n-heptanoic acid	PFHpA	375-85-9	2.0
Perfluoro-n-octanoic acid	PFOA	335-67-1	2.0
Perfluoro-n-nonanoic acid	PFNA	375-95-1	2.0
Perfluoro-n-decanoic acid	PFDA	335-76-2	2.0
Perfluoro-n-undecanoic acid	PFUdA	2058-94-8	2.0
Perfluoro-n-dodecanoic acid	PFDoA	307-55-1	2.0
Perfluoro-n-tridecanoic acid	PFTrDA	72629-94-8	2.0
Perfluoro-n-tetradecanoic acid	PFTeDA	376-06-7	2.0
Perfluorinated sulfonic acids (PFSAs)			
Perfluoro-1-butanesulfonic acid	PFBS	375-73-5	2.0
Perfluoro-1-pentanesulfonic acid	PFPeS	2706-91-4	2.0
Perfluoro-1-hexanesulfonic acid	PFHxS	355-46-4	2.0
Perfluoro-1-heptanesulfonic acid	PFHpS	375-92-8	2.0
Perfluoro-1-octanesulfonic acid	PFOS	1763-23-1	2.0
Perfluoro-1-nonanesulfonic acid	PFNS	68259-12-1	2.0
Perfluoro-1-decanesulfonic acid	PFDS	335-77-3	2.0
Perfluorinated sulfonamides (FOSA)			
Perfluoro-1-octanesulfonamide	FOSA	754-91-6	2.0
Perfluorinated sulfonamidoacetic acids (FOSAA)			
N-ethylperfluoro-1-octanesulfonamidoacetic acid	EtFOSAA	2991-50-6	20.0
N-methylperfluoro-1-octanesulfonamidoacetic acid	MeFOSAA	2355-31-9	20.0
Fluorotelomer sulfonates (FTS)			
1H,1H,2H,2H-perfluorohexane sulfonate *(4:2)*	4:2 FTS	757124-72-4	20.0
1H,1H,2H,2H-perfluorooctane sulfonate *(6:2)*	6:2 FTS	27619-97-2	20.0
1H,1H,2H,2H-perfluorodecane sulfonate *(8:2)*	8:2 FTS	39108-34-4	20.0
Fluorinated Replacement Chemicals			
Hexafluoropropylene oxide dimer acid	HFPO-DA	13252-13-6	4.0
4,8-dioxa-3H-perfluorononanoic acid	DONA	919005-14-4	2.0
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	F53B Major (9Cl-PF3ONS)	756426-58-1	2.0
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	F53B Minor (11Cl-PF3OUdS)	763051-58-1	2.0

NOTE: The LOQ values may vary. The Water LOQ is based on a 250mL nominal sample volume.

Table 2: Primary Materials Used

Material[1]	Hazards	Exposure Limit[2]	Signs and Symptoms of Exposure
Acetic Acid (3-2-1)	Corrosive Poison Flammable	10 ppm-TWA 15 ppm-STEL	Contact with concentrated solution may cause serious damage to the skin and eyes. Inhalation of concentrated vapors may cause serious damage to the lining of the nose, throat, and lungs. Breathing difficulties may occur.
Ammonium Hydroxide (3-0-0)	Corrosive Poison	50 ppm-TWA	Severe irritant. Effects from inhalation of dust or mist vary from mild irritation to serious damage to the upper respiratory tract. Symptoms may include sneezing, sore throat or runny nose. Contact with skin can cause irritation or severe burns and scarring with greater exposures. Causes irritation of eyes, and with greater exposures it can cause burns that may result in permanent damage, including blindness. Brief exposure to 5000 PPM can be fatal.
Hexane (2-3-0)	Flammable Irritant	500 ppm-TWA	Inhalation of vapors irritates the respiratory tract. Overexposure may cause lightheadedness, nausea, headache, and blurred vision. Vapors may cause irritation to the skin and eyes.
Methanol (2-3-0)	Flammable Poison Irritant	200 ppm (TWA)	A slight irritant to the mucous membranes. Toxic effects exerted upon nervous system, particularly the optic nerve. Symptoms of overexposure may include headache, drowsiness and dizziness. Methyl alcohol is a defatting agent and may cause skin to become dry and cracked. Skin absorption can occur; symptoms may parallel inhalation exposure. Irritant to the eyes.

[1] Always add acid to water to prevent violent reactions.
[2] Exposure limit refers to the OSHA regulatory exposure limit.

Table 3: QC Summary, Acceptance Criteria and Recommended Corrective Action

QC Check	Minimum Frequency	Acceptance Criteria	Recommended Corrective Action
6-Point Calibration (5 point minimum for CF and Linear Regression) (ICAL)	Before sample analysis, when CCVs indicate calibration is no longer valid; after major instrument maintenance	CF = RSD $\leq$ 20% (IDA compounds) CF = RSD $\leq$ 25% (ISTD compounds) CF = RSD $\leq$ 50% (ESTD IDA standards) Linear Regression: r $\geq$ 0.995	Correct problem and repeat initial calibration.
IDA Response	Every injection contains the IDA analytes	Field samples: 70-130% PFOA/PFOS (Other IDA 25-150%) of ICAL RF (reportable if >10x S/N ratio and >10% ICAL RF)	Standard failures must be investigated to determine the cause of the failure. Recalibration may be required. Samples with recoveries outside acceptance limits must be evaluated for data usability. Re-extraction may be necessary if data quality has been adversely affected.
IS Response	Every injection contains the IS analyte	ICAL Standards: Area of individual points must not deviate by more than 50% of ICAL mean area response Samples following ICAL: 50-150% of ICAL mean response Ongoing CCV: 50-150% of ICAL mean response Post-CCV Samples: Area must be within 50-150% of most recent CCV	Standard failures must be investigated to determine the cause of the failure. Recalibration may be required. Sample failures may be matrix related and should be evaluated to determine if the data quality has been adversely affected.
Initial Calibration Blank (ICB)	Immediately following the ICAL	< RL for all target analytes	Determine source of interference/contamination, eliminate it and recalibrate.
Second Source Standard Verification (ICV)	Prior to the analysis of samples. Generally immediately after the ICB.	CF = 70-130% (IDA targets) CF = 50-150% (ISTD targets)	Correct problem and verify second source standard. If that fails, repeat calibration.
Continuing Calibration Verification (CCV)	Beginning of each analytical sequence, every ten field samples and at the end of each analytical sequence. Alternate between levels 3, 4 and 5.	CF = 70-130% (IDA targets) CF = 60-140% (ISTD targets) ^{13}C PFOA/PFOS 80-120% Other IDA 50-150%	Rerun any samples analyzed before and after the failing CCV. Take corrective action; if subsequent CCV analyses fail, recalibrate instrument.
Continuing Calibration Verification-Low (CCVL)	Beginning of each analytical sequence that is not preceded by an ICAL to show LOQ is still valid.	CF = 50-150% (IDA targets) CF = 50-150% (ISTD targets) IDA 50-150%	Stop sample acquisition. Take corrective action; if subsequent CCV analyses fail, recalibrate instrument.
Method Blank	One per extraction batch of 20 or fewer samples	Routine: < RL for all target analytes	Reprocess MB and associated samples if any target analyte in the MB is at or above the RL, greater than 1/10 the amount detected in any sample or 1/10 the regulatory limit, whichever is greater. If the target is not greater than the RL in the samples associated with an unacceptable method blank, the data may be reported with appropriate qualifiers. If insufficient sample is available to reprocess, report data with appropriate qualifiers.
Laboratory Control Sample	One per extraction batch of 20 or fewer samples	%R within control limits. See Table 4	Reprep and reanalyze samples for failed analytes. If reanalysis is not possible due to insufficient

QC Check	Minimum Frequency	Acceptance Criteria	Recommended Corrective Action
			sample volume, report data with appropriate data qualifiers.
Matrix Spike / Matrix Spike Duplicate	One set per extraction batch when sufficient sample volume is provided or as requested per client	%R within control limits. See Table 4	Evaluate to determine if there is a matrix effect or analytical error. If analytical error, reanalyze or reprocess as appropriate.
Sample Duplicate	Per Client Request	RPD within control limits. See Table 4	Evaluate data to determine source for error. If analytical error is suspected, reanalyze or reprocess as appropriate.

Table 4: In-House LCS and MS/MSD Control Limits*

Analyte	In House Limits %R Water	RPD
Perfluorobutanoic acid (PFBA)	70-130	30
Perfluoropentanoic acid (PFPeA)	70-130	30
Perfluorobutanesulfonic acid (PFBS)	70-130	30
Perfluorohexanoic acid (PFHxA)	70-130	30
Perfluoropentanesulfonic acid (PFPeS)	70-130	30
Perfluoroheptanoic acid (PFHpA)	70-130	30
Perfluorohexanesulfonic acid (PFHxS)	70-130	30
Perfluorooctanoic acid (PFOA)	70-130	30
Perfluoroheptanesulfonic acid (PFHpS)	70-130	30
Perfluorononanoic acid (PFNA)	70-130	30
Perfluorooctanesulfonic acid (PFOS)	70-130	30
Perfluorodecanoic acid (PFDA)	70-130	30
Perfluorononanesulfonic acid (PFNS)	70-130	30
Perfluoroundecanoic acid (PFUdA)	70-130	30
Perfluorodecanesulfonic acid (PFDS)	70-130	30
Perfluorooctanesulfonamide (FOSA)	70-130	30
Perfluorododecanoic acid (PFDoA)	70-130	30
Perfluorotridecanoic acid (PFTrDA)	70-130	30
Perfluorotetradecanoic acid (PFTeDA)	70-130	30
Sodium 1H,1H,2H,2H Perfluorooctanesulfonate (4:2FTS)	70-130	30
Sodium 1H,1H,2H,2H Perfluorooctanesulfonate (6:2FTS)	70-130	30
Sodium 1H,1H,2H,2H Perfluorodecanesulfonate (8:2FTS)	70-130	30
N-Methyl Perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	70-130	30
N-Ethyl Perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	70-130	30
Hexafluoropropylene oxide dimer acid	70-130	30
4,8-dioxa-3H-perfluorononanoic acid	70-130	30
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	70-130	30
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	70-130	30

**The limits in this table are those in effect as of the published date of this SOP. These are default limits that will be updated once enough data has been acquired to produce more representative limits. Current in-house limits are populated in the LIMS database. Contact a laboratory representative for the most current set of limits.*

Appendix A: Terms and Definitions

PFCAs: Perfluorocarboxylic acids
PFSAs: Perfluorinated sulfonic acids
FOSA: Perfluorinated sulfonamide
PFOA: Perfluorooctanoic acid

PFOS: Perfluorooctane sulfonate
PTFE: Polytetrafluoroethylene (e.g., Teflon®)
SPE: Solid phase extraction**.**
PP: Polypropylene
PE: Polyethylene
HDPE: High density polyethylene
AFFF: Aqueous Film Forming Foam
IDA: Isotope dilution analytes
Acceptance Criteria: specified limits placed on characteristics of an item, process or service defined in requirement documents.
Accuracy: the degree of agreement between an observed value and an accepted reference value. Accuracy includes a combination of random error (precision) and systematic error (bias) components which are due to sampling and analytical operations; a data quality indicator.
Analyte: The specific chemicals or components for which a sample is analyzed. (EPA Risk Assessment Guide for Superfund, OSHA Glossary).
Batch: environmental samples that are prepared and/or analyzed together with the same process, using the same lot(s) of reagents. A preparation/digestion batch is composed of one to 20 environmental samples of similar matrix, meeting the above criteria. An analytical batch is composed of prepared environmental samples (extracts, digestates and concentrates), which are analyzed together as a group.
Calibration: a set of operations that establish, under specified conditions, the relationship between values of quantities indicated by a measuring instrument or measuring system, or values represented by a material measure or a reference material and the corresponding values realized by the standards.
Calibration Curve: the graphical relationship between the known values or a series of calibration standards and their instrument response.
Calibration Standard: A substance or reference used to calibrate an instrument.
Continuing Calibration Verification (CCV): a single or multi-parameter calibration standard used to verify the stability of the method over time. Usually from the same source as the calibration curve.
Corrective Action: the action taken to eliminate the cause of an existing nonconformity, defect or other undesirable occurrence in order to prevent recurrence.
Data Qualifier: a letter designation or symbol appended to an analytical result used to convey information to the data user. (Laboratory)
Demonstration of Capability (DOC): procedure to establish the ability to generate acceptable accuracy and precision.
Holding Time: the maximum time that a sample may be held before preparation and/or analysis as promulgated by regulation or as specified in a test method.
Initial Calibration: Analysis of analytical standards for a series of different specified concentrations used to define the quantitative response, linearity and dynamic range of the instrument to target analytes.
Intermediate Standard: a solution made from one or more stock standards at a concentration between the stock and working standard. Intermediate standards may be certified stock standard solutions purchased from a vendor and are also known as secondary standards.

Laboratory Control Sample (LCS): a blank matrix spiked with a known amount of analyte(s) processed simultaneously with and under the same conditions as samples through all steps of the procedure.
Matrix Spike (MS): a field sample to which a known amount of target analyte(s) is added.
Matrix Spike Duplicate (MSD): a second replicate matrix spike
Method Blank (MB): a blank matrix processed simultaneously with and under the same conditions as samples through all steps of the procedure. Also known as the preparation blank (PB).

Method Detection Limit (MDL): the minimum amount of a substance that can be measured with a specified degree of confidence that the amount is greater than zero using a specific measurement system. The MDL is a statistical estimation at a specified confidence interval of the concentration at which relative uncertainty is ±100%. The MDL represents a range where qualitative detection occurs. Quantitative results are only produced in this range and qualified with the proper data reporting flag when a project requires this type of data reporting.
Non-conformance: an indication, judgment, or state of not having met the requirements of the relevant specification, contract or regulation.
Precision: the degree to which a set of observations or measurements of the same property, obtained under similar conditions, conform to themselves.
Preservation: refrigeration and/or reagents added at the time of sample collection to maintain the chemical, physical, and/or biological integrity of the sample.
Quality Control Sample (QC): a sample used to assess the performance of all or a portion of the measurement system.
Reporting Limit (RL): the level to which data is reported for a specific test method and/or sample.
Stock Standard: a solution made with one or more neat standards usually with a high concentration. Also known as a primary standard. Stock standards may be certified solutions purchased from a vendor.
Surrogate: a substance with properties that mimic the analyte of interest but that are unlikely to be found in environmental samples.

Appendix B: Standard Preparation Tables

The standard formulations contained in this appendix are recommended and are subject to change. If the concentration of the stock standard is different than those noted in this table, adjust the standard preparation formulation accordingly. Unless otherwise specified, prepare the standard solutions in acetonitrile using Class A volumetric glassware and Hamilton syringes. Unless otherwise specified for a standard solution, assign an expiration date of 6 months from date of preparation unless the parent standard expires sooner in which case use the earliest expiration date. See laboratory SOP BR-QA-002 *Standard Preparation* for further guidance. For stock standards solutions made from neat material assign an expiration date of 2 years from the date of formulation.

Stock Standard Solutions

PFAS LCS/Matrix Spike Solution 1000 ng/mL

Parent Standard	Vendor	Component	Stock Standard Conc (µg/mL)	Volume Added (µL)	Final Volume (mL) and Final Conc (ng/mL)	
PFBA	Wellington Laboratories Code: PFBA	Perfluorobutanoic acid	50	200	10	1000
PFPeA	Wellington Laboratories Code: PFPeA	Perfluoropentanoic acid	50	200		1000
PFBS	Wellington Laboratories Code: L-PFBS	Perfluorobutanesulfonic acid	44.2	200		884
PFHxA	Wellington Laboratories Code: PFHxA	Perfluorohexanoic acid	50	200		1000
PFPeS	Wellington Laboratories Code: L-PFPeS	Perfluoropentanesulfonic acid	46.9	200		938
PFHpA	Wellington Laboratories Code: PFHpA	Perfluoroheptanoic acid	50	200		1000
PFHxS	Wellington Laboratories Code: br-PFHxSK	Perfluorohexanesulfonic acid	45.5	200		910
PFOA	Wellington Laboratories Code: PFOA	Perfluorooctanoic acid	50	200		1000
PFHpS	Wellington Laboratories Code: L-PFHpS	Perfluoroheptanesulfonic acid	47.6	200		952
PFNA	Wellington Laboratories Code: PFNA	Perfluorononanoic acid	50	200		1000
PFOS	Wellington Laboratories Code: br-PFOSK	Perfluorooctanesulfonic acid	46.4	200		928
PFDA	Wellington Laboratories Code: PFDA	Perfluorodecanoic acid	50	200		1000
PFNS	Wellington Laboratories Code: L-PFNS	Perfluorononanesulfonic acid	48.0	200		960
PFUdA	Wellington Laboratories Code: PFUdA	Perfluoroundecanoic acid	50	200		1000
PFDS	Wellington Laboratories Code: L-PFDS	Perfluorodecanesulfonic acid	48.2	200		964
FOSA	Wellington Laboratories Code: FOSA-I	Perfluorooctane sulfonamide	50	200		1000
PFDoA	Wellington Laboratories Code: PFDoA	Perfluorododecanoic acid	50	200		1000
PFTrDA	Wellington Laboratories Code: PFTrDA	Perfluorotridecanoic acid	50	200		1000
PFTeDA	Wellington Laboratories Code: PFTeDA	Perfluorotetradecanoic acid	50	200		1000
4:2FTS	Wellington Laboratories Code: 4:2FTS	1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	46.7	200		934
6:2FTS	Wellington Laboratories Code: 6:2FTS	1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4	200		948
8:2FTS	Wellington Laboratories Code: 8:2FTS	1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	47.9	200		958
NMeFOSAA	Wellington Laboratories Code: br-NMeFOSAA	N-methyl Perfluorooctane sulfonamidoacetic acid	50	200		1000
NEtFOSAA	Wellington Laboratories Code: br-NEtFOSAA	N-ethyl Perfluorooctane sulfonamidoacetic acid	50	200		1000
HFPO-DA	Wellington Laboratories Code: HFPO-DA	Hexafluoropropylene oxide dimer acid	50	200		1000
DONA	Wellington Laboratories Code: NaDONA	4,8-dioxa-3H-perfluorononanoic acid	47.1	200		942
9Cl-PF3ONS	Wellington Laboratories Code: 9Cl-PF3ONS	9-Chlorohexadecafluoro-3-oxanone-1-sulfonate	46.6	200		932

11Cl-PF3OUdS	Wellington Laboratories Code: 11Cl-PF3OUdS	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	47.1	200		942

Solvent: Methanol

PFAS-IDA Solution (Surrogate) 1000 ng/mL

Parent Standard	Vendor	Component	Stock Standard Conc (µg/mL)	Volume Added (µL)	Final Volume (mL)	Final Conc (ng/mL)
13C4 PFBA	Wellington Laboratories Code: MPFBA	$^{13}C_4$-Perfluorobutanoic acid	50	200	10	1000
13C5-PFPeA	Wellington Laboratories Code: MPFPeA	$^{13}C_5$-Perfluoropentanoic acid	50	200		1000
13C3-PFBS	Wellington Laboratories Code: M3PFBS	$^{13}C_3$-Perfluorobutanesulfonic acid	46.5	200		930
13C2 PFHxA	Wellington Laboratories Code: MPFHxA	$^{13}C_2$-Perfluorohexanoic acid	50	200		1000
13C4 PFHpA	Wellington Laboratories Code: M4PFHpA	$^{13}C_4$-Perfluoroheptanoic acid	50	200		1000
18O2 PFHxS	Wellington Laboratories Code: MPFHxS	$^{18}O_2$-Perfluorohexanesulfonic acid	47.3	200		946
13C4 PFOA	Wellington Laboratories Code: MPFOA	$^{13}C_4$-Perfluorooctanoic acid	50.0	200		1000
13C5 PFNA	Wellington Laboratories Code: MPFNA	$^{13}C_5$-Perfluorononanoic acid	50.0	200		1000
13C4 PFOS	Wellington Laboratories Code: MPFOS	$^{13}C_4$-Perfluorooctanesulfonic acid	47.8	200		956
13C2 PFDA	Wellington Laboratories Code: MPFDA	$^{13}C_2$-Perfluorodecanoic acid	50.0	200		1000
13C8 FOSA	Wellington Laboratories Code: M8FOSA-I	$^{13}C_8$-Perfluorooctane sulfonamide	50.0	200		1000
13C2 PFUdA	Wellington Laboratories Code: MPFUdA	$^{13}C_2$-Perfluoroundecanoic acid	50.0	200		1000
13C2 PFDoA	Wellington Laboratories Code: MPFDoA	$^{13}C_2$-Perfluorododecanoic acid	50.0	200		1000
13C2 PFTeDA	Wellington Laboratories Code: MPFTeDA	$^{13}C_2$-Perfluorotetradecanoic acid	50.0	200		1000
M2-4:2FTS	Wellington Laboratories Code: M2-4:2FTS	Sodium 1H,1H,2H,2H-perfluoro-1-[1,2-$^{13}C_2$]-hexane sulfonate (4:2)	46.7	200		934
M2-6:2FTS	Wellington Laboratories Code: M2-6:2FTS	Sodium 1H,1H,2H,2H-perfluoro-1-[1,2-$^{13}C_2$]-octane sulfonate (6:2)	47.5	200		950
M2-8:2FTS	Wellington Laboratories Code: M2-8:2FTS	Sodium 1H,1H,2H,2H-perfluoro-1-[1,2-$^{13}C_2$]-decane sulfonate (8:2)	47.9	200		958
d3-NMeFOSAA	Wellington Laboratories Code: d3-M-MeFOSAA	N-methyl-d_3-perfluoro-1-octane sulfonamidoacetic acid	50.0	200		1000
d5-NEtFOSAA	Wellington Laboratories Code: d5-M-EtFOSAA	N-ethyl-d_5-perfluoro-1-octane sulfonamidoacetic acid	50.0	200		1000
M3HFPO-DA	Wellington Laboratories Code: M3HFPO-DA	$^{13}C_3$-Hexafluoropropylene oxide dimer acid	50.0	200		1000

PFAS Internal Standard Solution 5000 ng/mL

Parent Standard	Vendor	Component	Stock Standard Conc (µg/mL)	Volume Added (µL)	Final Volume (mL)	Final Conc (ng/mL)
13C2 PFOA	Wellington Laboratories Code: M2PFOA	$^{13}C_2$-Perfluorooctanoic acid	50.0	400	4	5000

Solvent: Methanol

PFAS Internal Standard Spiking Solution 2500 ng/mL

Parent Standard	Vendor	Component	Stock Standard Conc (µg/mL)	Volume Added (µL)	Final Volume (mL)	Final Conc (ng/mL)
13C2 PFOA	Wellington Laboratories Code: M2PFOA	$^{13}C_2$-Perfluorooctanoic acid	50.0	200	4	2500

Solvent: Methanol

PFAS-IDA-IS Calibration Standards Level 1-Level 6 for the Analysis of Non-Concentrated Extracts

ICAL Level	Vol of 1ppm PFAS LCS/Matrix Spike (µL)	Vol of 100ppb Interm ICAL Solution (µL)	Nominal Conc of PFAS (ng/mL)	Vol of PFAS-IDA Solution (µL)	Conc of IDA (ng/mL)	Vol of 2.5ppm PFAS-IS SpikingSolution (µL)	Conc of IS (ng/mL)	Vol of 80/20 MeOH/H2O (µL)	Final Vol (mL)
1		2	0.050	10	2.5	4	2.5	3988	4.0
2		2	0.10	5	2.5	2	2.5	1993	2.0
3		10	0.50	5	2.5	2	2.5	1985	2.0
4		40	1.0	10	2.5	4	2.5	3950	4.0
5	10		2.5	10	2.5	4	2.5	3980	4.0
6	20		10	5	2.5	2	2.5	1975	2.0

The solvent is 80/20 Methanol/Water.

Appendix C: Equations

Initial Calibration Curve Evaluation:

The linear curve uses the following function:

Equation 1

$$y = bx + c$$

Where:

$$y = \frac{\text{Area (analyte)}}{\text{Area (IS)}} \times \text{Concentration (IS)}$$

x = concentration
b = slope
c = intercept

The quadratic curve uses the following function:

Equation 2

$$y = ax^2 + bx + c$$

Where y, x, b, and c are the same as above, and a = curvature.

The external standard method uses the following equation:

Equation 3

$$ResponseFactor = \frac{Peak\ Area}{Concentration\ of\ Solution(ng/mL)}$$

Equation 4

$$\text{Concentration, ng/mL} = \frac{y - c}{b}$$

Equation 5

$$\text{Concentration, ng/mL} = \frac{-b + \sqrt{b^2 - 4a(c - y)}}{2a}$$

Where:

$$y = \frac{\text{Area (analyte)}}{\text{Area (IS)}} \times \text{Concentration (IS)}$$

x = concentration
a = curvature
b = slope
c = intercept

Water Sample Result Calculation:

Equation 6

$$\text{Concentration, ng/L} = \frac{C_{ex} V_t}{V_o}$$

Where:

C_{ex} = Concentration measured in sample extract (ng/mL)

V_t = Volume of total extract (mL)
V_o = Volume of water extracted (L)

Soil Sample Result Calculation:

Equation 7

$$\text{Concentration}, ng/g = \frac{C_{ex}V_t}{W_s D}$$

Where ng/g = µg/kg and:

C_{ex} = Concentration measured in sample extract (ng/mL)
V_t = Volume of total extract (mL)
W_s = Weight of sample extracted (g)
D = Fraction of dry solids, which is calculated as follows:

$$\frac{100 - \%\,\text{moisture in sample}}{100}$$ (for dry weight result)

IDA Recovery Calculation:

Equation 8

$$\%\,Recovery = \frac{A_t Q_{is}}{A_{is} Q_t RRF_{IDA}} X 100$$

Where ng/g = µg/kg and:

RF_{IDA} = Response Factor for IDA compound
A_t = Area response for IDA compound
A_{IS} = Area Response for IS compound
Q_{IS} = Amount of IS added
Q_t = Amount of IDA added

Calibration Factor (CF_x) = $\dfrac{\text{Peak area or height}_{(x)}}{\text{Standard concentration}_{(\mu g/L)}}$

Mean Calibration Factor ($\overline{CF}$) = $\dfrac{\sum_{i=1}^{n} CF_i}{n}$

where: n = number of calibration levels

Standard Deviation of the Calibration Factor (SD) = $\sqrt{\dfrac{\sum_{i=1}^{n}\left(CF_i - \overline{CF}\right)^2}{n-1}}$

where: n = number of calibration levels

Percent Relative Standard Deviation (RSD) of the Calibration Factor =

$$\frac{SD}{\overline{CF}} \times 100\%$$

Percent Difference (%D) = $\frac{CF_v - \overline{CF}}{\overline{CF}} \times 100\%$

where: CF_v = Calibration Factor from the Continuing Calibration Verification (CCV)

Percent Drift = $\frac{\text{Calculated Concentration} - \text{Theoretical Concentration}}{\text{Theoretical Concentration}} \times 100\%$

Percent Recovery (%R) = $\frac{C_s}{C_n} \times 100\%$

where: C_s = Concentration of the Spiked Field or QC Sample
C_n = Nominal Concentration of Spike Added

Percent Recovery (%R) for MS/MSD = $\frac{C_s - C_u}{C_n} \times 100\%$

where: C_s = Concentration of the Spiked Sample
C_u = Concentration of the Unspiked Sample
C_n = Nominal Concentration of Spike Added

Relative Percent Difference (%RPD) = $\frac{|C_1 - C_2|}{\left(\frac{C_1 + C_2}{2}\right)} \times 100\%$

where: C_1 = Measured Concentration of First Sample
C_2 = Measured Concentration of Second Sample

Sample Concentration

Extract

$$C_{extract}\ (\mu g/L) = \frac{\text{Peak Area (or Height)}}{\overline{CF}}$$

Note: The concentrations of the 3-5 peaks chosen for quantificaton is calculated and the average is then taken for final calculation.

Solid

$$C_{sample}\ (ug/Kg) = C_{extract}\ (ug/L) \times \frac{\text{extract volume (L)}}{\text{sample weight (Kg)}} \times \frac{100}{\%\ \text{solids}} \times DF$$

Title: Per- and Poly-fluorinated Substances (PFAS) in Water, Soils, Sediments and Tissue

[Method 537 (Modified), PFAS by LCMSMS]

Approvals (Signature):

Don Dawicki Laboratory Director	Kristine Dusablon Quality Assurance Manager
Matthew Kirk Operations Manager / EHS Coordinator	Mark Fausel Department Supervisor

Facility Distribution No. Electronic **Distributed To: Facility Intranet**

1.0 Scope and Application

This SOP describes the laboratory procedure for the preparation and analysis of per- and polyfluorinated substances using liquid chromatography/tandem mass spectrometry (LC/MS/MS).

Program specific requirements are not included in this SOP. The details of program specific requirements are specified in other laboratory work instructions relevant to the program.

1.1 Analytes, Matrices, and Reporting Limits

This procedure is amenable with water, soil, sediment and tissue sample matrices.
The list of target compounds that may be determined from this procedure is provided below. Table 1 presents the compounds along with their associated reporting limits (RL).

Compound Name	Abbreviation	CAS #
Perfluoroalkylcarboxylic acids (PFCAs)		
Perfluoro-n-butanoic acid (Perfluoro-n-butyric acid)	PFBA	375-22-4
Perfluoro-n-pentanoic acid	PFPeA	2706-90-3
Perfluoro-n-hexanoic acid	PFHxA	307-24-4
Perfluoro-n-heptanoic acid	PFHpA	375-85-9
Perfluoro-n-octanoic acid	PFOA	335-67-1
Perfluoro-n-nonanoic acid	PFNA	375-95-1
Perfluoro-n-decanoic acid	PFDA	335-76-2
Perfluoro-n-undecanoic acid	PFUdA (PFUnA)	2058-94-8
Perfluoro-n-dodecanoic acid	PFDoA	307-55-1
Perfluoro-n-tridecanoic acid	PFTrDA	72629-94-8
Perfluoro-n-tetradecanoic acid	PFTeDA (PFTA)	376-06-7
Perfluoro-n-hexadecanoic acid	PFHxDA	67905-19-5
Perfluoro-n-octadecanoic acid	PFODA	16517-11-6
Perfluorinated sulfonic acids (PFSAs)		
Perfluoro-1-butanesulfonic acid	PFBS	375-73-5
* Perfluoro-1-pentanesulfonic acid	PFPeS	2706-91-4
Perfluoro-1-hexanesulfonic acid	PFHxS	355-46-4
Perfluoro-1-heptanesulfonic acid	PFHpS	375-92-8
Perfluoro-1-octanesulfonic acid	PFOS	1763-23-1
* Perfluoro-1-nonanesulfonic acid	PFNS	68259-12-1
Perfluoro-1-decanesulfonic acid	PFDS	335-77-3
Perfluorododecanesulfonic acid	PFDoS	79780-39-5
Perfluorinated sulfonamides (FOSA)		
Perfluoro-1-octanesulfonamide	FOSA	754-91-6
Perfluorinated sulfonamidoacetic acids (FOSAA)		
N-ethylperfluoro-1-octanesulfonamidoacetic acid	EtFOSAA	2991-50-6
N-methylperfluoro-1-octanesulfonamidoacetic acid	MeFOSAA	2355-31-9
Fluorotelomer sulfonates (FTS)		
* 1H,1H,2H,2H-perfluorohexanesulfonic acid *(4:2)*	4:2 FTS	757124-72-4
1H,1H,2H,2H-perfluorooctanesulfonic acid *(6:2)*	6:2 FTS	27619-97-2

1H,1H,2H,2H-perfluorodecanesulfonic acid *(8:2)*	8:2 FTS	39108-34-4
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2)	10:2 FTS	120226-60-0
Fluorinated Replacement Chemicals		
Hexafluoropropylene oxide dimer acid	HFPO-DA	13252-13-6
4,8-dioxa-3H-perfluorononanoic acid	DONA	919005-14-4
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	F53B Major (9Cl-PF3ONS)	756426-58-1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	F53B Minor (11Cl-PF3OUdS)	763051-58-1

Abbreviations in parenthesis are the abbreviations listed in Method 537, where they differ from the abbreviation used by the laboratory's LIMS.
***Indicates the analyte is not certified in any state or program.**
Analytes with secondary certification in NJDEP can be found in Appendix D.

The working range of the method is listed below. The linear range can be extended by diluting the extracts.

Matrix	Nominal Sample Size	Reporting Limit	Working Range
Water	250 mL	2.0 ng/L - 20 ng/L	2.0 ng/L - 400 ng/L
Soil/Sediment	5 g	0.2 µg/Kg–2.0 µg/Kg	0.2 µg/Kg-40 µgKg
Tissue	1 g	1.0 µg/Kg–10 µg/Kg	1.0 µg/Kg–200 µg/Kg

On occasion clients may request modifications to this SOP. These modifications are handled following the procedures outlined in the Quality Assurance Manual.

2.0 <u>Summary of Method</u>

Water Samples: Water samples are extracted using a solid phase extraction (SPE) cartridge. PFAS are eluted from the cartridge with an [redacted] solution.

Soil/sediment/tissue samples are extracted with a [redacted] solution using a TCLP tumbler operating at [redacted] The mixture is centrifuged to reduce the amount of solid transferred when decanting the solvent. The solvent extract is exchanged to water using nitrogen blowdown, then the aqueous extract is extracted using a solid phase extraction (SPE) cartridge. PFAS are eluted from the cartridge with an ammonium hydroxide/methanol solution.

The final [redacted] extracts are analyzed by LC/MS/MS operated in electrospray (ESI) negative ion mode. PFAS are separated from other components on a C18 column with a solvent gradient program [redacted] and methanol.

An isotope dilution technique is employed with this method for the compounds of interest. The isotope dilution analytes (IDAs) consist of carbon-13 labeled analogs, oxygen-18 labeled analogs, or deuterated analogs of the compound of interest, and they are spiked into the samples at the time of extraction. This technique allows for the correction for analytical bias encountered when analyzing more chemically complex environmental samples. The isotopically labeled compounds are chemically similar to the compounds of concern and are therefore affected by sample-related interferences to the same extent as the compounds of concern. Compounds that do not have an identically labeled analog are quantified by the IDA method using a closely related labeled analog.

Quantitation by the internal standard method is employed for the IDA analytes/recoveries. Peak response is measured as the area of the peak.

This SOP is based on the following reference methods:

- US EPA, "Method 537 - Determination of Selected Perfluorinated alkyl acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometery (LC/MS/MS)", Version 1.1, September 2009.
- Method ISO 25101, "Water quality – Determination of perfluorooctanesulfonate (PFOS) and perfluorooctanoate (PFOA) – Method for unfiltered samples using solid phase extraction and liquid chromatography/mass spectrometry", First Edition, 2009-03-01, International Organization for Standardization, Technical Committee ISO/TC 147, Water Quality, Subcommittee SC 2, Physical, chemical and biochemical methods.

If the laboratory's SOP is modified from the reference method, a list of method modifications along with technical justification may be found in Section 16. Modifications to this SOP may be applied on a project specific basis to meet project data quality objectives. Project specific modifications are documented in the project record.

3.0 Definitions

Refer to the Laboratory's Quality Assurance Manual (QAM) for the Glossary of Terms, Definitions and Acronyms except as follows.

Definitions of terms used in this SOP may be found in Appendix A.

4.0 Interferences

PFAS have been used in a wide variety of manufacturing processes, and laboratory supplies should be considered potentially contaminated until they have been tested and shown to be otherwise. The materials and supplies used during the method validation process have been tested and shown to be clean. These items are listed below in Section 6.

To avoid contamination of samples, standards are prepared in a ventilation hood in an area separate from where samples are extracted.

PTFE products can be a source of PFOA contamination. The use of PTFE in the procedure should be avoided or at least thoroughly tested before use. Polypropylene (PP) or polyethylene (PE, HDPE) products may be used in place of PTFE products to minimize PFOA contamination.

Standards and samples are injected from polypropylene autosampler vials with polyethylene screw caps once. Multiple injections may be performed on Primers when conditioning the instrument for analysis.

Random evaporation losses have been observed with the polyethylene caps causing high IDA recovery after the vial was punctured and sample re-injected. For this reason, it is best to inject standards and samples once in the analytical sequence.

Teflon-lined screw caps have detected PFAS at low concentrations. Repeated injection from the same Teflon-lined screw cap have detected PFNA at increasing concentration as each repeated injection was performed, therefore, it is best to use polyethylene screw caps.

Volumetric glassware and syringes are difficult to clean after being used for solutions containing high levels of PFAS. These items should be labeled for use only with similarly concentrated solutions or verified clean prior to re-use. To the extent possible, disposable labware is used.

Both branched and linear isomers of PFOS, PFOA, PFHxS, PFBS, EtFOSAA and MeFOSAA can potentially be found in the environment, based upon scientific literature. If multiple isomers are present for one of these PFAS, these adjacent peaks are either completely resolved or not resolved but with a profound deflection that can be resolved during peak integration. The later of the peaks matches the retention time of the single labeled PFAS peak. In general, earlier peaks are branched isomers and are not a result of peak splitting, and all the chromatographic peaks observed in the standard and/or sample must be integrated and the areas included.

When reference standards of technical mixtures of specific PFAS area available, they should be used to ensure that all appropriate peaks are included during peak integration (at this time, only PFOS, PFOA, PFHxS, EtFOSAA and MeFOSAA are available as technical mixtures). Refer to Section 7, Reagents, for the available technical mixtures utilized by this SOP.

In an attempt to reduce PFOS bias, it is required that m/z 449>80 transition be used as the quantitation transition.

Per the Certificate of Analysis for labeled perfluorohexadecanoic acid (13C2-PFHxDA) produced by Wellington Laboratories, the stock standard contains roughly 0.3% of native perfluorohexadecanoic acid. The laboratory utilizes a weighted linear regression that is not forced through the origin for the calibration of native perfluorohexadecanoic acid to account for this contribution from its labeled IDA.

5.0 Safety

Employees must abide by the policies and procedures in the Corporate Environmental Health and Safety Manual (CW-E-M-001), Radiation Safety Manual and this document. This procedure may involve hazardous material, operations and equipment. This SOP does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of the method to follow appropriate safety, waste disposal and health practices under the assumption that all samples and reagents are potentially hazardous. Safety glasses, gloves, lab coats and closed-toe, nonabsorbent shoes are a minimum.

5.1 Specific Safety Concerns or Requirements

Preliminary toxicity studies indicate that PFAS could have significant toxic effects. In the interest of keeping exposure levels as low as reasonably achievable, PFAS must be handled in the laboratory as hazardous and toxic chemicals.

Exercise caution when using syringes with attached filter disc assemblies. Application of excessive force has, upon occasion, caused a filter disc to burst during the process.

Laboratory procedures such as the use of pipets and transferring of extracts represent a significant potential for repetitive motion or other ergonomic injuries. Laboratory associates performing these procedures are in the best position to realize when they are at risk for these types of injuries. Whenever a situation is found in which an employee is performing the same repetitive motion, the employee shall immediately bring this to the attention of their supervisor, manager or the EH&S staff. The task will be analyzed to determine a better means of accomplishing it.

Eye protection that satisfies ANSI Z87.1 (as per the Eurofins TestAmerica Corporate Safety Manual), a laboratory coat and nitrile gloves must be worn while handling samples, standards, solvents and reagents. Disposable gloves that have been contaminated will be removed and discarded; other gloves will be cleaned immediately.

Perfluorocarboxylic acids are acids and are not compatible with strong bases.

The use of vacuum systems presents the risk of imploding glassware. All glassware used during vacuum operations must be thoroughly inspected prior to each use. Glass that is chipped, scratched, cracked, rubbed or marred in any manner must not be used under vacuum. It must be removed from service and replaced.

The HPLC and MS/MS have areas of high voltage. Depending on the type of work involved, the instrument should be turned off or disconnected from its source of power prior to extensive maintenance.

5.2 Primary Materials Used

Table 2 lists those materials used in this procedure that have a serious or significant hazard rating along with the exposure limits and primary hazards associated with that material as identified in the SDS. **NOTE: This list does not include all materials used in the method.** A complete list of materials used in the method can be found in the reagents and materials section. Employees must review the information in the SDS for each material before using it for the first time or when there are major changes to the SDS.

6.0 Equipment and Supplies

Catalog numbers listed in this SOP are subject to change at the discretion of the vendor. Analysts are cautioned to be sure equipment used meets the specification of this SOP.

6.1 Miscellaneous

- 15 mL polypropylene test tubes with screw caps, Fisherbrand 05-539-5 or equivalent.
- 250-mL HDPE wide-mouth bottles with screw caps (ESS 0250-1901-).
- Analytical balance capable of weighing to the nearest 0.01g, and checked for accuracy each day it is used in accordance with BR-GT-008.
- SPE Vacuum manifold, 24-port, [redacted] or equivalent.
- 1/8” OD Poly siphon lines, 30” long for sample loading.
- SPE Adaptor Caps for 1, 3, and 6 mL SPE Tubes, Polyethylene, [redacted], or equivalent.
- SPE Stopcocks, Polyethylene and Polypropylene, [redacted], or equivalent.
- Stainless steel solvent guide needles, [redacted], or equivalent.
- Heavy-Wall filter flask, Fisherbrand 4000mL, [redacted], or equivalent.
- TCLP tumbler, [redacted] for extraction of soil, sediment and tissue samples.
- Glass-Col ZipVap 24-port extract concentrator.

- Polypropylene Syringe, 10 mL with luer-lok or luer slip tips, [redacted] or equivalent.
- Volumetric Syringes, Class “A” (25µL, 50µL 100µL, and 500µL), Hamilton or equivalent.
- Automatic Pipettor, Finnpette, 1-5mL.
- Polypropylene autosampler vials, 300µL, 700µL and 2mL with polyethylene screw caps.
- Waters Oasis [redacted] or equivalent, for the extraction of PFAS from aqueous samples.
- Waters Oasis [redacted] or equivalent, for the cleanup of soils.
- 250mL Poly bottles containing 1.25g of Trizma Pre-Set Crystals, used for batch QC for samples received with Trizma preservation.
- 50mL graduated polypropylene centrifuge tubes. [redacted] or equivalent.
- 500ml Polyethylene wash bottle
- 4, 6, and 12ml Class A Volumetric Pipette
- Graphitized carbon (Envi-Carb™ or equivalent)
- Miscellaneous laboratory apparatus (beakers, test tubes, volumetric flasks, pipettes, etc). These should be disposable wherever possible, or marked and segregated for high-level versus low-level use.

6.2 Analytical System

Liquid Chromatography/Tandem Mass Spectrometer (LC/MS/MS)-as described below. The use of a column heater is required to maintain a stable temperature throughout the analytical run. Data is processed using Chrom Peak Review, version 2.1 or equivalent.

- SCIEX LC/MS/MS

  This system consists of a [redacted] HPLC interfaced with a [redacted]. The instrument control and data acquisition software is [redacted] [redacted]r equivalvent.

  [redacted] HPLC equipped with [redacted] and [redacted] or equivalent. [redacted] Column Oven.

  [redacted], or equivalent.

  PFAS Isolator column. [redacted]. These are plumbed between the pump’s mixing valve and the autosampler to minimized the HPLC-based PFAS background from injection-based PFAS.

7.0 <u>Reagents and Standards</u>

7.1 Reagents

All reagents must follow traceability guidelines found in SOP BR-QA-002.

- Ammonium acetate Stock Solution[redacted]
- [redacted] ammonium acetate eluent.. [redacted]

- Ammonium hydroxide, concentrated, JT Baker or equivalent.
- Ammonium hydroxide (NH_4OH) ([redacted] of Methanol. Volume prepared may be adjusted based on usage/need.
- Potassium hydroxide pellets, 87% purity, JT Baker P250-1 or equivalent.
- Potassium hydroxide (KOH), [redacted]
- Reagent Water, house reverse-osmosis reagent water ("PFAS-Free" via in-house testing).
- Hexane, Ultra-Resi Analyzed, JT Baker or equivalent.
- Methanol, HPLC JT Baker or equivalent.
- Sodium hydroxide, pellets, JT Baker or equivalent.
- Sodium hydroxide (NaOH), [redacted]
- Acetonitrile, Optima Grade, Fisherbrand or equivalent.

7.2 Standards

Purchase high purity, technical grade solids (96% or greater) or certified solutions from commercial vendors. Standard materials are verified compared to a second source material at the time of initial calibration. The solid stock material is stored at room temperature or as specified by the manufacturer or vendor. If solid material is used for preparing a standard, stock standard solutions are prepared from the solids and are stored at 4 ± 2°C. Stock standard solutions should be brought to room temperature before using. Standards are monitored for signs of degradation or evaporation. Standard solutions must be replaced at least annually from the date of preparation.

Per the Certificate of Analysis for labeled perfluorohexadecanoic acid (13C2-PFHxDA) produced by Wellington Laboratories, the stock standard contains ~0.3% of native PFHxDA. This equates to roughly 0.30 ng/L or 0.015 ug/Kg of PFHxDA expected in all samples and blanks.

As of this writing, only PFOS, PFOA, PFHxS, MeFOSAA and EtFOSAA are commercially available as technical mixtures. These reference standards of the technical mixtures for these specific PFAS are used to ensure that all appropriate peaks are included during peak integration.

PFBS, PFHxS, PFHpS, PFOS, PFDS, and many other PFAS are not available in the acid form, but rather as their corresponding salts, such as sodium or potassium. The standards are prepared and corrected for their salt content according to the equation below.

$$Mass_{acid} = \text{Measured } Mass_{salt} \times MW_{acid} / MW_{salt}$$

Where: MW_{acid} is the molecular weight of PFAA

MW_{salt} is the molecular weight of the purchased salt.

For example, the molecular weight of PFOS is 500.1295 and the molecular weight of NaPFOS is 523.1193. Therefore, the amount of NaPFOS used must be multiplied by a factor of 0.956 to account for the amount of PFOS in the final solution.

While PFAS standards commercially purchased are supplied in glass ampoules, all subsequent transfers or dilutions performed by the analyst must be prepared and stored in polypropylene or HDPE containers.

Prepare calibration and working standards by diluting a known volume of stock standard in an appropriate solvent to the final volume needed to achieve the desired concentration. The recommended formulation for each standard used in this procedure is provided in Appendix B along with the recommended source materials, expiration dates and storage conditions.

A technical (qualitative) grade PFOA standard is analyzed initially, then after initial calibration when a new column is installed or when significant changes are made to the HPLC parameters. This solution is used as a reference for the PFOA isomers (branched and linear) retention times.

A second source solution for PFAS is purchased from the same vendor; the PFC-MXB contains most of the target analytes in this mixture and is used as an ICV. For those compounds not available in this mixture or are not available from another vendor, a second analyst may prepare a second source standard from the same source as the ICAL to produce an ICV. The recommended concentration of the ICV standard should be in the mid-range of the calibration curve. The concentration may be adjusted if the initial calibration levels are changed or altered. The IDA and ISTD are added at a fixed concentration (2.5 ng/mL in extract).

7.3 Extraction Spiking Solutions

PFAS LCS/Matrix Spike Solution, 400 ng/mL

The PFAS spike solution is prepared by diluting all PFAS to produce a solution containing each PFAS at a concentration of 400 ng/mL in methanol.

PFAS High Level LCS Solution, 1000 ng/mL

The PFAS spike solution is prepared by diluting all PFAS to produce a solution containing each PFAS at a concentration of 1000 ng/mL in methanol.

PFAS Isotope Dilution Analyte Solution, 1000 ng/mL

The PFAS-IDA solution is prepared by diluting all labeled PFAS to produce a solution containing each IDA compound at a concentration of 1000 ng/mL in methanol.

Internal Standard Solution, $^{13}C_2$-PFOA, 2500 ng/mL

The internal standard solution is prepared by diluting the stock 50 µg/mL $^{13}C_2$-PFOA 20-fold in methanol.

See Appendix B for analyte lists and concentrations.

8.0 Sample Collection, Preservation, Shipment and Storage

The laboratory does not perform sample collection so these procedures are not included in this SOP, sampling requirements may be found in the published reference method.

Sample container, preservation techniques and holding times may vary and are dependent on sample matrix, method of choice, regulatory compliance, and/or specific contract or client requests. Listed below are the holding times and the references that include preservation requirements.

Matrix	Sample Container	Minimum Sample Size	Preservation	Holding Time[1]	Reference
Water	250 mL HDPE Bottle	250 mL	0-6°C, Trizma (5g/L) (if from a known	14 days from collection	Method 537

			chlorinated source)		
Soil/Sediment	4/8 oz HDPE wide-mouth container	100 g	0-6°C	14 days from collection	SW-846 Organic Methods
Extract	700 µL Polypropylene (PP) Vial with HDPE Screw cap	NA	0-6°C	40 days from extraction	NJDEP guidance

Extraction holding time is calculated from date of collection. Analytical holding time is determined from date of extraction.

Unless otherwise specified by client or regulatory program, after analysis, samples and extracts are retained for a minimum of 30 days after provision of the project report and then disposed of in accordance with applicable regulations.

9.0 Quality Control

Sample QC

When samples contain the preservative Trizma, all associated QC must be treated with the same preservative.

Initial Demonstration of Capability (IDOC) and Method Detection Limit (MDL) studies described in Section 12 must be acceptable before analysis of samples may begin.

Batches are defined at the sample preparation step. Batches should be kept together through the whole analytical process as far as possible, but it is not mandatory to analyze prepared extracts on the same instrument or in the same sequence.

The laboratory prepares the following sample QC for each extraction batch (an extraction batch is limited to a maximum of 20 field samples of the same matrix processed using the same procedure and reagents within the same time period):

QC Item	Frequency	Acceptance Criteria
Method Blank (MB)	1 per extraction batch	See Table 3
Laboratory Control Sample (LCS)	1 per extraction batch (Spiking Level rotates between Low, Medium and High on a batch-by-batch basis)	See Table 3
LCS Duplicate (LCSD)	1 per extraction batch whenever insufficient sample is available for an MS/MSD/DU	See Table 3
*Matrix Spike (MS/MSD)	1 per extraction batch (if sufficient sample is available)	See Table 3
*Sample Duplicate (SD)	DW-1 per extraction batch (if sufficient sample is available); Non-DW matrices- client request if sufficient sample is available	See Table 3
Field Reagent Blank, FRB	Per client set of samples	See Table 3

*An NCM must be applied if there is insufficient volume for a MS/MSD or duplicate.

Instrument QC

The following instrument QC is performed:

QC Item	Frequency	Acceptance Criteria
Initial Calibration (ICAL)	Initially, when CCV fails and after major instrument maintenance	See Table 3
Initial Calibration Blank (ICB)	Immediately after ICAL	See Table 3
Second Source Verification (ICV)	Immediately after ICB	See Table 3
Continuing Calibration Verification (CCV)	Beginning, end and after every 10 field samples. Alternate between ICAL Levels 4 and 5 (in order) throughout sequence	See Table 3
Continuing Calibration Verification Low (CCVL)	Immediately prior to Level 4 CCV at beginning of every non-ICAL analytical sequence	See Table 3
Isotope Dilution Analytes (IDA)	Added to Every injection (Standards, QC and Field Samples) at the same concentration	See Table 3

10.0 Procedure

One-time procedural variations are allowed only if deemed necessary in the professional judgment of a supervisor to accommodate variation in sample matrix, chemistry, sample size, or other parameters. Any variation in procedure shall be completely documented using a Non-Conformance Memo (NCM). The NCM process is described in more detail in SOP BR-QA-016. The NCM shall be filed in the project file and addressed in the case narrative. ***Any deviations from this procedure identified after the work has been completed must be documented in an NCM, with a cause and corrective action described.***

10.1 Water Sample Preparation

Visually inspect samples for the presence of settled and/or suspended sediment. If the amount of sediment is so great that the SPE cartridge will clog before the majority of the sample has eluted, filter the water sample through a glass fiber filter [redacted] or equivalent). Gravity or vacuum can be used to pass the sample through the filter. Prepare a filtration blank and LCS with any samples requiring filtration. File an NCM noting the need for filtration.

Warning: The use of a vacuum system creates the risk of glassware implosion. Inspect all glassware prior to use. Glassware with chips, scratches, rub marks or cracks must not be used.

Due to the high surface activity of the analytes, filtration should be regarded as a last resort. All samples will be spiked with IDA prior to filtration (if enough sample is available, perform an MS on each sample); this will allow any losses caused by filtration to be monitored and corrected for.

NOTE: for samples which full volume extraction is not possible, care MUST be taken to ensure the actual sample volume that is both spiked and extracted are documented in the sample worksheet notes.

Prepare two 250 mL aliquots of HPLC-grade water for the method blank and LCS.

Rotate the LCS concentration with each batch.

-Low Level LCS (50-150 %R), spike with 0.50 mL of PFAS LOQV solution. This will result in sample concentrations at the method Reporting Limit.

-Medium Level LCS (70-130 %R), spike with 0.025 mL (25 µL) of the PFAS LCS/Matrix Spike solution (Section 7.2). This will result in a sample concentration of 40 ng/L.

-High level LCS (70-130 %R), spike at 0.05mL (50uL) of the PFAS High Level LCS Spike solution (Section 7.2). This will result in a sample concentration of 200 ng/L.

Spike the MS/MSD (if available volume) with 0.025 mL (25 µL) of the PFAS LCS/Matrix Spike solution (Section 7.2). This will result in a sample concentration of 40 ng/L. NCM if there is insufficient volume to perform the MS/MSD.

Add [redacted] of the PFAS-IDA solution (Section 7.2) into each sample and QC sample, for a fixed concentration of 2.5 ng/mL in extract.

Due to the surface active nature of the PFAS analytes, it is necessary to extract the entire sample as well as the container walls to maximize recovery. It is therefore ideal to receive full 250 mL HDPE bottles for each sample (and MS/MSD if sufficient volume is received) so the entire sample can be processed from that container.

Weigh each container to determine its pre-extraction mass (Gross Weight). Spike each container in the batch with PFAS-IDA solution. Spike the LCS and LCSD (or MS/MSD, if available volume) with PFAS LCS/Matrix solution. Shake to mix the contents. After the extraction has been completed, allow the container to completely dry (uncapped). Replace the cap and reweigh the container to determine the container mass (Tare Weight). The sample volume extracted can be determined by subtracting the Tare Weight from the Gross Weight. These calculations are captured in the PFAS water sample prep module (TALS Method 3535_IVWT and 25101_2009_SPE).

10.1.1 Solid Phase Extraction (SPE) of Aqueous Samples

Condition the SPE cartridges [redacted]) by passing the following without drying the column.

> **WARNING: The use of a vacuum system creates the risk of glassware implosion. Inspect all glassware prior to use. Glassware with chips, scratches, rub marks or cracks must not be used.**

Wash with 5.0 mL of [redacted].

Wash with 5.0 mL of [redacted]. Close valve when ~ 1 mL remains on top to keep column wet. After this step, the columns should not go dry until the completion of loading and rinsing samples.

Appropriately label the SPE cartridges.

Add a poly siphon line to an adapter which has been firmly inserted into the SPE cartridge and place the other end of the line into the corresponding sample container.

Turn on the vacuum and pull the entire sample volume (minimum of 250 mL) through the cartridge at rate of approximately [redacted].

Stop the sample elution when ~0.1 mL remains. Add ~5 mL of water to the SPE column and restart the elution to complete the loading process. The added water volume ensures there are no small sample droplets remaining that may be clinging to the wall of the SPE cartridge.

After the sample and water rinse has passed through the cartridge, allow the cartridge to completely dry with vacuum (this could take up to 90 minutes). The cartridge should return to a uniform color. NOTE: Remove and replace each cartridge during the drying process to ensure any water droplets that may be in the flow path are eliminated.

10.1.2 SPE Column Wash of Aqueous Samples with Hexane

Add [redacted] to each SPE column and let the column become fully saturated with solvent. Close the stopcock and allow the column to soak for five minutes, then elute to waste.

Load a second [redacted] and elute to waste (without a soaking period).

Allow the column to dry with vacuum for 5 to 10 minutes. Columns must be dried thoroughly before continuing. The cartridge should return to a uniform color. Wipe any remaining water droplets from the bottom of the stainless steel guide needles using a fresh Kimwipe for each needle prior to proceeding to the next step.

10.1.3 SPE Elution of Aqueous Samples

<u>Note</u>: the use of glass should be avoided where able. However, disposable glass pipettes have a much narrower opening, which is necessary to reduce spillage during the following transfer steps.

Place labeled 15 mL polypropylene test tubes containing [redacted] of Reagent Water as receiving tubes in the SPE manifold.

Rinse the dried sample bottles with [redacted] and transfer to the corresponding SPE cartridge using a disposable glass pipet (NOTE: the sample container has molded ridges in the neck that can trap up to 0.5mL of the solvent rinsate; make sure to tip the container slightly to draw the rinsate out of the ridges). Allow the solution to soak the cartridge for 5 minutes and then elute into the 15 mL collection tube.

Repeat the sample bottle rinse to cartridge elution process with a [redacted] (without the soaking period) The total collection should be approximately 10 mL. Adjust to 10 mL with methanol.

10.1.4 Sample Cleanup with Graphitized Carbon (Optional)

NOTE: If this step is to be performed, do not add the [redacted] to the receiving tubes prior to extract collection. Add [redacted] of graphitized carbon to each sample extract and QC extracts to aid in the removal of organic interferences. Shake vigorously and then let sit for 10 minutes. Centrifuge each sample for 2 minutes at 1000 rpm. Decant the solvent layer into a new 15mL centrifuge tube containing 2 mL of Reagent Water and swirl to mix. Adjust the volume to 10 mL with methanol.

10.1.5 Internal Standard Addition

Add [redacted] internal standard to each extract and vortex to mix well.

Transfer a portion of the extract to a labeled 300µL polypropylene autosampler vial (6 drops or approximately 60µL). Archive the rest of the extract in the event the sample needs re-injection and/or dilution.

Seal the vials with polyethylene screw caps. Note: Teflon lined caps may not be used due to detection of low level concentration of PFAS.

10.2 Soil Sample Preparation

Visually inspect soil samples for homogeneity. Weigh a representative 5 g aliquot of soil, sediment or 1 g of tissue sample into a 50 mL centrifuge tube. Weigh additional sample amounts for the matrix spike and matrix spike duplicate analyses if they are requested and enough sample mass is available. Weigh 5 g aliquots of Ottawa sand or 0.1 g of oil for the MB and LCS samples.

Spike the LCS and MS/MSD (if requested) with 25 µL LCS/Matrix Spike Solution. This will result in a sample concentration of 2.0 ng/g (1.0 ng/mL ext).

Add [redacted] of IDA PFC Spiking Solution into each sample and QC sample, for a fixed concentration of 2.5 ng/mL in the final sample vial.

Cap the sample tubes and allow the spikes to settle into the sample matrix. Gently shake the bottles to mix the spike into the matrix.

Add [redacted]l to each sample. Cap each sample and shake lightly to confirm container is sealed.

Place all samples in the prep batch into the TCLP tumbler and tumble for 3 hours.

After removing the samples from the tumbler, gently shake each container to confirm the solid material has settled to the bottom of the centrifuge tube, then place in a sonic bath for 12 hours.

Centrifuge each sample at 3500 rpm for 15 minutes.

Transfer the supernate (solvent) to a second, labeled 50 mL centrifuge tube containing 2 mL of Reagent Water.

Slowly add [redacted]l to original 50 mL extraction tube. Pour the 2 mL of solvent rinse into the second labeled tube to complete the quantitative transfer.

Place extracts in the ZipVap set to 60 C for ~3 hours with nitrogen flow just strong enough to gently ripple the surface of the extracts. The concentration step is complete when the final volume either gets below 2 mL or maintains at the same level after consecutive checks a 5 minute intervals (this may be due to sample-based moisture contributing to the amount of water in the extract). Remove the sample from the ZipVap when the concentration has completed and allow the extracts to cool.

Adjust the volume of each sample's extract to 15 mL with Reagent Water and add 75 uL of Glacial Acetic Acid to neutralize the solution to pH 6-8. If the extracts contain suspended solids, centrifuge them at 3500 rpm for 15 minutes.

10.2.1 Solid Extract Cleanup by SPE

Condition the SPE cartridges [redacted] by passing the following without drying the column.

Wash with [redacted] with [redacted]. Wash with a second [redacted] followed by a second [redacted]. Close valve when ~ 0.5 mL remains on top to keep column wet. After this step, the columns should not go dry until the completion of loading and rinsing samples.

Appropriately label the SPE cartridges.

Pour each aqueous sample extract into its corresponding SPE cartridge until it is filled. Turn on the vacuum and open the stopcock to load the sample onto the cartridge. Add the remaining extract to the cartridge before it goes dry and stop the flow just before all of the sample has been drawn into the media. [redacted] to the 50 mL centrifuge tube to rinse the tube and complete the quantitative transfer. Pour this rinse into the SPE cartridge and open the stopcock to load the rest of the rinsate onto the cartridge. The added water volume ensures there are no small sample droplets remaining that may be clinging to the wall of the SPE cartridge. Set the centrifuge tubes aside and allow them to completely dry.

After the sample and water rinse has passed through the cartridge, allow the cartridge to completely dry with vacuum (this could take up to 30 minutes). The cartridge should return to a uniform color. NOTE: Remove and replace each cartridge during the drying process to ensure any water droplets that may be in the flow path are eliminated.

10.2.2 SPE Column Wash of Solid Extracts with Hexane

Add [redacted] of hexane to each SPE column and let the column become fully saturated with solvent. Close the stopcock and allow the column to soak for five minutes, then elute to waste.

Load a second [redacted] of hexane and elute to waste (without a soaking period).

Allow the column to dry with vacuum for 5 to 10 minutes. Columns must be dried thoroughly before continuing. The cartridge should return to a uniform color. Wipe any remaining water droplets from the bottom of the stainless steel guide needles using a fresh Kimwipe for each needle prior to proceeding to the next step.

10.2.3 SPE Elution of Solid Extracts

Place labeled 15 mL polypropylene test tubes containing [redacted] as receiving tubes in the SPE manifold.

Rinse the dried sample tubes with [redacted] and transfer to the corresponding SPE cartridge. Allow the solution to soak the cartridge for 5 minutes and then elute into the 15 mL collection tube.

Repeat sample bottle rinse to cartridge elution process with [redacted] (without the soaking period) The total collection should be approximately 10 mL. Adjust to 10 mL with methanol.

10.2.4 Sample Cleanup with Graphitized Carbon (Optional)

NOTE: If this step is to be performed, do not add the [redacted] to the receiving tubes prior to extract collection. Add [redacted] of graphitized carbon to each sample extract and QC extracts to aid in the removal of organic interferences. Shake vigorously and then let sit for 10 minutes. Centrifuge each sample for 2 minutes at 1000 rpm. Decant the solvent layer into a new 15mL centrifuge tube containing 2 mL of Reagent Water and swirl to mix. Adjust the volume to 10 mL with methanol.

10.2.5 Internal Standard Addition

Add [redacted] internal standard to each extract and vortex to mix well.

Transfer a portion of the extract to a labeled 300µL polypropylene autosampler vial (6 drops or approximately 60µL). Archive the rest of the extract in the event the sample needs re-injection and/or dilution.

Seal the vials with polyethylene screw caps. Note: Teflon lined caps may not be used due to detection of low level concentration of PFAS.

10.3 Instrument Operating Conditions

Suggested operating conditions are listed below for the [redacted] LCMS system:

Recommended Instrument Operating Conditions					
HPLC Conditions (Shimadzu HPLC)					
Column (Column temp = 45°C)	Phenomenex Gemini C18 3um, 3.0mm x 100mm				
Mobile Phase Composition	A=20mM Ammonium Acetate (90/10 water/methanol) B=Methanol				
Gradient Program	**Time**	**%A**	**%B**	**Curve**	**Flow Rate mL/min.**
	[redacted]			6	0.60
				6	0.60
				6	0.60
				6	0.60
				6	0.60
				6	0.60
	Maximum pressure limit = 5,000 psi				
Injection Size	[redacted]				
Run Time	[redacted]				
Mass Spectrometer Interface Settings [redacted]					
MS Interface Mode	[redacted]				
Ionspray (volts)	-[redacted]				
Declustering Potential-DP (volts)	[redacted]				
Entrance Potential-EP (volts)	[redacted]				

Source Temp (TEM)	[redacted]
Curtain Gas (CUR)	[redacted]
Collision Gas (CAD)	[redacted]
Ion Source Gas 1 (GS1)	[redacted]
Ion Source Gas 2 (GS2)	[redacted]
Collision Energy-CE (volts)	[redacted]
Collision Cell Exit Potential-CXP (volts)	[redacted]

Recommended Instrument Operating Conditions

Mass Spectrometer Scan Settings [redacted]

Compound	Comments	Reaction (MRM)	Dwell (sec)	DP(v)	EP(v)	CE(v)	CXP(v)
PFBA	Native analyte	212.9 > 169.0	0.011	[redacted]			
13C4 PFBA	IDA	217.0 > 172.0	0.011	[redacted]			
PFPeA	Native analyte	262.9 > 219.0	0.011	[redacted]			
13C5 PFPeA	IDA	267.9 > 223.0	0.011	[redacted]			
PFBS	Native analyte	298.9 > 80.0	0.011	[redacted]			
PFBS_2	Native analyte	298.9 > 99.0	0.011	[redacted]			
13C3 PFBS	IDA	301.9 > 80.0	0.011	[redacted]			
PFHxA	Native analyte	313.0 > 269.0	0.011	[redacted]			
PFHxA_2	Native analyte	313.0 > 119.0	0.011	[redacted]			
13C2 PFHxA	IDA	315.0 > 270.0	0.011	[redacted]			
4:2FTS	Native analyte	327.0 > 307.0	0.011	[redacted]			
M2-4:2FTS	IDA	329.0 > 81.0	0.011	[redacted]			
PFPeS	Native analyte	349.0 > 80.0	0.011	[redacted]			
PFPeS_2	Native analyte	349 > 99.0	0.011	[redacted]			
HFPO-DA	Native analyte	329.1 > 285	0.011	[redacted]			
13C3 HFPO-DA	IDA	332.1 > 287	0.011	[redacted]			
PFHpA	Native analyte	363.0 > 319.0	0.011	[redacted]			
PFHpA_2	Native analyte	363.0 > 169.0	0.011	[redacted]			
13C4 PFHpA	IDA	367.0 > 322.0	0.011	[redacted]			
PFHxS	Native analyte	399.0 > 80.0	0.011	[redacted]			
PFHxS_2	Native analyte	399.0 > 99.0	0.011	[redacted]			
18O2 PFHxS	IDA	403.0 > 84.0	0.011	[redacted]			
DONA	Native analyte	377 > 251	0.011	[redacted]			
DONA_2	Native analyte	377 > 85	0.011	[redacted]			
PFOA	Native analyte	413.0 > 369.0	0.011	[redacted]			
PFOA_2	Native analyte	413.0 > 169.0	0.011	[redacted]			
13C2 PFOA	Internal Std	415.0 > 370.0	0.011	[redacted]			
13C4 PFOA	IDA	417.0 > 372.0	0.011	[redacted]			
6:2FTS	Native analyte	427.0 > 407.0	0.011	[redacted]			
M2-6:2FTS	IDA	429.0 > 81.0	0.011	[redacted]			
PFHpS	Native analyte	449.0 > 80.0	0.011	[redacted]			
PFHpS_2	Native analyte	449.0 > 99.0	0.011	[redacted]			
PFNA	Native analyte	463.0 > 419.0	0.011	[redacted]			
PFNA_2	Native analyte	463.0 > 169.0	0.011	[redacted]			

13C5 PFNA	IDA	468.0 > 423.0	0.011	[redacted]
PFOS	Native analyte	499.0 > 80.0	0.011	[redacted]
PFOS_2	Native analyte	499.0 > 99.0	0.011	[redacted]
9Cl-PF3ONS	Native analyte	531 > 351	0.011	[redacted]
13C4 PFOS	IDA	503.0 > 80.0	0.011	[redacted]
PFDA	Native analyte	513.0 > 469.0	0.011	[redacted]
PFDA_2	Native analyte	513.0 > 169.0	0.011	[redacted]
13C2 PFDA	IDA	515.0 > 470.0	0.011	[redacted]
8:2FTS	Native analyte	527.0 > 507.0	0.011	[redacted]
M2-8:2FTS	IDA	529.0 > 81.0	0.011	[redacted]
PFNS	Native analyte	549.0 > 80.0	0.011	[redacted]
PFNS_2	Native analyte	549.0 > 99.0	0.011	[redacted]
MeFOSAA	Native analyte	570 > 419.0	0.011	[redacted]
d3-MeFOSAA	IDA	573.0 > 419.0	0.011	[redacted]
11Cl-PF3OUdS	Native analyte	631 > 451	0.011	[redacted]
FOSA	Native analyte	498.0 > 78.0	0.011	[redacted]
13C8 FOSA	IDA	506.0 > 78.0	0.011	[redacted]
PFUdA	Native analyte	563.0 > 519.0	0.011	[redacted]
PFUdA_2	Native analyte	563.0 > 169.0	0.011	[redacted]
13C2 PFUdA	IDA	565.0 > 520.0	0.011	[redacted]
EtFOSAA	Native analyte	584.0 > 419.0	0.011	[redacted]
d5-EtFOSAA	IDA	589.0 > 419.0	0.011	[redacted]
PFDS	Native analyte	599.0 > 80.0	0.011	[redacted]
PFDS_2	Native analyte	599.0 > 99.0	0.011	[redacted]
PFDoA	Native analyte	613.0 > 569.0	0.011	[redacted]
PFDoA_2	Native analyte	613.0 > 169.0	0.011	[redacted]
13C2 PFDoA	IDA	615.0 > 570.0	0.011	[redacted]
10:2FTS	Native analyte	627 > 607	0.011	[redacted]
PFDoS	Native analyte	699 > 80	0.011	[redacted]
PFDoS_2	Native analyte	699 > 99	0.011	[redacted]
PFTrDA	Native analyte	663.0 > 619.0	0.011	[redacted]
PFTrDA_2	Native analyte	663.0 > 169.0	0.011	[redacted]
PFTeDA	Native analyte	713.0 > 669.0	0.011	[redacted]
PFTeDA_2	Native analyte	713.0 > 169.0	0.011	[redacted]
13C2 PFTeDA	IDA	715.0 > 670.0	0.011	[redacted]
PFHxDA	Native analyte	813 > 769	0.011	[redacted]
PFHxDA_2	Native analyte	813 > 169	0.011	[redacted]
13C2 PFHxDA	IDA	815 > 770	0.011	[redacted]
PFODA	Native analyte	913 > 869	0.011	[redacted]
PFODA_2	Native analyte	913 > 169	0.011	[redacted]

Recommended Instrument Operating Conditions				
Retention Times & Quantitation ([redacted])				
Native Compounds	**Typical Native RT (minutes)**	**IS analog**	**Typical IDA RT (minutes)**	**Quantitation Method**
PFBA	[redacted]	13C4 PFBA	[redacted]	Isotope Dilution
PFPeA	[redacted]	13C5 PFPeA	[redacted]	Isotope Dilution
PFBS	[redacted]	13C3 PFBS	[redacted]	Isotope Dilution
4:2FTS	[redacted]	M2-4:2FTS	[redacted]	Internal Standard
PFHxA	[redacted]	13C2 PFHxA	[redacted]	Isotope Dilution
PFPeS	[redacted]	13C3 PFBS	[redacted]	Internal Standard
HFPO-DA	[redacted]	13C3 HFPO-DA	[redacted]	Isotope Dilution
PFHpA	[redacted]	13C4 PFHpA	[redacted]	Isotope Dilution
PFHxS	[redacted]	18O2 PFHxS	[redacted]	Isotope Dilution
DONA	[redacted]	13C4 PFOS	[redacted]	Internal Standard
6:2FTS	[redacted]	M2-6:2FTS	[redacted]	Isotope Dilution
PFOA	[redacted]	13C4 PFOA	[redacted]	Isotope Dilution
PFHpS	[redacted]	13C4 PFOS	[redacted]	Internal Standard
PFNA	[redacted]	13C5 PFNA	[redacted]	Isotope Dilution
PFOS	[redacted]	13C4 PFOS	[redacted]	Isotope Dilution
9Cl-PF3ONS	[redacted]	13C4 PFOS	[redacted]	Internal Standard
8:2FTS	[redacted]	M2-8:2FTS	[redacted]	Isotope Dilution
PFDA	[redacted]	13C2 PFDA	[redacted]	Isotope Dilution
PFNS	[redacted]	13C4 PFOS	[redacted]	Internal Standard
MeFOSAA	[redacted]	d3-MeFOSAA	[redacted]	Isotope Dilution
11Cl-PF3OUdS	[redacted]	13C4 PFOS	[redacted]	Internal Standard
EtFOSAA	[redacted]	d5-EtFOSAA	[redacted]	Isotope Dilution
PFDS	[redacted]	13C4 PFOS	[redacted]	Internal Standard
PFUdA	[redacted]	13C2 PFUdA	[redacted]	Isotope Dilution
FOSA	[redacted]	13C8 FOSA	[redacted]	Isotope Dilution
PFDoA	[redacted]	13C2 PFDoA	[redacted]	Isotope Dilution
10:2FTS	[redacted]	M2-8:2FTS	[redacted]	Internal Standard
PFDoS	[redacted]	13C4 PFOS	[redacted]	Internal Standard
PFTrDA	[redacted]	13C2 PFTeDA	[redacted]	Internal Standard
PFTeDA	[redacted]	13C2 PFTeDA	[redacted]	Isotope Dilution
PFHxDA	[redacted]	13C2 PFHxDA	[redacted]	Isotope Dilution
PFODA	[redacted]	13C2 PFHxDA	[redacted]	Internal Standard

Note: clients must be notified when the quantitation of an analyte is performed using an Internal standard. Changes to these IDA/ISTD associations may be necessary when sources of IDAs are updated: this may include additions as new IDAs become available, or subtractions if IDAs are unavailable.

10.4 Instrument Tuning

Instrument tuning is done initially when the method is first developed and thereafter as needed to maintain the sensitivity and selectivity of the method. Tuning is done by infusing each individual compound (native and IDA) into the MS/MS electrospray probe. The responses for the parent and daughter ions for each compound are observed and optimized for sensitivity and resolution. Mass assignments are reviewed and calibrated if necessary. The mass assignments must be within ± 0.5 amu of the values shown in the table above.

10.5 Instrument Calibration

Perform initial calibration with a minimum of five calibration standards before any sample analysis (initial method set-up), whenever a new column is installed, when significant instrument maintenance has been performed, and when the CCV does not meet acceptance criteria. Significant instrument maintenance includes installing a new column, changing the proportioning valve, or changing components of the MS/MS system. A new calibration is not required following minor maintenance.

With the exception of the circumstances delineated in policy CA-Q-P-003, it is not acceptable to remove points from a calibration curve. In any event, at least five points must be included in the calibration curve. Average Response Factor and linear fit calibrations require five points, whereas Quadratic (second order) calibrations require six points. The same injection volume must be used for all injections (standards and extracts).

Calibration is by average response factor, linear fit, or by quadratic fit. Quadratic fit is used for the analyte if the response is non-linear.

For average response factor (RFa), the relative standard deviation (RSD) for all compounds quantitated by isotope dilution must be < 20% for the curve to be valid.

For average response factor (RFa), the relative standard deviation (RSD) for all compounds quantitated by internal standard (i.e. those compounds that do not have corresponding isotopically labeled analogs) must be < 25% for the curve to be valid.

For linear fit, the intercept of the line must be less than ½ the reporting limit, and the coefficient of determination (r2) must be greater than or equal to 0.990 for the curve to be considered valid (or the correlation coefficient (r) > 0.995).

Evaluation of Calibration Curves

The following requirements must be met for any calibration to be used:

-Response must increase with increasing concentration.

-The absolute value of the intercept of a regression line (linear or non-linear) at zero response must be less than the reporting limit.

-There should be no carryover at or above 1/2 MRL after a high CAL standard.

-The low cal. point must recover to within 50-150%, and all others must recover to within 70-130%.

If these criteria are not met, instrument conditions and standards will be checked, and the ICAL successfully repeated before continuing.

Weighting of Calibration Points

In linear and quadratic calibration fits, the points at the lower end of the calibration curve have less absolute variance than points at the high concentration end of the curve. This can cause severe errors in quantitation at the low end of the calibration. Because accuracy at the low end of the curve is very important for this analysis, it is preferable to increase the weighting of the lower concentration points. 1/concentration or 1/x weighting is encouraged. Visual inspection of the line fitted to the data is important in selecting the best fit.

10.6 Initial Calibration

Prepare the working calibration standards using the recommended formulations given in Appendix B ensuring the lowest calibration standard for each analyte is equal to or below the established RL. Unless otherwise specified on a project basis, use calibration levels 1 to 6 to establish the calibration curve for each analyte.

Prime the instrument by analyzing a minimum of 4 “primer” solutions consisting of 80/20 methanol/water. In general, an HPLC contains components made from PTFE, which enable the pumps to work with many types of organic solvents. Despite efforts to remove as much PTFE as possible, certain components cannot be replaced and contribute PFAS. The longer the system remains idle, the more PFAS that is yielded. Therefore these primers serve to reduce and stabilize the amount of PFAS that are contributed. Immediately following the primers is a Blank, the ICAL sequence (run in ascending order of Level 1 to Level 6), the ICB, the ICV and the first analytical window of extracts (up to 10 field samples). The data is acquired using Sciex’s Analyst 1.6.

The Chrom Review data system generates calibration data by generating relative response factors (RRFs) based on the response of the target analyte and its corresponding Isotope Dilution Analyte (or Internal Standard) as well as their injection concentrations to ultimately generate Mean Response Factors. All analytes calibrated using IDA must have RSD values < 20%, all analytes calibrated using ISTD must have RSD values < 25%. The IDA compounds are also calibrated using an external RF model using response and concentration. The IDA RSD must be < 50%. Alternatively, a linear regression curve of concentration vs. peak area for each analyte relative to their corresponding IDA/ISTD and their concentrations calculates the correlation coefficient with 1/concentration weighting. The calibration must have a correlation coefficient (r) $\geq$ 0.995 ($r^2 \geq 0.990$). If criteria are not met, correct the problem and repeat calibration. Further analysis may not proceed without valid calibration.

10.7 Initial Calibration Blank (ICB)

Immediately following the ICAL, a calibration blank is analyzed that consists of an injection of [redacted] fortified with IDA solution at 50 ng/mL

The result for the calibration blank must be less than the reporting limit.

If the ICB is greater than the reporting limit then the source of contamination must be identified and any necessary cleaning completed, and then the instrument should be recalibrated.

10.8 Second Source Calibration Verification (ICV)

Following the ICAL and the ICB, an ICV standard obtained from a different source or vendor than the ICAL standards is analyzed. This ICV standard is a mid-range standard.

The recovery for the ICV must meet the appropriate following criteria:

The native analyte must be within or equal to 70-130% for all native analytes quantitated by isotope dilution.

The native analyte must be within or equal to 70-130% for all native analytes quantitated by internal standard (i.e. those compounds that do not have corresponding isotopically labeled analogs).

The IDA recovery must be within or equal to 50-150%.

See Table 3 for corrective actions in the event that the ICV does not meet the criteria above.

10.9 Continuing Calibration Verification (CCV)

Analyze a CCV at the beginning of a run, the end of a run, and after every 10 samples to determine if the calibration is still valid. The exception is after an acceptable curve and ICV are run 10 samples can be analyzed before a CCV is required. The CCVs are usually at the mid-level range of the curve and should vary throughout the run. The curve and ICV do not need to be run every day. To start an analytical run a CCV can be analyzed and if it meets acceptance criteria a run can be started. In addition, the low standard in the curve must be analyzed and must be within ± 50% of the expected value.

The recovery for the CCV standards must be equal to or within 70-130% (50-150% for low level standards) for all natives quantitated by isotope dilution and for all natives quantitated by internal standard. The recovery for the IDA must be within or equal to 70-130% of the true value.

If this is not achieved, the instrument has drifted outside the calibration limits. If the CCV fails again following minor maintenance, the instrument must be recalibrated.

10.10 Isotope Dilution Analytes (IDA)

The IDA solution is added to each field and QC sample at the time of extraction, as described in Section 10.1. As described in Section 7, this solution consists of isotopically labeled analogs of the analytes of interest.

IDA recoveries are flagged if they are outside of the acceptance limits. Quantitation by isotope dilution generally precludes any adverse effect on data quality due to IDA recoveries being outside of the acceptance limits as long as the signal-to-noise ratio is greater than 10:1.

> Evaluate data quality for usability, flag and submit a non-conformance memo for any analytes outside of the recovery criteria, and report if data is deemed not adversely effected.
>
> Re-extraction of samples should be performed if the signal-to-noise for any IDA is less than 10:1 or if the IDA recoveries fall below 10%.
>
> Re-extraction may be necessary under other circumstances when data quality has been determined to be adversely affected.

10.11 Troubleshooting:

Check the following items in case of calibration failures:

Evaluate the failure to determine whether it affects all of the compounds in the ICAL equally. If one ICAL point appears low or high, reprep the curve and rerun, as the error was most likely prep-based. If only a subset of the analytes are affected, check the integration and chromatography to see if there are anomalies; if justifiable, correct the integration so it is consistent with the other ICAL levels.

If there are no peaks for all compounds or no peaks after a specific retention time, ensure that the HPLC pump is pumping properly; it may have shut down due to overpressure or has a leak. If the pump has shut down, confirm it is primed and replace the in-line filter. If the pressure climbs above expected levels, changing the guard column and even analytical column may be necessary. It's best to chase high pressure sources from the pump forward (ie the post-pump in-line filter, isolator column, post-autosampler in-line filter, guard column, analytical column and MSMS inlet. If the pump is still pumping, check the system pressure. If it is lower than expected, check for leaks. Start with all connections, then move on to pump seals, especially if there are wide variations in pressure when pumping the same solvents at the same flow rates. If the pump is still pumping and the pressure is normal, check to make sure the MSMS is still functioning properly. Most issues with the MSMS system will be noted by the instrument software.

If there are peaks for all analytes, evaluate the peak shapes by comparing them to the ICAL chromatography. If the peaks have changed (shorter and wider), a new guard column may improve peak shape and bring the system back into compliance. If a new column is necessary, a new ICAL will be needed.

Preventive and routine maintenance is described in the table below

HPLC/MS/MS Preventative Maintenance
As Needed: Change pump seals. Change in-line filters in autosampler (HPLC). Check/replace in-line frit if excessive pressure or poor performance. Replace column if no change following in-line frit change. Replace fused silica tube in ESI interface. Clean lenses. Clean skimmer. Ballast rough pump 30 minutes.
Daily (When in use) Check solvent reservoirs for sufficient level of solvent. Verify that pump is primed, operating pulse free. Check needle wash reservoir for sufficient solvent. Verify capillary heater temperature functioning. Verify vaporizer heater temperature. Verify rough pump oil levels. Verify turbo-pump functioning. Verify nitrogen pressure for auxiliary and sheath gasses. Verify that multiplier is functioning.

10.12 Sample Analysis

Place the field and QC samples in a sequence that begins with the calibration standards followed by the analysis of QC samples, field samples and continuing calibration verification standards (CCVs).

An example analytical sequence that includes initial calibration (ICAL) is provided below.

Injection Number	Lab Description
1	Primer 1
2	Primer 2
3	Primer 3

Injection Number	Lab Description
4	Primer 4
5	Blank
6	Calibration Level 1
7	Calibration Level 2
8	Calibration Level 3
9	Calibration Level 4 (ICIS)
10	Calibration Level 5
11	Calibration Level 6
12	ICB
13	ICV
14	T-PFOA
15	MB
16	LCS
17-26	(up to) 10 Field samples
27	CCV L4
28-37	(up to) 10 Field samples
38	MS
39	MSD
40	CCV L5
41	MB
42	LCS
43-52	(up to) 10 Field samples
53	CCV L4
54-63	(up to) 10 Field samples
65	MS
66	MSD
67	CCV L5

An example analytical sequence without ICAL:

Injection Number	Lab Description
1	Primer 1
2	Primer 2
3	Primer 3
4	Primer 4
5	CCB
6	CCVL (LOQV)
7	CCVIS (L4)
8	MB
9	LCS
10-19	(up to) 10 Field samples
20	CCV L5
21-30	(up to) 10 Field samples
31	MS
32	MSD
33	CCV L4
34	MB
35	LCS

36-45	(up to) 10 Field samples
46	CCV L5
47-56	(up to) 10 Field samples
57	MS
58	MSD
59	CCV L4

Enter the sample ID's into the data acquisition program in the order the samples were placed in the autosampler and initiate the analytical sequence.

11.0 Corrective Action

When an out-of-control situation occurs that is not delineated in this corrective action table or the corrective actions listed do not adequately address the circumstances, a Corrective Action Report (CAR) (NCM), etc., must be developed (see SOP BR-QA-016) and the analyst must use his/her best analytical judgment and available resources to determine the corrective action to be taken. The out-of-control situation may be caused by more than one variable. The analyst should seek the assistance of his/her immediate supervisor, QA manager or other experienced staff if they are uncertain of the cause of the out-of-control situation. The analysis must not be resumed until the source of the problem and an in-control status is re-established. All samples associated with the out-of-control situation must be reanalyzed after in-control status has been re-established or if authorization is received from the supervisor or QA Manager for release with data qualification.

12.0 Calculations / Data Reduction

12.1 Qualitative Identification

The data processing system identifies the target analytes by comparing the retention time of the peaks to the retention times of the initial calibration standards. The retention times of PFAS with labeled standards must be the same as that of the labeled IDA's to within 0.05 min. For PFAS with no labeled standards, the RT must be within $\pm$ 0.3 minutes of the CCVIS standards. *Note: The IS RT and native RT may be offset by 0.02 to 0.04 minutes.*

12.2 Quantitative Identification

The ICAL established in Section 10.10 is used to calculate concentrations for the extracts. The data processing system determines on-column concentration. Final results are calculated by the laboratory's LIMS information system (TALS).

Dilute and reanalyze samples whose results exceed the calibration range. The diluted analysis should result in a determination within the upper half of the calibration curve.

Check the results of samples analyzed immediately after high concentration samples (those with results above calibration range) for signs of carry-over. Reanalyze all samples suspected of carry -over.

12.3 Calculations

See Appendix C.

12.4 Data Review

Refer to laboratory SOP BR-QA-019 for additional instruction on the requirements for data review. The following sections summarize the general procedure as described in the data review SOP.

12.5 Primary Review

Review the chromatography and quantitation in the data processing system to confirm quantitative and qualitative identification of each target analyte. Perform and document manual integrations only if needed per the instructions in corporate policy CA-Q-S-002, Acceptable Manual Integration Practices.

Upload the data files to TALS and process the batch. Enter job information into the batch editor and add the standards and reagent additions to the worksheet, if necessary. Review the results against acceptance criteria. If acceptance criteria are not met, perform corrective action or make arrangements for corrective action with another analyst.

Set results to primary, secondary, acceptable or rejected. Set results to be reported to a status of primary and secondary. Set results that meet criteria but will not be reported to acceptable. Set results that do not meet criteria to rejected, to prevent inadvertent reporting of data.

Verify that all appropriate QC were performed and acceptable. If insufficient volume is received (MS, MSD, FRB, etc…) document in an NCM. Record all instances where acceptance criteria are not met in a nonconformance memo (NCM).

Verify that all project requirements or program specific requirements were followed. If not, immediately notify the project manager to determine an appropriate course of action. Record decisions made in the data review checklist.

Set the batch to 1st level review. Complete the data review checklist and make arrangements for secondary review by a peer analyst.

12.6 Secondary Data Review (Performed by Peer Analyst)

Record review using the data review checklist.

Verify that all project requirements or program specific requirements were followed. If not, consult with the primary analyst to determine cause. Any decisions made should be recorded on the data review checklist and retained as part of the analytical record.

Review the TALS batch editor to verify ancillary information for the work performed is filled in.

Verify that that the procedures in this SOP were followed. If discrepancy between the SOP and the analytical record is found, consult with the primary analyst to determine the source of the discrepancy. Resolve the discrepancy and verify any modifications to the SOP are properly documented and were approved by laboratory management. Record all SOP deviations in an NCM.

Spot-check ~15% of samples in the batch to verify quantitative and qualitative identification.

If manual integrations were performed:

- Review each manual integration to verify that the integration is consistent and compliant with the requirements specified in SOP CA-Q-S-002.

- Check to ensure an appropriate technical reason code is provided for each manual integration. Acceptable technical reason codes are provided in SOP CA-Q-S-002.

- If an error is suspected, the reviewer must consult with the analyst that performed the integration to determine if a correction is necessary. Input from the Technical Manager (TM), Department Manager (DM), or QA Manager (QAM) may be sought as necessary. **The reviewer may not reintegrate except in those circumstances approved by laboratory management**, such as when the analyst that performed the integration is on vacation. If re-integration is performed by the reviewer, the reviewer is now considered the "primary analyst" and the re-integration is subject to the same review and documentation requirements as the original integration.

Verify acceptance criteria were met. If not, verify that corrective actions were performed and the nonconformance was documented with an NCM. Review the NCM to verify the form is filled out and the requisite information has been included in the internal comments tab. If corrective action was not performed and the failure not documented, consult with the primary analyst to determine cause. Consult with the primary analyst and department management to determine what actions should be taken, then follow-through with the decision made.

Run the QC checker and fix any problems found. Run and review the deliverable for gross error such as missing data. Fix any problems found.

When review is complete set the method chain to lab complete. Complete the data review checklist and forward associated paperwork to report/project management.

12.7 Data Reporting & Record Retention

The specifications for data reporting are set by the project manager and are performed by TALS using the formatter selected by the PM. The type of deliverable is also set by the PM based on various deliverable options in the TALS system. The formatters and deliverables are programmed into TALS by corporate IT staff and cannot be modified locally.

The following sections describe the default reporting scheme set for this method in TALS:

Data is retained, managed and archived as specified in laboratory SOP BR-QA-014 Laboratory Records.

13.0 Method Performance

13.1 Method Detection Limit Study (MDL)

The method detection limit (MDL) is the lowest concentration that can be detected for a given analytical method and sample matrix with 99% confidence that the analyte is present. MDLs reflect a calculated (statistical) value determined under ideal laboratory conditions in a clean matrix, and may not be achievable in all environmental matrices. An initial method detection limit study is performed in accordance with SOP BR-QA-005. The laboratory maintains MDL studies for analyses performed; these are verified at least annually unless method or program requirements require a greater frequency.

13.2 Demonstration of Capabilities

All personnel are required to perform an initial demonstration of proficiency (IDOC) on the instrument they will be using for analysis prior to testing samples. On-going proficiency must be demonstrated annually. IDOCs and on-going proficiency demonstrations are conducted as follows.

13.2.1 Four aliquots of the QC check sample are analyzed using the same procedures used to analyze samples, including sample preparation. The concentration of the QC check sample can be equivalent to a mid- level calibration.

13.2.2 Calculate the average recovery and standard deviation of the recovery for each analyte of interest.

13.2.3 If any analyte does not meet the acceptance criteria, the test must be repeated. Only those analytes that did not meet criteria in the first test need to be evaluated. TNI 2016 requires consecutive passing results. Repeated failure for any analyte indicates the need for the laboratory to evaluate the analytical procedure and take corrective action.

13.2.4 Until the IDOC is approved by the QA Manager (or designee); the trainer and trainee must be identified in the batch record.

13.3 Training Requirements

The Group Leader is responsible for ensuring that this procedure is performed by an associate who has been properly trained in its use and has the required experience. A new analyst must be working under documented supervision prior to approval of the IDOC. Documentation that a new analyst is performing under supervision must be entered into the batch record (View Batch Information) until that analyst's IDOC has been approved by the QA Manager (or designee). See requirements for demonstration of analyst proficiency in SOP BR-QA-011.

14.0 Pollution Control

It is Test America's policy to evaluate each method and look for opportunities to minimize waste generated (i.e., examine recycling options, ordering chemicals based on quantity needed, preparation of reagents based on anticipated usage and reagent stability). Employees must abide by the policies in Section 13 of the Corporate Safety Manual for "Waste Management and Pollution Prevention."

15.0 Waste Management

Waste management practices are conducted consistent with all applicable rules and regulations. Excess reagents, samples and method process wastes are disposed of in an accepted manner. Waste description rules and land disposal restrictions are followed. Waste disposal procedures are incorporated by reference to BR-EH-001. The following waste streams are produced when this method is carried out.

- Vials containing sample extracts: Satellite Container: 30 gallon poly barrel located under GC-Semi prep hood.
- Solvent Waste: Satellite Container: 5 gallon poly carboy located under LCMSMS.

16.0 References / Cross References

- Cheryl Moody, Wai Chi Kwan, Johnathan W. Martin, Derek C. G. Muir, Scott A. Mabury, “Determination of Perfluorinated Surfactants in Surface Water Samples by Two Independent Analytical Techniques: Liquid Chromatography/Tandem Mass Spectrometry and 19FNMR,” Analytical Chemistry 2001, 73, 2200-2206.
- John Giesy et al., “Accumulation of Perfluorooctane Sulfonate in Marine Mammals”, Environmental Science & Technology, 2001 Vol. 35, No. 8, pages 1593-1598.
- U.S. EPA, “Residue Chemistry Test Guidelines, OPPTS 860.1340, Residue Analytical Method”, EPA 712-C-95-174, August 1995.
- STL Denver White Paper DEN-W-LC-002, “Method Validation Study for Analysis of Ammonium Perfluorooctanoate in Soil Matrices by High Performance Liquid Chromatography/Mass Spectrometry (HPLC/MS/MS)”, Mark Dymerski, September 5, 2003.
- STL Denver White Paper DEN-W-LC-003, “Addendum A to Method Validation Study for Analysis of Ammonium Perfluorooctanoate in Soil Matrices by High Performance Liquid Chromatography/Mass Spectrometry (HPLC/MS/MS)”, Mark Dymerski, August 6, 2003.
- STL Denver White Paper DEN-W-LC-004, “Method Validation Study for Analysis of Perfluorooctanoic Acid in Waters by High Performance Liquid Chromatography/Tandem Mass Spectrometry (HPLC/MS/MS)”, Mark Dymerski, January 26, 2005.
- Waters application note; “Acquity UPLC System for Quantifying Trace Levels of Perfluorinated Compounds with an Acquity PFC Analysis Kit”, Peter J. Lee, Evan T. Bernier, Gordon T. Fujimoto, Jeremy Shia, Michael S. Young, and Alice J. Di Gloia, Waters Corporation, Milford, MA. USA.
- Method ISO 25101, “Water quality – Determination of perfluorooctanesulfonate (PFOS) and perfluorooctanoate (PFOA) – Method for unfiltered samples using solid phase extraction and liquid chromatography/mass spectrometry”, First Edition, 2009-03-01, International Organization for Standardization, Technical Committee ISO/TC 147, Water Quality, Subcommittee SC 2, Physical, chemical and biochemical methods.
- US EPA, “Method 537 - Determination of Selected Perfluorinated alkyl acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometery (LC/MS/MS)”, Version 1.1, September 2009, J.A. Shoemaker, P.E. Grimmett, B.K. Boutin, EPA Document #: EPA/600/R-08/092.
- Laboratory SOP BR-QA-005 *Procedures for the Determination of Limits of Detection (LOD), Limits of Quantitation (LOQ) and Reporting Limits (RL).*
- Laboratory SOP BR-QA-011 *Employee Training*
- Laboratory SOP BR-EH-001 *Hazardous Waste*
- Laboratory SOP BR-QA-014 *Laboratory Records*
- Laboratory SOP BR-QA-006 *Procedures & Documentation Requirements for Manual Integration*
- Laboratory Quality Assurance Manual (QAM)
- Corporate TestAmerica SOP CA-Q-S-002 *Manual Integrations*.

17.0 Method Modifications

Modification Number	Method Reference	Modification & Technical Justification
1	Section 7.2	Method 25101 specifies that the values reported for PFOA and PFOS shall be the linear isomer only. In keeping with the dictates of USEPA 537 and other US conventions, the laboratory reports both the branched (when present) and linear isomers as a single value for these compounds.
2	Section 10.1	A different SPE cartridge, Waters OASIS WAX, is used for the extraction process. As a result, solvents and elution procedures are different.
3	Section 10.1	The samples are fortified with a greater number of labeled analytes (most analytes have labeled versions) prior to extraction.
4	Section 10.5	The HPLC Column, Eluents and gradient conditions have changed.
5	Section 10.5	For non-drinking water matrices, the analyte list has expanded. The number of labeled analytes has also expanded to improve quantitation.
6	Table 1	The reporting limits have changed to a consistent value.
7	Appendix B	Calibration levels have been changed so all levels have the same analyte concentration.

18.0 Attachments

- Table 1: Routine Compound List and LOQ
- Table 2: Primary Materials Used
- Table 3: QC Summary & Recommended Corrective Action
- Table 4: Control Limits
- Appendix A: Terms and Definitions
- Appendix B: Standard Preparation Tables
- Appendix C: Equations

19.0 Revision History (all revision history must be retained in this SOP)

Revision 6.0

- Updated cover page dates, copyright information, and signatories
- Throughout: Added support for soil, sediment and tissue matrices.
- Throughout: Removed reference to analysis using Waters instrumentation.
- Throughout: Removed reference to final extract concentration for aqueous samples.
- Section 1.1: Update Fluorotelomer sulfonates (FTS) to report acid forms
- Section 11.0: Added corrective action requirement as it is a corporate requirement to include.

Revision 5.0

- Updated cover page dates, copyright information, and signatories
- Throughout: removed references to drinking water. Will add back if adopted.
- Throughout: removed solid extraction/analysis verbiage missed in previous revision.
- Throughout: revised formatting to be consistent
- Throughout: added PFHxDA, PFODA, PFDoS, 10:2FTS, HFPO_DA, DONA, F53BMajor, and F53B Minor as additional analytes and IDAs
- Section 4.0: added interference information about $^{13}C_2$-PFHxDA
- Section 6.1: updated to include additional laboratory apparatus information
- Section 6.2: updated to include additional instrument and more detail for existing instrument
- Section 7.1: added more detail to reagent information and the addition of Ammonium acetate and Ammonium hydroxide
- Section 7.2: added PFHpS and PFDS as other PFAS not available in the acid form. Added the IDA and ISTD are added at a fixed concentration and removed the low level reference
- Section 9.1 added a NCM must be added for MS/MSD
- Section 10.1: removed the low level spike reference and added the PFAS-IDA solution is added to each sample and QC sample in concentrated extract and non-concentrated extracts
- Section 10.2: In the previous version of this SOP, the “Note” was removed and replaced with “Warning: The use of a vacuum system creates the risk of glassware implosion. Inspect All glassware prior to use. Glassware with chips, scratches, rub marks or cracks must not be used.”
- Section 10.2: changed wording to clarify addition of poly siphon line into the SPE cartridge
- Section 10.3: removed to keep test tube as keep and added “Note: If the extracts will note be concentrated, use [redacted] for the second bottle rinse so the final volume is approximately 8mL.”
- Section 10.5: added sample cleanup with graphitized carbon section
- Section 10.6: added wording to have [redacted] of reagent water to the 10mL extract at this time
- Section 10.7: updated wording
- Section 10.8: added operating system for new instrument and added more detail for existing instrument
- Section 10.17: updated sample analysis to include calibration currently in use
- Table 1 and Table 4: updated to include additional analytes and IDAs
- Appendix A: updated terms and definitions from body of SOP
- Appendix B: updated to include additional analytes and IDAs

Revision 4.0

- Updated cover page dates, copyright information, and signatories
- Headers: removed TestAmerica logo and added Eurofins logo
- Throughout: removed references to drinking water. Will add back if adopted.
- Throughout: revised formatting to be consistent
- Section 1.1: added note about addition of Appendix D, removed NJDEP as PAB
- Section 10.1.3: added note about the use of glass pipettes

- Section 10.3: In a previous version of this SOP, Table “Recommended Instrument Operating Conditions” incorrectly referenced PFTrDA as Isotope Dilution, so this was corrected to Internal Standard and added note to contact clients for ISTD quantitation.
- Removed verbiage regarding soil LOQ from Note on Table 1.
- Added Appendix D: NJDEP secondary certified analytes list

Revision 3.0
- Updated cover page dates and signatories
- Section 10.1: added note for handling incomplete volume extraction process
- Section 18: added previous revision history back into SOP
- Throughout: updated QC criteria from EPA 537 r1.1 that was missed in previous revision
- Throughout: removed solid extraction/analysis verbiage missed in previous revision.
- Throughout: updated calibration to include criteria from EPA 537 r1.1 and to include the 9 calibration points currently in use.
- Throughout: minor formatting updates

Rev 2.1:
- Updated cover page dates and signatories
- Section 8: added preservation requirements for DW samples.
- Throughout: updated QC criteria to match EPA537 rev1.1
- Throughout: removed references to solid and tissue extraction/analysis.

Rev 2.0
- Updated cover page and signatories
- Section 8: added preservation requirements for DW samples.
- Throughout: included verbiage that Non-drinking water matrices are not certified under PAB.
- Throughout: separated DW and non-DW limits and QC requirements.
- Throughout: minor formatting and typographical corrections.
- Tables 3 & 4: updated limit to meet EPA 537 criteria.
- Appendix A: updated terms and definitions from body of SOP

Rev 1.0
- Extended analyte list to 21 native compounds and 18 IDAs.
- Altered concentration step in extract preparation by employing a reagent water keeper instead of concentrating to dryness.
- Incorporated use of internal standard for IDA recovery calculation.

Revision 0.0: 05/19/2017

- New SOP based on USEPA method 537

Previous revisions are retained by the QA department.

Table 1: Routine Compound List & Limit of Quantitation (LOQ)

Compound Name	Abbreviation	CAS #	Water (ng/L)	Soil/ Sediment (ug/Kg)	Tissue (ug/Kg)
Perfluoroalkylcarboxylic acids (PFCAs)					
Perfluoro-n-butanoic acid	PFBA	375-22-4	2.0	0.20	1.0
Perfluoro-n-pentanoic acid	PFPeA	2706-90-3	2.0	0.20	1.0
Perfluoro-n-hexanoic acid	PFHxA	307-24-4	2.0	0.20	1.0
Perfluoro-n-heptanoic acid	PFHpA	375-85-9	2.0	0.20	1.0
Perfluoro-n-octanoic acid	PFOA	335-67-1	2.0	0.20	1.0
Perfluoro-n-nonanoic acid	PFNA	375-95-1	2.0	0.20	1.0
Perfluoro-n-decanoic acid	PFDA	335-76-2	2.0	0.20	1.0
Perfluoro-n-undecanoic acid	PFUdA	2058-94-8	2.0	0.20	1.0
Perfluoro-n-dodecanoic acid	PFDoA	307-55-1	2.0	0.20	1.0
Perfluoro-n-tridecanoic acid	PFTrDA	72629-94-8	2.0	0.20	1.0
Perfluoro-n-tetradecanoic acid	PFTeDA	376-06-7	2.0	0.20	1.0
Perfluoro-n-hexadecanoic acid	PFHxDA	67905-19-5	2.0	0.20	1.0
Perfluoro-n-octadecanoic acid	PFODA	16517-11-6	2.0	0.20	1.0
Perfluorinated sulfonic acids (PFSAs)					
Perfluoro-1-butanesulfonic acid	PFBS	375-73-5	2.0	0.20	1.0
Perfluoro-1-pentanesulfonic acid	PFPeS	2706-91-4	2.0	0.20	1.0
Perfluoro-1-hexanesulfonic acid	PFHxS	355-46-4	2.0	0.20	1.0
Perfluoro-1-heptanesulfonic acid	PFHpS	375-92-8	2.0	0.20	1.0
Perfluoro-1-octanesulfonic acid	PFOS	1763-23-1	2.0	0.20	1.0
Perfluoro-1-nonanesulfonic acid	PFNS	68259-12-1	2.0	0.20	1.0
Perfluoro-1-decanesulfonic acid	PFDS	335-77-3	2.0	0.20	1.0
Perfluoro-1-dodecanesulfonic acid	PFDoS	79780-39-5	2.0	0.20	1.0
Perfluorinated sulfonamides (FOSA)					
Perfluoro-1-octanesulfonamide	FOSA	754-91-6	2.0	0.20	1.0
Perfluorinated sulfonamidoacetic acids (FOSAA)					
N-ethylperfluoro-1-octanesulfonamidoacetic acid	EtFOSAA	2991-50-6	20.0	2.0	10.0
N-methylperfluoro-1-octanesulfonamidoacetic acid	MeFOSAA	2355-31-9	20.0	2.0	10.0
Fluorotelomer sulfonates (FTS)					
1H,1H,2H,2H-perfluorohexane sulfonate *(4:2)*	4:2 FTS	757124-72-4	20.0	2.0	10.0
1H,1H,2H,2H-perfluorooctane sulfonate *(6:2)*	6:2 FTS	27619-97-2	20.0	2.0	10.0
1H,1H,2H,2H-perfluorodecane sulfonate *(8:2)*	8:2 FTS	39108-34-4	20.0	2.0	10.0
1H,1H,2H,2H-perfluorododecane sulfonate*(10:2)*	10:2 FTS	120226-60-0	20.0	2.0	10.0
Fluorinated Replacement Chemicals					
Hexafluoropropylene oxide dimer acid	HFPO-DA	13252-13-6	4.0	0.40	2.0
4,8-dioxa-3H-perfluorononanoic acid	DONA	919005-14-4	2.0	0.20	1.0
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	F53B Major (9Cl-PF3ONS)	756426-58-1	2.0	0.20	1.0
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	F53B Minor (11Cl-PF3OUdS)	763051-58-1	2.0	0.20	1.0

NOTE: The LOQ values may vary. The Water LOQ is based on a 250mL nominal sample volume.

Table 2: Primary Materials Used

Material[1]	Hazards	Exposure Limit[2]	Signs and Symptoms of Exposure
Acetic Acid (3-2-1)	Corrosive Poison Flammable	10 ppm-TWA 15 ppm-STEL	Contact with concentrated solution may cause serious damage to the skin and eyes. Inhalation of concentrated vapors may cause serious damage to the lining of the nose, throat, and lungs. Breathing difficulties may occur.
Ammonium Hydroxide (3-0-0)	Corrosive Poison	50 ppm-TWA	Severe irritant. Effects from inhalation of dust or mist vary from mild irritation to serious damage to the upper respiratory tract. Symptoms may include sneezing, sore throat or runny nose. Contact with skin can cause irritation or severe burns and scarring with greater exposures. Causes irritation of eyes, and with greater exposures it can cause burns that may result in permanent damage, including blindness. Brief exposure to 5000 PPM can be fatal.
Hexane (2-3-0)	Flammable Irritant	500 ppm-TWA	Inhalation of vapors irritates the respiratory tract. Overexposure may cause lightheadedness, nausea, headache, and blurred vision. Vapors may cause irritation to the skin and eyes.
Hydrochloric Acid (3-0-1)	Corrosive Poison	5 ppm (Ceiling)	Can cause pain and severe burns upon inhalation, ingestion, eye or skin contact. Exposure to concentrated solutions may cause deep ulcerations to skin, permanent eye damage, circulatory failure and swallowing may be fatal.
Methanol (2-3-0)	Flammable Poison Irritant	200 ppm (TWA)	A slight irritant to the mucous membranes. Toxic effects exerted upon nervous system, particularly the optic nerve. Symptoms of overexposure may include headache, drowsiness and dizziness. Methyl alcohol is a defatting agent and may cause skin to become dry and cracked. Skin absorption can occur; symptoms may parallel inhalation exposure. Irritant to the eyes.
Potassium Hydroxide (3-0-1)	Corrosive Poison		Severe irritant. Can cause severe burns upon inhalation, ingestion, eye or skin contact. Exposure to concentrated solutions may cause severe scarring of tissue, blindness, and may be fatal if swallowed.
Potassium Persulfate (2-0-1-OX)	Oxidizer	None	Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath. Causes irritation to skin and eyes. Symptoms include redness, itching, and pain. May cause dermatitis, burns, and moderate skin necrosis.

[1] Always add acid to water to prevent violent reactions.
[2] Exposure limit refers to the OSHA regulatory exposure limit.

Table 3: QC Summary, Acceptance Criteria and Recommended Corrective Action (EPA537)

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action
6-Point Calibration (5 point minimum for CF and Linear Regression) (ICAL)	Before sample analysis, when CCVs indicate calibration is no longer valid; after major instrument maintenance	CF = RSD $\leq$ 20% (compounds calibrated via IDA) CF = RSD $\leq$ 25% (compounds calibrated using "near-IDA" compounds) CF = RSD $\leq$ 50% (IDA standards using ISTD) Each cal pt. = +/-30%Rec. (+/-50%Rec for cal low pt.) Linear Regression: $r^2 \geq 0.990$	Correct problem and repeat initial calibration.
IDA Response	Every injection contains the IDA analytes	Non-DW matrices: Standards: 50-150% recovery Field samples: 50-150% recovery (poor responding IDAs: 25-150%) (reportable if >10x S/N ratio and >10% ICAL RF)	Standard failures must be investigated to determine the cause of the failure. Recalibration may be required. Samples with recoveries outside acceptance limits must be evaluated for data usability. Re-extraction may be necessary if data quality has been adversely affected.
IS Response	Every injection contains the IS analyte	ICAL Standards: Area of individual points must not deviate by more than 50% of ICAL mean area response Samples following ICAL: 50-150% of ICAL mean response Ongoing CCV: 50-150% of ICAL mean response Post-CCV Samples: Area must be within 50-150% of most recent CCVIS (daily opening CCV)	Standard failures must be investigated to determine the cause of the failure. Recalibration may be required. Sample failures may be matrix related and should be evaluated to determine if the data quality has been adversely affected.
Initial Calibration Blank (ICB)	Immediately following the ICAL	Non-DW: < RL for all target analytes	Determine source of interference/contamination, eliminate it and recalibrate.
Second Source Standard Verification (ICV)	Prior to the analysis of samples. Generally immediately after the ICB.	+/-30 for analytes, IS, and SUR.	Correct problem and verify second source standard. If that fails, repeat calibration.
Continuing Calibration Verification (CCV)	Beginning of each analytical sequence, every ten field samples and at the end of each analytical sequence. Alternate between levels 3, 4 and 5.	+/-30%	Rerun any samples analyzed before and after the failing CCV. Take corrective action; if subsequent CCV analyses fail, recalibrate instrument.
Continuing Calibration Verification-Low (CCVL)	Beginning of each analytical sequence that is not preceded by an ICAL to show LOQ is still valid.	CF = 50-150% (ISTD targets) IDA 50-150%	Stop sample acquisition. Take corrective action; if subsequent CCV analyses fail, recalibrate instrument.
Method Blank	One per extraction batch of 20 or fewer samples	Non-DW: < RL for all target analytes	Reprocess MB and associated samples if any target analyte in the MB is at or above the RL, greater than 1/10 the amount detected in any sample or 1/10 the regulatory limit, whichever is greater. If the target is not greater than the RL in the samples associated with an unacceptable method blank, the data may be reported with appropriate qualifiers. If insufficient sample is available to reprocess, report data with appropriate qualifiers.
Laboratory Control Sample	One per extraction batch of 20 or fewer samples (rotate between Low, Med, High)	%R within control limits. See Table 4	Reprep and reanalyze samples for failed analytes. If reanalysis is not possible due to insufficient sample volume, report data with appropriate data qualifiers.

QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action
Matrix Spike / Matrix Spike Duplicate	One set per extraction batch when sufficient sample volume is provided	%R within control limits. See Table 4	Evaluate to determine if there is a matrix effect or analytical error. If analytical error, reanalyze or reprocess as appropriate.
Sample Duplicate	One per extraction batch of 20 or fewer samples	RPD within control limits. See Table 4	Evaluate data to determine source for error. If analytical error is suspected, reanalyze or reprocess as appropriate.
Field Reagent Blank	Per client sample set	Non-DW: < RL for all target analytes	Analysis only required if samples contain target analytes at or above the RL. If analytes are present in the FRB at >1/3 RL, all samples must be recollected and re-analyzed.

Table 4: LCS and MS/MSD Control Limits*

Analyte	Water (Low Level) %R	Water (Med-High Level) %R	RPD
Perfluorobutanoic acid (PFBA)	50-150	70-130	20
Perfluoropentanoic acid (PFPeA)	50-150	70-130	20
Perfluorobutanesulfonic acid (PFBS)	50-150	70-130	20
Perfluorohexanoic acid (PFHxA)	50-150	70-130	20
Perfluoropentanesulfonic acid (PFPeS)	50-150	70-130	20
Perfluoroheptanoic acid (PFHpA)	50-150	70-130	20
Perfluorohexanesulfonic acid (PFHxS)	50-150	70-130	20
Perfluorooctanoic acid (PFOA)	50-150	70-130	20
Perfluoroheptanesulfonic acid (PFHpS)	50-150	70-130	20
Perfluorononanoic acid (PFNA)	50-150	70-130	20
Perfluorooctanesulfonic acid (PFOS)	50-150	70-130	20
Perfluorodecanoic acid (PFDA)	50-150	70-130	20
Perfluorononanesulfonic acid (PFNS)	50-150	70-130	20
Perfluoroundecanoic acid (PFUdA)	50-150	70-130	20
Perfluorodecanesulfonic acid (PFDS)	50-150	70-130	20
Perfluorooctanesulfonamide (FOSA)	50-150	70-130	20
Perfluorododecanoic acid (PFDoA)	50-150	70-130	20
Perfluorododecanesulfonic acid (PFDoS)	50-150	70-130	20
Perfluorotridecanoic acid (PFTrDA)	50-150	70-130	20
Perfluorotetradecanoic acid (PFTeDA)	50-150	70-130	20
Perfluorohexadecanoic acid (PFHxDA)	50-150	70-130	20
Perfluorooctadecanoic acid (PFODA)	50-150	70-130	20
1H,1H,2H,2H Perfluorohexanesulfonate (4:2FTS)	50-150	70-130	20
1H,1H,2H,2H Perfluorooctanesulfonate (6:2FTS)	50-150	70-130	20
1H,1H,2H,2H Perfluorodecanesulfonate (8:2FTS)	50-150	70-130	20
1H,1H,2H,2H Perfluorododecanesulfonate (10:2FTS)	50-150	70-130	20
N-Methyl Perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	50-150	70-130	20
N-Ethyl Perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	50-150	70-130	20
Hexafluoropropylene oxide dimer acid	50-150	70-130	20
4,8-dioxa-3H-perfluorononanoic acid	50-150	70-130	20
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	50-150	70-130	20
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	50-150	70-130	20

**The limits in this table are those in effect as of the published date of this SOP. The %R limits are specified by EPA 537r1.1 in sections 9.33, 9.36, and 9.37. The RPD the lab uses is more strict than those referenced in EPA 537 r1.1. If the lab makes changes to any of these limits, the updated limits will be no less strict than those specified in EPA537.*

Appendix A: Terms and Definitions

PFCAs: Perfluorocarboxylic acids
PFSAs: Perfluorinated sulfonic acids
FOSA: Perfluorinated sulfonamide
PFOA: Perfluorooctanoic acid
PFOS: Perfluorooctane sulfonate
PTFE: Polytetrafluoroethylene (e.g., Teflon®)
SPE: Solid phase extraction**.**
PP: Polypropylene
PE: Polyethylene
HDPE: High density polyethylene
AFFF: Aqueous Film Forming Foam
IDA: Isotope dilution analytes
Acceptance Criteria: specified limits placed on characteristics of an item, process or service defined in requirement documents.
Accuracy: the degree of agreement between an observed value and an accepted reference value. Accuracy includes a combination of random error (precision) and systematic error (bias) components which are due to sampling and analytical operations; a data quality indicator.
Analyte: The specific chemicals or components for which a sample is analyzed. (EPA Risk Assessment Guide for Superfund, OSHA Glossary).
Batch: environmental samples that are prepared and/or analyzed together with the same process, using the same lot(s) of reagents. A preparation/digestion batch is composed of one to 20 environmental samples of similar matrix, meeting the above criteria. An analytical batch is composed of prepared environmental samples (extracts, digestates and concentrates), which are analyzed together as a group.
Calibration: a set of operations that establish, under specified conditions, the relationship between values of quantities indicated by a measuring instrument or measuring system, or values represented by a material measure or a reference material and the corresponding values realized by the standards.
Calibration Curve: the graphical relationship between the known values or a series of calibration standards and their instrument response.
Calibration Standard: A substance or reference used to calibrate an instrument.
Continuing Calibration Verification (CCV): a single or multi-parameter calibration standard used to verify the stability of the method over time. Usually from the same source as the calibration curve.
Corrective Action: the action taken to eliminate the cause of an existing nonconformity, defect or other undesirable occurrence in order to prevent recurrence.
Data Qualifier: a letter designation or symbol appended to an analytical result used to convey information to the data user. (Laboratory)
Demonstration of Capability (DOC): procedure to establish the ability to generate acceptable accuracy and precision.
Holding Time: the maximum time that a sample may be held before preparation and/or analysis as promulgated by regulation or as specified in a test method.
Initial Calibration: Analysis of analytical standards for a series of different specified concentrations used to define the quantitative response, linearity and dynamic range of the instrument to target analytes.
Intermediate Standard: a solution made from one or more stock standards at a concentration between the stock and working standard. Intermediate standards may be certified stock standard solutions purchased from a vendor and are also known as secondary standards.

Laboratory Control Sample (LCS): a blank matrix spiked with a known amount of analyte(s) processed simultaneously with and under the same conditions as samples through all steps of the procedure.
Matrix Spike (MS): a field sample to which a known amount of target analyte(s) is added.
Matrix Spike Duplicate (MSD): a second replicate matrix spike
Method Blank (MB): a blank matrix processed simultaneously with and under the same conditions as samples through all steps of the procedure. Also known as the preparation blank (PB).
Method Detection Limit (MDL): the minimum amount of a substance that can be measured with a specified degree of confidence that the amount is greater than zero using a specific measurement system. The MDL is a statistical estimation at a specified confidence interval of the concentration at which relative uncertainty is ±100%. The MDL represents a range where qualitative detection occurs. Quantitative results are only produced in this range and qualified with the proper data reporting flag when a project requires this type of data reporting.
Non-conformance: an indication, judgment, or state of not having met the requirements of the relevant specification, contract or regulation.
Precision: the degree to which a set of observations or measurements of the same property, obtained under similar conditions, conform to themselves.
Preservation: refrigeration and/or reagents added at the time of sample collection to maintain the chemical, physical, and/or biological integrity of the sample.
Quality Control Sample (QC): a sample used to assess the performance of all or a portion of the measurement system.
Reporting Limit (RL): the level to which data is reported for a specific test method and/or sample.
Stock Standard: a solution made with one or more neat standards usually with a high concentration. Also known as a primary standard. Stock standards may be certified solutions purchased from a vendor.
Surrogate: a substance with properties that mimic the analyte of interest but that are unlikely to be found in environmental samples.

Appendix B: Standard Preparation Tables

The standard formulations contained in this appendix are recommended and are subject to change. If the concentration of the stock standard is different than those noted in this table, adjust the standard preparation formulation accordingly. Unless otherwise specified, prepare the standard solutions in methanol using Class A volumetric glassware and Hamilton syringes and assign an expiration date of 1 year from date of preparation unless the parent standard expires sooner; then use the earlier date. See laboratory SOP BR-QA-002 *Standard Preparation* for further guidance. For stock standards solutions made from neat material, assign an expiration date of 2 years from the date of formulation.

Stock Standard Solutions

PFAS LCS/Matrix Spike Solution 1000 ng/mL

Parent Standard	Vendor	Component	Stock Standard Conc (µg/mL)	Volume Added (µL)	Final Volume (mL)	Final Conc (ng/mL)
PFBA	Wellington Laboratories Code: PFBA	Perfluorobutanoic acid	50	200	10	1000
PFPeA	Wellington Laboratories Code: PFPeA	Perfluoropentanoic acid	50	200		1000
PFBS	Wellington Laboratories Code: L-PFBS	Perfluorobutanesulfonic acid	44.2	200		884
PFHxA	Wellington Laboratories Code: PFHxA	Perfluorohexanoic acid	50	200		1000
PFPeS	Wellington Laboratories Code: L-PFPeS	Perfluoropentanesulfonic acid	46.9	200		938
PFHpA	Wellington Laboratories Code: PFHpA	Perfluoroheptanoic acid	50	200		1000
PFHxSK	Wellington Laboratories Code: br-PFHxSK	Perfluorohexanesulfonic acid	45.5	200		910
PFOA	Wellington Laboratories Code: PFOA	Perfluorooctanoic acid	50	200		1000
PFHpS	Wellington Laboratories Code: L-PFHpS	Perfluoroheptanesulfonic acid	47.6	200		952
PFNA	Wellington Laboratories Code: PFNA	Perfluorononanoic acid	50	200		1000
PFOS	Wellington Laboratories Code: br-PFOSK	Perfluorooctanesulfonic acid	46.4	200		928
PFDA	Wellington Laboratories Code: PFDA	Perfluorodecanoic acid	50	200		1000
PFNS	Wellington Laboratories Code: L-PFNS	Perfluorononanesulfonic acid	48.0	200		960
PFUdA	Wellington Laboratories Code: PFUdA	Perfluoroundecanoic acid	50	200		1000
PFDS	Wellington Laboratories Code: L-PFDS	Perfluorodecanesulfonic acid	48.2	200		964
FOSA	Wellington Laboratories Code: FOSA-I	Perfluorooctane sulfonamide	50	200		1000
PFDoA	Wellington Laboratories Code: PFDoA	Perfluorododecanoic acid	50	200		1000
PFDoS	Wellington Laboratories Code: L-PFDoS	Perfluorododecanesulfonic acid	48.4	200		968
PFTrDA	Wellington Laboratories Code: PFTrDA	Perfluorotridecanoic acid	50	200		1000
PFTeDA	Wellington Laboratories Code: PFTeDA	Perfluorotetradecanoic acid	50	200		1000
PFHxDA	Wellington Laboratories Code: PFHxDA	Perfluorohexadecanoic acid	50	200		1000
PFODA	Wellington Laboratories Code: PFODA	Perfluorooctadecanoic acid	50	200		1000
4:2FTS	Wellington Laboratories Code: 4:2FTS	1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	46.7	200		934
6:2FTS	Wellington Laboratories Code: 6:2FTS	1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4	200		948

8:2FTS	Wellington Laboratories Code: 8:2FTS	1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	47.9	200		958
10:2FTS	Wellington Laboratories Code: 10:2FTS	1H,1H,2H,2H-perfluorododecane sulfonate (10:2)	48.2	200		964
NMeFOSAA	Wellington Laboratories Code: br-NMeFOSAA	N-methyl Perfluorooctane sulfonamidoacetic acid	50	200		1000
NEtFOSAA	Wellington Laboratories Code: br-NEtFOSAA	N-ethyl Perfluorooctane sulfonamidoacetic acid	50	200		1000
HFPO-DA	Wellington Laboratories Code: HFPO-DA	Hexafluoropropylene oxide dimer acid	50	200		1000
DONA	Wellington Laboratories Code: NaDONA	4,8-dioxa-3H-perfluorononanoic acid	47.1	200		942
9Cl-PF3ONS	Wellington Laboratories Code: 9Cl-PF3ONS	9-Chlorohexadecafluoro-3-oxanone-1-sulfonate	46.6	200		932
11Cl-PF3OUdS	Wellington Laboratories Code: 11Cl-PF3OUdS	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	47.1	200		942

Solvent: Methanol

PFAS-IDA Solution (Surrogate) 1000 ng/mL

Parent Standard	Vendor	Component	Stock Standard Conc (µg/mL)	Volume Added (µL)	Final Volume (mL)	Final Conc (ng/mL)
13C4 PFBA	Wellington Laboratories Code: MPFBA	$^{13}C_4$-Perfluorobutanoic acid	50	200	10	1000
13C5-PFPeA	Wellington Laboratories Code: MPFPeA	$^{13}C_5$-Perfluoropentanoic acid	50	200		1000
13C3-PFBS	Wellington Laboratories Code: M3PFBS	$^{13}C_3$-Perfluorobutanesulfonic acid	46.5	200		930
13C2 PFHxA	Wellington Laboratories Code: MPFHxA	$^{13}C_2$-Perfluorohexanoic acid	50	200		1000
13C4 PFHpA	Wellington Laboratories Code: M4PFHpA	$^{13}C_4$-Perfluoroheptanoic acid	50	200		1000
18O2 PFHxS	Wellington Laboratories Code: MPFHxS	$^{18}O_2$-Perfluorohexanesulfonic acid	47.3	200		946
13C4 PFOA	Wellington Laboratories Code: MPFOA	$^{13}C_4$-Perfluorooctanoic acid	50.0	200		1000
13C5 PFNA	Wellington Laboratories Code: MPFNA	$^{13}C_5$-Perfluorononanoic acid	50.0	200		1000
13C4 PFOS	Wellington Laboratories Code: MPFOS	$^{13}C_4$-Perfluorooctanesulfonic acid	47.8	200		956
13C2 PFDA	Wellington Laboratories Code: MPFDA	$^{13}C_2$-Perfluorodecanoic acid	50.0	200		1000
13C8 FOSA	Wellington Laboratories Code: M8FOSA-I	$^{13}C_8$-Perfluorooctane sulfonamide	50.0	200		1000
13C2 PFUdA	Wellington Laboratories Code: MPFUdA	$^{13}C_2$-Perfluoroundecanoic acid	50.0	200		1000
13C2 PFDoA	Wellington Laboratories Code: MPFDoA	$^{13}C_2$-Perfluorododecanoic acid	50.0	200		1000
13C2 PFTeDA	Wellington Laboratories Code: MPFTeDA	$^{13}C_2$-Perfluorotetradecanoic acid	50.0	200		1000
13C2 PFHxDA	Wellington Laboratories Code: MPFHxDA	$^{13}C_2$-Perfluorohexadecanoic acid	50.0	200		1000
M2-4:2FTS	Wellington Laboratories Code: M2-4:2FTS	Sodium 1H,1H,2H,2H-perfluoro-1-[1,2-$^{13}C_2$]-hexane sulfonate (4:2)	46.7	200		934
M2-6:2FTS	Wellington Laboratories Code: M2-6:2FTS	Sodium 1H,1H,2H,2H-perfluoro-1-[1,2-$^{13}C_2$]-octane sulfonate (6:2)	47.5	200		950
M2-8:2FTS	Wellington Laboratories Code: M2-8:2FTS	Sodium 1H,1H,2H,2H-perfluoro-1-[1,2-$^{13}C_2$]-decane sulfonate (8:2)	47.9	200		958
d3-NMeFOSAA	Wellington Laboratories Code: d3-M-MeFOSAA	N-methyl-d_3-perfluoro-1-octane sulfonamidoacetic acid	50.0	200		1000
d5-NEtFOSAA	Wellington Laboratories Code: d5-M-EtFOSAA	N-ethyl-d_5-perfluoro-1-octane sulfonamidoacetic acid	50.0	200		1000

M3HFPO-DA	Wellington Laboratories Code: M3HFPO-DA	$^{13}C_3$-Hexafluoropropylene oxide dimer acid	50.0	200		1000

Solvent: Methanol

PFAS Internal Standard Stock Solution 5000 ng/mL

Parent Standard	Vendor	Component	Stock Standard Conc (µg/mL)	Volume Added (µL)	Final Volume (mL)	Final Conc (ng/mL)
13C2 PFOA	Wellington Laboratories Code: M2PFOA	$^{13}C_2$-Perfluorooctanoic acid	50.0	400	4	5000

Solvent: Methanol

PFAS Internal Standard Spiking Solution 2500 ng/mL

Parent Standard	Vendor	Component	Stock Standard Conc (µg/mL)	Volume Added (µL)	Final Volume (mL)	Final Conc (ng/mL)
13C2 PFOA	Wellington Laboratories Code: M2PFOA	$^{13}C_2$-Perfluorooctanoic acid	50.0	200	4	2500

Solvent: Methanol

PFAS-IDA-IS Calibration Standards Level 1-Level 6

ICAL Level	Vol of PFAS LCS/Matrix Spike (µL)	Nominal Conc of PFAS (ng/mL)	Vol of PFAS-IDA Solution (µL)	Conc of IDA (ng/mL)	Vol of 5ppm PFAS-IS Stock Solution (µL)	Conc of IS (ng/mL)	Vol of Water (µL)	Vol of 80/20 MeOH/H2O (µL)	Final Vol (mL)
1	4	1.0	200	50	40	50	51	3745	4.0
2	2	2.0	50	50	10	50	13	935	1.0
3	16	5.0	160	50	32	50	44	2980	3.2
4	72	20.0	180	50	36	50	63	3285	3.6
5	160	50.0	160	50	32	50	80	2800	3.2
6	240	200	60	50	12	50	75	825	1.2

The solvent is 80/20 Methanol/Water.

Appendix C: Equations

Initial Calibration Curve Evaluation:

The linear curve uses the following function:

Equation 1

$$y = bx + c$$

Where:

y = $\frac{\text{Area (analyte)}}{\text{Area (IS)}} \times \text{Concentration (IS)}$
x = concentration
b = slope
c = intercept

The quadratic curve uses the following function:

Equation 2

$$y = ax^2 + bx + c$$

Where y, x, b, and c are the same as above, and a = curvature.

The external standard method uses the following equation:

Equation 3

$$ResponseFactor = \frac{Peak\ Area}{Concentration\ of\ Solution (ng/mL)}$$

Equation 4

$$\text{Concentration, ng/mL} = \frac{y - c}{b}$$

Equation 5

$$\text{Concentration, ng/mL} = \frac{-b + \sqrt{b^2 - 4a(c - y)}}{2a}$$

Where:

y = $\frac{\text{Area (analyte)}}{\text{Area (IS)}} \times \text{Concentration (IS)}$
x = concentration
a = curvature
b = slope
c = intercept

Water Sample Result Calculation:

Equation 6

$$\text{Concentration, ng/L} = \frac{C_{ex} V_t}{V_o}$$

Where:

C_{ex} = Concentration measured in sample extract (ng/mL)
V_t = Volume of total extract (mL)
V_o = Volume of water extracted (L)

IDA Recovery Calculation:

Equation 8

$$\%\,\text{Recovery} = \frac{A_t Q_{is}}{A_{is} Q_t RRF_{IDA}} X 100$$

Where ng/g = µg/kg and:

RF_{IDA} = Response Factor for IDA compound
A_t = Area response for IDA compound
A_{IS} = Area Response for IS compound
Q_{IS} = Amount of IS added
Q_t = Amount of IDA added

Calibration Factor (CF_x) = $\dfrac{\text{Peak area or height}_{(x)}}{\text{Standard concentration}_{(\mu g/L)}}$

Mean Calibration Factor ($\overline{CF}$) = $\dfrac{\sum_{i=1}^{n} CF_i}{n}$

where: n = number of calibration levels

Standard Deviation of the Calibration Factor (SD) = $\sqrt{\dfrac{\sum_{i=1}^{n}\left(CF_i - \overline{CF}\right)^2}{n-1}}$

where: n = number of calibration levels

Percent Relative Standard Deviation (RSD) of the Calibration Factor =
$\dfrac{SD}{\overline{\overline{CF}}} \times 100\%$

Percent Difference (%D) = $\dfrac{CF_v - \overline{CF}}{\overline{\overline{CF}}} \times 100\%$

where: CF_v = Calibration Factor from the Continuing Calibration Verification (CCV)

Percent Drift = $\dfrac{\text{Calculated Concentration} - \text{Theoretical Concentration}}{\text{Theoretical Concentration}} \times 100\%$

Percent Recovery (%R) = $\frac{C_s}{C_n} \times 100\%$

where: C_s = Concentration of the Spiked Field or QC Sample
C_n = Nominal Concentration of Spike Added

Percent Recovery (%R) for MS/MSD = $\frac{C_s - C_u}{C_n} \times 100\%$

where: C_s = Concentration of the Spiked Sample
C_u = Concentration of the Unspiked Sample
C_n = Nominal Concentration of Spike Added

Relative Percent Difference (%RPD) = $\frac{|C_1 - C_2|}{\left(\frac{C_1 + C_2}{2}\right)} \times 100\%$

where: C_1 = Measured Concentration of First Sample
C_2 = Measured Concentration of Second Sample

Sample Concentration

Extract

$C_{extract}$ (µg/L) = $\frac{\text{Peak Area (or Height)}}{\overline{\text{CF}}}$

Note: The concentrations of the 3-5 peaks chosen for quantificaton is calculated and the average is then taken for final calculation.

Appendix D: Analytes applied for Secondary Certification with NJDEP

Compound Name	Abbreviation	CAS #
Perfluorobutanoic acid	PFBA	375-22-4
Perfluoropentanoic acid	PFPeA	2706-90-3
Perfluorohexanoic acid	PFHxA	307-24-4
Perfluoroheptanoic acid	PFHpA	375-85-9
Perfluorooctanoic acid	PFOA	335-67-1
Perfluorononanoic acid	PFNA	375-95-1
Perfluorodecanoic acid	PFDA	335-76-2
Perfluoroundecanoic acid	PFUdA (PFUnA)	2058-94-8
Perfluorododecanoic acid	PFDoA	307-55-1
Perfluorotridecanoic acid	PFTrDA	72629-94-8
Perfluorotetradecanoic acid	PFTeDA (PFTA)	376-06-7
Perfluorobutanesulfonic acid	PFBS	375-73-5
Perfluorohexanesulfonic acid	PFHxS	355-46-4
Perfluorooctanesulfonic acid	PFOS	1763-23-1

NEW YORK STATE OF OPPORTUNITY. | Department of Health

ANDREW M. CUOMO
Governor

HOWARD A. ZUCKER, M.D., J.D.
Commissioner

SALLY DRESLIN, M.S., R.N.
Executive Deputy Commissioner

LAB ID: 10391

April 01, 2020

MS. KRISTINE A. DUSABLON
EUROFINS TESTAMERICA BURLINGTON
30 COMMUNITY DRIVE
SUITE #11
SOUTH BURLINGTON, VT 05403

Certificate Expiration Date:
April 01, 2021

Dear Ms. Dusablon,

Enclosed are certificate(s) of approval issued to your environmental laboratory for the current permit year. The certificate(s) supersede(s) any previously issued one(s) and is(are) in effect through the expiration date listed. Please carefully examine the certificate(s) to insure that the categories, subcategories, analytes, and methods for which your laboratory is approved are correct. In addition, verify that your laboratory's name, address, lead technical director, and identification number are accurate.

Pursuant to NYCRR Subpart 55-2.2, original certificates must be posted conspicuously in the laboratory and copies shall be made available to any client of the laboratory upon request.

Pursuant to NYCRR Subpart 55-2.6, any misrepresentation of the fields of accreditation (category - method - analyte) for which your laboratory is approved may result in denial, suspension, or revocation of your certification. Any use of the Environmental Laboratory Approval Program (ELAP) or National Environmental Laboratory Accreditation Program (NELAP) name, reference to the laboratory's approval status, and/or using the NELAP logo in any catalogs, advertising, business solicitations, proposals, quotations, laboratory analytical reports, or other materials must include the laboratory's ELAP identification number and distinguish between testing for which the laboratory is approved and testing for which the laboratory is not approved.

If you have any questions, please contact us at the Environmental Laboratory Approval Program, Wadsworth Center, New York State Department of Health, Empire State Plaza, Albany NY, 12237; by phone at (518) 485-5570; by facsimile at (518) 485-5568; and by email at elap@health.ny.gov.

Sincerely,

Victoria Pretti

Victoria Pretti
Director and QA Officer
Environmental Laboratory Approval Program

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2021
Issued April 01, 2020

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SOUTH BURLINGTON, VT 05403

NY Lab Id No: 10391

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2003) for the category ENVIRONMENTAL ANALYSES POTABLE WATER
All approved analytes are listed below:

Miscellaneous

Perchlorate	EPA 331.0

Serial No.: 61075

Property of the New York State Department of Health. Certificates are valid only at the address shown, must be conspicuously posted, and are printed on secure paper. Continued accreditation depends on successful ongoing participation in the Program. Consumers are urged to call (518) 485-5570 to verify the laboratory's accreditation status.

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WADSWORTH CENTER

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ENVIRONMENTAL ANALYSES POTABLE WATER
All approved subcategories and/or analytes are listed below:

Perfluorinated Alkyl Acids

Perfluorooctanesulfonic acid (PFOS)	ISO 25101
Perfluorooctanoic acid (PFOA)	ISO 25101

Serial No.: 61076

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Dissolved Gases

Ethane	RSK-175
Ethene (Ethylene)	RSK-175
Methane	RSK-175

Metals I

Barium, Total	EPA 6010D
	EPA 6020B
Cadmium, Total	EPA 6010D
	EPA 6020B
Calcium, Total	EPA 6010D
	EPA 6020B
Chromium, Total	EPA 6010D
	EPA 6020B
Copper, Total	EPA 6010D
	EPA 6020B
Iron, Total	EPA 6010D
	EPA 6020B
Lead, Total	EPA 6010D
	EPA 6020B
Magnesium, Total	EPA 6010D
	EPA 6020B
Manganese, Total	EPA 6010D
	EPA 6020B
Nickel, Total	EPA 6010D
	EPA 6020B
Potassium, Total	EPA 6010D

Metals I

Potassium, Total	EPA 6020B
Sodium, Total	EPA 6010D
	EPA 6020B
Strontium, Total	EPA 6010D

Metals II

Aluminum, Total	EPA 6010D
	EPA 6020B
Arsenic, Total	EPA 6010D
	EPA 6020B
Beryllium, Total	EPA 6010D
	EPA 6020B
Mercury, Total	EPA 7470A
Selenium, Total	EPA 6010D
	EPA 6020B
Vanadium, Total	EPA 6010D
	EPA 6020B
Zinc, Total	EPA 6010D
	EPA 6020B

Metals III

Cobalt, Total	EPA 6010D
	EPA 6020B
Molybdenum, Total	EPA 6010D
	EPA 6020B
Thallium, Total	EPA 6010D
	EPA 6020B

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All approved analytes are listed below:

Metals III

Tin, Total	EPA 6010D
Titanium, Total	EPA 6010D

Miscellaneous

Perchlorate	EPA 6850

Nitroaromatics and Isophorone

1,3,5-Trinitrobenzene	EPA 8330B
1,3-Dinitrobenzene	EPA 8330B
2,4,6-Trinitrotoluene	EPA 8330B
2,4-Dinitrotoluene	EPA 8330B
2,6-Dinitrotoluene	EPA 8330B
2-Amino-4,6-dinitrotoluene	EPA 8330B
2-Nitrotoluene	EPA 8330B
3-Nitrotoluene	EPA 8330B
4-Amino-2,6-dinitrotoluene	EPA 8330B
4-Nitrotoluene	EPA 8330B
Hexahydro-1,3,5-trinitro-1,3,5-triazine	EPA 8330B
Methyl-2,4,6-trinitrophenylnitramine	EPA 8330B
Nitrobenzene	EPA 8330B
Octahydro-tetranitro-tetrazocine	EPA 8330B

Polychlorinated Biphenyls

Aroclor 1016 (PCB-1016)	EPA 8082A
Aroclor 1221 (PCB-1221)	EPA 8082A
Aroclor 1232 (PCB-1232)	EPA 8082A
Aroclor 1242 (PCB-1242)	EPA 8082A

Polychlorinated Biphenyls

Aroclor 1248 (PCB-1248)	EPA 8082A
Aroclor 1254 (PCB-1254)	EPA 8082A
Aroclor 1260 (PCB-1260)	EPA 8082A
Aroclor 1262 (PCB-1262)	EPA 8082A
Aroclor 1268 (PCB-1268)	EPA 8082A

Sample Preparation Methods

	EPA 3010A
	EPA 3510C
	EPA 3520C

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All approved analytes are listed below:

Characteristic Testing

Synthetic Precipitation Leaching Proc.	EPA 1312
TCLP	EPA 1311

Metals I

Barium, Total	EPA 6010D
	EPA 6020B
Cadmium, Total	EPA 6010D
	EPA 6020B
Calcium, Total	EPA 6010D
	EPA 6020B
Chromium, Total	EPA 6010D
	EPA 6020B
Copper, Total	EPA 6010D
	EPA 6020B
Iron, Total	EPA 6010D
	EPA 6020B
Lead, Total	EPA 6010D
	EPA 6020B
Magnesium, Total	EPA 6010D
	EPA 6020B
Manganese, Total	EPA 6010D
	EPA 6020B
Nickel, Total	EPA 6010D
	EPA 6020B
Potassium, Total	EPA 6010D
	EPA 6020B

Metals I

Silver, Total	EPA 6010D
	EPA 6020B
Sodium, Total	EPA 6010D
	EPA 6020B
Strontium, Total	EPA 6010D

Metals II

Aluminum, Total	EPA 6010D
	EPA 6020B
Antimony, Total	EPA 6010D
	EPA 6020B
Arsenic, Total	EPA 6010D
	EPA 6020B
Beryllium, Total	EPA 6010D
	EPA 6020B
Mercury, Total	EPA 7471B
Selenium, Total	EPA 6010D
	EPA 6020B
Vanadium, Total	EPA 6010D
	EPA 6020B
Zinc, Total	EPA 6010D
	EPA 6020B

Metals III

Cobalt, Total	EPA 6010D
	EPA 6020B
Molybdenum, Total	EPA 6010D

Serial No.: 61078

NELAP RECOGNIZED TNI ACCREDITATION BODY

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All approved analytes are listed below:

Metals III

Molybdenum, Total	EPA 6020B
Thallium, Total	EPA 6010D
	EPA 6020B
Tin, Total	EPA 6010D
Titanium, Total	EPA 6010D

Miscellaneous

Organic Carbon, Total	USER DEFINED Lloyd Kahn mod
Perchlorate	EPA 6850

Nitroaromatics and Isophorone

1,3,5-Trinitrobenzene	EPA 8330B
1,3-Dinitrobenzene	EPA 8330B
2,4,6-Trinitrotoluene	EPA 8330B
2,4-Dinitrotoluene	EPA 8330B
2,6-Dinitrotoluene	EPA 8330B
2-Amino-4,6-dinitrotoluene	EPA 8330B
2-Nitrotoluene	EPA 8330B
3-Nitrotoluene	EPA 8330B
4-Amino-2,6-dinitrotoluene	EPA 8330B
4-Nitrotoluene	EPA 8330B
Hexahydro-1,3,5-trinitro-1,3,5-triazine	EPA 8330B
Methyl-2,4,6-trinitrophenylnitramine	EPA 8330B
Nitrobenzene	EPA 8330B
Octahydro-tetranitro-tetrazocine	EPA 8330B

Polychlorinated Biphenyls

Aroclor 1016 (PCB-1016)	EPA 8082A
Aroclor 1221 (PCB-1221)	EPA 8082A
Aroclor 1232 (PCB-1232)	EPA 8082A
Aroclor 1242 (PCB-1242)	EPA 8082A
Aroclor 1248 (PCB-1248)	EPA 8082A
Aroclor 1254 (PCB-1254)	EPA 8082A
Aroclor 1260 (PCB-1260)	EPA 8082A
Aroclor 1262 (PCB-1262)	EPA 8082A
Aroclor 1268 (PCB-1268)	EPA 8082A

Sample Preparation Methods

EPA 3050B
EPA 3550C
EPA 3540C
EPA 3541

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All approved analytes are listed below:

Acrylates

Acetonitrile	EPA TO-15
Methyl methacrylate	EPA TO-15

Chlorinated Hydrocarbons

1,2,4-Trichlorobenzene	EPA TO-15
Hexachlorobutadiene	EPA TO-15

Polychlorinated Biphenyls

PCBs and Aroclors	EPA TO-10A
	EPA TO-4A

Polynuclear Aromatics

Acenaphthene	EPA TO-13A
Acenaphthylene	EPA TO-13A
Anthracene	EPA TO-13A
Benzo(a)anthracene	EPA TO-13A
Benzo(a)pyrene	EPA TO-13A
Benzo(b)fluoranthene	EPA TO-13A
Benzo(g,h,i)perylene	EPA TO-13A
Benzo(k)fluoranthene	EPA TO-13A
Chrysene	EPA TO-13A
Dibenzo(a,h)anthracene	EPA TO-13A
Fluoranthene	EPA TO-13A
Fluorene	EPA TO-13A
Indeno(1,2,3-cd)pyrene	EPA TO-13A
Naphthalene	EPA TO-13A
	EPA TO-15

Polynuclear Aromatics

Phenanthrene	EPA TO-13A
Pyrene	EPA TO-13A

Purgeable Aromatics

1,2,4-Trimethylbenzene	EPA TO-15
1,2-Dichlorobenzene	EPA TO-15
1,3,5-Trimethylbenzene	EPA TO-15
1,3-Dichlorobenzene	EPA TO-15
1,4-Dichlorobenzene	EPA TO-15
2-Chlorotoluene	EPA TO-15
Benzene	EPA TO-15
Chlorobenzene	EPA TO-15
Ethyl benzene	EPA TO-15
m/p-Xylenes	EPA TO-15
o-Xylene	EPA TO-15
Styrene	EPA TO-15
Toluene	EPA TO-15
Total Xylenes	EPA TO-15

Purgeable Halocarbons

1,1,1-Trichloroethane	EPA TO-15
1,1,2,2-Tetrachloroethane	EPA TO-15
1,1,2-Trichloro-1,2,2-Trifluoroethane	EPA TO-15
1,1,2-Trichloroethane	EPA TO-15
1,1-Dichloroethane	EPA TO-15
1,1-Dichloroethene	EPA TO-15
1,2-Dibromoethane	EPA TO-15

Serial No.: 61079

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All approved analytes are listed below:

Purgeable Halocarbons

1,2-Dichloroethane	EPA TO-15
1,2-Dichloropropane	EPA TO-15
3-Chloropropene (Allyl chloride)	EPA TO-15
Bromodichloromethane	EPA TO-15
Bromoform	EPA TO-15
Bromomethane	EPA TO-15
Carbon tetrachloride	EPA TO-15
Chloroethane	EPA TO-15
Chloroform	EPA TO-15
Chloromethane	EPA TO-15
cis-1,2-Dichloroethene	EPA TO-15
cis-1,3-Dichloropropene	EPA TO-15
Dibromochloromethane	EPA TO-15
Dichlorodifluoromethane	EPA TO-15
Methylene chloride	EPA TO-15
Tetrachloroethene	EPA TO-15
trans-1,2-Dichloroethene	EPA TO-15
trans-1,3-Dichloropropene	EPA TO-15
Trichloroethene	EPA TO-15
Trichlorofluoromethane	EPA TO-15
Vinyl bromide	EPA TO-15
Vinyl chloride	EPA TO-15

Volatile Chlorinated Organics

Benzyl chloride	EPA TO-15

Volatile Organics

1,2-Dichlorotetrafluoroethane	EPA TO-15
1,3-Butadiene	EPA TO-15
1,4-Dioxane	EPA TO-15
2,2,4-Trimethylpentane	EPA TO-15
2-Butanone (Methylethyl ketone)	EPA TO-15
4-Methyl-2-Pentanone	EPA TO-15
Acetone	EPA TO-15
Carbon Disulfide	EPA TO-15
Cyclohexane	EPA TO-15
Hexane	EPA TO-15
Isopropanol	EPA TO-15
Methyl tert-butyl ether	EPA TO-15
n-Heptane	EPA TO-15
tert-butyl alcohol	EPA TO-15

Serial No.: 61079

Attachment 2

Integral Data Validation
Personnel Resumes

Marcia Greenblatt, Ph.D., P.E.
Principal

Education and Credentials

Ph.D., Water Resources Engineering, University of California, Berkeley, 1997

M.S., Water Resources Engineering, University of California, Berkeley, 1993

B.S., Forestry, University of Massachusetts, Amherst, 1989

Professional Engineer, Massachusetts (License No. 48975), New York (License No. 100156)

Continuing Education and Training

Facilitation and Mediation of Public and Environmental Conflicts, Collaborative Decision Resources (2017)

The Transport of Sediment and Contaminants in Surface Waters, a short course taught by Dr. Wilbert Lick of University of California, Santa Barbara

Professional Profile

Dr. Marcia Greenblatt is a water resources engineer with 22 years of specialized experience in hydrodynamic, water quality, and sediment investigations. She has extensive involvement in CERCLA remedial investigations and feasibility studies (RI/FSs) at large sediment sites. Her responsibilities have included management of a major feasibility study and design of sediment, water column, and bathymetric data collection programs and field sampling plans. In addition, she has integrated data analyses within a geographic information system (GIS) to support site conceptualization, characterize and evaluate fate and transport processes, identify data gaps, parameterize and apply numerical models, and evaluate remedial alternatives. Dr. Greenblatt has designed and performed several modeling studies, applying both simple and complex numerical models, to predict hydrodynamic flows, sediment erosion, transport and deposition, chemical fate and transport, and water quality. She has performed numerous modeling studies for mixing zone evaluations to support NPDES renewals as well as operational evaluations, with several of these studies focused on thermal discharges. Dr. Greenblatt has served as both a testifying and consulting technical expert on water quality and sediment allocation matters.

Relevant Experience

Sediment Investigations

Lower Passaic River RI/FS, New Jersey—Project manager of the feasibility study, focused on evaluation of a source control interim remedy in the upper 9 miles of the 17-mile study area. If implemented, the interim remedy would be part of an adaptive management program. Participated in all aspects of this Lower Passaic River remediation project, including developing and managing sediment and water column field investigations; interpreting and analyzing data; and combining multiple lines of evidence (bathymetry, grain size, channel slope, and radiochemistry data) to support system understanding. Works closely with the project coordinators and project consulting team supporting project strategy development and technical review of project documents.

Yosemite Slough Pre-Remedial Design Investigation, San Francisco, California—Led a numerical modeling study to support an EPA

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Louisville, CO 80027

720.465.3347
mgreenblatt@integral-corp.com

non-time-critical removal action of lead- and PCB-contaminated sediments at the Yosemite Slough Superfund site. A hydrodynamic and sediment transport model was developed to assess cap stability to support engineering design. A field study was performed to collect site-specific data to set up and calibrate the models, and model predictions of bed shear stress and residual transport during tidal and storm conditions will be used in future design of capping and dredging remedy.

Big River Sediment Feasibility Study, Missouri—Served as project manager for feasibility study of a 50-mile reach of a mining-impacted river. The project included collecting sediment, soil, porewater, and tissue data to support a supplemental remedial investigation; developing a site conceptual model; updating the ecological risk assessment; performing a human health risk assessment; and identifying and evaluating remedial options. Developed and directed field investigations to support development of site-specific preliminary remediation goals to support evaluation of potential remedial options.

Sparrows Point, Baltimore, Maryland—Served as project manager of the investigation of potential offsite impacts of a steel mill to the surrounding harbor. Provided strategic support during scope development negotiations with state and federal agencies. Developed investigation approach, which included data collection, surface water modeling, and risk assessments.

Evaluation of Sediment Fate and Transport, Michigan—Technical expert supporting litigation on allocation evaluation of contaminated river sediments. Evaluated available data and previous court documents to develop a conceptual model of historical and ongoing sediment and contaminant transport at a Superfund site.

Engineering Evaluation and Cost Analysis (EE/CA) at a Former Chemical Manufacturing Facility, Portland, Oregon—Supported the EE/CA for sediment remediation at the site in Portland Harbor, including evaluating potential recontamination of remedial alternatives and application of a cap model to support development of conceptual design parameters and cost estimates.

Confidential Site, Washington—Provided senior planning and review for an analysis of the contributions of urban stormwater runoff to dioxin contamination in harbor sediments. Supported development and review of an analytical, GIS-based model using the revised universal soil loss equation and measured dioxin concentrations in municipal and regional soils to estimate the potential dioxin load associated with runoff and the associated liability to the municipality.

Dredge Disposal Monitoring, Providence Harbor, Rhode Island—Evaluated monitoring data collected during maintenance dredging. Developed confined aquatic disposal (CAD) cells and dredging disposal into the CAD cells at the Rhode Island Sound Disposal Site, as directed by the Providence River and Harbor Maintenance Dredging Project Water Quality Certification. Compared dredge material plume modeling results performed to support the environmental impact statement with monitoring results and recommended potential improvements for development of future dredged material monitoring plans.

Thermal Modeling and Evaluations

Thermal Discharge Evaluation, Vermont—Provided expert testimony in oral deposition, written testimony, and public hearings on the potential impact of thermal discharge from a nuclear power plant to receiving waters. Evaluated flow and temperature data and a hydrodynamic and thermal transport model to assess completeness of impact characterization.

Thermal Discharge Permit Evaluation and Litigation Support, Confidential Site—Evaluated existing NPDES thermal discharge permit and supporting modeling and data to assess validity and achievement of permit limits. Wrote expert opinion report.

Thermal Discharge Study, Kennedy Center for Performing Arts, Washington, DC—Designed a field program to characterize the thermal discharge into the Potomac River. The study was performed as part of NPDES compliance, and required that the Kennedy Center provide a temporal and spatial characterization of the thermal plume.

Thermal Discharge Study, Ohio—Designed a field program and modeling study as part of a thermal discharge study evaluating the refinery discharge plume to support an NPDES permit renewal. The field program includes long-term deployment of moorings and several boat-based surveys to delineate the thermal plume under a range of seasonal conditions. The modeling program includes both CORMIX (for nearfield analysis) and EFDC (farfield analysis) to predict the extent of the thermal plume under existing conditions not observed during the field study as well as future loading conditions. Developed the work plan, which included negotiation with and approval from Ohio EPA.

Thermal Discharge Analysis, Michigan—Evaluated the potential impact of increased thermal blowdown from the addition of a new unit at an existing nuclear power facility. Served as senior reviewer of the CORMIX model, which was used to predict the thermal mixing zone under typical and extreme monthly conditions, as well as rare events. The thermal discharge analysis also included data collection and review and statistical analysis of flow conditions. Presented the results on two occasions to the Nuclear Regulatory Commission.

Thermal Study of a Cooling Reservoir, Texas—Provided senior modeling oversight for the development of a 3-dimensional hydrodynamic and thermal model. Set up and applied the model to evaluate the potential impact of increased thermal load and reservoir reconfiguration on reservoir water temperatures. Project included characterization of reservoir temperatures and stratification, and calibration of the EFDC model to the observed temperatures. Ran the model to simulate a potential worst-case meteorological and loading condition to characterize temperatures across the reservoir.

Three-Dimensional Hydrodynamic and Thermal Modeling Study, Southeastern United States—Served as project manager and senior model reviewer, overseeing the development and application of the EFDC numerical model, which was used to evaluate the effect of moving a thermal discharge location on cooling water intake temperatures in a tidal estuary. The proposed channel bypass would move the heated discharge approximately 2 miles closer to the intake location. The model was developed as a submodel to a regional model and calibrated to available water surface, salinity, and temperature measurements. Several months of plant operation were simulated, and predicted intake temperatures with and without the proposed bypass were compared to support the decision-making process surrounding the construction of the bypass channel.

Hydrodynamic, Sediment, and Water Quality Studies

Florida v. Georgia No. 142, Original—Testified as an expert witness in the U.S. Supreme Court in an interstate water rights case. Performed hydrodynamic modeling to evaluate water quality impacts due to upstream water use.

Barr Lake and Milton Reservoir Nutrient Total Maximum Daily Load (TMDL) Water Quality Model, Colorado—Served as project manager for the expansion (including new input data) and recalibration of a water quality model to support assessment of TMDL alternatives for the Barr Lake and Milton Reservoir Watershed Association Technical Committee. The linked watershed/in-lake model simulated flows and nutrients in a complex system with an extensive canal system, numerous irrigation inputs and withdrawals, and two water supply reservoirs. The EPA models SWAT and WASP were applied to ultimately predict present and potential future in-lake nutrient systems in a severely eutrophic system.

Sedimentation and Water Quality Modeling Study, Alaska—Led a study to evaluate the potential sedimentation and turbidity impacts due to proposed construction of a trans-Alaska liquefied natural gas pipeline. Developed a 3-dimensional hydrodynamic and sediment transport model using Delft-3D to predict water column turbidity concentrations and sedimentation based on proposed construction activities. Models were set up in a tidal bay and in multiple freshwater streams to characterize the range of potential impact. Submitted modeling reports as part of the Federal Energy Regulatory Commission application to support the environmental report.

Water Quality and Fish Tissue Field Study, Confidential Client—Designed and implemented a field program to evaluate recent water quality and tissue concentrations for emerging contaminants. The program was designed to characterize fluxes, identify potential upland sources, and compare to previous studies. Program was designed and implemented in an expedited timeframe to support ongoing negotiations.

Three-Dimensional Hydrodynamic and Sediment Transport Modeling Study, Gulf of Mexico—Set up and applied the EPA-supported EFDC model to evaluate potential water quality and benthic habitat impacts associated with proposed construction of a pipeline from Tampa Bay through the Gulf of Mexico. Applied the model to predict tidally varying currents and sediment transport and deposition potentially resulting from pipeline construction activities. Modeling activities included application of the U.S. Army Corps of Engineers ADDAMS models DREDGE and STFATE to estimate sediment resuspension rates from dredging and sidecasting operations, and mapping model-predicted suspended sediment concentrations and sediment deposition extents and depths over sensitive habitat areas.

Dredge Disposal Evaluation, Savannah Harbor, Georgia—Applied the ADDAMS STFATE model to evaluate the fate and transport of disposed dredge material in Savannah Harbor. Used field data to set up the model. Conducted model simulations to estimate sediment transport and water column concentration. Model results were interpreted to determine whether relevant water quality standards were achieved within the disposal area.

Industrial Effluent Modeling in Tidal Estuary, Nova Scotia, Canada—Modeled nearfield and farfield dilution and mixing of an industrial effluent discharge into a tidal estuary to support the identification of alternate locations for relocating an existing outfall. Used the 3-dimensional hydrodynamic and water quality model HEM3D to simulate a conservative tracer and predict the extent of the visible plume. A number of locations and discharge scenarios (continuous, hold-and-release) were investigated. Calibrated the farfield model by using measurements taken during a synoptic field survey specially designed to support the modeling task. Conducted nearfield mixing modeling to evaluate alternative diffuser designs.

Nonpoint Source Modeling for Nutrient TMDL Study, Massachusetts—Modeled hydrology, water quality, and biology in a eutrophic river system in support of the TMDL process. Project included several rounds of field data collection and analysis, model selection, setup, and development. Set up an application of the HSPF watershed and instream numerical model to simulate point and nonpoint source flow and nutrient loads into the river, as well as instream nutrient and biomass interactions. Set up the model based on GIS data, and calibrated and validated the model using several sets of field data. Once calibrated, applied the model to assess several alternative management scenarios.

Oil Spill Modeling, Brazil—Used available bathymetry and shoreline data to set up and apply a hydrodynamic and oil spill model to assess the impact of a potential oil spill in support of a permit application. The dynamic model was calibrated to measured current and water surface elevation data collected for the study. The predicted flow fields were imported into a particle tracking oil spill model. The oil spill model was applied for several dominant wind conditions and several types (varying in location, duration, and volume) of oil spills. The areal extent and location of the spill were tracked for several days. The extent of coastline potentially impacted and the time until impact were assessed for each modeled scenario.

Hurricane Protection Office, New Orleans, Louisiana—To support the design-build of a 9,000-ft hurricane barrier in coastal Louisiana, developed a numerical model to evaluate channel velocities during construction and operation of the barrier sector gates. Designed and managed the field program implemented to characterize the flows and circulation patterns in the study area. An RMA-2 model was set up, calibrated, and validated to a large set of available field data throughout the model domain. The calibrated model was applied to predict velocities for a set of design scenarios, and the model results were used to support the design team in construction and operations planning.

Temperature TMDL Study, Vermont—Developed a numerical model (SNTEMP) to simulate water temperature in a river in support of the TMDL process. Field data were used to calibrate and validate the model. The model was applied to assess the effects of alternative management scenarios on instream water temperature. Model results were compared to the requirements of native and/or desired species to determine the optimum alternatives for adequate habitat.

Mixing Zone Studies and National Pollutant Discharge Elimination System Permitting

Discharge Permit Renewal Evaluation, American Samoa—Provided consulting expertise and strategic direction to support renewal of a NPDES permit to discharge nutrients into a harbor. Work included review of existing data and mixing zone modeling, development of CORMIX initial mixing model and DELFT3D far-field numerical model, and submittal of an expert report to support comments on draft permit.

Anti-Degradation Evaluation, Ohio—Evaluated the impact of cessation of a groundwater pump and treat system on downstream water quality. Applied state guidance to model potential future water quality for evaluation of anti-degradation potential.

Thermal Discharge Permit Evaluation, Confidential Site—Evaluated existing NPDES thermal discharge permit and supporting modeling and data to assess validity and achievement of permit limits. Wrote expert opinion report.

Mixing Zone Analysis, Gilbert Generating Station, New Jersey—Applied CORMIX expert mixing zone model to determine the extent of the mixing zone induced by a cooling water discharge. Compared results with applicable water quality standards.

Water Discharge Permitting, Wythe, North Carolina—Modeled the mixing zone of a cooling tower discharge into an adjacent river for several constituents of interest. Evaluated alternative diffuser designs to determine the best design and location for maximum mixing.

Water Supply and Discharge Design and Permitting, Rensselaer, New York—Evaluated siting intake and discharge locations to avoid recirculation on the tidally reversing river for a proposed newsprint facility on the Hudson River. The potential to entrain fish larvae at the intake was evaluated on a seasonal basis for the vulnerable life stages of each species. The mixing zone of the effluent was evaluated for various times during the tidal cycle under a range of freshwater inflow conditions. The optimal diffuser design was developed to meet the mixing requirements and the physical constraints within the river (including rapidly changing bathymetry and the proximity to a shipping channel).

Oceanographic Studies

Disposal Area Monitoring System (DAMOS), New England—Served as program manager for the DAMOS program for monitoring of disposed sediment and benthic habitat recovery at dredged material disposal sites in coastal New England and New York. Budgeted tasks, planned resources and surveys, and coordinated subcontractors. Oversaw monitoring cruises that typically included bathymetric, side-scan, and sediment-profile imaging (SPI) surveys after the disposal season. Supported the development of bathymetric maps and depth-difference maps, interpretation of SPI results, and comparison of disposal area sediment data with reference and historical data. Wrote and reviewed technical reports included as DAMOS contributions and distributed to the public. Coordinated the 10th and 11th DAMOS symposia, where recent DAMOS work and new technological advances were presented to government representatives (state and federal) as well as the interested public.

Physical Oceanographic Evaluation, Long Island Sound, New York—As part of a major EPA-required environmental impact study to assess potential impacts associated with dredged material disposal and evaluate alternative candidate disposal sites in Long Island Sound, performed extensive oceanographic data analysis, including time series analysis and spectral analysis of water velocity and wave data, and developed a graphical presentation of all historical and recent data. Specific tasks included an intensive review of historical physical oceanographic data, creation and distribution of a GIS-based database of all physical oceanographic data on Long Island Sound, collaboration and meetings with the research community in the sound to reach consensus on required future hydrodynamic data collection, and selection of optimal disposal site locations in terms of hydrodynamic and sediment transport objectives.

Publications / Presentations

Greenblatt, M., W. Locke, and R. Law. 2019. Adaptive management: A practical approach to remediation of the Lower Passaic River. Platform presentation at Battelle 10th International Conference on the Remediation and Management of Contaminated Sediments, New Orleans, LA. February 11−14.

Greenblatt, M., and J. Connolly. 2015. Lower Passaic River (RM 10.9) early action: Evaluation of remedial design data and implications for river-wide remedy development. Battelle 8th International Conference on Remediation of Contaminated Sediments, New Orleans, LA. January 12–15.

Thorvaldsen, A., G. Dang, P. Israelsson, J. Connolly, P. Oates, and M. Greenblatt. 2015. A contaminant mapping methodology for remedial alternatives assessment on the Lower Passaic River. Battelle 8th International Conference on Remediation of Contaminated Sediments, New Orleans, LA. January 12–15.

Greenblatt, M., M. Barbara, J. Connolly, and R. Law. 2011. Lower Passaic River conceptual site model—Integration of multiple lines of evidence. Battelle 6th International Conference on Remediation of Contaminated Sediments, New Orleans, LA. February 8.

Barbara, M., M. Greenblatt, and J. Connolly. 2010. Sediment stability in the Lower Passaic River—Integration of multiple lines of evidence. Fourth Passaic River Symposium, Montclair, NJ. June 22.

Connolly, J., M. Greenblatt, L. Postma, H. Winterwerp, R. Canizares, and R. Law. 2009. Interpretation of spatial patterns of contaminants in the Lower Passaic River. SETAC North America 30th Annual Meeting, New Orleans, LA. November 19–23.

Law, R., J. McNally, R. Canizares, and M. Greenblatt. 2009. Evaluation of sediment stability in the Lower Passaic River using the weight-of-evidence approach. SETAC North America 30th Annual Meeting, New Orleans, LA. November 19–23.

Greenblatt, M., S. Wolf, and T. Fredette. 2009. Providence River and Harbor maintenance dredging project—summary and lessons learned. Western Dredging Association XXIX Conference and 40th Texas A&M Dredging Seminar, Tempe, AZ. June 14–17.

Gerath, M., and M. Greenblatt. 2008. Evaluation of hydrologic disturbance frequency and duration in western ephemeral streams. In: Relevance of ambient water quality criteria for ephemeral streams and effluent-dependent watercourses of the arid western United States. R.W. Gensemer, R.D. Meyerhoff, K.J. Ramage, and E.F. Curley (Eds.). Pensacola, FL. Society of Environmental Toxicology and Chemistry. 268 pp.

Ruffle, B., M. Greenblatt, and D. Reid-Green. 2007. Application of geostatistics and risk assessment to property divestitures. University of Massachusetts Annual Conference on Soils, Sediments, Water, and Energy, Amherst, MA. October 15–18.

Wolf, S., M. Greenblatt, and T. Fredette. 2006. Stability and recovery of capped in-channel CAD cells—Boston Harbor, MA. Western Dredging Association XXVI Conference and 38th Texas A&M Dredging Seminar, San Diego, CA. June 25–27.

Greenblatt, M. 2003. Modeling aquatic biology: A TMDL challenge. 27th Annual Meeting of the New England Association of Environmental Biologists, Wachusett, MA. March 26–28.

Greenblatt, M., K. Hickey, and K. Heim. 2001. Riverine nutrient TMDL allocation: overview of the field program and modeling application. In: Proc. of the 2nd ASCE Wetlands Engineering and River Restoration Conference. Reno, NV. American Society of Civil Engineers.

Morin, I., K. Hickey, M. Greenblatt, and G. Gong. 2000. Using GIS as an interface for 3D hydrodynamic modeling. Estuarine and coastal modeling. In: Proc. of the 6th International Conference, New Orleans, LA. November 1999.

Hickey, K., I. Morin, M. Greenblatt, and G. Gong. 2000. 3D hydrodynamics of an estuary in Nova Scotia. Estuarine and coastal modeling. Proc. of the 6th International Conference, New Orleans, LA. November 1999.

Gilman, J, J. San Antonio, M. Greenblatt, and S. Emmons. 2010. Application of RMA2 for design and construction of the inner harbor navigation canal hurricane surge barrier. In: 83rd Annual Water Environment Federation Technical Exhibition and Conference; WEFTEC. New Orleans, LA.

Greenblatt, M.S., and R.J. Sobey. 1998. Near surface flow and transport in tidal wetland marsh plains. In: Proc. of the ASCE Wetlands Engineering and River Restoration Conference. Denver, CO. American Society of Civil Engineers.

Greenblatt, M.S., and R.J. Sobey. 1999. Subsurface flow and transport in tidal wetlands: Marsh plain equations. *J. Engr. Mech*. 125(8):971–974.

Greenblatt, M.S. 1997. Surface water–groundwater interactions in a tidal wetland marsh plain. Ph.D. thesis. University of California, Berkeley, Berkeley, CA.

Greenblatt, M.S., and R.J. Sobey. 1997. Saturated/unsaturated flow and salinity transport using method of lines. pp. 907–912. In: Environmental and Coastal Hydraulics: Protecting the Aquatic Habitat. Water for a Changing Global Community: Proc. of the XXVII Congress. International Association for Hydraulic Research, San Francisco, CA.

Greenblatt, M.S., and R.J. Sobey. 1997. Subsurface flow and salinity response patterns in a tidal wetland marsh plain. In: Tidal Wetland Management: Integrated Ecological and Physical Processes. Proc. of the XXVII Congress. International Association for Hydraulic Research, San Francisco, CA. Short Course Notes.

Jeffrey E. Marsh, E.I.T.
Consultant

Education and Credentials

B.S., Chemical Engineering, Clarkson University, Potsdam, New York, 2003

New York Intern Engineer (Engineer in Training) (License No. 083740)

Continuing Education and Training

Hazardous Waste Operations and Emergency Response 40-Hour Certification (2003; refreshers annually)

OSHA Confined Space Training (2015)

First Aid and CPR Certified (2018)

Professional Affiliations

Member of Air and Waste Management Association

Achievements and Awards

American Council of Engineering Companies 2018 Diamond Award

Trenchless Technology 2016 Rehabilitation Project of the Year Honorable Mention

Western Dredging Association 2014 Health and Safety Excellence Award

Professional Profile

Mr. Jeffrey Marsh has 16 years of experience in the fields of chemical and environmental engineering. He is currently responsible for delegating technical responsibilities to engineers, designers, and drafters on complex and diverse projects. He has an active role in developing project budgets and schedules, preparing reports, managing projects, and maintaining a close relationship with clients, regulatory agencies, and other stakeholders throughout the development of a project.

His experience includes monitoring and management of remedial investigations; design, construction, startup, operation, monitoring, and troubleshooting of remedial systems; development of treatment solutions to remedy contaminated sites; and preparation of feasibility studies, as well as air and water permitting. Mr. Marsh is also experienced in the design, implementation, and troubleshooting of computer control systems. He has experience preparing cost estimates and engineering input for feasibility studies at CERCLA sites and with large-scale groundwater remediation system design, construction, and operation and with habitat restoration within floodplain environments.

Relevant Experience

Remedial Investigation, Design, Construction, and Operation

Groundwater Collection, Conveyance, and Treatment System Design and Construction, Onondaga Lake Superfund Site, Geddes, New York—Managed the design of an interim remedial measure (IRM) and oversaw construction for groundwater collection systems, low permeability lining systems, groundwater pumping systems, and groundwater treatment plant. Project included design and construction of more than 7,000 ft of groundwater collection trench, a treatment plant designed to reduce groundwater pH for direct discharge to publicly owned treatment works, and upgrades to an existing pumping station. Groundwater contamination included primarily metals, volatile organic compounds (VOCs), and semivolatile organic compounds (SVOCs), with a pH of up to 12 and high scalability.

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Groundwater Collection System and Storm Sewer Rehabilitation Design and Construction, Onondaga Lake Superfund Site, Geddes, New York—Managed development of IRM design for rehabilitation of existing interstate highway storm sewers, groundwater collection systems, low permeability lining systems, and habitat restoration. Project included mitigation of contaminated seepage affecting a berm proximate to a public highway via low-permeable lining systems and a groundwater collection system, and reduction of existing highway storm sewer infiltration via cured-in-place-pipe. Contamination included high concentrations of VOCs, primarily benzene, chlorobenzene, and dichlorobenzene.

Groundwater Collection System and Storm Sewer Rehabilitation Pre-design Investigation and Design, Onondaga Lake Superfund Site, Geddes, New York—Managed development and implementation of a pre-design investigation program, including topographic survey, geotechnical borings, monitoring well installation, *in situ* hydraulic conductivity testing, groundwater and surface water sampling and level monitoring, culvert inspection and sampling, vegetation survey, geotechnical sample testing, and hydrogeologic investigation. Subsequently, managed development of IRM design for groundwater and seep collection, treatment and conveyance, low permeability lining systems, culvert and manhole rehabilitation, and habitat restoration. Groundwater contamination included primarily metals, VOCs, and SVOCs.

Groundwater Pump Station Pre-design Investigation and Design, Onondaga Lake Superfund Site, Geddes, New York—Managed pre-design investigation and development of IRM design and provided construction oversight for multiple groundwater pump stations. Pump stations were installed to convey collected groundwater to a central treatment facility located more than 2 miles away. Groundwater contamination included primarily metals, VOCs, and SVOCs, with a pH of up to 12 and high scalability.

Stormwater Lift Station and Storm Sewer Rehabilitation Design and Construction, Onondaga Lake Superfund Site, Geddes, New York—Performed and provided oversight for day-to-day design tasks, including development and review of specifications, drawings, and reports, associated with an IRM at a former industrial site. Provided oversight and reviewed submittals during construction. IRM included lining and rehabilitation of existing storm sewers impacted by mercury and VOCs, and installation of a stormwater lift station designed to bypass a 150-year-old, 40-ft-deep, hand-laid, brick storm sewer pipe experiencing heavy infiltration. Peak flows were approximately 5,000 gallons per minute (gpm) with an average flow of approximately 30 gpm.

Groundwater Collection and Conveyance, and Brook Sediment Excavation and Restoration Design and Construction, Onondaga Lake Superfund Site, Geddes, New York—Performed and provided oversight for day-to-day design tasks, including development and review of specifications, drawings, and reports, associated with an IRM at a former industrial site. Provided oversight and reviewed submittals during construction. IRM included low permeability liner systems, groundwater collection and conveyance systems, culvert rehabilitation, sediment removal, and wetland, stream, and habitat restoration. Project included construction of two groundwater pump stations, installation of approximately 4,000 ft of groundwater collection and conveyance, rehabilitation of a former railroad bridge eligible for listing on the National Register of Historic

Places, and sediment removal within a Class C stream. Project included a large permitting effort, because the site was owned by 13 different public and private property owners, including the New York State Department of Transportation and CSX, and was transected by more than 15 different utility rights of way. Groundwater contaminants included primarily metals, VOCs, and SVOCs, with a pH of up to 12, high scalability, and a free product (nonaqueous-phase liquid, NAPL) plume.

Geothermal Testing and Design, New Haven, Connecticut—Designed geothermal pilot testing procedure for standing column geothermal well system. Project included the first use of pilot testing for standing column wells to support geothermal design in the United States. Tasks included full-scale pilot testing followed by design and specification of geothermal system.

Geothermal Design for International Conference Center, New Haven, Connecticut—Designed standing column geothermal well system. Tasks included design and specification of geothermal system developed to achieve high standard of noise reduction and aesthetic improvements for international conference center.

Geothermal Design and Optimization, New Haven, Connecticut—Designed standing column geothermal well system. Tasks included design and specification of geothermal system for conference centers as well as optimization studies to investigate the most cost-effective combination of geothermal and central plant systems.

Dual-Phase Extraction System, Rochester, New York—Performed dual-phase, vacuum-enhanced, pumping pilot test for the removal of petroleum hydrocarbons in a residential neighborhood affected by leaking tanks at a nearby gasoline station. Used pilot test results to design a full-scale remedy consisting of dual-phase extraction with subsequent treatment of water and vapor streams via oxidation and air stripping. Also, managed and coordinated day-to-day operations and maintenance of full-scale remedy.

Pump and Treat System, Defiance, Ohio—Designed a pump and treat system for the removal of PCBs from groundwater at a foundry. The system use ultrafiltration to remove PCBs sorbed to solids. Prepared design drawings and assisted with system startup.

Soil Vapor Extraction/Bioremediation System, North Hollywood, California—Managed source removal activities for an active soil vapor extraction system for the removal of petroleum hydrocarbons from the subsurface. Work included monitoring and evaluating operating conditions to recommend system adjustments to optimize operation. Also worked as project engineer for the design of a hybrid remediation system for the downgradient methyl *tert*-butyl ether plume. The system combines *ex situ* treatment with biologically seeded carbon beds and oxygenation of the groundwater for *in situ* enhanced biological degradation. Work included an IRM design and work plan, preliminary and final design of a full-scale remedy, and system startup and monitoring. Teamed with regulators to become the first site ever in the state of California to reinject treated groundwater back into a drinking water aquifer.

Dual-Phase Extraction System, Lodi, New Jersey—Designed a dual-phase extraction system for the removal of chlorinated solvents from groundwater. The system uses a catalytic oxidizer, scrubber, carbon, resin, and air stripper to remove the contaminants of concern. Prepared design drawings and assisted with system startup and long-term operations. Also coordinated short-term operations and maintenance, such as water and air sampling, well-field data collection, and control loop tuning.

Dual-Phase Extraction System, Boston, Massachusetts—Designed a dual-phase extraction system for the removal of chlorinated solvents and petroleum hydrocarbons from groundwater. The system uses a catalytic oxidizer and air stripper to remove the contaminants of concern. Prepared design drawings, equipment specifications, and procurement quotes.

Vacuum-Enhanced Pumping/Dual-Phase Extraction System at Chemical Plant, Resende, Brazil—Designed a dual-phase extraction and vacuum-enhanced pumping system for the removal of multiple high-concentration contaminants from groundwater at an active chemical plant in Brazil. Prepared design drawings and assisted with system startup. Coordinated short-term operations and maintenance with plant personnel who had very limited understanding of the technologies employed, such as water and air sampling, well-field data collection, system optimization, startup, and control loop tuning.

Dual-Phase Extraction System, Argentina—Designed a dual-phase extraction system for the removal of multiple high-concentration contaminants from groundwater at a site in Argentina. Prepared design drawings and assisted with system startup. Coordinated short-term operations and maintenance with plant personnel who had very limited understanding of the technologies employed, such as water and air sampling, well-field data collection, system optimization, startup, and control loop tuning.

Brownfield Redevelopment Site, Tarrytown, New York—Assisted in the remediation design of a former manufactured gas plant site being redeveloped for use in a residential capacity. Performed and oversaw confirmation testing, with oversight from the New York State Department of Environmental Conservation, to ensure that no vapor intrusion into residential living spaces was occurring.

FERC Permitting Project, Florida-Bahamas—Assisted in the permitting process for a $550 million installation of a 54-mile liquefied natural gas line from Ocean Cay (near Bimini, Bahamas) to Broward County, Florida. Evaluated impacts to critical habitats of any endangered or at-risk species.

Landfill Closure, Storrs, Connecticut—Designed a leachate collection and pumping system at a former landfill. Work included design of pumping and control systems, review of contractor submittals, assistance with startup and troubleshooting, and confirmation of proper operation.

Soil Vapor Intrusion System, Wampsville, New York—Designed a sub-slab depressurization system to prevent vapor intrusion into an active industrial facility. Oversaw construction activities and subsequent confirmation sampling and testing.

Blasted Bedrock Collection System, Rochester, New York—Designed a blasted bedrock trench and associated groundwater pumping system. Tasks included system design, programmable logic controller (PLC) design, and system startup.

Pump and Treat System at Automotive Plant and Landfill, Farmington, New Hampshire—Assisted in the design of a pump and treat system at an automotive plant and inactive landfill. Tasks included assistance with design decisions, preparation and review of contract drawings, and design of PLC system.

Pump and Treat System at Aerospace Facility, Huntington Beach, California—Designed a pump and treat system to remediate a large groundwater plume with multiple contaminants at an active aerospace facility. Tasks included assistance with design decisions, preparation and review of contract drawings, and design of electrical and PLC system.

Design and Permitting for Research and Development Facility, Canandaigua, New York—Assisted with design and permitting of a multi-purpose research and development facility. Tasks included evaluating materials compatibility for conveyance of multiple highly corrosive, acidic, basic, and explosive chemicals; designing treatment trains for multiple waste streams; and working with permitting lead to ensure a seamless permitting process.

Bottled Water Permitting Application, Ecuador—Provided engineering and permitting support to a large international bottling company seeking a permit to sell bottled water in New York State. Reviewed existing bottling operations to provide engineering recommendations to meet New York State Health Department and U.S. Food and Drug Administration regulations, and reviewed analytical data to evaluate compliance with applicable regulations.

Remediation System Monitoring and Optimization

Groundwater Collection and Habitat Restoration Performance Verification and Monitoring, Onondaga Lake Superfund Site, Geddes, New York—Managed implementation of performance verification and monitoring for several existing IRMs, including groundwater collection and conveyance systems, wetland and habitat restorations, and low permeable lining systems. Performance verification and monitoring activities included collection and analysis of operational data, verification that systems were meeting regulatory compliance requirements, media sampling, development and implementation of corrective actions, and annual reporting.

Dense Nonaqueous-Phase Liquid Recovery System Optimization, Onondaga Lake Superfund Site, Geddes, New York—Managed development, design, and implementation of a performance optimization strategy for an existing dense NAPL recovery system.

Nonaqueous-Phase Liquid Recovery System, Los Angeles, California—Performed operation, maintenance, and monitoring activities for a NAPL recovery system consisting of more than

200 recovery wells, in addition to a groundwater and air treatment system, to evaluate and optimize system operation. Tasks included continuously operating the remediation systems, assisting technicians with system adjustments to improve recovery, and updating and improving the computer control system.

Geothermal Performance Improvement Evaluations, Cambridge, Massachusetts—Performed evaluations to improve performance of existing geothermal well system, including developing recommendations for increased reliability through use of changes in control systems.

Pump and Treat/Soil Vapor Extraction System, Morristown, Tennessee—Oversaw quarterly groundwater sampling events and used data to determine effectiveness of soil vapor extraction and pump and treat systems. Managed site operations and maintenance contractor to maintain maximum system uptime. Monitored system operation, and recommended and designed system upgrades.

Pump and Treat System, Rochester, New York—Coordinated operations, maintenance, and sampling activities for a pump and treat system at a former industrial site. Recommended and designed system upgrades to increase and maintain uptime requirements. Used site groundwater and system data to recommend operational changes.

Feasibility Studies

Focused Feasibility Evaluation, Hinkley, California—Provided highly detailed cost estimates for an array of remedy options related to cleanup of a chromium contaminated groundwater plume approximately 2 mi^2 in size. Tasks included developing modular cost estimates that could be applied to various remedy options, evaluating proposed remedy effectiveness at meeting project goals, and presenting the data in a manageable and meaningful form to various stakeholder groups.

Environmental Liabilities Portfolio Estimates, Various Locations—Assisted with the development of detailed cost estimates for the environmental liabilities portfolio of a large domestic automobile corporation. Worked with a multi-disciplinary engineering team to develop comprehensive estimates for multiple sites with a multitude of environmental contaminants. Estimates were used to develop a portfolio-wide liability reserve for use in corporate bankruptcy hearings.

Presentations/Posters

Marsh, J. 2017. Overcoming several site-specific challenges to remediate an urban brook and several tributaries. Ninth International Conference on Remediation and Management of Contaminated Sediments, New Orleans, LA.

Glenn Esler
Scientist

Education and Credentials

B.S., Geography, Portland State University, Portland, Oregon, 2008

A.S., Chemistry, Millersville University, Millersville, Pennsylvania, 1984

Continuing Education and Training

Sustainability Leadership Program Certificate, University of Oregon, Portland, Oregon (2013)

EPA Office of Emergency and Remedial Response, 40-Hour Health and Safety Course (2010)

Certified Laboratory Auditor Training and Credentialing Program, iNARTE (2009)

Naval Sea Systems Command Laboratory Quality and Accreditation Office Sampling and Laboratory Testing E-Learning Training (2009)

Radiometric Data Validation, American Radiochemistry Society (2009)

SDSFIE Web Online Training Course (2005)

Analysts Guide to NELAC Assessment Short Course, Advanced Systems, Inc. (2004)

Basics of Quality Improvement Short Course, University of Delaware (1996)

Environmental Data Quality Short Course, American Chemical Society (1992)

Professional Profile

Mr. Glenn Esler has more than 30 years of experience in the field of environmental chemistry, including 15 years in laboratory quality assurance and data quality management and 5 years as a GC/MS analyst. His technical specialties include design and implementation of laboratory quality management programs, laboratory and field audits, and data interpretation and assessment of compliance with regulatory requirements and project objectives. He has an in-depth working knowledge of EPA environmental analytical methods and EPA Contract Laboratory Program (CLP) national functional guidelines for data review. His experience includes environmental analysis, data verification and validation, preparation of quality assurance documentation, and coordination of subcontracting laboratories. He is also credentialed as a Certified Laboratory Auditor.

Relevant Experience

Quality Assurance and Quality Control

Airplane Manufacturer Superfund Site, Laboratory and Field Audits, Washington—Conducted onsite laboratory and field audits in support of remedial action and treatment systems related to groundwater contamination. Wrote final report that provided an assessment of the laboratory and field sampling team's performance and ability to provide high-quality, defensible data, and areas where improvements are required.

NOAA, Lower Duwamish River (LDR), Washington—Conducted research related to the Natural Resources Damage Assessment program for PAH allocation in LDR sediments. Research was based on PAH footprint maps, tax parcel information, data from EPA and Washington State Department of Ecology files, site histories, and other publicly available reports produced over the last several decades. Also used Google Earth and ESRI's ArcView to aid in allocation to multiple sites along the LDR.

Energy Distribution Company, Indiana—Assisted with work plan preparation, laboratory coordination, and data validation, data review, and data quality assessment on public sewer sediments and stormwater sampling at the site. The site was identified as a

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potential source of PCBs to a public sewer system and river sediments associated with a National Priorities List site.

Railroad Transportation Laboratory Audits, Multiple Sites, United States—Conducted onsite laboratory audits and provided assistance in conjunction with the Laboratory Management Program. The program included establishment of a web site for distributing program information, development of a web-based project management tool to handle laboratory projects, documentation of laboratory procedures in an online and hard copy manual, solicitation and establishment of standardized pricing for laboratory work, and presentation of the program to railroad officials, laboratories, and consultants. Also audited laboratories analyzing NPDES samples on behalf of client; evaluated laboratory reports for completeness, verification of reporting limits, and laboratory standard operating procedures. Wrote final report that provided an assessment of the laboratory's performance and ability to provide high quality, defensible data, and areas where improvements were required.

Cleanup of Base Oil/Water Separators, Air Force Center for Environmental Excellence, Grissom Air Reserve Base, Indiana—Assisted with quality assurance project plan (QAPP) preparation and data quality objectives (DQOs) and performed data validation, data review, and data quality assessment in conjunction with site activities, which included sampling, analyzing, cleaning, collecting, removing, manifesting, and properly disposing of materials for nine oil/water separators in accordance with applicable state regulations.

Selfridge Air National Guard Base, Michigan—Assisted with QAPP preparation and formulation of DQOs for the collection of data to support the evaluation of the corrective action measures, site characterization, and determination of extent of contamination at a Michigan Air National Guard Base.

U.S. Department of the Navy, Naval Facilities Engineering Command Southwest, California—Assisted with the preparation of the pre-design sampling and analysis plan (SAP) and remedial action work plan for the remedial design and remedial action at IR Site 1. Also assisted with laboratory procurement of analytical services and procurement of third-party data validation services.

Groundwater Monitoring Program, Arizona—Assisted in the development of the site-wide quality assurance management plan and the QAPP for an EPA Superfund site. Contaminants of concern were volatile organic compounds (VOCs) and perchlorate. Activities included groundwater program planning and execution, groundwater sampling, quarterly and annual reporting, QA/QC, data validation, and project problem solving. Supported the project quality assurance manager by providing data validation, tracking quality control parameters, and handling laboratory data quality issues.

Partial Database Rebuild for a Sawmill Facility, Montana—Provided technical support for the partial reconstruction of the project database after discrepancies were found during quality assurance activities. Review third-party data validation reports and updated associated electronic data deliverables as appropriate.

Emergency Response at Bulk Chemical Terminal, New Orleans, Louisiana—Assisted with data analyses and audit of the analytical laboratory charges for samples collected related to the emergency response and cleanup of a chemical spill caused by flooding of a bulk chemical terminal during Hurricane Isaac.

Engineering Evaluation and Cost Analysis for a Former Chemical Manufacturing Facility, Portland, Oregon—Revised project QAPP based on EPA comments on a sediment sampling work plan, which was prepared to collect data for pre-remedial design to address sediments adjacent to the site. Coordinated with analytical laboratories for methods, quality control criteria, standard operating procedures, quality assurance documentation, and costs for additional analyses. Researched and co-authored technical memorandum to EPA on the passive sampling effort to measure the freely dissolved porewater concentrations of DDT and its metabolites, polychlorinated dibenzo-*p*-dioxins and dibenzofurans (PCDD/Fs), and PCBs described in the porewater chemistry section of the work plan.

Laboratory Forensics Investigation, Oregon—Supported the verification of possible reporting anomalies initiated by a respected commercial laboratory. Performed preliminary data review activities, including review of laboratory documentation, quality control data, and selected instrument run data files followed by a more comprehensive review process for instrument run file outputs associated with reported data.

Forensics Investigation Municipal Wastewater Collection and Treatment Facility, Oregon—Supported a third party investigation of possible analysis procedural and data integrity issues associated with a municipal wastewater treatment plant. The project entailed a review of electronic data files, permit requirements, laboratory record books, and laboratory standard operating procedures, laboratory audits, and staff interviews. Included review of laboratory and corporate procedural guidance documents, instrument manuals, laboratory bench books, and discharge monitoring report data submitted in fulfillment of NPDES requirements. The technical evaluation included data verification by tracing records from sample analysis through reporting, evaluation of quality control data for compliance with laboratory control limits, visual evaluations of time series data and trends, and assessment of the impact of possible improper laboratory practices.

Litigation Support

Database Inventory in Support of Litigation, U.S. West Coast—Supported maintenance of database inventory, which included a summary of relevant information such as information types, sample material, geographic area, period of record, and source information for customized databases cataloging large numbers of publicly available data sets.

Biomonitoring Study Conducted in Support of Litigation, Missouri—Evaluated laboratory methodologies and data usability and prepared a report summarizing the data usability results associated with the collection of human serum from more than 500 participants.

Expert Testimony Report, Confidential Client—Performed research on the pervasiveness and persistence of organochlorine pesticide chemicals in environmental media and biota in support of expert testimony report.

Project Chemistry

Railyard Air Monitoring, Various Sites, Montana—Served as project chemist for semiannual air sampling program related to indoor air monitoring at several active railyards throughout Montana. Oversaw data validation effort using various air analytical methods, including EPA TO-15 and MADEP VPH. Reviewed data validation reports and associated electronic data deliverables.

Air National Guard, One Clean Program, Multiple Sites, North/Midwest Region—Served as project chemist and oversaw preparation of the QAPP, data validation, and data management for this accelerated turnaround project, which included field investigation activities to determine the presence of environmental contamination at identified areas of concern at 38 sites at 11 installations in the Air National Guard's North/Midwest Region. Oversaw the following: management of all analytical data using the EQuIS™ data management tool; Level III data validation consistent with the Environmental Restoration Program Air National Guard Investigation Guidance; creation of export templates from the database; generation of data tables for the Site Inspection Report; and the electronic data deliverables for the ESOH-MIS database.

Niblack Mining Corporation, Ketchikan, Alaska—Prepared a QAPP revision in support of routine monitoring of surface water and groundwater quality. Assisted in coordinating project logistics, sending sampling equipment to a remote location in Alaska, and subsequent delivery of samples to the analytical laboratory. Monitored laboratory's progress on sample analyses and reviewed and validated analytical results. Supported preparation of data quality reports summarizing analytical results.

Water Quality Monitoring for a Volcanogenic Massive Sulfide Mine Exploration Project, Alaska—Assisted with QAPP preparation in support of monitoring of surface water and groundwater quality. Assisted in coordinating project logistics, sending sampling equipment to a remote location in Alaska, and subsequent delivery of samples to the analytical laboratory. Monitored laboratories' progress on sample analyses and reviewed and validated analytical results.

Baseline Ecological Risk Assessment (BERA) for a Landfill Superfund Site, New Jersey—As the project's quality assurance chemist, assisted with QAPP preparation for analytical and field activities associated with soil, sediment, surface water, and biota samples to better characterize potential site risks and examine factors that influence metal bioavailability. Chemicals of potential concern included phthalates, PAHs, pesticides, PCBs, PCDD/Fs, metals, and cyanide. Performed laboratory and data validation coordination as well as review of sample receipt variances, laboratory quality control variances, analytical corrective actions, data verification issues (e.g., incomplete records), and data review corrective actions.

RI/FS Waiau Generating Station Honolulu, Hawai'i—Assisted with QAPP preparation for analytical and field activities for multiple sampling phases including onshore source investigation, sediment transport evaluation, biota sampling, source control investigation, and pipe and tunnel investigation. Coordinated with analytical laboratories and data validation firm. Reviewed data validation reports.

Groundwater Monitoring and Delineation of Impacted Soil at Former Mill Site, Centralia, Washington—Coordinated laboratory analytical proposals and work orders, performed review of laboratory deliverables and tabular data, and assisted with field sampling planning.

Per- and Polyfluoroalkyl Substances, Northeastern U.S.—Serving as project chemist overseeing analyses and validation of per- and polyfluoroalkyl substances (PFAS) in groundwater, drinking water, surface water, soil, sediment, and porewater. Review isomer profiles of PFAS samples.

Kenmore Navigation Channel Sediment Characterization, Kenmore, Washington—Under a subcontract, prepared QAPP and health and safety plan (HASP) for a sediment characterization in 2019 to support maintenance dredging. Assisted with development of SAP and sample collection effort.

Elliott Bay Bioaccumulation Study, Seattle, Washington—Under a subcontract, prepared QAPP and HASP for the collection of surface sediment in 2019 to support a benchmark bioaccumulation study. Assisted with development of SAP and sample collection effort.

Ecological Baseline Pre-Design Investigation, Centredale Manor Restoration Project Superfund Site, Rhode Island—Prepared Uniform Federal Policy QAPP and performed quality assurance chemistry tasks in support of pre-remedial design investigation activities including ecological surveys and sampling stations, sampling equipment and procedures, sample designation, and sample handling. This Superfund site, based in North Providence, has multiple operating units. The site is associated with human health issues and ecological concerns from the presence of dioxins, furans, PCBs, pesticides, herbicides, and VOCs in all environmental media, but particularly in riverine and aquatic environments, associated biota, and floodplain soils.

Detailed Sediment Investigation, San Diego, California—Quality assurance chemistry in support of sediment investigation at two shipyards in San Diego Bay, focusing on the effects of metals, organo-metallic compounds, PAH, PCBs, polychlorinated triphenyls, and petroleum hydrocarbons on aquatic life, aquatic-dependent wildlife, and human health. Managed laboratory and data validation subcontracting.

Data Management and Validation

Deepwater Horizon Oil Spill, Natural Resource Damage Assessment—Worked in conjunction with the natural resource damage assessment team responding to the Deepwater Horizon accident and oil spill in the Gulf of Mexico on behalf of BP Exploration & Production Inc. Provided chemistry support and performed data validation and review of data validation reports associated with the environmental sample collection activities.

Industrial Site Data Validation, Vancouver, Washington—Performed data validation for a project involving the presence of chlorinated solvents at an active manufacturing facility in Vancouver, Washington. Project included groundwater monitoring and nearby residential air sample analyses, which are being used by the Washington State Department of Ecology for human health risk assessment.

Electrical Equipment Repair Facility Site Investigation Data Validation and Data Quality Assessment, Oregon—Performed data validation, data review, and data quality assessment for the site investigation of historical PCB releases at an electrical equipment inspection, service, and repair facility. The site was identified by the Oregon Department of Environmental Quality as a potential source of PCBs detected in the public stormwater system and in Willamette River sediments.

Groundwater Monitoring Program Data Validation, Beaverton, Oregon—Performed validation of groundwater chemistry results generated as part of a RCRA Corrective Action Program. Monitoring required for the project included VOCs and Appendix IX List compounds.

Fort Lewis Thermal Remediation Project Data Review and Validation, Fort Lewis, Washington—Performed chemical data review and validation on project data, including water and air samples for hydrocarbon and VOC analyses, using GC/photoionization detector and GC/MS, for a remediation project at Fort Lewis using electric resistance heating. The project was designed by the U.S. Army Corps of Engineers to be performed using near-real-time data from a mobile laboratory to make decisions about the remediation process using the Triad Approach.

Field Investigation Oversight and Report Preparation for a Coal-Fired Electrical Power Plant, Indiana—Performed data validation for a large environmental investigation of a coal-fired power plant. Data included groundwater, soils, and plant tissues.

Interim Remedial Actions/PCB Soil Removals, Cape Canaveral Air Force Station, Brevard County, Florida—Performed data validation and data assessment for a RCRA interim measures delineation and cleanup effort at Space Launch Complex 40 at Cape Canaveral Air Station, Florida. The project involved delineating TSCA levels in soil to determine PCB concentrations >50 ppm.

Voluntary Property Assessment (VPA) Activities, Former Crosstie Chipping Facility, Alabama—Performed data validation and data assessment for VPA investigation activities. Work included collection of numerous soil, sediment, surface water, groundwater, and macroinvertebrate samples to evaluate the extent of PAH impacts to the site and surrounding areas resulting from former crosstie chipping operations.

Former Truck Manufacturing Facility Remediation Data Validation and Data Quality Assessment, Washington—Performed data validation, data review, and data quality assessment for remediation of a former truck manufacturing facility located adjacent to the Duwamish River. The project work consisted of the collection of stormwater and tidal sediments.

Memphis Air National Guard, Memphis, Tennessee—Performed data quality review and data assessment on VOC data from the risk assessment and remediation of petroleum-impacted soil and groundwater.

White Swan Cleaners/Sun Cleaners Superfund Site, New Jersey—Performed data validation on CLP data, and data quality review and assessment on the data for ongoing collection activities related to a Settlement Agreement with EPA Region 2 to conduct an RI/FS of a regional site that has been contaminated by the dry cleaning solvent PCE. PCE had potentially impacted municipal water supply wells at a popular shoreline resort community.

Former Pharmaceuticals Facility Data Validation, Oregon—Performed data validation on the results related to the release of VOCs on the site. The primary contaminants of concern included trichloroethene, *cis*-1, 2-dichloroethene, and vinyl chloride, which were found at concentrations indicative of dense non-aqueous phase liquid.

Former Industrial Site Water Sampling Data Validation and Data Quality Assessment, New Jersey—Performed data validation, data review, and data quality assessment on the annual drinking water sampling at all homes surrounding a former industrial site, where the chemicals of concern in groundwater include VOCs—primarily 1,1,1-trichloroethane, 1,1-dichloroethylene, and 1,1-dichloroethane.

Groundwater and Surface Water Monitoring, Naval Facilities Engineering Command (NAVFAC), Fort Gordon, Georgia—Performed data validation, data review, and data quality assessment on quarterly groundwater sampling. Quarterly monitoring of groundwater and surface water was performed under a NAVFAC contract in compliance with NPDES for a wastewater treatment facility and land-application system at the Pointes West Army Recreation Area in Columbia County, Georgia.

Site Characterization at Industrial Operation, Seattle, Washington—Performed data validation, data review, and data quality assessment on the soil boring and groundwater sampling at the site. Site activities included site characterization (i.e., field assessment, focused site characterization report, project management) at an industrial operation approximately 2.1 acres in size located in Seattle, Washington. The site was impacted with metals, PCBs, PAHs, TPH, and VOCs.

West Virginia Department of Environmental Protection Brownfield Sites Data Validation and Data Quality Assessment, West Virginia—Performed data validation, data review, and data quality assessment using EPA Region 3 modifications to CLP national functional guidelines associated with Phase I surface soil sampling and follow-up Phase II subsurface soil sampling, groundwater investigations, and surface water and sediment sampling at various brownfield sites throughout West Virginia.

Massachusetts Military Reservation Closure Data Validation, Cape Cod, Massachusetts—Validated data for samples submitted for explosives compounds analysis and perchlorate, which are associated with verification that post-excavation bottom soils and expansion area soils are below established action levels in order to obtain closure determination for the CS-19 and CS-18 Source Area sites at the Massachusetts Military Reservation in Cape Cod. Soil samples from the expansion areas were collected using the multi-increment sampling approach proposed by Cold Regions Research and Engineering Laboratory.

Susanville Sawmill and Cogeneration Facility, Susanville, California—Performed expedited data validation and associated report writing associated with air, water, soil, and product samples collected during the overall scope of work, which included site investigations and remediation at the proposed treatment cell area and fuel and maintenance area.

Rosiclare Mine Site, Rosiclare, Illinois—Validated data associated with soil, sediment, and groundwater sampling and wrote data validation report for the RI/FS effort to clean up historical fluorspar mine tailings.

Rental Car Maintenance Facility, San Jose, California—Performed expedited data validation and report writing associated with samples collected during the overall scope of work, which included removal and disposal of underground storage tanks, an aboveground storage tank, below-ground hydraulic lifts, and a car wash structure.

Former Ashland Lease Area, Shoreham Facility, Minneapolis, Minnesota—Performed data validation of quarterly groundwater samples analyzed for anions, conventional parameters, and VOCs and report writing for the monitoring program for the four remedial actions currently under way at the site: soil vapor extraction, light nonaqueous phase liquid monitoring and recovery, till bioremediation, and outwash pump and treat.

Smeltertown Superfund Site OU1, Salida, Colorado—Validated data from groundwater samples analyzed for metals and wrote report for the annual groundwater monitoring program.

Chemical Distribution Facility, Santa Ana, California—Validated data resulting from semiannual groundwater samples analyzed for PCE, TCE, chemical degradation products of PCE and TCE, and 1,4-dioxane and wrote data validation report as part of oversight of groundwater monitoring and soil remediation at the site.

Waste Rock Water Quality Assessment Open Pit Gold Mine Expansions, Nevada—Validated data associated with ongoing humidity cell test results of existing waste rock, alluvium, and drill cores of expansion material. Assisted with the quality assurance report associated with the 20-week results of the first round of humidity cell tests.

Former DDT Manufacturing Facility, Portland, Oregon—Validated data associated with stormwater monitoring at a former pesticide manufacturing facility under the jurisdiction of the Oregon Department of Environmental Quality. Also monitored laboratories' progress on sample analyses and reviewed and validated analytical results.

Blackwell Zinc Site, Blackwell, Oklahoma—Validated data associated with mitigation strategies of metals loading to the city's wastewater treatment plant resulting from infiltration of contaminated groundwater to the city's sanitary collection system.

Soil and Groundwater Investigation at Former Allied Engineering Facility, Alameda, California—Validated historical data and recent data associated with assessment and potential remediation of groundwater and sediment at the site.

Slag and Sewage Site, Past Costs and River Sediment Evaluation, Fox Point Park, Wilmington, Delaware—Performed Stage 2B and Stage 3 data validation associated with the sediment RI/FS in the Delaware River.

Hazardous Materials Assessment of Soils at Various Public Schools, Hawaii—Performed laboratory coordination and Stage 2B data validation associated with environmental hazard screening of select school sites for arsenic, lead, and organochlorine pesticides.

Former Wood Treating CERCLA Facility, Columbus, Mississippi—Performed data validation in support of a human health risk assessment, Operable Unit 1 focused feasibility study, and Operable Unit 1 removal action work plan, as well as implementation of the Operable Unit 1 voluntary removal action at a Superfund site.

Matthew E. Behum
Senior Scientist

Education and Credentials

M.S., Marine Science, University of South Carolina, Columbia, South Carolina, 2004

B.A., Environmental Biology (with Honors), Colgate University, Hamilton, New York, 2002

Certified Senior Ecologist, Ecological Society of America (2015)

Continuing Education and Training

SafeStart Certified Instructor (2019)

OSHA 10-Hour General Safety Training (2020)

Hazardous Waste Operations and Emergency Response 40-Hour Certification (2005; refresher 2020)

Hazardous Waste Operations Management and Supervisor 8-Hour Certification (2014)

Delaware Valley Safety Council Basic Orientation Plus Safety Certification (2015)

First Aid, CPR, and AED Certified (2020)

Risk-Based Corrective Action at Petroleum Release Sites (2005)

Professional Affiliations

Ecological Society of America

Society for Environmental Toxicology and Chemistry, Chesapeake-Potomac Regional Chapter

American Society of Safety Engineers

Achievements and Awards

Aqua Survey, Inc. Blue Peter Award for Environmental Remediation Leadership (2018)

Professional Profile

Mr. Matthew Behum is an ecologist with 15 years of experience in the field supporting multimedia ecological and human health risk assessments at Superfund sites and private industrial facilities. He has also performed environmental compliance audits with Maryland Vehicle Administration testing facilities. In addition to his risk assessment experience, Mr. Behum has sampled plants, benthic invertebrates, and aquatic vertebrates in both marine and freshwater systems and has identified juvenile invertebrates using molecular techniques. He has experience in ecological theory, database management, and general biostatistical analyses. He also has field management experience on a variety of projects, including coordination of a million-dollar, multiphase field effort involving biotic and abiotic sampling at a New Jersey Superfund site, as well as leading a data collection investigation of perfluoroalkyl substances (PFAS) in water systems on behalf of an East Coast chemical manufacturer. Mr. Behum is the office manager for Integral's Annapolis, Maryland, location, and is the company corporate health and safety manager.

Relevant Experience

Corporate Health and Safety Management

Prepared comprehensive revision of company health and safety program plan and coordinated its production. Regularly review all site health and safety plans prior to field operations. Manage health and safety credentials for all staff (e.g., Hazardous Waste Operations and Emergency Response, first aid, physicals, drug and alcohol testing, project-specific safety training). Utilize ISNet, Avetta, and BROWZ platforms for client-specific health and safety questionnaires, insurance updates, and project safety training coordination. Responsible for field safety updates, including job hazard analysis use, subcontractor prequalification questionnaires, and field auditing. Conduct company-wide presentations on safety topics and company safety updates. Also instituted the SafeStart safety program for all employees and currently manages that program for Integral.

Database Management and Statistical Analysis

Experience includes parametric and nonparametric statistical analyses. Project work has involved linear and multilinear

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regression investigations. Analytical platforms include Excel, Statistica, R, ProUCL, and GPOWER. Project experience includes working with relational databases using Access.

Environmental Auditing

Motor Vehicle Administration Sites, Maryland—Assisted with and led comprehensive voluntary audits of motor vehicle administration facilities to ensure compliance with multiple federal criteria including Clean Air Act, Clean Water Act, FIFRA, RCRA, and TSCA. Completed federal compliance checklists and drafted facility reports for client review. In addition, reviewed relevant state permitting policies, including whether relevant motor vehicle administration facilities were compliant for discharges from small municipal separate storm sewer systems (MS4s) within NPDES.

Environmental and Biological Sampling

Chemical Manufacturer, East Coast—Overseeing a multiphase data collection program to evaluate the presence of PFAS adjacent to a New Jersey chemical manufacturer. Managed subcontractors, budget, and the development of a work plan and field sampling plan. Initiated a data collection program, including seasonal public water supply sampling of various municipalities, private well sampling (including community outreach), temporary groundwater well sampling, onsite and offsite groundwater well sampling, surface water and sediment sampling of the Delaware and Schuylkill rivers, and onsite soil sampling.

Berry's Creek Superfund Site, Meadowlands, New Jersey—Completed multiple field surveys of Berry's Creek and surrounding tributaries of the Hackensack River, including water quality analyses of candidate reference sites to Berry's Creek and aquatic fauna surveys of the creek, in support of an RI/FS. Responsible for data syntheses of reference site surveys. Participated in marsh sediment sampling along floodplain transects and collected terrestrial and aquatic insects in surficial marsh sediment and *Phragmites* leaf litter for qualitative identification. Coordinated, managed, and participated in field sampling plans from 2010 to present for a variety of taxa in Berry's Creek and surrounding tributaries. Effort included oversight of budget, coordination with field staff (colleagues and teaming partners), along with refinement updates to standard operating procedures, field sampling plans, and work plan addenda. Recent field efforts include mercury air monitoring (including light intensity and temperature readings), fish residue biomonitoring collection, and marsh insect collection for residue analysis using various techniques, as well as benthic residue collection of annelids and fiddler crabs.

Curtis Bay Site, Curtis Bay, Maryland—Performed biota reconnaissance of nearshore sediment onsite at a former agricultural chemical production facility. Sediment samples were sieved and analyzed for invertebrate presence and species composition.

Portland Harbor Superfund Site, Portland, Oregon—Conducted crayfish sampling and sculpin longlining and electrofishing in Portland Harbor in support of multiclient remedial investigation.

Field Sampling, Central New York and Coastal South Carolina—Collected stream macroinvertebrates to assess community dynamics in response to changing riparian cover.

Collected fiddler crab juveniles and larvae in a salt marsh system to assess settlement patterns of two species.

Risk Assessment

Portland Harbor Superfund Site, Portland, Oregon—Analyzed sediment and fish data usability regarding N-qualified PCB and DDx data; performed syntheses of exploratory statistics addressing data usability concerns. Also performed multiple reviews of fish, plant, and amphibian baseline ecological risk assessments spanning multiple lines of evidence (e.g., tissue concentrations, surface water concentrations, and modeled effects). Performed exploratory biota-sediment accumulation factor calculations for whole-body smallmouth bass samples to compare with proposed findings of proposed Gobas model.

Yerington Mine Site, Yerington, Nevada—Developed mitigation plan for avian deterrence from site pumpback and evaporation ponds. Researched avian deterrence measures, consulted with experts, and helped to finalize a three-tiered approach involving amplified distress/predatory calls, pyrotechnics, and nonlethal projectiles. Managed wildlife observation database of the former Yerington mine site. Prepared quarterly reports. Monitoring was conducted to evaluate wildlife use at the site in support of ecological risk assessment.

Groundwater to Surface Water Interaction, Patrick Bayou, Texas—Managed groundwater, sediment, and ecotoxicological data to support weight-of-evidence evaluations of the impact of groundwater discharge to benthic communities. Also extensively researched Texas state ecological risk regulations.

Ecological and Human Risk Assessments, Formerly Used Defense Sites, Northeast U.S.—Participated in preparing screening level ecological and human health risk assessments of various media for multiple receptors at numerous formerly used defense sites. Conducted research of federal and secondary benchmarks for use in the screening-level risk assessments and proposed alternative screening values for ecological screening based on equilibrium partitioning theory.

Berry's Creek Superfund Site, New Jersey—As part of a proposal effort, evaluated food web dynamics of representative biota and plants exposed to mercury contamination in the Hackensack Meadowlands. Assisted in development of multi-tiered conceptual site model across various media in the creek. Also served as lead in a Phase 1 screening-level ecological risk assessment using published screening values for sediment, surface water, and wildlife tissue.

Curtis Bay Site, Curtis Bay, Maryland—Performed screening-level risk assessment of porewater exposures of volatile and semivolatile organic compounds to benthic invertebrates using ambient water quality criteria developed via secondary chronic values. Applied EPA methodology and narcosis theory based on bioavailability.

Greens Bayou, ISK Pond, Houston, Texas—Performed thorough research of appropriate literature for use in developing alternative benchmarks that were accepted by Trustees to support site closure. Prepared a habitat equivalency analysis of sediment contamination as part of a natural resource damage assessment.

Upper Columbia River RI/FS, Washington—Prepared air data statistical summaries of beach dust monitoring in support of a remedial investigation. Used Statistica and ProUCL platform applications.

Regional Risk Assessment of a River Estuary, Delaware—Composed summaries of physical, chemical, and biological stressors affecting tidal stretch of Delaware estuary, which were then used for regional risk assessment. Managed junior staff investigating stressor identification. Updated reference database for project.

Exxon Valdez Oil Spill, Prince William Sound, Alaska—Assisted in researching and compiling literature related to natural resource injury associated with the 1989 *Exxon Valdez* oil spill.

Risk Assessment of West Nile Virus Incidence and Control, Suffolk County, New York—Conducted statistical analyses of air concentrations for various pesticides and synergist chemicals portraying statistical results for use in the risk assessment. Assisted in the evaluation of ecological risks associated with mosquito-control activities.

Research

Chesapeake Bay Environmental Issues—Conduct regular research of environmental and policy issues facing Chesapeake Bay and involving all states that are part of its watershed. Provide updated information to colleagues on an ongoing basis.

Water Quality Criteria Research—Engage in extensive research of federal and secondary benchmark development from a variety of sources. Focus on understanding how benchmarks are developed using both conventional and equilibrium partitioning approaches. Have obtained extensive knowledge of ambient water quality criteria data requirements.

Macroinvertebrate Survey along a Stream Continuum, Central New York—Conducted field sampling of macroinvertebrates and identified them to functional feeding group and genera to analyze shifting feeding groups in response to dynamic stream canopies. Collected fine and coarse particulate organic matter samples along with chlorophyll *a* concentrations at all sampling locations. Results presented for honors degree in environmental biology.

Postlarval Settlement Patterns of Fiddler Crabs across Salt Marsh Habitats, Winyah Bay Estuary Marshes, South Carolina—Conducted field sampling of juvenile and larval fiddler crabs, identifying them to species using restriction fragment length polymorphism molecular techniques. Oversaw undergraduate interns assisting in laboratory and fieldwork. Also analyzed surface sediment temperature and moisture. Results documented and presented at 2004 Benthic Ecology Meeting and published in *Marine Ecology Progress Series*.

Wind Power Business Development—Led initiatives to incorporate population-level risk assessment techniques, including GIS encounter modeling with bird and bat strikes, probabilistic risk assessment, and preferred bird and bat habitat analyses with wind power development.

Publications

Behum, M.E., R.J. Brodie, and J.L. Staton. 2005. Distribution of juvenile *Uca pugnax* and *U. pugilator* across habitats in a South Carolina estuary, assessed by molecular techniques. *Mar. Ecol. Prog. Ser.* 288:211–220.

Brodie, R.J., M.E. Behum, E. Monroe, N. Glenn, and J.L. Staton. 2005. Recruitment to adult habitats following marine planktonic development in the fiddler crabs, *Uca pugilator*, *U. pugnax*, and *U. minax*. *Mar. Biol.* 147:105–111.

Presentations/Posters

Behum, M. 2018. Challenges presented by new, temporary, and young employees. Platform presentation, Retia Safety Forum Invitational, Nashville, TN. September 18–19.

Behum, M. 2017. Safety metrics, best practices, and lessons learned: Safety culture in a small firm. Platform presentation, Retia Safety Forum Invitational, Nashville, TN. September 20–21.

Behum, M. 2016. Safety metrics, best practices, and lessons learned: Office safety. Platform presentation, Retia Safety Forum Invitational, Nashville, TN. September 14–15.

Behum, M., J. Durda, D. Himmelheber, and P. Brussock. 2015. Camera surveys to document human use in an isolated urban estuary: Update and analysis. Poster presentation, Eighth International Conference on Remediation and Management of Contaminated Sediments, New Orleans, LA. January 12–15.

Behum, M., J. Lape, J. Durda, P. de Haven, and J. Wollenberg. 2015. Air monitoring in a mercury-contaminated estuary: Support for risk assessment and risk management. Poster presentation, Eighth International Conference on Remediation and Management of Contaminated Sediments, New Orleans, LA. January 12–15.

Durda, J., M. Behum, P. de Haven, and J. Wollenberg. 2015. Physical and ecological conditions in marshes: Exposure pathways, assessment, and implications for risk management. Platform presentation, Eighth International Conference on Remediation and Management of Contaminated Sediments, New Orleans, LA. January 12–15.

Behum, M., J.L. Durda, and J. Samuelian. 2013. Marsh invertebrate community surveys to support ecological risk assessment in a New Jersey estuary. Poster presentation, Seventh International Conference on Remediation of Contaminated Sediments, Dallas, TX. February 4–7.

Pastorok, R.A., D.V. Preziosi, and M.E. Behum. 2012. The role of population modeling in risk assessment at wind energy facilities. Poster presentation, National Wind Coordinating Collaborative Wind Wildlife Research Meeting, Broomfield, CO. November 27–30.

Behum, M.E. 2010. Unique approach to assessing wildlife population risk from wind turbine development. Platform presentation, Chesapeake-Potomac Regional Chapter Meeting of the Society of Ecotoxicology and Chemistry, Towson, MD. April 19.

Behum, M.E. 2009. Fostering career development and mentoring. Platform presentation, Integral Consulting Inc. company retreat, Stevenson, WA. May 16.

Behum, M.E. 2004. Postlarval settlement patterns of fiddler crabs across salt marsh habitats. Platform presentation, 33rd Annual Marine Benthic Ecology Meeting, Mobile, AL. March 25–28.

Craig Hutchings
Consultant

Education and Credentials

B.S., Environmental Studies, The Evergreen State College, Olympia, Washington, 1991

Professional Profile

Craig Hutchings is a chemist with more than 25 years of experience in environmental investigations, environmental analytical chemistry, and QA/QC data review and validation. He is responsible for the preparation of sampling and analysis plans (SAPs) and quality assurance project plans (QAPPs), data interpretation, and development of quality assurance programs for sites within various state and federal regulatory programs. Mr. Hutchings has coordinated communication between laboratories and data users on several projects involving performance-based methods for non-standard analytes and methods to ensure that methodologies, data quality, and deliverables meet project needs. Mr. Hutchings has validated both the newly developed methodologies used for these projects and the data generated. He has authored numerous SAPs and QAPPs that comply with federal or state regulatory programs and take into account unique data quality objective requirements of specific projects. Mr. Hutchings has performed and supervised gas chromatography, high performance liquid chromatography, and gas chromatography/mass spectrometry analyses for contaminants in soil, sediment, water, and tissues using EPA and various state methods. He is experienced in the evaluation and review of analytical data including outputs from inductively coupled plasma instruments and chromatograms for Aroclors, pesticides, and other compounds and has reviewed chemistry data from numerous projects involving a wide variety of analyses in air, water, soils, sediments, and tissues.

Relevant Experience

Per- and Polyfluoroalkyl Substances, Northeastern U.S.—Serving as project chemist overseeing analyses and validation of per- and polyfluoroalkyl substances (PFAS) in groundwater, drinking water, surface water, soil, sediment, and pore water. Review isomer profiles of PFAS samples and assist in investigations of potential third-party source contributions.

Yosemite Slough, Technical Pre-Design Studies, San Francisco, California—Developed QAPP for technical pre-design studies related to design of non-time critical removal action. The QAPP addressed analyses of sediment, pore water, and surface water for chemical and physical parameters to inform cap design and studies

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of sediment resuspension, hydrodynamics, and the potential use of monitored and enhanced natural attenuation as an alternative to capping or dredging.

Third-Party Data Integrity Evaluation, Confidential Location—Worked with project team to perform a detailed third-party review of 4 years of chemistry data to investigate allegations of improper practices and data falsification at a small-scale wastewater treatment plant laboratory. Examined hard copy and electronic data and ancillary documents to evaluate the validity of analytical results and conformity with analytical methods, laboratory standard operating procedures, and best laboratory practices. Assisted in preparation of a technical report summarizing the evaluation techniques and conclusions to support reporting by legal counsel to the state regulatory agency.

Biomonitoring Study, U.S.—Served as project manager for a biomonitoring study conducted in support of litigation. Coordinated study design and implementation, laboratory oversight, and data management. Evaluated laboratory methodologies, provided laboratory oversight and coordination, evaluated data usability, and prepared a report summarizing the data and results.

Third-Party Analytical Data Quality Review, Confidential Location—Worked with project team to provided extensive third party review of 8 years of analytical chemistry data records from three laboratory instruments to identify and evaluate the impacts of improper laboratory practices. Examined raw instrument files, laboratory data packages, hard copy documentation, and the laboratory's information management system database to assess conformity with analytical methods, laboratory standard operating procedures, and best laboratory practices.

Deepwater Horizon, Gulf of Mexico—Worked in conjunction with the consulting team in responding to the *Deepwater Horizon* accident and oil spill in the Gulf of Mexico on behalf of BP Exploration & Production Inc. Provided quality assurance and offshore sample coordination roles to support sample collection, data management, and reporting activities for multiple technical work groups. Participated in the chemistry technical working group in review of the quality assurance plan, laboratory coordination, and other quality assurance review activities and data completeness tasks.

Regional-Scale Risk Assessment, Former Mill and Mine Sites, Illinois—Led the review and data validation of analyses of soil, sediment, and surface water for lead, cadmium, chromium, zinc, mercury, and cyanide.

San Jacinto River Waste Pits RI/FS, Houston, Texas—Project chemist for a remedial investigation of dioxin contaminated sediments. Assisted in the development of quality assurance project plans for sediment, soil, and tissue investigations. Performed laboratory coordination for all aspects of the investigation—soil, sediment, groundwater, and tissue.

Upper Columbia River RI/FS, Washington and British Columbia—Project chemist for a remedial investigation of the upper Columbia River. Carried primary responsibility for the development of quality assurance project plan sections related to laboratory activities, the preparation of a comprehensive laboratory request for proposal, and the selection of laboratories for approximately $3 million of analyses. Performed laboratory coordination for beach sediment sampling events.

Portland Harbor RI/FS, Portland, Oregon—Provided assistance to lead project chemists and task managers for this ongoing remedial investigation of a 9-mile stretch of industrialized, urban river. Reviewed analytical data and chromatograms to resolve technical issues, including reviews of chromatograms to confirm Aroclor identifications and the effects of Aroclors on pesticide identifications. Reviewed historical chemistry data for stormwater and managed data to be added to the project database. Completed data validation for a wide variety of analyses, including dioxins and furans, PCB congeners, and EPA methods in sediment, tissue, surface water, and transition zone water samples.

Presentations/Posters

Luz, A., C. Hutchings, J. Anderson, P. Goodrum, and J. Field. 2019. A novel approach for assessing hazard associated with firefighting foams. Poster presentation at SETAC North America 40th Annual Meeting, Toronto, Ontario, Canada. November 3–7.

Goodrum, P., A. Luz, J. Anderson, G. Ansell, and C. Hutchings. 2019. Approaches for perfluoroalkyl acid grouping and assessment of mixture toxicity. SETAC North America Focused Topic Meeting: Environmental Risk Assessment of PFAS, Durham, NC. August 12–15.

Hutchings, C., and S. Helgen. 2019. Identifying linear and branched isomers from standard PFAS analysis for source delineation. Platform presentation at Tenth International Conference on the Remediation and Management of Contaminated Sediments, New Orleans, LA. February 11–14.

Helgen, S., M. Marietta, C. Hutchings, and E. Palko. 2018. Site-specific desorption testing of perfluorononanoic acid (PFNA) to assess potential soil leaching to groundwater. Platform presentation at Eleventh International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Palm Springs, CA. April 8–12.

Jones, L., and C. Hutchings. 2013. Superfund data validation. Lorman Education Services Audio Conference.

Hutchings, C., and A. Bailey. 2006. Variables in lipids analyses and effect on data quality. 22nd National Environmental Monitoring Conference, Arlington, VA.

Bailey, A.K., P. Kane, and C. Hutchings. 2006. Reference materials as indicators of analytical data quality for human and ecological risk assessments. Tenth International Symposium on Biological and Environmental Reference Materials, Charleston, SC.

Manon Tanner-Dave
Project Scientist

Education and Credentials

M.S., Environmental Science, Oregon Health & Science University, Portland, Oregon, 2002

B.S., Chemistry, Pacific University, Forest Grove, Oregon, 2001

A.A., General, Modesto Junior College, Modesto, California, 1998

Continuing Education and Training

Confined Space Entry Awareness Course (2007)

Red Cross CPR (2007) and First Aid Training (2004)

Hazardous Waste Operations and Emergency Response 40-Hour Certification (2004; refreshers current)

Oregon Department of Transportation Training (2009)

Professional Profile

Ms. Manon Tanner-Dave is a chemist with 15 years of experience providing support in project and data quality assurance. She has extensive experience writing field sampling plans and quality assurance project plans (QAPPs) related to a variety environmental media for both state and federal regulatory agencies, including Alaska Department of Environmental Conservation, Washington State Department of Ecology, EPA Regions 6 and 10, and the U.S. Army Corps of Engineers. She specializes in environmental chemistry and is experienced in data validation for organic and inorganic data using EPA's functional guidelines for data validation. She has coordinated analytical laboratory activities and works closely with clients, project teams, and laboratories to resolve any data quality issues, such as background contamination or analytical interference. In addition, Ms. Tanner-Dave is knowledgeable of many analytical methods for environmental matrices, including EPA SW-846, Standard Methods for the Examination of Water and Wastewater, and ASTM International standards.

Relevant Experience

Portland Harbor Superfund Site Remedial Investigation/Feasibility Study, Portland, Oregon—Assisted in the development of QAPPs and several QAPP addenda for an extensive list of organic and inorganic analytes of interest in soil, sediment, tissue, surface water, and groundwater. Prepared letters of authorization to participating analytical laboratories and data validation firms and assisted with budget projections. Coordinated and oversaw all analytical laboratory services and assisted in sample collection and shipment of samples to the analytical laboratories. Worked closely with the analytical laboratories on analytical method modifications needed for some problematic environmental matrices. Evaluated data and assisted in preparing field sampling reports and data quality assurance reports.

Blood Lead Biomonitoring Study, Rico, Colorado—Assisted in developing a biomonitoring study for a former lead mining town in Colorado. Prepared a QAPP for the study, coordinated field activities with the analytical laboratories, validated analytical results, and prepared a quality assurance data report. Sampled media included blood, house dust, drinking water, and paint. Results of

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this study were used to evaluate seasonal fluctuations of blood lead levels in town residents and to assess the effectiveness of soil remediation efforts.

Former Chemical Manufacturing Facility, Portland, Oregon—Drafted QAPPs in support of interim and remedial measures for stormwater as well as post-construction stormwater monitoring for site-specific organic and inorganic analytes of concern. Coordinated laboratory analyses of samples. Reviewed and validated analytical results from stormwater interim and remedial measures, and post-construction stormwater monitoring of site-specific organic and inorganic analytes of concern. Prepared data quality assurance reports summarizing data results.

Post-construction Groundwater Monitoring Program, Smeltertown Superfund Site, Operable Unit No. 1, Salida, Colorado—Provided data validation services for a groundwater monitoring project. Analytes of interest included select metals and semivolatile organic compounds. Provided a data validation summary report.

Subslab Gas Sampling, Milwaukie International Way Site, Milwaukie, Oregon—Participated in semiannual subslab gas sampling Soil gas probes were installed and sampled following EPA guidance, *Standard Operating Procedure (SOP) for Installation of Sub-Slab Vapor Probes and Sampling Using EPA Method TO-15 to Support Vapor Intrusion Investigations*. Reviewed and validated analytical results from subslab air samples that were collected and analyzed according to EPA Method TO-15. Provided a data quality summary report for each sampling event.

Human Health Risk Assessment at Smelter Facility, La Oroya, Peru—Assisted in developing a human health risk assessment for an active smelter. Prepared a study QAPP, coordinated field activities with the analytical laboratories (international and domestic), validated analytical results, and prepared a quality assurance data report. Also participated in one of two field sampling efforts in the community surrounding the smelter to characterize exposure media, including drinking water, surface soil, outdoor dust, and dust in homes. These data were combined with biomonitoring and dietary intake data for the population and air dispersion and deposition modeling results to complete the human health risk assessment. For this project all communications occurred in Spanish.

Semiannual Groundwater Sampling at a Former Wood Waste Disposal Landfill, Oakridge, Oregon—Collected groundwater and surface water samples at a former wood waste landfill site. Analyzed field and analytical data to modify an existing environmental monitoring plan for the site that included a reduced list of analytes.

Water Quality Monitoring for Mining Site, Ketchikan, Alaska—Prepared QAPPs in support of routine monitoring of surface water and groundwater quality, and quarterly monitoring of the wastewater treatment facility effluent for the site barge, which houses onsite employees. Reviewed and validated analytical results from quarterly groundwater, surface water, and wastewater treatment facility effluent from the site barge. Assisted with quarterly and annual data evaluation, reporting, and development of a database for analytical results.

Volcanogenic Massive Sulfide Project, Alaska—Prepared a QAPP using Alaska Department of Environmental Conservation guidance in support of assembling a sufficient data set to define baseline conditions for target analytes in surface water. Analytes of interest included conventional parameters, cations/anions, and total/dissolved metals. Baseline water quality data were used to characterize water quality typical of the project area prior to any potential underground exploration or mine development. Monitored laboratories' progress on sample analyses. Reviewed and validated analytical results from baseline water quality testing. Provided data quality reports summarizing analytical results and assisted with development of a database for analytical results.

Glenbrook Nickel Site, Coos Bay, Oregon—Provided data validation services for sediment samples submitted for total organic carbon, grain size, and nickel analyses for site investigation purposes. Responsible for providing a data quality summary report of all analytical results.

Groundwater and Wastewater Sample Data Validation, Blackwell, Oklahoma—Reviewed and validated total and dissolved cadmium, lead, zinc, calcium, and magnesium results from groundwater samples. Reviewed and validated cadmium, lead, and zinc results from wastewater treatment plant influent samples. Reviewed and validated cadmium, lead, zinc, naphthalene, and select volatile organic compound results from groundwater treatment facility samples. Assisted with quarterly and annual reporting of analytical results.

Formerly Used Defense Sites—Performed data validation for munitions-related constituents. Provided data validation reports for each area of concern. Delegated role as lead data validator and performed senior review of data validation results and data validation reports.

Deepwater Horizon, Gulf of Mexico—Worked in conjunction with the Cardno ENTRIX team in responding to the Deepwater Horizon accident and oil spill in the Gulf of Mexico on behalf of BP Exploration & Production Inc. Provided support to the chemistry technical working group in quality assurance review activities and data completeness tasks. Primarily validated data and provided data validation review support according to project-specific quality assurance plan specifications.

Attachment 3

Chain-of-Custody Form

>>> Select a Laboratory <<<
#N/A
#N/A
#N/A
#N/A

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

TestAmerica Laboratories, Inc.

Client Contact	Project Manager:	Site Contact:	Date:	COC No:
Your Company Name here	Tel/Fax:	Lab Contact:	Carrier:	_______ of ______ COCs
Address	Analysis Turnaround Time			Sampler:
City/State/Zip	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
(xxx) xxx-xxxx Phone	TAT if different from Below _________			Walk-in Client:
(xxx) xxx-xxxx FAX	☐ 2 weeks			Lab Sampling:
Project Name:	☐ 1 week			
Site:	☐ 2 days			Job / SDG No.:
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)																	Sample Specific Notes:

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other ____________

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for_________ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:		Cooler Temp. (^{o}C): Obs'd:________ Corr'd:__________ Therm ID No.:___________		
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Appendix D

Standard Operating Procedures

P-SITE CHARACTERIZATION WORK PLAN: CORNING REFRACTORIES PLANT

NYSDEC Project ID 851048, 1 Front Street, Corning, New York

Standard Operating Procedures

Prepared for
Corning Incorporated
Corning, NY

Prepared by

31 West 34th Street
Suite 7196
New York, NY 10001

April 14, 2022

Affiliated with Integral Consulting Inc.

All Purpose Standard Operating Procedures

- SOP AP-01 Sample Packaging and Shipping
- SOP AP-02 Field Documentation
- SOP AP-03 Sample Custody
- SOP AP-04 Sample Labeling
- SOP AP-05 Characterization Derived Waste Handling

Groundwater Standard Operating Procedures

- SOP GW-01 Decontamination of Groundwater Sampling Equipment
- SOP GW-02 Measurement of Depth to Water
- SOP GW-03 Low-Flow Groundwater Sampling

Soil Standard Operating Procedures

- SOP SL-01 Decontamination of Soil Sampling Equipment
- SOP SL-02 Preparation of Field Quality Control Samples for Soils
- SOP SL-04 Field Classification of Soil
- SOP SL-05 Surface Soil Sampling
- SOP SL-06 Logging of Soil Boreholes
- SOP SL-07 Subsurface Soil Sampling

STANDARD OPERATING PROCEDURE (SOP) AP-01

SAMPLE PACKAGING AND SHIPPING

SCOPE AND APPLICATION

This SOP describes specific requirements for sample packaging and shipping to ensure the proper transfer and documentation of environmental samples collected during field operations. Procedures for the careful and consistent transfer of samples from the field to the laboratory are outlined herein. This SOP also presents the method to be used when packing samples that will either be hand delivered or shipped by commercial carrier to the laboratory.

EQUIPMENT AND SUPPLIES REQUIRED

Make sure that you have the equipment and supplies necessary to properly pack and ship environmental samples, including the following:

- Project-specific sampling and analysis plan (SAP)
- Project-specific field logbook
- Sealable airtight bags in assorted sizes (e.g., Ziploc®)
- Wet ice in doubled, sealed bags; frozen Blue Ice®; or dry ice
- Cooler(s)
- Bubble wrap
- Fiber-reinforced packing tape, clear plastic packing tape, and duct tape
- Scissors or knife
- Chain-of-custody (COC) forms
- COC seals
- Large plastic garbage bags (preferably 3 mil [0.003 in.] thick)
- Paper towels
- "Fragile," "This End Up," or "Handle With Care" labels
- Mailing labels
- Air bills for overnight shipment

PROCEDURE

Customize the logistics for sample packaging and shipping to each study. If necessary, transfer samples from the field to a local storage facility where they can be frozen or refrigerated. Depending on the logistics of the operation, field personnel may transport samples to the laboratory or use a commercial courier or shipping service. In the latter case, Integral field personnel must be aware of any potentially limiting factors to timely shipping, such as availability of overnight service and weekend deliveries to specific areas, and shipping regulations regarding “restricted articles” (e.g., dry ice, formalin) prior to shipping the samples.

SAMPLE PREPARATION

Take the following steps to ensure the proper transfer of samples from the field to the laboratories:

At the sample collection location:

1. Document all samples using the proper logbooks or field forms (see SOP AP-02), required sample container identification (i.e., sample labels with tag numbers), and COC form (example provided in SOP AP-03). Fill out the COC form as described in SOP AP-03, and use the sample labeling techniques provided in SOP AP-04.
2. Make all applicable laboratory quality control sample designations on the COC forms. Clearly identify samples that will be archived for future possible analysis. Label these samples as follows: “Do Not Analyze: Hold and archive for possible future analysis.” Some laboratories interpret “archive” to mean that they should continue holding the residual sample after analysis.
3. Notify the laboratory contact and the Integral project quality assurance/quality control (QA/QC) coordinator that samples will be shipped and the estimated arrival time. Send copies of all COC forms to Integral’s project QA/QC coordinator or project manager, as appropriate.
4. Keep the samples in the possession of the sampling personnel at all times. Lock and secure any temporary on-location sample storage areas to maintain sample integrity and COC requirements.
5. Clean the outside of all dirty sample containers to remove any residual material that may lead to cross-contamination.
6. Complete the COC form as described in SOP AP-03, and retain the back (pink) copy for project records prior to sealing the cooler. Check sample containers against the COC form to ensure all the samples that were collected are in the cooler.

7. Store each sample container in a sealed plastic bag that allows the sample label (example provided in SOP AP-03) to be read. Before sealing the bags, ensure that volatile organic analyte (VOA) vials are encased in a foam sleeve or in bubble wrap.
8. If the samples require storage at a specific temperature, place enough ice in the sample cooler to maintain the temperature (e.g., 4°C) throughout the sampling day.

At the sample processing area (immediately after sample collection) take the following steps:

1. If the samples require a specific storage temperature, then cool the samples and maintain the temperature prior to shipping. For example, place enough ice in each sample cooler to maintain the temperature at 4°C until processing begins at the testing laboratory.
2. Be aware of holding time requirements for project-specific analytes and arrange the sample shipping schedule accordingly.
3. Place samples in secure storage (i.e., locked room or vehicle) or keep them in the possession of Integral sampling personnel before shipment. Lock and secure any sample storage areas to maintain sample integrity and COC requirements.
4. Store samples in the dark (e.g., keep coolers shut).

At the sample processing area (just prior to shipping), do the following:

1. Check sample containers against the COC form to account for all samples intended for shipment.
2. Choose cooler(s) of appropriate size and make sure they are clean of gross contamination inside and out. If the cooler has a drain, close the drain and secure it with duct tape.
3. Line the cooler with bubble wrap and place a large plastic bag (preferably with a thickness of 3 mil), open, inside the cooler.
4. Individually wrap each glass container (which was sealed in a plastic bag at the collection location) in bubble wrap and secure with tape or a rubber band. Place the wrapped samples in the large plastic bag in the cooler, leaving room for ice to keep the samples cold (i.e., 4°C).
5. If temperature blanks have been provided by the testing laboratory, place one temperature blank in each sample cooler.
6. If the samples require a specific storage temperature, add enough wet ice or Blue Ice® to maintain that temperature during overnight shipping (i.e., 4°C). Always overestimate the amount of ice that will be required. Keep ice in a sealed plastic bag, which is placed in a second sealed plastic bag to prevent leakage. Avoid separating the samples from the ice with excess bubble wrap because it may insulate the samples from the ice. After adding all samples and ice to the cooler, use bubble wrap (or other

available clean packing material) to fill any empty space and prevent the samples from shifting during transport.

7. If possible, consolidate all VOA samples in a single cooler and ship them with (a) trip blank(s) if the project-specific QA project plan calls for them.
8. Sign, date, and include any tracking numbers provided by the shipper on the COC form. Remove the back (pink) copy of the original COC form and retain this copy for the project records.
9. Seal the rest of the signed COC form in a bag and tape the bag to the inside of the cooler lid. Each cooler should contain an individual COC form for the samples contained inside it. If time is short and it becomes necessary to combine all the samples onto a single set of COC forms and ship multiple coolers together, then indicate on the outside of the appropriate cooler, "Chain-of-Custody Inside."
10. After the cooler is sufficiently packed to prevent shifting of the containers, close the lid and seal it with fiber-reinforced packing tape. Tape the cooler around the opening, joining the lid to the bottom, and around the circumference of the cooler at both hinges.
11. As security against unauthorized handling of the samples, apply two COC seals across the opening of the cooler lid (provided with example field forms). Place one seal on the front right portion of the cooler and one on the back left. Be sure the seals are properly affixed to the cooler to prevent removal during shipment. Additional tape across the seal may be necessary if the outside of the cooler is wet.

SAMPLE SHIPPING

Hand Delivery to the Testing Laboratory

1. Notify the laboratory contact and the Integral project QA/QC coordinator that samples will be delivered to the laboratory and the estimated arrival time.
2. When hand-delivering environmental samples, make sure the testing laboratory receives them on the same day that they were packed in the coolers.
3. Fax or scan and e-mail copies of all COC forms to the Integral project QA/QC coordinator. Note: It may be necessary to photocopy the COC form on a slightly darker setting so the form is readable after it has been faxed. Never leave the original COC form in the custody of non-Integral staff.

Shipped by Commercial Carrier to the Laboratory

1. Apply a mailing label to the cooler with destination and return addresses, and add other appropriate stickers, such as "This End Up," "Fragile," and "Handle With Care." If the shipment contains multiple coolers, indicate on the mailing label the number of coolers that the testing laboratory should expect to receive (e.g., 1 of 2; 2 of 2). Place clear tape over the mailing label to firmly affix it to the cooler and to protect it from the weather. This is a secondary label in case the air bill is lost during shipment.
2. Fill out the air bill and fasten it to the handle tags provided by the shipper (or the top of the cooler if handle tags are not available).
3. If samples must be frozen (–20°C) during shipping, make sure that dry ice has been placed in the sample cooler. Be aware of any additional shipping, handling, and special labeling requirements that the shipper may require.
4. Make sure that benthic infauna samples have been preserved with formalin in the field prior to shipping. Be aware of any additional shipping, handling, and special labeling requirements that the shipper may require for these samples.
5. Notify the laboratory contact and the Integral project QA/QC coordinator that samples will be shipped and the estimated arrival date and time. If environmental samples must be shipped at 4°C or –20°C, choose overnight shipping for delivery next morning. Fax or scan and e-mail copies of all COC forms to the Integral project QA/QC coordinator. Note: It may be necessary to photocopy the COC form on a slightly darker setting so the form is readable after faxing. Never leave the original COC form in the custody of non-Integral staff.

STANDARD OPERATING PROCEDURE (SOP) AP-02

FIELD DOCUMENTATION

SCOPE AND APPLICATION

This SOP describes the Integral procedure for accurate record-keeping in the field for the purposes of ensuring that samples can be traced from collection to final disposition.

Document all information relevant to field operations properly to ensure that activities are accounted for in written records to the extent that someone not present could reconstruct the activity without relying on the memory of the field crew. Several types of field documents are used for this purpose and should be consistently used by field personnel. Field documentation should include only a factual description of activities and observations. Field personnel should not include superfluous comments or speculation regarding the field activities or observations.

FIELD LOGBOOKS

During field sampling events, field logbooks must be used to record all daily activities. The purpose of the field logbook is to document events and record data measured in the field to the extent that someone not present could reconstruct the activity without relying on the memory of the field crew. The project manager (or designee) should issue a field logbook to the appropriate personnel for the direction of activities (e.g., reconnaissance survey team leader, sampling team leader). It is this designee's responsibility to maintain the logbook while it is in his or her possession and return it to the project manager or turn it over to another field team.

Make entries in the field logbook as follows:

1. Document all daily field activities in indelible ink in the logbook and make no erasures. Make corrections with a single line-out deletion, followed by the author's initials and the date. The author must initial and date each page of the field logbook. The author must sign and date the last page at the end of each day, and draw a line through any blank space remaining on the page below the last entry.

2. Write the project name, dates of the field work, study area name and location (city and state), and Integral job number on the cover of the field logbook. If more than one logbook is used during a single sampling event, then annotate the upper right-hand corner of the logbook (e.g., Volume 1 of 2, 2 of 2) to indicate the number of logbooks used during the field event. Secure all field logbooks when not in use in the field. The following is a list of the types of information that is appropriate for entry in the field notebook:

   – Project start date and end date
   – Date and time of entry (24-hour clock)
   – Time and duration of daily sampling activities
   – Weather conditions at the beginning of the field work and any changes that occur throughout the day, including the approximate time of the change (e.g., wind speed and direction, rain, thunder, wave action, current, tide, vessel traffic, air and water temperature, thickness of ice if present)
   – Name and affiliation of person making entries and other field personnel and their duties, including what times they are present
   – The location and description of the work area, including sketches, map references, and photograph log, if appropriate
   – Level of personal protection being used
   – Visitors (names and affiliations), if any, including what times they are present
   – The name, agency, and telephone number of any field contacts
   – Notation of the coordinate system used to determine the station location
   – The sample identifier and analysis code for each sample to be submitted for laboratory analysis, if not included on separate field data sheets
   – All field measurements made (or reference to specific field data sheets used for this purpose), including the time of collection and the date of calibration, if appropriate
   – The sampling location name, date, gear, water depth (if applicable), and sampling location coordinates, if not included on separate field data sheets
   – For aquatic sampling, the type of vessel used (e.g., size, power, type of engine)
   – Specific information on each type of sampling activity
   – The sample type (e.g., groundwater, soil, surface sediment), sample number, sample tag number, and any preservatives used, if not included on separate field data sheets
   – Sample storage methods

- Cross-references of numbers for duplicate samples
- A description of the sample (source and appearance, such as soil or sediment type, color, texture, consistency, presence of biota or debris, presence of oily sheen, changes in sample characteristics with depth, presence/location/thickness of the redox potential discontinuity [RPD] layer, and odor) and penetration depth, if not included on separate field data sheets
- Estimate of length and appearance of recovered cores, if not included on separate field data sheets
- Photographs (uniquely identified) taken at the sampling location, if any
- Details of the work performed
- Variations, if any, from the project-specific sampling and analysis plan (SAP) or standard operating protocols and reasons for deviation
- Details pertaining to unusual events that might have occurred during sample collection (e.g., possible sources of sample contamination, equipment failure, unusual appearance of sample integrity, control of vertical descent of the sampling equipment)
- References to other logbooks or field forms used to record information (e.g., field data sheets, health and safety log)
- Any field results not appearing on the field data sheets (if used), including station identification and location, date, and time of measurement
- Sample shipment information (e.g., shipping manifests, chain-of-custody (COC) form numbers, carrier, air bill numbers, time addresses)
- A record of quantity of characterization-derived wastes (if any) and storage and handling procedures.

3. During the field day, as listed above, record in the logbook a summary of all activities. Provide a date and time for each entry. The information need not duplicate anything recorded in other field logbooks or field forms (e.g., health and safety officer's logbook, calibration logbook, field data sheets), but should summarize the contents of the other logbooks and refer to the pages in these logbooks for detailed information.
4. If measurements are made at any location, record the measurements and equipment used, or refer to the logbook and page number(s) or field forms on which they are recorded. All maintenance and calibration records for equipment should be traceable through field records to the person using the instrument and to the specific piece of instrumentation itself.

5. Upon completion of the field sampling event, the sampling team leader will be responsible for submitting all field logbooks to be copied. A discussion of copy distribution is provided below.

FIELD DATA FORMS

Occasionally, additional field data forms are generated during a field sampling event (e.g., groundwater monitoring form, sediment core profile form, water quality measurement form) to record the relevant sample information collected. For instructions regarding the proper identification of field data forms, sampling personnel should consult the project-specific SAP.

Upon completion of the field sampling event, the sampling team leader will be responsible for submitting all field data forms to be copied. A discussion of copy distribution is provided below.

PHOTOGRAPHS

In certain cases, photographs (print or digital) of sampling stations may be taken using a camera-lens system with a perspective similar to the naked eye. Ensure that photographs include a measured scale in the image, when practical. If you take photographs of sample characteristics and routine sampling activities, avoid using telephoto or wide-angle shots, because they cannot be used in enforcement proceedings. Record the following items in the field logbook for each photograph taken:

1. The photographer’s name or initials, the date, the time of the photograph, and the general direction faced (orientation)
2. A brief description of the subject and the field work shown in the picture
3. For print photographs, the sequential number of the photograph and the roll number on which it is contained
4. For digital photographs, the sequential number of the photograph, the file name, the file location, and back-up disk number (if applicable).

Upon completion of the field sampling event, the sampling team leader is responsible for submitting all photographic materials to be developed (prints) or copied (disks). Place the prints or disks and associated negatives in the project files (at the Integral project manager’s location). Make photocopies of photo logs and any supporting documentation from the field logbooks, and place them in the project files with the prints or disks.

EQUIPMENT CALIBRATION RECORDS

Record in the field logbook all equipment calibration records, including instrument type and serial number, calibration supplies used, calibration methods and calibration results, date, time, and personnel performing the calibration. Calibrate all equipment used daily, at a minimum, in accordance with the manufacturers' recommendations.

DISTRIBUTION OF COPIES

When the field team has returned from the sampling event, the field team leader is responsible for making sure that the field documentation is 1) scanned and placed into the project file on the portal (in a subfolder named Field under Working_Files), and 2) a copy of all field logbooks and additional field data forms is made and placed into the project file. Both the scanned copy and the hard copy will be available for general staff use.

The original field logbooks and forms will be placed in a locked file cabinet for safekeeping. One file cabinet at each Integral office will contain the original field documentation for multiple projects. The original field documentation will be filed at the Integral office where the project manager is located.

SET-UP OF LOCKING FILE CABINET

Place each project in its own file folder in a locking file cabinet. On the folder label, include the project name and contract number. Each project folder will include up to six kinds of files:

- Field logbook(s)
- Additional field data forms
- Photographs
- COC forms
- Acknowledgment of Sample Receipt forms
- Archive Record form (to be completed only if samples are archived at an Integral field storage facility or Integral laboratory).

STANDARD OPERATING PROCEDURE (SOP) AP-03

SAMPLE CUSTODY

SCOPE AND APPLICATION

This SOP describes Integral procedures for custody management of environmental samples.

A stringent, established program of sample chain-of-custody will be followed during sample storage and shipping activities to account for each sample. The procedure outlined herein will be used with SOP AP-01, which covers sample packaging and shipping; SOP AP-02, which covers the use of field logbooks and other types of field documentation; and SOP AP-04, which covers sample labeling. Chain-of-custody (COC) forms ensure that samples are traceable from the time of collection through processing and analysis until final disposition. A sample is considered to be in a person's custody if any of the following criteria are met:

1. The sample is in the person's possession
2. The sample is in the person's view after being in his or her possession
3. The sample is in the person's possession and is being transferred to a designated secure area
4. The sample has been locked up to prevent tampering after it was in the person's possession.

At no time is it acceptable for samples to be outside of Integral personnel's custody unless the samples have been transferred to a secure area (i.e., locked up). If the samples cannot be placed in a secure area, then an Integral field team member must physically remain with the samples (e.g., at lunch time one team member must remain with the samples).

CHAIN-OF-CUSTODY FORMS

The COC form is critical because it documents sample possession from the time of collection through final disposition. The form also provides information to the laboratory regarding what analyses are to be performed on the samples that are shipped.

Complete the COC form after each field collection activity and before shipping the samples to the laboratory. Sampling personnel are responsible for the care and custody of the samples until they are shipped. The individuals relinquishing and receiving the samples must sign the

COC form(s), indicating the time and date of the transfer, when transferring possession of the samples.

A COC form consists of three-part carbonless paper with white, yellow, and pink copies. The sampling team leader keeps the pink copy. The white and yellow sheets are placed in a sealed plastic bag and secured inside the top of each transfer container (e.g., cooler). Field staff retain the pink sheet for filing at the Integral project manager's location. Each COC form has a unique four-digit number. This number and the samples on the form must be recorded in the field logbook. Integral also uses computer-generated COC forms. If computer-generated forms are used, then the forms must be printed in triplicate and all three sheets signed so that two sheets can accompany the shipment to the laboratory and one sheet can be retained on file. Alternatively, if sufficient time is available, the computer-generated forms will be printed on three-part carbonless paper.

Record on the COC form the project-assigned sample number and the unique tag number at the bottom of each sample label. The COC form also identifies the sample collection date and time, type of sample, project name, and sampling personnel. In addition, the COC form provides information on the preservative or other sample pretreatment applied in the field and the analyses to be conducted by referencing a list of specific analyses or the statement of work for the laboratory. The COC form is sent to the laboratory along with the sample(s).

PROCEDURES

Use the following guidelines to ensure the integrity of the samples:

1. Sign and date each COC form. Have the person who relinquishes custody of the samples also sign this form.
2. At the end of each sampling day and prior to shipping or storage, make COC entries for all samples. Check the information on the labels and tags against field logbook entries.
3. Do not sign the COC form until the team leader has checked the information for inaccuracies. Make corrections by drawing a single line through any incorrect entry, and then initial and date it. Make revised entries in the space below the entries. After making corrections, mark out any blank lines remaining on the COC form, using single lines that are initialed and dated. This procedure will prevent any unauthorized additions.

   At the bottom of each COC form is a space for the signatures of the persons relinquishing and receiving the samples and the time and date of the transfer. The time the samples were relinquished should match exactly the time they were received by another party. Under no circumstances should there be any time when custody of the samples is undocumented.

4. If samples are sent by a commercial carrier not affiliated with the laboratory, such as FedEx or United Parcel Service (UPS), record the name of the carrier on the COC form. Also enter on the COC form any tracking numbers supplied by the carrier. The time of transfer should be as close to the actual drop-off time as possible. After signing the COC forms and removing the pink copy, seal them inside the transfer container.
5. If errors are found after the shipment has left the custody of sampling personnel, make a corrected version of the forms and send it to all relevant parties. Fix minor errors by making the change on a copy of the original with a brief explanation and signature. Errors in the signature block may require a letter of explanation.
6. Provide a COC form and an Archive Record form for any samples that are archived internally at Integral.

Upon completion of the field sampling event, the sampling team leader is responsible for submitting all COC forms to be copied. A discussion of copy distribution is provided in SOP AP-02.

CUSTODY SEAL

As security against unauthorized handling of the samples during shipping, affix two custody seals to each sample cooler. Place the custody seals across the opening of the cooler (front right and back left) prior to shipping. Be sure the seals are properly affixed to the cooler so they cannot be removed during shipping. Additional tape across the seal may be prudent.

SHIPPING AIR BILLS

When samples are shipped from the field to the testing laboratory via a commercial carrier (e.g., FedEx, UPS), the shipper provides an air bill or receipt. Upon completion of the field sampling event, the sampling team leader will be responsible for submitting the sender's copy of all shipping air bills to be copied at an Integral office. A discussion of copy distribution is provided in SOP AP-02. Note the air bill number (or tracking number) on the applicable COC forms or, alternatively, note the applicable COC form number on the air bill to enable the tracking of samples if a cooler becomes lost.

ACKNOWLEDGMENT OF SAMPLE RECEIPT FORMS

In most cases, when samples are sent to a testing laboratory, an Acknowledgment of Sample Receipt form is faxed to the project QA/QC coordinator the day the samples are received by the laboratory. The person receiving this form is responsible for reviewing it, making sure that the laboratory has received all the samples that were sent, and verifying that the correct analyses were requested. If an error is found, call the laboratory immediately, and document any decisions made during the telephone conversation, in writing, on the Acknowledgment of Sample Receipt form. In addition, correct the COC form and fax the corrected version to the laboratory.

Submit the Acknowledgment of Sample Receipt form (and any modified COC forms) to be copied. A discussion of copy distribution is provided in SOP AP-02.

ARCHIVE RECORD FORMS

On the rare occasion that samples are archived at an Integral office, it is the responsibility of the project manager to complete an Archive Record form. This form is to be accompanied by a copy of the COC form for the samples, and will be placed in a locked file cabinet. The original COC form remains with the samples in a sealed Ziploc® bag.

STANDARD OPERATING PROCEDURE (SOP) AP-04

SAMPLE LABELING

SCOPE AND APPLICATION

This SOP describes the general Integral procedures for labeling samples, and the three kinds of labels that can be used on a project (i.e., sample labels, sample tags, and internal sample labels). Consult the project-specific sampling and analysis plan (SAP) to determine the exact sample identifiers and sample labels that are required for a given project. If they are not specified in the SAP, then follow the designations below.

SAMPLE IDENTIFIERS

Before field sampling begins, establish sample identifiers to be assigned to each sample as it is collected. Sample identifiers consist of codes designed to fulfill three purposes: 1) to identify related samples (i.e., replicates) to ensure proper data analysis and interpretation, 2) to obscure the relationships between samples so that laboratory analysis will be unbiased by presumptive similarities between samples, and 3) to track individual sample containers to ensure that the laboratory receives all material associated with a single sample. To accomplish these purposes, each container may have three different codes associated with it: the sample identifier, the sample number, and the sample tag number. These codes and their use are described as follows:

- **Sample Identification Code—**The sample identification code (Sample ID) is a unique designation that identifies where and how the sample was collected. The sample identifier is recorded in the field logbook *only* and is not provided on the sample label or chain-of-custody (COC) form. The sample identifier is a multiple-part code. The first component begins with the letter abbreviation; for example, "SWNS" or "SWNB" to designate the surface water sample was collected from the near-surface or near-bottom of the water column. The second part could identify the sampling event; for example, "1" to designate Round 1 sampling. The third part could contain an abbreviation for whether the station is a single point (SP), a transect (TR), a composite (CO), or a vertically integrated station (VI). The station number would be the final component of the sample identifier. Use leading zeros for stations with numbers below 100 for ease of data management and correct data sorting.

  If appropriate, add a supplemental component to the sample identifier to code field duplicate samples and splits. Use a single letter (i.e., a suffix of "A" and "B") to indicate field duplicates or splits in the final component of the sample identifiers. For equipment decontamination blanks, assign sequential numbers starting at 900 instead of station numbers. Use a sample type code that corresponds to the sample type for which the decontamination blank was collected. Additional codes may be adopted, if necessary, to reflect sampling equipment requirements (see project-specific SAP).

Examples of sample IDs are as follows:

- SWNS-1-SP-002: Surface water sample collected from the near-surface at a single point during Round 1 from Station 2.
- SWNB-1-TR-010-A: Duplicate surface water sample from the near-bottom transect during Round 1 from Station 10.

- **Sample Number**—The sample number is an arbitrary number assigned to each distinct sample or split that is shipped to the laboratory for separate analysis. The sample number appears on the sample containers and the COC forms. Each sample will be assigned a unique sample number. All aliquots of a composited field sample will have the same sample number. In cases where samples consist of multiple bottles from the same location, assign each bottle the same sample number and time. However, assign replicates from the same location different sample numbers and times. Sample numbers of related field replicates will not necessarily have any shared content.

  Each field split of a single sample will also have a different sample number and time. The sample number is generally a unique six-digit number that includes a two-digit media code and a four-digit number. The media code may be specific to the sampling project, but the Integral default codes are as follows:

  - SS—Surface soil
  - BH—Subsurface soil or rock (typically from borehole)
  - GW—Groundwater
  - SW—Surface water
  - PW—Pore water
  - SD—Sediment
  - BT—Biota or biological tissue

    The exact sample numbering scheme may vary from project to project. Variances in the sample numbering scheme will be described in the project-specific SAP for the field event. Example sample numbers are PW0001, PW0002, PW0003, etc.

- **Tag Number—**Attach a different tag number to each sample container. If the amount of material (i.e., everything associated with a single sample number) is too large for a single container, assign each container the same sample number and a different sample tag. A sample will also be split between containers if a different preservation technique is used for each container (i.e., because different analyses will be conducted).

  The sample tag number is a unique five- or six-digit number assigned to each sample label (or "tag") for multiple bottles per sample. Integral sample labels come with a preprinted sample tag number. The tag number provides a unique tracking number to a specific sample bottle. This allows for greater flexibility in tracking sample bottles and assists in field quality control when filling out documentation and shipping. Sample tags are not used by many other consultants, and there may be resistance from such firms during teaming situations. However, experience has shown that tags can be very valuable, both in the field and while processing data from field efforts.

  Record tag numbers on the COC form. Laboratories use tag numbers only to confirm that they have received all of the containers that were filled and shipped. Data are reported by sample number.

Assign sample numbers sequentially in the field; sample labels are preprinted with sequential tag numbers.

SAMPLE LABELS

Integral sample labels are designed to uniquely identify each individual sample container that is collected during a sampling event. Field sampling teams are provided with preprinted sample labels, which must be affixed to each sample container used. Fill out the labels at the time the samples are collected, documenting the following information:

- Sample number
- Study Area name or project number
- Date and time sample is collected
- Initials of the samplers
- Preservatives used, if any
- A unique number (commonly referred to as the "Tag Number") that is preprinted on the label consisting of five or six digits; used to identify individual containers.

SAMPLE TAGS

Integral sample tags are designed to be affixed to each container that is used for a sample. Sample tags are required only for environmental samples collected in certain U.S.

Environmental Protection Agency (EPA) regions (e.g., EPA Region 5). Field crews are provided with preprinted sample tags. Attach sample tags to each individual sample container with a rubber band or wire through a reinforced hole in the tag. Mark all sample tag entries with indelible ink. Fill out the tags at the time the samples are collected, documenting the following information:

- Sample number
- Study Area name or project number
- Date and time sample is collected
- Initials of the samplers
- Preservatives used, if any
- Type of analysis.

A space for the laboratory sample number (provided by the laboratory at log-in) will also be provided on the sample tag.

INTERNAL SAMPLE LABELS

For benthic infaunal samples, wash away the sediment from the sample and collect the remaining benthic infauna into a sample container. Affix sample label (as discussed above) to the outside of the sample container. In addition, place an internal sample label inside the sample container. This internal sample label is made of waterproof paper; be sure to make all internal sample label entries with pencil. Fill out the internal sample labels at the time the samples are collected, documenting the following information:

- Sample number
- Study Area name or project number
- Date and time sample is collected
- Initials of the samplers
- Preservative used (e.g., formalin).

STANDARD OPERATING PROCEDURE (SOP) AP-05

CHARACTERIZATION-DERIVED WASTE HANDLING

SCOPE AND APPLICATION

This SOP presents the method to be used for handling wastes generated during field sampling activities that could be hazardous. These wastes are referred to as characterization-derived waste and are subject to specific regulations.

All disposable materials used for sample collection and processing, such as paper towels and gloves, are not considered characterization-derived wastes and will be placed in heavyweight garbage bags or other appropriate containers. Disposable supplies will be removed from OU4 by sampling personnel and placed in a normal refuse container for disposal at a solid waste landfill.

EQUIPMENT AND REAGENTS REQUIRED

- 55-gallon drums (or appropriately sized waste container)
- Paint markers
- Tools (to open and close drum)
- Ziploc® bags
- Drum labels.

PROCEDURES

1. Place solid wastes that need to be containerized in properly labeled, DOT- approved, 55-gallon drums.
2. Properly close, seal, label, and stage all filled or partially filled drums before demobilization. Properly profile full drums and have them shipped off OU4 to a RCRA Subtitle C facility.

3. Sampling activities generate personal protective equipment and miscellaneous debris that require disposal. Remove gross contamination from these items, and place the items in plastic bags. It is acceptable to store these items in plastic bags as an interim measure. At the end of each day, dispose of the bags at an appropriate solid waste facility dumpster.

STANDARD OPERATING PROCEDURE (SOP) GW-01

DECONTAMINATION OF GROUNDWATER SAMPLING EQUIPMENT

SCOPE AND APPLICATION

This SOP describes procedures for decontaminating sampling equipment used for groundwater sampling that could come in contact with contaminated media. To prevent potential cross contamination of samples, all reusable groundwater sampling and processing equipment will be decontaminated before each use. At the sample collection location, a decontamination area will be established in a clean location, upwind of actual sampling locations, if possible. This decontamination area is where all groundwater sampling and processing equipment will be cleaned. Decontaminated equipment will be stored away from areas that may cause recontamination. When handling decontamination chemicals, field personnel will follow all relevant procedures and will wear protective equipment as stipulated in the Investigation Area-specific health and safety plan.

This SOP describes procedures for decontaminating sampling and processing equipment contaminated by either inorganic or organic materials. General procedures were adopted from the Standard Practice for Decontamination of Field Equipment Used at Waste Sites (ASTM 2002).

EQUIPMENT AND REAGENTS REQUIRED

- Plastic sheeting
- 55-gal, U.S. Department of Transportation-approved drums (if required)
- Alconox® or Liquinox® detergent
- Acid rinses (for inorganic constituent sampling); either reagent-grade diluted nitric or hydrochloric acid (if required)
- Solvent rinses (for organic constituent sampling); either pesticide-grade hexane, isopropanol, or acetone (if required)
- Deionized/distilled water (generally provided by laboratory) and potable water
- 5-gal buckets or other appropriate containers

- 4-ft length of 2-in. polyvinyl chloride (PVC) tubing with an end cap (if required)
- Scrub brushes
- Personal protective equipment, including appropriate gloves and goggles.

PROCEDURES

The following sections detail the procedures for decontaminating sampling equipment that has been, or could be, contaminated with inorganic or organic chemicals and for decontaminating the submersible pump.

Inorganic Chemicals—Decontamination of Sampling Equipment

1. Wipe equipment free of gross solids.
2. Wash equipment with an Alconox® or Liquinox® solution, scrubbing off any residue.
3. Rinse generously with potable water.
4. Rinse equipment with acid (0.1 N nitric or hydrochloric) if specified in the sampling and analysis plan (SAP).
5. Rinse with deionized water.
6. Allow to air dry, if practical.
7. Wrap equipment in new aluminum foil if it will not be used promptly.
8. Place all sampling equipment, gloves, and other disposable materials in garbage bags after decontaminating. The wash and rinse must be placed in containers for proper disposal.

Organic Chemicals—Decontamination of Sampling Equipment

1. Wipe equipment free of gross solids.
2. Wash equipment with an Alconox® or Liquinox® solution, scrubbing off any residues.
3. Rinse generously with tap water.
4. Rinse equipment with solvent (pesticide-grade hexane, isopropanol, or acetone) if specified in the SAP.
5. Rinse with deionized water.
6. Allow to air dry, if practical.
7. Wrap equipment in new aluminum foil if it will not be used promptly.

8. Place all sampling equipment, gloves, and other disposable materials in garbage bags after decontaminating. Place wash and rinse fluids in containers for proper disposal.

Decontamination of Submersible Pump

1. Place the pump in a 5-gal bucket containing potable water and a small amount of Alconox® or Liquinox® detergent. Place discharge hose into same bucket.
2. Turn on the system and pump water through the sampling system. Add more potable water as needed and pump for 2 minutes.
3. Place the pump into a second 5-gal bucket containing tap water leaving the discharge hose in the first bucket. Turn on the system and pump until the soapy water is purged from the pump and tubing. Place the discharge hose into the second 5-gal bucket of water and pump for 1 minute.
4. Turn off system and place the pump into the 4-ft section of 2-in. inside diameter PVC tubing fitted with an end cap. Pour organic-free deionized water into the decontamination tube. Stand by with additional deionized water.
5. Turn on the pump and pull deionized water through the system. Add more water until at least 3 L of deionized water is pumped through the system.
6. Remove the pump from the decontamination tube.
7. Place all sampling equipment, gloves, and other disposable materials in garbage bags after decontaminating. Place wash and rinse fluids in containers for proper disposal.

REFERENCE

ASTM. 2002. Standard practice for decontamination of field equipment used at waste sites. D5088-02. American Society for Testing and Materials, West Conshohocken, PA.

STANDARD OPERATING PROCEDURE (SOP) GW-02

MEASUREMENT OF DEPTH TO WATER

SCOPE AND APPLICATION

This SOP describes the required equipment and the procedures used for the collection of water level data. Alternate equipment may be used if necessary, as long as the general procedures described below are followed. Typically water levels are collected from all the Investigation Area wells as expeditiously as possible so that the water level data can be used to create potentiometric surface maps that are representative of a "single" point in time. This SOP does not address interpretation of water level data and the special care and hydraulic expertise that should be used to interpret water level data sets in unique environments (i.e., tidally influenced wells).

Depth to groundwater surface is measured using an electric water level meter. A light on the water level meter illuminates and an alarm sounds when the weighted probe tip contacts the water surface in the well and completes an electronic circuit. The measured depth to water is determined to within 0.01 ft by noting the point on the probe cable that corresponds to the measuring point at the top of the well/piezometer casing at the initial point of contact. The measuring point should be notched at the lip of the casing, typically either on the high side or on the north side.

EQUIPMENT AND REAGENTS REQUIRED

- Electronic water level indicator (Solinst® or equivalent)
- Potable and distilled/deionized water
- Alconox® or Liquinox® detergent
- Tape measure with stainless steel weights
- Disposable bailer (if light, nonaqueous-phase liquid [LNAPL] conditions are unknown)

PROCEDURES

Water Level Measurements

1. Check the operation of the meter by turning on the indicator switch and pressing the test button.
2. Open well cap to allow equilibration with ambient atmospheric pressure.
3. Monitor air quality at the well head if volatile contaminants are or may be present, or as specified by the project-specific health and safety plan.
4. Check for possible presence of LNAPL using a new 3-ft long disposable bailer affixed to nylon rope if conditions are unknown. Gradually lower the bailer until the bottom of the bailer is approximately 2 ft below the top of the water surface. Slowly raise the bailer to the surface and measure the product thickness using a tape measure. Record the measurement in the field logbook. Properly dispose of the bailer.
5. Decontaminate the probe and graduated cable with an Alconox® or Liquinox® solution followed by a distilled or deionized water rinse.
6. Hold the water level indicator and cable reel above the well casing and lower indicator probe and cable gradually into well until a tone (e.g., buzzer) and/or the indicator light illuminates, denoting that the indicator probe has made contact with the water surface. Stop lowering the cable.
7. Note the point on the graduated cable that corresponds to the measuring point at the top of the casing when the electronic circuit is first completed. If necessary, grasp tape with thumb and index finger exactly at the measuring point marked at the top of the well casing. Pull tape out of well slowly and read the measurement.
8. Draw the cable about 1 ft above the surface of the water, then lower it and repeat Steps 6 through 8. If the two readings differ by more than 0.01 ft, repeat until the measured readings stabilize. Water level records should always use the measurement taken as the indicator is lowered into the well, not as it is raised.
9. Remove the cable from the well or piezometer.
10. Record the stabilized depth-to-water measurement in the field logbook.
11. Decontaminate the probe and graduated cable with Alconox® and tap-water wash and distilled or deionized water, as appropriate.

12. Lower a weighted steel measuring tape slowly from center of well or piezometer if the total depth of the well needs to be measured. Alternately, the water level meter can be used to measure the total depth of the well. However, when measuring the total depth, the depth from the measuring point of the probe to the bottom of the probe must be **added** to the measurement because the graduated cable is referenced to the point of the probe where the electronic circuit is completed. Sounding the bottom of the well prior to sampling of the well is **NOT** recommended because of the potential for resuspension of settled formation solids in the well.
13. Draw tape up very slowly until it is taut again when the weight hits the bottom or until the tape slackens noticeably.
14. Note the tape reading at level of casing top. Record this as well depth in the field logbook to the nearest 0.01 ft.

STANDARD OPERATING PROCEDURE (SOP) GW-03

LOW-FLOW GROUNDWATER SAMPLING

SCOPE AND APPLICATION

This SOP presents the methods to be used for monitoring well purging and groundwater sampling using low-flow (minimal drawdown) sampling methods. The procedures outlined in this SOP are in accordance with groundwater sampling methods recommended by USEPA (1992, 1996). Details on Investigation Area-specific sampling activities, equipment selection (i.e., pumps), Investigation Area-specific field parameters, field quality control and quality assurance (QA/QC) samples, and laboratory analyses are presented in the work plan, field sampling plan (FSP), or quality assurance program plan (QAPP). Where possible, sampling should first be conducted in areas least affected by chemicals of interest, followed by increasingly affected areas (i.e., clean to dirty).

EQUIPMENT REQUIRED

- Electronic water level meter
- Groundwater parameter meter capable of measuring field parameters required by the FSP or the QAPP
- Flow-through cell
- Sampling equipment (one from list):
  - Submersible pump (bladder or Grundfos®): pump, control box, power source (typically a portable generator or 12V battery)
  - Peristaltic pump: pump with pump head, silicone tubing, tubing connectors, power source (typically 12 V battery)
- Decontamination equipment and supplies (buckets, scrub brushes, deionized or distilled water, potable water, and Liquinox® or Alconox® detergent)
- Groundwater sampling forms and logbook
- Sample tubing (type and length are project- and Investigation Area-dependent)
- Sample tags/labels and appropriate documentation (e.g., chain-of-custody forms, logbook, and groundwater sample collection forms)

- Insulated cooler(s), chain-of-custody seals, Ziploc® bags
- Sample containers with preservative (if required), coolers, and ice.

PROCEDURES

The following sections provide guidelines for preparation for purging, well purging, and groundwater sampling.

Preparation for Purging

Preparation for purging includes inspecting the condition of the well, monitoring health and safety conditions, and calibrating and decontaminating sampling equipment. General procedures are presented below:

1. Ensure that the area around well head is clean and free of debris. If necessary, place a plastic drop cloth around well head to prevent sampling equipment from coming into contact with the ground surface.
2. Inspect condition of well (e.g., well in locked position, tightness of cap, measuring point well marked, disturbance of surface casing, straightness of well casing, condition of concrete pad). Indicate condition of well on the sampling form.
3. Remove well cap. If the Investigation Area health and safety plan (HASP) identifies organic compounds as potential contaminants of concern, screen well headspace and breathing-zone headspace (if specified in the HASP) for organic vapors using the appropriate field monitoring instrument (e.g., photoionization detector).
4. Decontaminate all equipment (as specified in the FSP, QAPP, or in accordance with SOP GW-01) before use in each well. Wear nitrile gloves and/or other protective equipment as specified in the Investigation Area-specific HASP during possible water-contact or equipment-contact activities. At a minimum, change gloves between each well or when it is possible for potential contaminants to be introduced into the well.
5. Measure water level using a decontaminated electronic water level meter as described in SOP GW-02 when the water level in the well has equilibrated.
6. Obtain a sample from the well using a bailer and observe the contents for evidence of free floating product (SOP GW-02), if suspected (see FSP or QAPP). Alternatively, measure free product thickness using an oil–water interface probe.
7. Calculate the well casing volume as follows:

$$\text{well casing volume (gal)} = \pi(r^2)(h)(7.48\ \text{gal/ft}^3)$$

Where:

h	=	height of water in the well casing (i.e., depth to bottom of the well minus depth to water) in feet
r	=	radius of the inside of the well casing in feet.

8. Calibrate water quality meters for measuring field parameters as appropriate. At a minimum, collect temperature, pH, and specific conductance measurements during purging and prior to sampling. Other field parameters, including dissolved oxygen, redox potential, and turbidity (recommended for inorganics) may be required as specified in the work plan or FSP. Record equipment calibration and maintenance in the field logbook. Decontaminate meters between wells by rinsing with distilled or deionized water. Manage rinsate water used for these measurements in the same manner as purge water, as defined in the work plan or FSP.

Well Purging

Monitoring wells are purged before groundwater samples are collected for analyses. The purpose of well purging is to remove stagnant groundwater from the well. Field parameters (i.e., pH, temperature, specific conductance, redox potential, dissolved oxygen, and turbidity) are measured during the purging process to verify that stagnant water has been removed and that groundwater conditions are stable prior to sampling to ensure a representative groundwater sample is collected. A variety of pumps can be used to purge and sample the monitoring well (refer to the FSP or QAPP for the specified pump type). Refer to the manufacturer's instructions for operation of the specified pump. General procedures for purging are as follows:

1. Remove well cap.
2. Connect pump.

   Submersible Pump (bladder or Grundfos):

   a. Remove the pump from the pump holder and rinse with distilled water.

   b. Connect appropriate length of tubing to pump.

   c. Connect the pump to control box.

   d. Connect the control box to the power supply.

   Peristaltic Pump:

   a. Connect new or pre-cleaned tubing to peristaltic pump.

   b. Connect the pump to the power supply.

c. Lower the pump intake or intake tubing (as applicable) into the water column. The pump intake should be placed at the middle or slightly above the middle of the screened interval in confined aquifers (USEPA 1996) or in unconfined aquifers not screened across the water table. Place the pump intake near the top of the water column for unconfined aquifers screened across the water table (USEPA 1996).

3. Insert multimeter into flow-through cell. Connect the discharge hose from the pump to the flow-through cell. Direct discharge from flow-through cell to an appropriately sized container to manage purge water. **DO NOT** immerse water quality meter probes into purge water containing free product because this may damage the probes.

4. Turn on the pump. Conduct purging at a rate that will minimize drawdown in the well (i.e., purge at a rate less than or equal to recharge, if possible). Recommended purge rates are generally less than 0.13 gal/min (0.5 L/min) (USEPA 1996), or a rate that results in minimal (i.e., less than 0.3 ft) of drawdown in the well. Actual purge rates will vary based on aquifer material and well construction.

5. Record field parameters on the groundwater sampling form or logbook every 3 to 5 minutes. Purging should continue at a constant rate until the water quality parameters have stabilized for three successive measurements according to the stabilization criteria provided in the table below (USEPA 1996). In the event that even very low purge rates result in evacuation of the well, collect groundwater samples for laboratory analyses as soon as sufficient groundwater accumulates in the well, regardless of the stabilization of field parameters.

Field Parameter	Stabilization Criteria
Temperature	± 1°C
pH	± 0.1 standard units
Specific Conductance	± 3 percent
Dissolved Oxygen	± 10 percent
Redox Potential	± 10 mV
Turbidity (nephelometric turbidity units)	± 10 percent

Groundwater Sample Collection

Groundwater sampling is conducted following proper purging of the well. Where possible, groundwater samples for analyses should be collected directly from the pump discharge at the lowest rate possible to minimize cross contamination, suspension of solids, and aeration of the sample.

Sample groundwater after the water quality parameters have stabilized. The general procedures for groundwater sample collection are as follows:

1. Turn down flow rate on the control box so that water flow is stopped or minimal while maintaining sufficient pressure in the system to prevent water in the tubing or flow-through cell from flowing back into the well. If a peristaltic pump is used, turn off the pump. Take care not to release the pump head because the loss of suction will cause the water in the tubing to drain back into the well.
2. Disconnect the pump discharge hose from flow-through cell or cut the tubing just before the connection to the flow-through cell.
3. Introduce groundwater samples directly from the pump discharge tube into the proper sample container and fill it to capacity. Place a bucket beneath the sampling tube to catch any unsampled water. Target analytes, container types, and preservatives are specified in the FSP or QAPP.
4. Collect groundwater samples for multiple compounds in the recommended following order (USEPA 1992):
   - Volatile organic compounds (VOCs)
   - Dissolved gases and total organic carbon (TOC)
   - Semivolatile organic compounds (SVOCs)
   - Metals and cyanide
   - Major water quality cations and anions
   - Radionuclides.
5. Increase pump flow rate slightly so that the flow rate is approximately the same as was used for purging and fill necessary sample bottles. If sampling for VOCs, flow rate should be just enough to create a trickle of water. If sampling for other analytes, flow rate may be increased. When collecting samples for VOCs, direct the flow from the pump discharge down the side of the sample container to minimize aeration. Hold caps in hand to minimize contamination of sample. Fill all VOC sample containers to the top. A positive meniscus at the top of the container will help ensure that no air is trapped inside when cap is screwed down on the container. No air bubbles should be trapped in the sample when the container is sealed. VOC sample bottles must be checked after filling to ensure no air bubbles are present. Invert the bottle and lightly tap it to release any bubbles beneath the cap. If an air bubble is present, the VOC sample must be retaken using a fresh bottle.

6. Conduct field filtration, if required by the FSP or QAPP (recommended for inorganic analytes). If applicable, attach a new, disposable filter cartridge (typically 0.45 μm) to the discharge line. Collect filtered samples last and pre-rinse them by running a minimum of 0.25 gal of groundwater through them prior to collecting the sample (USEPA 1996). Introduce filtered water directly into the appropriate sample container. Note that alternate field filtration methods may be specified in the FSP or QAPP.
7. Collect QA/QC samples (i.e., duplicate, equipment rinsate, trip blank, laboratory matrix spike, and laboratory matrix spike duplicate, as applicable) at the same time by filling all bottles from the same flow. The number and types of QA/QC samples are specified in the FSP or QAPP.
8. Label sample bottles with date, sample number, time, sampler's name, and type of preservative, as described in the project-specific QAPP and in accordance with SOP AP-04. Place sample bottles in a cooler or on ice to keep samples cool (4°C). Samples must be cooled continuously from the time of collection to the time of receipt at the laboratory, as described in SOP AP-01.
9. Reconnect the discharge tubing to the flow-through cell with the multimeter. Continue pumping for 1 to 2 minutes and collect a set of post-sampling field parameters. Record the parameters on the groundwater sampling form or in the logbook.
10. Remove pump and/or tubing from the well. Close and lock the well. Decontaminate the sampling equipment in accordance with SOP GW-01. Purge, wash, and rinse water should be managed as specified in the FSP or QAPP.
11. Complete chain-of-custody form, package samples for shipment, and ship samples or arrange for courier to laboratory.
12. Document all field observations made and data generated in conjunction with the sample collection on the groundwater field sampling form.

REFERENCES

USEPA. 1992. RCRA ground-water monitoring: draft technical guidance. U.S. Environmental Protection Agency, Office of Solid Waste, Washington, DC.

USEPA. 1996. Low-flow (minimal drawdown) ground-water sampling procedures. EPA/540/S-95/504. U.S. Environmental Protection Agency, Office of Research and Development, Office of Solid Waste and Emergency Response, Washington, DC.

STANDARD OPERATING PROCEDURE (SOP) SL-01

DECONTAMINATION OF SOIL SAMPLING EQUIPMENT

SCOPE AND APPLICATION

This SOP describes procedures for decontaminating sampling and processing equipment contaminated by either organic or inorganic materials. To prevent potential cross contamination of samples, all reusable soil sampling and processing equipment is decontaminated before each use. At the sample collection location, a decontamination area is established in a clean location that is upwind of actual sampling locations, if possible. All soil sampling and processing equipment is cleaned in this location. Decontaminated equipment is stored away from areas that may cause recontamination. When handling decontamination chemicals, field personnel must follow all relevant procedures and wear protective clothing as stipulated in the OU4-specific health and safety plan (HASP).

Sampling equipment may be used to collect samples that will 1) undergo a full-suite analysis (organics, metals, and conventional parameters) or 2) be analyzed for metals and conventional parameters only. Decontamination of sampling equipment (e.g., hand auger, split-spoon sampler) used for both analyte groups should follow the order of a detergent wash, rinse water, organic solvent rinses, and final rinse with water. Sample processing equipment (e.g., bowls, spoons) is rinsed with distilled/deionized water instead of with water from OU4.

EQUIPMENT AND REAGENTS REQUIRED

Equipment required for decontamination includes the following:

- Steam cleaner and collection basin (if required)
- 55-gal, Department of Transportation (DOT)-approved drums (if required)
- Polyethylene or polypropylene tub (to collect solvent rinsate)
- Plastic bucket(s) (e.g., 5-gal bucket)
- Tap water or water from OU4 (i.e., potable water)
- Carboy, distilled/deionized water (analyte-free; received from testing laboratory or other reliable source)
- Properly labeled squirt bottles

- Funnels
- Alconox®, Liquinox®, or equivalent industrial nonphosphate detergent
- Pesticide-grade ethanol and hexane (consult project-specific field sampling plan [FSP], as the solvents may vary by U.S. Environmental Protection Agency [EPA] region or state)
- 10 percent diluted nitric acid or hydrochloric acid (reagent grade) for inorganic contaminants (if required; see project-specific FSP)
- Baking soda (if required)
- Long handled, hard-bristle brushes
- Plastic sheeting, garbage bags, and aluminum foil
- Personal protective equipment as specified in the HASP.

PROCEDURES

Decontamination Procedures for Full Suite Analysis (Organic, Metal, or Conventional Parameters)

Two organic solvents are used in this procedure. The first is miscible with water (e.g., ethanol) and is intended to scavenge water from the surface of the sampling equipment and allow the equipment to dry quickly. This allows the second solvent to fully contact the surface of the sampler. Make sure that the solvent ordered is anhydrous or has a very low water content (i.e., <1 percent). If ethanol is used, make sure that the denaturing agent in the alcohol is not one of the sample analytes. The second organic solvent is hydrophobic (e.g., hexane) and is intended to dissolve any organic chemicals that are on the surface of the equipment.

The exact solvents used for a given project may vary by EPA region or state (see project-specific FSP). Integral uses ethanol and hexane as preferred solvents for equipment decontamination. If specified in the project-specific FSP, isopropanol or acetone can be substituted for ethanol, and methanol can be substituted for hexane in the decontamination sequence. The choice of solvents is also dependent on the kind of material from which the equipment is made (e.g., acetone cannot be used on polycarbonate), and the ambient temperature (e.g., hexane is too volatile in hot climates). In addition, although methanol is slightly more effective than other solvents, its use is discouraged because of its potential toxicity to sampling personnel. Always follow the procedures listed in the OU4-specific HASP when decontaminating sampling equipment (e.g., always stand upwind when using volatile solvents, wear appropriate gloves and safety glasses or goggles). Containerize all decontamination fluids for proper disposal, following procedures listed in the FSP.

The specific procedures for decontaminating soil sampling equipment and soil compositing equipment are as follows:

1. Rinse the equipment thoroughly with tap water or water from OU4 to remove visible soil. This step should be performed on location for all equipment. After removing visible solids, set aside sampling equipment that does not need to be used again that day and see that it is thoroughly cleaned in the field laboratory at the end of the day.
2. Pour a small amount of concentrated laboratory detergent into a bucket (i.e., about 1 to 2 tablespoons per 5-gal bucket) and fill it halfway with tap water or water from OU4. If the detergent is in crystal form, make sure all crystals are completely dissolved prior to use.
3. Scrub the equipment in the detergent solution using a long-handled brush with rigid bristles, using a back-and-forth motion. Be sure to clean the outside of the compositing bowls and other pieces that may be covered with soil.
4. Double rinse the equipment with tap water or water from OU4 and set upright on a stable surface to drain. The more completely the equipment drains, the less solvent will be needed in the next step. Do not allow any surface that will come in contact with the sample to touch any contaminated surface. If acid and solvent rinses are not required by the FSP, skip to step 8.
5. If an acid rinse is required by the FSP, rinse the equipment using a squirt bottle using a 10 percent acid solution. Double-rinse equipment with tap water or water from OU4 and set right-side-up on a stable surface to drain. If solvent rinses are not required by the FSP, skip to step 8.
6. Carefully rinse the equipment with ethanol from a squirt bottle, and let the excess solvent drain into a waste container (which may need to be equipped with a funnel). These solvents act primarily as a drying agent by scavenging water from the equipment surface and carrying it away, but they also work as a solvent for some organic contamination. Hand-augers must be held over the waste container and turned slowly so the stream of solvent contacts the entire surface. The sample apparatus may be turned on its side, and if applicable, opened to be washed more effectively. Set the equipment in a clean location and allow it to air dry. Use only enough solvent to scavenge all of the water and flow off the surface of the equipment (i.e., establish sheet flow) into the waste container. Allow equipment to drain as much as possible. Ideally, the equipment will be dry. The more thoroughly it drains, the less solvent will be needed in the next step.
7. Carefully rinse the drained or air-dried equipment with hexane from a squirt bottle, and let the excess solvent drain into the waste container, which may need to be equipped with a funnel. Hexane acts as the primary solvent of organic chemicals. Ethanol is soluble in hexane but water is not. If water beading occurs, it means that the

equipment was not thoroughly rinsed with ethanol or that the ethanol that was purchased was not free of water. When the equipment has been rinsed with hexane, set it in a clean location and allow the hexane to evaporate before using the equipment for sampling. Use only enough solvent to scavenge all of the ethanol and flow off the surface of the equipment (i.e., establish sheet flow) into the waste container.

8. Do a final rinse with water from OU4 for the sampling equipment (i.e., hand-auger) and distilled/deionized water for the processing equipment (i.e., stainless-steel bowls and spoons). Equipment does not need to be dried before use.

9. If the decontaminated sampling equipment is not to be used immediately, wrap small stainless-steel items in aluminum foil (dull side facing the cleaned area).

   If the sample collection or processing equipment is precleaned at the field laboratory and transported to OU4, then the decontaminated equipment will be wrapped in aluminum foil (dull side facing the cleaned area) and stored and transported in a clean plastic bag (e.g., a trash bag) until ready for use, unless the project-specific FSP lists special handling procedures.

10. After decontaminating all of the sampling equipment, dispose of the disposable gloves and used foil per the procedures listed in the project-specific FSP. When not in use, keep the waste solvent container closed and store in a secure area. The waste should be transferred to empty solvent bottles for disposal at a licensed facility per the procedures listed in the project-specific FSP. When not in use, keep the waste acid container closed and store in a secure area. The acid waste should be neutralized with baking soda or containerized and disposed of per the procedures listed in the project-specific FSP.

Decontamination Procedures for Metals and Conventional Parameters Only

The specific procedures for decontaminating soil sampling equipment and soil processing equipment are as follows:

1. Rinse the equipment thoroughly with tap water or water from OU4 to remove the visible soil. Perform this step on location for all equipment. Set aside any pieces that do not need to be used again that day see that they are thoroughly cleaned in the field laboratory at the end of the day.

2. Pour a small amount of concentrated laboratory detergent into a bucket (i.e., about 1 to 2 tablespoons per 5-gal bucket) and fill it halfway with tap water or water from OU4. If the detergent is in crystal form, make sure all crystals are completely dissolved prior to use.

3. Scrub the equipment in the detergent solution using a long-handled brush with rigid bristles. Be sure to clean the outside of the compositing bowls and other pieces that may be covered with soil.
4. Double-rinse the equipment with tap water or water from OU4 (if an acid rinse is required) or with distilled/deionized water (if no acid rinse) and set right-side-up on a stable surface to drain. Do not allow any surface that will come in contact with the sample to touch any contaminated surface.
5. If an acid rinse is required by the FSP, rinse the equipment using a squirt bottle containing a 10 percent acid solution. Double-rinse equipment with distilled/deionized water and set right-side-up on a stable surface to drain.
6. If the decontaminated sampling equipment is not to be used immediately, wrap small stainless-steel items in aluminum foil (dull side facing the cleaned area).

   If the sample collecting or processing equipment is cleaned at the field laboratory and transported to OU4, then the decontaminated equipment will be wrapped in aluminum foil (dull side facing the cleaned area) and stored and transported in a clean plastic bag until ready for use, unless the project-specific FSP lists special handling procedures.
7. After decontaminating all of the sampling equipment, place the disposable gloves and used foil in garbage bags for disposal in a solid waste landfill. When not in use, keep the waste acid container closed and store in a secure area. The acid waste should be neutralized with baking soda and disposed of per the procedures listed in the project-specific FSP.

Decontamination Procedures for Drill Rig Sampling Equipment

1. Decontaminate sampling equipment before use, between samples and stations, and upon completion of sampling operations.
2. Equipment used during drilling operations should be decontaminated in the Exclusion Zone prior to transport to the Support Zone (refer to Investigation Area-specific HASP).
3. If the steam-cleaning location is in an area outside of the Exclusion Zone, remove loose soil on the drill rig, augers, drill pipe, and rods, and other large equipment at the drill location, then move the equipment directly to the steam-cleaning decontamination area for more thorough cleaning.
4. To decontaminate a drill rig, pressure wash with a steam cleaner using potable water rinse upon mobilization, between drilling locations, and upon demobilization. Cleaning water can generally be allowed to drain directly on the ground near the station (refer to the FSP).

5. To decontaminate auger, drill rods, and other down-hole tools, pressure wash with a steam cleaner and potable water rinse upon mobilization, between drilling locations, and upon demobilization. All decontamination fluids are to be containerized for proper disposal.
6. To decontaminate split-spoon and hand-auger samplers, follow the decontamination procedures listed above (the selected decontamination procedures is dependent upon analyte list provided in the project-specific FSP). To the extent possible, allow to air dry prior to sampling. If the split-spoon is not used immediately, wrap it in aluminum foil. All decontamination fluids are to be containerized for proper disposal.

STANDARD OPERATING PROCEDURE (SOP) SL-02

PREPARATION OF FIELD QUALITY CONTROL SAMPLES FOR SOILS

SCOPE AND APPLICATION

This SOP describes the purpose, preparation, and collection frequency of field duplicate samples, field replicate samples, matrix spike/matrix spike duplicates (MS/MSDs), equipment rinsate blanks, bottle blanks, trip blanks, temperature blanks, environmental blanks, and reference materials (i.e., a standard reference material, a certified reference material, or other reference material) for soil samples. Not all of the field quality control samples discussed in this SOP may be required for a given project. The specific field quality control samples will be identified in the project-specific field sampling plan (FSP) and quality assurance project plan (QAPP). For most projects, Integral's recommended field quality control samples include an equipment rinsate blank, a field duplicate, and trip blanks if volatile organic compounds (VOCs) are to be analyzed. Definitions of all potential quality control samples are described below.

As part of the quality assurance and quality control (QA/QC) program, all field quality control samples will be sent to the laboratories blind. To accomplish this, field quality control samples will be prepared and labeled in the same manner as regular samples, with each quality control sample being assigned a unique sample number that is consistent with the numbering for regular samples. All of the containers that are required to complete the field quality control sample for the applicable analyte list must be labeled with the same sample number. The sample ID for field quality control samples should allow data management and data validation staff to identify them as such and should only be recorded in the field logbook or field sampling forms. Under no circumstances should the laboratory be allowed to use reference materials, rinsate blanks, or trip blanks for laboratory quality control analysis (i.e., duplicates, matrix spike, and matrix spike duplicates). To prevent this from happening, select and mark regular samples on the chain-of-custody/sampling analysis request (COC) form or instruct the laboratory to contact the project QA/QC coordinator to select appropriate samples for each sample group.

Prepare field quality control samples at least once per sampling event, and prepare certain types more often at predetermined frequencies. If the number of samples taken does not equal an integer multiple of the intervals specified in this SOP, the number of field quality control samples is specified by the next higher multiple. For example, if a frequency of 1 quality control sample per 20 is indicated and 28 samples are collected, prepare 2 quality control samples. The method of preparation and frequency of field quality control samples required for soil sampling activities are described below. These protocols must be followed, unless different frequency requirements are listed in the FSP and QAPP.

For most projects, Integral's recommended field quality control samples include an equipment rinsate blank, a field duplicate, and trip blanks if VOCs are to be analyzed. The following table lists the possible quality control sample types and suggested frequencies for soil sampling programs (not all types of quality control samples will always be collected; see project-specific FSP and QAPP for actual quality control samples that need to be collected for a particular sampling event). A detailed explanation of each type of quality control sample with the required preparation follows.

Field Quality Control Sample Requirements

Quality Control Sample Name	Abbreviation	Preparation		Frequency[a]
		Location	Method	
Duplicate	DUP	Sampling location	Additional natural sample	One per 20 samples. May not be applicable if REP is being collected.
Replicate	REP	Sampling location	Additional natural sample	One replicate per 20 samples. May not be applicable if DUP is being collected.
Matrix spike/matrix spike duplicate	MS/MSD	Sampling location	Additional sample bottles filled for laboratory quality control requirements	One per 20 samples
Equipment rinsate blank	ER	Sampling location	Deionized water collected after pouring through and over decontaminated equipment	Minimum of one per sampling event per type of sampling equipment used and then 1:20 thereafter
Bottle blank	BB	Field	Unopened bottle	One per sample episode or one per bottle type
Trip blank	TB	Laboratory	Deionized water with preservative	One pair per each VOC sample cooler shipment
Temperature blank	TMB	Laboratory	Deionized water	One per sample cooler
Environmental (transfer) blank	EB	Field	Bottle filled at sample location with deionized water	One per 20 samples
Standard reference material	SRM	Field laboratory or sampling location	SRM ampules or other containers for each analyte group	One set per 50 samples or one per episode

[a] Frequencies provided here are general recommendations; specific frequencies should be provided in the project-specific FSP or QAPP.

FIELD DUPLICATE SAMPLES

Collect field duplicate (or split) samples to assess the homogeneity of the samples collected in the field and the precision of the sampling process. Prepare field duplicates by collecting two aliquots for the sample and submitting them for analysis as separate samples. Collect field duplicates at a minimum frequency of 1 per 20 samples or once per sampling event, whichever is more frequent. The project QA/QC coordinator will determine the actual number of field duplicate samples collected during a sampling event on a case-by-case basis (consult the project-specific FSP and QAPP, as the requirements on frequency of field duplicate collection may vary by EPA region or state).

FIELD REPLICATE SAMPLES

Field replicate samples are co-located samples collected in an identical manner over a minimum period of time to provide a measure of the field and laboratory variance, including variance resulting from sample heterogeneity. Prepare field replicates by collecting two completely separate samples from the same station and submitting them for analysis as separate samples. Collect field replicates at a minimum frequency of 1 per 20 samples or once per sampling event, whichever is more frequent. If field duplicate samples are collected, then it is unlikely that field replicate samples will also be collected during a sampling event. The project QA/QC coordinator will determine the actual number of field replicate samples collected during a sampling event on a case-by-case basis (consult the project-specific FSP and QAPP, as the requirements on frequency of field duplicate collection may vary by EPA region or state).

MATRIX SPIKE/MATRIX SPIKE DUPLICATES

The MS/MSD analyses provide information about the effect of the sample matrix on the design and measurement methodology used by the laboratory. To account for the additional volume that may be needed by the laboratory to perform the analyses, extra sample volumes may be required to be collected from designated soil stations. MS/MSDs may be collected at a minimum frequency of 1 per 20 samples or once per sampling event, whichever is more frequent. The project QA/QC coordinator will determine the actual number of extra bottles collected during a sampling event on a case-by-case basis (consult the project-specific FSP and QAPP, as the requirements may vary by analyte group).

EQUIPMENT RINSATE BLANKS

Use equipment rinsate blanks to help identify possible contamination from the sampling environment and/or from decontaminated sampling equipment. Prepare equipment rinsate blanks by pouring laboratory distilled/deionized water through, over, and into the decontaminated sample collection equipment, then transferring the water to the appropriate sample containers and adding any necessary preservatives. Prepare equipment rinsate blanks for all inorganic, organic, and sometimes conventional analytes at least once per sampling event per the type of sampling equipment used. The project QA/QC coordinator will determine the actual number of equipment rinsate blanks prepared during an event on a case-by-case basis (consult the project-specific FSP and QAPP, as the requirements on frequency of equipment rinsate blank collection may vary by EPA region or state).

BOTTLE BLANKS

The bottle blank is an unopened sample bottle. Submit bottle blanks along with soil samples to ensure that contaminants are not originating from the bottles themselves because of improper preparation, handling, or cleaning techniques. If required, submit one bottle blank per lot of prepared bottles for analysis. If more than one type of bottle will be used in the sampling (e.g., HDPE or glass), then submit a bottle blank for each type of bottle and preservative. The project QA/QC coordinator will determine the actual number of bottle blanks analyzed during a project on a case-by-case basis (consult the project-specific FSP and QAPP, as the requirements on frequency of bottle blank analysis may vary by EPA region or state).

To prepare a bottle blank in the field, set aside one unopened sample bottle from each bottle lot sent from the testing laboratory. Label the bottle as "Bottle Blank" on the sample label (and in the "Remarks" column on the COC form), and send the empty bottle to the laboratory with the field samples.

TRIP BLANKS

Use trip blanks to help identify whether contaminants may have been introduced during shipment of the soil samples from the field to the laboratory for VOC analyses only. Trip blanks are prepared at the testing laboratory by pouring distilled/deionized water into two 40 mL VOC vials and tightly closing the lids. Invert each vial and tap lightly to determine if air bubbles exist. There should be no air bubbles in the VOC trip blank vials. If air bubbles are present, then note this information in the field logbook.

Transport the trip blanks unopened to and from the field in the cooler with the VOC samples. Label the trip blank and place it inside the cooler that contains newly collected VOC samples; it must remain in the cooler at all times. A trip blank must accompany samples at all times in the field. Send one trip blank (consisting of a pair of VOC vials) with each cooler of samples shipped to the testing laboratory for VOC analysis.

TEMPERATURE BLANKS

The laboratory will use temperature blanks to verify the temperature of the samples upon receipt at the testing laboratory. The testing laboratory will prepare temperature blanks by pouring distilled/deionized water into a vial and tightly closing the lid. The blanks will be transported unopened to and from the field in the cooler with the sample containers. A temperature blank must be included with each sample cooler shipped to the testing laboratory.

ENVIRONMENTAL BLANKS

Prepare the environmental (i.e., transfer) blank in the field to evaluate potential background concentrations present in the air and in the distilled/deionized water used for the final decontamination rinse. If you use unpreserved bottles, then you must add the appropriate preservative (e.g., for metals samples, use a 10 percent nitric acid solution to bring sample pH to 2 or less), if required. Collect environmental blanks at a minimum frequency of 1 in 20 samples. The project QA/QC coordinator will determine the actual number of environmental blanks analyzed during a project on a case-by-case basis (consult the project-specific FSP and QAPP, as the requirements on frequency of environmental blank analysis may vary by EPA region or state).

To prepare an environmental blank in the field, open the laboratory-prepared sample bottle while at a sample collection location, fill the sample bottle with distilled/deionized water and then seal. Note the location from which the environmental blank was collected along with atmospheric conditions at the time of its collection in the field logbook. Assign the environmental blank a unique sample number, label the bottle, and then send the bottle to the laboratory with the field samples.

REFERENCE MATERIALS

Reference materials (i.e., a standard reference material, a certified reference material, or other reference material are samples containing known analytes at known concentrations that have been prepared by and obtained from EPA-approved sources. Reference materials have undergone multilaboratory analyses using a standard method which provides certified concentrations. When available for a specific analyte, Reference material samples provide a measure of analytical performance and/or analytical method bias (i.e., accuracy) of the laboratory. Several reference materials may be required to cover all analytical parameters. For all analytes where available, one reference material will be analyzed at a frequency of one per 50 samples. The project QA/QC coordinator will determine the actual number of reference materials analyzed during a project on a case-by-case basis (consult the project-specific FSP and QAPP, as the requirements on frequency of reference material analysis may vary by EPA region or state).

STANDARD OPERATING PROCEDURE (SOP) SL-04

FIELD CLASSIFICATION OF SOIL

SCOPE AND APPLICATION

This SOP establishes the minimum information that must be recorded in the field to adequately document surface soil sampling and soil borehole advancement activities performed during field exploration. The surface soil sampling or borehole log form must be filled out completely for each station.

This SOP presents the field classification of soils to be used by Integral field staff. In general, Integral has adopted the procedures provided in American Society for Testing and Materials (ASTM) Method D-2488-00, Standard Practice for Description and Identification of Soils (attached). ASTM D-2488-00 uses the Unified Soil Classification (USC) system for naming soils. Field personnel are encouraged to study these procedures prior to initiation of fieldwork.

Soil descriptions should be precise and comprehensive without being verbose. The overall impression of the soil should not be distorted by excessive emphasis on minor constituents. In general, the similarities of consecutive soil samples should be emphasized and minor differences de-emphasized. These descriptions will be used to interpret potential contaminant transport properties, rather than interpret the exact mineralogy or tectonic environment. We are primarily interested in engineering and geochemical properties of the soil.

Soil descriptions should be provided on the surface soil field collection form or in the soil description column of the Integral's soil boring log for each sample collected. If there is no difference between consecutive soil samples, subsequent descriptions can be noted as "same as above" or minor changes such as "increasing sand" or "becomes dark brown" can be added.

The format and order of soil descriptions should be as follows:

- Group symbol (in the Unified Symbol column)
- USC name (should be identical to the ASTM D-2488-00 Group Name with the appropriate modifiers)
- Minor components
- Color
- Moisture
- Additional descriptions.

EQUIPMENT AND REAGENTS REQUIRED

- Surface soil field collection form or borehole log form (see SOP SL-06, *Logging of Soil Boreholes*)
- Munsell® soil color chart.

PROCEDURES

The USC is an engineering properties system that uses grain size to classify soils. The first major distinction is between fine-grained soils (more than 50 percent passing the No. 200 sieve [75 µm/0.0029 in.]) and coarse-grained soils (more than 50 percent retained by the No. 200 sieve). Small No. 200 sieves are necessary to classify soils near the cutoff size.

1. Fine-grained soils are classified as either silts or clays. Field determinations of silts and clays are based on observations of dry strength, dilatancy, toughness, and plasticity. Field procedures for these tests are included in ASTM D-2488-00. If these tests are used, include the results in the soil description. If these materials are encountered, perform at least one complete round of field tests for the subject property, preferably at the beginning of the field characterization. The modifiers "fat" and "lean" are used by ASTM to describe soils of high and low plasticity. The soil group symbols (e.g., CL, MH) already indicate plasticity characteristics, and these modifiers are not necessary in the description. Soils with high plasticity can be emphasized by describing them as "silty CLAY with high plasticity." Plasticity, for example, is an important descriptor because it is often used to interpret whether an ML soil is acting as either a leaky or a competent aquitard. For example, an ML soil can be dilatant/nonplastic and serve as a transport pathway, or it can be highly plastic and very impervious.
2. Coarse-grained soils are classified as either predominantly gravel or sand, with the No. 4 sieve (4.75 mm/0.19 in.) being the division. Use modifiers to describe the relative amounts of fine-grained soil, as noted below:

Description	Percent Fines	Group Symbol
Gravel (sand)	<5 percent	GW, GP (SW, SP)
Gravel (sand) with silt (clay)	5–15 percent	Hyphenated names
Silty (clayey) gravel (sand)	>15 percent	GM, GC (SM, SC)

The gradation of a coarse-grained soil is included in the specific soil name (e.g., fine to medium SAND with silt). Estimating the percent of size ranges following the group name is encouraged for mixtures of silt sand and gravel. Use of the modifiers "poorly graded" or "well graded" is not necessary, as they are indicated by the group symbol.

Show a borderline classification with a slash (e.g., GM/SM). Use this symbol when the soil cannot be distinctly placed in either soil group. Also use a borderline symbol when describing interbedded soils of two or more soil group names when the thickness of the beds are approximately equal, such as "interbedded lenses and layers of fine sand and silt." Do not use a borderline symbol indiscriminately. Make every effort to place the soil into a single group. (One very helpful addition to the soil log form description is the percentage of silt/sand/gravel. Even if the geologist did not have sufficient time to properly define the soil, this percentage breakdown allows classification at a later date).

3. Precede minor components, such as cobbles, roots, and construction debris with the appropriate adjective reflecting relative percentages: trace (0–5 percent), few (5–10 percent), little (15–25 percent), and some (30–45 percent). Use the word "occasional" to describe random particles of a larger size than the general soil matrix (i.e., occasional cobbles, occasional brick fragments). The term "with" indicates definite characteristics regarding the percentage of secondary particle size in the soil name. It is not to be used to describe minor components. If a nonsoil component exceeds 50 percent of an interval, state it in place of the group name.
4. Give the basic color of a soil, such as brown, gray, or red. Modify the color term with adjectives such as light, dark, or mottled, as appropriate. Especially note staining or mottling. This information, for example, may be useful to establish water table fluctuations or contamination in boreholes. The Munsell® soil color chart designation is the Integral color standard. These charts are readily available and offer a high degree of consistency in descriptions between geologists.
5. Define the degree of moisture present in the soil as dry, moist, or wet. Moisture content can be estimated from the criteria listed in Table 3 of ASTM D-2488-00.
6. If observed, note such features as discontinuities, inclusions, joints, fissures, slickensides, bedding, laminations, root holes, and major mineralogical components. Note anything unusual. Additional soil descriptions may be made at the discretion of the project manager or as the field conditions warrant. The surface soil field collection and soil boring log forms list some optional descriptions, as does Table 13 of the ASTM standard. The reader is referred to the ASTM standard for procedures of these descriptions.

The contact between two soil types must be clearly marked on the surface soil field collection or soil boring log forms. If the contact is obvious and sharp, draw it in with a straight line. If it is gradational, use a slanted line over the interval. In the case where it is unclear, use a dashed line over the most likely interval.

For drilling activities, the field geologist, who has the advantage of watching the drilling rate and cuttings removal and can talk with the driller in real time, has a much better chance of interpreting the interval than someone in the office.

ATTACHMENT 1. ASTM D 2488 – 00, STANDARD PRACTICE FOR DESCRIPTION AND IDENTIFICATION OF SOILS (VISUAL-MANUAL PROCEDURE)

Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)[1]

This standard is issued under the fixed designation D 2488; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope *

1.1 This practice covers procedures for the description of soils for engineering purposes.

1.2 This practice also describes a procedure for identifying soils, at the option of the user, based on the classification system described in Test Method D 2487. The identification is based on visual examination and manual tests. It must be clearly stated in reporting an identification that it is based on visual-manual procedures.

1.2.1 When precise classification of soils for engineering purposes is required, the procedures prescribed in Test Method D 2487 shall be used.

1.2.2 In this practice, the identification portion assigning a group symbol and name is limited to soil particles smaller than 3 in. (75 mm).

1.2.3 The identification portion of this practice is limited to naturally occurring soils (disturbed and undisturbed).

NOTE 1—This practice may be used as a descriptive system applied to such materials as shale, claystone, shells, crushed rock, etc. (see Appendix X2).

1.3 The descriptive information in this practice may be used with other soil classification systems or for materials other than naturally occurring soils.

1.4 The values stated in inch-pound units are to be regarded as the standard.

1.5 *This standard does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.* For specific precautionary statements see Section 8.

1.6 *This practice offers a set of instructions for performing one or more specific operations. This document cannot replace education or experience and should be used in conjunction with professional judgment. Not all aspects of this practice may be applicable in all circumstances. This ASTM standard is not intended to represent or replace the standard of care by which the adequacy of a given professional service must be judged, nor should this document be applied without consideration of a project's many unique aspects. The word "Standard" in the title of this document means only that the document has been approved through the ASTM consensus process.*

2. Referenced Documents

2.1 *ASTM Standards:*

D 653 Terminology Relating to Soil, Rock, and Contained Fluids[2]

D 1452 Practice for Soil Investigation and Sampling by Auger Borings[2]

D 1586 Test Method for Penetration Test and Split-Barrel Sampling of Soils[2]

D 1587 Practice for Thin-Walled Tube Sampling of Soils[2]

D 2113 Practice for Diamond Core Drilling for Site Investigation[2]

D 2487 Classification of Soils for Engineering Purposes (Unified Soil Classification System)[2]

D 3740 Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and rock as Used in Engineering Design and Construction[3]

D 4083 Practice for Description of Frozen Soils (Visual-Manual Procedure)[2]

3. Terminology

3.1 *Definitions*—Except as listed below, all definitions are in accordance with Terminology D 653.

NOTE 2—For particles retained on a 3-in. (75-mm) US standard sieve, the following definitions are suggested:
Cobbles—particles of rock that will pass a 12-in. (300-mm) square opening and be retained on a 3-in. (75-mm) sieve, and
Boulders—particles of rock that will not pass a 12-in. (300-mm) square opening.

3.1.1 *clay*—soil passing a No. 200 (75-μm) sieve that can be made to exhibit plasticity (putty-like properties) within a range of water contents, and that exhibits considerable strength when air-dry. For classification, a clay is a fine-grained soil, or the

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[1] This practice is under the jurisdiction of ASTM Committee D-18 on Soil and Rock and is the direct responsibility of Subcommittee D18.07 on Identification and Classification of Soils.

Current edition approved Feb. 10, 2000. Published May 2000. Originally published as D 2488 – 66 T. Last previous edition D 2488 – 93$^{\epsilon 1}$.

[2] *Annual Book of ASTM Standards*, Vol 04.08.

[3] *Annual Book of ASTM Standards*, Vol 04.09.

***A Summary of Changes section appears at the end of this standard.**

fine-grained portion of a soil, with a plasticity index equal to or greater than 4, and the plot of plasticity index versus liquid limit falls on or above the "A" line (see Fig. 3 of Test Method D 2487).

3.1.2 *gravel*—particles of rock that will pass a 3-in. (75-mm) sieve and be retained on a No. 4 (4.75-mm) sieve with the following subdivisions:

coarse—passes a 3-in. (75-mm) sieve and is retained on a ¾-in. (19-mm) sieve.

fine—passes a ¾-in. (19-mm) sieve and is retained on a No. 4 (4.75-mm) sieve.

3.1.3 *organic clay*—a clay with sufficient organic content to influence the soil properties. For classification, an organic clay is a soil that would be classified as a clay, except that its liquid limit value after oven drying is less than 75 % of its liquid limit value before oven drying.

3.1.4 *organic silt*—a silt with sufficient organic content to influence the soil properties. For classification, an organic silt is a soil that would be classified as a silt except that its liquid limit value after oven drying is less than 75 % of its liquid limit value before oven drying.

3.1.5 *peat*—a soil composed primarily of vegetable tissue in various stages of decomposition usually with an organic odor, a dark brown to black color, a spongy consistency, and a texture ranging from fibrous to amorphous.

3.1.6 *sand*—particles of rock that will pass a No. 4 (4.75-mm) sieve and be retained on a No. 200 (75-µm) sieve with the following subdivisions:

coarse—passes a No. 4 (4.75-mm) sieve and is retained on a No. 10 (2.00-mm) sieve.

medium—passes a No. 10 (2.00-mm) sieve and is retained on a No. 40 (425-µm) sieve.

fine—passes a No. 40 (425-µm) sieve and is retained on a No. 200 (75-µm) sieve.

3.1.7 *silt*—soil passing a No. 200 (75-µm) sieve that is nonplastic or very slightly plastic and that exhibits little or no strength when air dry. For classification, a silt is a fine-grained soil, or the fine-grained portion of a soil, with a plasticity index less than 4, or the plot of plasticity index versus liquid limit falls below the "A" line (see Fig. 3 of Test Method D 2487).

4. Summary of Practice

4.1 Using visual examination and simple manual tests, this practice gives standardized criteria and procedures for describing and identifying soils.

4.2 The soil can be given an identification by assigning a group symbol(s) and name. The flow charts, Fig. 1a and Fig. 1b for fine-grained soils, and Fig. 2, for coarse-grained soils, can be used to assign the appropriate group symbol(s) and name. If the soil has properties which do not distinctly place it into a specific group, borderline symbols may be used, see Appendix X3.

NOTE 3—It is suggested that a distinction be made between *dual symbols* and *borderline symbols.*

Dual Symbol—A dual symbol is two symbols separated by a hyphen, for example, GP-GM, SW-SC, CL-ML used to indicate that the soil has been identified as having the properties of a classification in accordance with Test Method D 2487 where two symbols are required. Two symbols are required when the soil has between 5 and 12 % fines or when the liquid limit and plasticity index values plot in the CL-ML area of the plasticity chart.

Borderline Symbol—A borderline symbol is two symbols separated by a slash, for example, CL/CH, GM/SM, CL/ML. A borderline symbol should be used to indicate that the soil has been identified as having properties that do not distinctly place the soil into a specific group (see Appendix X3).

5. Significance and Use

5.1 The descriptive information required in this practice can be used to describe a soil to aid in the evaluation of its significant properties for engineering use.

5.2 The descriptive information required in this practice should be used to supplement the classification of a soil as determined by Test Method D 2487.

5.3 This practice may be used in identifying soils using the classification group symbols and names as prescribed in Test Method D 2487. Since the names and symbols used in this practice to identify the soils are the same as those used in Test Method D 2487, it shall be clearly stated in reports and all other appropriate documents, that the classification symbol and name are based on visual-manual procedures.

5.4 This practice is to be used not only for identification of soils in the field, but also in the office, laboratory, or wherever soil samples are inspected and described.

5.5 This practice has particular value in grouping similar soil samples so that only a minimum number of laboratory tests need be run for positive soil classification.

NOTE 4—The ability to describe and identify soils correctly is learned more readily under the guidance of experienced personnel, but it may also be acquired systematically by comparing numerical laboratory test results for typical soils of each type with their visual and manual characteristics.

5.6 When describing and identifying soil samples from a given boring, test pit, or group of borings or pits, it is not necessary to follow all of the procedures in this practice for every sample. Soils which appear to be similar can be grouped together; one sample completely described and identified with the others referred to as similar based on performing only a few of the descriptive and identification procedures described in this practice.

5.7 This practice may be used in combination with Practice D 4083 when working with frozen soils.

NOTE 5—Notwithstanding the statements on precision and bias contained in this standard: The precision of this test method is dependent on the competence of the personnel performing it and the suitability of the equipment and facilities used. Agencies that meet the criteria of Practice D 3740 are generally considered capable of competent and objective testing. Users of this test method are cautioned that compliance with Practice D 3740 does not in itself assure reliable testing. Reliable testing depends on several factors; Practice D 3740 provides a means for evaluating some of those factors.

6. Apparatus

6.1 *Required Apparatus*:

6.1.1 *Pocket Knife or Small Spatula.*

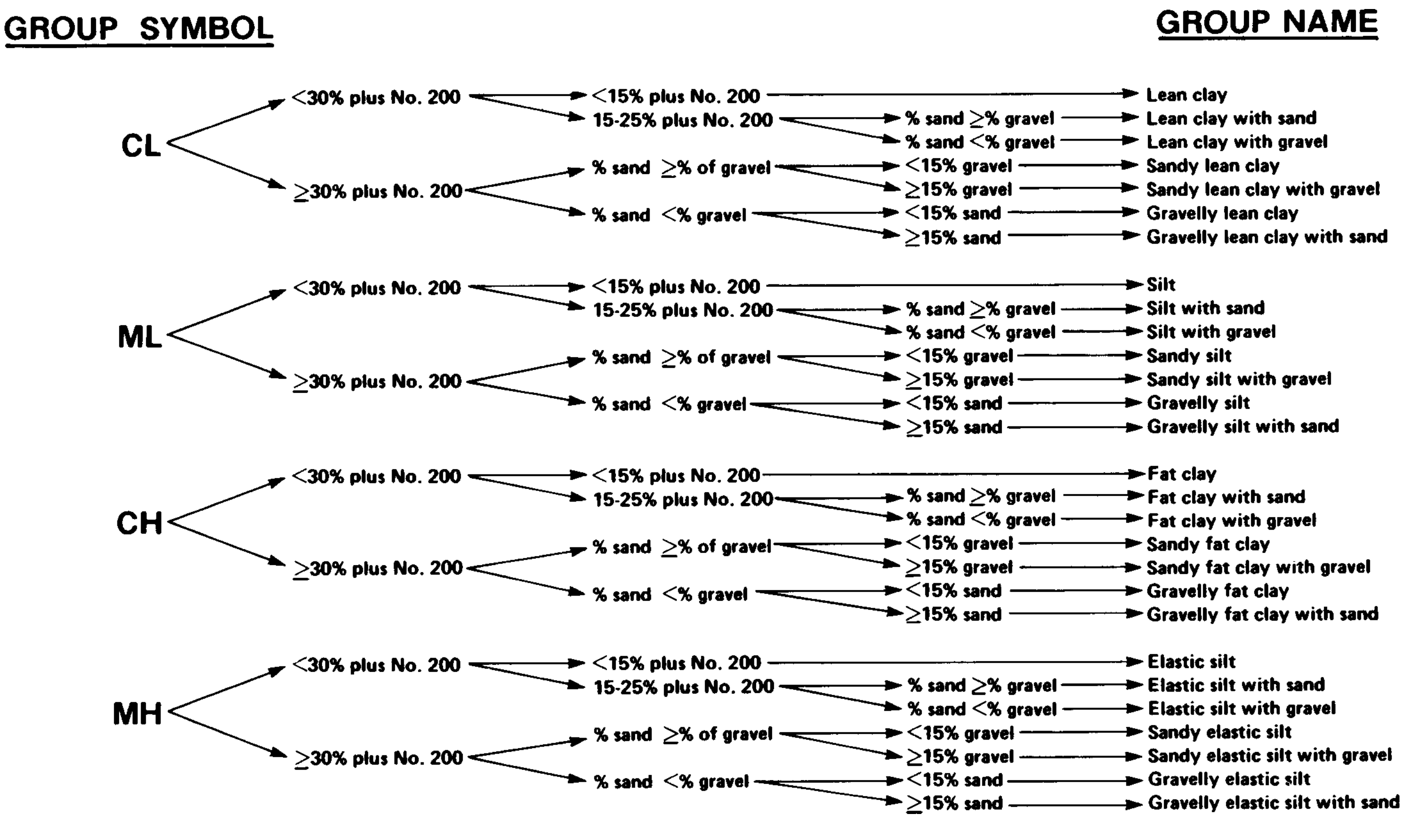
6.2 *Useful Auxiliary Apparatus*:

6.2.1 *Small Test Tube and Stopper* (or jar with a lid).

6.2.2 *Small Hand Lens.*

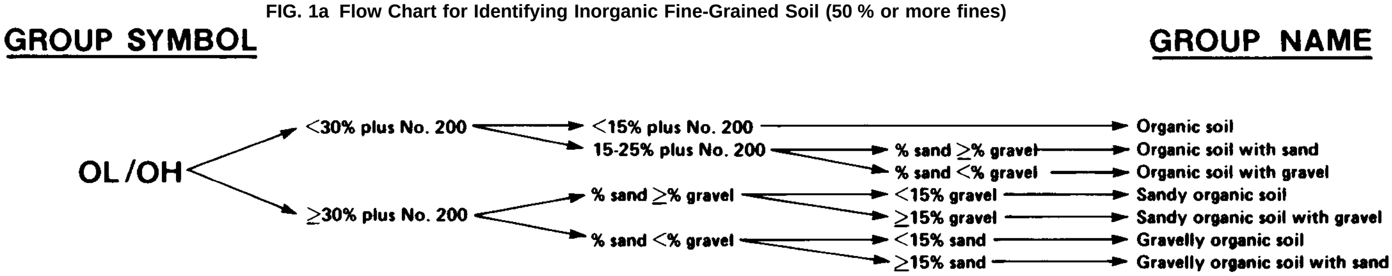
7. Reagents

7.1 *Purity of Water*—Unless otherwise indicated, references



NOTE 1—Percentages are based on estimating amounts of fines, sand, and gravel to the nearest 5 %.

FIG. 1a Flow Chart for Identifying Inorganic Fine-Grained Soil (50 % or more fines)



NOTE 1—Percentages are based on estimating amounts of fines, sand, and gravel to the nearest 5 %.

FIG. 1 b Flow Chart for Identifying Organic Fine-Grained Soil (50 % or more fines)

to water shall be understood to mean water from a city water supply or natural source, including non-potable water.

7.2 *Hydrochloric Acid*—A small bottle of dilute hydrochloric acid, HCl, one part HCl (10 *N*) to three parts water (This reagent is optional for use with this practice). See Section 8.

8. Safety Precautions

8.1 When preparing the dilute HCl solution of one part concentrated hydrochloric acid (10 *N*) to three parts of distilled water, slowly add acid into water following necessary safety precautions. Handle with caution and store safely. If solution comes into contact with the skin, rinse thoroughly with water.

8.2 **Caution**—Do not add water to acid.

9. Sampling

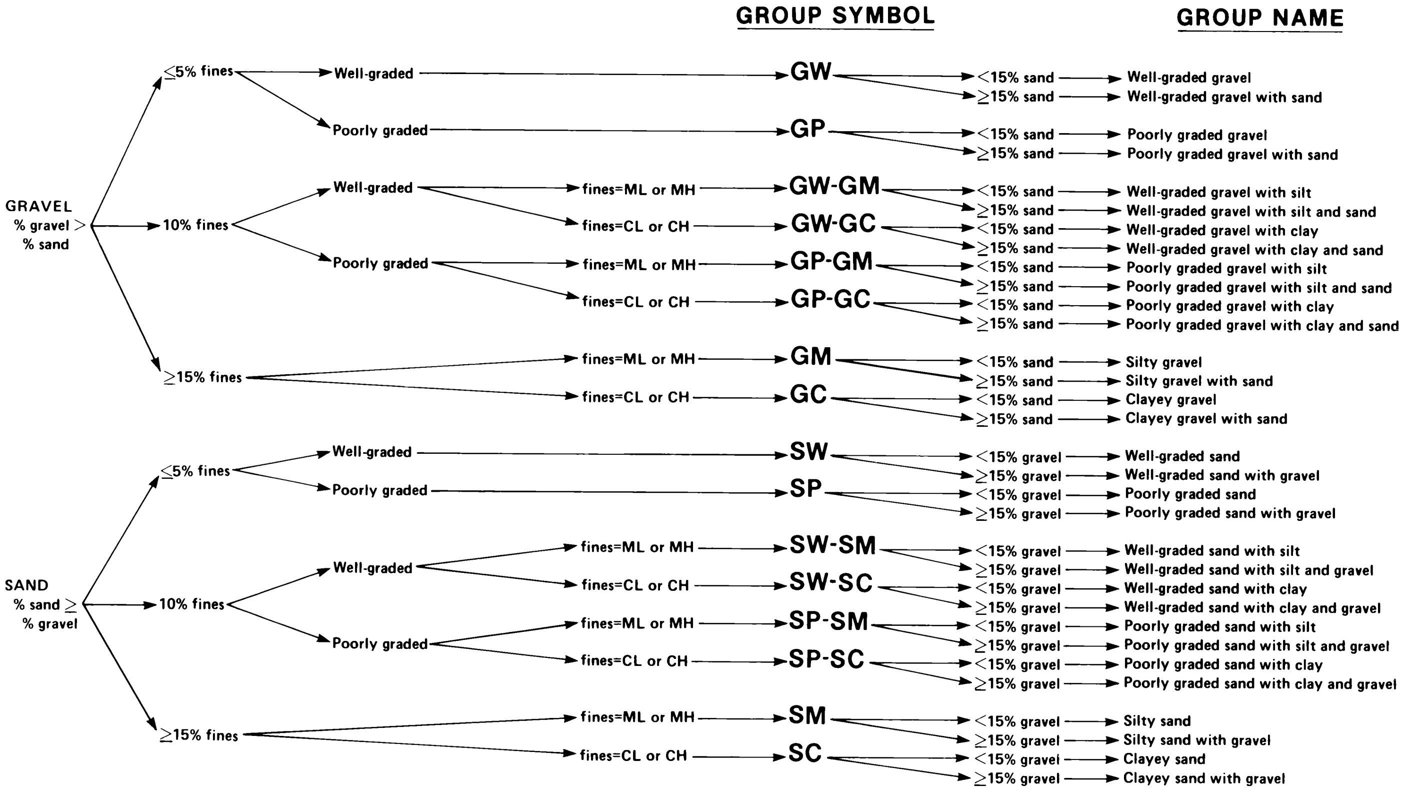
9.1 The sample shall be considered to be representative of the stratum from which it was obtained by an appropriate, accepted, or standard procedure.

NOTE 6—Preferably, the sampling procedure should be identified as having been conducted in accordance with Practices D 1452, D 1587, or D 2113, or Test Method D 1586.

9.2 The sample shall be carefully identified as to origin.

NOTE 7—Remarks as to the origin may take the form of a boring number and sample number in conjunction with a job number, a geologic stratum, a pedologic horizon or a location description with respect to a permanent monument, a grid system or a station number and offset with respect to a stated centerline and a depth or elevation.

9.3 For accurate description and identification, the minimum amount of the specimen to be examined shall be in accordance with the following schedule:



NOTE 1—Percentages are based on estimating amounts of fines, sand, and gravel to the nearest 5 %.

FIG. 2 Flow Chart for Identifying Coarse-Grained Soils (less than 50 % fines)

Maximum Particle Size, Sieve Opening	Minimum Specimen Size, Dry Weight
4.75 mm (No. 4)	100 g (0.25 lb)
9.5 mm (3⁄8 in.)	200 g (0.5 lb)
19.0 mm (3⁄4 in.)	1.0 kg (2.2 lb)
38.1 mm (1½ in.)	8.0 kg (18 lb)
75.0 mm (3 in.)	60.0 kg (132 lb)

NOTE 8—If random isolated particles are encountered that are significantly larger than the particles in the soil matrix, the soil matrix can be accurately described and identified in accordance with the preceeding schedule.

9.4 If the field sample or specimen being examined is smaller than the minimum recommended amount, the report shall include an appropriate remark.

10. Descriptive Information for Soils

10.1 *Angularity*—Describe the angularity of the sand (coarse sizes only), gravel, cobbles, and boulders, as angular, subangular, subrounded, or rounded in accordance with the criteria in Table 1 and Fig. 3. A range of angularity may be stated, such as: subrounded to rounded.

10.2 *Shape*—Describe the shape of the gravel, cobbles, and boulders as flat, elongated, or flat and elongated if they meet the criteria in Table 2 and Fig. 4. Otherwise, do not mention the shape. Indicate the fraction of the particles that have the shape, such as: one-third of the gravel particles are flat.

10.3 *Color*—Describe the color. Color is an important property in identifying organic soils, and within a given locality it may also be useful in identifying materials of similar geologic origin. If the sample contains layers or patches of varying colors, this shall be noted and all representative colors shall be described. The color shall be described for moist samples. If the color represents a dry condition, this shall be stated in the report.

TABLE 1 Criteria for Describing Angularity of Coarse-Grained Particles (see Fig. 3)

Description	Criteria
Angular	Particles have sharp edges and relatively plane sides with unpolished surfaces
Subangular	Particles are similar to angular description but have rounded edges
Subrounded	Particles have nearly plane sides but have well-rounded corners and edges
Rounded	Particles have smoothly curved sides and no edges

10.4 *Odor*—Describe the odor if organic or unusual. Soils containing a significant amount of organic material usually have a distinctive odor of decaying vegetation. This is especially apparent in fresh samples, but if the samples are dried, the odor may often be revived by heating a moistened sample. If the odor is unusual (petroleum product, chemical, and the like), it shall be described.

10.5 *Moisture Condition*—Describe the moisture condition as dry, moist, or wet, in accordance with the criteria in Table 3.

10.6 *HCl Reaction*—Describe the reaction with HCl as none, weak, or strong, in accordance with the critera in Table 4. Since calcium carbonate is a common cementing agent, a report of its presence on the basis of the reaction with dilute hydrochloric acid is important.

10.7 *Consistency*—For intact fine-grained soil, describe the

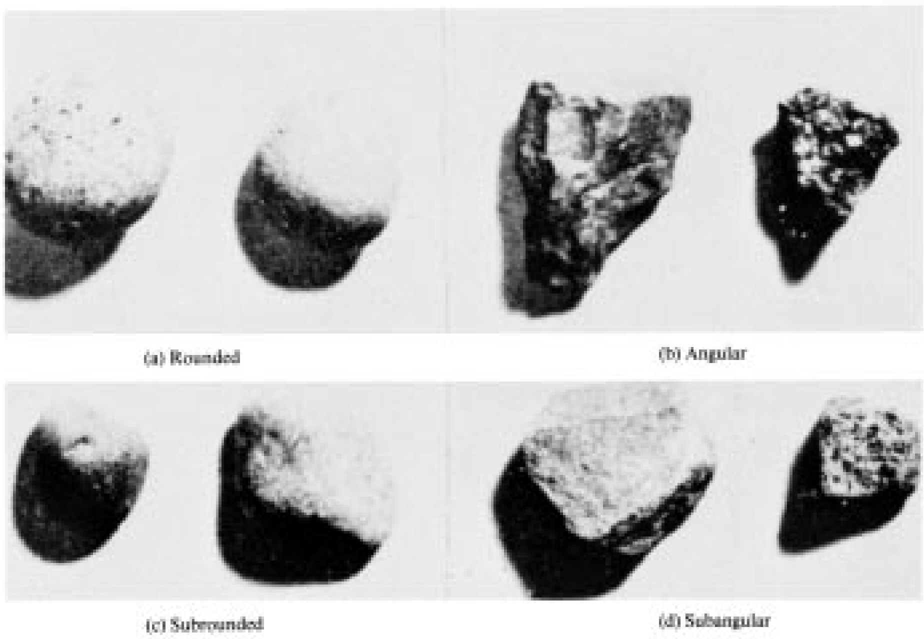


FIG. 3 Typical Angularity of Bulky Grains

TABLE 2 Criteria for Describing Particle Shape (see Fig. 4)

The particle shape shall be described as follows where length, width, and thickness refer to the greatest, intermediate, and least dimensions of a particle, respectively.

Flat	Particles with width/thickness > 3
Elongated	Particles with length/width > 3
Flat and elongated	Particles meet criteria for both flat and elongated

consistency as very soft, soft, firm, hard, or very hard, in accordance with the criteria in Table 5. This observation is inappropriate for soils with significant amounts of gravel.

10.8 *Cementation*—Describe the cementation of intact coarse-grained soils as weak, moderate, or strong, in accordance with the criteria in Table 6.

10.9 *Structure*—Describe the structure of intact soils in accordance with the criteria in Table 7.

10.10 *Range of Particle Sizes*—For gravel and sand components, describe the range of particle sizes within each component as defined in 3.1.2 and 3.1.6. For example, about 20 % fine to coarse gravel, about 40 % fine to coarse sand.

10.11 *Maximum Particle Size*—Describe the maximum particle size found in the sample in accordance with the following information:

10.11.1 *Sand Size*—If the maximum particle size is a sand size, describe as fine, medium, or coarse as defined in 3.1.6. For example: maximum particle size, medium sand.

10.11.2 *Gravel Size*—If the maximum particle size is a gravel size, describe the maximum particle size as the smallest sieve opening that the particle will pass. For example, maximum particle size, 1½ in. (will pass a 1½-in. square opening but not a ¾-in. square opening).

10.11.3 *Cobble or Boulder Size*—If the maximum particle size is a cobble or boulder size, describe the maximum dimension of the largest particle. For example: maximum dimension, 18 in. (450 mm).

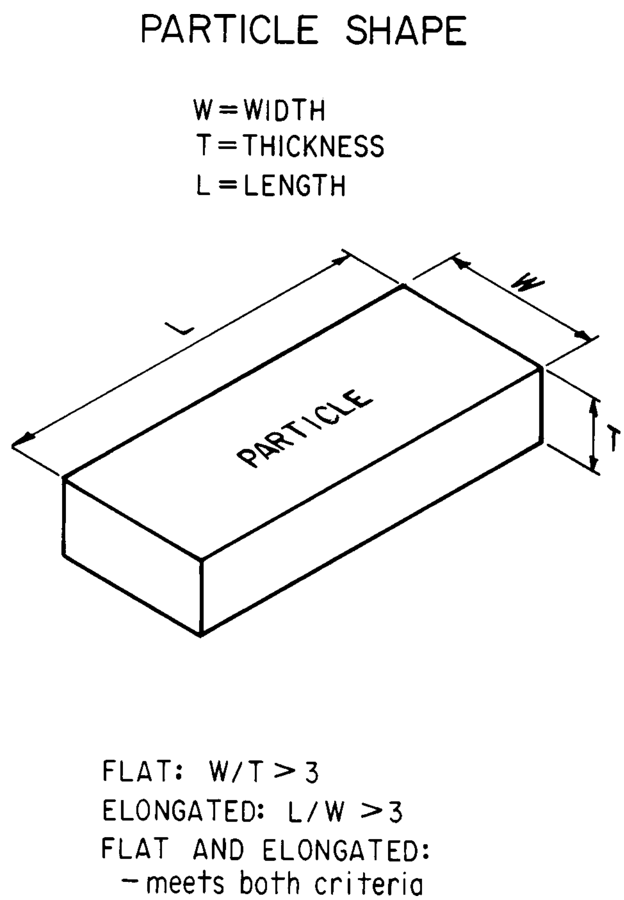


FIG. 4 Criteria for Particle Shape

10.12 *Hardness*—Describe the hardness of coarse sand and larger particles as hard, or state what happens when the

TABLE 3 Criteria for Describing Moisture Condition

Description	Criteria
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, usually soil is below water table

TABLE 4 Criteria for Describing the Reaction With HCl

Description	Criteria
None	No visible reaction
Weak	Some reaction, with bubbles forming slowly
Strong	Violent reaction, with bubbles forming immediately

TABLE 5 Criteria for Describing Consistency

Description	Criteria
Very soft	Thumb will penetrate soil more than 1 in. (25 mm)
Soft	Thumb will penetrate soil about 1 in. (25 mm)
Firm	Thumb will indent soil about ¼in. (6 mm)
Hard	Thumb will not indent soil but readily indented with thumbnail
Very hard	Thumbnail will not indent soil

TABLE 6 Criteria for Describing Cementation

Description	Criteria
Weak	Crumbles or breaks with handling or little finger pressure
Moderate	Crumbles or breaks with considerable finger pressure
Strong	Will not crumble or break with finger pressure

TABLE 7 Criteria for Describing Structure

Description	Criteria
Stratified	Alternating layers of varying material or color with layers at least 6 mm thick; note thickness
Laminated	Alternating layers of varying material or color with the layers less than 6 mm thick; note thickness
Fissured	Breaks along definite planes of fracture with little resistance to fracturing
Slickensided	Fracture planes appear polished or glossy, sometimes striated
Blocky	Cohesive soil that can be broken down into small angular lumps which resist further breakdown
Lensed	Inclusion of small pockets of different soils, such as small lenses of sand scattered through a mass of clay; note thickness
Homogeneous	Same color and appearance throughout

particles are hit by a hammer, for example, gravel-size particles fracture with considerable hammer blow, some gravel-size particles crumble with hammer blow. "Hard" means particles do not crack, fracture, or crumble under a hammer blow.

10.13 Additional comments shall be noted, such as the presence of roots or root holes, difficulty in drilling or augering hole, caving of trench or hole, or the presence of mica.

10.14 A local or commercial name or a geologic interpretation of the soil, or both, may be added if identified as such.

10.15 A classification or identification of the soil in accordance with other classification systems may be added if identified as such.

11. Identification of Peat

11.1 A sample composed primarily of vegetable tissue in various stages of decomposition that has a fibrous to amorphous texture, usually a dark brown to black color, and an organic odor, shall be designated as a highly organic soil and shall be identified as peat, PT, and not subjected to the identification procedures described hereafter.

12. Preparation for Identification

12.1 The soil identification portion of this practice is based on the portion of the soil sample that will pass a 3-in. (75-mm) sieve. The larger than 3-in. (75-mm) particles must be removed, manually, for a loose sample, or mentally, for an intact sample before classifying the soil.

12.2 Estimate and note the percentage of cobbles and the percentage of boulders. Performed visually, these estimates will be on the basis of volume percentage.

NOTE 9—Since the percentages of the particle-size distribution in Test Method D 2487 are by dry weight, and the estimates of percentages for gravel, sand, and fines in this practice are by dry weight, it is recommended that the report state that the percentages of cobbles and boulders are by volume.

12.3 Of the fraction of the soil smaller than 3 in. (75 mm), estimate and note the percentage, by dry weight, of the gravel, sand, and fines (see Appendix X4 for suggested procedures).

NOTE 10—Since the particle-size components appear visually on the basis of volume, considerable experience is required to estimate the percentages on the basis of dry weight. Frequent comparisons with laboratory particle-size analyses should be made.

12.3.1 The percentages shall be estimated to the closest 5 %. The percentages of gravel, sand, and fines must add up to 100 %.

12.3.2 If one of the components is present but not in sufficient quantity to be considered 5 % of the smaller than 3-in. (75-mm) portion, indicate its presence by the term *trace*, for example, trace of fines. A trace is not to be considered in the total of 100 % for the components.

13. Preliminary Identification

13.1 The soil is *fine grained* if it contains 50 % or more fines. Follow the procedures for identifying fine-grained soils of Section 14.

13.2 The soil is *coarse grained* if it contains less than 50 % fines. Follow the procedures for identifying coarse-grained soils of Section 15.

14. Procedure for Identifying Fine-Grained Soils

14.1 Select a representative sample of the material for examination. Remove particles larger than the No. 40 sieve (medium sand and larger) until a specimen equivalent to about a handful of material is available. Use this specimen for performing the dry strength, dilatancy, and toughness tests.

14.2 *Dry Strength*:

14.2.1 From the specimen, select enough material to mold into a ball about 1 in. (25 mm) in diameter. Mold the material until it has the consistency of putty, adding water if necessary.

14.2.2 From the molded material, make at least three test specimens. A test specimen shall be a ball of material about ½ in. (12 mm) in diameter. Allow the test specimens to dry in air, or sun, or by artificial means, as long as the temperature does not exceed 60°C.

14.2.3 If the test specimen contains natural dry lumps, those that are about ½ in. (12 mm) in diameter may be used in place of the molded balls.

NOTE 11—The process of molding and drying usually produces higher strengths than are found in natural dry lumps of soil.

14.2.4 Test the strength of the dry balls or lumps by crushing between the fingers. Note the strength as none, low, medium, high, or very high in accorance with the criteria in Table 8. If natural dry lumps are used, do not use the results of any of the lumps that are found to contain particles of coarse sand.

14.2.5 The presence of high-strength water-soluble cementing materials, such as calcium carbonate, may cause exceptionally high dry strengths. The presence of calcium carbonate can usually be detected from the intensity of the reaction with dilute hydrochloric acid (see 10.6).

14.3 *Dilatancy*:

14.3.1 From the specimen, select enough material to mold into a ball about ½ in. (12 mm) in diameter. Mold the material, adding water if necessary, until it has a soft, but not sticky, consistency.

14.3.2 Smooth the soil ball in the palm of one hand with the blade of a knife or small spatula. Shake horizontally, striking the side of the hand vigorously against the other hand several times. Note the reaction of water appearing on the surface of the soil. Squeeze the sample by closing the hand or pinching the soil between the fingers, and note the reaction as none, slow, or rapid in accordance with the criteria in Table 9. The reaction is the speed with which water appears while shaking, and disappears while squeezing.

14.4 *Toughness*:

14.4.1 Following the completion of the dilatancy test, the test specimen is shaped into an elongated pat and rolled by hand on a smooth surface or between the palms into a thread about ⅛ in. (3 mm) in diameter. (If the sample is too wet to roll easily, it should be spread into a thin layer and allowed to lose some water by evaporation.) Fold the sample threads and reroll repeatedly until the thread crumbles at a diameter of about ⅛ in. The thread will crumble at a diameter of ⅛ in. when the soil is near the plastic limit. Note the pressure required to roll the thread near the plastic limit. Also, note the strength of the thread. After the thread crumbles, the pieces should be lumped together and kneaded until the lump crumbles. Note the toughness of the material during kneading.

14.4.2 Describe the toughness of the thread and lump as low, medium, or high in accordance with the criteria in Table 10.

TABLE 8 Criteria for Describing Dry Strength

Description	Criteria
None	The dry specimen crumbles into powder with mere pressure of handling
Low	The dry specimen crumbles into powder with some finger pressure
Medium	The dry specimen breaks into pieces or crumbles with considerable finger pressure
High	The dry specimen cannot be broken with finger pressure. Specimen will break into pieces between thumb and a hard surface
Very high	The dry specimen cannot be broken between the thumb and a hard surface

TABLE 9 Criteria for Describing Dilatancy

Description	Criteria
None	No visible change in the specimen
Slow	Water appears slowly on the surface of the specimen during shaking and does not disappear or disappears slowly upon squeezing
Rapid	Water appears quickly on the surface of the specimen during shaking and disappears quickly upon squeezing

14.5 *Plasticity*—On the basis of observations made during the toughness test, describe the plasticity of the material in accordance with the criteria given in Table 11.

14.6 Decide whether the soil is an *inorganic* or an *organic* fine-grained soil (see 14.8). If inorganic, follow the steps given in 14.7.

14.7 *Identification of Inorganic Fine-Grained Soils*:

14.7.1 Identify the soil as a *lean clay*, CL, if the soil has medium to high dry strength, no or slow dilatancy, and medium toughness and plasticity (see Table 12).

14.7.2 Identify the soil as a *fat clay*, CH, if the soil has high to very high dry strength, no dilatancy, and high toughness and plasticity (see Table 12).

14.7.3 Identify the soil as a *silt*, ML, if the soil has no to low dry strength, slow to rapid dilatancy, and low toughness and plasticity, or is nonplastic (see Table 12).

14.7.4 Identify the soil as an *elastic silt*, MH, if the soil has low to medium dry strength, no to slow dilatancy, and low to medium toughness and plasticity (see Table 12).

NOTE 12—These properties are similar to those for a lean clay. However, the silt will dry quickly on the hand and have a smooth, silky feel when dry. Some soils that would classify as MH in accordance with the criteria in Test Method D 2487 are visually difficult to distinguish from lean clays, CL. It may be necessary to perform laboratory testing for proper identification.

14.8 *Identification of Organic Fine-Grained Soils*:

14.8.1 Identify the soil as an *organic soil*, OL/OH, if the soil contains enough organic particles to influence the soil properties. Organic soils usually have a dark brown to black color and may have an organic odor. Often, organic soils will change color, for example, black to brown, when exposed to the air. Some organic soils will lighten in color significantly when air dried. Organic soils normally will not have a high toughness or plasticity. The thread for the toughness test will be spongy.

NOTE 13—In some cases, through practice and experience, it may be possible to further identify the organic soils as organic silts or organic clays, OL or OH. Correlations between the dilatancy, dry strength, toughness tests, and laboratory tests can be made to identify organic soils in certain deposits of similar materials of known geologic origin.

TABLE 10 Criteria for Describing Toughness

Description	Criteria
Low	Only slight pressure is required to roll the thread near the plastic limit. The thread and the lump are weak and soft
Medium	Medium pressure is required to roll the thread to near the plastic limit. The thread and the lump have medium stiffness
High	Considerable pressure is required to roll the thread to near the plastic limit. The thread and the lump have very high stiffness

TABLE 11 Criteria for Describing Plasticity

Description	Criteria
Nonplastic	A ⅛-in. (3-mm) thread cannot be rolled at any water content
Low	The thread can barely be rolled and the lump cannot be formed when drier than the plastic limit
Medium	The thread is easy to roll and not much time is required to reach the plastic limit. The thread cannot be rerolled after reaching the plastic limit. The lump crumbles when drier than the plastic limit
High	It takes considerable time rolling and kneading to reach the plastic limit. The thread can be rerolled several times after reaching the plastic limit. The lump can be formed without crumbling when drier than the plastic limit

TABLE 12 Identification of Inorganic Fine-Grained Soils from Manual Tests

Soil Symbol	Dry Strength	Dilatancy	Toughness
ML	None to low	Slow to rapid	Low or thread cannot be formed
CL	Medium to high	None to slow	Medium
MH	Low to medium	None to slow	Low to medium
CH	High to very high	None	High

14.9 If the soil is estimated to have 15 to 25 % sand or gravel, or both, the words "with sand" or "with gravel" (whichever is more predominant) shall be added to the group name. For example: "lean clay with sand, CL" or "silt with gravel, ML" (see Fig. 1a and Fig. 1b). If the percentage of sand is equal to the percentage of gravel, use "with sand."

14.10 If the soil is estimated to have 30 % or more sand or gravel, or both, the words "sandy" or "gravelly" shall be added to the group name. Add the word "sandy" if there appears to be more sand than gravel. Add the word "gravelly" if there appears to be more gravel than sand. For example: "sandy lean clay, CL", "gravelly fat clay, CH", or "sandy silt, ML" (see Fig. 1a and Fig. 1b). If the percentage of sand is equal to the percent of gravel, use "sandy."

15. Procedure for Identifying Coarse-Grained Soils (Contains less than 50 % fines)

15.1 The soil is a *gravel* if the percentage of gravel is estimated to be more than the percentage of sand.

15.2 The soil is a *sand* if the percentage of gravel is estimated to be equal to or less than the percentage of sand.

15.3 The soil is a *clean gravel* or *clean sand* if the percentage of fines is estimated to be 5 % or less.

15.3.1 Identify the soil as a *well-graded gravel*, GW, or as a *well-graded sand*, SW, if it has a wide range of particle sizes and substantial amounts of the intermediate particle sizes.

15.3.2 Identify the soil as a *poorly graded gravel*, GP, or as a *poorly graded sand*, SP, if it consists predominantly of one size (uniformly graded), or it has a wide range of sizes with some intermediate sizes obviously missing (gap or skip graded).

15.4 The soil is either a *gravel with fines* or a *sand with fines* if the percentage of fines is estimated to be 15 % or more.

15.4.1 Identify the soil as a *clayey gravel*, GC, or a *clayey sand*, SC, if the fines are clayey as determined by the procedures in Section 14.

15.4.2 Identify the soil as a *silty gravel*, GM, or a *silty sand*, SM, if the fines are silty as determined by the procedures in Section 14.

15.5 If the soil is estimated to contain 10 % fines, give the soil a dual identification using two group symbols.

15.5.1 The first group symbol shall correspond to a clean gravel or sand (GW, GP, SW, SP) and the second symbol shall correspond to a gravel or sand with fines (GC, GM, SC, SM).

15.5.2 The group name shall correspond to the first group symbol plus the words "with clay" or "with silt" to indicate the plasticity characteristics of the fines. For example: "well-graded gravel with clay, GW-GC" or "poorly graded sand with silt, SP-SM" (see Fig. 2).

15.6 If the specimen is predominantly sand or gravel but contains an estimated 15 % or more of the other coarse-grained constituent, the words "with gravel" or "with sand" shall be added to the group name. For example: "poorly graded gravel with sand, GP" or "clayey sand with gravel, SC" (see Fig. 2).

15.7 If the field sample contains any cobbles or boulders, or both, the words "with cobbles" or "with cobbles and boulders" shall be added to the group name. For example: "silty gravel with cobbles, GM."

16. Report

16.1 The report shall include the information as to origin, and the items indicated in Table 13.

NOTE 14—*Example: Clayey Gravel with Sand and Cobbles, GC*—About 50 % fine to coarse, subrounded to subangular gravel; about 30 % fine to coarse, subrounded sand; about 20 % fines with medium plasticity, high dry strength, no dilatancy, medium toughness; weak reaction with HCl; original field sample had about 5 % (by volume) subrounded cobbles, maximum dimension, 150 mm.

In-Place Conditions—Firm, homogeneous, dry, brown

Geologic Interpretation—Alluvial fan

TABLE 13 Checklist for Description of Soils

1. Group name
2. Group symbol
3. Percent of cobbles or boulders, or both (by volume)
4. Percent of gravel, sand, or fines, or all three (by dry weight)
5. Particle-size range:
   Gravel—fine, coarse
   Sand—fine, medium, coarse
6. Particle angularity: angular, subangular, subrounded, rounded
7. Particle shape: (if appropriate) flat, elongated, flat and elongated
8. Maximum particle size or dimension
9. Hardness of coarse sand and larger particles
10. Plasticity of fines: nonplastic, low, medium, high
11. Dry strength: none, low, medium, high, very high
12. Dilatancy: none, slow, rapid
13. Toughness: low, medium, high
14. Color (in moist condition)
15. Odor (mention only if organic or unusual)
16. Moisture: dry, moist, wet
17. Reaction with HCl: none, weak, strong

For intact samples:

18. Consistency (fine-grained soils only): very soft, soft, firm, hard, very hard
19. Structure: stratified, laminated, fissured, slickensided, lensed, homogeneous
20. Cementation: weak, moderate, strong
21. Local name
22. Geologic interpretation
23. Additional comments: presence of roots or root holes, presence of mica, gypsum, etc., surface coatings on coarse-grained particles, caving or sloughing of auger hole or trench sides, difficulty in augering or excavating, etc.

NOTE 15—Other examples of soil descriptions and identification are given in Appendix X1 and Appendix X2.

NOTE 16—If desired, the percentages of gravel, sand, and fines may be stated in terms indicating a range of percentages, as follows:

Trace—Particles are present but estimated to be less than 5 %
Few—5 to 10 %
Little—15 to 25 %
Some—30 to 45 %
Mostly—50 to 100 %

16.2 If, in the soil description, the soil is identified using a classification group symbol and name as described in Test Method D 2487, it must be distinctly and clearly stated in log forms, summary tables, reports, and the like, that the symbol and name are based on visual-manual procedures.

17. Precision and Bias

17.1 This practice provides qualitative information only, therefore, a precision and bias statement is not applicable.

18. Keywords

18.1 classification; clay; gravel; organic soils; sand; silt; soil classification; soil description; visual classification

APPENDIXES

(Nonmandatory Information)

X1. EXAMPLES OF VISUAL SOIL DESCRIPTIONS

X1.1 The following examples show how the information required in 16.1 can be reported. The information that is included in descriptions should be based on individual circumstances and need.

X1.1.1 *Well-Graded Gravel with Sand (GW)*—About 75 % fine to coarse, hard, subangular gravel; about 25 % fine to coarse, hard, subangular sand; trace of fines; maximum size, 75 mm, brown, dry; no reaction with HCl.

X1.1.2 *Silty Sand with Gravel (SM)*—About 60 % predominantly fine sand; about 25 % silty fines with low plasticity, low dry strength, rapid dilatancy, and low toughness; about 15 % fine, hard, subrounded gravel, a few gravel-size particles fractured with hammer blow; maximum size, 25 mm; no reaction with HCl (Note—Field sample size smaller than recommended).

In-Place Conditions—Firm, stratified and contains lenses of silt 1 to 2 in. (25 to 50 mm) thick, moist, brown to gray; in-place density 106 lb/ft^3; in-place moisture 9 %.

X1.1.3 *Organic Soil (OL/OH)*—About 100 % fines with low plasticity, slow dilatancy, low dry strength, and low toughness; wet, dark brown, organic odor; weak reaction with HCl.

X1.1.4 *Silty Sand with Organic Fines (SM)*—About 75 % fine to coarse, hard, subangular reddish sand; about 25 % organic and silty dark brown nonplastic fines with no dry strength and slow dilatancy; wet; maximum size, coarse sand; weak reaction with HCl.

X1.1.5 *Poorly Graded Gravel with Silt, Sand, Cobbles and Boulders (GP-GM)*—About 75 % fine to coarse, hard, subrounded to subangular gravel; about 15 % fine, hard, subrounded to subangular sand; about 10 % silty nonplastic fines; moist, brown; no reaction with HCl; original field sample had about 5 % (by volume) hard, subrounded cobbles and a trace of hard, subrounded boulders, with a maximum dimension of 18 in. (450 mm).

X2. USING THE IDENTIFICATION PROCEDURE AS A DESCRIPTIVE SYSTEM FOR SHALE, CLAYSTONE, SHELLS, SLAG, CRUSHED ROCK, AND THE LIKE

X2.1 The identification procedure may be used as a descriptive system applied to materials that exist in-situ as shale, claystone, sandstone, siltstone, mudstone, etc., but convert to soils after field or laboratory processing (crushing, slaking, and the like).

X2.2 Materials such as shells, crushed rock, slag, and the like, should be identified as such. However, the procedures used in this practice for describing the particle size and plasticity characteristics may be used in the description of the material. If desired, an identification using a group name and symbol according to this practice may be assigned to aid in describing the material.

X2.3 The group symbol(s) and group names should be placed in quotation marks or noted with some type of distinguishing symbol. See examples.

X2.4 Examples of how group names and symbols can be incororated into a descriptive system for materials that are not naturally occurring soils are as follows:

X2.4.1 *Shale Chunks*—Retrieved as 2 to 4-in. (50 to 100-mm) pieces of shale from power auger hole, dry, brown, no reaction with HCl. After slaking in water for 24 h, material identified as "Sandy Lean Clay (CL)"; about 60 % fines with medium plasticity, high dry strength, no dilatancy, and medium toughness; about 35 % fine to medium, hard sand; about 5 % gravel-size pieces of shale.

X2.4.2 *Crushed Sandstone*—Product of commercial crushing operation; "Poorly Graded Sand with Silt (SP-SM)"; about 90 % fine to medium sand; about 10 % nonplastic fines; dry, reddish-brown, strong reaction with HCl.

X2.4.3 *Broken Shells*—About 60 % gravel-size broken shells; about 30 % sand and sand-size shell pieces; about 10 % fines; "Poorly Graded Gravel with Sand (GP)."

X2.4.4 *Crushed Rock*—Processed from gravel and cobbles in Pit No. 7; "Poorly Graded Gravel (GP)"; about 90 % fine, hard, angular gravel-size particles; about 10 % coarse, hard, angular sand-size particles; dry, tan; no reaction with HCl.

X3. SUGGESTED PROCEDURE FOR USING A BORDERLINE SYMBOL FOR SOILS WITH TWO POSSIBLE IDENTIFICATIONS.

X3.1 Since this practice is based on estimates of particle size distribution and plasticity characteristics, it may be difficult to clearly identify the soil as belonging to one category. To indicate that the soil may fall into one of two possible basic groups, a borderline symbol may be used with the two symbols separated by a slash. For example: SC/CL or CL/CH.

X3.1.1 A borderline symbol may be used when the percentage of fines is estimated to be between 45 and 55 %. One symbol should be for a coarse-grained soil with fines and the other for a fine-grained soil. For example: GM/ML or CL/SC.

X3.1.2 A borderline symbol may be used when the percentage of sand and the percentage of gravel are estimated to be about the same. For example: GP/SP, SC/GC, GM/SM. It is practically impossible to have a soil that would have a borderline symbol of GW/SW.

X3.1.3 A borderline symbol may be used when the soil could be either well graded or poorly graded. For example: GW/GP, SW/SP.

X3.1.4 A borderline symbol may be used when the soil could either be a silt or a clay. For example: CL/ML, CH/MH, SC/SM.

X3.1.5 A borderline symbol may be used when a fine-grained soil has properties that indicate that it is at the boundary between a soil of low compressibility and a soil of high compressibility. For example: CL/CH, MH/ML.

X3.2 The order of the borderline symbols should reflect similarity to surrounding or adjacent soils. For example: soils in a borrow area have been identified as CH. One sample is considered to have a borderline symbol of CL and CH. To show similarity, the borderline symbol should be CH/CL.

X3.3 The group name for a soil with a borderline symbol should be the group name for the first symbol, except for:

CL/CH lean to fat clay
ML/CL clayey silt
CL/ML silty clay

X3.4 The use of a borderline symbol should not be used indiscriminately. Every effort shall be made to first place the soil into a single group.

X4. SUGGESTED PROCEDURES FOR ESTIMATING THE PERCENTAGES OF GRAVEL, SAND, AND FINES IN A SOIL SAMPLE

X4.1 *Jar Method*—The relative percentage of coarse- and fine-grained material may be estimated by thoroughly shaking a mixture of soil and water in a test tube or jar, and then allowing the mixture to settle. The coarse particles will fall to the bottom and successively finer particles will be deposited with increasing time; the sand sizes will fall out of suspension in 20 to 30 s. The relative proportions can be estimated from the relative volume of each size separate. This method should be correlated to particle-size laboratory determinations.

X4.2 *Visual Method*—Mentally visualize the gravel size particles placed in a sack (or other container) or sacks. Then, do the same with the sand size particles and the fines. Then, mentally compare the number of sacks to estimate the percentage of plus No. 4 sieve size and minus No. 4 sieve size present. The percentages of sand and fines in the minus sieve size No. 4 material can then be estimated from the wash test (X4.3).

X4.3 *Wash Test (for relative percentages of sand and fines)*—Select and moisten enough minus No. 4 sieve size material to form a 1-in (25-mm) cube of soil. Cut the cube in half, set one-half to the side, and place the other half in a small dish. Wash and decant the fines out of the material in the dish until the wash water is clear and then compare the two samples and estimate the percentage of sand and fines. Remember that the percentage is based on weight, not volume. However, the volume comparison will provide a reasonable indication of grain size percentages.

X4.3.1 While washing, it may be necessary to break down lumps of fines with the finger to get the correct percentages.

X5. ABBREVIATED SOIL CLASSIFICATION SYMBOLS

X5.1 In some cases, because of lack of space, an abbreviated system may be useful to indicate the soil classification symbol and name. Examples of such cases would be graphical logs, databases, tables, etc.

X5.2 This abbreviated system is not a substitute for the full name and descriptive information but can be used in supplementary presentations when the complete description is referenced.

X5.3 The abbreviated system should consist of the soil classification symbol based on this standard with appropriate lower case letter prefixes and suffixes as:

Prefix:	Suffix:
s = sandy	s = with sand
g = gravelly	g = with gravel
	c = with cobbles
	b = with boulders

X5.4 The soil classification symbol is to be enclosed in parenthesis. Some examples would be:

Group Symbol and Full Name	Abbreviated
CL, Sandy lean clay	s(CL)
SP-SM, Poorly graded sand with silt and gravel	(SP-SM)g
GP, poorly graded gravel with sand, cobbles, and boulders	(GP)scb
ML, gravelly silt with sand and cobbles	g(ML)sc

SUMMARY OF CHANGES

In accordance with Committee D18 policy, this section identifies the location of changes to this standard since the last edition ($1993^{\epsilon 1}$) that may impact the use of this standard.

(1) Added Practice D 3740 to Section 2.

(2) Added Note 5 under 5.7 and renumbered subsequent notes.

STANDARD OPERATING PROCEDURE (SOP) SL-05

SURFACE SOIL SAMPLING

SCOPE AND APPLICATION

This SOP defines and standardizes the collection of surface soil samples (e.g., 0 to 2 in. below ground surface). Soil samples should be collected from areas having lower levels of constituents of interest first, followed by stations with higher expected levels of constituents of interest.

The procedures listed below may be modified in the field upon the agreement of the lead sampler and field personnel, based on field conditions, after appropriate annotations have been made in the field logbook. If specialized sampling methods (e.g., ENCORE®) are to be used, refer to the manufacturer's recommended procedures. If methanol preservation is required, refer to Integral's SOP on methanol preservation of soil samples. Record all pertinent information on Integral's surface soil sampling field data form or field logbook.

EQUIPMENT AND SUPPLIES REQUIRED

- Decontaminated sampling tool (stainless-steel shovel, scoop, trowel, or spoon)
- Large stainless steel mixing bowl and spoon
- Laboratory-supplied sample containers, insulated coolers, and ice
- Chain-of-custody forms, custody seals, sample labels
- Ziploc® bags
- Camera
- Tape measure
- Field logbook, surface soil field collection form, and pens
- Project-specific field sampling plan (FSP) and health and safety plan (HASP)
- Personal protective equipment (safety glasses, steel-toed boots, nitrile gloves, and any other items required by the project-specific HASP)
- Decontamination equipment.

PROCEDURES

1. Locate the sample station as directed in the project-specific FSP. Label containers with sample tags prior to filling in accordance with Integral's SOP on sample labeling (SOP-AP04). If analytical testing will be performed for volatile organic compounds (VOCs), collect the VOC sample first (with a minimum of disturbance) by placing the sample into the container with a minimum amount of headspace and sealed tightly.
2. Don a new pair of nitrile gloves and expose the soil surface by clearing an approximately 1 ft^2 area at the sampling location of any rocks, other solid material/debris, or organic material greater than approximately 3 in. in size. Note any material removed from the sampling location in the field logbook.
3. Using a decontaminated stainless-steel sampling tool, excavate soil to the depth specified in the work plan.
4. If required for analysis, first collect VOC samples (prior to any homogenization) from a discrete location, placing the samples in the appropriate containers. Label sample containers before filling in accordance with Integral's SOP on sample labeling (SOP AP-04).
5. Place additional sample material in a decontaminated plastic or stainless-steel mixing bowl.
6. Describe the soil in accordance with ASTM D2488-00 (see Integral's SOP on field classification of soils, SOP SL-04).
7. Thoroughly mix and homogenize the sample using disposable equipment or a decontaminated stainless-steel spoon until the color and texture are consistent throughout.
8. If required for analysis, first collect samples for grain-size tests before any large rocks are removed from the homogenized soil.
9. Identify any rocks or other solid material/debris that are greater than 0.5 in. in diameter. Determine their percentage contribution to the homogenized soil volume, note it on the surface soil field collection form or in the field logbook, and then discard.
10. Remove samples of the homogenized soil from the mixing bowl with the decontaminated stainless steel spoon and place in the appropriate size sample container. Do not touch the sample with your gloves. Fill the sample container with soil to just below the container lip, and seal the container tightly. Label sample containers before filling in accordance with Integral's SOP on sample labeling.
11. Mark the sampling location with a wire flag, wooden stake, metal rebar, or flagging, as appropriate.

12. Complete all pertinent field QA/QC documentation, logbooks, sample labels, and field data sheets. Record any deviations from the specified sampling procedures or any obstacles encountered.
13. Photograph sample location and document it in the logbook.
14. Decontaminate all sampling equipment according to Integral's SOP on decontaminating equipment for soil sampling (SOP SL-01) and in accordance with the project-specific FSP.

STANDARD OPERATING PROCEDURE (SOP) SL-06

LOGGING OF SOIL BOREHOLES

SCOPE AND APPLICATION

This SOP describes how to complete a Soil Boring Log form, which must be completed for Integral projects where soil boring techniques are performed during field exploration. A correctly completed form contains all of the information that must be recorded in the field to adequately characterize soil boreholes.

These procedures are adapted from ASTM D-2488-00. Field staff are encouraged to examine ASTM D-2488-00 in its entirety. This SOP represents minor modifications to emphasize environmental characterizations rather than geotechnical characterizations, for which the standards were written. Because each environmental project is unique and because job requirements can vary widely, the minimum standards presented may need to be supplemented with additional technical descriptions or field test results. However, all soil boring field logs, regardless of special project circumstances, must include information addressed in this SOP to achieve the minimum acceptable standards required by Integral.

LOG FORM INFORMATION

Project Number—Use the standard contract number.

Client—Identify the name of the client and the project location.

Location—If stations, coordinates, mileposts, or similar markers are applicable, use them to identify the location of the project. If this information is not available, identify the facility (e.g., 20 ft NE of Retort #1).

Drilling Method—Identify the bit size and type, drilling fluid (if used), and method of drilling (e.g., rotary, hollow-stem auger, cable tool) and the name of the drill rig (e.g., Mobil B 61, CME 55).

Diameter—Provide the diameter of the borehole. If the borehole has variable diameters, provide the depth interval for each diameter.

Sampling Method—Identify the type of sampler(s) used (e.g., standard split spoon, Dames & Moore sampler, grab).

Drilling Contractor—Provide the name of the drilling contractor.

Integral Staff—Enter the name(s) of Integral staff members performing logging and sampling activities.

Water Level Information—Provide the date, time, depth to static water, and casing depth. Generally, water levels should be taken each day before resuming drilling and at the completion of drilling. If water is not encountered in the boring, this information should be recorded.

Boring Number—Provide the boring number. A numbering system should be developed prior to drilling that does not conflict with other Study Area information, such as previous drilling or other sampling activities.

Sheet—Number the sheets consecutively for each boring and continue the consecutive depth numbering.

Drilling Start and Finish—Provide the drilling start and finish dates and times.

For consecutive sheets, provide (at a minimum) the job number, boring number, and sheet number.

TECHNICAL DATA

Sampler Type—Provide the sampler type (e.g., SS = split spoon, G = grab).

Depth of Casing—Enter the depth of the casing below ground surface immediately prior to sampling.

Driven/Recovery—Provide the length that the sampler was driven and the length of sample recovered in the sampler. This column would not apply to grab samples.

Sample Number/Sample Depth—Provide the sample number. The sample numbering scheme should be established prior to drilling. One method is to use the boring number and consecutive alphabetical letters. For instance, the first sample obtained from boring MW-4 would be identified as 4A, the second would be identified as 4B, and so on. Another method for sample identification is naming the boring number with the depth. For example, the sample from Boring 1 at 10 ft would be labeled B1-10'. The depth of the sample is the depth of the casing plus the length to the middle of the recovered sample to the nearest 0.1 ft. Typically, split spoon samplers are 18 in. long. Samples should be obtained from the middle of the recovered sample. The depth of the sample with the casing at 10 ft would then be 10.7 ft.

Number of Blows—For standard split-spoon samplers, record the number of blows for each 6 in. of sampler penetration. A typical blow count of 6, 12, and 14 is recorded as 6/12/14. Refusal is a penetration of less than 6 in. with a blow count of 50. A partial penetration of 50 blows for 4 in. is recorded as 50/4". Total blows will be recorded for nonstandard split spoons (e.g., 5-ft tube used for continuous sampling).

Blank Columns—Two blank columns are provided. Use these columns for OU4-specific information, usually related to the chemicals of concern. Examples for a hydrocarbon location would be sheen and photoionization detector readings of the samples.

Depth—Use a depth scale that is appropriate for the complexity of the subsurface conditions. The boxes located to the right of the scale should be used to graphically indicate sample locations as shown in the example.

Surface Conditions—Describe the surface conditions (e.g., paved, 4-in. concrete slab, grass, natural vegetation and surface soil, oil-stained gravel).

Soil Description—Enter the soil classification and definition of soil contacts using the format described in SOP SL-04, *Field Classification of Soil*.

Comments—Include all pertinent observations. Drilling observations might include drilling chatter, rod-bounce (boulder), sudden differences in drilling speed, damaged samplers, and malfunctioning equipment. Information provided by the driller should be attributed to the driller. Information on possible contaminants might include odor, staining, color, and presence or absence of some indicator of contamination. Describe what it is that indicates contamination (e.g., fuel-like odor, oily sheen in drill cuttings, yellow water in drill cuttings).

ATTACHMENT 1. SOIL BORING LOG FORM

integral consulting inc.

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Portland, OR 97204
(503) 284-5545

STATION NUMBER ____________
PROJECT ____________
LOCATION ____________
PROJECT NUMBER ____________
LOGGED BY ____________

SAMPLE INFORMATION							DESCRIPTION
Sample ID	Depth	Time	Tag No.	% Recov.	Depth (Feet)	STRATA	USCS group name, color, grain size range, minor constituents, plasticity, odor, sheen, moisture content, texture, weathering, cementation, geologic interpretation, etc.
					2--		
					4--		
					6--		
					8--		
					10--		
					12--		
					14--		

DRILLING CONTRACTOR ____________
DRILLING METHOD ____________
SAMPLING EQUIPMENT ____________
DRILLING STARTED ____________
COORDINATES ____________
SURFACE ELEVATION ____________
DATUM ____________

Location Sketch

ATTACHMENT 2. ASTM D 2488 – 00, STANDARD PRACTICE FOR DESCRIPTION AND IDENTIFICATION OF SOILS (VISUAL-MANUAL PROCEDURE)

Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)[1]

This standard is issued under the fixed designation D 2488; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope *

1.1 This practice covers procedures for the description of soils for engineering purposes.

1.2 This practice also describes a procedure for identifying soils, at the option of the user, based on the classification system described in Test Method D 2487. The identification is based on visual examination and manual tests. It must be clearly stated in reporting an identification that it is based on visual-manual procedures.

1.2.1 When precise classification of soils for engineering purposes is required, the procedures prescribed in Test Method D 2487 shall be used.

1.2.2 In this practice, the identification portion assigning a group symbol and name is limited to soil particles smaller than 3 in. (75 mm).

1.2.3 The identification portion of this practice is limited to naturally occurring soils (disturbed and undisturbed).

NOTE 1—This practice may be used as a descriptive system applied to such materials as shale, claystone, shells, crushed rock, etc. (see Appendix X2).

1.3 The descriptive information in this practice may be used with other soil classification systems or for materials other than naturally occurring soils.

1.4 The values stated in inch-pound units are to be regarded as the standard.

1.5 *This standard does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.* For specific precautionary statements see Section 8.

1.6 *This practice offers a set of instructions for performing one or more specific operations. This document cannot replace education or experience and should be used in conjunction with professional judgment. Not all aspects of this practice may be applicable in all circumstances. This ASTM standard is not intended to represent or replace the standard of care by which the adequacy of a given professional service must be judged, nor should this document be applied without consideration of a project's many unique aspects. The word "Standard" in the title of this document means only that the document has been approved through the ASTM consensus process.*

2. Referenced Documents

2.1 *ASTM Standards:*

D 653 Terminology Relating to Soil, Rock, and Contained Fluids[2]

D 1452 Practice for Soil Investigation and Sampling by Auger Borings[2]

D 1586 Test Method for Penetration Test and Split-Barrel Sampling of Soils[2]

D 1587 Practice for Thin-Walled Tube Sampling of Soils[2]

D 2113 Practice for Diamond Core Drilling for Site Investigation[2]

D 2487 Classification of Soils for Engineering Purposes (Unified Soil Classification System)[2]

D 3740 Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and rock as Used in Engineering Design and Construction[3]

D 4083 Practice for Description of Frozen Soils (Visual-Manual Procedure)[2]

3. Terminology

3.1 *Definitions*—Except as listed below, all definitions are in accordance with Terminology D 653.

NOTE 2—For particles retained on a 3-in. (75-mm) US standard sieve, the following definitions are suggested:
Cobbles—particles of rock that will pass a 12-in. (300-mm) square opening and be retained on a 3-in. (75-mm) sieve, and
Boulders—particles of rock that will not pass a 12-in. (300-mm) square opening.

3.1.1 *clay*—soil passing a No. 200 (75-μm) sieve that can be made to exhibit plasticity (putty-like properties) within a range of water contents, and that exhibits considerable strength when air-dry. For classification, a clay is a fine-grained soil, or the

[1] This practice is under the jurisdiction of ASTM Committee D-18 on Soil and Rock and is the direct responsibility of Subcommittee D18.07 on Identification and Classification of Soils.

Current edition approved Feb. 10, 2000. Published May 2000. Originally published as D 2488 – 66 T. Last previous edition D 2488 – 93$^{\epsilon 1}$.

[2] *Annual Book of ASTM Standards*, Vol 04.08.

[3] *Annual Book of ASTM Standards*, Vol 04.09.

***A Summary of Changes section appears at the end of this standard.**

fine-grained portion of a soil, with a plasticity index equal to or greater than 4, and the plot of plasticity index versus liquid limit falls on or above the "A" line (see Fig. 3 of Test Method D 2487).

3.1.2 *gravel*—particles of rock that will pass a 3-in. (75-mm) sieve and be retained on a No. 4 (4.75-mm) sieve with the following subdivisions:

coarse—passes a 3-in. (75-mm) sieve and is retained on a ¾-in. (19-mm) sieve.

fine—passes a ¾-in. (19-mm) sieve and is retained on a No. 4 (4.75-mm) sieve.

3.1.3 *organic clay*—a clay with sufficient organic content to influence the soil properties. For classification, an organic clay is a soil that would be classified as a clay, except that its liquid limit value after oven drying is less than 75 % of its liquid limit value before oven drying.

3.1.4 *organic silt*—a silt with sufficient organic content to influence the soil properties. For classification, an organic silt is a soil that would be classified as a silt except that its liquid limit value after oven drying is less than 75 % of its liquid limit value before oven drying.

3.1.5 *peat*—a soil composed primarily of vegetable tissue in various stages of decomposition usually with an organic odor, a dark brown to black color, a spongy consistency, and a texture ranging from fibrous to amorphous.

3.1.6 *sand*—particles of rock that will pass a No. 4 (4.75-mm) sieve and be retained on a No. 200 (75-µm) sieve with the following subdivisions:

coarse—passes a No. 4 (4.75-mm) sieve and is retained on a No. 10 (2.00-mm) sieve.

medium—passes a No. 10 (2.00-mm) sieve and is retained on a No. 40 (425-µm) sieve.

fine—passes a No. 40 (425-µm) sieve and is retained on a No. 200 (75-µm) sieve.

3.1.7 *silt*—soil passing a No. 200 (75-µm) sieve that is nonplastic or very slightly plastic and that exhibits little or no strength when air dry. For classification, a silt is a fine-grained soil, or the fine-grained portion of a soil, with a plasticity index less than 4, or the plot of plasticity index versus liquid limit falls below the "A" line (see Fig. 3 of Test Method D 2487).

4. Summary of Practice

4.1 Using visual examination and simple manual tests, this practice gives standardized criteria and procedures for describing and identifying soils.

4.2 The soil can be given an identification by assigning a group symbol(s) and name. The flow charts, Fig. 1a and Fig. 1b for fine-grained soils, and Fig. 2, for coarse-grained soils, can be used to assign the appropriate group symbol(s) and name. If the soil has properties which do not distinctly place it into a specific group, borderline symbols may be used, see Appendix X3.

NOTE 3—It is suggested that a distinction be made between *dual symbols* and *borderline symbols.*

Dual Symbol—A dual symbol is two symbols separated by a hyphen, for example, GP-GM, SW-SC, CL-ML used to indicate that the soil has been identified as having the properties of a classification in accordance with Test Method D 2487 where two symbols are required. Two symbols are required when the soil has between 5 and 12 % fines or when the liquid limit and plasticity index values plot in the CL-ML area of the plasticity chart.

Borderline Symbol—A borderline symbol is two symbols separated by a slash, for example, CL/CH, GM/SM, CL/ML. A borderline symbol should be used to indicate that the soil has been identified as having properties that do not distinctly place the soil into a specific group (see Appendix X3).

5. Significance and Use

5.1 The descriptive information required in this practice can be used to describe a soil to aid in the evaluation of its significant properties for engineering use.

5.2 The descriptive information required in this practice should be used to supplement the classification of a soil as determined by Test Method D 2487.

5.3 This practice may be used in identifying soils using the classification group symbols and names as prescribed in Test Method D 2487. Since the names and symbols used in this practice to identify the soils are the same as those used in Test Method D 2487, it shall be clearly stated in reports and all other appropriate documents, that the classification symbol and name are based on visual-manual procedures.

5.4 This practice is to be used not only for identification of soils in the field, but also in the office, laboratory, or wherever soil samples are inspected and described.

5.5 This practice has particular value in grouping similar soil samples so that only a minimum number of laboratory tests need be run for positive soil classification.

NOTE 4—The ability to describe and identify soils correctly is learned more readily under the guidance of experienced personnel, but it may also be acquired systematically by comparing numerical laboratory test results for typical soils of each type with their visual and manual characteristics.

5.6 When describing and identifying soil samples from a given boring, test pit, or group of borings or pits, it is not necessary to follow all of the procedures in this practice for every sample. Soils which appear to be similar can be grouped together; one sample completely described and identified with the others referred to as similar based on performing only a few of the descriptive and identification procedures described in this practice.

5.7 This practice may be used in combination with Practice D 4083 when working with frozen soils.

NOTE 5—Notwithstanding the statements on precision and bias contained in this standard: The precision of this test method is dependent on the competence of the personnel performing it and the suitability of the equipment and facilities used. Agencies that meet the criteria of Practice D 3740 are generally considered capable of competent and objective testing. Users of this test method are cautioned that compliance with Practice D 3740 does not in itself assure reliable testing. Reliable testing depends on several factors; Practice D 3740 provides a means for evaluating some of those factors.

6. Apparatus

6.1 *Required Apparatus*:

6.1.1 *Pocket Knife or Small Spatula*.

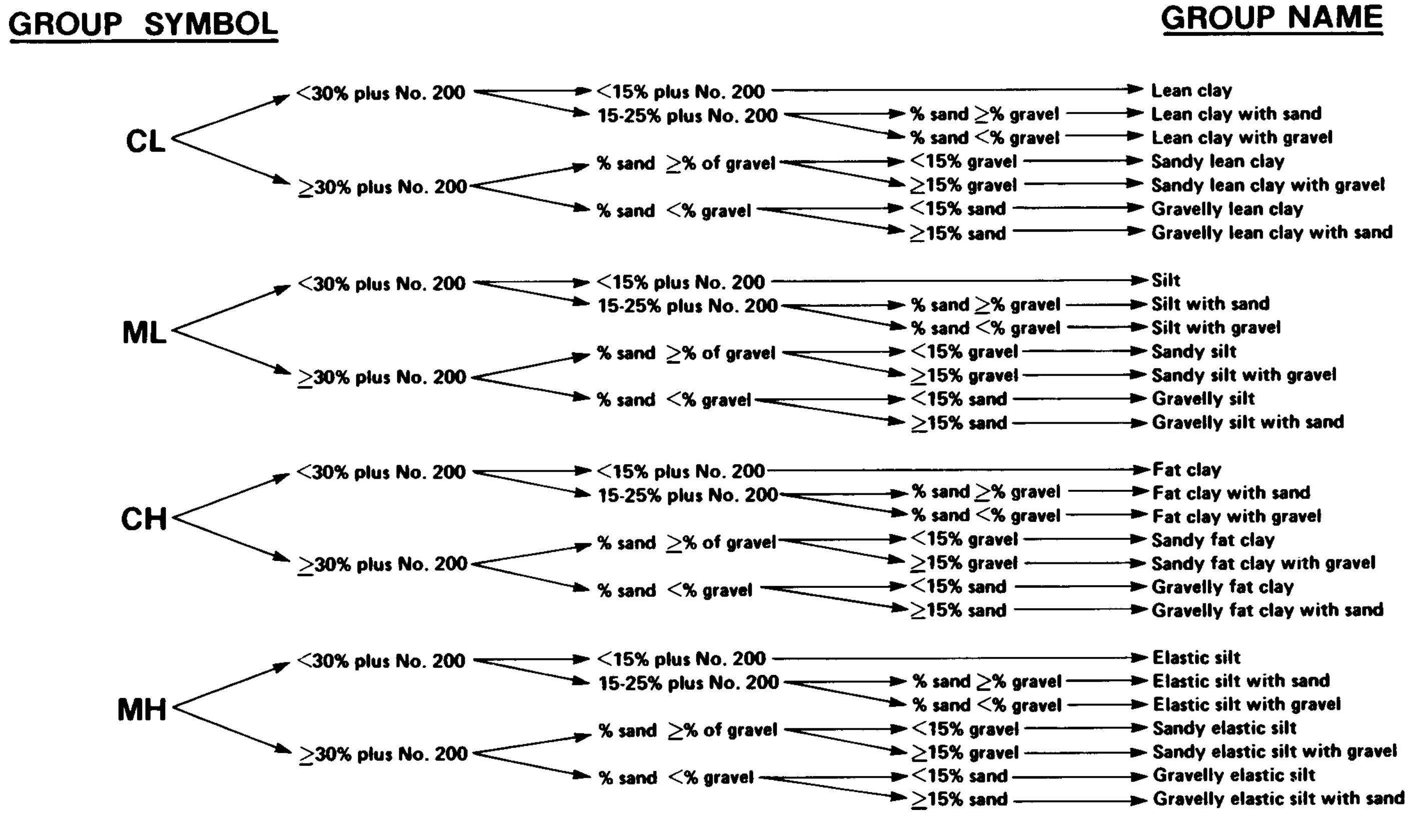
6.2 *Useful Auxiliary Apparatus*:

6.2.1 *Small Test Tube and Stopper* (or jar with a lid).

6.2.2 *Small Hand Lens*.

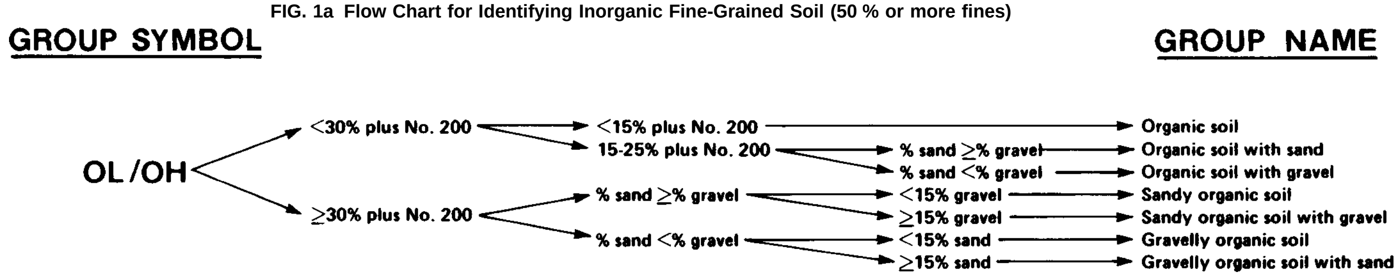
7. Reagents

7.1 *Purity of Water*—Unless otherwise indicated, references



NOTE 1—Percentages are based on estimating amounts of fines, sand, and gravel to the nearest 5 %.

FIG. 1a Flow Chart for Identifying Inorganic Fine-Grained Soil (50 % or more fines)



NOTE 1—Percentages are based on estimating amounts of fines, sand, and gravel to the nearest 5 %.

FIG. 1 b Flow Chart for Identifying Organic Fine-Grained Soil (50 % or more fines)

to water shall be understood to mean water from a city water supply or natural source, including non-potable water.

7.2 *Hydrochloric Acid*—A small bottle of dilute hydrochloric acid, HCl, one part HCl (10 *N*) to three parts water (This reagent is optional for use with this practice). See Section 8.

8. Safety Precautions

8.1 When preparing the dilute HCl solution of one part concentrated hydrochloric acid (10 *N*) to three parts of distilled water, slowly add acid into water following necessary safety precautions. Handle with caution and store safely. If solution comes into contact with the skin, rinse thoroughly with water.

8.2 **Caution**—Do not add water to acid.

9. Sampling

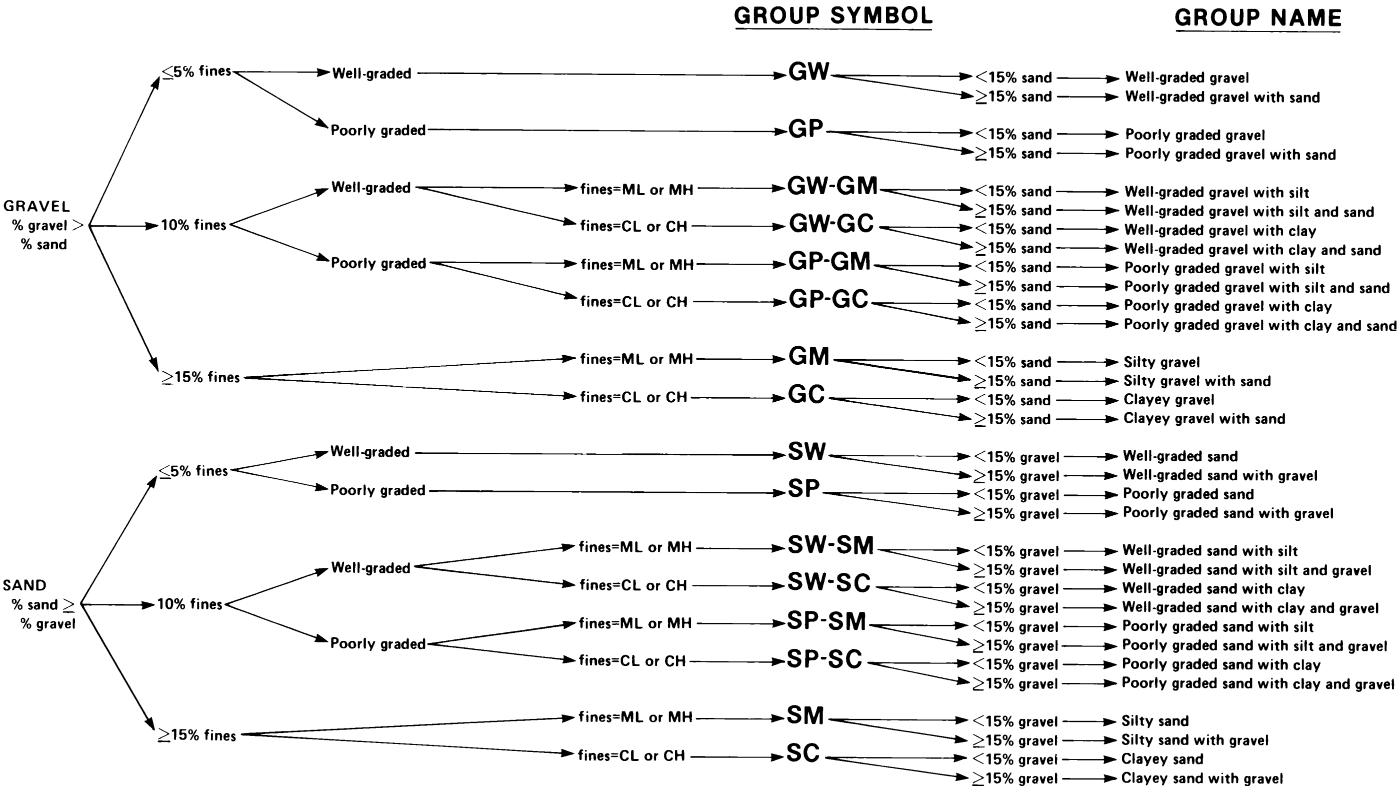
9.1 The sample shall be considered to be representative of the stratum from which it was obtained by an appropriate, accepted, or standard procedure.

NOTE 6—Preferably, the sampling procedure should be identified as having been conducted in accordance with Practices D 1452, D 1587, or D 2113, or Test Method D 1586.

9.2 The sample shall be carefully identified as to origin.

NOTE 7—Remarks as to the origin may take the form of a boring number and sample number in conjunction with a job number, a geologic stratum, a pedologic horizon or a location description with respect to a permanent monument, a grid system or a station number and offset with respect to a stated centerline and a depth or elevation.

9.3 For accurate description and identification, the minimum amount of the specimen to be examined shall be in accordance with the following schedule:



NOTE 1—Percentages are based on estimating amounts of fines, sand, and gravel to the nearest 5 %.

FIG. 2 Flow Chart for Identifying Coarse-Grained Soils (less than 50 % fines)

Maximum Particle Size, Sieve Opening	Minimum Specimen Size, Dry Weight
4.75 mm (No. 4)	100 g (0.25 lb)
9.5 mm (3⁄8 in.)	200 g (0.5 lb)
19.0 mm (3⁄4 in.)	1.0 kg (2.2 lb)
38.1 mm (1½ in.)	8.0 kg (18 lb)
75.0 mm (3 in.)	60.0 kg (132 lb)

NOTE 8—If random isolated particles are encountered that are significantly larger than the particles in the soil matrix, the soil matrix can be accurately described and identified in accordance with the preceeding schedule.

9.4 If the field sample or specimen being examined is smaller than the minimum recommended amount, the report shall include an appropriate remark.

10. Descriptive Information for Soils

10.1 *Angularity*—Describe the angularity of the sand (coarse sizes only), gravel, cobbles, and boulders, as angular, subangular, subrounded, or rounded in accordance with the criteria in Table 1 and Fig. 3. A range of angularity may be stated, such as: subrounded to rounded.

10.2 *Shape*—Describe the shape of the gravel, cobbles, and boulders as flat, elongated, or flat and elongated if they meet the criteria in Table 2 and Fig. 4. Otherwise, do not mention the shape. Indicate the fraction of the particles that have the shape, such as: one-third of the gravel particles are flat.

10.3 *Color*—Describe the color. Color is an important property in identifying organic soils, and within a given locality it may also be useful in identifying materials of similar geologic origin. If the sample contains layers or patches of varying colors, this shall be noted and all representative colors shall be described. The color shall be described for moist samples. If the color represents a dry condition, this shall be stated in the report.

10.4 *Odor*—Describe the odor if organic or unusual. Soils containing a significant amount of organic material usually have a distinctive odor of decaying vegetation. This is especially apparent in fresh samples, but if the samples are dried, the odor may often be revived by heating a moistened sample. If the odor is unusual (petroleum product, chemical, and the like), it shall be described.

10.5 *Moisture Condition*—Describe the moisture condition as dry, moist, or wet, in accordance with the criteria in Table 3.

10.6 *HCl Reaction*—Describe the reaction with HCl as none, weak, or strong, in accordance with the critera in Table 4. Since calcium carbonate is a common cementing agent, a report of its presence on the basis of the reaction with dilute hydrochloric acid is important.

10.7 *Consistency*—For intact fine-grained soil, describe the

TABLE 1 Criteria for Describing Angularity of Coarse-Grained Particles (see Fig. 3)

Description	Criteria
Angular	Particles have sharp edges and relatively plane sides with unpolished surfaces
Subangular	Particles are similar to angular description but have rounded edges
Subrounded	Particles have nearly plane sides but have well-rounded corners and edges
Rounded	Particles have smoothly curved sides and no edges

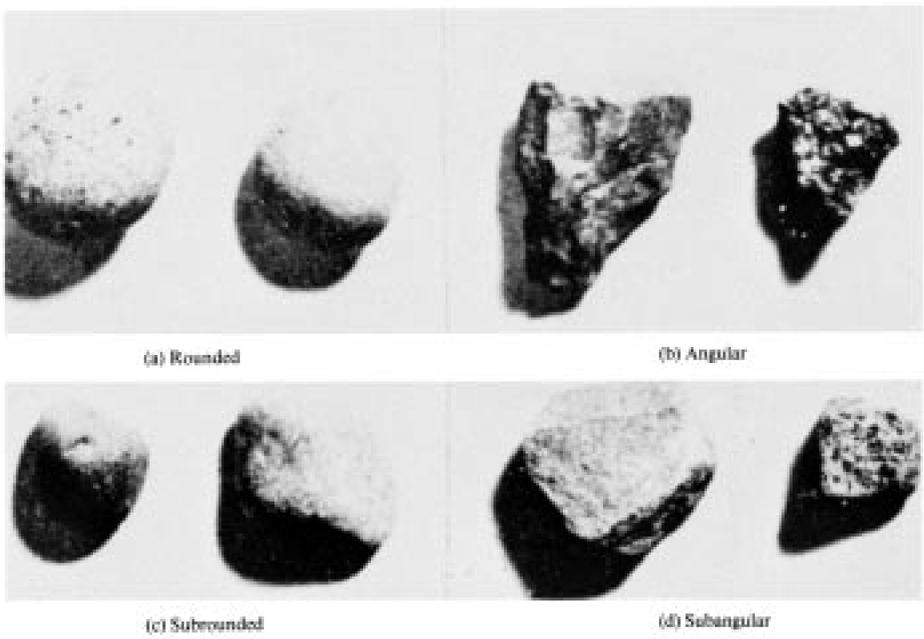


FIG. 3 Typical Angularity of Bulky Grains

TABLE 2 Criteria for Describing Particle Shape (see Fig. 4)

The particle shape shall be described as follows where length, width, and thickness refer to the greatest, intermediate, and least dimensions of a particle, respectively.

Flat	Particles with width/thickness > 3
Elongated	Particles with length/width > 3
Flat and elongated	Particles meet criteria for both flat and elongated

consistency as very soft, soft, firm, hard, or very hard, in accordance with the criteria in Table 5. This observation is inappropriate for soils with significant amounts of gravel.

10.8 *Cementation*—Describe the cementation of intact coarse-grained soils as weak, moderate, or strong, in accordance with the criteria in Table 6.

10.9 *Structure*—Describe the structure of intact soils in accordance with the criteria in Table 7.

10.10 *Range of Particle Sizes*—For gravel and sand components, describe the range of particle sizes within each component as defined in 3.1.2 and 3.1.6. For example, about 20 % fine to coarse gravel, about 40 % fine to coarse sand.

10.11 *Maximum Particle Size*—Describe the maximum particle size found in the sample in accordance with the following information:

10.11.1 *Sand Size*—If the maximum particle size is a sand size, describe as fine, medium, or coarse as defined in 3.1.6. For example: maximum particle size, medium sand.

10.11.2 *Gravel Size*—If the maximum particle size is a gravel size, describe the maximum particle size as the smallest sieve opening that the particle will pass. For example, maximum particle size, 1½ in. (will pass a 1½-in. square opening but not a ¾-in. square opening).

10.11.3 *Cobble or Boulder Size*—If the maximum particle size is a cobble or boulder size, describe the maximum dimension of the largest particle. For example: maximum dimension, 18 in. (450 mm).

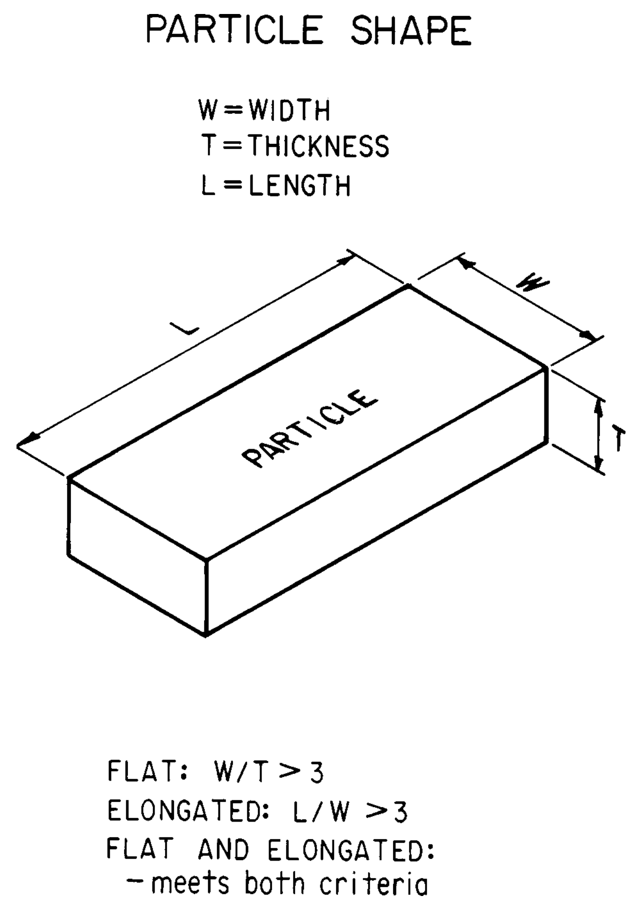


FIG. 4 Criteria for Particle Shape

10.12 *Hardness*—Describe the hardness of coarse sand and larger particles as hard, or state what happens when the

TABLE 3 Criteria for Describing Moisture Condition

Description	Criteria
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, usually soil is below water table

TABLE 4 Criteria for Describing the Reaction With HCl

Description	Criteria
None	No visible reaction
Weak	Some reaction, with bubbles forming slowly
Strong	Violent reaction, with bubbles forming immediately

TABLE 5 Criteria for Describing Consistency

Description	Criteria
Very soft	Thumb will penetrate soil more than 1 in. (25 mm)
Soft	Thumb will penetrate soil about 1 in. (25 mm)
Firm	Thumb will indent soil about ¼in. (6 mm)
Hard	Thumb will not indent soil but readily indented with thumbnail
Very hard	Thumbnail will not indent soil

TABLE 6 Criteria for Describing Cementation

Description	Criteria
Weak	Crumbles or breaks with handling or little finger pressure
Moderate	Crumbles or breaks with considerable finger pressure
Strong	Will not crumble or break with finger pressure

TABLE 7 Criteria for Describing Structure

Description	Criteria
Stratified	Alternating layers of varying material or color with layers at least 6 mm thick; note thickness
Laminated	Alternating layers of varying material or color with the layers less than 6 mm thick; note thickness
Fissured	Breaks along definite planes of fracture with little resistance to fracturing
Slickensided	Fracture planes appear polished or glossy, sometimes striated
Blocky	Cohesive soil that can be broken down into small angular lumps which resist further breakdown
Lensed	Inclusion of small pockets of different soils, such as small lenses of sand scattered through a mass of clay; note thickness
Homogeneous	Same color and appearance throughout

particles are hit by a hammer, for example, gravel-size particles fracture with considerable hammer blow, some gravel-size particles crumble with hammer blow. "Hard" means particles do not crack, fracture, or crumble under a hammer blow.

10.13 Additional comments shall be noted, such as the presence of roots or root holes, difficulty in drilling or augering hole, caving of trench or hole, or the presence of mica.

10.14 A local or commercial name or a geologic interpretation of the soil, or both, may be added if identified as such.

10.15 A classification or identification of the soil in accordance with other classification systems may be added if identified as such.

11. Identification of Peat

11.1 A sample composed primarily of vegetable tissue in various stages of decomposition that has a fibrous to amorphous texture, usually a dark brown to black color, and an organic odor, shall be designated as a highly organic soil and shall be identified as peat, PT, and not subjected to the identification procedures described hereafter.

12. Preparation for Identification

12.1 The soil identification portion of this practice is based on the portion of the soil sample that will pass a 3-in. (75-mm) sieve. The larger than 3-in. (75-mm) particles must be removed, manually, for a loose sample, or mentally, for an intact sample before classifying the soil.

12.2 Estimate and note the percentage of cobbles and the percentage of boulders. Performed visually, these estimates will be on the basis of volume percentage.

NOTE 9—Since the percentages of the particle-size distribution in Test Method D 2487 are by dry weight, and the estimates of percentages for gravel, sand, and fines in this practice are by dry weight, it is recommended that the report state that the percentages of cobbles and boulders are by volume.

12.3 Of the fraction of the soil smaller than 3 in. (75 mm), estimate and note the percentage, by dry weight, of the gravel, sand, and fines (see Appendix X4 for suggested procedures).

NOTE 10—Since the particle-size components appear visually on the basis of volume, considerable experience is required to estimate the percentages on the basis of dry weight. Frequent comparisons with laboratory particle-size analyses should be made.

12.3.1 The percentages shall be estimated to the closest 5 %. The percentages of gravel, sand, and fines must add up to 100 %.

12.3.2 If one of the components is present but not in sufficient quantity to be considered 5 % of the smaller than 3-in. (75-mm) portion, indicate its presence by the term *trace*, for example, trace of fines. A trace is not to be considered in the total of 100 % for the components.

13. Preliminary Identification

13.1 The soil is *fine grained* if it contains 50 % or more fines. Follow the procedures for identifying fine-grained soils of Section 14.

13.2 The soil is *coarse grained* if it contains less than 50 % fines. Follow the procedures for identifying coarse-grained soils of Section 15.

14. Procedure for Identifying Fine-Grained Soils

14.1 Select a representative sample of the material for examination. Remove particles larger than the No. 40 sieve (medium sand and larger) until a specimen equivalent to about a handful of material is available. Use this specimen for performing the dry strength, dilatancy, and toughness tests.

14.2 *Dry Strength*:

14.2.1 From the specimen, select enough material to mold into a ball about 1 in. (25 mm) in diameter. Mold the material until it has the consistency of putty, adding water if necessary.

14.2.2 From the molded material, make at least three test specimens. A test specimen shall be a ball of material about ½ in. (12 mm) in diameter. Allow the test specimens to dry in air, or sun, or by artificial means, as long as the temperature does not exceed 60°C.

14.2.3 If the test specimen contains natural dry lumps, those that are about ½ in. (12 mm) in diameter may be used in place of the molded balls.

NOTE 11—The process of molding and drying usually produces higher strengths than are found in natural dry lumps of soil.

14.2.4 Test the strength of the dry balls or lumps by crushing between the fingers. Note the strength as none, low, medium, high, or very high in accorance with the criteria in Table 8. If natural dry lumps are used, do not use the results of any of the lumps that are found to contain particles of coarse sand.

14.2.5 The presence of high-strength water-soluble cementing materials, such as calcium carbonate, may cause exceptionally high dry strengths. The presence of calcium carbonate can usually be detected from the intensity of the reaction with dilute hydrochloric acid (see 10.6).

14.3 *Dilatancy*:

14.3.1 From the specimen, select enough material to mold into a ball about ½ in. (12 mm) in diameter. Mold the material, adding water if necessary, until it has a soft, but not sticky, consistency.

14.3.2 Smooth the soil ball in the palm of one hand with the blade of a knife or small spatula. Shake horizontally, striking the side of the hand vigorously against the other hand several times. Note the reaction of water appearing on the surface of the soil. Squeeze the sample by closing the hand or pinching the soil between the fingers, and note the reaction as none, slow, or rapid in accordance with the criteria in Table 9. The reaction is the speed with which water appears while shaking, and disappears while squeezing.

14.4 *Toughness*:

14.4.1 Following the completion of the dilatancy test, the test specimen is shaped into an elongated pat and rolled by hand on a smooth surface or between the palms into a thread about ⅛ in. (3 mm) in diameter. (If the sample is too wet to roll easily, it should be spread into a thin layer and allowed to lose some water by evaporation.) Fold the sample threads and reroll repeatedly until the thread crumbles at a diameter of about ⅛ in. The thread will crumble at a diameter of ⅛ in. when the soil is near the plastic limit. Note the pressure required to roll the thread near the plastic limit. Also, note the strength of the thread. After the thread crumbles, the pieces should be lumped together and kneaded until the lump crumbles. Note the toughness of the material during kneading.

14.4.2 Describe the toughness of the thread and lump as low, medium, or high in accordance with the criteria in Table 10.

TABLE 8 Criteria for Describing Dry Strength

Description	Criteria
None	The dry specimen crumbles into powder with mere pressure of handling
Low	The dry specimen crumbles into powder with some finger pressure
Medium	The dry specimen breaks into pieces or crumbles with considerable finger pressure
High	The dry specimen cannot be broken with finger pressure. Specimen will break into pieces between thumb and a hard surface
Very high	The dry specimen cannot be broken between the thumb and a hard surface

TABLE 9 Criteria for Describing Dilatancy

Description	Criteria
None	No visible change in the specimen
Slow	Water appears slowly on the surface of the specimen during shaking and does not disappear or disappears slowly upon squeezing
Rapid	Water appears quickly on the surface of the specimen during shaking and disappears quickly upon squeezing

14.5 *Plasticity*—On the basis of observations made during the toughness test, describe the plasticity of the material in accordance with the criteria given in Table 11.

14.6 Decide whether the soil is an *inorganic* or an *organic* fine-grained soil (see 14.8). If inorganic, follow the steps given in 14.7.

14.7 *Identification of Inorganic Fine-Grained Soils*:

14.7.1 Identify the soil as a *lean clay*, CL, if the soil has medium to high dry strength, no or slow dilatancy, and medium toughness and plasticity (see Table 12).

14.7.2 Identify the soil as a *fat clay*, CH, if the soil has high to very high dry strength, no dilatancy, and high toughness and plasticity (see Table 12).

14.7.3 Identify the soil as a *silt*, ML, if the soil has no to low dry strength, slow to rapid dilatancy, and low toughness and plasticity, or is nonplastic (see Table 12).

14.7.4 Identify the soil as an *elastic silt*, MH, if the soil has low to medium dry strength, no to slow dilatancy, and low to medium toughness and plasticity (see Table 12).

NOTE 12—These properties are similar to those for a lean clay. However, the silt will dry quickly on the hand and have a smooth, silky feel when dry. Some soils that would classify as MH in accordance with the criteria in Test Method D 2487 are visually difficult to distinguish from lean clays, CL. It may be necessary to perform laboratory testing for proper identification.

14.8 *Identification of Organic Fine-Grained Soils*:

14.8.1 Identify the soil as an *organic soil*, OL/OH, if the soil contains enough organic particles to influence the soil properties. Organic soils usually have a dark brown to black color and may have an organic odor. Often, organic soils will change color, for example, black to brown, when exposed to the air. Some organic soils will lighten in color significantly when air dried. Organic soils normally will not have a high toughness or plasticity. The thread for the toughness test will be spongy.

NOTE 13—In some cases, through practice and experience, it may be possible to further identify the organic soils as organic silts or organic clays, OL or OH. Correlations between the dilatancy, dry strength, toughness tests, and laboratory tests can be made to identify organic soils in certain deposits of similar materials of known geologic origin.

TABLE 10 Criteria for Describing Toughness

Description	Criteria
Low	Only slight pressure is required to roll the thread near the plastic limit. The thread and the lump are weak and soft
Medium	Medium pressure is required to roll the thread to near the plastic limit. The thread and the lump have medium stiffness
High	Considerable pressure is required to roll the thread to near the plastic limit. The thread and the lump have very high stiffness

TABLE 11 Criteria for Describing Plasticity

Description	Criteria
Nonplastic	A ⅛-in. (3-mm) thread cannot be rolled at any water content
Low	The thread can barely be rolled and the lump cannot be formed when drier than the plastic limit
Medium	The thread is easy to roll and not much time is required to reach the plastic limit. The thread cannot be rerolled after reaching the plastic limit. The lump crumbles when drier than the plastic limit
High	It takes considerable time rolling and kneading to reach the plastic limit. The thread can be rerolled several times after reaching the plastic limit. The lump can be formed without crumbling when drier than the plastic limit

TABLE 12 Identification of Inorganic Fine-Grained Soils from Manual Tests

Soil Symbol	Dry Strength	Dilatancy	Toughness
ML	None to low	Slow to rapid	Low or thread cannot be formed
CL	Medium to high	None to slow	Medium
MH	Low to medium	None to slow	Low to medium
CH	High to very high	None	High

14.9 If the soil is estimated to have 15 to 25 % sand or gravel, or both, the words "with sand" or "with gravel" (whichever is more predominant) shall be added to the group name. For example: "lean clay with sand, CL" or "silt with gravel, ML" (see Fig. 1a and Fig. 1b). If the percentage of sand is equal to the percentage of gravel, use "with sand."

14.10 If the soil is estimated to have 30 % or more sand or gravel, or both, the words "sandy" or "gravelly" shall be added to the group name. Add the word "sandy" if there appears to be more sand than gravel. Add the word "gravelly" if there appears to be more gravel than sand. For example: "sandy lean clay, CL", "gravelly fat clay, CH", or "sandy silt, ML" (see Fig. 1a and Fig. 1b). If the percentage of sand is equal to the percent of gravel, use "sandy."

15. Procedure for Identifying Coarse-Grained Soils (Contains less than 50 % fines)

15.1 The soil is a *gravel* if the percentage of gravel is estimated to be more than the percentage of sand.

15.2 The soil is a *sand* if the percentage of gravel is estimated to be equal to or less than the percentage of sand.

15.3 The soil is a *clean gravel* or *clean sand* if the percentage of fines is estimated to be 5 % or less.

15.3.1 Identify the soil as a *well-graded gravel*, GW, or as a *well-graded sand*, SW, if it has a wide range of particle sizes and substantial amounts of the intermediate particle sizes.

15.3.2 Identify the soil as a *poorly graded gravel*, GP, or as a *poorly graded sand*, SP, if it consists predominantly of one size (uniformly graded), or it has a wide range of sizes with some intermediate sizes obviously missing (gap or skip graded).

15.4 The soil is either a *gravel with fines* or a *sand with fines* if the percentage of fines is estimated to be 15 % or more.

15.4.1 Identify the soil as a *clayey gravel*, GC, or a *clayey sand*, SC, if the fines are clayey as determined by the procedures in Section 14.

15.4.2 Identify the soil as a *silty gravel*, GM, or a *silty sand*, SM, if the fines are silty as determined by the procedures in Section 14.

15.5 If the soil is estimated to contain 10 % fines, give the soil a dual identification using two group symbols.

15.5.1 The first group symbol shall correspond to a clean gravel or sand (GW, GP, SW, SP) and the second symbol shall correspond to a gravel or sand with fines (GC, GM, SC, SM).

15.5.2 The group name shall correspond to the first group symbol plus the words "with clay" or "with silt" to indicate the plasticity characteristics of the fines. For example: "well-graded gravel with clay, GW-GC" or "poorly graded sand with silt, SP-SM" (see Fig. 2).

15.6 If the specimen is predominantly sand or gravel but contains an estimated 15 % or more of the other coarse-grained constituent, the words "with gravel" or "with sand" shall be added to the group name. For example: "poorly graded gravel with sand, GP" or "clayey sand with gravel, SC" (see Fig. 2).

15.7 If the field sample contains any cobbles or boulders, or both, the words "with cobbles" or "with cobbles and boulders" shall be added to the group name. For example: "silty gravel with cobbles, GM."

16. Report

16.1 The report shall include the information as to origin, and the items indicated in Table 13.

NOTE 14—*Example: Clayey Gravel with Sand and Cobbles, GC*—About 50 % fine to coarse, subrounded to subangular gravel; about 30 % fine to coarse, subrounded sand; about 20 % fines with medium plasticity, high dry strength, no dilatancy, medium toughness; weak reaction with HCl; original field sample had about 5 % (by volume) subrounded cobbles, maximum dimension, 150 mm.

In-Place Conditions—Firm, homogeneous, dry, brown

Geologic Interpretation—Alluvial fan

TABLE 13 Checklist for Description of Soils

1. Group name
2. Group symbol
3. Percent of cobbles or boulders, or both (by volume)
4. Percent of gravel, sand, or fines, or all three (by dry weight)
5. Particle-size range:
   Gravel—fine, coarse
   Sand—fine, medium, coarse
6. Particle angularity: angular, subangular, subrounded, rounded
7. Particle shape: (if appropriate) flat, elongated, flat and elongated
8. Maximum particle size or dimension
9. Hardness of coarse sand and larger particles
10. Plasticity of fines: nonplastic, low, medium, high
11. Dry strength: none, low, medium, high, very high
12. Dilatancy: none, slow, rapid
13. Toughness: low, medium, high
14. Color (in moist condition)
15. Odor (mention only if organic or unusual)
16. Moisture: dry, moist, wet
17. Reaction with HCl: none, weak, strong

For intact samples:

18. Consistency (fine-grained soils only): very soft, soft, firm, hard, very hard
19. Structure: stratified, laminated, fissured, slickensided, lensed, homogeneous
20. Cementation: weak, moderate, strong
21. Local name
22. Geologic interpretation
23. Additional comments: presence of roots or root holes, presence of mica, gypsum, etc., surface coatings on coarse-grained particles, caving or sloughing of auger hole or trench sides, difficulty in augering or excavating, etc.

NOTE 15—Other examples of soil descriptions and identification are given in Appendix X1 and Appendix X2.

NOTE 16—If desired, the percentages of gravel, sand, and fines may be stated in terms indicating a range of percentages, as follows:

Trace—Particles are present but estimated to be less than 5 %

Few—5 to 10 %

Little—15 to 25 %

Some—30 to 45 %

Mostly—50 to 100 %

16.2 If, in the soil description, the soil is identified using a classification group symbol and name as described in Test Method D 2487, it must be distinctly and clearly stated in log forms, summary tables, reports, and the like, that the symbol and name are based on visual-manual procedures.

17. Precision and Bias

17.1 This practice provides qualitative information only, therefore, a precision and bias statement is not applicable.

18. Keywords

18.1 classification; clay; gravel; organic soils; sand; silt; soil classification; soil description; visual classification

APPENDIXES

(Nonmandatory Information)

X1. EXAMPLES OF VISUAL SOIL DESCRIPTIONS

X1.1 The following examples show how the information required in 16.1 can be reported. The information that is included in descriptions should be based on individual circumstances and need.

X1.1.1 *Well-Graded Gravel with Sand (GW)*—About 75 % fine to coarse, hard, subangular gravel; about 25 % fine to coarse, hard, subangular sand; trace of fines; maximum size, 75 mm, brown, dry; no reaction with HCl.

X1.1.2 *Silty Sand with Gravel (SM)*—About 60 % predominantly fine sand; about 25 % silty fines with low plasticity, low dry strength, rapid dilatancy, and low toughness; about 15 % fine, hard, subrounded gravel, a few gravel-size particles fractured with hammer blow; maximum size, 25 mm; no reaction with HCl (Note—Field sample size smaller than recommended).

In-Place Conditions—Firm, stratified and contains lenses of silt 1 to 2 in. (25 to 50 mm) thick, moist, brown to gray; in-place density 106 lb/ft^3; in-place moisture 9 %.

X1.1.3 *Organic Soil (OL/OH)*—About 100 % fines with low plasticity, slow dilatancy, low dry strength, and low toughness; wet, dark brown, organic odor; weak reaction with HCl.

X1.1.4 *Silty Sand with Organic Fines (SM)*—About 75 % fine to coarse, hard, subangular reddish sand; about 25 % organic and silty dark brown nonplastic fines with no dry strength and slow dilatancy; wet; maximum size, coarse sand; weak reaction with HCl.

X1.1.5 *Poorly Graded Gravel with Silt, Sand, Cobbles and Boulders (GP-GM)*—About 75 % fine to coarse, hard, subrounded to subangular gravel; about 15 % fine, hard, subrounded to subangular sand; about 10 % silty nonplastic fines; moist, brown; no reaction with HCl; original field sample had about 5 % (by volume) hard, subrounded cobbles and a trace of hard, subrounded boulders, with a maximum dimension of 18 in. (450 mm).

X2. USING THE IDENTIFICATION PROCEDURE AS A DESCRIPTIVE SYSTEM FOR SHALE, CLAYSTONE, SHELLS, SLAG, CRUSHED ROCK, AND THE LIKE

X2.1 The identification procedure may be used as a descriptive system applied to materials that exist in-situ as shale, claystone, sandstone, siltstone, mudstone, etc., but convert to soils after field or laboratory processing (crushing, slaking, and the like).

X2.2 Materials such as shells, crushed rock, slag, and the like, should be identified as such. However, the procedures used in this practice for describing the particle size and plasticity characteristics may be used in the description of the material. If desired, an identification using a group name and symbol according to this practice may be assigned to aid in describing the material.

X2.3 The group symbol(s) and group names should be placed in quotation marks or noted with some type of distinguishing symbol. See examples.

X2.4 Examples of how group names and symbols can be incororated into a descriptive system for materials that are not naturally occurring soils are as follows:

X2.4.1 *Shale Chunks*—Retrieved as 2 to 4-in. (50 to 100-mm) pieces of shale from power auger hole, dry, brown, no reaction with HCl. After slaking in water for 24 h, material identified as "Sandy Lean Clay (CL)"; about 60 % fines with medium plasticity, high dry strength, no dilatancy, and medium toughness; about 35 % fine to medium, hard sand; about 5 % gravel-size pieces of shale.

X2.4.2 *Crushed Sandstone*—Product of commercial crushing operation; "Poorly Graded Sand with Silt (SP-SM)"; about 90 % fine to medium sand; about 10 % nonplastic fines; dry, reddish-brown, strong reaction with HCl.

X2.4.3 *Broken Shells*—About 60 % gravel-size broken shells; about 30 % sand and sand-size shell pieces; about 10 % fines; "Poorly Graded Gravel with Sand (GP)."

X2.4.4 *Crushed Rock*—Processed from gravel and cobbles in Pit No. 7; "Poorly Graded Gravel (GP)"; about 90 % fine, hard, angular gravel-size particles; about 10 % coarse, hard, angular sand-size particles; dry, tan; no reaction with HCl.

X3. SUGGESTED PROCEDURE FOR USING A BORDERLINE SYMBOL FOR SOILS WITH TWO POSSIBLE IDENTIFICATIONS.

X3.1 Since this practice is based on estimates of particle size distribution and plasticity characteristics, it may be difficult to clearly identify the soil as belonging to one category. To indicate that the soil may fall into one of two possible basic groups, a borderline symbol may be used with the two symbols separated by a slash. For example: SC/CL or CL/CH.

X3.1.1 A borderline symbol may be used when the percentage of fines is estimated to be between 45 and 55 %. One symbol should be for a coarse-grained soil with fines and the other for a fine-grained soil. For example: GM/ML or CL/SC.

X3.1.2 A borderline symbol may be used when the percentage of sand and the percentage of gravel are estimated to be about the same. For example: GP/SP, SC/GC, GM/SM. It is practically impossible to have a soil that would have a borderline symbol of GW/SW.

X3.1.3 A borderline symbol may be used when the soil could be either well graded or poorly graded. For example: GW/GP, SW/SP.

X3.1.4 A borderline symbol may be used when the soil could either be a silt or a clay. For example: CL/ML, CH/MH, SC/SM.

X3.1.5 A borderline symbol may be used when a fine-grained soil has properties that indicate that it is at the boundary between a soil of low compressibility and a soil of high compressibility. For example: CL/CH, MH/ML.

X3.2 The order of the borderline symbols should reflect similarity to surrounding or adjacent soils. For example: soils in a borrow area have been identified as CH. One sample is considered to have a borderline symbol of CL and CH. To show similarity, the borderline symbol should be CH/CL.

X3.3 The group name for a soil with a borderline symbol should be the group name for the first symbol, except for:

CL/CH lean to fat clay
ML/CL clayey silt
CL/ML silty clay

X3.4 The use of a borderline symbol should not be used indiscriminately. Every effort shall be made to first place the soil into a single group.

X4. SUGGESTED PROCEDURES FOR ESTIMATING THE PERCENTAGES OF GRAVEL, SAND, AND FINES IN A SOIL SAMPLE

X4.1 *Jar Method*—The relative percentage of coarse- and fine-grained material may be estimated by thoroughly shaking a mixture of soil and water in a test tube or jar, and then allowing the mixture to settle. The coarse particles will fall to the bottom and successively finer particles will be deposited with increasing time; the sand sizes will fall out of suspension in 20 to 30 s. The relative proportions can be estimated from the relative volume of each size separate. This method should be correlated to particle-size laboratory determinations.

X4.2 *Visual Method*—Mentally visualize the gravel size particles placed in a sack (or other container) or sacks. Then, do the same with the sand size particles and the fines. Then, mentally compare the number of sacks to estimate the percentage of plus No. 4 sieve size and minus No. 4 sieve size present. The percentages of sand and fines in the minus sieve size No. 4 material can then be estimated from the wash test (X4.3).

X4.3 *Wash Test (for relative percentages of sand and fines)*—Select and moisten enough minus No. 4 sieve size material to form a 1-in (25-mm) cube of soil. Cut the cube in half, set one-half to the side, and place the other half in a small dish. Wash and decant the fines out of the material in the dish until the wash water is clear and then compare the two samples and estimate the percentage of sand and fines. Remember that the percentage is based on weight, not volume. However, the volume comparison will provide a reasonable indication of grain size percentages.

X4.3.1 While washing, it may be necessary to break down lumps of fines with the finger to get the correct percentages.

X5. ABBREVIATED SOIL CLASSIFICATION SYMBOLS

X5.1 In some cases, because of lack of space, an abbreviated system may be useful to indicate the soil classification symbol and name. Examples of such cases would be graphical logs, databases, tables, etc.

X5.2 This abbreviated system is not a substitute for the full name and descriptive information but can be used in supplementary presentations when the complete description is referenced.

X5.3 The abbreviated system should consist of the soil classification symbol based on this standard with appropriate lower case letter prefixes and suffixes as:

Prefix:	Suffix:
s = sandy	s = with sand
g = gravelly	g = with gravel
	c = with cobbles
	b = with boulders

X5.4 The soil classification symbol is to be enclosed in parenthesis. Some examples would be:

Group Symbol and Full Name	Abbreviated
CL, Sandy lean clay	s(CL)
SP-SM, Poorly graded sand with silt and gravel	(SP-SM)g
GP, poorly graded gravel with sand, cobbles, and boulders	(GP)scb
ML, gravelly silt with sand and cobbles	g(ML)sc

SUMMARY OF CHANGES

In accordance with Committee D18 policy, this section identifies the location of changes to this standard since the last edition ($1993^{\epsilon 1}$) that may impact the use of this standard.

(1) Added Practice D 3740 to Section 2.

(2) Added Note 5 under 5.7 and renumbered subsequent notes.

ATTACHMENT 3. FIELD CLASSIFICATION OF SOILS, BASED ON UNIFIED SOIL CLASSIFICATION SYSTEM AND ASTM STANDARD D-2488

Field Classification of Soils, Based on Unified Soil Classification System and ASTM Standard D-2488

Major Divisions		Symbol and Pattern	General Soil Description
Coarse-Grained Soils (More than 1/2 of soil >No. 200 sieve size)	**Gravels**	GW	Well-graded gravels or gravel-sand mixtures, little to no fines
		GP	Poorly-graded gravels or gravel-sand mixtures, little to no fines
		GM	Silty gravels or gravel-sand-silt mixtures
		GC	Clayey gravels or gravel-sand-clay mixtures
	Sands	SW	Well-graded sands or gravel-sand mixtures, little to no fines
		SP	Poorly-graded sands or gravelly sands, little to no fines
		SM	Silty sands, sand-silt mixtures
		SC	Clayey sands, sand-clay mixtures
Fine-Grained Soils (More than 1/2 of soil <No. 200 sieve size)	**Silts**	ML	Inorganic silts with slight plasticity
		MH	Inorganic elastic silts
		OL	Organic elastic silts
	Clays	CL	Inorganic clays of low to medium plasticity, lean clays
		CH	Inorganic clays of high plasticity, fat clays
		OH	Organic clays of medium to high plasticity
Highly Organic Soils		Pt	Peat, sample composed primarily of vegetable tissue

Soil Classification Notes

Groundwater, First Observed

Groundwater, Static

Sampling Equipment

SS	Split Spoon
ST	Shelby Tube
GS	Geoprobe® Macrocore Sampler

Sheen Types

NS	No Sheen
LS	Light Sheen
MS	Moderate Sheen
HS	Heavy Sheen

Sample Moisture

Dry	No moisture, dry to touch
Moist	Damp, but no free water
Wet	Visible free water

Sample Plasticity (Fine-Grained Soils)

Non-Plastic -	Cannot be rolled at any moisture content.
Low -	Can barely be rolled, lump cannot be formed when drier than plastic limit.
Medium -	Can easily be rolled, lump crumbles when drier than plastic limit.
High -	Can easily be rolled, but takes considerable time to reach the plastic limit. Lump can be formed without crumbling when drier than the plastic limit.

Particle Size Range (Coarse-Grained Soils)

Gravel -	Fine, Coarse
Sand -	Fine, Medium, Coarse

STANDARD OPERATING PROCEDURE (SOP) SL-07

SUBSURFACE SOIL SAMPLING

SCOPE AND APPLICATION

The following procedures are designed to be used to collect subsurface soil samples using a hand auger or direct-push drill rig. *All underground utilities must be located and cleared prior to drilling or excavating.* Soil samples should be collected from areas having lower levels of constituents of interest first, followed by stations with higher expected levels of constituents of interest.

Based on field conditions, the procedures listed below may be modified in the field upon agreement of the field team leader and project management, after appropriate annotations have been made in the project-specific field logbook. If specialized sampling methods (e.g., Encore®) are to be used, refer to the manufacturer's recommended procedures. If methanol preservation is required, refer to Integral SOP SL-08 on methanol preservation of soil samples. Record all pertinent information in the Integral field logbook, subsurface soil field collection form, or boring log (as appropriate).

EQUIPMENT AND SUPPLIES REQUIRED

- Subsurface sampling equipment (e.g., hand auger, direct-push drill rig [e.g., Geoprobe®], stainless-steel spade) (consult project-specific field sampling plan [FSP] for kind of equipment to be used for a specific field event)
- Large stainless steel mixing bowl and spoon
- Laboratory-supplied sample containers, insulated coolers, and ice
- Chain-of-custody forms, custody seals, sample labels
- Resealable plastic bags (e.g., Ziploc®)
- Camera
- Tape measure
- Logging table
- 6-mil visqueen and duct tape for covering the logging table
- Aluminum foil

- 55-gallon drums for decontamination waters and excess soil (separate drums for liquid and solid wastes) if required by the project-specific FSP
- Field logbook, subsurface soil field collection form, and/or soil boring form, and pens
- Project-specific FSP and health and safety plan (HSP)
- Personal protective equipment (PPE) (safety glasses, steel-toed boots, nitrile gloves, and any other items required by the project-specific HSP)
- Photoionization detector (PID), if required by the project-specific FSP or HSP
- Global positioning system (GPS), if required by the project-specific FSP
- Decontamination equipment.

HAND AUGER SAMPLER

The following procedures are designed to be used during the general operation of a hand auger sampler. The procedures listed below may be modified in the field upon agreement of the field team leader and drill operators, based on field conditions, after appropriate annotations have been made in the field logbook.

1. Locate the sample station as directed in the project-specific FSP. Place sample labels on the sample container prior to filling in accordance with Integral's SOP on sample labeling (SOP AP-04).
2. Place plastic sheeting adjacent to the sampling location.
3. Advance the hand auger into subsurface soil.
4. Empty soil from the first interval (as specified in the project-specific FSP) from the hand auger into a decontaminated stainless steel bowl and cover the bowl with aluminum foil. Continue advancing the hand auger until the next appropriate sample interval has been completed.
5. Screen the soil sample for volatile organic compounds (VOCs) using a PID if required by the project-specific FSP.
6. Photograph each interval with depth and location markers visible in the photograph, if applicable.
7. Log the soils in accordance with SOP SL-04 (*Field Classification of Soils*).
8. If VOC samples are required (see project-specific FSP), collect them prior to homogenizing (i.e., mixing) the sample. Collect the VOC sample (with a minimum of disturbance) by placing the sample into the container with no headspace and sealing it tightly. If an Encore® sampling device is specified in the project-specific FSP, follow the sample collection guidelines provided by the manufacturer.

9. (a) If the soil sample is to be a discrete sample (see project-specific FSP), collect soil from the hand auger using a decontaminated stainless-steel spoon and place the sample into a decontaminated stainless-steel bowl. Homogenize the soil to a consistent color and texture.

   (b) If additional sample volume is required to perform the analyses specified in the project-specific FSP, place multiple soil samples collected from nearby locations (it is important to keep the distance between multiple soil borings as close as possible; the maximum distance will be specified in the project-specific FSP) from the same depth interval into a composite sample in a single decontaminated stainless-steel bowl. When a sufficient volume of soil has been obtained, homogenize all of the soil in the bowl to a consistent color and texture using a decontaminated spoon.

10. Discard rocks or other solid material/debris, found in the homogenized soil that are greater than 0.5 in. in diameter after positively identifying them, determining their percentage contribution to the homogenized soil volume, and noting it in the field notebook.

11. Remove samples of the homogenized soil from the compositing bowl and place in the appropriate size sample container. Fill the sample container with soil to just below the container lip, and seal the container tightly.

12. Decontaminate all sampling equipment in accordance with SOP SL-01 and the project-specific FSP.

13. Repeat the process described above for all subsequent sample intervals.

14. Complete the appropriate field books, field data sheets, and quality assurance and quality control (QA/QC) documentation. Record any deviations from the specified sampling procedures or any obstacles encountered.

15. Backfill the borehole with remaining hand auger soil cuttings or place the cuttings in a properly labeled 55-gallon drum, as specified in the project-specific FSP. If soil cuttings are placed in a 55-gallon drum, backfill the borehole with bentonite hole plug pellets and hydrate the pellets with potable water.

16. Mark the sampling location with a wire flag, wooden stake, metal rebar, or flagging, as appropriate. Collect GPS coordinates of the sample location if specified in the project-specific FSP.

DIRECT-PUSH DRILL RIG

The following procedures are designed to be used during the general operation of direct-push drill rig (e.g., Geoprobe®). The procedures listed below may be modified in the field upon agreement of the field team leader and drill operators, based on field conditions, after appropriate annotations have been made in the field logbook. The direct-push drill rig will be operated by a licensed drilling contractor.

The direct-push drilling technique hydraulically pushes tools into the ground to collect soil samples. Direct-push drilling techniques can be used to collect soil samples to depths of 30–100 ft, depending on drilling conditions. In addition to soil sample collection, direct-push techniques can be used to collect soil gas samples, reconnoiter groundwater samples, and install small-diameter monitoring wells.

Soil samples can be collected using two types of Macrocore® samplers, open tip and closed tip. These samplers are typically either 4 ft long by 1.5 in. inside diameter (i.d.) or 5 ft long by 2.5 in. i.d. These samplers have a tubular design and utilize acetate liners to collect the soil samples. The following sections of this SOP describe how to collect soil samples using open-tip and closed-tip Macrocore® samplers.

Open-Tip Sampler

The open-tip sampler is typically used in soils that are cohesive (e.g., stiff silts and clays), where the soil boring is stable and stays open when the sampler and rods are removed from the ground.

1. Ensure all underground utilities are cleared prior to initiating drilling activities.
2. Position the direct-push drill rig over the sample station and remove any surface material that will interfere with sampling. Note in the field logbook any surface material that is removed prior to sampling.
3. Determine the interval to be sampled and install a new clean liner into the open tip Macrocore® sampler.
4. Push the sampler to the bottom of the appropriate sample interval.
5. Retract the rods and Macrocore® sampler.
6. After the Macrocore® sampler has been brought to the surface, remove the liner from the sampler, cap both ends of the liner, and inspect it.
7. After the soil sample is judged to be acceptable, label the sample liner with the station identifier, depth interval, and soil orientation (i.e., arrow pointing toward uppermost soil interval).
8. Place the capped sample liner on a new piece of aluminum foil on the logging table and split the liner open with a hook or utility knife. Process the sample in accordance with the "General Sampling Procedures" listed below.
9. Repeat Steps 2–8 for each subsequent sample interval.

Closed-Tip Sampler

The closed-tip sampler is typically used to collect soil samples that are noncohesive (e.g., sandy materials), where the soil boring is unstable and collapses when the rods and sampler are removed from the ground.

1. Ensure all underground utilities are cleared prior to initiating drilling activities.
2. Position the direct-push drill rig over the sample station and remove any surface material that will interfere with sampling. Note in the field logbook any surface material removed prior to sampling.
3. Determine the interval to be sampled and install a drive point and a new clean liner into the closed-tip Macrocore® sampler.
4. Push the rods and sampler to the top of the appropriate sample interval.
5. Retract the rods to release the drive point.
6. Push the sampler to the bottom of the appropriate sample interval.
7. Retract the rods and Macrocore® sampler.
8. Once the soil sample has been brought to the surface, remove the liner from the sampler, cap both ends of the liner, and inspect it.
9. After the soil sample is judged to be acceptable, label the sample liner with the station identifier, depth interval, and soil orientation (i.e., arrow pointing toward uppermost soil interval).
10. Place the capped sample liner on a new piece of aluminum foil on the logging table and split the liner open with a hook or utility knife. Process the sample in accordance with the "General Sampling Procedures" listed below.
11. Repeat Steps 2–10 for each additional sample interval.

General Sampling Procedures

1. After the liner has been split open, screen the soil sample for VOCs using a PID if required by the project-specific FSP.
2. Log the soils in accordance with SOP SL-04 (*Field Classification of Soils*).
3. Photograph each section of the soil boring with appropriate orientation, depth, and location markers visible in the photograph, if specified in the project-specific FSP.

4. If VOC samples are required (see project-specific FSP), collect them prior to sample removal from the liner. Collect the VOC sample (with a minimum of disturbance) by placing the sample into the container with no headspace and seal it tightly. If an Encore® sampling device is specified in the project-specific FSP, follow the sample collection guidelines provided by the manufacturer.
5. Remove the soil from the liner using a decontaminated stainless-steel spoon and place the soil in a decontaminated compositing bowl and thoroughly mix and homogenize the sample using a decontaminated spoon until the color and texture are consistent throughout.
6. (a) If the soil sample is to be a discrete sample (see project-specific FSP), collect soil from the liner using a decontaminated stainless-steel spoon and place the sample into a decontaminated stainless-steel bowl. Homogenize the soil to a consistent color and texture.

   (b) If additional sample volume is required to perform the analyses specified in the project-specific FSP, place multiple soil samples collected from nearby locations (it is important to keep the distance between multiple soil borings as close as possible; the maximum distance will be specified in the project-specific FSP) from the same depth interval into a composite sample in a single decontaminated stainless-steel bowl. When a sufficient volume of soil has been obtained, homogenize all of the soil in the bowl to a consistent color and texture using a decontaminated spoon.
7. Discard rocks or other solid material/debris found in the homogenized soil that are greater than 0.5 in. in diameter after positively identifying them, determining their percentage contribution to the homogenized soil volume, and noting it in the field notebook.
8. Remove samples of the homogenized soil from the compositing bowl and place in the appropriate size sample container. Fill the sample container with soil to just below the container lip, and seal the container tightly.
9. Repeat the process described above for subsequent sample intervals.
10. Complete the appropriate field books, field data sheets, and QA/QC documentation. Record any deviations from the specified sampling procedures or any obstacles encountered.
11. Backfill the borehole with remaining direct-push sampler cuttings or place the cuttings in a properly labeled 55-gallon drum, as specified in the project-specific FSP. If soil cuttings are placed in a 55-gallon drum, backfill the borehole with bentonite grout (mixed to the manufacturer's specifications) or bentonite hole plug pellets and hydrate the pellets with potable water.

12. Mark the sampling location with a wire flag, wooden stake, metal rebar, or flagging, as appropriate. Collect GPS coordinates of the sample location if specified in the project-specific FSP.
13. Decontaminate all sampling equipment in accordance with SOP SL-01 and the project-specific FSP.

Appendix E

Aerial Photographs and
Sanborn Maps

1 Front Street

1 Front Street

Corning, NY 14830

Inquiry Number: 3804177.5

December 09, 2013

The EDR Aerial Photo Decade Package

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

When delivered electronically by EDR, the aerial photo images included with this report are for ONE TIME USE ONLY. Further reproduction of these aerial photo images is prohibited without permission from EDR. For more information contact your EDR Account Executive.

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

Date EDR Searched Historical Sources:

Aerial Photography December 09, 2013

Target Property:

1 Front Street

Corning, NY 14830

Year	***Scale***	***Details***	***Source***
1942	Aerial Photograph. Scale: 1"=1000'	Panel #: 42077-B1, Corning, NY;/Flight Date: May 11, 1942	EDR
1952	Aerial Photograph. Scale: 1"=500'	Panel #: 42077-B1, Corning, NY;/Flight Date: April 16, 1952	EDR
1960	Aerial Photograph. Scale: 1"=1000'	Panel #: 42077-B1, Corning, NY;/Flight Date: May 04, 1960	EDR
1968	Aerial Photograph. Scale: 1"=500'	Panel #: 42077-B1, Corning, NY;/Flight Date: March 30, 1968	EDR
1995	Aerial Photograph. Scale: 1"=500'	Panel #: 42077-B1, Corning, NY;/DOQQ - acquisition dates: April 16, 1995	EDR
1999	Aerial Photograph. Scale: 1"=500'	Panel #: 42077-B1, Corning, NY;/Flight Date: January 01, 1999	EDR
2006	Aerial Photograph. Scale: 1"=500'	Panel #: 42077-B1, Corning, NY;/Flight Year: 2006	EDR
2008	Aerial Photograph. Scale: 1"=500'	Panel #: 42077-B1, Corning, NY;/Flight Year: 2008	EDR
2009	Aerial Photograph. Scale: 1"=500'	Panel #: 42077-B1, Corning, NY;/Flight Year: 2009	EDR
2011	Aerial Photograph. Scale: 1"=500'	Panel #: 42077-B1, Corning, NY;/Flight Year: 2011	EDR


INQUIRY #: 3804177.5
YEAR: 1942
= 1000'
N

INQUIRY #: 3804177.5

YEAR: 1952

= 500'

N


INQUIRY #: 3804177.5
YEAR: 1960
= 1000'
N

INQUIRY #: 3804177.5

YEAR: 1968

= 500'

N


INQUIRY #: 3804177.5
YEAR: 1995
= 500'
N


INQUIRY #: 3804177.5
YEAR: 1999
= 500'
N

INQUIRY #: 3804177.5

YEAR: 2006

= 500'

N


INQUIRY #: 3804177.5
YEAR: 2008
= 500'
N


INQUIRY #: 3804177.5
YEAR: 2009
= 500'
N


INQUIRY #: 3804177.5
YEAR: 2011
= 500'
N

1 Front Street

1 Front Street

Corning, NY 14830

Inquiry Number: 3804177.3

December 05, 2013

Certified Sanborn® Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

12/05/13

Site Name:	**Client Name:**
1 Front Street	Haley & Aldrich of New York
1 Front Street	200 Town Centre Drive
Corning, NY 14830	Rochester, NY 14623
EDR Inquiry # 3804177.3	Contact: Claire Mondello

EDR® Environmental Data Resources Inc

The complete Sanborn Library collection has been searched by EDR, and fire insurance maps covering the target property location provided by Haley & Aldrich of New York were identified for the years listed below. The certified Sanborn Library search results in this report can be authenticated by visiting www.edrnet.com/sanborn and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by Sanborn Library LLC, the copyright holder for the collection.

Certified Sanborn Results:

Site Name:	1 Front Street
Address:	1 Front Street
City, State, Zip:	Corning, NY 14830
Cross Street:	
P.O. #	40617-970
Project:	Phase I ESA
Certification #	CD3B-48D7-95F3

Maps Provided:

1968	1903
1948	1898
1930	1893
1921	1888
1913	
1908	

Sanborn® Library search results
Certification # CD3B-48D7-95F3

The Sanborn Library includes more than 1.2 million Sanborn fire insurance maps, which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ✔ Library of Congress
- ✔ University Publications of America
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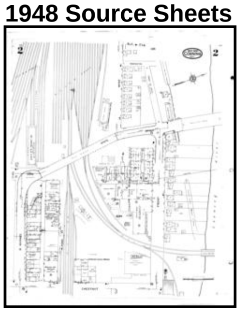
Sanborn Sheet Thumbnails

This Certified Sanborn Map Report is based upon the following Sanborn Fire Insurance map sheets.

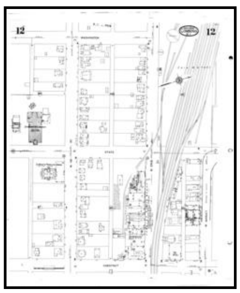
1968 Source Sheets

Volume 1, Sheet 2

1948 Source Sheets

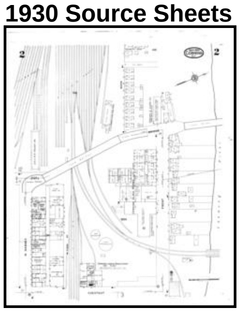


Volume 1, Sheet 2



Volume 1, Sheet 12

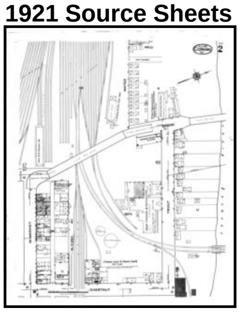
1930 Source Sheets



Volume 1, Sheet 2

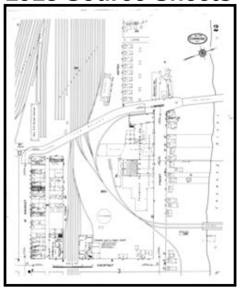
Volume 1, Sheet 12

1921 Source Sheets



Volume 1, Sheet 2

1913 Source Sheets

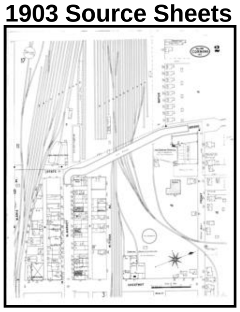


Volume 1, Sheet 2

1908 Source Sheets

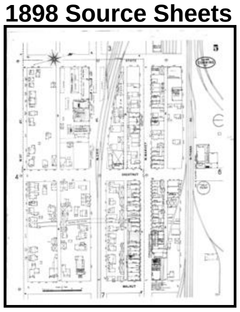
Volume 1, Sheet 2

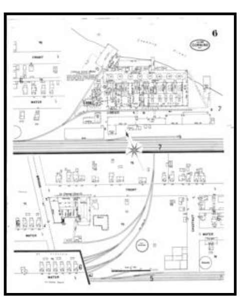
1903 Source Sheets



Volume 1, Sheet 2

1898 Source Sheets



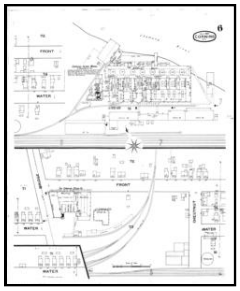


Volume 1, Sheet 5

Volume 1, Sheet 6

1893 Source Sheets

Volume 1, Sheet 5

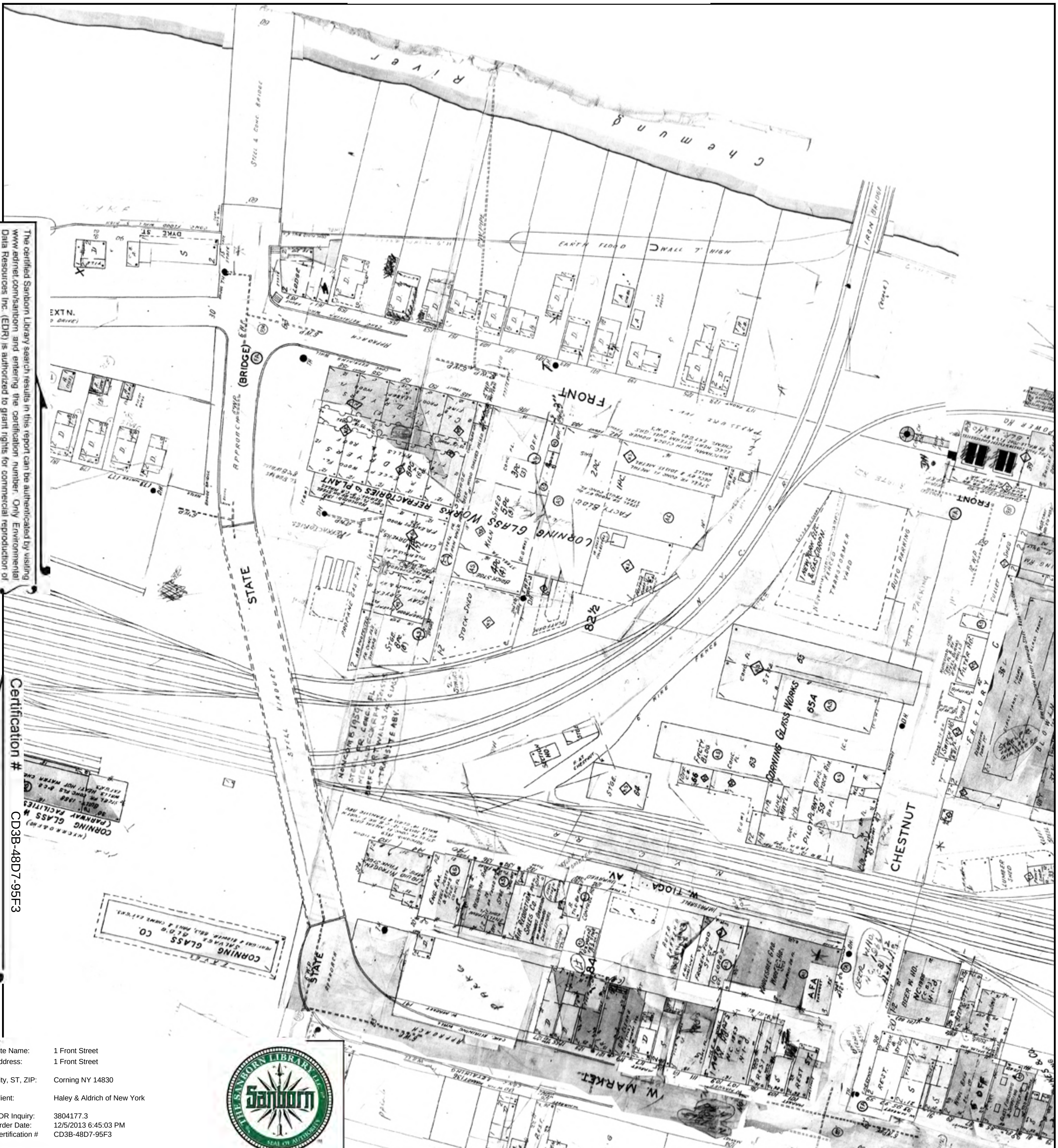


Volume 1, Sheet 6

1888 Source Sheets

Volume 1, Sheet 5

1968 Certified Sanborn Map



Site Name:	1 Front Street
Address:	1 Front Street
City, ST, ZIP:	Corning NY 14830
Client:	Haley & Aldrich of New York
EDR Inquiry:	3804177.3
Order Date:	12/5/2013 6:45:03 PM
Certification #	CD3B-48D7-95F3
Copyright:	1968

This Certified Sanborn Map combines the following sheets.
Outlined areas indicate map sheets within the collection.

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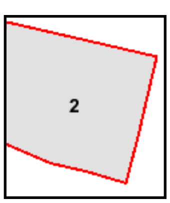
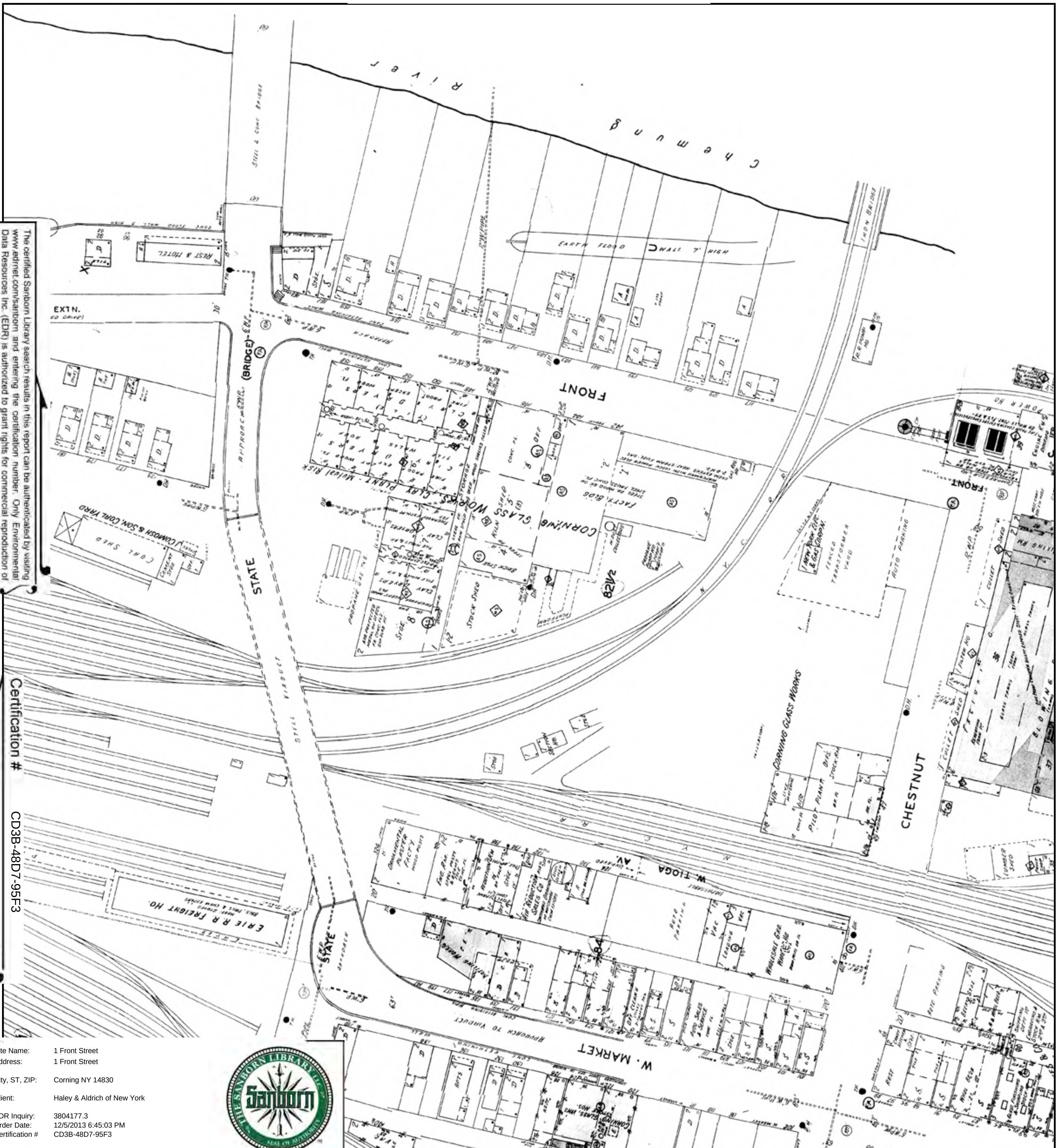


Volume 1, Sheet 2

N

1948 Certified Sanborn Map



Site Name:	1 Front Street
Address:	1 Front Street
City, ST, ZIP:	Corning NY 14830
Client:	Haley & Aldrich of New York
EDR Inquiry:	3804177.3
Order Date:	12/5/2013 6:45:03 PM
Certification #	CD3B-48D7-95F3
Copyright:	1948

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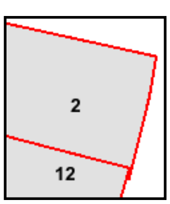
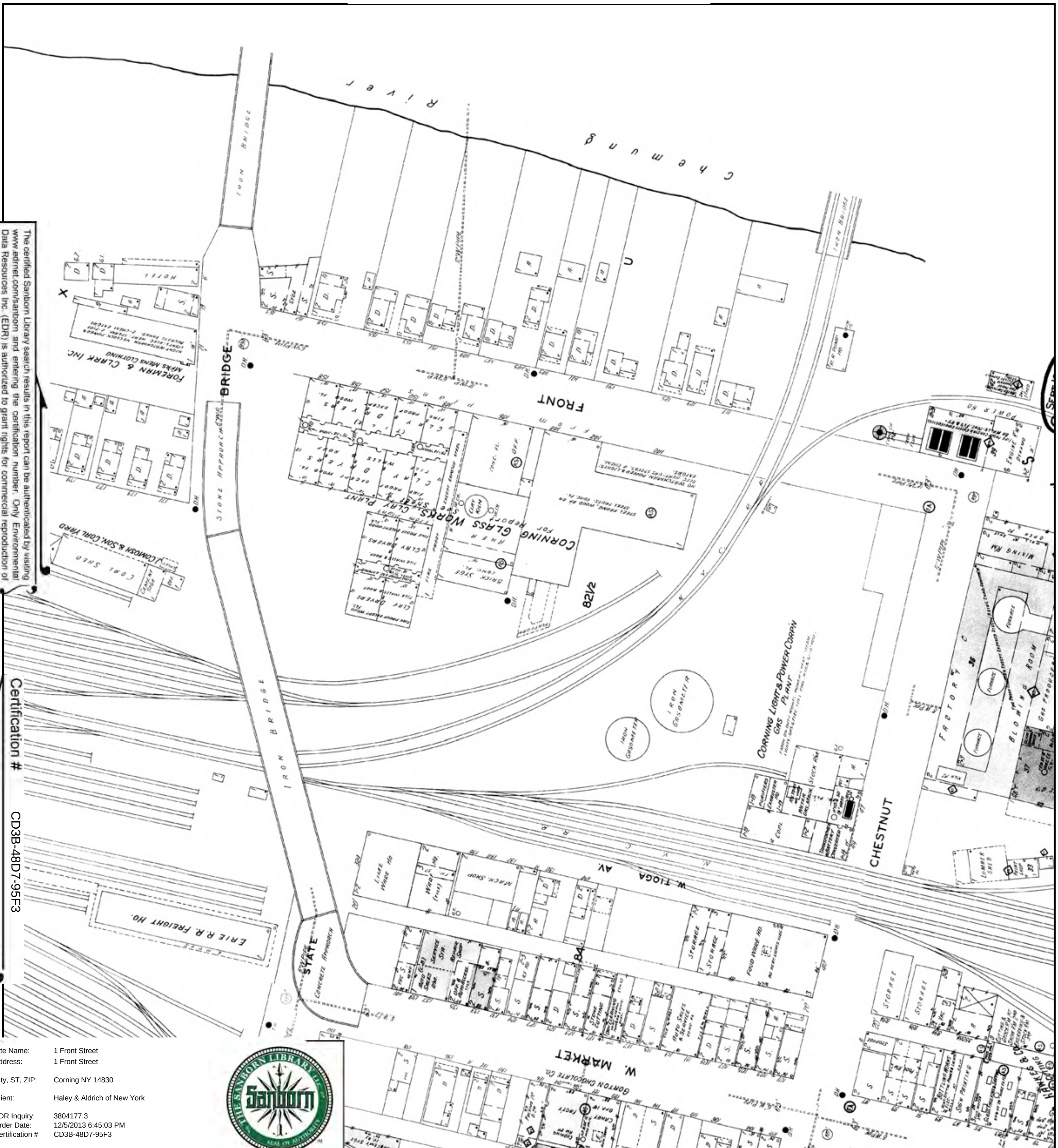


Volume 1, Sheet 2
Volume 1, Sheet 12

N

1930 Certified Sanborn Map



Site Name:	1 Front Street
Address:	1 Front Street
City, ST, ZIP:	Corning NY 14830
Client:	Haley & Aldrich of New York
EDR Inquiry:	3804177.3
Order Date:	12/5/2013 6:45:03 PM
Certification #	CD3B-48D7-95F3
Copyright:	1930

0 Feet 150 300 600

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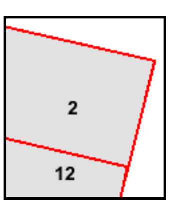
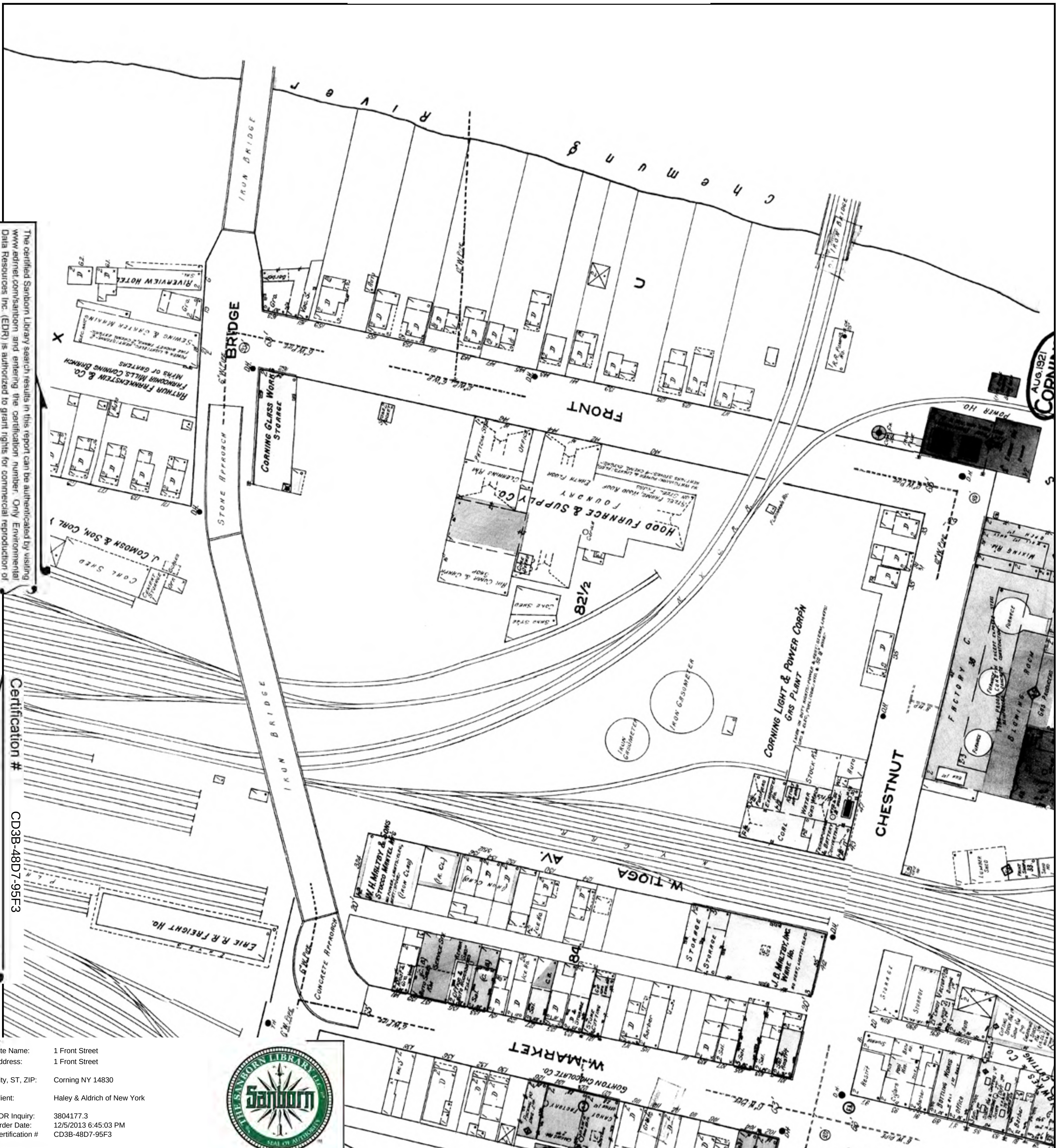


Volume 1, Sheet 2
Volume 1, Sheet 12

N

1921 Certified Sanborn Map



Certification # CD3B-48D7-95F3

Site Name:	1 Front Street
Address:	1 Front Street
City, ST, ZIP:	Corning NY 14830
Client:	Haley & Aldrich of New York
EDR Inquiry:	3804177.3
Order Date:	12/5/2013 6:45:03 PM
Certification #	CD3B-48D7-95F3
Copyright:	1921

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0 Feet 150 300 600

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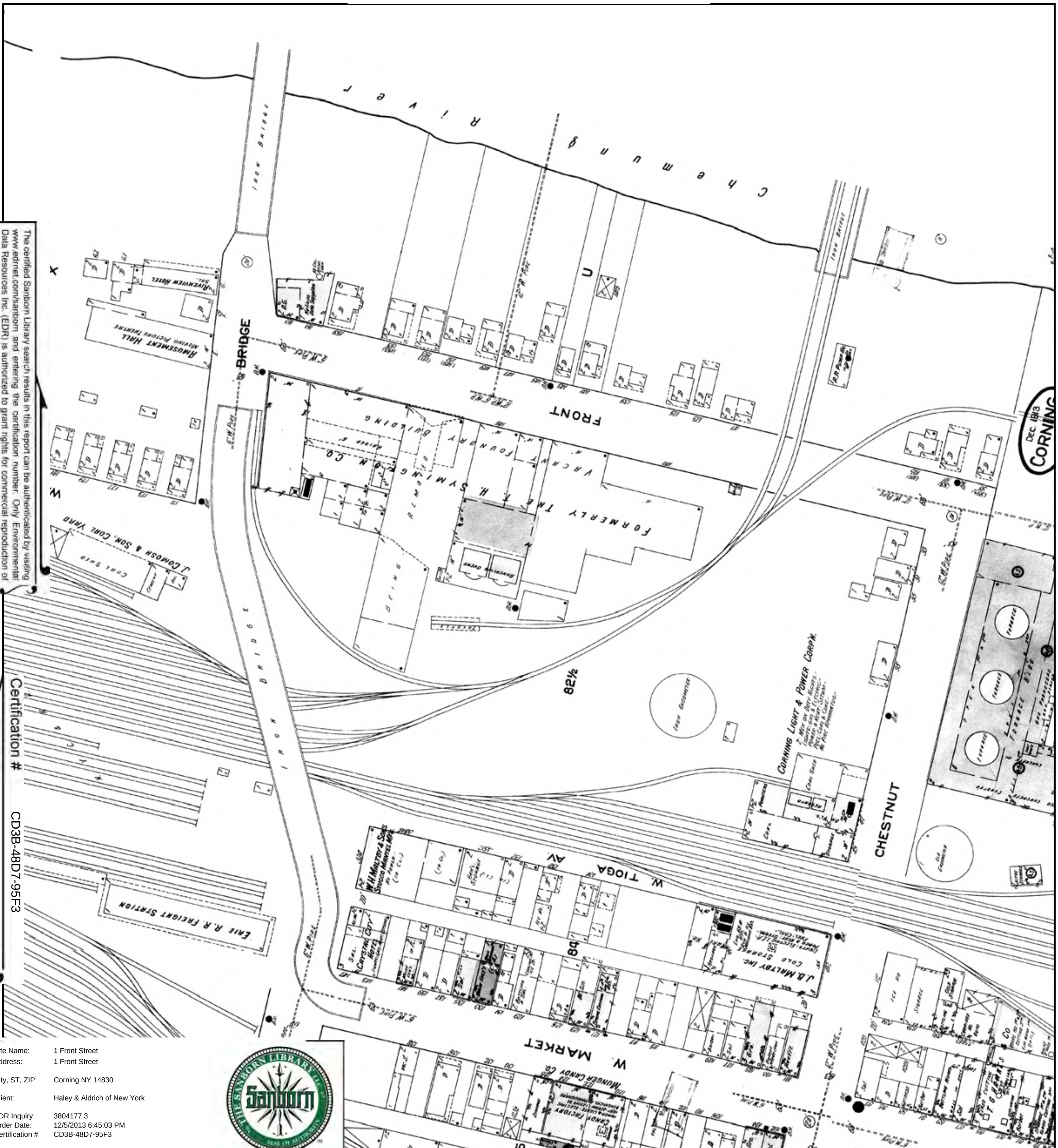
2

Volume 1, Sheet 2

1913 Certified Sanborn Map



Site Name:	1 Front Street
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City, ST, ZIP:	Corning NY 14830
Client:	Haley & Aldrich of New York
EDR Inquiry:	3804177.3
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Certification #	CD3B-48D7-95F3
Copyright:	1913

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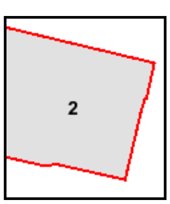

Volume 1, Sheet 2

N

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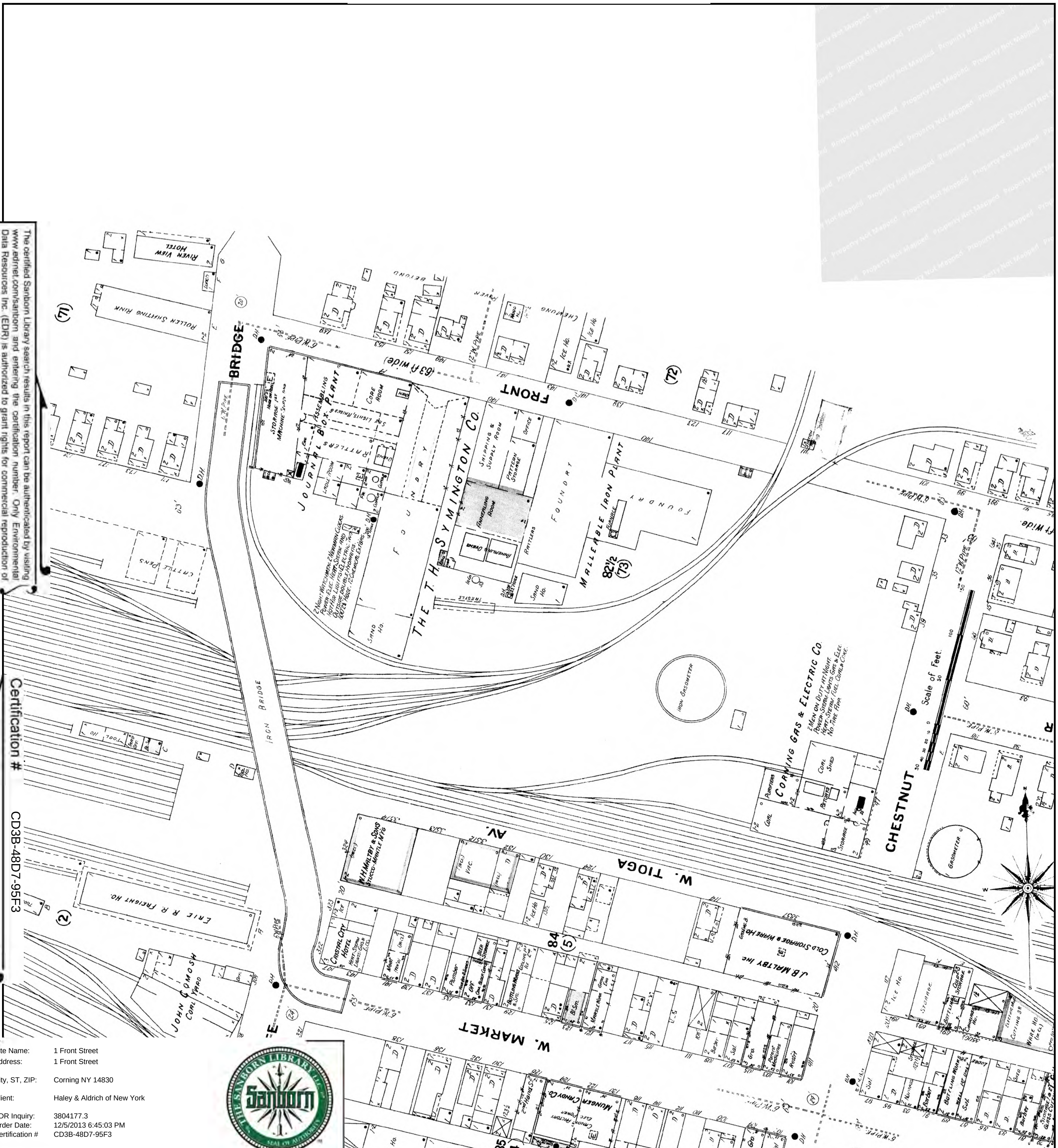

Site Name:	1 Front Street
Address:	1 Front Street
City, ST, ZIP:	Corning NY 14830
Client:	Haley & Aldrich of New York
EDR Inquiry:	3804177.3
Order Date:	12/5/2013 6:45:03 PM
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Copyright:	1908

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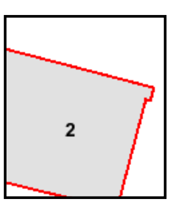
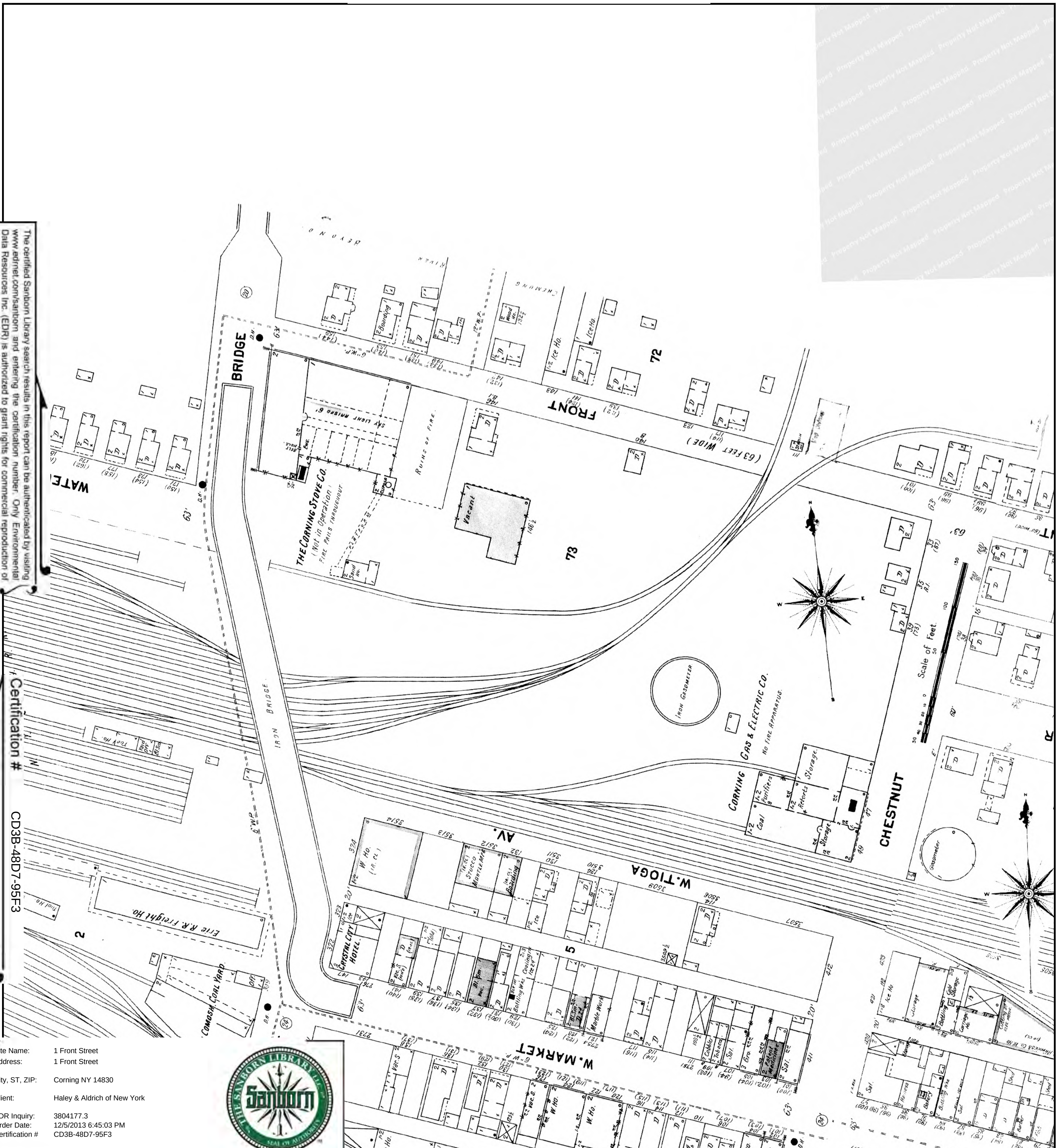


Volume 1, Sheet 2

N

1903 Certified Sanborn Map



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Certification # CD3B-48D7-95F3

Site Name:	1 Front Street
Address:	1 Front Street
City, ST, ZIP:	Corning NY 14830
Client:	Haley & Aldrich of New York
EDR Inquiry:	3804177.3
Order Date:	12/5/2013 6:45:03 PM
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Copyright:	1903

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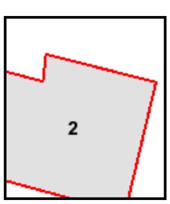

Volume 1, Sheet 2

N

1898 Certified Sanborn Map

Certification # CD3B-48D7-95F3

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Address: 1 Front Street
City, ST, ZIP: Corning NY 14830
Client: Haley & Aldrich of New York
EDR Inquiry: 3804177.3
Order Date: 12/5/2013 6:45:03 PM
Certification # CD3B-48D7-95F3

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Outlined areas indicate map sheets within the collection.

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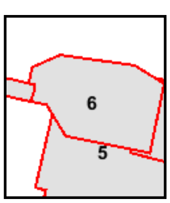
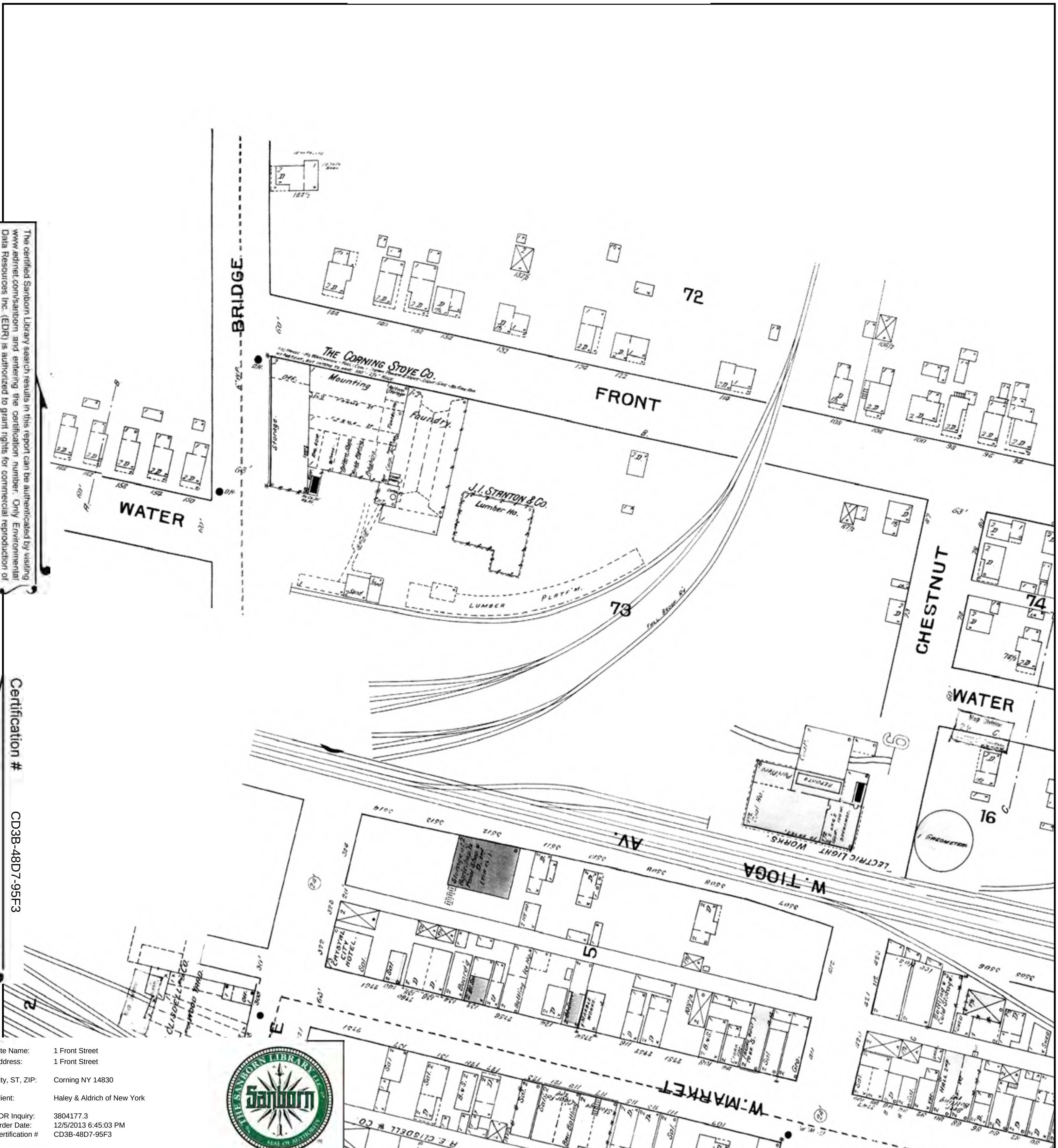


Volume 1, Sheet 5
Volume 1, Sheet 6

N

1893 Certified Sanborn Map



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Address: 1 Front Street
City, ST, ZIP: Corning NY 14830
Client: Haley & Aldrich of New York
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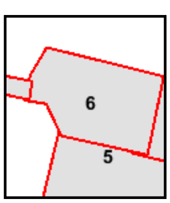
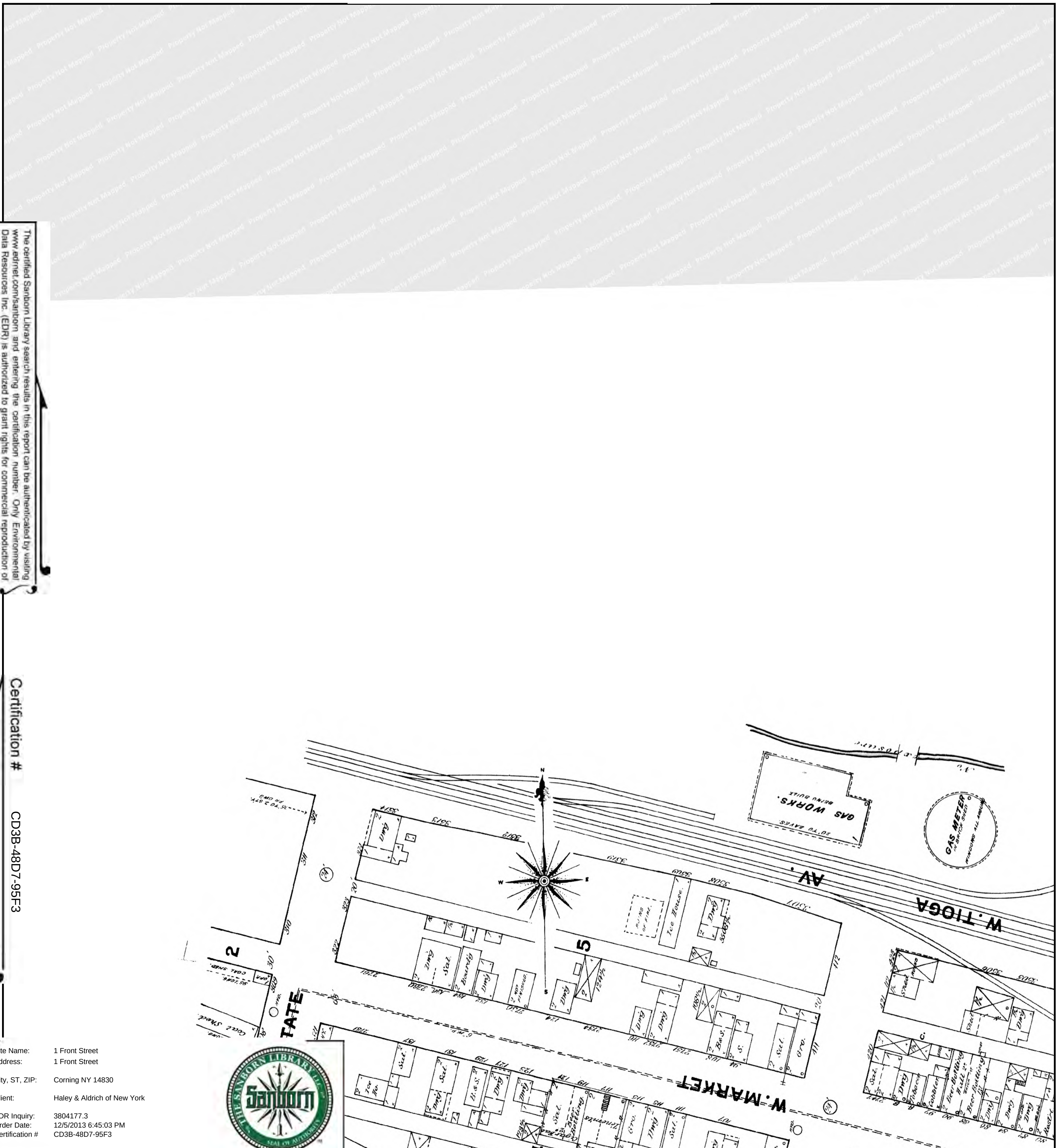


Volume 1, Sheet 5
Volume 1, Sheet 6

1888 Certified Sanborn Map



Certification # CD3B-48D7-95F3

Site Name:	1 Front Street
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Client:	Haley & Aldrich of New York
EDR Inquiry:	3804177.3
Order Date:	12/5/2013 6:45:03 PM
Certification #	CD3B-48D7-95F3
Copyright:	1888

This Certified Sanborn Map combines the following sheets.
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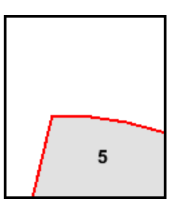

Volume 1, Sheet 5

N

Appendix F

Site Decommissioning Data

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
DW1-BLDG1-SP-001-20210414	SW1010	480-183377-1	Flash Point	50	U	deg F
DW1-BLDG1-SP-001-20210414	SW6010C	480-183377-1	TCLP Arsenic	0.012	J	mg/L
DW1-BLDG1-SP-001-20210414	SW6010C	480-183377-1	TCLP Barium	1.0		mg/L
DW1-BLDG1-SP-001-20210414	SW6010C	480-183377-1	TCLP Cadmium	0.17		mg/L
DW1-BLDG1-SP-001-20210414	SW6010C	480-183377-1	TCLP Chromium	0.01	U	mg/L
DW1-BLDG1-SP-001-20210414	SW6010C	480-183377-1	TCLP Lead	0.047		mg/L
DW1-BLDG1-SP-001-20210414	SW6010C	480-183377-1	TCLP Selenium	0.0087	U	mg/L
DW1-BLDG1-SP-001-20210414	SW6010C	480-183377-1	TCLP Silver	0.0017	U	mg/L
DW1-BLDG1-SP-001-20210414	SW7470A	480-183377-1	TCLP Mercury	0.00012	U	mg/L
DW1-BLDG1-SP-001-20210414	SW8081B	480-183377-1	TCLP Chlordane (Technical)	0.000029	U	mg/L
DW1-BLDG1-SP-001-20210414	SW8081B	480-183377-1	TCLP Endrin	0.000014	U	mg/L
DW1-BLDG1-SP-001-20210414	SW8081B	480-183377-1	TCLP Gamma Bhc (Lindane)	0.000006	U	mg/L
DW1-BLDG1-SP-001-20210414	SW8081B	480-183377-1	TCLP Heptachlor	0.0000085	U	mg/L
DW1-BLDG1-SP-001-20210414	SW8081B	480-183377-1	TCLP Heptachlor Epoxide	0.0000053	U	mg/L
DW1-BLDG1-SP-001-20210414	SW8081B	480-183377-1	TCLP Methoxychlor	0.000014	U	mg/L
DW1-BLDG1-SP-001-20210414	SW8081B	480-183377-1	TCLP Toxaphene	0.00012	U	mg/L
DW1-BLDG1-SP-001-20210414	SW8151A	480-183377-1	TCLP 2,4-D (Dichlorophenoxyacetic Acid)	0.0004	U	mg/L
DW1-BLDG1-SP-001-20210414	SW8151A	480-183377-1	TCLP Silvex (2,4,5-TP)	0.00036	U	mg/L
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	1,1,1-Trichloroethane	0.42	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	1,1,2,2-Tetrachloroethane	0.93	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	1,1,2-Trichloro-1,2,2-Trifluoroethane	1.3	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	1,1,2-Trichloroethane	0.75	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	1,1-Dichloroethane	0.70	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	1,1-Dichloroethene	0.70	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	1,2,4-Trichlorobenzene	0.35	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	1,2-Dibromo-3-Chloropropane	2.9	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	1,2-Dibromoethane (Ethylene Dibromide)	0.74	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	1,2-Dichlorobenzene	0.45	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	1,2-Dichloroethane	0.29	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	1,2-Dichloropropane	2.9	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	1,3-Dichlorobenzene	0.30	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	1,4-Dichlorobenzene	0.80	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	2-Hexanone	2.9	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	Acetone	4.8	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	Benzene	0.28	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	Bromodichloromethane	0.77	U	µg/kg

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	Bromoform	2.9	*U*	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	Bromomethane	0.52	*U*	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	Carbon Disulfide	2.9	*U*	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	Carbon Tetrachloride	0.56	*U*	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	Chlorobenzene	0.76	*U*	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	Chloroethane	1.3	*U*	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	Chloroform	0.36	*U*	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	Chloromethane	0.35	*U*	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	*cis* -1,2-Dichloroethylene	0.74	*U*	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	*cis* -1,3-Dichloropropene	0.83	*U*	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	Cyclohexane	0.80	*U*	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	Dibromochloromethane	0.74	*U*	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	Dichlorodifluoromethane	0.47	*U*	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	Ethylbenzene	0.40	*U*	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	Isopropylbenzene (Cumene)	0.87	*U*	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	Methyl Acetate	3.5	*U*	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	Methyl Ethyl Ketone (2-BUanone)	2.1	*U*	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	Methyl IsobUyl Ketone (4-Methyl-2-Pentanone)	1.9	*U*	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	Methylcyclohexane	0.87	*U*	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	Methylene Chloride	2.6	*U*	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	Styrene	0.29	*U*	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	Tert-BUyl Methyl Ether	0.56	*U*	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	Tetrachloroethylene (PCE)	0.77	*U*	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	Toluene	0.43	*U*	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	*trans* -1,2-Dichloroethene	0.59	*U*	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	*trans* -1,3-Dichloropropene	2.5	*U*	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	Trichloroethylene (TCE)	1.3	*U*	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	Trichlorofluoromethane	0.54	*U*	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	Vinyl Chloride	0.70	*U*	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	Xylenes	0.97	*U*	µg/kg
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	TCLP 1,1-Dichloroethene	0.0029	*U*	mg/L
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DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	TCLP Carbon Tetrachloride	0.0027	*U*	mg/L
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	TCLP Chlorobenzene	0.0075	*U*	mg/L
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	TCLP Chloroform	0.0034	*U*	mg/L

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	TCLP Methyl Ethyl Ketone (2-BUanone)	0.013	U	mg/L
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	TCLP Tetrachloroethylene (PCE)	0.0036	U	mg/L
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	TCLP Trichloroethylene (TCE)	0.0046	U	mg/L
DW1-BLDG1-SP-001-20210414	SW8260C	480-183377-1	TCLP Vinyl Chloride	0.009	U	mg/L
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	1,4-Dioxane (P-Dioxane)	320	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	2,4,5-Trichlorophenol	270	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	2,4,6-Trichlorophenol	200	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	2,4-Dichlorophenol	110	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	2,4-Dimethylphenol	240	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	2,4-Dinitrophenol	4600	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	2,4-Dinitrotoluene	200	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	2,6-Dinitrotoluene	120	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	2-Chloronaphthalene	160	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	2-Chlorophenol	180	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	2-Methylnaphthalene	200	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	2-Methylphenol (O-Cresol)	120	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	2-Nitroaniline	150	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	2-Nitrophenol	280	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	3,3'-Dichlorobenzidine	1200	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	3-Nitroaniline	270	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	4,6-Dinitro-2-Methylphenol	990	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	4-Bromophenyl Phenyl Ether	140	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	4-Chloro-3-Methylphenol	250	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	4-Chloroaniline	250	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	4-Chlorophenyl Phenyl Ether	120	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	4-Methylphenol (P-Cresol)	120	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	4-Nitroaniline	520	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	4-Nitrophenol	690	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	Acenaphthene	150	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	Acenaphthylene	130	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	Acetophenone	130	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	Anthracene	250	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	Atrazine	340	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	Benzaldehyde	790	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	Benzo(a)Anthracene	99	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	Benzo(a)Pyrene	150	U	µg/kg

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	Benzo(b)Fluoranthene	160	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	Benzo(g,h,i)Perylene	110	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	Benzo(k)Fluoranthene	130	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	Benzyl BUyl Phthalate	160	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	Biphenyl (Diphenyl)	150	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	Bis(2-Chloroethoxy) Methane	210	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)	130	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	Bis(2-Chloroisopropyl) Ether	200	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	Bis(2-Ethylhexyl) Phthalate	340	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	Caprolactam	300	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	Carbazole	120	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	Chrysene	220	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	Dibenz(A,H)Anthracene	180	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	Dibenzofuran	120	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	Diethyl Phthalate	130	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	Dimethyl Phthalate	120	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	Di-n-BUyl Phthalate	170	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	Di-n-Octylphthalate	120	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	Fluoranthene	110	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	Fluorene	120	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	Hexachlorobenzene	130	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	HexachlorobUadiene	150	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	Hexachlorocyclopentadiene	130	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	Hexachloroethane	130	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	Indeno(1,2,3-c,d)Pyrene	120	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	Isophorone	210	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	Naphthalene	130	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	Nitrobenzene	110	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	N-Nitrosodi-N-Propylamine	170	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	N-Nitrosodiphenylamine	810	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	Pentachlorophenol	990	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	Phenanthrene	150	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	Phenol	150	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	Pyrene	120	U	µg/kg
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	TCLP 1,4-Dichlorobenzene	0.0018	U	mg/L
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	TCLP 2,4,5-Trichlorophenol	0.0019	U	mg/L

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	TCLP 2,4,6-Trichlorophenol	0.0024	U	mg/L
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	TCLP 2,4-Dinitrotoluene	0.0017	U	mg/L
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	TCLP 2-Methylphenol (O-Cresol)	0.0016	U	mg/L
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	TCLP 3-Methylphenol	0.0016	U	mg/L
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	TCLP 4-Methylphenol (P-Cresol)	0.0014	U	mg/L
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	TCLP Hexachlorobenzene	0.002	U	mg/L
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	TCLP HexachlorobUadiene	0.0027	U	mg/L
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	TCLP Hexachloroethane	0.0023	U	mg/L
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	TCLP Nitrobenzene	0.0011	U	mg/L
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	TCLP Pentachlorophenol	0.0088	U	mg/L
DW1-BLDG1-SP-001-20210414	SW8270D	480-183377-1	TCLP Pyridine	0.0016	U	mg/L
DW1-BLDG1-SP-001-20210414	SW9045D	480-183377-1	Temperature	21		deg C
DW1-BLDG1-SP-001-20210414	SW9045D	480-183377-1	pH	8.7		pH units
DW2-BLDG1-SP-002-20210414	SW1010	480-183377-2	Flash Point	50	U	deg F
DW2-BLDG1-SP-002-20210414	SW6010C	480-183377-2	TCLP Arsenic	0.011	J	mg/L
DW2-BLDG1-SP-002-20210414	SW6010C	480-183377-2	TCLP Barium	0.80	J	mg/L
DW2-BLDG1-SP-002-20210414	SW6010C	480-183377-2	TCLP Cadmium	0.031		mg/L
DW2-BLDG1-SP-002-20210414	SW6010C	480-183377-2	TCLP Chromium	0.031		mg/L
DW2-BLDG1-SP-002-20210414	SW6010C	480-183377-2	TCLP Lead	0.19		mg/L
DW2-BLDG1-SP-002-20210414	SW6010C	480-183377-2	TCLP Selenium	0.0087	U	mg/L
DW2-BLDG1-SP-002-20210414	SW6010C	480-183377-2	TCLP Silver	0.0017	U	mg/L
DW2-BLDG1-SP-002-20210414	SW7470A	480-183377-2	TCLP Mercury	0.00012	U	mg/L
DW2-BLDG1-SP-002-20210414	SW8081B	480-183377-2	TCLP Chlordane (Technical)	0.000029	U	mg/L
DW2-BLDG1-SP-002-20210414	SW8081B	480-183377-2	TCLP Endrin	0.000014	U	mg/L
DW2-BLDG1-SP-002-20210414	SW8081B	480-183377-2	TCLP Gamma Bhc (Lindane)	0.000006	U	mg/L
DW2-BLDG1-SP-002-20210414	SW8081B	480-183377-2	TCLP Heptachlor	0.0000085	U	mg/L
DW2-BLDG1-SP-002-20210414	SW8081B	480-183377-2	TCLP Heptachlor Epoxide	0.0000053	U	mg/L
DW2-BLDG1-SP-002-20210414	SW8081B	480-183377-2	TCLP Methoxychlor	0.000014	U	mg/L
DW2-BLDG1-SP-002-20210414	SW8081B	480-183377-2	TCLP Toxaphene	0.00012	U	mg/L
DW2-BLDG1-SP-002-20210414	SW8151A	480-183377-2	TCLP 2,4-D (Dichlorophenoxyacetic Acid)	0.0004	U	mg/L
DW2-BLDG1-SP-002-20210414	SW8151A	480-183377-2	TCLP Silvex (2,4,5-TP)	0.00036	U	mg/L
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	1,1,1-Trichloroethane	0.40	U	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	1,1,2,2-Tetrachloroethane	0.89	U	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	1,1,2-Trichloro-1,2,2-Trifluoroethane	1.3	U	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	1,1,2-Trichloroethane	0.72	U	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	1,1-Dichloroethane	0.67	U	µg/kg

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	1,1-Dichloroethene	0.67	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	1,2,4-Trichlorobenzene	0.34	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	1,2-Dibromo-3-Chloropropane	2.8	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	1,2-Dibromoethane (Ethylene Dibromide)	0.71	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	1,2-Dichlorobenzene	0.43	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	1,2-Dichloroethane	0.28	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	1,2-Dichloropropane	2.8	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	1,3-Dichlorobenzene	0.28	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	1,4-Dichlorobenzene	0.77	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	2-Hexanone	2.8	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	Acetone	4.6	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	Benzene	0.27	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	Bromodichloromethane	0.74	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	Bromoform	2.8	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	Bromomethane	0.50	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	Carbon Disulfide	2.8	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	Carbon Tetrachloride	0.53	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	Chlorobenzene	0.73	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	Chloroethane	1.2	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	Chloroform	0.34	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	Chloromethane	0.33	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	*cis* -1,2-Dichloroethylene	0.71	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	*cis* -1,3-Dichloropropene	0.79	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	Cyclohexane	0.77	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	Dibromochloromethane	0.71	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	Dichlorodifluoromethane	0.46	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	Ethylbenzene	0.38	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	Isopropylbenzene (Cumene)	0.83	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	Methyl Acetate	3.3	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	Methyl Ethyl Ketone (2-BUanone)	2.0	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	Methyl IsobUyl Ketone (4-Methyl-2-Pentanone)	1.8	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	Methylcyclohexane	0.84	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	Methylene Chloride	2.5	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	Styrene	0.28	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	Tert-BUyl Methyl Ether	0.54	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	Tetrachloroethylene(PCE)	0.74	*U*	µg/kg

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	Toluene	0.42	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	*trans* -1,2-Dichloroethene	0.57	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	*trans* -1,3-Dichloropropene	2.4	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	Trichloroethylene (TCE)	1.2	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	Trichlorofluoromethane	0.52	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	Vinyl Chloride	0.67	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	Xylenes	0.93	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	TCLP 1,1-Dichloroethene	0.0029	*U*	mg/L
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	TCLP 1,2-Dichloroethane	0.0021	*U*	mg/L
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	TCLP Benzene	0.0041	*U*	mg/L
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	TCLP Carbon Tetrachloride	0.0027	*U*	mg/L
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	TCLP Chlorobenzene	0.0075	*U*	mg/L
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	TCLP Chloroform	0.0034	*U*	mg/L
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	TCLP Methyl Ethyl Ketone (2-BUanone)	0.013	*U*	mg/L
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	TCLP Tetrachloroethylene(PCE)	0.0036	*U*	mg/L
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	TCLP Trichloroethylene (TCE)	0.0046	*U*	mg/L
DW2-BLDG1-SP-002-20210414	SW8260C	480-183377-2	TCLP Vinyl Chloride	0.009	*U*	mg/L
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	1,4-Dioxane (P-Dioxane)	610	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	2,4,5-Trichlorophenol	510	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	2,4,6-Trichlorophenol	380	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	2,4-Dichlorophenol	200	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	2,4-Dimethylphenol	460	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	2,4-Dinitrophenol	8800	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	2,4-Dinitrotoluene	390	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	2,6-Dinitrotoluene	220	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	2-Chloronaphthalene	310	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	2-Chlorophenol	350	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	2-Methylnaphthalene	380	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	2-Methylphenol (O-Cresol)	220	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	2-Nitroaniline	280	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	2-Nitrophenol	540	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	3,3'-Dichlorobenzidine	2200	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	3-Nitroaniline	520	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	4,6-Dinitro-2-Methylphenol	1900	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	4-Bromophenyl Phenyl Ether	270	*U*	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	4-Chloro-3-Methylphenol	470	*U*	µg/kg

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	4-Chloroaniline	470	U	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	4-Chlorophenyl Phenyl Ether	230	U	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	4-Methylphenol (P-Cresol)	220	U	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	4-Nitroaniline	990	U	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	4-Nitrophenol	1300	U	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	Acenaphthene	280	U	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	Acenaphthylene	250	U	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	Acetophenone	260	U	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	Anthracene	470	U	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	Atrazine	660	U	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	Benzaldehyde	1500	U	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	Benzo(A)Anthracene	190	U	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	Benzo(A)Pyrene	440	J	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	Benzo(B)Fluoranthene	580	J	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	Benzo(G,H,I)Perylene	450	J	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	Benzo(K)Fluoranthene	280	J	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	Benzyl BUyl Phthalate	310	U	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	Biphenyl (Diphenyl)	280	U	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	Bis(2-Chloroethoxy) Methane	400	U	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)	250	U	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	Bis(2-Chloroisopropyl) Ether	380	U	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	Bis(2-Ethylhexyl) Phthalate	1800	J	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	Caprolactam	570	U	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	Carbazole	220	U	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	Chrysene	420	U	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	Dibenz(A,H)Anthracene	330	U	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	Dibenzofuran	220	U	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	Diethyl Phthalate	250	U	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	Dimethyl Phthalate	220	U	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	Di-N-BUyl Phthalate	520	J	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	Di-N-Octylphthalate	220	U	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	Fluoranthene	770	J	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	Fluorene	220	U	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	Hexachlorobenzene	260	U	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	HexachlorobUadiene	280	U	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	Hexachlorocyclopentadiene	260	U	µg/kg

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	Hexachloroethane	250	U	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	Indeno(1,2,3-C,D)Pyrene	350	J	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	Isophorone	400	U	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	Naphthalene	250	U	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	Nitrobenzene	210	U	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	N-Nitrosodi-N-Propylamine	320	U	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	N-Nitrosodiphenylamine	1500	U	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	Pentachlorophenol	1900	U	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	Phenanthrene	390	J	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	Phenol	290	U	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	Pyrene	650	J	µg/kg
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	TCLP 1,4-Dichlorobenzene	0.0018	U	mg/L
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	TCLP 2,4,5-Trichlorophenol	0.0019	U	mg/L
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	TCLP 2,4,6-Trichlorophenol	0.0024	U	mg/L
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	TCLP 2,4-Dinitrotoluene	0.0017	U	mg/L
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	TCLP 2-Methylphenol (O-Cresol)	0.0016	U	mg/L
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	TCLP 3-Methylphenol	0.0016	U	mg/L
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	TCLP 4-Methylphenol (P-Cresol)	0.0014	U	mg/L
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	TCLP Hexachlorobenzene	0.002	U	mg/L
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	TCLP HexachlorobUadiene	0.0027	U	mg/L
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	TCLP Hexachloroethane	0.0023	U	mg/L
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	TCLP Nitrobenzene	0.0011	U	mg/L
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	TCLP Pentachlorophenol	0.0088	U	mg/L
DW2-BLDG1-SP-002-20210414	SW8270D	480-183377-2	TCLP Pyridine	0.0016	U	mg/L
DW2-BLDG1-SP-002-20210414	SW9045D	480-183377-2	Temperature	20.8		deg C
DW2-BLDG1-SP-002-20210414	SW9045D	480-183377-2	pH	8.4		pH units
DW3-OU-SP-004-20210414	SW1010	480-183377-4	Flash Point	50	U	deg F
DW3-OU-SP-004-20210414	SW6010C	480-183377-4	TCLP Arsenic	0.0056	U	mg/L
DW3-OU-SP-004-20210414	SW6010C	480-183377-4	TCLP Barium	0.57	J	mg/L
DW3-OU-SP-004-20210414	SW6010C	480-183377-4	TCLP Cadmium	0.0062		mg/L
DW3-OU-SP-004-20210414	SW6010C	480-183377-4	TCLP Chromium	0.01	U	mg/L
DW3-OU-SP-004-20210414	SW6010C	480-183377-4	TCLP Lead	0.081		mg/L
DW3-OU-SP-004-20210414	SW6010C	480-183377-4	TCLP Selenium	0.0087	U	mg/L
DW3-OU-SP-004-20210414	SW6010C	480-183377-4	TCLP Silver	0.0017	U	mg/L
DW3-OU-SP-004-20210414	SW7470A	480-183377-4	TCLP Mercury	0.00012	U	mg/L
DW3-OU-SP-004-20210414	SW8081B	480-183377-4	TCLP Chlordane (Technical)	0.000029	U	mg/L

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
DW3-OU-SP-004-20210414	SW8081B	480-183377-4	TCLP Endrin	0.000014	*U*	mg/L
DW3-OU-SP-004-20210414	SW8081B	480-183377-4	TCLP Gamma Bhc (Lindane)	0.000006	*U*	mg/L
DW3-OU-SP-004-20210414	SW8081B	480-183377-4	TCLP Heptachlor	0.0000085	*U*	mg/L
DW3-OU-SP-004-20210414	SW8081B	480-183377-4	TCLP Heptachlor Epoxide	0.0000053	*U*	mg/L
DW3-OU-SP-004-20210414	SW8081B	480-183377-4	TCLP Methoxychlor	0.000014	*U*	mg/L
DW3-OU-SP-004-20210414	SW8081B	480-183377-4	TCLP Toxaphene	0.00012	*U*	mg/L
DW3-OU-SP-004-20210414	SW8151A	480-183377-4	TCLP 2,4-D (Dichlorophenoxyacetic Acid)	0.0004	*U*	mg/L
DW3-OU-SP-004-20210414	SW8151A	480-183377-4	TCLP Silvex (2,4,5-Tp)	0.00036	*U*	mg/L
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	1,1,1-Trichloroethane	0.45	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	1,1,2,2-Tetrachloroethane	1.0	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	1,1,2-Trichloro-1,2,2-Trifluoroethane	1.4	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	1,1,2-Trichloroethane	0.81	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	1,1-Dichloroethane	0.76	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	1,1-Dichloroethene	0.77	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	1,2,4-Trichlorobenzene	0.38	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	1,2-Dibromo-3-Chloropropane	3.1	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	1,2-Dibromoethane (Ethylene Dibromide)	0.80	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	1,2-Dichlorobenzene	0.49	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	1,2-Dichloroethane	0.31	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	1,2-Dichloropropane	3.1	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	1,3-Dichlorobenzene	0.32	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	1,4-Dichlorobenzene	0.88	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	2-Hexanone	3.1	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	Acetone	5.3	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	Benzene	0.31	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	Bromodichloromethane	0.84	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	Bromoform	3.1	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	Bromomethane	0.56	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	Carbon Disulfide	3.1	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	Carbon Tetrachloride	0.61	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	Chlorobenzene	0.83	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	Chloroethane	1.4	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	Chloroform	0.39	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	Chloromethane	0.38	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	*cis* -1,2-Dichloroethylene	0.80	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	*cis* -1,3-Dichloropropene	0.90	*U*	µg/kg

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	Cyclohexane	0.88	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	Dibromochloromethane	0.80	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	Dichlorodifluoromethane	0.52	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	Ethylbenzene	0.43	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	Isopropylbenzene (Cumene)	0.94	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	Methyl Acetate	3.8	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	Methyl Ethyl Ketone (2-BUanone)	2.3	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	Methyl IsobUyl Ketone (4-Methyl-2-Pentanone)	2.1	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	Methylcyclohexane	0.95	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	Methylene Chloride	2.9	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	Styrene	0.31	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	Tert-BUyl Methyl Ether	0.62	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	Tetrachloroethylene(PCE)	0.84	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	Toluene	0.47	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	*trans* -1,2-Dichloroethene	0.65	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	*trans* -1,3-Dichloropropene	2.8	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	Trichloroethylene (TCE)	1.4	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	Trichlorofluoromethane	0.59	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	Vinyl Chloride	0.76	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	Xylenes	1.1	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	TCLP 1,1-Dichloroethene	0.0029	*U*	mg/L
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	TCLP 1,2-Dichloroethane	0.0021	*U*	mg/L
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	TCLP Benzene	0.0041	*U*	mg/L
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	TCLP Carbon Tetrachloride	0.0027	*U*	mg/L
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	TCLP Chlorobenzene	0.0075	*U*	mg/L
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	TCLP Chloroform	0.0034	*U*	mg/L
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	TCLP Methyl Ethyl Ketone (2-BUanone)	0.013	*U*	mg/L
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	TCLP Tetrachloroethylene(PCE)	0.0036	*U*	mg/L
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	TCLP Trichloroethylene (TCE)	0.0046	*U*	mg/L
DW3-OU-SP-004-20210414	SW8260C	480-183377-4	TCLP Vinyl Chloride	0.009	*U*	mg/L
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	1,4-Dioxane (P-Dioxane)	690	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	2,4,5-Trichlorophenol	580	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	2,4,6-Trichlorophenol	430	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	2,4-Dichlorophenol	230	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	2,4-Dimethylphenol	520	*U*	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	2,4-Dinitrophenol	9900	*U*	µg/kg

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	2,4-Dinitrotoluene	440	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	2,6-Dinitrotoluene	250	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	2-Chloronaphthalene	350	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	2-Chlorophenol	390	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	2-Methylnaphthalene	430	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	2-Methylphenol (O-Cresol)	250	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	2-Nitroaniline	320	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	2-Nitrophenol	610	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	3,3'-Dichlorobenzidine	2500	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	3-Nitroaniline	590	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	4,6-Dinitro-2-Methylphenol	2100	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	4-Bromophenyl Phenyl Ether	300	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	4-Chloro-3-Methylphenol	530	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	4-Chloroaniline	530	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	4-Chlorophenyl Phenyl Ether	260	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	4-Methylphenol (P-Cresol)	250	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	4-Nitroaniline	1100	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	4-Nitrophenol	1500	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	Acenaphthene	320	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	Acenaphthylene	280	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	Acetophenone	290	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	Anthracene	530	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	Atrazine	740	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	Benzaldehyde	1700	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	Benzo(A)Anthracene	2100		µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	Benzo(A)Pyrene	3000		µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	Benzo(B)Fluoranthene	3600		µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	Benzo(G,H,I)Perylene	2400		µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	Benzo(K)Fluoranthene	2000	J	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	Benzyl BUyl Phthalate	350	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	Biphenyl (Diphenyl)	320	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	Bis(2-Chloroethoxy) Methane	450	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)	280	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	Bis(2-Chloroisopropyl) Ether	430	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	Bis(2-Ethylhexyl) Phthalate	1000	J	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	Caprolactam	640	U	µg/kg

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	Carbazole	380	J	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	Chrysene	3100		µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	Dibenz(A,H)Anthracene	460	J	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	Dibenzofuran	250	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	Diethyl Phthalate	280	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	Dimethyl Phthalate	250	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	Di-N-BUyl Phthalate	370	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	Di-N-Octylphthalate	250	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	Fluoranthene	7300		µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	Fluorene	250	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	Hexachlorobenzene	290	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	HexachlorobUadiene	320	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	Hexachlorocyclopentadiene	290	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	Hexachloroethane	280	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	Indeno(1,2,3-C,D)Pyrene	2000	J	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	Isophorone	450	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	Naphthalene	280	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	Nitrobenzene	240	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	N-Nitrosodi-N-Propylamine	370	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	N-Nitrosodiphenylamine	1700	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	Pentachlorophenol	2100	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	Phenanthrene	4100		µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	Phenol	330	U	µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	Pyrene	6000		µg/kg
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	TCLP 1,4-Dichlorobenzene	0.0018	U	mg/L
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	TCLP 2,4,5-Trichlorophenol	0.0019	U	mg/L
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	TCLP 2,4,6-Trichlorophenol	0.0024	U	mg/L
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	TCLP 2,4-Dinitrotoluene	0.0017	U	mg/L
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	TCLP 2-Methylphenol (O-Cresol)	0.0016	U	mg/L
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	TCLP 3-Methylphenol	0.0016	U	mg/L
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	TCLP 4-Methylphenol (P-Cresol)	0.0014	U	mg/L
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	TCLP Hexachlorobenzene	0.002	U	mg/L
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	TCLP HexachlorobUadiene	0.0027	U	mg/L
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	TCLP Hexachloroethane	0.0023	U	mg/L
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	TCLP Nitrobenzene	0.0011	U	mg/L
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	TCLP Pentachlorophenol	0.0088	U	mg/L

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
DW3-OU-SP-004-20210414	SW8270D	480-183377-4	TCLP Pyridine	0.0016	U	mg/L
DW3-OU-SP-004-20210414	SW9045D	480-183377-4	Temperature	20.6		deg C
DW3-OU-SP-004-20210414	SW9045D	480-183377-4	pH	7.7		pH units
DW4-OU-SP-005-20210414	SW1010	480-183377-5	Flash Point	50	U	deg F
DW4-OU-SP-005-20210414	SW6010C	480-183377-5	TCLP Arsenic	0.0056	U	mg/L
DW4-OU-SP-005-20210414	SW6010C	480-183377-5	TCLP Barium	0.39	J	mg/L
DW4-OU-SP-005-20210414	SW6010C	480-183377-5	TCLP Cadmium	0.0055		mg/L
DW4-OU-SP-005-20210414	SW6010C	480-183377-5	TCLP Chromium	0.01	U	mg/L
DW4-OU-SP-005-20210414	SW6010C	480-183377-5	TCLP Lead	0.022		mg/L
DW4-OU-SP-005-20210414	SW6010C	480-183377-5	TCLP Selenium	0.0087	U	mg/L
DW4-OU-SP-005-20210414	SW6010C	480-183377-5	TCLP Silver	0.0017	U	mg/L
DW4-OU-SP-005-20210414	SW7470A	480-183377-5	TCLP Mercury	0.00012	U	mg/L
DW4-OU-SP-005-20210414	SW8081B	480-183377-5	TCLP Chlordane (Technical)	0.000029	U	mg/L
DW4-OU-SP-005-20210414	SW8081B	480-183377-5	TCLP Endrin	0.000014	U	mg/L
DW4-OU-SP-005-20210414	SW8081B	480-183377-5	TCLP Gamma Bhc (Lindane)	0.000006	U	mg/L
DW4-OU-SP-005-20210414	SW8081B	480-183377-5	TCLP Heptachlor	0.0000085	U	mg/L
DW4-OU-SP-005-20210414	SW8081B	480-183377-5	TCLP Heptachlor Epoxide	0.0000053	U	mg/L
DW4-OU-SP-005-20210414	SW8081B	480-183377-5	TCLP Methoxychlor	0.000014	U	mg/L
DW4-OU-SP-005-20210414	SW8081B	480-183377-5	TCLP Toxaphene	0.00012	U	mg/L
DW4-OU-SP-005-20210414	SW8151A	480-183377-5	TCLP 2,4-D (Dichlorophenoxyacetic Acid)	0.0004	U	mg/L
DW4-OU-SP-005-20210414	SW8151A	480-183377-5	TCLP Silvex (2,4,5-Tp)	0.00036	U	mg/L
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	1,1,1-Trichloroethane	0.49	U	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	1,1,2,2-Tetrachloroethane	1.1	U	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	1,1,2-Trichloro-1,2,2-Trifluoroethane	1.6	U	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	1,1,2-Trichloroethane	0.88	U	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	1,1-Dichloroethane	0.83	U	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	1,1-Dichloroethene	0.83	U	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	1,2,4-Trichlorobenzene	0.41	U	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	1,2-Dibromo-3-Chloropropane	3.4	U	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	1,2-Dibromoethane (Ethylene Dibromide)	0.87	U	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	1,2-Dichlorobenzene	0.53	U	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	1,2-Dichloroethane	0.34	U	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	1,2-Dichloropropane	3.4	U	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	1,3-Dichlorobenzene	0.35	U	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	1,4-Dichlorobenzene	0.95	U	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	2-Hexanone	3.4	U	µg/kg

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	Acetone	5.7	*U*	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	Benzene	0.33	*U*	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	Bromodichloromethane	0.91	*U*	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	Bromoform	3.4	*U*	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	Bromomethane	0.61	*U*	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	Carbon Disulfide	3.4	*U*	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	Carbon Tetrachloride	0.66	*U*	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	Chlorobenzene	0.90	*U*	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	Chloroethane	1.5	*U*	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	Chloroform	0.42	*U*	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	Chloromethane	0.41	*U*	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	*cis* -1,2-Dichloroethylene	0.87	*U*	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	*cis* -1,3-Dichloropropene	0.98	*U*	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	Cyclohexane	0.95	*U*	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	Dibromochloromethane	0.87	*U*	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	Dichlorodifluoromethane	0.56	*U*	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	Ethylbenzene	0.47	*U*	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	Isopropylbenzene (Cumene)	1.0	*U*	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	Methyl Acetate	4.1	*U*	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	Methyl Ethyl Ketone (2-BUanone)	2.5	*U*	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	Methyl IsobUyl Ketone (4-Methyl-2-Pentanone)	2.2	*U*	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	Methylcyclohexane	1.0	*U*	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	Methylene Chloride	3.1	*U*	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	Styrene	0.34	*U*	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	Tert-BUyl Methyl Ether	0.67	*U*	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	Tetrachloroethylene(PCE)	0.91	*U*	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	Toluene	0.51	*U*	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	*trans* -1,2-Dichloroethene	0.70	*U*	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	*trans* -1,3-Dichloropropene	3.0	*U*	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	Trichloroethylene (TCE)	1.5	*U*	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	Trichlorofluoromethane	0.64	*U*	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	Vinyl Chloride	0.83	*U*	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	Xylenes	1.1	*U*	µg/kg
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	TCLP 1,1-Dichloroethene	0.0029	*U*	mg/L
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	TCLP 1,2-Dichloroethane	0.0021	*U*	mg/L
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	TCLP Benzene	0.0041	*U*	mg/L

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	TCLP Carbon Tetrachloride	0.0027	U	mg/L
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	TCLP Chlorobenzene	0.0075	U	mg/L
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	TCLP Chloroform	0.0034	U	mg/L
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	TCLP Methyl Ethyl Ketone (2-BUanone)	0.013	U	mg/L
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	TCLP Tetrachloroethylene(PCE)	0.0036	U	mg/L
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	TCLP Trichloroethylene (TCE)	0.0046	U	mg/L
DW4-OU-SP-005-20210414	SW8260C	480-183377-5	TCLP Vinyl Chloride	0.009	U	mg/L
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	1,4-Dioxane (P-Dioxane)	760	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	2,4,5-Trichlorophenol	640	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	2,4,6-Trichlorophenol	470	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	2,4-Dichlorophenol	250	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	2,4-Dimethylphenol	570	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	2,4-Dinitrophenol	11000	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	2,4-Dinitrotoluene	480	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	2,6-Dinitrotoluene	280	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	2-Chloronaphthalene	390	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	2-Chlorophenol	430	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	2-Methylnaphthalene	470	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	2-Methylphenol (O-Cresol)	280	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	2-Nitroaniline	350	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	2-Nitrophenol	660	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	3,3'-Dichlorobenzidine	2800	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	3-Nitroaniline	650	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	4,6-Dinitro-2-Methylphenol	2300	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	4-Bromophenyl Phenyl Ether	330	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	4-Chloro-3-Methylphenol	580	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	4-Chloroaniline	580	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	4-Chlorophenyl Phenyl Ether	290	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	4-Methylphenol (P-Cresol)	280	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	4-Nitroaniline	1200	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	4-Nitrophenol	1600	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	Acenaphthene	620	J	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	Acenaphthylene	400	J	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	Acetophenone	320	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	Anthracene	1600	J	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	Atrazine	810	U	µg/kg

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	Benzaldehyde	1900	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	Benzo(A)Anthracene	5200		µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	Benzo(A)Pyrene	6000		µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	Benzo(B)Fluoranthene	7300		µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	Benzo(G,H,I)Perylene	4400		µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	Benzo(K)Fluoranthene	3000		µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	Benzyl BUyl Phthalate	390	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	Biphenyl (Diphenyl)	350	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	Bis(2-Chloroethoxy) Methane	500	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)	300	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	Bis(2-Chloroisopropyl) Ether	470	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	Bis(2-Ethylhexyl) Phthalate	800	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	Caprolactam	700	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	Carbazole	980	J	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	Chrysene	5800		µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	Dibenz(A,H)Anthracene	1100	J	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	Dibenzofuran	540	J	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	Diethyl Phthalate	300	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	Dimethyl Phthalate	280	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	Di-N-BUyl Phthalate	400	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	Di-N-Octylphthalate	280	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	Fluoranthene	16000		µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	Fluorene	840	J	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	Hexachlorobenzene	320	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	HexachlorobUadiene	350	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	Hexachlorocyclopentadiene	320	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	Hexachloroethane	300	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	Indeno(1,2,3-C,D)Pyrene	3800		µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	Isophorone	500	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	Naphthalene	640	J	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	Nitrobenzene	260	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	N-Nitrosodi-N-Propylamine	400	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	N-Nitrosodiphenylamine	1900	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	Pentachlorophenol	2300	U	µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	Phenanthrene	9900		µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	Phenol	360	U	µg/kg

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	Pyrene	13000		µg/kg
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	TCLP 1,4-Dichlorobenzene	0.0018	U	mg/L
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	TCLP 2,4,5-Trichlorophenol	0.0019	U	mg/L
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	TCLP 2,4,6-Trichlorophenol	0.0024	U	mg/L
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	TCLP 2,4-Dinitrotoluene	0.0017	U	mg/L
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	TCLP 2-Methylphenol (O-Cresol)	0.0016	U	mg/L
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	TCLP 3-Methylphenol	0.0016	U	mg/L
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	TCLP 4-Methylphenol (P-Cresol)	0.0014	U	mg/L
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	TCLP Hexachlorobenzene	0.002	U	mg/L
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	TCLP HexachlorobUadiene	0.0027	U	mg/L
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	TCLP Hexachloroethane	0.0023	U	mg/L
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	TCLP Nitrobenzene	0.0011	U	mg/L
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	TCLP Pentachlorophenol	0.0088	U	mg/L
DW4-OU-SP-005-20210414	SW8270D	480-183377-5	TCLP Pyridine	0.0016	U	mg/L
DW4-OU-SP-005-20210414	SW9045D	480-183377-5	Temperature	20.4		deg C
DW4-OU-SP-005-20210414	SW9045D	480-183377-5	pH	7.5		pH units
DW5-BLDG8-SP-003-20210414	SW1010	480-183377-3	Flash Point	50	U	deg F
DW5-BLDG8-SP-003-20210414	SW6010C	480-183377-3	TCLP Arsenic	0.0057	J	mg/L
DW5-BLDG8-SP-003-20210414	SW6010C	480-183377-3	TCLP Barium	0.49	J	mg/L
DW5-BLDG8-SP-003-20210414	SW6010C	480-183377-3	TCLP Cadmium	0.031		mg/L
DW5-BLDG8-SP-003-20210414	SW6010C	480-183377-3	TCLP Chromium	0.012	J	mg/L
DW5-BLDG8-SP-003-20210414	SW6010C	480-183377-3	TCLP Lead	0.034		mg/L
DW5-BLDG8-SP-003-20210414	SW6010C	480-183377-3	TCLP Selenium	0.0087	U	mg/L
DW5-BLDG8-SP-003-20210414	SW6010C	480-183377-3	TCLP Silver	0.0017	U	mg/L
DW5-BLDG8-SP-003-20210414	SW7470A	480-183377-3	TCLP Mercury	0.00012	U	mg/L
DW5-BLDG8-SP-003-20210414	SW8081B	480-183377-3	TCLP Chlordane (Technical)	0.000029	U	mg/L
DW5-BLDG8-SP-003-20210414	SW8081B	480-183377-3	TCLP Endrin	0.000014	U	mg/L
DW5-BLDG8-SP-003-20210414	SW8081B	480-183377-3	TCLP Gamma Bhc (Lindane)	0.000006	U	mg/L
DW5-BLDG8-SP-003-20210414	SW8081B	480-183377-3	TCLP Heptachlor	0.0000085	U	mg/L
DW5-BLDG8-SP-003-20210414	SW8081B	480-183377-3	TCLP Heptachlor Epoxide	0.0000053	U	mg/L
DW5-BLDG8-SP-003-20210414	SW8081B	480-183377-3	TCLP Methoxychlor	0.000014	U	mg/L
DW5-BLDG8-SP-003-20210414	SW8081B	480-183377-3	TCLP Toxaphene	0.00012	U	mg/L
DW5-BLDG8-SP-003-20210414	SW8151A	480-183377-3	TCLP 2,4-D (Dichlorophenoxyacetic Acid)	0.0004	U	mg/L
DW5-BLDG8-SP-003-20210414	SW8151A	480-183377-3	TCLP Silvex (2,4,5-Tp)	0.00036	U	mg/L
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	1,1,1-Trichloroethane	0.36	U	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	1,1,2,2-Tetrachloroethane	0.80	U	µg/kg

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	1,1,2-Trichloro-1,2,2-Trifluoroethane	1.1	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	1,1,2-Trichloroethane	0.64	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	1,1-Dichloroethane	0.61	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	1,1-Dichloroethene	0.61	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	1,2,4-Trichlorobenzene	0.30	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	1,2-Dibromo-3-Chloropropane	2.5	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	1,2-Dibromoethane (Ethylene Dibromide)	0.64	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	1,2-Dichlorobenzene	0.39	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	1,2-Dichloroethane	0.25	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	1,2-Dichloropropane	2.5	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	1,3-Dichlorobenzene	0.25	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	1,4-Dichlorobenzene	0.69	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	2-Hexanone	2.5	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	Acetone	4.8	*J*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	Benzene	0.24	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	Bromodichloromethane	0.66	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	Bromoform	2.5	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	Bromomethane	0.45	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	Carbon Disulfide	2.5	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	Carbon Tetrachloride	0.48	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	Chlorobenzene	0.65	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	Chloroethane	1.1	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	Chloroform	0.31	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	Chloromethane	0.30	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	*cis* -1,2-Dichloroethylene	0.63	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	*cis* -1,3-Dichloropropene	0.71	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	Cyclohexane	0.69	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	Dibromochloromethane	0.63	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	Dichlorodifluoromethane	0.41	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	Ethylbenzene	0.34	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	Isopropylbenzene (Cumene)	0.75	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	Methyl Acetate	3.0	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	Methyl Ethyl Ketone (2-BUanone)	1.8	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	Methyl IsobUyl Ketone (4-Methyl-2-Pentanone)	1.6	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	Methylcyclohexane	0.75	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	Methylene Chloride	2.3	*U*	µg/kg

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	Styrene	0.25	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	Tert-BUyl Methyl Ether	0.49	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	Tetrachloroethylene(PCE)	0.67	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	Toluene	0.38	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	*trans* -1,2-Dichloroethene	0.51	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	*trans* -1,3-Dichloropropene	2.2	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	Trichloroethylene (TCE)	1.1	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	Trichlorofluoromethane	0.47	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	Vinyl Chloride	0.61	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	Xylenes	0.83	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	TCLP 1,1-Dichloroethene	0.0029	*U*	mg/L
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	TCLP 1,2-Dichloroethane	0.0021	*U*	mg/L
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	TCLP Benzene	0.0041	*U*	mg/L
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	TCLP Carbon Tetrachloride	0.0027	*U*	mg/L
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	TCLP Chlorobenzene	0.0075	*U*	mg/L
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	TCLP Chloroform	0.0034	*U*	mg/L
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	TCLP Methyl Ethyl Ketone (2-BUanone)	0.013	*U*	mg/L
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	TCLP Tetrachloroethylene(PCE)	0.0036	*U*	mg/L
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	TCLP Trichloroethylene (TCE)	0.0046	*U*	mg/L
DW5-BLDG8-SP-003-20210414	SW8260C	480-183377-3	TCLP Vinyl Chloride	0.009	*U*	mg/L
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	1,4-Dioxane (P-Dioxane)	280	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	2,4,5-Trichlorophenol	230	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	2,4,6-Trichlorophenol	170	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	2,4-Dichlorophenol	91	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	2,4-Dimethylphenol	210	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	2,4-Dinitrophenol	4000	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	2,4-Dinitrotoluene	180	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	2,6-Dinitrotoluene	100	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	2-Chloronaphthalene	140	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	2-Chlorophenol	160	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	2-Methylnaphthalene	170	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	2-Methylphenol (O-Cresol)	100	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	2-Nitroaniline	130	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	2-Nitrophenol	240	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	3,3'-Dichlorobenzidine	1000	*U*	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	3-Nitroaniline	240	*U*	µg/kg

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	4,6-Dinitro-2-Methylphenol	860	U	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	4-Bromophenyl Phenyl Ether	120	U	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	4-Chloro-3-Methylphenol	210	U	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	4-Chloroaniline	210	U	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	4-Chlorophenyl Phenyl Ether	110	U	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	4-Methylphenol (P-Cresol)	100	U	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	4-Nitroaniline	450	U	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	4-Nitrophenol	600	U	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	Acenaphthene	130	U	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	Acenaphthylene	110	U	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	Acetophenone	120	U	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	Anthracene	210	U	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	Atrazine	300	U	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	Benzaldehyde	680	U	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	Benzo(A)Anthracene	660	J	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	Benzo(A)Pyrene	770	J	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	Benzo(B)Fluoranthene	910		µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	Benzo(G,H,I)Perylene	640	J	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	Benzo(K)Fluoranthene	390	J	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	Benzyl BUyl Phthalate	3500		µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	Biphenyl (Diphenyl)	130	U	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	Bis(2-Chloroethoxy) Methane	180	U	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)	110	U	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	Bis(2-Chloroisopropyl) Ether	170	U	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	Bis(2-Ethylhexyl) Phthalate	4400		µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	Caprolactam	260	U	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	Carbazole	110	J	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	Chrysene	710	J	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	Dibenz(A,H)Anthracene	180	J	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	Dibenzofuran	100	U	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	Diethyl Phthalate	110	U	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	Dimethyl Phthalate	100	U	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	Di-N-BUyl Phthalate	310	J	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	Di-N-Octylphthalate	100	U	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	Fluoranthene	1500		µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	Fluorene	100	U	µg/kg

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	Hexachlorobenzene	120	U	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	HexachlorobUadiene	130	U	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	Hexachlorocyclopentadiene	120	U	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	Hexachloroethane	110	U	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	Indeno(1,2,3-C,D)Pyrene	510	J	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	Isophorone	180	U	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	Naphthalene	110	U	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	Nitrobenzene	96	U	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	N-Nitrosodi-N-Propylamine	150	U	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	N-Nitrosodiphenylamine	700	U	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	Pentachlorophenol	860	U	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	Phenanthrene	710	J	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	Phenol	130	U	µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	Pyrene	1100		µg/kg
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	TCLP 1,4-Dichlorobenzene	0.0018	U	mg/L
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	TCLP 2,4,5-Trichlorophenol	0.0019	U	mg/L
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	TCLP 2,4,6-Trichlorophenol	0.0024	U	mg/L
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	TCLP 2,4-Dinitrotoluene	0.0017	U	mg/L
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	TCLP 2-Methylphenol (O-Cresol)	0.0016	U	mg/L
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	TCLP 3-Methylphenol	0.0016	U	mg/L
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	TCLP 4-Methylphenol (P-Cresol)	0.0014	U	mg/L
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	TCLP Hexachlorobenzene	0.002	U	mg/L
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	TCLP HexachlorobUadiene	0.0027	U	mg/L
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	TCLP Hexachloroethane	0.0023	U	mg/L
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	TCLP Nitrobenzene	0.0011	U	mg/L
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	TCLP Pentachlorophenol	0.0088	U	mg/L
DW5-BLDG8-SP-003-20210414	SW8270D	480-183377-3	TCLP Pyridine	0.0016	U	mg/L
DW5-BLDG8-SP-003-20210414	SW9045D	480-183377-3	Temperature	20.6		deg C
DW5-BLDG8-SP-003-20210414	SW9045D	480-183377-3	pH	7.4		pH units
BLDG5-SP-007-20210415	SW1010	480-183421-1	Flash Point	50	U	deg F
BLDG5-SP-007-20210415	SW6010C	480-183421-1	TCLP Arsenic	0.0056	U	mg/L
BLDG5-SP-007-20210415	SW6010C	480-183421-1	TCLP Barium	1.5		mg/L
BLDG5-SP-007-20210415	SW6010C	480-183421-1	TCLP Cadmium	0.023		mg/L
BLDG5-SP-007-20210415	SW6010C	480-183421-1	TCLP Chromium	0.01	U	mg/L
BLDG5-SP-007-20210415	SW6010C	480-183421-1	TCLP Lead	0.095		mg/L
BLDG5-SP-007-20210415	SW6010C	480-183421-1	TCLP Selenium	0.036		mg/L

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
BLDG5-SP-007-20210415	SW6010C	480-183421-1	TCLP Silver	0.0032	J	mg/L
BLDG5-SP-007-20210415	SW7470A	480-183421-1	TCLP Mercury	0.00012	U	mg/L
BLDG5-SP-007-20210415	SW8081B	480-183421-1	TCLP Chlordane (Technical)	0.000073	U	mg/L
BLDG5-SP-007-20210415	SW8081B	480-183421-1	TCLP Endrin	0.000035	U	mg/L
BLDG5-SP-007-20210415	SW8081B	480-183421-1	TCLP Gamma Bhc (Lindane)	0.000015	U	mg/L
BLDG5-SP-007-20210415	SW8081B	480-183421-1	TCLP Heptachlor	0.000021	U	mg/L
BLDG5-SP-007-20210415	SW8081B	480-183421-1	TCLP Heptachlor Epoxide	0.000013	U	mg/L
BLDG5-SP-007-20210415	SW8081B	480-183421-1	TCLP Methoxychlor	0.000035	U	mg/L
BLDG5-SP-007-20210415	SW8081B	480-183421-1	TCLP Toxaphene	0.0003	U	mg/L
BLDG5-SP-007-20210415	SW8151A	480-183421-1	TCLP 2,4-D (Dichlorophenoxyacetic Acid)	0.0004	U	mg/L
BLDG5-SP-007-20210415	SW8151A	480-183421-1	TCLP Silvex (2,4,5-Tp)	0.00036	U	mg/L
BLDG5-SP-007-20210415	SW8260C	480-183421-1	1,1,1-Trichloroethane	0.39	U	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	1,1,2,2-Tetrachloroethane	0.86	U	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	1,1,2-Trichloro-1,2,2-Trifluoroethane	1.2	U	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	1,1,2-Trichloroethane	0.69	U	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	1,1-Dichloroethane	0.65	U	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	1,1-Dichloroethene	0.65	U	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	1,2,4-Trichlorobenzene	0.32	U	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	1,2-Dibromo-3-Chloropropane	2.7	U	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	1,2-Dibromoethane (Ethylene Dibromide)	0.68	U	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	1,2-Dichlorobenzene	0.41	U	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	1,2-Dichloroethane	0.27	U	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	1,2-Dichloropropane	2.7	U	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	1,3-Dichlorobenzene	0.27	U	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	1,4-Dichlorobenzene	0.74	U	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	2-Hexanone	2.7	U	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	Acetone	4.5	U	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	Benzene	0.26	U	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	Bromodichloromethane	0.71	U	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	Bromoform	2.7	U	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	Bromomethane	0.48	U	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	Carbon Disulfide	2.7	U	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	Carbon Tetrachloride	0.51	U	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	Chlorobenzene	0.70	U	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	Chloroethane	1.2	U	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	Chloroform	0.33	U	µg/kg

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
BLDG5-SP-007-20210415	SW8260C	480-183421-1	Chloromethane	0.32	*U*	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	*cis* -1,2-Dichloroethylene	0.68	*U*	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	*cis* -1,3-Dichloropropene	0.76	*U*	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	Cyclohexane	0.74	*U*	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	Dibromochloromethane	0.68	*U*	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	Dichlorodifluoromethane	0.44	*U*	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	Ethylbenzene	0.37	*U*	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	Isopropylbenzene (Cumene)	0.80	*U*	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	Methyl Acetate	3.2	*U*	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	Methyl Ethyl Ketone (2-BUanone)	1.9	*U*	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	Methyl IsobUyl Ketone (4-Methyl-2-Pentanone)	1.7	*U*	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	Methylcyclohexane	0.81	*U*	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	Methylene Chloride	2.4	*U*	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	Styrene	0.27	*U*	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	Tert-BUyl Methyl Ether	0.52	*U*	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	Tetrachloroethylene(PCE)	0.71	*U*	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	Toluene	0.40	*U*	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	*trans* -1,2-Dichloroethene	0.55	*U*	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	*trans* -1,3-Dichloropropene	2.3	*U*	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	Trichloroethylene (TCE)	1.2	*U*	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	Trichlorofluoromethane	0.50	*U*	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	Vinyl Chloride	0.65	*U*	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	Xylenes	0.89	*U*	µg/kg
BLDG5-SP-007-20210415	SW8260C	480-183421-1	TCLP 1,1-Dichloroethene	0.0029	*U*	mg/L
BLDG5-SP-007-20210415	SW8260C	480-183421-1	TCLP 1,2-Dichloroethane	0.0021	*U*	mg/L
BLDG5-SP-007-20210415	SW8260C	480-183421-1	TCLP Benzene	0.0041	*U*	mg/L
BLDG5-SP-007-20210415	SW8260C	480-183421-1	TCLP Carbon Tetrachloride	0.0027	*U*	mg/L
BLDG5-SP-007-20210415	SW8260C	480-183421-1	TCLP Chlorobenzene	0.0075	*U*	mg/L
BLDG5-SP-007-20210415	SW8260C	480-183421-1	TCLP Chloroform	0.0034	*U*	mg/L
BLDG5-SP-007-20210415	SW8260C	480-183421-1	TCLP Methyl Ethyl Ketone (2-BUanone)	0.013	*U*	mg/L
BLDG5-SP-007-20210415	SW8260C	480-183421-1	TCLP Tetrachloroethylene(PCE)	0.0036	*U*	mg/L
BLDG5-SP-007-20210415	SW8260C	480-183421-1	TCLP Trichloroethylene (TCE)	0.0046	*U*	mg/L
BLDG5-SP-007-20210415	SW8260C	480-183421-1	TCLP Vinyl Chloride	0.009	*U*	mg/L
BLDG5-SP-007-20210415	SW8270D	480-183421-1	1,4-Dioxane (P-Dioxane)	590	*U*	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	2,4,5-Trichlorophenol	500	*U*	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	2,4,6-Trichlorophenol	370	*U*	µg/kg

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
BLDG5-SP-007-20210415	SW8270D	480-183421-1	2,4-Dichlorophenol	190	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	2,4-Dimethylphenol	440	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	2,4-Dinitrophenol	8500	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	2,4-Dinitrotoluene	380	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	2,6-Dinitrotoluene	220	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	2-Chloronaphthalene	300	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	2-Chlorophenol	340	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	2-Methylnaphthalene	370	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	2-Methylphenol (O-Cresol)	220	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	2-Nitroaniline	270	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	2-Nitrophenol	520	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	3,3'-Dichlorobenzidine	2200	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	3-Nitroaniline	510	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	4,6-Dinitro-2-Methylphenol	1800	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	4-Bromophenyl Phenyl Ether	260	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	4-Chloro-3-Methylphenol	450	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	4-Chloroaniline	450	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	4-Chlorophenyl Phenyl Ether	230	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	4-Methylphenol (P-Cresol)	220	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	4-Nitroaniline	960	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	4-Nitrophenol	1300	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	Acenaphthene	270	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	Acenaphthylene	240	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	Acetophenone	250	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	Anthracene	450	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	Atrazine	640	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	Benzaldehyde	1500	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	Benzo(A)Anthracene	180	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	Benzo(A)Pyrene	270	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	Benzo(B)Fluoranthene	290	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	Benzo(G,H,I)Perylene	190	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	Benzo(K)Fluoranthene	240	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	Benzyl BUyl Phthalate	1300	J	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	Biphenyl (Diphenyl)	270	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	Bis(2-Chloroethoxy) Methane	390	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)	240	U	µg/kg

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
BLDG5-SP-007-20210415	SW8270D	480-183421-1	Bis(2-Chloroisopropyl) Ether	370	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	Bis(2-Ethylhexyl) Phthalate	1100	J	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	Caprolactam	550	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	Carbazole	220	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	Chrysene	410	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	Dibenz(A,H)Anthracene	320	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	Dibenzofuran	220	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	Diethyl Phthalate	240	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	Dimethyl Phthalate	220	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	Di-N-BUyl Phthalate	490	J	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	Di-N-Octylphthalate	220	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	Fluoranthene	190	J	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	Fluorene	220	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	Hexachlorobenzene	250	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	HexachlorobUadiene	270	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	Hexachlorocyclopentadiene	250	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	Hexachloroethane	240	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	Indeno(1,2,3-C,D)Pyrene	230	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	Isophorone	390	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	Naphthalene	240	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	Nitrobenzene	210	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	N-Nitrosodi-N-Propylamine	310	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	N-Nitrosodiphenylamine	1500	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	Pentachlorophenol	1800	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	Phenanthrene	270	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	Phenol	280	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	Pyrene	220	U	µg/kg
BLDG5-SP-007-20210415	SW8270D	480-183421-1	TCLP 1,4-Dichlorobenzene	0.0045	U	mg/L
BLDG5-SP-007-20210415	SW8270D	480-183421-1	TCLP 2,4,5-Trichlorophenol	0.0048	U	mg/L
BLDG5-SP-007-20210415	SW8270D	480-183421-1	TCLP 2,4,6-Trichlorophenol	0.006	U	mg/L
BLDG5-SP-007-20210415	SW8270D	480-183421-1	TCLP 2,4-Dinitrotoluene	0.0043	U	mg/L
BLDG5-SP-007-20210415	SW8270D	480-183421-1	TCLP 2-Methylphenol (O-Cresol)	0.004	U	mg/L
BLDG5-SP-007-20210415	SW8270D	480-183421-1	TCLP 3-Methylphenol	0.004	U	mg/L
BLDG5-SP-007-20210415	SW8270D	480-183421-1	TCLP 4-Methylphenol (P-Cresol)	0.0035	U	mg/L
BLDG5-SP-007-20210415	SW8270D	480-183421-1	TCLP Hexachlorobenzene	0.005	U	mg/L
BLDG5-SP-007-20210415	SW8270D	480-183421-1	TCLP HexachlorobUadiene	0.0068	U	mg/L

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
BLDG5-SP-007-20210415	SW8270D	480-183421-1	TCLP Hexachloroethane	0.0058	U	mg/L
BLDG5-SP-007-20210415	SW8270D	480-183421-1	TCLP Nitrobenzene	0.0028	U	mg/L
BLDG5-SP-007-20210415	SW8270D	480-183421-1	TCLP Pentachlorophenol	0.022	U	mg/L
BLDG5-SP-007-20210415	SW8270D	480-183421-1	TCLP Pyridine	0.004	U	mg/L
BLDG5-SP-007-20210415	SW9045D	480-183421-1	Temperature	19.9		deg C
BLDG5-SP-007-20210415	SW9045D	480-183421-1	pH	8.5		pH units
BLDG6-SP-009-20210415	SW1010	480-183421-3	Flash Point	50	U	deg F
BLDG6-SP-009-20210415	SW6010C	480-183421-3	TCLP Arsenic	0.0056	U	mg/L
BLDG6-SP-009-20210415	SW6010C	480-183421-3	TCLP Barium	0.23	J	mg/L
BLDG6-SP-009-20210415	SW6010C	480-183421-3	TCLP Cadmium	0.00084	J	mg/L
BLDG6-SP-009-20210415	SW6010C	480-183421-3	TCLP Chromium	0.01	U	mg/L
BLDG6-SP-009-20210415	SW6010C	480-183421-3	TCLP Lead	0.078		mg/L
BLDG6-SP-009-20210415	SW6010C	480-183421-3	TCLP Selenium	0.0087	U	mg/L
BLDG6-SP-009-20210415	SW6010C	480-183421-3	TCLP Silver	0.0017	U	mg/L
BLDG6-SP-009-20210415	SW7470A	480-183421-3	TCLP Mercury	0.00012	U	mg/L
BLDG6-SP-009-20210415	SW8081B	480-183421-3	TCLP Chlordane (Technical)	0.000029	U	mg/L
BLDG6-SP-009-20210415	SW8081B	480-183421-3	TCLP Endrin	0.000014	U	mg/L
BLDG6-SP-009-20210415	SW8081B	480-183421-3	TCLP Gamma Bhc (Lindane)	0.000006	U	mg/L
BLDG6-SP-009-20210415	SW8081B	480-183421-3	TCLP Heptachlor	0.0000085	U	mg/L
BLDG6-SP-009-20210415	SW8081B	480-183421-3	TCLP Heptachlor Epoxide	0.0000053	U	mg/L
BLDG6-SP-009-20210415	SW8081B	480-183421-3	TCLP Methoxychlor	0.000014	U	mg/L
BLDG6-SP-009-20210415	SW8081B	480-183421-3	TCLP Toxaphene	0.00012	U	mg/L
BLDG6-SP-009-20210415	SW8151A	480-183421-3	TCLP 2,4-D (Dichlorophenoxyacetic Acid)	0.0004	U	mg/L
BLDG6-SP-009-20210415	SW8151A	480-183421-3	TCLP Silvex (2,4,5-Tp)	0.00036	U	mg/L
BLDG6-SP-009-20210415	SW8260C	480-183421-3	1,1,1-Trichloroethane	0.37	U	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	1,1,2,2-Tetrachloroethane	0.83	U	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	1,1,2-Trichloro-1,2,2-Trifluoroethane	1.2	U	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	1,1,2-Trichloroethane	0.67	U	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	1,1-Dichloroethane	0.63	U	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	1,1-Dichloroethene	0.63	U	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	1,2,4-Trichlorobenzene	0.31	U	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	1,2-Dibromo-3-Chloropropane	2.6	U	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	1,2-Dibromoethane (Ethylene Dibromide)	0.66	U	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	1,2-Dichlorobenzene	0.40	U	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	1,2-Dichloroethane	0.26	U	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	1,2-Dichloropropane	2.6	U	µg/kg

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
BLDG6-SP-009-20210415	SW8260C	480-183421-3	1,3-Dichlorobenzene	0.26	*U*	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	1,4-Dichlorobenzene	0.72	*U*	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	2-Hexanone	2.6	*U*	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	Acetone	4.3	*U*	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	Benzene	0.25	*U*	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	Bromodichloromethane	0.69	*U*	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	Bromoform	2.6	*U*	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	Bromomethane	0.46	*U*	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	Carbon Disulfide	2.6	*U*	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	Carbon Tetrachloride	0.50	*U*	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	Chlorobenzene	0.68	*U*	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	Chloroethane	1.2	*U*	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	Chloroform	0.32	*U*	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	Chloromethane	0.31	*U*	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	*cis* -1,2-Dichloroethylene	0.66	*U*	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	*cis* -1,3-Dichloropropene	0.74	*U*	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	Cyclohexane	0.72	*U*	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	Dibromochloromethane	0.66	*U*	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	Dichlorodifluoromethane	0.42	*U*	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	Ethylbenzene	0.35	*U*	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	Isopropylbenzene (Cumene)	0.77	*U*	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	Methyl Acetate	3.1	*U*	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	Methyl Ethyl Ketone (2-BUanone)	1.9	*U*	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	Methyl IsobUyl Ketone (4-Methyl-2-Pentanone)	1.7	*U*	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	Methylcyclohexane	0.78	*U*	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	Methylene Chloride	2.4	*U*	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	Styrene	0.26	*U*	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	Tert-BUyl Methyl Ether	0.50	*U*	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	Tetrachloroethylene(PCE)	0.69	*U*	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	Toluene	0.39	*U*	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	*trans* -1,2-Dichloroethene	0.53	*U*	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	*trans* -1,3-Dichloropropene	2.3	*U*	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	Trichloroethylene (TCE)	1.1	*U*	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	Trichlorofluoromethane	0.49	*U*	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	Vinyl Chloride	0.63	*U*	µg/kg
BLDG6-SP-009-20210415	SW8260C	480-183421-3	Xylenes	0.86	*U*	µg/kg

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
BLDG6-SP-009-20210415	SW8260C	480-183421-3	TCLP 1,1-Dichloroethene	0.0029	U	mg/L
BLDG6-SP-009-20210415	SW8260C	480-183421-3	TCLP 1,2-Dichloroethane	0.0021	U	mg/L
BLDG6-SP-009-20210415	SW8260C	480-183421-3	TCLP Benzene	0.0041	U	mg/L
BLDG6-SP-009-20210415	SW8260C	480-183421-3	TCLP Carbon Tetrachloride	0.0027	U	mg/L
BLDG6-SP-009-20210415	SW8260C	480-183421-3	TCLP Chlorobenzene	0.0075	U	mg/L
BLDG6-SP-009-20210415	SW8260C	480-183421-3	TCLP Chloroform	0.0034	U	mg/L
BLDG6-SP-009-20210415	SW8260C	480-183421-3	TCLP Methyl Ethyl Ketone (2-BUanone)	0.013	U	mg/L
BLDG6-SP-009-20210415	SW8260C	480-183421-3	TCLP Tetrachloroethylene(PCE)	0.0036	U	mg/L
BLDG6-SP-009-20210415	SW8260C	480-183421-3	TCLP Trichloroethylene (TCE)	0.0046	U	mg/L
BLDG6-SP-009-20210415	SW8260C	480-183421-3	TCLP Vinyl Chloride	0.009	U	mg/L
BLDG6-SP-009-20210415	SW8270D	480-183421-3	1,4-Dioxane (P-Dioxane)	1500	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	2,4,5-Trichlorophenol	1300	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	2,4,6-Trichlorophenol	940	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	2,4-Dichlorophenol	500	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	2,4-Dimethylphenol	1100	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	2,4-Dinitrophenol	22000	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	2,4-Dinitrotoluene	970	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	2,6-Dinitrotoluene	550	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	2-Chloronaphthalene	770	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	2-Chlorophenol	850	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	2-Methylnaphthalene	940	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	2-Methylphenol (O-Cresol)	550	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	2-Nitroaniline	690	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	2-Nitrophenol	1300	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	3,3'-Dichlorobenzidine	5500	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	3-Nitroaniline	1300	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	4,6-Dinitro-2-Methylphenol	4700	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	4-Bromophenyl Phenyl Ether	660	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	4-Chloro-3-Methylphenol	1200	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	4-Chloroaniline	1200	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	4-Chlorophenyl Phenyl Ether	580	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	4-Methylphenol (P-Cresol)	550	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	4-Nitroaniline	2500	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	4-Nitrophenol	3300	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	Acenaphthene	690	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	Acenaphthylene	610	U	µg/kg

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
BLDG6-SP-009-20210415	SW8270D	480-183421-3	Acetophenone	630	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	Anthracene	1200	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	Atrazine	1600	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	Benzaldehyde	3700	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	Benzo(A)Anthracene	470	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	Benzo(A)Pyrene	690	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	Benzo(B)Fluoranthene	740	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	Benzo(G,H,I)Perylene	500	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	Benzo(K)Fluoranthene	610	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	Benzyl BUyl Phthalate	770	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	Biphenyl (Diphenyl)	690	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	Bis(2-Chloroethoxy) Methane	990	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)	610	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	Bis(2-Chloroisopropyl) Ether	940	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	Bis(2-Ethylhexyl) Phthalate	1600	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	Caprolactam	1400	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	Carbazole	550	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	Chrysene	1000	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	Dibenz(A,H)Anthracene	830	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	Dibenzofuran	550	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	Diethyl Phthalate	610	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	Dimethyl Phthalate	550	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	Di-N-BUyl Phthalate	800	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	Di-N-Octylphthalate	550	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	Fluoranthene	500	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	Fluorene	550	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	Hexachlorobenzene	630	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	HexachlorobUadiene	690	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	Hexachlorocyclopentadiene	630	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	Hexachloroethane	610	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	Indeno(1,2,3-C,D)Pyrene	580	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	Isophorone	990	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	Naphthalene	610	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	Nitrobenzene	520	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	N-Nitrosodi-N-Propylamine	800	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	N-Nitrosodiphenylamine	3800	U	µg/kg

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
BLDG6-SP-009-20210415	SW8270D	480-183421-3	Pentachlorophenol	4700	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	Phenanthrene	690	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	Phenol	720	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	Pyrene	550	U	µg/kg
BLDG6-SP-009-20210415	SW8270D	480-183421-3	TCLP 1,4-Dichlorobenzene	0.0018	U	mg/L
BLDG6-SP-009-20210415	SW8270D	480-183421-3	TCLP 2,4,5-Trichlorophenol	0.0019	U	mg/L
BLDG6-SP-009-20210415	SW8270D	480-183421-3	TCLP 2,4,6-Trichlorophenol	0.0024	U	mg/L
BLDG6-SP-009-20210415	SW8270D	480-183421-3	TCLP 2,4-Dinitrotoluene	0.0017	U	mg/L
BLDG6-SP-009-20210415	SW8270D	480-183421-3	TCLP 2-Methylphenol (O-Cresol)	0.0016	U	mg/L
BLDG6-SP-009-20210415	SW8270D	480-183421-3	TCLP 3-Methylphenol	0.0016	U	mg/L
BLDG6-SP-009-20210415	SW8270D	480-183421-3	TCLP 4-Methylphenol (P-Cresol)	0.0014	U	mg/L
BLDG6-SP-009-20210415	SW8270D	480-183421-3	TCLP Hexachlorobenzene	0.002	U	mg/L
BLDG6-SP-009-20210415	SW8270D	480-183421-3	TCLP HexachlorobUadiene	0.0027	U	mg/L
BLDG6-SP-009-20210415	SW8270D	480-183421-3	TCLP Hexachloroethane	0.0023	U	mg/L
BLDG6-SP-009-20210415	SW8270D	480-183421-3	TCLP Nitrobenzene	0.0011	U	mg/L
BLDG6-SP-009-20210415	SW8270D	480-183421-3	TCLP Pentachlorophenol	0.0088	U	mg/L
BLDG6-SP-009-20210415	SW8270D	480-183421-3	TCLP Pyridine	0.0016	U	mg/L
BLDG6-SP-009-20210415	SW9045D	480-183421-3	Temperature	20.2		deg C
BLDG6-SP-009-20210415	SW9045D	480-183421-3	pH	8.2		pH units
BLDG10-SP-034-20210601	SW1010	480-185463-3	Flash Point	50	U	deg F
BLDG10-SP-034-20210601	SW6010C	480-185463-3	TCLP Arsenic	0.0056	U	mg/L
BLDG10-SP-034-20210601	SW6010C	480-185463-3	TCLP Barium	2.6		mg/L
BLDG10-SP-034-20210601	SW6010C	480-185463-3	TCLP Cadmium	0.018		mg/L
BLDG10-SP-034-20210601	SW6010C	480-185463-3	TCLP Chromium	0.01	U	mg/L
BLDG10-SP-034-20210601	SW6010C	480-185463-3	TCLP Lead	44.2		mg/L
BLDG10-SP-034-20210601	SW6010C	480-185463-3	TCLP Selenium	0.0087	U	mg/L
BLDG10-SP-034-20210601	SW6010C	480-185463-3	TCLP Silver	0.0017	U	mg/L
BLDG10-SP-034-20210601	SW7470A	480-185463-3	TCLP Mercury	0.00012	U	mg/L
BLDG10-SP-034-20210601	SW8081B	480-185463-3	TCLP Chlordane (Technical)	0.000029	U	mg/L
BLDG10-SP-034-20210601	SW8081B	480-185463-3	TCLP Endrin	0.000014	U	mg/L
BLDG10-SP-034-20210601	SW8081B	480-185463-3	TCLP Gamma Bhc (Lindane)	0.000006	U	mg/L
BLDG10-SP-034-20210601	SW8081B	480-185463-3	TCLP Heptachlor	0.0000085	U	mg/L
BLDG10-SP-034-20210601	SW8081B	480-185463-3	TCLP Heptachlor Epoxide	0.0000053	U	mg/L
BLDG10-SP-034-20210601	SW8081B	480-185463-3	TCLP Methoxychlor	0.000014	U	mg/L
BLDG10-SP-034-20210601	SW8081B	480-185463-3	TCLP Toxaphene	0.00012	U	mg/L
BLDG10-SP-034-20210601	SW8151A	480-185463-3	TCLP 2,4-D (Dichlorophenoxyacetic Acid)	0.0004	U	mg/L

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
BLDG10-SP-034-20210601	SW8151A	480-185463-3	TCLP Silvex (2,4,5-Tp)	0.00036	*U*	mg/L
BLDG10-SP-034-20210601	SW8260C	480-185463-3	1,1,1-Trichloroethane	0.56	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	1,1,2,2-Tetrachloroethane	1.3	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	1,1,2-Trichloro-1,2,2-Trifluoroethane	1.8	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	1,1,2-Trichloroethane	1.0	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	1,1-Dichloroethane	0.94	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	1,1-Dichloroethene	0.95	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	1,2,4-Trichlorobenzene	0.47	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	1,2-Dibromo-3-Chloropropane	3.9	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	1,2-Dibromoethane (Ethylene Dibromide)	0.99	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	1,2-Dichlorobenzene	0.61	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	1,2-Dichloroethane	0.39	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	1,2-Dichloropropane	3.9	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	1,3-Dichlorobenzene	0.40	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	1,4-Dichlorobenzene	1.1	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	2-Hexanone	3.9	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	Acetone	6.5	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	Benzene	0.38	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	Bromodichloromethane	1.0	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	Bromoform	3.9	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	Bromomethane	0.70	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	Carbon Disulfide	3.9	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	Carbon Tetrachloride	0.75	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	Chlorobenzene	1.0	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	Chloroethane	1.8	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	Chloroform	0.48	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	Chloromethane	0.47	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	*cis* -1,2-Dichloroethylene	0.99	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	*cis* -1,3-Dichloropropene	1.1	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	Cyclohexane	1.1	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	Dibromochloromethane	0.99	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	Dichlorodifluoromethane	0.64	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	Ethylbenzene	0.53	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	Isopropylbenzene (Cumene)	1.2	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	Methyl Acetate	4.7	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	Methyl Ethyl Ketone (2-BUanone)	2.8	*U*	µg/kg

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
BLDG10-SP-034-20210601	SW8260C	480-185463-3	Methyl IsobUyl Ketone (4-Methyl-2-Pentanone)	2.5	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	Methylcyclohexane	1.2	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	Methylene Chloride	3.6	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	Styrene	0.39	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	Tert-BUyl Methyl Ether	0.76	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	Tetrachloroethylene(PCE)	1.0	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	Toluene	0.59	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	*trans* -1,2-Dichloroethene	0.80	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	*trans* -1,3-Dichloropropene	3.4	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	Trichloroethylene (TCE)	1.7	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	Trichlorofluoromethane	2.9	*J*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	Vinyl Chloride	0.94	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	Xylenes	1.3	*U*	µg/kg
BLDG10-SP-034-20210601	SW8260C	480-185463-3	TCLP 1,1-Dichloroethene	0.0029	*U*	mg/L
BLDG10-SP-034-20210601	SW8260C	480-185463-3	TCLP 1,2-Dichloroethane	0.0021	*U*	mg/L
BLDG10-SP-034-20210601	SW8260C	480-185463-3	TCLP Benzene	0.0041	*U*	mg/L
BLDG10-SP-034-20210601	SW8260C	480-185463-3	TCLP Carbon Tetrachloride	0.0027	*U*	mg/L
BLDG10-SP-034-20210601	SW8260C	480-185463-3	TCLP Chlorobenzene	0.0075	*U*	mg/L
BLDG10-SP-034-20210601	SW8260C	480-185463-3	TCLP Chloroform	0.0034	*U*	mg/L
BLDG10-SP-034-20210601	SW8260C	480-185463-3	TCLP Methyl Ethyl Ketone (2-BUanone)	0.013	*U*	mg/L
BLDG10-SP-034-20210601	SW8260C	480-185463-3	TCLP Tetrachloroethylene(PCE)	0.0036	*U*	mg/L
BLDG10-SP-034-20210601	SW8260C	480-185463-3	TCLP Trichloroethylene (TCE)	0.0046	*U*	mg/L
BLDG10-SP-034-20210601	SW8260C	480-185463-3	TCLP Vinyl Chloride	0.009	*U*	mg/L
BLDG10-SP-034-20210601	SW8270D	480-185463-3	1,4-Dioxane (P-Dioxane)	17000	*U*	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	2,4,5-Trichlorophenol	14000	*U*	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	2,4,6-Trichlorophenol	10000	*U*	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	2,4-Dichlorophenol	5500	*U*	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	2,4-Dimethylphenol	12000	*U*	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	2,4-Dinitrophenol	240000	*U*	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	2,4-Dinitrotoluene	11000	*U*	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	2,6-Dinitrotoluene	6100	*U*	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	2-Chloronaphthalene	8500	*U*	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	2-Chlorophenol	9400	*U*	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	2-Methylnaphthalene	10000	*U*	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	2-Methylphenol (O-Cresol)	6100	*U*	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	2-Nitroaniline	7600	*U*	µg/kg

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
BLDG10-SP-034-20210601	SW8270D	480-185463-3	2-Nitrophenol	15000	U	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	3,3'-Dichlorobenzidine	61000	U	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	3-Nitroaniline	14000	U	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	4,6-Dinitro-2-Methylphenol	52000	U	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	4-Bromophenyl Phenyl Ether	7300	U	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	4-Chloro-3-Methylphenol	13000	U	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	4-Chloroaniline	13000	U	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	4-Chlorophenyl Phenyl Ether	6400	U	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	4-Methylphenol (P-Cresol)	6100	U	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	4-Nitroaniline	27000	U	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	4-Nitrophenol	36000	U	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	Acenaphthene	7600	U	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	Acenaphthylene	6700	U	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	Acetophenone	7000	U	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	Anthracene	13000	U	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	Atrazine	18000	U	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	Benzaldehyde	41000	U	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	Benzo(A)Anthracene	5200	U	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	Benzo(A)Pyrene	7600	U	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	Benzo(B)Fluoranthene	8200	U	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	Benzo(G,H,I)Perylene	5500	U	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	Benzo(K)Fluoranthene	6700	U	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	Benzyl BUyl Phthalate	8500	U	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	Biphenyl (Diphenyl)	7600	U	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	Bis(2-Chloroethoxy) Methane	11000	U	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)	6700	U	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	Bis(2-Chloroisopropyl) Ether	10000	U	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	Bis(2-Ethylhexyl) Phthalate	18000	U	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	Caprolactam	16000	U	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	Carbazole	6100	U	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	Chrysene	12000	U	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	Dibenz(A,H)Anthracene	9100	U	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	Dibenzofuran	6100	U	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	Diethyl Phthalate	6700	U	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	Dimethyl Phthalate	6100	U	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	Di-N-BUyl Phthalate	8800	U	µg/kg

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
BLDG10-SP-034-20210601	SW8270D	480-185463-3	Di-N-Octylphthalate	6100	*U*	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	Fluoranthene	5500	*U*	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	Fluorene	6100	*U*	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	Hexachlorobenzene	7000	*U*	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	HexachlorobUadiene	7600	*U*	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	Hexachlorocyclopentadiene	7000	*U*	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	Hexachloroethane	6700	*U*	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	Indeno(1,2,3-C,D)Pyrene	6400	*U*	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	Isophorone	11000	*U*	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	Naphthalene	6700	*U*	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	Nitrobenzene	5800	*U*	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	N-Nitrosodi-N-Propylamine	8800	*U*	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	N-Nitrosodiphenylamine	42000	*U*	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	Pentachlorophenol	52000	*U*	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	Phenanthrene	7600	*U*	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	Phenol	7900	*U*	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	Pyrene	6100	*U*	µg/kg
BLDG10-SP-034-20210601	SW8270D	480-185463-3	TCLP 1,4-Dichlorobenzene	0.0018	*U*	mg/L
BLDG10-SP-034-20210601	SW8270D	480-185463-3	TCLP 2,4,5-Trichlorophenol	0.0019	*U*	mg/L
BLDG10-SP-034-20210601	SW8270D	480-185463-3	TCLP 2,4,6-Trichlorophenol	0.0024	*U*	mg/L
BLDG10-SP-034-20210601	SW8270D	480-185463-3	TCLP 2,4-Dinitrotoluene	0.0017	*U*	mg/L
BLDG10-SP-034-20210601	SW8270D	480-185463-3	TCLP 2-Methylphenol (O-Cresol)	0.0016	*U*	mg/L
BLDG10-SP-034-20210601	SW8270D	480-185463-3	TCLP 3-Methylphenol	0.0016	*U*	mg/L
BLDG10-SP-034-20210601	SW8270D	480-185463-3	TCLP 4-Methylphenol (P-Cresol)	0.0014	*U*	mg/L
BLDG10-SP-034-20210601	SW8270D	480-185463-3	TCLP Hexachlorobenzene	0.002	*U*	mg/L
BLDG10-SP-034-20210601	SW8270D	480-185463-3	TCLP HexachlorobUadiene	0.0027	*U*	mg/L
BLDG10-SP-034-20210601	SW8270D	480-185463-3	TCLP Hexachloroethane	0.0023	*U*	mg/L
BLDG10-SP-034-20210601	SW8270D	480-185463-3	TCLP Nitrobenzene	0.0011	*U*	mg/L
BLDG10-SP-034-20210601	SW8270D	480-185463-3	TCLP Pentachlorophenol	0.0088	*U*	mg/L
BLDG10-SP-034-20210601	SW8270D	480-185463-3	TCLP Pyridine	0.0016	*U*	mg/L
BLDG10-SP-034-20210601	SW9045D	480-185463-3	Temperature	22.4		deg C
BLDG10-SP-034-20210601	SW9045D	480-185463-3	pH	7.0		pH units
BLDG2-SP-033-20210601	SW1010	480-185463-2	Flash Point	50	*U*	deg F
BLDG2-SP-033-20210601	SW6010C	480-185463-2	TCLP Arsenic	0.0056	*U*	mg/L
BLDG2-SP-033-20210601	SW6010C	480-185463-2	TCLP Barium	0.63	*J*	mg/L
BLDG2-SP-033-20210601	SW6010C	480-185463-2	TCLP Cadmium	0.019		mg/L

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
BLDG2-SP-033-20210601	SW6010C	480-185463-2	TCLP Chromium	0.01	U	mg/L
BLDG2-SP-033-20210601	SW6010C	480-185463-2	TCLP Lead	0.093		mg/L
BLDG2-SP-033-20210601	SW6010C	480-185463-2	TCLP Selenium	0.0087	U	mg/L
BLDG2-SP-033-20210601	SW6010C	480-185463-2	TCLP Silver	0.0017	U	mg/L
BLDG2-SP-033-20210601	SW7470A	480-185463-2	TCLP Mercury	0.00012	U	mg/L
BLDG2-SP-033-20210601	SW8081B	480-185463-2	TCLP Chlordane (Technical)	0.000029	U	mg/L
BLDG2-SP-033-20210601	SW8081B	480-185463-2	TCLP Endrin	0.000014	U	mg/L
BLDG2-SP-033-20210601	SW8081B	480-185463-2	TCLP Gamma Bhc (Lindane)	0.000006	U	mg/L
BLDG2-SP-033-20210601	SW8081B	480-185463-2	TCLP Heptachlor	0.0000085	U	mg/L
BLDG2-SP-033-20210601	SW8081B	480-185463-2	TCLP Heptachlor Epoxide	0.0000053	U	mg/L
BLDG2-SP-033-20210601	SW8081B	480-185463-2	TCLP Methoxychlor	0.000014	U	mg/L
BLDG2-SP-033-20210601	SW8081B	480-185463-2	TCLP Toxaphene	0.00012	U	mg/L
BLDG2-SP-033-20210601	SW8151A	480-185463-2	TCLP 2,4-D (Dichlorophenoxyacetic Acid)	0.0004	U	mg/L
BLDG2-SP-033-20210601	SW8151A	480-185463-2	TCLP Silvex (2,4,5-Tp)	0.00036	U	mg/L
BLDG2-SP-033-20210601	SW8260C	480-185463-2	1,1,1-Trichloroethane	0.50	U	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	1,1,2,2-Tetrachloroethane	1.1	U	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	1,1,2-Trichloro-1,2,2-Trifluoroethane	1.6	U	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	1,1,2-Trichloroethane	0.90	U	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	1,1-Dichloroethane	0.84	U	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	1,1-Dichloroethene	0.84	U	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	1,2,4-Trichlorobenzene	0.42	U	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	1,2-Dibromo-3-Chloropropane	3.4	U	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	1,2-Dibromoethane (Ethylene Dibromide)	0.89	U	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	1,2-Dichlorobenzene	0.54	U	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	1,2-Dichloroethane	0.35	U	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	1,2-Dichloropropane	3.4	U	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	1,3-Dichlorobenzene	0.35	U	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	1,4-Dichlorobenzene	0.97	U	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	2-Hexanone	3.4	U	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	Acetone	5.8	U	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	Benzene	0.34	U	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	Bromodichloromethane	0.92	U	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	Bromoform	3.4	U	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	Bromomethane	0.62	U	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	Carbon Disulfide	3.4	U	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	Carbon Tetrachloride	0.67	U	µg/kg

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
BLDG2-SP-033-20210601	SW8260C	480-185463-2	Chlorobenzene	0.91	*U*	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	Chloroethane	1.6	*U*	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	Chloroform	0.43	*U*	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	Chloromethane	0.42	*U*	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	*cis* -1,2-Dichloroethylene	0.88	*U*	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	*cis* -1,3-Dichloropropene	0.99	*U*	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	Cyclohexane	0.97	*U*	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	Dibromochloromethane	0.88	*U*	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	Dichlorodifluoromethane	0.57	*U*	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	Ethylbenzene	0.48	*U*	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	Isopropylbenzene (Cumene)	1.0	*U*	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	Methyl Acetate	4.2	*U*	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	Methyl Ethyl Ketone (2-BUanone)	2.5	*U*	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	Methyl IsobUyl Ketone (4-Methyl-2-Pentanone)	2.3	*U*	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	Methylcyclohexane	1.0	*U*	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	Methylene Chloride	3.2	*U*	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	Styrene	0.34	*U*	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	Tert-BUyl Methyl Ether	0.68	*U*	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	Tetrachloroethylene(PCE)	0.93	*U*	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	Toluene	0.52	*U*	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	*trans* -1,2-Dichloroethene	0.71	*U*	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	*trans* -1,3-Dichloropropene	3.0	*U*	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	Trichloroethylene (TCE)	1.5	*U*	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	Trichlorofluoromethane	0.65	*U*	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	Vinyl Chloride	0.84	*U*	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	Xylenes	1.2	*U*	µg/kg
BLDG2-SP-033-20210601	SW8260C	480-185463-2	TCLP 1,1-Dichloroethene	0.0029	*U*	mg/L
BLDG2-SP-033-20210601	SW8260C	480-185463-2	TCLP 1,2-Dichloroethane	0.0021	*U*	mg/L
BLDG2-SP-033-20210601	SW8260C	480-185463-2	TCLP Benzene	0.0041	*U*	mg/L
BLDG2-SP-033-20210601	SW8260C	480-185463-2	TCLP Carbon Tetrachloride	0.0027	*U*	mg/L
BLDG2-SP-033-20210601	SW8260C	480-185463-2	TCLP Chlorobenzene	0.0075	*U*	mg/L
BLDG2-SP-033-20210601	SW8260C	480-185463-2	TCLP Chloroform	0.0034	*U*	mg/L
BLDG2-SP-033-20210601	SW8260C	480-185463-2	TCLP Methyl Ethyl Ketone (2-BUanone)	0.013	*U*	mg/L
BLDG2-SP-033-20210601	SW8260C	480-185463-2	TCLP Tetrachloroethylene(PCE)	0.0036	*U*	mg/L
BLDG2-SP-033-20210601	SW8260C	480-185463-2	TCLP Trichloroethylene (TCE)	0.0046	*U*	mg/L
BLDG2-SP-033-20210601	SW8260C	480-185463-2	TCLP Vinyl Chloride	0.009	*U*	mg/L

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
BLDG2-SP-033-20210601	SW8270D	480-185463-2	1,4-Dioxane (P-Dioxane)	760	*U*	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	2,4,5-Trichlorophenol	640	*U*	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	2,4,6-Trichlorophenol	470	*U*	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	2,4-Dichlorophenol	250	*U*	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	2,4-Dimethylphenol	570	*U*	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	2,4-Dinitrophenol	11000	*U*	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	2,4-Dinitrotoluene	490	*U*	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	2,6-Dinitrotoluene	280	*U*	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	2-Chloronaphthalene	390	*U*	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	2-Chlorophenol	430	*U*	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	2-Methylnaphthalene	470	*U*	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	2-Methylphenol (O-Cresol)	280	*U*	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	2-Nitroaniline	350	*U*	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	2-Nitrophenol	670	*U*	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	3,3'-Dichlorobenzidine	2800	*U*	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	3-Nitroaniline	650	*U*	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	4,6-Dinitro-2-Methylphenol	2400	*U*	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	4-Bromophenyl Phenyl Ether	330	*U*	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	4-Chloro-3-Methylphenol	580	*U*	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	4-Chloroaniline	580	*U*	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	4-Chlorophenyl Phenyl Ether	290	*U*	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	4-Methylphenol (P-Cresol)	280	*U*	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	4-Nitroaniline	1200	*U*	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	4-Nitrophenol	1700	*U*	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	Acenaphthene	350	*U*	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	Acenaphthylene	310	*U*	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	Acetophenone	320	*U*	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	Anthracene	580	*U*	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	Atrazine	820	*U*	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	Benzaldehyde	1900	*U*	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	Benzo(A)Anthracene	240	*U*	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	Benzo(A)Pyrene	700	*J*	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	Benzo(B)Fluoranthene	1400	*J*	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	Benzo(G,H,I)Perylene	590	*J*	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	Benzo(K)Fluoranthene	450	*J*	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	Benzyl BUyl Phthalate	390	*U*	µg/kg

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
BLDG2-SP-033-20210601	SW8270D	480-185463-2	Biphenyl (Diphenyl)	350	U	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	Bis(2-Chloroethoxy) Methane	500	U	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)	310	U	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	Bis(2-Chloroisopropyl) Ether	470	U	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	Bis(2-Ethylhexyl) Phthalate	810	U	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	Caprolactam	710	U	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	Carbazole	280	U	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	Chrysene	1100	J	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	Dibenz(A,H)Anthracene	420	U	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	Dibenzofuran	280	U	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	Diethyl Phthalate	310	U	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	Dimethyl Phthalate	280	U	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	Di-N-BUyl Phthalate	400	U	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	Di-N-Octylphthalate	280	U	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	Fluoranthene	1800	J	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	Fluorene	280	U	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	Hexachlorobenzene	320	U	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	HexachlorobUadiene	350	U	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	Hexachlorocyclopentadiene	320	U	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	Hexachloroethane	310	U	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	Indeno(1,2,3-C,D)Pyrene	480	J	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	Isophorone	500	U	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	Naphthalene	310	U	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	Nitrobenzene	260	U	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	N-Nitrosodi-N-Propylamine	400	U	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	N-Nitrosodiphenylamine	1900	U	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	Pentachlorophenol	2400	U	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	Phenanthrene	540	J	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	Phenol	360	U	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	Pyrene	1500	J	µg/kg
BLDG2-SP-033-20210601	SW8270D	480-185463-2	TCLP 1,4-Dichlorobenzene	0.0018	U	mg/L
BLDG2-SP-033-20210601	SW8270D	480-185463-2	TCLP 2,4,5-Trichlorophenol	0.0019	U	mg/L
BLDG2-SP-033-20210601	SW8270D	480-185463-2	TCLP 2,4,6-Trichlorophenol	0.0024	U	mg/L
BLDG2-SP-033-20210601	SW8270D	480-185463-2	TCLP 2,4-Dinitrotoluene	0.0017	U	mg/L
BLDG2-SP-033-20210601	SW8270D	480-185463-2	TCLP 2-Methylphenol (O-Cresol)	0.0016	U	mg/L
BLDG2-SP-033-20210601	SW8270D	480-185463-2	TCLP 3-Methylphenol	0.0016	U	mg/L

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
BLDG2-SP-033-20210601	SW8270D	480-185463-2	TCLP 4-Methylphenol (P-Cresol)	0.0014	U	mg/L
BLDG2-SP-033-20210601	SW8270D	480-185463-2	TCLP Hexachlorobenzene	0.002	U	mg/L
BLDG2-SP-033-20210601	SW8270D	480-185463-2	TCLP HexachlorobUadiene	0.0027	U	mg/L
BLDG2-SP-033-20210601	SW8270D	480-185463-2	TCLP Hexachloroethane	0.0023	U	mg/L
BLDG2-SP-033-20210601	SW8270D	480-185463-2	TCLP Nitrobenzene	0.0011	U	mg/L
BLDG2-SP-033-20210601	SW8270D	480-185463-2	TCLP Pentachlorophenol	0.0088	U	mg/L
BLDG2-SP-033-20210601	SW8270D	480-185463-2	TCLP Pyridine	0.0016	U	mg/L
BLDG2-SP-033-20210601	SW9045D	480-185463-2	Temperature	22.7		deg C
BLDG2-SP-033-20210601	SW9045D	480-185463-2	pH	7.4		pH units
BLDG4-SP-036-20210601	SW1010	480-185463-5	Flash Point	50	U	deg F
BLDG4-SP-036-20210601	SW6010C	480-185463-5	TCLP Arsenic	0.013	J	mg/L
BLDG4-SP-036-20210601	SW6010C	480-185463-5	TCLP Barium	0.50	J	mg/L
BLDG4-SP-036-20210601	SW6010C	480-185463-5	TCLP Cadmium	0.029		mg/L
BLDG4-SP-036-20210601	SW6010C	480-185463-5	TCLP Chromium	0.01	U	mg/L
BLDG4-SP-036-20210601	SW6010C	480-185463-5	TCLP Lead	0.13		mg/L
BLDG4-SP-036-20210601	SW6010C	480-185463-5	TCLP Selenium	0.0087	U	mg/L
BLDG4-SP-036-20210601	SW6010C	480-185463-5	TCLP Silver	0.0017	U	mg/L
BLDG4-SP-036-20210601	SW7470A	480-185463-5	TCLP Mercury	0.00012	U	mg/L
BLDG4-SP-036-20210601	SW8081B	480-185463-5	TCLP Chlordane (Technical)	0.000029	U	mg/L
BLDG4-SP-036-20210601	SW8081B	480-185463-5	TCLP Endrin	0.000014	U	mg/L
BLDG4-SP-036-20210601	SW8081B	480-185463-5	TCLP Gamma Bhc (Lindane)	0.000006	U	mg/L
BLDG4-SP-036-20210601	SW8081B	480-185463-5	TCLP Heptachlor	0.0000085	U	mg/L
BLDG4-SP-036-20210601	SW8081B	480-185463-5	TCLP Heptachlor Epoxide	0.0000053	U	mg/L
BLDG4-SP-036-20210601	SW8081B	480-185463-5	TCLP Methoxychlor	0.000014	U	mg/L
BLDG4-SP-036-20210601	SW8081B	480-185463-5	TCLP Toxaphene	0.00012	U	mg/L
BLDG4-SP-036-20210601	SW8151A	480-185463-5	TCLP 2,4-D (Dichlorophenoxyacetic Acid)	0.0004	U	mg/L
BLDG4-SP-036-20210601	SW8151A	480-185463-5	TCLP Silvex (2,4,5-Tp)	0.00036	U	mg/L
BLDG4-SP-036-20210601	SW8260C	480-185463-5	1,1,1-Trichloroethane	0.57	U	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	1,1,2,2-Tetrachloroethane	1.3	U	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	1,1,2-Trichloro-1,2,2-Trifluoroethane	1.8	U	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	1,1,2-Trichloroethane	1.0	U	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	1,1-Dichloroethane	0.96	U	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	1,1-Dichloroethene	0.97	U	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	1,2,4-Trichlorobenzene	0.48	U	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	1,2-Dibromo-3-Chloropropane	4.0	U	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	1,2-Dibromoethane (Ethylene Dibromide)	1.0	U	µg/kg

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
BLDG4-SP-036-20210601	SW8260C	480-185463-5	1,2-Dichlorobenzene	0.62	*U*	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	1,2-Dichloroethane	0.40	*U*	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	1,2-Dichloropropane	4.0	*U*	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	1,3-Dichlorobenzene	0.41	*U*	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	1,4-Dichlorobenzene	1.1	*U*	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	2-Hexanone	4.0	*U*	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	Acetone	18	*J*	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	Benzene	0.39	*U*	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	Bromodichloromethane	1.1	*U*	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	Bromoform	4.0	*U*	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	Bromomethane	0.71	*U*	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	Carbon Disulfide	4.0	*U*	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	Carbon Tetrachloride	0.77	*U*	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	Chlorobenzene	1.0	*U*	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	Chloroethane	1.8	*U*	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	Chloroform	0.49	*U*	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	Chloromethane	0.48	*U*	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	*cis* -1,2-Dichloroethylene	1.0	*U*	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	*cis* -1,3-Dichloropropene	1.1	*U*	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	Cyclohexane	1.1	*U*	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	Dibromochloromethane	1.0	*U*	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	Dichlorodifluoromethane	0.65	*U*	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	Ethylbenzene	0.55	*U*	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	Isopropylbenzene (Cumene)	1.2	*U*	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	Methyl Acetate	4.8	*U*	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	Methyl Ethyl Ketone (2-BUanone)	2.9	*U*	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	Methyl IsobUyl Ketone (4-Methyl-2-Pentanone)	2.6	*U*	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	Methylcyclohexane	1.2	*U*	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	Methylene Chloride	3.6	*U*	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	Styrene	0.40	*U*	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	Tert-BUyl Methyl Ether	0.78	*U*	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	Tetrachloroethylene(PCE)	1.1	*U*	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	Toluene	0.60	*U*	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	*trans* -1,2-Dichloroethene	0.82	*U*	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	*trans* -1,3-Dichloropropene	3.5	*U*	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	Trichloroethylene (TCE)	1.7	*U*	µg/kg

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
BLDG4-SP-036-20210601	SW8260C	480-185463-5	Trichlorofluoromethane	0.75	U	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	Vinyl Chloride	0.96	U	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	Xylenes	1.3	U	µg/kg
BLDG4-SP-036-20210601	SW8260C	480-185463-5	TCLP 1,1-Dichloroethene	0.0029	U	mg/L
BLDG4-SP-036-20210601	SW8260C	480-185463-5	TCLP 1,2-Dichloroethane	0.0021	U	mg/L
BLDG4-SP-036-20210601	SW8260C	480-185463-5	TCLP Benzene	0.0041	U	mg/L
BLDG4-SP-036-20210601	SW8260C	480-185463-5	TCLP Carbon Tetrachloride	0.0027	U	mg/L
BLDG4-SP-036-20210601	SW8260C	480-185463-5	TCLP Chlorobenzene	0.0075	U	mg/L
BLDG4-SP-036-20210601	SW8260C	480-185463-5	TCLP Chloroform	0.0034	U	mg/L
BLDG4-SP-036-20210601	SW8260C	480-185463-5	TCLP Methyl Ethyl Ketone (2-BUanone)	0.013	U	mg/L
BLDG4-SP-036-20210601	SW8260C	480-185463-5	TCLP Tetrachloroethylene(PCE)	0.0036	U	mg/L
BLDG4-SP-036-20210601	SW8260C	480-185463-5	TCLP Trichloroethylene (TCE)	0.0046	U	mg/L
BLDG4-SP-036-20210601	SW8260C	480-185463-5	TCLP Vinyl Chloride	0.009	U	mg/L
BLDG4-SP-036-20210601	SW8270D	480-185463-5	1,4-Dioxane (P-Dioxane)	13000	U	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	2,4,5-Trichlorophenol	11000	U	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	2,4,6-Trichlorophenol	7900	U	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	2,4-Dichlorophenol	4200	U	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	2,4-Dimethylphenol	9600	U	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	2,4-Dinitrophenol	180000	U	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	2,4-Dinitrotoluene	8200	U	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	2,6-Dinitrotoluene	4700	U	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	2-Chloronaphthalene	6500	U	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	2-Chlorophenol	7200	U	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	2-Methylnaphthalene	7900	U	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	2-Methylphenol (O-Cresol)	4700	U	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	2-Nitroaniline	5800	U	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	2-Nitrophenol	11000	U	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	3,3'-Dichlorobenzidine	47000	U	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	3-Nitroaniline	11000	U	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	4,6-Dinitro-2-Methylphenol	40000	U	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	4-Bromophenyl Phenyl Ether	5600	U	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	4-Chloro-3-Methylphenol	9800	U	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	4-Chloroaniline	9800	U	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	4-Chlorophenyl Phenyl Ether	4900	U	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	4-Methylphenol (P-Cresol)	4700	U	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	4-Nitroaniline	21000	U	µg/kg

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
BLDG4-SP-036-20210601	SW8270D	480-185463-5	4-Nitrophenol	28000	*U*	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	Acenaphthene	5800	*U*	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	Acenaphthylene	5100	*U*	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	Acetophenone	5400	*U*	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	Anthracene	9800	*U*	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	Atrazine	14000	*U*	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	Benzaldehyde	31000	*U*	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	Benzo(A)Anthracene	4000	*U*	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	Benzo(A)Pyrene	5800	*U*	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	Benzo(B)Fluoranthene	6300	*U*	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	Benzo(G,H,I)Perylene	4200	*U*	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	Benzo(K)Fluoranthene	5100	*U*	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	Benzyl BUyl Phthalate	6500	*U*	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	Biphenyl (Diphenyl)	5800	*U*	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	Bis(2-Chloroethoxy) Methane	8400	*U*	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)	5100	*U*	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	Bis(2-Chloroisopropyl) Ether	7900	*U*	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	Bis(2-Ethylhexyl) Phthalate	14000	*U*	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	Caprolactam	12000	*U*	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	Carbazole	4700	*U*	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	Chrysene	8900	*U*	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	Dibenz(A,H)Anthracene	7000	*U*	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	Dibenzofuran	4700	*U*	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	Diethyl Phthalate	5100	*U*	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	Dimethyl Phthalate	4700	*U*	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	Di-N-BUyl Phthalate	6800	*U*	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	Di-N-Octylphthalate	4700	*U*	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	Fluoranthene	4200	*U*	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	Fluorene	4700	*U*	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	Hexachlorobenzene	5400	*U*	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	HexachlorobUadiene	5800	*U*	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	Hexachlorocyclopentadiene	5400	*U*	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	Hexachloroethane	5100	*U*	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	Indeno(1,2,3-C,D)Pyrene	4900	*U*	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	Isophorone	8400	*U*	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	Naphthalene	5100	*U*	µg/kg

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
BLDG4-SP-036-20210601	SW8270D	480-185463-5	Nitrobenzene	4400	U	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	N-Nitrosodi-N-Propylamine	6800	U	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	N-Nitrosodiphenylamine	32000	U	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	Pentachlorophenol	40000	U	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	Phenanthrene	5800	U	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	Phenol	6100	U	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	Pyrene	4700	U	µg/kg
BLDG4-SP-036-20210601	SW8270D	480-185463-5	TCLP 1,4-Dichlorobenzene	0.0018	U	mg/L
BLDG4-SP-036-20210601	SW8270D	480-185463-5	TCLP 2,4,5-Trichlorophenol	0.0019	U	mg/L
BLDG4-SP-036-20210601	SW8270D	480-185463-5	TCLP 2,4,6-Trichlorophenol	0.0024	U	mg/L
BLDG4-SP-036-20210601	SW8270D	480-185463-5	TCLP 2,4-Dinitrotoluene	0.0017	U	mg/L
BLDG4-SP-036-20210601	SW8270D	480-185463-5	TCLP 2-Methylphenol (O-Cresol)	0.0016	U	mg/L
BLDG4-SP-036-20210601	SW8270D	480-185463-5	TCLP 3-Methylphenol	0.0016	U	mg/L
BLDG4-SP-036-20210601	SW8270D	480-185463-5	TCLP 4-Methylphenol (P-Cresol)	0.0014	U	mg/L
BLDG4-SP-036-20210601	SW8270D	480-185463-5	TCLP Hexachlorobenzene	0.002	U	mg/L
BLDG4-SP-036-20210601	SW8270D	480-185463-5	TCLP HexachlorobUadiene	0.0027	U	mg/L
BLDG4-SP-036-20210601	SW8270D	480-185463-5	TCLP Hexachloroethane	0.0023	U	mg/L
BLDG4-SP-036-20210601	SW8270D	480-185463-5	TCLP Nitrobenzene	0.0011	U	mg/L
BLDG4-SP-036-20210601	SW8270D	480-185463-5	TCLP Pentachlorophenol	0.0088	U	mg/L
BLDG4-SP-036-20210601	SW8270D	480-185463-5	TCLP Pyridine	0.0016	U	mg/L
BLDG4-SP-036-20210601	SW9045D	480-185463-5	Temperature	23.1		deg C
BLDG4-SP-036-20210601	SW9045D	480-185463-5	pH	7.2		pH units
BLDG6-SP-032-20210601	SW1010	480-185463-1	Flash Point	50	U	deg F
BLDG6-SP-032-20210601	SW6010C	480-185463-1	TCLP Arsenic	0.021		mg/L
BLDG6-SP-032-20210601	SW6010C	480-185463-1	TCLP Barium	1.1		mg/L
BLDG6-SP-032-20210601	SW6010C	480-185463-1	TCLP Cadmium	0.019		mg/L
BLDG6-SP-032-20210601	SW6010C	480-185463-1	TCLP Chromium	0.017	J	mg/L
BLDG6-SP-032-20210601	SW6010C	480-185463-1	TCLP Lead	0.048		mg/L
BLDG6-SP-032-20210601	SW6010C	480-185463-1	TCLP Selenium	0.0087	U	mg/L
BLDG6-SP-032-20210601	SW6010C	480-185463-1	TCLP Silver	0.0017	U	mg/L
BLDG6-SP-032-20210601	SW7470A	480-185463-1	TCLP Mercury	0.00012	U	mg/L
BLDG6-SP-032-20210601	SW8081B	480-185463-1	TCLP Chlordane (Technical)	0.000029	U	mg/L
BLDG6-SP-032-20210601	SW8081B	480-185463-1	TCLP Endrin	0.000014	U	mg/L
BLDG6-SP-032-20210601	SW8081B	480-185463-1	TCLP Gamma Bhc (Lindane)	0.000006	U	mg/L
BLDG6-SP-032-20210601	SW8081B	480-185463-1	TCLP Heptachlor	0.0000085	U	mg/L
BLDG6-SP-032-20210601	SW8081B	480-185463-1	TCLP Heptachlor Epoxide	0.0000053	U	mg/L

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
BLDG6-SP-032-20210601	SW8081B	480-185463-1	TCLP Methoxychlor	0.000014	*U*	mg/L
BLDG6-SP-032-20210601	SW8081B	480-185463-1	TCLP Toxaphene	0.00012	*U*	mg/L
BLDG6-SP-032-20210601	SW8151A	480-185463-1	TCLP 2,4-D (Dichlorophenoxyacetic Acid)	0.0004	*U*	mg/L
BLDG6-SP-032-20210601	SW8151A	480-185463-1	TCLP Silvex (2,4,5-Tp)	0.00036	*U*	mg/L
BLDG6-SP-032-20210601	SW8260C	480-185463-1	1,1,1-Trichloroethane	0.46	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	1,1,2,2-Tetrachloroethane	1.0	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	1,1,2-Trichloro-1,2,2-Trifluoroethane	1.5	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	1,1,2-Trichloroethane	0.83	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	1,1-Dichloroethane	0.78	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	1,1-Dichloroethene	0.78	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	1,2,4-Trichlorobenzene	0.39	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	1,2-Dibromo-3-Chloropropane	3.2	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	1,2-Dibromoethane (Ethylene Dibromide)	0.82	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	1,2-Dichlorobenzene	0.50	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	1,2-Dichloroethane	0.32	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	1,2-Dichloropropane	3.2	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	1,3-Dichlorobenzene	0.33	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	1,4-Dichlorobenzene	0.89	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	2-Hexanone	3.2	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	Acetone	5.4	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	Benzene	0.31	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	Bromodichloromethane	0.85	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	Bromoform	3.2	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	Bromomethane	0.57	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	Carbon Disulfide	3.2	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	Carbon Tetrachloride	0.62	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	Chlorobenzene	0.84	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	Chloroethane	1.4	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	Chloroform	0.39	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	Chloromethane	0.38	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	*cis* -1,2-Dichloroethylene	0.81	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	*cis* -1,3-Dichloropropene	0.92	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	Cyclohexane	0.89	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	Dibromochloromethane	0.81	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	Dichlorodifluoromethane	0.53	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	Ethylbenzene	0.44	*U*	µg/kg

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
BLDG6-SP-032-20210601	SW8260C	480-185463-1	Isopropylbenzene (Cumene)	0.96	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	Methyl Acetate	3.8	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	Methyl Ethyl Ketone (2-BUanone)	2.3	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	Methyl IsobUyl Ketone (4-Methyl-2-Pentanone)	2.1	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	Methylcyclohexane	0.97	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	Methylene Chloride	2.9	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	Styrene	0.32	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	Tert-BUyl Methyl Ether	0.62	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	Tetrachloroethylene(PCE)	0.85	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	Toluene	0.48	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	*trans* -1,2-Dichloroethene	0.66	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	*trans* -1,3-Dichloropropene	2.8	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	Trichloroethylene (TCE)	1.4	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	Trichlorofluoromethane	0.60	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	Vinyl Chloride	0.78	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	Xylenes	1.1	*U*	µg/kg
BLDG6-SP-032-20210601	SW8260C	480-185463-1	TCLP 1,1-Dichloroethene	0.0029	*U*	mg/L
BLDG6-SP-032-20210601	SW8260C	480-185463-1	TCLP 1,2-Dichloroethane	0.0021	*U*	mg/L
BLDG6-SP-032-20210601	SW8260C	480-185463-1	TCLP Benzene	0.0041	*U*	mg/L
BLDG6-SP-032-20210601	SW8260C	480-185463-1	TCLP Carbon Tetrachloride	0.0027	*U*	mg/L
BLDG6-SP-032-20210601	SW8260C	480-185463-1	TCLP Chlorobenzene	0.0075	*U*	mg/L
BLDG6-SP-032-20210601	SW8260C	480-185463-1	TCLP Chloroform	0.0034	*U*	mg/L
BLDG6-SP-032-20210601	SW8260C	480-185463-1	TCLP Methyl Ethyl Ketone (2-BUanone)	0.013	*U*	mg/L
BLDG6-SP-032-20210601	SW8260C	480-185463-1	TCLP Tetrachloroethylene(PCE)	0.0036	*U*	mg/L
BLDG6-SP-032-20210601	SW8260C	480-185463-1	TCLP Trichloroethylene (TCE)	0.0046	*U*	mg/L
BLDG6-SP-032-20210601	SW8260C	480-185463-1	TCLP Vinyl Chloride	0.009	*U*	mg/L
BLDG6-SP-032-20210601	SW8270D	480-185463-1	1,4-Dioxane (P-Dioxane)	70	*U*	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	2,4,5-Trichlorophenol	59	*U*	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	2,4,6-Trichlorophenol	43	*U*	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	2,4-Dichlorophenol	23	*U*	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	2,4-Dimethylphenol	52	*U*	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	2,4-Dinitrophenol	1000	*U*	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	2,4-Dinitrotoluene	45	*U*	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	2,6-Dinitrotoluene	25	*U*	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	2-Chloronaphthalene	36	*U*	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	2-Chlorophenol	40	*U*	µg/kg

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
BLDG6-SP-032-20210601	SW8270D	480-185463-1	2-Methylnaphthalene	43	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	2-Methylphenol (O-Cresol)	25	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	2-Nitroaniline	32	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	2-Nitrophenol	61	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	3,3'-Dichlorobenzidine	250	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	3-Nitroaniline	60	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	4,6-Dinitro-2-Methylphenol	220	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	4-Bromophenyl Phenyl Ether	31	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	4-Chloro-3-Methylphenol	54	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	4-Chloroaniline	54	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	4-Chlorophenyl Phenyl Ether	27	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	4-Methylphenol (P-Cresol)	25	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	4-Nitroaniline	110	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	4-Nitrophenol	150	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	Acenaphthene	32	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	Acenaphthylene	28	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	Acetophenone	29	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	Anthracene	54	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	Atrazine	75	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	Benzaldehyde	170	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	Benzo(A)Anthracene	22	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	Benzo(A)Pyrene	41	J	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	Benzo(B)Fluoranthene	59	J	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	Benzo(G,H,I)Perylene	43	J	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	Benzo(K)Fluoranthene	32	J	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	Benzyl BUyl Phthalate	36	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	Biphenyl (Diphenyl)	32	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	Bis(2-Chloroethoxy) Methane	46	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)	28	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	Bis(2-Chloroisopropyl) Ether	43	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	Bis(2-Ethylhexyl) Phthalate	110	J	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	Caprolactam	65	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	Carbazole	25	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	Chrysene	48	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	Dibenz(A,H)Anthracene	38	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	Dibenzofuran	25	U	µg/kg

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
BLDG6-SP-032-20210601	SW8270D	480-185463-1	Diethyl Phthalate	28	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	Dimethyl Phthalate	25	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	Di-N-BUyl Phthalate	37	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	Di-N-Octylphthalate	25	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	Fluoranthene	89	J	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	Fluorene	25	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	Hexachlorobenzene	29	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	HexachlorobUadiene	32	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	Hexachlorocyclopentadiene	29	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	Hexachloroethane	28	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	Indeno(1,2,3-C,D)Pyrene	34	J	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	Isophorone	46	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	Naphthalene	28	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	Nitrobenzene	24	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	N-Nitrosodi-N-Propylamine	37	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	N-Nitrosodiphenylamine	180	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	Pentachlorophenol	220	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	Phenanthrene	32	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	Phenol	33	U	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	Pyrene	87	J	µg/kg
BLDG6-SP-032-20210601	SW8270D	480-185463-1	TCLP 1,4-Dichlorobenzene	0.0018	U	mg/L
BLDG6-SP-032-20210601	SW8270D	480-185463-1	TCLP 2,4,5-Trichlorophenol	0.0019	U	mg/L
BLDG6-SP-032-20210601	SW8270D	480-185463-1	TCLP 2,4,6-Trichlorophenol	0.0024	U	mg/L
BLDG6-SP-032-20210601	SW8270D	480-185463-1	TCLP 2,4-Dinitrotoluene	0.0017	U	mg/L
BLDG6-SP-032-20210601	SW8270D	480-185463-1	TCLP 2-Methylphenol (O-Cresol)	0.0016	U	mg/L
BLDG6-SP-032-20210601	SW8270D	480-185463-1	TCLP 3-Methylphenol	0.0016	U	mg/L
BLDG6-SP-032-20210601	SW8270D	480-185463-1	TCLP 4-Methylphenol (P-Cresol)	0.0014	U	mg/L
BLDG6-SP-032-20210601	SW8270D	480-185463-1	TCLP Hexachlorobenzene	0.002	U	mg/L
BLDG6-SP-032-20210601	SW8270D	480-185463-1	TCLP HexachlorobUadiene	0.0027	U	mg/L
BLDG6-SP-032-20210601	SW8270D	480-185463-1	TCLP Hexachloroethane	0.0023	U	mg/L
BLDG6-SP-032-20210601	SW8270D	480-185463-1	TCLP Nitrobenzene	0.0011	U	mg/L
BLDG6-SP-032-20210601	SW8270D	480-185463-1	TCLP Pentachlorophenol	0.0088	U	mg/L
BLDG6-SP-032-20210601	SW8270D	480-185463-1	TCLP Pyridine	0.0016	U	mg/L
BLDG6-SP-032-20210601	SW9045D	480-185463-1	Temperature	22.8		deg C
BLDG6-SP-032-20210601	SW9045D	480-185463-1	pH	7.6		pH units
RAMP-SP-035-20210601	SW1010	480-185463-4	Flash Point	50	U	deg F

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
RAMP-SP-035-20210601	SW6010C	480-185463-4	TCLP Arsenic	0.0079	J	mg/L
RAMP-SP-035-20210601	SW6010C	480-185463-4	TCLP Barium	0.51	J	mg/L
RAMP-SP-035-20210601	SW6010C	480-185463-4	TCLP Cadmium	0.019		mg/L
RAMP-SP-035-20210601	SW6010C	480-185463-4	TCLP Chromium	0.01	U	mg/L
RAMP-SP-035-20210601	SW6010C	480-185463-4	TCLP Lead	0.14		mg/L
RAMP-SP-035-20210601	SW6010C	480-185463-4	TCLP Selenium	0.0087	U	mg/L
RAMP-SP-035-20210601	SW6010C	480-185463-4	TCLP Silver	0.0017	U	mg/L
RAMP-SP-035-20210601	SW7470A	480-185463-4	TCLP Mercury	0.00012	U	mg/L
RAMP-SP-035-20210601	SW8081B	480-185463-4	TCLP Chlordane (Technical)	0.000029	U	mg/L
RAMP-SP-035-20210601	SW8081B	480-185463-4	TCLP Endrin	0.000014	U	mg/L
RAMP-SP-035-20210601	SW8081B	480-185463-4	TCLP Gamma Bhc (Lindane)	0.000006	U	mg/L
RAMP-SP-035-20210601	SW8081B	480-185463-4	TCLP Heptachlor	0.0000085	U	mg/L
RAMP-SP-035-20210601	SW8081B	480-185463-4	TCLP Heptachlor Epoxide	0.0000053	U	mg/L
RAMP-SP-035-20210601	SW8081B	480-185463-4	TCLP Methoxychlor	0.000014	U	mg/L
RAMP-SP-035-20210601	SW8081B	480-185463-4	TCLP Toxaphene	0.00012	U	mg/L
RAMP-SP-035-20210601	SW8151A	480-185463-4	TCLP 2,4-D (Dichlorophenoxyacetic Acid)	0.0004	U	mg/L
RAMP-SP-035-20210601	SW8151A	480-185463-4	TCLP Silvex (2,4,5-Tp)	0.00036	U	mg/L
RAMP-SP-035-20210601	SW8260C	480-185463-4	1,1,1-Trichloroethane	39	U	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	1,1,2,2-Tetrachloroethane	23	U	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	1,1,2-Trichloro-1,2,2-Trifluoroethane	71	U	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	1,1,2-Trichloroethane	30	U	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	1,1-Dichloroethane	44	U	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	1,1-Dichloroethene	49	U	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	1,2,4-Trichlorobenzene	54	U	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	1,2-Dibromo-3-Chloropropane	71	U	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	1,2-Dibromoethane (Ethylene Dibromide)	25	U	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	1,2-Dichlorobenzene	36	U	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	1,2-Dichloroethane	58	U	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	1,2-Dichloropropane	23	U	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	1,3-Dichlorobenzene	38	U	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	1,4-Dichlorobenzene	20	U	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	2-Hexanone	290	U	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	Acetone	580	U	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	Benzene	27	U	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	Bromodichloromethane	28	U	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	Bromoform	71	U	µg/kg

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
RAMP-SP-035-20210601	SW8260C	480-185463-4	Bromomethane	31	*U*	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	Carbon Disulfide	65	*U*	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	Carbon Tetrachloride	36	*U*	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	Chlorobenzene	19	*U*	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	Chloroethane	30	*U*	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	Chloroform	98	*U*	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	Chloromethane	34	*U*	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	*cis* -1,2-Dichloroethylene	39	*U*	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	*cis* -1,3-Dichloropropene	34	*U*	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	Cyclohexane	32	*U*	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	Dibromochloromethane	69	*U*	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	Dichlorodifluoromethane	62	*U*	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	Ethylbenzene	41	*U*	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	Isopropylbenzene (Cumene)	21	*U*	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	Methyl Acetate	68	*U*	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	Methyl Ethyl Ketone (2-BUanone)	420	*U*	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	Methyl IsobUyl Ketone (4-Methyl-2-Pentanone)	46	*U*	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	Methylcyclohexane	67	*U*	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	Methylene Chloride	28	*U*	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	Styrene	34	*U*	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	Tert-BUyl Methyl Ether	54	*U*	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	Tetrachloroethylene(PCE)	19	*U*	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	Toluene	38	*U*	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	*trans* -1,2-Dichloroethene	34	*U*	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	*trans* -1,3-Dichloropropene	14	*U*	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	Trichloroethylene (TCE)	40	*U*	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	Trichlorofluoromethane	67	*U*	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	Vinyl Chloride	48	*U*	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	Xylenes	79	*U*	µg/kg
RAMP-SP-035-20210601	SW8260C	480-185463-4	TCLP 1,1-Dichloroethene	0.0029	*U*	mg/L
RAMP-SP-035-20210601	SW8260C	480-185463-4	TCLP 1,2-Dichloroethane	0.0021	*U*	mg/L
RAMP-SP-035-20210601	SW8260C	480-185463-4	TCLP Benzene	0.0041	*U*	mg/L
RAMP-SP-035-20210601	SW8260C	480-185463-4	TCLP Carbon Tetrachloride	0.0027	*U*	mg/L
RAMP-SP-035-20210601	SW8260C	480-185463-4	TCLP Chlorobenzene	0.0075	*U*	mg/L
RAMP-SP-035-20210601	SW8260C	480-185463-4	TCLP Chloroform	0.0034	*U*	mg/L
RAMP-SP-035-20210601	SW8260C	480-185463-4	TCLP Methyl Ethyl Ketone (2-BUanone)	0.013	*U*	mg/L

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
RAMP-SP-035-20210601	SW8260C	480-185463-4	TCLP Tetrachloroethylene(PCE)	0.0036	*U*	mg/L
RAMP-SP-035-20210601	SW8260C	480-185463-4	TCLP Trichloroethylene (TCE)	0.0046	*U*	mg/L
RAMP-SP-035-20210601	SW8260C	480-185463-4	TCLP Vinyl Chloride	0.009	*U*	mg/L
RAMP-SP-035-20210601	SW8270D	480-185463-4	1,4-Dioxane (P-Dioxane)	700	*U*	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	2,4,5-Trichlorophenol	590	*U*	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	2,4,6-Trichlorophenol	430	*U*	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	2,4-Dichlorophenol	230	*U*	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	2,4-Dimethylphenol	520	*U*	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	2,4-Dinitrophenol	10000	*U*	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	2,4-Dinitrotoluene	450	*U*	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	2,6-Dinitrotoluene	250	*U*	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	2-Chloronaphthalene	360	*U*	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	2-Chlorophenol	390	*U*	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	2-Methylnaphthalene	430	*U*	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	2-Methylphenol (O-Cresol)	250	*U*	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	2-Nitroaniline	320	*U*	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	2-Nitrophenol	610	*U*	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	3,3'-Dichlorobenzidine	2500	*U*	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	3-Nitroaniline	600	*U*	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	4,6-Dinitro-2-Methylphenol	2200	*U*	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	4-Bromophenyl Phenyl Ether	310	*U*	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	4-Chloro-3-Methylphenol	530	*U*	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	4-Chloroaniline	530	*U*	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	4-Chlorophenyl Phenyl Ether	270	*U*	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	4-Methylphenol (P-Cresol)	250	*U*	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	4-Nitroaniline	1100	*U*	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	4-Nitrophenol	1500	*U*	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	Acenaphthene	320	*U*	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	Acenaphthylene	280	*U*	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	Acetophenone	290	*U*	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	Anthracene	530	*U*	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	Atrazine	750	*U*	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	Benzaldehyde	1700	*U*	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	Benzo(A)Anthracene	220	*U*	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	Benzo(A)Pyrene	320	*U*	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	Benzo(B)Fluoranthene	390	*J*	µg/kg

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
RAMP-SP-035-20210601	SW8270D	480-185463-4	Benzo(G,H,I)Perylene	230	J	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	Benzo(K)Fluoranthene	280	U	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	Benzyl BUyl Phthalate	360	U	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	Biphenyl (Diphenyl)	320	U	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	Bis(2-Chloroethoxy) Methane	460	U	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)	280	U	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	Bis(2-Chloroisopropyl) Ether	430	U	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	Bis(2-Ethylhexyl) Phthalate	3100		µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	Caprolactam	650	U	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	Carbazole	250	U	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	Chrysene	480	U	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	Dibenz(A,H)Anthracene	380	U	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	Dibenzofuran	250	U	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	Diethyl Phthalate	280	U	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	Dimethyl Phthalate	250	U	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	Di-N-BUyl Phthalate	370	U	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	Di-N-Octylphthalate	250	U	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	Fluoranthene	330	J	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	Fluorene	250	U	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	Hexachlorobenzene	290	U	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	HexachlorobUadiene	320	U	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	Hexachlorocyclopentadiene	290	U	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	Hexachloroethane	280	U	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	Indeno(1,2,3-C,D)Pyrene	270	U	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	Isophorone	460	U	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	Naphthalene	280	U	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	Nitrobenzene	240	U	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	N-Nitrosodi-N-Propylamine	370	U	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	N-Nitrosodiphenylamine	1800	U	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	Pentachlorophenol	2200	U	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	Phenanthrene	320	U	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	Phenol	330	U	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	Pyrene	380	J	µg/kg
RAMP-SP-035-20210601	SW8270D	480-185463-4	TCLP 1,4-Dichlorobenzene	0.0018	U	mg/L
RAMP-SP-035-20210601	SW8270D	480-185463-4	TCLP 2,4,5-Trichlorophenol	0.0019	U	mg/L
RAMP-SP-035-20210601	SW8270D	480-185463-4	TCLP 2,4,6-Trichlorophenol	0.0024	U	mg/L

Appendix F. Site Decommissioning Data

Sample Identification	Method	Lab Sample ID	Analyte	Result	Lab Qualifier	Units
RAMP-SP-035-20210601	SW8270D	480-185463-4	TCLP 2,4-Dinitrotoluene	0.0017	*U*	mg/L
RAMP-SP-035-20210601	SW8270D	480-185463-4	TCLP 2-Methylphenol (O-Cresol)	0.0016	*U*	mg/L
RAMP-SP-035-20210601	SW8270D	480-185463-4	TCLP 3-Methylphenol	0.0016	*U*	mg/L
RAMP-SP-035-20210601	SW8270D	480-185463-4	TCLP 4-Methylphenol (P-Cresol)	0.0014	*U*	mg/L
RAMP-SP-035-20210601	SW8270D	480-185463-4	TCLP Hexachlorobenzene	0.002	*U*	mg/L
RAMP-SP-035-20210601	SW8270D	480-185463-4	TCLP HexachlorobUadiene	0.0027	*U*	mg/L
RAMP-SP-035-20210601	SW8270D	480-185463-4	TCLP Hexachloroethane	0.0023	*U*	mg/L
RAMP-SP-035-20210601	SW8270D	480-185463-4	TCLP Nitrobenzene	0.0011	*U*	mg/L
RAMP-SP-035-20210601	SW8270D	480-185463-4	TCLP Pentachlorophenol	0.0088	*U*	mg/L
RAMP-SP-035-20210601	SW8270D	480-185463-4	TCLP Pyridine	0.0016	*U*	mg/L
RAMP-SP-035-20210601	SW9045D	480-185463-4	Temperature	22.6		deg C
RAMP-SP-035-20210601	SW9045D	480-185463-4	pH	7.7		pH units

Notes:
deg C = degrees Celcius
deg F = degrees Fahrenheit
MDL = method detection limit
RL = reporting limit
TCLP = toxicity characteristic leaching procedure

Data Qualifiers:
J = Result is less than the RL, but greater than or equal to the MDL, and the concentration is an approximate.
U = The material was analyzed for, but was not detected.

eurofins | Environment Testing America

ANALYTICAL REPORT

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Laboratory Job ID: 480-183377-1
Client Project/Site: Project EF1017
Revision: 1

For:
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319 SW Washington Ave
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Portland, Oregon 97204

Attn: Mr. Glenn Esler

Authorized for release by:
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Rebecca Jones, Project Management Assistant I
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The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183377-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
vs	Reported analyte concentrations are below 200 ug/kg and may be biased low due to the sample not being collected according to 5035A-L low-level specifications.

GC/MS Semi VOA

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

GC Semi VOA

Qualifier	Qualifier Description
*1	LCS/LCSD RPD exceeds control limits.
S1-	Surrogate recovery exceeds control limits, low biased.

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)

Glossary (Continued)

Abbreviation	These commonly used abbreviations may or may not be present in this report.
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 480-183377-1

Laboratory: Eurofins TestAmerica, Buffalo

Narrative

Job Narrative
480-183377-1

Revision
This report has been revised to remove sample 6 and place it into it's own report.

Receipt
The samples were received on 4/15/2021 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.3º C.

GC/MS VOA
Method 8260C: The continuing calibration verification (CCVIS) associated with batch 480-576931 recovered above the upper control limit for Trichlorofluoromethane. The sample(s) associated with this CCVIS were non-detect for the affected analyte; therefore, the data have been reported. The associated samples are impacted: DW5-BLDG8-SP-003 (480-183377-3) and DW4-OUT-SP-005 (480-183377-5).

Method 8260C: The continuing calibration verification (CCV) associated with batch 480-577160 recovered above the upper control limit for Vinyl chloride. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: DW1-BLDG1-SP-001 (480-183377-1), DW2-BLDG1-SP-002 (480-183377-2), DW5-BLDG8-SP-003 (480-183377-3), DW3-OUT-SP-004 (480-183377-4) and DW4-OUT-SP-005 (480-183377-5).

Method 8260C: The following samples were diluted due to the nature of the TCLP solid sample matrix: DW1-BLDG1-SP-001 (480-183377-1), DW2-BLDG1-SP-002 (480-183377-2), DW5-BLDG8-SP-003 (480-183377-3), DW3-OUT-SP-004 (480-183377-4), DW4-OUT-SP-005 (480-183377-5), and (LB 480-576813/1-A). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC/MS Semi VOA
Method 8270D: The continuing calibration verification (CCV) associated with batch 480-577005 recovered above the upper control limit for 4-Nitrophenol, Bis(2-ethylhexyl) phthalate, Butyl benzyl phthalate and Di-n-octyl phthalate. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: DW1-BLDG1-SP-001 (480-183377-1), DW3-OUT-SP-004 (480-183377-4) and DW4-OUT-SP-005 (480-183377-5).

Method 8270D: The following samples were diluted due to color, appearance, and viscosity: DW1-BLDG1-SP-001 (480-183377-1), DW2-BLDG1-SP-002 (480-183377-2), DW5-BLDG8-SP-003 (480-183377-3), DW3-OUT-SP-004 (480-183377-4) and DW4-OUT-SP-005 (480-183377-5). Elevated reporting limits (RL) are provided.

Method 8270D: The laboratory control sample duplicate (LCSD) for preparation batch 480-576811 and 480-577070 and analytical batch 480-577181 recovered outside control limits for the following analytes: 2,4-Dinitrotoluene. These analytes were biased high in the LCSD and were not detected in the associated samples; therefore, the data have been reported.

Method 8270D: The following samples were diluted due to color, appearance, and viscosity: DW2-BLDG1-SP-002 (480-183377-2) and DW5-BLDG8-SP-003 (480-183377-3). Elevated reporting limits (RL) are provided.

Method 8270D: The continuing calibration verification (CCV) associated with batch 480-577225 recovered outside acceptance criteria, low biased, for 2,2'-oxybis[1-chloropropane]. A reporting limit (RL) standard was analyzed, and the target analyte was detected. Since the associated samples were non-detect for this analyte, the data have been reported.

Method 8270D: The minimum response factor (RF) criteria for the continuing calibration verification (CCV) analyzed in batch 480-577225 was outside criteria for the following analyte(s): Bis(2-chloroethoxy)methane. As indicated in the reference method, sample analysis may proceed; however, any detection or non-detection for the affected analyte(s) is considered estimated.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC Semi VOA
Method 8151A: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch

Job ID: 480-183377-1 (Continued)

Laboratory: Eurofins TestAmerica, Buffalo (Continued)

480-576811 and 480-576977 and analytical batch 480-577206 recovered outside control limits for the following analyte: 2,4-D.

Method 8151A: Surrogate recovery for the following samples were outside control limits: DW4-OUT-SP-005 (480-183377-5) and (LB 480-576811/1-D). This is routine for TCLP herbicides, due to the pH effects created during the leaching process, inhibiting the herbicide derivatization of the free acid components.

Method 8151A: Surrogate recovery for the following samples were outside control limits: DW2-BLDG1-SP-002 (480-183377-2) and (LB 480-577812/1-B). This is routine for TCLP herbicides, due to the pH effects created during the leaching process, inhibiting the herbicide derivatization of the free acid components.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
Methods 9045C, 9045D: This analysis is normally performed in the field and has a method-defined holding time of 15 minutes. The following samples has been qualified with the "HF" flag to indicate analysis was performed in the laboratory outside the 15 minute timeframe: DW1-BLDG1-SP-001 (480-183377-1), DW2-BLDG1-SP-002 (480-183377-2), DW5-BLDG8-SP-003 (480-183377-3), DW3-OUT-SP-004 (480-183377-4) and DW4-OUT-SP-005 (480-183377-5).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep
Method 3510C: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 480-576811 and 480-576976.

Method 8151A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 480-576811 and 480-576977.

Method 8151A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 480-577812 and 480-577918.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Integral Consulting Inc | Job ID: 480-183377-1
Project/Site: Project EF1017

Client Sample ID: DW1-BLDG1-SP-001 | Lab Sample ID: 480-183377-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.012	J	0.015	0.0056	mg/L	1		6010C	TCLP
Barium	1.0		1.0	0.10	mg/L	1		6010C	TCLP
Cadmium	0.17		0.0020	0.00050	mg/L	1		6010C	TCLP
Lead	0.047		0.020	0.0030	mg/L	1		6010C	TCLP
Flashpoint	>180		50.0	50.0	Degrees F	1		1010A	Total/NA
pH	8.7	HF	0.1	0.1	SU	1		9045D	Total/NA
Temperature	21.0	HF	0.001	0.001	Degrees C	1		9045D	Total/NA

Client Sample ID: DW2-BLDG1-SP-002 | Lab Sample ID: 480-183377-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzo[a]pyrene	440	J	1900	280	ug/Kg	10	☼	8270D	Total/NA
Benzo[b]fluoranthene	580	J	1900	300	ug/Kg	10	☼	8270D	Total/NA
Benzo[g,h,i]perylene	450	J	1900	200	ug/Kg	10	☼	8270D	Total/NA
Benzo[k]fluoranthene	280	J	1900	250	ug/Kg	10	☼	8270D	Total/NA
Bis(2-ethylhexyl) phthalate	1800	J	1900	650	ug/Kg	10	☼	8270D	Total/NA
Di-n-butyl phthalate	520	J	1900	320	ug/Kg	10	☼	8270D	Total/NA
Fluoranthene	770	J	1900	200	ug/Kg	10	☼	8270D	Total/NA
Indeno[1,2,3-cd]pyrene	350	J	1900	230	ug/Kg	10	☼	8270D	Total/NA
Phenanthrene	390	J	1900	280	ug/Kg	10	☼	8270D	Total/NA
Pyrene	650	J	1900	220	ug/Kg	10	☼	8270D	Total/NA
Arsenic	0.011	J	0.015	0.0056	mg/L	1		6010C	TCLP
Barium	0.80	J	1.0	0.10	mg/L	1		6010C	TCLP
Cadmium	0.031		0.0020	0.00050	mg/L	1		6010C	TCLP
Chromium	0.031		0.020	0.010	mg/L	1		6010C	TCLP
Lead	0.19		0.020	0.0030	mg/L	1		6010C	TCLP
Flashpoint	>180		50.0	50.0	Degrees F	1		1010A	Total/NA
pH	8.4	HF	0.1	0.1	SU	1		9045D	Total/NA
Temperature	20.8	HF	0.001	0.001	Degrees C	1		9045D	Total/NA

Client Sample ID: DW5-BLDG8-SP-003 | Lab Sample ID: 480-183377-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	4.8	J vs	25	4.2	ug/Kg	1	☼	8260C	Total/NA
Benzo[a]anthracene	660	J	860	86	ug/Kg	5	☼	8270D	Total/NA
Benzo[a]pyrene	770	J	860	130	ug/Kg	5	☼	8270D	Total/NA
Benzo[b]fluoranthene	910		860	140	ug/Kg	5	☼	8270D	Total/NA
Benzo[g,h,i]perylene	640	J	860	91	ug/Kg	5	☼	8270D	Total/NA
Benzo[k]fluoranthene	390	J	860	110	ug/Kg	5	☼	8270D	Total/NA
Bis(2-ethylhexyl) phthalate	4400		860	290	ug/Kg	5	☼	8270D	Total/NA
Butyl benzyl phthalate	3500		860	140	ug/Kg	5	☼	8270D	Total/NA
Carbazole	110	J	860	100	ug/Kg	5	☼	8270D	Total/NA
Chrysene	710	J	860	190	ug/Kg	5	☼	8270D	Total/NA
Di-n-butyl phthalate	310	J	860	150	ug/Kg	5	☼	8270D	Total/NA
Dibenz(a,h)anthracene	180	J	860	150	ug/Kg	5	☼	8270D	Total/NA
Fluoranthene	1500		860	91	ug/Kg	5	☼	8270D	Total/NA
Indeno[1,2,3-cd]pyrene	510	J	860	110	ug/Kg	5	☼	8270D	Total/NA
Phenanthrene	710	J	860	130	ug/Kg	5	☼	8270D	Total/NA
Pyrene	1100		860	100	ug/Kg	5	☼	8270D	Total/NA
Arsenic	0.0057	J	0.015	0.0056	mg/L	1		6010C	TCLP
Barium	0.49	J	1.0	0.10	mg/L	1		6010C	TCLP
Cadmium	0.031		0.0020	0.00050	mg/L	1		6010C	TCLP

This Detection Summary does not include radiochemical test results.

Client Sample ID: DW5-BLDG8-SP-003 (Continued) — Lab Sample ID: 480-183377-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	0.012	J	0.020	0.010	mg/L	1		6010C	TCLP
Lead	0.034		0.020	0.0030	mg/L	1		6010C	TCLP
Flashpoint	>180		50.0	50.0	Degrees F	1		1010A	Total/NA
pH	7.4	HF	0.1	0.1	SU	1		9045D	Total/NA
Temperature	20.6	HF	0.001	0.001	Degrees C	1		9045D	Total/NA

Client Sample ID: DW3-OUT-SP-004 — Lab Sample ID: 480-183377-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzo[a]anthracene	2100		2100	210	ug/Kg	10	☼	8270D	Total/NA
Benzo[a]pyrene	3000		2100	320	ug/Kg	10	☼	8270D	Total/NA
Benzo[b]fluoranthene	3600		2100	340	ug/Kg	10	☼	8270D	Total/NA
Benzo[g,h,i]perylene	2400		2100	230	ug/Kg	10	☼	8270D	Total/NA
Benzo[k]fluoranthene	2000	J	2100	280	ug/Kg	10	☼	8270D	Total/NA
Bis(2-ethylhexyl) phthalate	1000	J	2100	730	ug/Kg	10	☼	8270D	Total/NA
Carbazole	380	J	2100	250	ug/Kg	10	☼	8270D	Total/NA
Chrysene	3100		2100	480	ug/Kg	10	☼	8270D	Total/NA
Dibenz(a,h)anthracene	460	J	2100	380	ug/Kg	10	☼	8270D	Total/NA
Fluoranthene	7300		2100	230	ug/Kg	10	☼	8270D	Total/NA
Indeno[1,2,3-cd]pyrene	2000	J	2100	260	ug/Kg	10	☼	8270D	Total/NA
Phenanthrene	4100		2100	320	ug/Kg	10	☼	8270D	Total/NA
Pyrene	6000		2100	250	ug/Kg	10	☼	8270D	Total/NA
Barium	0.57	J	1.0	0.10	mg/L	1		6010C	TCLP
Cadmium	0.0062		0.0020	0.00050	mg/L	1		6010C	TCLP
Lead	0.081		0.020	0.0030	mg/L	1		6010C	TCLP
Flashpoint	>180		50.0	50.0	Degrees F	1		1010A	Total/NA
pH	7.7	HF	0.1	0.1	SU	1		9045D	Total/NA
Temperature	20.6	HF	0.001	0.001	Degrees C	1		9045D	Total/NA

Client Sample ID: DW4-OUT-SP-005 — Lab Sample ID: 480-183377-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acenaphthene	620	J	2300	350	ug/Kg	10	☼	8270D	Total/NA
Acenaphthylene	400	J	2300	300	ug/Kg	10	☼	8270D	Total/NA
Anthracene	1600	J	2300	580	ug/Kg	10	☼	8270D	Total/NA
Benzo[a]anthracene	5200		2300	230	ug/Kg	10	☼	8270D	Total/NA
Benzo[a]pyrene	6000		2300	350	ug/Kg	10	☼	8270D	Total/NA
Benzo[b]fluoranthene	7300		2300	370	ug/Kg	10	☼	8270D	Total/NA
Benzo[g,h,i]perylene	4400		2300	250	ug/Kg	10	☼	8270D	Total/NA
Benzo[k]fluoranthene	3000		2300	300	ug/Kg	10	☼	8270D	Total/NA
Carbazole	980	J	2300	280	ug/Kg	10	☼	8270D	Total/NA
Chrysene	5800		2300	520	ug/Kg	10	☼	8270D	Total/NA
Dibenz(a,h)anthracene	1100	J	2300	410	ug/Kg	10	☼	8270D	Total/NA
Dibenzofuran	540	J	2300	280	ug/Kg	10	☼	8270D	Total/NA
Fluoranthene	16000		2300	250	ug/Kg	10	☼	8270D	Total/NA
Fluorene	840	J	2300	280	ug/Kg	10	☼	8270D	Total/NA
Indeno[1,2,3-cd]pyrene	3800		2300	290	ug/Kg	10	☼	8270D	Total/NA
Naphthalene	640	J	2300	300	ug/Kg	10	☼	8270D	Total/NA
Phenanthrene	9900		2300	350	ug/Kg	10	☼	8270D	Total/NA
Pyrene	13000		2300	280	ug/Kg	10	☼	8270D	Total/NA
Barium	0.39	J	1.0	0.10	mg/L	1		6010C	TCLP
Cadmium	0.0055		0.0020	0.00050	mg/L	1		6010C	TCLP

This Detection Summary does not include radiochemical test results.

Client Sample ID: DW4-OUT-SP-005 (Continued)

Lab Sample ID: 480-183377-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	0.022		0.020	0.0030	mg/L	1		6010C	TCLP
Flashpoint	>180		50.0	50.0	Degrees F	1		1010A	Total/NA
pH	7.5	HF	0.1	0.1	SU	1		9045D	Total/NA
Temperature	20.4	HF	0.001	0.001	Degrees C	1		9045D	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: DW1-BLDG1-SP-001 — Lab Sample ID: 480-183377-1

Date Collected: 04/14/21 10:10 — **Matrix: Solid**
Date Received: 04/15/21 10:00 — **Percent Solids: 84.6**

Method: 8260C - TCLP Volatiles - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.010	0.0041	mg/L			04/21/21 16:58	10
Carbon tetrachloride	ND		0.010	0.0027	mg/L			04/21/21 16:58	10
Chlorobenzene	ND		0.010	0.0075	mg/L			04/21/21 16:58	10
Chloroform	ND		0.010	0.0034	mg/L			04/21/21 16:58	10
1,2-Dichloroethane	ND		0.010	0.0021	mg/L			04/21/21 16:58	10
1,1-Dichloroethene	ND		0.010	0.0029	mg/L			04/21/21 16:58	10
2-Butanone (MEK)	ND		0.050	0.013	mg/L			04/21/21 16:58	10
Tetrachloroethene	ND		0.010	0.0036	mg/L			04/21/21 16:58	10
Trichloroethene	ND		0.010	0.0046	mg/L			04/21/21 16:58	10
Vinyl chloride	ND		0.010	0.0090	mg/L			04/21/21 16:58	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*77 - 120*		*04/21/21 16:58*	*10*
Toluene-d8 (Surr)	*95*		*80 - 120*		*04/21/21 16:58*	*10*
4-Bromofluorobenzene (Surr)	*106*		*73 - 120*		*04/21/21 16:58*	*10*
Dibromofluoromethane (Surr)	*108*		*75 - 123*		*04/21/21 16:58*	*10*

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND	vs	5.7	0.42	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
1,1,2,2-Tetrachloroethane	ND	vs	5.7	0.93	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
1,1,2-Trichloroethane	ND	vs	5.7	0.75	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	vs	5.7	1.3	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
1,1-Dichloroethane	ND	vs	5.7	0.70	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
1,1-Dichloroethene	ND	vs	5.7	0.70	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
1,2,4-Trichlorobenzene	ND	vs	5.7	0.35	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
1,2-Dibromo-3-Chloropropane	ND	vs	5.7	2.9	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
1,2-Dichlorobenzene	ND	vs	5.7	0.45	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
1,2-Dichloroethane	ND	vs	5.7	0.29	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
1,2-Dichloropropane	ND	vs	5.7	2.9	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
1,3-Dichlorobenzene	ND	vs	5.7	0.30	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
1,4-Dichlorobenzene	ND	vs	5.7	0.80	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
2-Butanone (MEK)	ND	vs	29	2.1	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
2-Hexanone	ND	vs	29	2.9	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
4-Methyl-2-pentanone (MIBK)	ND	vs	29	1.9	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
Acetone	ND	vs	29	4.8	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
Benzene	ND	vs	5.7	0.28	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
Bromodichloromethane	ND	vs	5.7	0.77	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
Bromoform	ND	vs	5.7	2.9	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
Bromomethane	ND	vs	5.7	0.52	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
Carbon disulfide	ND	vs	5.7	2.9	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
Carbon tetrachloride	ND	vs	5.7	0.56	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
Chlorobenzene	ND	vs	5.7	0.76	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
Dibromochloromethane	ND	vs	5.7	0.74	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
Chloroethane	ND	vs	5.7	1.3	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
Chloroform	ND	vs	5.7	0.36	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
Chloromethane	ND	vs	5.7	0.35	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
cis-1,2-Dichloroethene	ND	vs	5.7	0.74	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
cis-1,3-Dichloropropene	ND	vs	5.7	0.83	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
Cyclohexane	ND	vs	5.7	0.80	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1

Client Sample ID: DW1-BLDG1-SP-001
Date Collected: 04/14/21 10:10
Date Received: 04/15/21 10:00

Lab Sample ID: 480-183377-1
Matrix: Solid
Percent Solids: 84.6

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND	vs	5.7	0.47	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
Ethylbenzene	ND	vs	5.7	0.40	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
1,2-Dibromoethane	ND	vs	5.7	0.74	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
Isopropylbenzene	ND	vs	5.7	0.87	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
Methyl acetate	ND	vs	29	3.5	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
Methyl tert-butyl ether	ND	vs	5.7	0.56	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
Methylcyclohexane	ND	vs	5.7	0.87	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
Methylene Chloride	ND	vs	5.7	2.6	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
Styrene	ND	vs	5.7	0.29	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
Tetrachloroethene	ND	vs	5.7	0.77	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
Toluene	ND	vs	5.7	0.43	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
trans-1,2-Dichloroethene	ND	vs	5.7	0.59	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
trans-1,3-Dichloropropene	ND	vs	5.7	2.5	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
Trichloroethene	ND	vs	5.7	1.3	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
Trichlorofluoromethane	ND	vs	5.7	0.54	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
Vinyl chloride	ND	vs	5.7	0.70	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1
Xylenes, Total	ND	vs	11	0.97	ug/Kg	☼	04/19/21 11:15	04/19/21 15:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*102*		*71 - 125*	*04/19/21 11:15*	*04/19/21 15:14*	*1*
1,2-Dichloroethane-d4 (Surr)	*117*		*64 - 126*	*04/19/21 11:15*	*04/19/21 15:14*	*1*
4-Bromofluorobenzene (Surr)	*109*		*72 - 126*	*04/19/21 11:15*	*04/19/21 15:14*	*1*
Dibromofluoromethane (Surr)	*111*		*60 - 140*	*04/19/21 11:15*	*04/19/21 15:14*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biphenyl	ND		990	150	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
bis (2-chloroisopropyl) ether	ND		990	200	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
2,4,5-Trichlorophenol	ND		990	270	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
2,4,6-Trichlorophenol	ND		990	200	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
2,4-Dichlorophenol	ND		990	110	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
2,4-Dimethylphenol	ND		990	240	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
2,4-Dinitrophenol	ND		9700	4600	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
2,4-Dinitrotoluene	ND		990	200	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
2,6-Dinitrotoluene	ND		990	120	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
2-Chloronaphthalene	ND		990	160	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
1,4-Dioxane	ND		580	320	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
2-Chlorophenol	ND		1900	180	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
2-Methylnaphthalene	ND		990	200	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
2-Methylphenol	ND		990	120	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
2-Nitroaniline	ND		1900	150	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
2-Nitrophenol	ND		990	280	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
3,3'-Dichlorobenzidine	ND		1900	1200	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
3-Nitroaniline	ND		1900	270	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
4,6-Dinitro-2-methylphenol	ND		1900	990	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
4-Bromophenyl phenyl ether	ND		990	140	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
4-Chloro-3-methylphenol	ND		990	250	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
4-Chloroaniline	ND		990	250	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
4-Chlorophenyl phenyl ether	ND		990	120	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
4-Methylphenol	ND		1900	120	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183377-1

Client Sample ID: DW1-BLDG1-SP-001
Date Collected: 04/14/21 10:10
Date Received: 04/15/21 10:00

Lab Sample ID: 480-183377-1
Matrix: Solid
Percent Solids: 84.6

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4-Nitroaniline	ND		1900	520	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
4-Nitrophenol	ND		1900	690	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
Acenaphthene	ND		990	150	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
Acenaphthylene	ND		990	130	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
Acetophenone	ND		990	130	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
Anthracene	ND		990	250	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
Atrazine	ND		990	340	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
Benzaldehyde	ND		990	790	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
Benzo[a]anthracene	ND		990	99	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
Benzo[a]pyrene	ND		990	150	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
Benzo[b]fluoranthene	ND		990	160	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
Benzo[g,h,i]perylene	ND		990	110	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
Benzo[k]fluoranthene	ND		990	130	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
Bis(2-chloroethoxy)methane	ND		990	210	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
Bis(2-chloroethyl)ether	ND		990	130	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
Bis(2-ethylhexyl) phthalate	ND		990	340	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
Butyl benzyl phthalate	ND		990	160	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
Caprolactam	ND		990	300	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
Carbazole	ND		990	120	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
Chrysene	ND		990	220	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
Di-n-butyl phthalate	ND		990	170	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
Di-n-octyl phthalate	ND		990	120	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
Dibenz(a,h)anthracene	ND		990	180	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
Dibenzofuran	ND		990	120	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
Diethyl phthalate	ND		990	130	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
Dimethyl phthalate	ND		990	120	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
Fluoranthene	ND		990	110	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
Fluorene	ND		990	120	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
Hexachlorobenzene	ND		990	130	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
Hexachlorobutadiene	ND		990	150	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
Hexachlorocyclopentadiene	ND		990	130	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
Hexachloroethane	ND		990	130	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
Indeno[1,2,3-cd]pyrene	ND		990	120	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
Isophorone	ND		990	210	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
N-Nitrosodi-n-propylamine	ND		990	170	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
N-Nitrosodiphenylamine	ND		990	810	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
Naphthalene	ND		990	130	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
Nitrobenzene	ND		990	110	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
Pentachlorophenol	ND		1900	990	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
Phenanthrene	ND		990	150	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
Phenol	ND		990	150	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5
Pyrene	ND		990	120	ug/Kg	☼	04/19/21 08:15	04/20/21 16:18	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*80*		*54 - 120*	*04/19/21 08:15*	*04/20/21 16:18*	*5*
2-Fluorobiphenyl	*92*		*60 - 120*	*04/19/21 08:15*	*04/20/21 16:18*	*5*
2-Fluorophenol	*77*		*52 - 120*	*04/19/21 08:15*	*04/20/21 16:18*	*5*
Nitrobenzene-d5	*86*		*53 - 120*	*04/19/21 08:15*	*04/20/21 16:18*	*5*
p-Terphenyl-d14	*97*		*79 - 130*	*04/19/21 08:15*	*04/20/21 16:18*	*5*
Phenol-d5	*82*		*54 - 120*	*04/19/21 08:15*	*04/20/21 16:18*	*5*

Eurofins TestAmerica, Buffalo

Client Sample ID: DW1-BLDG1-SP-001
Lab Sample ID: 480-183377-1

Date Collected: 04/14/21 10:10
Matrix: Solid
Date Received: 04/15/21 10:00
Percent Solids: 84.6

Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.040	0.0018	mg/L		04/20/21 14:51	04/21/21 13:28	1
2,4-Dinitrotoluene	ND	*+	0.020	0.0017	mg/L		04/20/21 14:51	04/21/21 13:28	1
Hexachlorobenzene	ND		0.020	0.0020	mg/L		04/20/21 14:51	04/21/21 13:28	1
Hexachlorobutadiene	ND		0.020	0.0027	mg/L		04/20/21 14:51	04/21/21 13:28	1
Hexachloroethane	ND		0.020	0.0023	mg/L		04/20/21 14:51	04/21/21 13:28	1
3-Methylphenol	ND		0.040	0.0016	mg/L		04/20/21 14:51	04/21/21 13:28	1
2-Methylphenol	ND		0.020	0.0016	mg/L		04/20/21 14:51	04/21/21 13:28	1
4-Methylphenol	ND		0.040	0.0014	mg/L		04/20/21 14:51	04/21/21 13:28	1
Nitrobenzene	ND		0.020	0.0011	mg/L		04/20/21 14:51	04/21/21 13:28	1
Pentachlorophenol	ND		0.040	0.0088	mg/L		04/20/21 14:51	04/21/21 13:28	1
Pyridine	ND		0.10	0.0016	mg/L		04/20/21 14:51	04/21/21 13:28	1
2,4,5-Trichlorophenol	ND		0.020	0.0019	mg/L		04/20/21 14:51	04/21/21 13:28	1
2,4,6-Trichlorophenol	ND		0.020	0.0024	mg/L		04/20/21 14:51	04/21/21 13:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*86*		*41 - 120*	*04/20/21 14:51*	*04/21/21 13:28*	*1*
2-Fluorobiphenyl	*99*		*48 - 120*	*04/20/21 14:51*	*04/21/21 13:28*	*1*
2-Fluorophenol	*51*		*35 - 120*	*04/20/21 14:51*	*04/21/21 13:28*	*1*
Nitrobenzene-d5	*98*		*46 - 120*	*04/20/21 14:51*	*04/21/21 13:28*	*1*
p-Terphenyl-d14	*90*		*60 - 148*	*04/20/21 14:51*	*04/21/21 13:28*	*1*
Phenol-d5	*34*		*22 - 120*	*04/20/21 14:51*	*04/21/21 13:28*	*1*

Method: 8081B - Organochlorine Pesticides (GC) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.00020	0.0000060	mg/L		04/20/21 11:51	04/22/21 12:01	1
Chlordane (technical)	ND		0.0020	0.000029	mg/L		04/20/21 11:51	04/22/21 12:01	1
Endrin	ND		0.00020	0.000014	mg/L		04/20/21 11:51	04/22/21 12:01	1
Heptachlor	ND		0.00020	0.0000085	mg/L		04/20/21 11:51	04/22/21 12:01	1
Heptachlor epoxide	ND		0.00020	0.0000053	mg/L		04/20/21 11:51	04/22/21 12:01	1
Methoxychlor	ND		0.00020	0.000014	mg/L		04/20/21 11:51	04/22/21 12:01	1
Toxaphene	ND		0.0020	0.00012	mg/L		04/20/21 11:51	04/22/21 12:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*48*		*20 - 120*	*04/20/21 11:51*	*04/22/21 12:01*	*1*
DCB Decachlorobiphenyl	*44*		*20 - 120*	*04/20/21 11:51*	*04/22/21 12:01*	*1*
Tetrachloro-m-xylene	*96*		*44 - 120*	*04/20/21 11:51*	*04/22/21 12:01*	*1*
Tetrachloro-m-xylene	*83*		*44 - 120*	*04/20/21 11:51*	*04/22/21 12:01*	*1*

Method: 8151 - TCLP Herbicides - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND		0.0020	0.00036	mg/L		04/20/21 11:55	04/21/21 16:44	1
2,4-D	ND	*1	0.0020	0.00040	mg/L		04/20/21 11:55	04/21/21 16:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*64*		*48 - 132*	*04/20/21 11:55*	*04/21/21 16:44*	*1*
2,4-Dichlorophenylacetic acid	*56*		*48 - 132*	*04/20/21 11:55*	*04/21/21 16:44*	*1*

Method: 6010C - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.012**	**J**	0.015	0.0056	mg/L		04/21/21 07:04	04/22/21 03:53	1
Barium	**1.0**		1.0	0.10	mg/L		04/21/21 07:04	04/22/21 03:53	1

Client Sample ID: DW1-BLDG1-SP-001 — Lab Sample ID: 480-183377-1

Date Collected: 04/14/21 10:10 — **Matrix: Solid**
Date Received: 04/15/21 10:00 — **Percent Solids: 84.6**

Method: 6010C - Metals (ICP) - TCLP (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	**0.17**		0.0020	0.00050	mg/L		04/21/21 07:04	04/22/21 03:53	1
Chromium	ND		0.020	0.010	mg/L		04/21/21 07:04	04/22/21 03:53	1
Lead	**0.047**		0.020	0.0030	mg/L		04/21/21 07:04	04/22/21 03:53	1
Selenium	ND		0.025	0.0087	mg/L		04/21/21 07:04	04/22/21 03:53	1
Silver	ND		0.0060	0.0017	mg/L		04/21/21 07:04	04/22/21 03:53	1

Method: 7470A - TCLP Mercury - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		04/20/21 14:21	04/20/21 18:56	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Flashpoint	**>180**		50.0	50.0	Degrees F			04/22/21 15:52	1
pH	**8.7**	**HF**	0.1	0.1	SU			04/20/21 13:00	1
Temperature	**21.0**	**HF**	0.001	0.001	Degrees C			04/20/21 13:00	1

Client Sample ID: DW2-BLDG1-SP-002 — Lab Sample ID: 480-183377-2

Date Collected: 04/14/21 10:45 — **Matrix: Solid**
Date Received: 04/15/21 10:00 — **Percent Solids: 88.6**

Method: 8260C - TCLP Volatiles - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.010	0.0041	mg/L			04/21/21 17:22	10
Carbon tetrachloride	ND		0.010	0.0027	mg/L			04/21/21 17:22	10
Chlorobenzene	ND		0.010	0.0075	mg/L			04/21/21 17:22	10
Chloroform	ND		0.010	0.0034	mg/L			04/21/21 17:22	10
1,2-Dichloroethane	ND		0.010	0.0021	mg/L			04/21/21 17:22	10
1,1-Dichloroethene	ND		0.010	0.0029	mg/L			04/21/21 17:22	10
2-Butanone (MEK)	ND		0.050	0.013	mg/L			04/21/21 17:22	10
Tetrachloroethene	ND		0.010	0.0036	mg/L			04/21/21 17:22	10
Trichloroethene	ND		0.010	0.0046	mg/L			04/21/21 17:22	10
Vinyl chloride	ND		0.010	0.0090	mg/L			04/21/21 17:22	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*77 - 120*		*04/21/21 17:22*	*10*
Toluene-d8 (Surr)	*91*		*80 - 120*		*04/21/21 17:22*	*10*
4-Bromofluorobenzene (Surr)	*102*		*73 - 120*		*04/21/21 17:22*	*10*
Dibromofluoromethane (Surr)	*113*		*75 - 123*		*04/21/21 17:22*	*10*

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND	vs	5.5	0.40	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
1,1,2,2-Tetrachloroethane	ND	vs	5.5	0.89	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
1,1,2-Trichloroethane	ND	vs	5.5	0.72	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	vs	5.5	1.3	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
1,1-Dichloroethane	ND	vs	5.5	0.67	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
1,1-Dichloroethene	ND	vs	5.5	0.67	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
1,2,4-Trichlorobenzene	ND	vs	5.5	0.34	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
1,2-Dibromo-3-Chloropropane	ND	vs	5.5	2.8	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
1,2-Dichlorobenzene	ND	vs	5.5	0.43	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
1,2-Dichloroethane	ND	vs	5.5	0.28	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1

Client Sample ID: DW2-BLDG1-SP-002

Date Collected: 04/14/21 10:45
Date Received: 04/15/21 10:00

Lab Sample ID: 480-183377-2
Matrix: Solid
Percent Solids: 88.6

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichloropropane	ND	vs	5.5	2.8	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
1,3-Dichlorobenzene	ND	vs	5.5	0.28	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
1,4-Dichlorobenzene	ND	vs	5.5	0.77	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
2-Butanone (MEK)	ND	vs	28	2.0	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
2-Hexanone	ND	vs	28	2.8	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
4-Methyl-2-pentanone (MIBK)	ND	vs	28	1.8	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
Acetone	ND	vs	28	4.6	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
Benzene	ND	vs	5.5	0.27	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
Bromodichloromethane	ND	vs	5.5	0.74	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
Bromoform	ND	vs	5.5	2.8	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
Bromomethane	ND	vs	5.5	0.50	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
Carbon disulfide	ND	vs	5.5	2.8	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
Carbon tetrachloride	ND	vs	5.5	0.53	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
Chlorobenzene	ND	vs	5.5	0.73	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
Dibromochloromethane	ND	vs	5.5	0.71	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
Chloroethane	ND	vs	5.5	1.2	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
Chloroform	ND	vs	5.5	0.34	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
Chloromethane	ND	vs	5.5	0.33	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
cis-1,2-Dichloroethene	ND	vs	5.5	0.71	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
cis-1,3-Dichloropropene	ND	vs	5.5	0.79	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
Cyclohexane	ND	vs	5.5	0.77	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
Dichlorodifluoromethane	ND	vs	5.5	0.46	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
Ethylbenzene	ND	vs	5.5	0.38	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
1,2-Dibromoethane	ND	vs	5.5	0.71	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
Isopropylbenzene	ND	vs	5.5	0.83	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
Methyl acetate	ND	vs	28	3.3	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
Methyl tert-butyl ether	ND	vs	5.5	0.54	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
Methylcyclohexane	ND	vs	5.5	0.84	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
Methylene Chloride	ND	vs	5.5	2.5	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
Styrene	ND	vs	5.5	0.28	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
Tetrachloroethene	ND	vs	5.5	0.74	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
Toluene	ND	vs	5.5	0.42	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
trans-1,2-Dichloroethene	ND	vs	5.5	0.57	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
trans-1,3-Dichloropropene	ND	vs	5.5	2.4	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
Trichloroethene	ND	vs	5.5	1.2	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
Trichlorofluoromethane	ND	vs	5.5	0.52	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
Vinyl chloride	ND	vs	5.5	0.67	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1
Xylenes, Total	ND	vs	11	0.93	ug/Kg	☼	04/19/21 11:15	04/19/21 15:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*71 - 125*	*04/19/21 11:15*	*04/19/21 15:38*	*1*
1,2-Dichloroethane-d4 (Surr)	*119*		*64 - 126*	*04/19/21 11:15*	*04/19/21 15:38*	*1*
4-Bromofluorobenzene (Surr)	*98*		*72 - 126*	*04/19/21 11:15*	*04/19/21 15:38*	*1*
Dibromofluoromethane (Surr)	*106*		*60 - 140*	*04/19/21 11:15*	*04/19/21 15:38*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biphenyl	ND		1900	280	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
bis (2-chloroisopropyl) ether	ND		1900	380	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
2,4,5-Trichlorophenol	ND		1900	510	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10

Client Sample Results

Client Sample ID: DW2-BLDG1-SP-002
Date Collected: 04/14/21 10:45
Date Received: 04/15/21 10:00

Lab Sample ID: 480-183377-2
Matrix: Solid
Percent Solids: 88.6

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	ND		1900	380	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
2,4-Dichlorophenol	ND		1900	200	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
2,4-Dimethylphenol	ND		1900	460	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
2,4-Dinitrophenol	ND		19000	8800	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
2,4-Dinitrotoluene	ND		1900	390	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
2,6-Dinitrotoluene	ND		1900	220	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
2-Chloronaphthalene	ND		1900	310	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
1,4-Dioxane	ND		1100	610	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
2-Chlorophenol	ND		3700	350	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
2-Methylnaphthalene	ND		1900	380	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
2-Methylphenol	ND		1900	220	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
2-Nitroaniline	ND		3700	280	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
2-Nitrophenol	ND		1900	540	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
3,3'-Dichlorobenzidine	ND		3700	2200	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
3-Nitroaniline	ND		3700	520	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
4,6-Dinitro-2-methylphenol	ND		3700	1900	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
4-Bromophenyl phenyl ether	ND		1900	270	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
4-Chloro-3-methylphenol	ND		1900	470	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
4-Chloroaniline	ND		1900	470	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
4-Chlorophenyl phenyl ether	ND		1900	230	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
4-Methylphenol	ND		3700	220	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
4-Nitroaniline	ND		3700	990	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
4-Nitrophenol	ND		3700	1300	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
Acenaphthene	ND		1900	280	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
Acenaphthylene	ND		1900	250	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
Acetophenone	ND		1900	260	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
Anthracene	ND		1900	470	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
Atrazine	ND		1900	660	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
Benzaldehyde	ND		1900	1500	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
Benzo[a]anthracene	ND		1900	190	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
Benzo[a]pyrene	**440**	**J**	1900	280	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
Benzo[b]fluoranthene	**580**	**J**	1900	300	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
Benzo[g,h,i]perylene	**450**	**J**	1900	200	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
Benzo[k]fluoranthene	**280**	**J**	1900	250	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
Bis(2-chloroethoxy)methane	ND		1900	400	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
Bis(2-chloroethyl)ether	ND		1900	250	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
Bis(2-ethylhexyl) phthalate	**1800**	**J**	1900	650	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
Butyl benzyl phthalate	ND		1900	310	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
Caprolactam	ND		1900	570	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
Carbazole	ND		1900	220	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
Chrysene	ND		1900	420	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
Di-n-butyl phthalate	**520**	**J**	1900	320	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
Di-n-octyl phthalate	ND		1900	220	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
Dibenz(a,h)anthracene	ND		1900	330	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
Dibenzofuran	ND		1900	220	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
Diethyl phthalate	ND		1900	250	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
Dimethyl phthalate	ND		1900	220	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
Fluoranthene	**770**	**J**	1900	200	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
Fluorene	ND		1900	220	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10

Client Sample ID: DW2-BLDG1-SP-002
Date Collected: 04/14/21 10:45
Date Received: 04/15/21 10:00

Lab Sample ID: 480-183377-2
Matrix: Solid
Percent Solids: 88.6

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexachlorobenzene	ND		1900	260	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
Hexachlorobutadiene	ND		1900	280	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
Hexachlorocyclopentadiene	ND		1900	260	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
Hexachloroethane	ND		1900	250	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
Indeno[1,2,3-cd]pyrene	**350**	**J**	1900	230	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
Isophorone	ND		1900	400	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
N-Nitrosodi-n-propylamine	ND		1900	320	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
N-Nitrosodiphenylamine	ND		1900	1500	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
Naphthalene	ND		1900	250	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
Nitrobenzene	ND		1900	210	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
Pentachlorophenol	ND		3700	1900	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
Phenanthrene	**390**	**J**	1900	280	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
Phenol	ND		1900	290	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10
Pyrene	**650**	**J**	1900	220	ug/Kg	☼	04/19/21 08:15	04/21/21 15:20	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*106*		*54 - 120*	*04/19/21 08:15*	*04/21/21 15:20*	*10*
2-Fluorobiphenyl	*96*		*60 - 120*	*04/19/21 08:15*	*04/21/21 15:20*	*10*
2-Fluorophenol	*77*		*52 - 120*	*04/19/21 08:15*	*04/21/21 15:20*	*10*
Nitrobenzene-d5	*81*		*53 - 120*	*04/19/21 08:15*	*04/21/21 15:20*	*10*
p-Terphenyl-d14	*108*		*79 - 130*	*04/19/21 08:15*	*04/21/21 15:20*	*10*
Phenol-d5	*80*		*54 - 120*	*04/19/21 08:15*	*04/21/21 15:20*	*10*

Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.040	0.0018	mg/L		04/20/21 14:51	04/21/21 13:52	1
2,4-Dinitrotoluene	ND	*+	0.020	0.0017	mg/L		04/20/21 14:51	04/21/21 13:52	1
Hexachlorobenzene	ND		0.020	0.0020	mg/L		04/20/21 14:51	04/21/21 13:52	1
Hexachlorobutadiene	ND		0.020	0.0027	mg/L		04/20/21 14:51	04/21/21 13:52	1
Hexachloroethane	ND		0.020	0.0023	mg/L		04/20/21 14:51	04/21/21 13:52	1
3-Methylphenol	ND		0.040	0.0016	mg/L		04/20/21 14:51	04/21/21 13:52	1
2-Methylphenol	ND		0.020	0.0016	mg/L		04/20/21 14:51	04/21/21 13:52	1
4-Methylphenol	ND		0.040	0.0014	mg/L		04/20/21 14:51	04/21/21 13:52	1
Nitrobenzene	ND		0.020	0.0011	mg/L		04/20/21 14:51	04/21/21 13:52	1
Pentachlorophenol	ND		0.040	0.0088	mg/L		04/20/21 14:51	04/21/21 13:52	1
Pyridine	ND		0.10	0.0016	mg/L		04/20/21 14:51	04/21/21 13:52	1
2,4,5-Trichlorophenol	ND		0.020	0.0019	mg/L		04/20/21 14:51	04/21/21 13:52	1
2,4,6-Trichlorophenol	ND		0.020	0.0024	mg/L		04/20/21 14:51	04/21/21 13:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*84*		*41 - 120*	*04/20/21 14:51*	*04/21/21 13:52*	*1*
2-Fluorobiphenyl	*102*		*48 - 120*	*04/20/21 14:51*	*04/21/21 13:52*	*1*
2-Fluorophenol	*48*		*35 - 120*	*04/20/21 14:51*	*04/21/21 13:52*	*1*
Nitrobenzene-d5	*98*		*46 - 120*	*04/20/21 14:51*	*04/21/21 13:52*	*1*
p-Terphenyl-d14	*101*		*60 - 148*	*04/20/21 14:51*	*04/21/21 13:52*	*1*
Phenol-d5	*32*		*22 - 120*	*04/20/21 14:51*	*04/21/21 13:52*	*1*

Method: 8081B - Organochlorine Pesticides (GC) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.00020	0.0000060	mg/L		04/20/21 11:51	04/22/21 12:20	1

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Client Sample ID: DW2-BLDG1-SP-002

Lab Sample ID: 480-183377-2

Date Collected: 04/14/21 10:45
Matrix: Solid
Date Received: 04/15/21 10:00
Percent Solids: 88.6

Method: 8081B - Organochlorine Pesticides (GC) - TCLP (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlordane (technical)	ND		0.0020	0.000029	mg/L		04/20/21 11:51	04/22/21 12:20	1
Endrin	ND		0.00020	0.000014	mg/L		04/20/21 11:51	04/22/21 12:20	1
Heptachlor	ND		0.00020	0.0000085	mg/L		04/20/21 11:51	04/22/21 12:20	1
Heptachlor epoxide	ND		0.00020	0.0000053	mg/L		04/20/21 11:51	04/22/21 12:20	1
Methoxychlor	ND		0.00020	0.000014	mg/L		04/20/21 11:51	04/22/21 12:20	1
Toxaphene	ND		0.0020	0.00012	mg/L		04/20/21 11:51	04/22/21 12:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*51*		*20 - 120*	*04/20/21 11:51*	*04/22/21 12:20*	*1*
DCB Decachlorobiphenyl	*42*		*20 - 120*	*04/20/21 11:51*	*04/22/21 12:20*	*1*
Tetrachloro-m-xylene	*91*		*44 - 120*	*04/20/21 11:51*	*04/22/21 12:20*	*1*
Tetrachloro-m-xylene	*78*		*44 - 120*	*04/20/21 11:51*	*04/22/21 12:20*	*1*

Method: 8151 - TCLP Herbicides - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND		0.0020	0.00036	mg/L		04/26/21 10:16	04/28/21 07:14	1
2,4-D	ND		0.0020	0.00040	mg/L		04/26/21 10:16	04/28/21 07:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*40*	*S1-*	*48 - 132*	*04/26/21 10:16*	*04/28/21 07:14*	*1*
2,4-Dichlorophenylacetic acid	*39*	*S1-*	*48 - 132*	*04/26/21 10:16*	*04/28/21 07:14*	*1*

Method: 6010C - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.011**	**J**	0.015	0.0056	mg/L		04/21/21 07:04	04/22/21 04:08	1
Barium	**0.80**	**J**	1.0	0.10	mg/L		04/21/21 07:04	04/22/21 04:08	1
Cadmium	**0.031**		0.0020	0.00050	mg/L		04/21/21 07:04	04/22/21 04:08	1
Chromium	**0.031**		0.020	0.010	mg/L		04/21/21 07:04	04/22/21 04:08	1
Lead	**0.19**		0.020	0.0030	mg/L		04/21/21 07:04	04/22/21 04:08	1
Selenium	ND		0.025	0.0087	mg/L		04/21/21 07:04	04/22/21 04:08	1
Silver	ND		0.0060	0.0017	mg/L		04/21/21 07:04	04/22/21 04:08	1

Method: 7470A - TCLP Mercury - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		04/20/21 14:21	04/20/21 19:00	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Flashpoint	**>180**		50.0	50.0	Degrees F			04/22/21 15:52	1
pH	**8.4**	**HF**	0.1	0.1	SU			04/20/21 13:00	1
Temperature	**20.8**	**HF**	0.001	0.001	Degrees C			04/20/21 13:00	1

Client Sample ID: DW5-BLDG8-SP-003

Lab Sample ID: 480-183377-3

Date Collected: 04/14/21 11:45
Matrix: Solid
Date Received: 04/15/21 10:00
Percent Solids: 97.5

Method: 8260C - TCLP Volatiles - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.010	0.0041	mg/L			04/21/21 17:47	10
Carbon tetrachloride	ND		0.010	0.0027	mg/L			04/21/21 17:47	10
Chlorobenzene	ND		0.010	0.0075	mg/L			04/21/21 17:47	10

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Client Sample ID: DW5-BLDG8-SP-003

Lab Sample ID: 480-183377-3

Date Collected: 04/14/21 11:45 — **Matrix: Solid**
Date Received: 04/15/21 10:00 — **Percent Solids: 97.5**

Method: 8260C - TCLP Volatiles - TCLP (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroform	ND		0.010	0.0034	mg/L			04/21/21 17:47	10
1,2-Dichloroethane	ND		0.010	0.0021	mg/L			04/21/21 17:47	10
1,1-Dichloroethene	ND		0.010	0.0029	mg/L			04/21/21 17:47	10
2-Butanone (MEK)	ND		0.050	0.013	mg/L			04/21/21 17:47	10
Tetrachloroethene	ND		0.010	0.0036	mg/L			04/21/21 17:47	10
Trichloroethene	ND		0.010	0.0046	mg/L			04/21/21 17:47	10
Vinyl chloride	ND		0.010	0.0090	mg/L			04/21/21 17:47	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*77 - 120*		*04/21/21 17:47*	*10*
Toluene-d8 (Surr)	*105*		*80 - 120*		*04/21/21 17:47*	*10*
4-Bromofluorobenzene (Surr)	*109*		*73 - 120*		*04/21/21 17:47*	*10*
Dibromofluoromethane (Surr)	*112*		*75 - 123*		*04/21/21 17:47*	*10*

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND	vs	5.0	0.36	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
1,1,2,2-Tetrachloroethane	ND	vs	5.0	0.80	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
1,1,2-Trichloroethane	ND	vs	5.0	0.64	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	vs	5.0	1.1	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
1,1-Dichloroethane	ND	vs	5.0	0.61	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
1,1-Dichloroethene	ND	vs	5.0	0.61	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
1,2,4-Trichlorobenzene	ND	vs	5.0	0.30	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
1,2-Dibromo-3-Chloropropane	ND	vs	5.0	2.5	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
1,2-Dichlorobenzene	ND	vs	5.0	0.39	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
1,2-Dichloroethane	ND	vs	5.0	0.25	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
1,2-Dichloropropane	ND	vs	5.0	2.5	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
1,3-Dichlorobenzene	ND	vs	5.0	0.25	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
1,4-Dichlorobenzene	ND	vs	5.0	0.69	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
2-Butanone (MEK)	ND	vs	25	1.8	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
2-Hexanone	ND	vs	25	2.5	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
4-Methyl-2-pentanone (MIBK)	ND	vs	25	1.6	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
Acetone	**4.8**	**J vs**	25	4.2	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
Benzene	ND	vs	5.0	0.24	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
Bromodichloromethane	ND	vs	5.0	0.66	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
Bromoform	ND	vs	5.0	2.5	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
Bromomethane	ND	vs	5.0	0.45	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
Carbon disulfide	ND	vs	5.0	2.5	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
Carbon tetrachloride	ND	vs	5.0	0.48	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
Chlorobenzene	ND	vs	5.0	0.65	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
Dibromochloromethane	ND	vs	5.0	0.63	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
Chloroethane	ND	vs	5.0	1.1	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
Chloroform	ND	vs	5.0	0.31	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
Chloromethane	ND	vs	5.0	0.30	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
cis-1,2-Dichloroethene	ND	vs	5.0	0.63	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
cis-1,3-Dichloropropene	ND	vs	5.0	0.71	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
Cyclohexane	ND	vs	5.0	0.69	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
Dichlorodifluoromethane	ND	vs	5.0	0.41	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
Ethylbenzene	ND	vs	5.0	0.34	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
1,2-Dibromoethane	ND	vs	5.0	0.64	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1

Client Sample ID: DW5-BLDG8-SP-003

Lab Sample ID: 480-183377-3

Date Collected: 04/14/21 11:45
Matrix: Solid
Date Received: 04/15/21 10:00
Percent Solids: 97.5

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Isopropylbenzene	ND	vs	5.0	0.75	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
Methyl acetate	ND	vs	25	3.0	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
Methyl tert-butyl ether	ND	vs	5.0	0.49	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
Methylcyclohexane	ND	vs	5.0	0.75	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
Methylene Chloride	ND	vs	5.0	2.3	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
Styrene	ND	vs	5.0	0.25	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
Tetrachloroethene	ND	vs	5.0	0.67	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
Toluene	ND	vs	5.0	0.38	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
trans-1,2-Dichloroethene	ND	vs	5.0	0.51	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
trans-1,3-Dichloropropene	ND	vs	5.0	2.2	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
Trichloroethene	ND	vs	5.0	1.1	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
Trichlorofluoromethane	ND	vs	5.0	0.47	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
Vinyl chloride	ND	vs	5.0	0.61	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1
Xylenes, Total	ND	vs	9.9	0.83	ug/Kg	☼	04/19/21 17:08	04/20/21 03:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*71 - 125*	*04/19/21 17:08*	*04/20/21 03:48*	*1*
1,2-Dichloroethane-d4 (Surr)	*122*		*64 - 126*	*04/19/21 17:08*	*04/20/21 03:48*	*1*
4-Bromofluorobenzene (Surr)	*105*		*72 - 126*	*04/19/21 17:08*	*04/20/21 03:48*	*1*
Dibromofluoromethane (Surr)	*107*		*60 - 140*	*04/19/21 17:08*	*04/20/21 03:48*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biphenyl	ND		860	130	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
bis (2-chloroisopropyl) ether	ND		860	170	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
2,4,5-Trichlorophenol	ND		860	230	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
2,4,6-Trichlorophenol	ND		860	170	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
2,4-Dichlorophenol	ND		860	91	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
2,4-Dimethylphenol	ND		860	210	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
2,4-Dinitrophenol	ND		8400	4000	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
2,4-Dinitrotoluene	ND		860	180	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
2,6-Dinitrotoluene	ND		860	100	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
2-Chloronaphthalene	ND		860	140	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
1,4-Dioxane	ND		510	280	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
2-Chlorophenol	ND		1700	160	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
2-Methylnaphthalene	ND		860	170	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
2-Methylphenol	ND		860	100	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
2-Nitroaniline	ND		1700	130	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
2-Nitrophenol	ND		860	240	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
3,3'-Dichlorobenzidine	ND		1700	1000	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
3-Nitroaniline	ND		1700	240	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
4,6-Dinitro-2-methylphenol	ND		1700	860	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
4-Bromophenyl phenyl ether	ND		860	120	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
4-Chloro-3-methylphenol	ND		860	210	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
4-Chloroaniline	ND		860	210	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
4-Chlorophenyl phenyl ether	ND		860	110	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
4-Methylphenol	ND		1700	100	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
4-Nitroaniline	ND		1700	450	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
4-Nitrophenol	ND		1700	600	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
Acenaphthene	ND		860	130	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5

Client Sample ID: DW5-BLDG8-SP-003

Date Collected: 04/14/21 11:45
Date Received: 04/15/21 10:00

Lab Sample ID: 480-183377-3
Matrix: Solid
Percent Solids: 97.5

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthylene	ND		860	110	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
Acetophenone	ND		860	120	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
Anthracene	ND		860	210	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
Atrazine	ND		860	300	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
Benzaldehyde	ND		860	680	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
Benzo[a]anthracene	**660**	**J**	860	86	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
Benzo[a]pyrene	**770**	**J**	860	130	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
Benzo[b]fluoranthene	**910**		860	140	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
Benzo[g,h,i]perylene	**640**	**J**	860	91	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
Benzo[k]fluoranthene	**390**	**J**	860	110	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
Bis(2-chloroethoxy)methane	ND		860	180	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
Bis(2-chloroethyl)ether	ND		860	110	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
Bis(2-ethylhexyl) phthalate	**4400**		860	290	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
Butyl benzyl phthalate	**3500**		860	140	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
Caprolactam	ND		860	260	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
Carbazole	**110**	**J**	860	100	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
Chrysene	**710**	**J**	860	190	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
Di-n-butyl phthalate	**310**	**J**	860	150	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
Di-n-octyl phthalate	ND		860	100	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
Dibenz(a,h)anthracene	**180**	**J**	860	150	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
Dibenzofuran	ND		860	100	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
Diethyl phthalate	ND		860	110	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
Dimethyl phthalate	ND		860	100	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
Fluoranthene	**1500**		860	91	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
Fluorene	ND		860	100	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
Hexachlorobenzene	ND		860	120	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
Hexachlorobutadiene	ND		860	130	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
Hexachlorocyclopentadiene	ND		860	120	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
Hexachloroethane	ND		860	110	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
Indeno[1,2,3-cd]pyrene	**510**	**J**	860	110	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
Isophorone	ND		860	180	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
N-Nitrosodi-n-propylamine	ND		860	150	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
N-Nitrosodiphenylamine	ND		860	700	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
Naphthalene	ND		860	110	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
Nitrobenzene	ND		860	96	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
Pentachlorophenol	ND		1700	860	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
Phenanthrene	**710**	**J**	860	130	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
Phenol	ND		860	130	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5
Pyrene	**1100**		860	100	ug/Kg	☼	04/19/21 08:15	04/21/21 15:45	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*93*		*54 - 120*	*04/19/21 08:15*	*04/21/21 15:45*	*5*
2-Fluorobiphenyl	*94*		*60 - 120*	*04/19/21 08:15*	*04/21/21 15:45*	*5*
2-Fluorophenol	*71*		*52 - 120*	*04/19/21 08:15*	*04/21/21 15:45*	*5*
Nitrobenzene-d5	*71*		*53 - 120*	*04/19/21 08:15*	*04/21/21 15:45*	*5*
p-Terphenyl-d14	*91*		*79 - 130*	*04/19/21 08:15*	*04/21/21 15:45*	*5*
Phenol-d5	*70*		*54 - 120*	*04/19/21 08:15*	*04/21/21 15:45*	*5*

Client Sample ID: DW5-BLDG8-SP-003

Date Collected: 04/14/21 11:45
Date Received: 04/15/21 10:00

Lab Sample ID: 480-183377-3

Matrix: Solid
Percent Solids: 97.5

Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.040	0.0018	mg/L		04/20/21 14:51	04/21/21 14:16	1
2,4-Dinitrotoluene	ND	*+	0.020	0.0017	mg/L		04/20/21 14:51	04/21/21 14:16	1
Hexachlorobenzene	ND		0.020	0.0020	mg/L		04/20/21 14:51	04/21/21 14:16	1
Hexachlorobutadiene	ND		0.020	0.0027	mg/L		04/20/21 14:51	04/21/21 14:16	1
Hexachloroethane	ND		0.020	0.0023	mg/L		04/20/21 14:51	04/21/21 14:16	1
3-Methylphenol	ND		0.040	0.0016	mg/L		04/20/21 14:51	04/21/21 14:16	1
2-Methylphenol	ND		0.020	0.0016	mg/L		04/20/21 14:51	04/21/21 14:16	1
4-Methylphenol	ND		0.040	0.0014	mg/L		04/20/21 14:51	04/21/21 14:16	1
Nitrobenzene	ND		0.020	0.0011	mg/L		04/20/21 14:51	04/21/21 14:16	1
Pentachlorophenol	ND		0.040	0.0088	mg/L		04/20/21 14:51	04/21/21 14:16	1
Pyridine	ND		0.10	0.0016	mg/L		04/20/21 14:51	04/21/21 14:16	1
2,4,5-Trichlorophenol	ND		0.020	0.0019	mg/L		04/20/21 14:51	04/21/21 14:16	1
2,4,6-Trichlorophenol	ND		0.020	0.0024	mg/L		04/20/21 14:51	04/21/21 14:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*89*		*41 - 120*	*04/20/21 14:51*	*04/21/21 14:16*	*1*
2-Fluorobiphenyl	*99*		*48 - 120*	*04/20/21 14:51*	*04/21/21 14:16*	*1*
2-Fluorophenol	*50*		*35 - 120*	*04/20/21 14:51*	*04/21/21 14:16*	*1*
Nitrobenzene-d5	*95*		*46 - 120*	*04/20/21 14:51*	*04/21/21 14:16*	*1*
p-Terphenyl-d14	*84*		*60 - 148*	*04/20/21 14:51*	*04/21/21 14:16*	*1*
Phenol-d5	*33*		*22 - 120*	*04/20/21 14:51*	*04/21/21 14:16*	*1*

Method: 8081B - Organochlorine Pesticides (GC) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.00020	0.0000060	mg/L		04/20/21 11:51	04/22/21 12:40	1
Chlordane (technical)	ND		0.0020	0.000029	mg/L		04/20/21 11:51	04/22/21 12:40	1
Endrin	ND		0.00020	0.000014	mg/L		04/20/21 11:51	04/22/21 12:40	1
Heptachlor	ND		0.00020	0.0000085	mg/L		04/20/21 11:51	04/22/21 12:40	1
Heptachlor epoxide	ND		0.00020	0.0000053	mg/L		04/20/21 11:51	04/22/21 12:40	1
Methoxychlor	ND		0.00020	0.000014	mg/L		04/20/21 11:51	04/22/21 12:40	1
Toxaphene	ND		0.0020	0.00012	mg/L		04/20/21 11:51	04/22/21 12:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*50*		*20 - 120*	*04/20/21 11:51*	*04/22/21 12:40*	*1*
DCB Decachlorobiphenyl	*41*		*20 - 120*	*04/20/21 11:51*	*04/22/21 12:40*	*1*
Tetrachloro-m-xylene	*97*		*44 - 120*	*04/20/21 11:51*	*04/22/21 12:40*	*1*
Tetrachloro-m-xylene	*85*		*44 - 120*	*04/20/21 11:51*	*04/22/21 12:40*	*1*

Method: 8151 - TCLP Herbicides - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND		0.0020	0.00036	mg/L		04/26/21 10:16	04/28/21 07:44	1
2,4-D	ND		0.0020	0.00040	mg/L		04/26/21 10:16	04/28/21 07:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*42*	*S1-*	*48 - 132*	*04/26/21 10:16*	*04/28/21 07:44*	*1*
2,4-Dichlorophenylacetic acid	*60*		*48 - 132*	*04/26/21 10:16*	*04/28/21 07:44*	*1*

Method: 6010C - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.0057**	**J**	0.015	0.0056	mg/L		04/21/21 07:04	04/22/21 04:12	1
Barium	**0.49**	**J**	1.0	0.10	mg/L		04/21/21 07:04	04/22/21 04:12	1

Client Sample ID: DW5-BLDG8-SP-003
Lab Sample ID: 480-183377-3
Date Collected: 04/14/21 11:45
Matrix: Solid
Date Received: 04/15/21 10:00
Percent Solids: 97.5

Method: 6010C - Metals (ICP) - TCLP (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	0.031		0.0020	0.00050	mg/L		04/21/21 07:04	04/22/21 04:12	1
Chromium	0.012	J	0.020	0.010	mg/L		04/21/21 07:04	04/22/21 04:12	1
Lead	0.034		0.020	0.0030	mg/L		04/21/21 07:04	04/22/21 04:12	1
Selenium	ND		0.025	0.0087	mg/L		04/21/21 07:04	04/22/21 04:12	1
Silver	ND		0.0060	0.0017	mg/L		04/21/21 07:04	04/22/21 04:12	1

Method: 7470A - TCLP Mercury - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		04/20/21 14:21	04/20/21 19:01	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Flashpoint	>180		50.0	50.0	Degrees F			04/22/21 15:52	1
pH	7.4	HF	0.1	0.1	SU			04/20/21 13:00	1
Temperature	20.6	HF	0.001	0.001	Degrees C			04/20/21 13:00	1

Client Sample ID: DW3-OUT-SP-004
Lab Sample ID: 480-183377-4
Date Collected: 04/14/21 13:30
Matrix: Solid
Date Received: 04/15/21 10:00
Percent Solids: 79.0

Method: 8260C - TCLP Volatiles - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.010	0.0041	mg/L			04/21/21 18:11	10
Carbon tetrachloride	ND		0.010	0.0027	mg/L			04/21/21 18:11	10
Chlorobenzene	ND		0.010	0.0075	mg/L			04/21/21 18:11	10
Chloroform	ND		0.010	0.0034	mg/L			04/21/21 18:11	10
1,2-Dichloroethane	ND		0.010	0.0021	mg/L			04/21/21 18:11	10
1,1-Dichloroethene	ND		0.010	0.0029	mg/L			04/21/21 18:11	10
2-Butanone (MEK)	ND		0.050	0.013	mg/L			04/21/21 18:11	10
Tetrachloroethene	ND		0.010	0.0036	mg/L			04/21/21 18:11	10
Trichloroethene	ND		0.010	0.0046	mg/L			04/21/21 18:11	10
Vinyl chloride	ND		0.010	0.0090	mg/L			04/21/21 18:11	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*77 - 120*		*04/21/21 18:11*	*10*
Toluene-d8 (Surr)	*95*		*80 - 120*		*04/21/21 18:11*	*10*
4-Bromofluorobenzene (Surr)	*106*		*73 - 120*		*04/21/21 18:11*	*10*
Dibromofluoromethane (Surr)	*108*		*75 - 123*		*04/21/21 18:11*	*10*

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND	vs	6.3	0.45	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
1,1,2,2-Tetrachloroethane	ND	vs	6.3	1.0	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
1,1,2-Trichloroethane	ND	vs	6.3	0.81	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	vs	6.3	1.4	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
1,1-Dichloroethane	ND	vs	6.3	0.76	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
1,1-Dichloroethene	ND	vs	6.3	0.77	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
1,2,4-Trichlorobenzene	ND	vs	6.3	0.38	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
1,2-Dibromo-3-Chloropropane	ND	vs	6.3	3.1	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
1,2-Dichlorobenzene	ND	vs	6.3	0.49	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
1,2-Dichloroethane	ND	vs	6.3	0.31	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1

Client Sample ID: DW3-OUT-SP-004

Date Collected: 04/14/21 13:30
Date Received: 04/15/21 10:00

Lab Sample ID: 480-183377-4

Matrix: Solid
Percent Solids: 79.0

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichloropropane	ND	vs	6.3	3.1	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
1,3-Dichlorobenzene	ND	vs	6.3	0.32	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
1,4-Dichlorobenzene	ND	vs	6.3	0.88	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
2-Butanone (MEK)	ND	vs	31	2.3	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
2-Hexanone	ND	vs	31	3.1	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
4-Methyl-2-pentanone (MIBK)	ND	vs	31	2.1	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
Acetone	ND	vs	31	5.3	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
Benzene	ND	vs	6.3	0.31	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
Bromodichloromethane	ND	vs	6.3	0.84	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
Bromoform	ND	vs	6.3	3.1	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
Bromomethane	ND	vs	6.3	0.56	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
Carbon disulfide	ND	vs	6.3	3.1	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
Carbon tetrachloride	ND	vs	6.3	0.61	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
Chlorobenzene	ND	vs	6.3	0.83	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
Dibromochloromethane	ND	vs	6.3	0.80	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
Chloroethane	ND	vs	6.3	1.4	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
Chloroform	ND	vs	6.3	0.39	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
Chloromethane	ND	vs	6.3	0.38	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
cis-1,2-Dichloroethene	ND	vs	6.3	0.80	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
cis-1,3-Dichloropropene	ND	vs	6.3	0.90	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
Cyclohexane	ND	vs	6.3	0.88	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
Dichlorodifluoromethane	ND	vs	6.3	0.52	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
Ethylbenzene	ND	vs	6.3	0.43	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
1,2-Dibromoethane	ND	vs	6.3	0.80	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
Isopropylbenzene	ND	vs	6.3	0.94	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
Methyl acetate	ND	vs	31	3.8	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
Methyl tert-butyl ether	ND	vs	6.3	0.62	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
Methylcyclohexane	ND	vs	6.3	0.95	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
Methylene Chloride	ND	vs	6.3	2.9	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
Styrene	ND	vs	6.3	0.31	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
Tetrachloroethene	ND	vs	6.3	0.84	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
Toluene	ND	vs	6.3	0.47	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
trans-1,2-Dichloroethene	ND	vs	6.3	0.65	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
trans-1,3-Dichloropropene	ND	vs	6.3	2.8	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
Trichloroethene	ND	vs	6.3	1.4	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
Trichlorofluoromethane	ND	vs	6.3	0.59	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
Vinyl chloride	ND	vs	6.3	0.76	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1
Xylenes, Total	ND	vs	13	1.1	ug/Kg	☼	04/19/21 11:15	04/19/21 16:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*106*		*71 - 125*	*04/19/21 11:15*	*04/19/21 16:27*	*1*
1,2-Dichloroethane-d4 (Surr)	*116*		*64 - 126*	*04/19/21 11:15*	*04/19/21 16:27*	*1*
4-Bromofluorobenzene (Surr)	*95*		*72 - 126*	*04/19/21 11:15*	*04/19/21 16:27*	*1*
Dibromofluoromethane (Surr)	*106*		*60 - 140*	*04/19/21 11:15*	*04/19/21 16:27*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biphenyl	ND		2100	320	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
bis (2-chloroisopropyl) ether	ND		2100	430	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
2,4,5-Trichlorophenol	ND		2100	580	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183377-1

Client Sample ID: DW3-OUT-SP-004
Date Collected: 04/14/21 13:30
Date Received: 04/15/21 10:00

Lab Sample ID: 480-183377-4
Matrix: Solid
Percent Solids: 79.0

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	ND		2100	430	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
2,4-Dichlorophenol	ND		2100	230	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
2,4-Dimethylphenol	ND		2100	520	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
2,4-Dinitrophenol	ND		21000	9900	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
2,4-Dinitrotoluene	ND		2100	440	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
2,6-Dinitrotoluene	ND		2100	250	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
2-Chloronaphthalene	ND		2100	350	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
1,4-Dioxane	ND		1300	690	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
2-Chlorophenol	ND		4200	390	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
2-Methylnaphthalene	ND		2100	430	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
2-Methylphenol	ND		2100	250	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
2-Nitroaniline	ND		4200	320	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
2-Nitrophenol	ND		2100	610	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
3,3'-Dichlorobenzidine	ND		4200	2500	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
3-Nitroaniline	ND		4200	590	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
4,6-Dinitro-2-methylphenol	ND		4200	2100	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
4-Bromophenyl phenyl ether	ND		2100	300	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
4-Chloro-3-methylphenol	ND		2100	530	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
4-Chloroaniline	ND		2100	530	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
4-Chlorophenyl phenyl ether	ND		2100	260	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
4-Methylphenol	ND		4200	250	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
4-Nitroaniline	ND		4200	1100	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
4-Nitrophenol	ND		4200	1500	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
Acenaphthene	ND		2100	320	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
Acenaphthylene	ND		2100	280	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
Acetophenone	ND		2100	290	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
Anthracene	ND		2100	530	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
Atrazine	ND		2100	740	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
Benzaldehyde	ND		2100	1700	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
Benzo[a]anthracene	**2100**		2100	210	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
Benzo[a]pyrene	**3000**		2100	320	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
Benzo[b]fluoranthene	**3600**		2100	340	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
Benzo[g,h,i]perylene	**2400**		2100	230	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
Benzo[k]fluoranthene	**2000**	**J**	2100	280	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
Bis(2-chloroethoxy)methane	ND		2100	450	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
Bis(2-chloroethyl)ether	ND		2100	280	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
Bis(2-ethylhexyl) phthalate	**1000**	**J**	2100	730	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
Butyl benzyl phthalate	ND		2100	350	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
Caprolactam	ND		2100	640	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
Carbazole	**380**	**J**	2100	250	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
Chrysene	**3100**		2100	480	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
Di-n-butyl phthalate	ND		2100	370	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
Di-n-octyl phthalate	ND		2100	250	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
Dibenz(a,h)anthracene	**460**	**J**	2100	380	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
Dibenzofuran	ND		2100	250	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
Diethyl phthalate	ND		2100	280	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
Dimethyl phthalate	ND		2100	250	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
Fluoranthene	**7300**		2100	230	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
Fluorene	ND		2100	250	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10

Client Sample ID: DW3-OUT-SP-004
Date Collected: 04/14/21 13:30
Date Received: 04/15/21 10:00

Lab Sample ID: 480-183377-4
Matrix: Solid
Percent Solids: 79.0

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexachlorobenzene	ND		2100	290	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
Hexachlorobutadiene	ND		2100	320	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
Hexachlorocyclopentadiene	ND		2100	290	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
Hexachloroethane	ND		2100	280	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
Indeno[1,2,3-cd]pyrene	**2000**	**J**	2100	260	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
Isophorone	ND		2100	450	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
N-Nitrosodi-n-propylamine	ND		2100	370	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
N-Nitrosodiphenylamine	ND		2100	1700	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
Naphthalene	ND		2100	280	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
Nitrobenzene	ND		2100	240	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
Pentachlorophenol	ND		4200	2100	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
Phenanthrene	**4100**		2100	320	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
Phenol	ND		2100	330	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10
Pyrene	**6000**		2100	250	ug/Kg	☼	04/19/21 08:15	04/20/21 17:31	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*102*		*54 - 120*	*04/19/21 08:15*	*04/20/21 17:31*	*10*
2-Fluorobiphenyl	*97*		*60 - 120*	*04/19/21 08:15*	*04/20/21 17:31*	*10*
2-Fluorophenol	*79*		*52 - 120*	*04/19/21 08:15*	*04/20/21 17:31*	*10*
Nitrobenzene-d5	*102*		*53 - 120*	*04/19/21 08:15*	*04/20/21 17:31*	*10*
p-Terphenyl-d14	*94*		*79 - 130*	*04/19/21 08:15*	*04/20/21 17:31*	*10*
Phenol-d5	*85*		*54 - 120*	*04/19/21 08:15*	*04/20/21 17:31*	*10*

Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.040	0.0018	mg/L		04/20/21 14:51	04/21/21 14:40	1
2,4-Dinitrotoluene	ND	*+	0.020	0.0017	mg/L		04/20/21 14:51	04/21/21 14:40	1
Hexachlorobenzene	ND		0.020	0.0020	mg/L		04/20/21 14:51	04/21/21 14:40	1
Hexachlorobutadiene	ND		0.020	0.0027	mg/L		04/20/21 14:51	04/21/21 14:40	1
Hexachloroethane	ND		0.020	0.0023	mg/L		04/20/21 14:51	04/21/21 14:40	1
3-Methylphenol	ND		0.040	0.0016	mg/L		04/20/21 14:51	04/21/21 14:40	1
2-Methylphenol	ND		0.020	0.0016	mg/L		04/20/21 14:51	04/21/21 14:40	1
4-Methylphenol	ND		0.040	0.0014	mg/L		04/20/21 14:51	04/21/21 14:40	1
Nitrobenzene	ND		0.020	0.0011	mg/L		04/20/21 14:51	04/21/21 14:40	1
Pentachlorophenol	ND		0.040	0.0088	mg/L		04/20/21 14:51	04/21/21 14:40	1
Pyridine	ND		0.10	0.0016	mg/L		04/20/21 14:51	04/21/21 14:40	1
2,4,5-Trichlorophenol	ND		0.020	0.0019	mg/L		04/20/21 14:51	04/21/21 14:40	1
2,4,6-Trichlorophenol	ND		0.020	0.0024	mg/L		04/20/21 14:51	04/21/21 14:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*82*		*41 - 120*	*04/20/21 14:51*	*04/21/21 14:40*	*1*
2-Fluorobiphenyl	*93*		*48 - 120*	*04/20/21 14:51*	*04/21/21 14:40*	*1*
2-Fluorophenol	*47*		*35 - 120*	*04/20/21 14:51*	*04/21/21 14:40*	*1*
Nitrobenzene-d5	*94*		*46 - 120*	*04/20/21 14:51*	*04/21/21 14:40*	*1*
p-Terphenyl-d14	*95*		*60 - 148*	*04/20/21 14:51*	*04/21/21 14:40*	*1*
Phenol-d5	*30*		*22 - 120*	*04/20/21 14:51*	*04/21/21 14:40*	*1*

Method: 8081B - Organochlorine Pesticides (GC) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.00020	0.0000060	mg/L		04/20/21 11:51	04/22/21 12:59	1

Client Sample ID: DW3-OUT-SP-004

Lab Sample ID: 480-183377-4
Date Collected: 04/14/21 13:30
Matrix: Solid
Date Received: 04/15/21 10:00
Percent Solids: 79.0

Method: 8081B - Organochlorine Pesticides (GC) - TCLP (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlordane (technical)	ND		0.0020	0.000029	mg/L		04/20/21 11:51	04/22/21 12:59	1
Endrin	ND		0.00020	0.000014	mg/L		04/20/21 11:51	04/22/21 12:59	1
Heptachlor	ND		0.00020	0.0000085	mg/L		04/20/21 11:51	04/22/21 12:59	1
Heptachlor epoxide	ND		0.00020	0.0000053	mg/L		04/20/21 11:51	04/22/21 12:59	1
Methoxychlor	ND		0.00020	0.000014	mg/L		04/20/21 11:51	04/22/21 12:59	1
Toxaphene	ND		0.0020	0.00012	mg/L		04/20/21 11:51	04/22/21 12:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*60*		*20 - 120*	*04/20/21 11:51*	*04/22/21 12:59*	*1*
DCB Decachlorobiphenyl	*49*		*20 - 120*	*04/20/21 11:51*	*04/22/21 12:59*	*1*
Tetrachloro-m-xylene	*85*		*44 - 120*	*04/20/21 11:51*	*04/22/21 12:59*	*1*
Tetrachloro-m-xylene	*76*		*44 - 120*	*04/20/21 11:51*	*04/22/21 12:59*	*1*

Method: 8151 - TCLP Herbicides - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND		0.0020	0.00036	mg/L		04/20/21 11:55	04/21/21 18:42	1
2,4-D	ND	*1	0.0020	0.00040	mg/L		04/20/21 11:55	04/21/21 18:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*49*		*48 - 132*	*04/20/21 11:55*	*04/21/21 18:42*	*1*
2,4-Dichlorophenylacetic acid	*27*	*S1-*	*48 - 132*	*04/20/21 11:55*	*04/21/21 18:42*	*1*

Method: 6010C - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.015	0.0056	mg/L		04/21/21 07:04	04/22/21 04:16	1
Barium	**0.57**	**J**	1.0	0.10	mg/L		04/21/21 07:04	04/22/21 04:16	1
Cadmium	**0.0062**		0.0020	0.00050	mg/L		04/21/21 07:04	04/22/21 04:16	1
Chromium	ND		0.020	0.010	mg/L		04/21/21 07:04	04/22/21 04:16	1
Lead	**0.081**		0.020	0.0030	mg/L		04/21/21 07:04	04/22/21 04:16	1
Selenium	ND		0.025	0.0087	mg/L		04/21/21 07:04	04/22/21 04:16	1
Silver	ND		0.0060	0.0017	mg/L		04/21/21 07:04	04/22/21 04:16	1

Method: 7470A - TCLP Mercury - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		04/20/21 14:21	04/20/21 19:03	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Flashpoint	**>180**		50.0	50.0	Degrees F			04/22/21 15:52	1
pH	**7.7**	**HF**	0.1	0.1	SU			04/20/21 13:00	1
Temperature	**20.6**	**HF**	0.001	0.001	Degrees C			04/20/21 13:00	1

Client Sample ID: DW4-OUT-SP-005

Lab Sample ID: 480-183377-5
Date Collected: 04/14/21 13:45
Matrix: Solid
Date Received: 04/15/21 10:00
Percent Solids: 71.5

Method: 8260C - TCLP Volatiles - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.010	0.0041	mg/L			04/21/21 18:35	10
Carbon tetrachloride	ND		0.010	0.0027	mg/L			04/21/21 18:35	10
Chlorobenzene	ND		0.010	0.0075	mg/L			04/21/21 18:35	10

Client Sample ID: DW4-OUT-SP-005
Date Collected: 04/14/21 13:45
Date Received: 04/15/21 10:00

Lab Sample ID: 480-183377-5
Matrix: Solid
Percent Solids: 71.5

Method: 8260C - TCLP Volatiles - TCLP (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroform	ND		0.010	0.0034	mg/L			04/21/21 18:35	10
1,2-Dichloroethane	ND		0.010	0.0021	mg/L			04/21/21 18:35	10
1,1-Dichloroethene	ND		0.010	0.0029	mg/L			04/21/21 18:35	10
2-Butanone (MEK)	ND		0.050	0.013	mg/L			04/21/21 18:35	10
Tetrachloroethene	ND		0.010	0.0036	mg/L			04/21/21 18:35	10
Trichloroethene	ND		0.010	0.0046	mg/L			04/21/21 18:35	10
Vinyl chloride	ND		0.010	0.0090	mg/L			04/21/21 18:35	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*77 - 120*		*04/21/21 18:35*	*10*
Toluene-d8 (Surr)	*97*		*80 - 120*		*04/21/21 18:35*	*10*
4-Bromofluorobenzene (Surr)	*103*		*73 - 120*		*04/21/21 18:35*	*10*
Dibromofluoromethane (Surr)	*106*		*75 - 123*		*04/21/21 18:35*	*10*

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND	vs	6.8	0.49	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
1,1,2,2-Tetrachloroethane	ND	vs	6.8	1.1	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
1,1,2-Trichloroethane	ND	vs	6.8	0.88	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	vs	6.8	1.6	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
1,1-Dichloroethane	ND	vs	6.8	0.83	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
1,1-Dichloroethene	ND	vs	6.8	0.83	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
1,2,4-Trichlorobenzene	ND	vs	6.8	0.41	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
1,2-Dibromo-3-Chloropropane	ND	vs	6.8	3.4	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
1,2-Dichlorobenzene	ND	vs	6.8	0.53	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
1,2-Dichloroethane	ND	vs	6.8	0.34	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
1,2-Dichloropropane	ND	vs	6.8	3.4	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
1,3-Dichlorobenzene	ND	vs	6.8	0.35	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
1,4-Dichlorobenzene	ND	vs	6.8	0.95	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
2-Butanone (MEK)	ND	vs	34	2.5	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
2-Hexanone	ND	vs	34	3.4	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
4-Methyl-2-pentanone (MIBK)	ND	vs	34	2.2	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
Acetone	ND	vs	34	5.7	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
Benzene	ND	vs	6.8	0.33	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
Bromodichloromethane	ND	vs	6.8	0.91	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
Bromoform	ND	vs	6.8	3.4	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
Bromomethane	ND	vs	6.8	0.61	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
Carbon disulfide	ND	vs	6.8	3.4	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
Carbon tetrachloride	ND	vs	6.8	0.66	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
Chlorobenzene	ND	vs	6.8	0.90	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
Dibromochloromethane	ND	vs	6.8	0.87	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
Chloroethane	ND	vs	6.8	1.5	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
Chloroform	ND	vs	6.8	0.42	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
Chloromethane	ND	vs	6.8	0.41	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
cis-1,2-Dichloroethene	ND	vs	6.8	0.87	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
cis-1,3-Dichloropropene	ND	vs	6.8	0.98	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
Cyclohexane	ND	vs	6.8	0.95	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
Dichlorodifluoromethane	ND	vs	6.8	0.56	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
Ethylbenzene	ND	vs	6.8	0.47	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
1,2-Dibromoethane	ND	vs	6.8	0.87	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1

Client Sample ID: DW4-OUT-SP-005

Date Collected: 04/14/21 13:45
Date Received: 04/15/21 10:00

Lab Sample ID: 480-183377-5

Matrix: Solid
Percent Solids: 71.5

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Isopropylbenzene	ND	vs	6.8	1.0	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
Methyl acetate	ND	vs	34	4.1	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
Methyl tert-butyl ether	ND	vs	6.8	0.67	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
Methylcyclohexane	ND	vs	6.8	1.0	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
Methylene Chloride	ND	vs	6.8	3.1	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
Styrene	ND	vs	6.8	0.34	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
Tetrachloroethene	ND	vs	6.8	0.91	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
Toluene	ND	vs	6.8	0.51	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
trans-1,2-Dichloroethene	ND	vs	6.8	0.70	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
trans-1,3-Dichloropropene	ND	vs	6.8	3.0	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
Trichloroethene	ND	vs	6.8	1.5	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
Trichlorofluoromethane	ND	vs	6.8	0.64	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
Vinyl chloride	ND	vs	6.8	0.83	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1
Xylenes, Total	ND	vs	14	1.1	ug/Kg	☼	04/19/21 17:08	04/20/21 04:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*107*		*71 - 125*	*04/19/21 17:08*	*04/20/21 04:12*	*1*
1,2-Dichloroethane-d4 (Surr)	*119*		*64 - 126*	*04/19/21 17:08*	*04/20/21 04:12*	*1*
4-Bromofluorobenzene (Surr)	*93*		*72 - 126*	*04/19/21 17:08*	*04/20/21 04:12*	*1*
Dibromofluoromethane (Surr)	*108*		*60 - 140*	*04/19/21 17:08*	*04/20/21 04:12*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biphenyl	ND		2300	350	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
bis (2-chloroisopropyl) ether	ND		2300	470	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
2,4,5-Trichlorophenol	ND		2300	640	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
2,4,6-Trichlorophenol	ND		2300	470	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
2,4-Dichlorophenol	ND		2300	250	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
2,4-Dimethylphenol	ND		2300	570	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
2,4-Dinitrophenol	ND		23000	11000	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
2,4-Dinitrotoluene	ND		2300	480	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
2,6-Dinitrotoluene	ND		2300	280	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
2-Chloronaphthalene	ND		2300	390	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
1,4-Dioxane	ND		1400	760	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
2-Chlorophenol	ND		4600	430	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
2-Methylnaphthalene	ND		2300	470	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
2-Methylphenol	ND		2300	280	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
2-Nitroaniline	ND		4600	350	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
2-Nitrophenol	ND		2300	660	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
3,3'-Dichlorobenzidine	ND		4600	2800	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
3-Nitroaniline	ND		4600	650	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
4,6-Dinitro-2-methylphenol	ND		4600	2300	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
4-Bromophenyl phenyl ether	ND		2300	330	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
4-Chloro-3-methylphenol	ND		2300	580	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
4-Chloroaniline	ND		2300	580	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
4-Chlorophenyl phenyl ether	ND		2300	290	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
4-Methylphenol	ND		4600	280	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
4-Nitroaniline	ND		4600	1200	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
4-Nitrophenol	ND		4600	1600	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
Acenaphthene	**620**	**J**	2300	350	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183377-1

Client Sample ID: DW4-OUT-SP-005

Date Collected: 04/14/21 13:45
Date Received: 04/15/21 10:00

Lab Sample ID: 480-183377-5
Matrix: Solid
Percent Solids: 71.5

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthylene	**400**	**J**	2300	300	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
Acetophenone	ND		2300	320	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
Anthracene	**1600**	**J**	2300	580	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
Atrazine	ND		2300	810	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
Benzaldehyde	ND		2300	1900	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
Benzo[a]anthracene	**5200**		2300	230	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
Benzo[a]pyrene	**6000**		2300	350	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
Benzo[b]fluoranthene	**7300**		2300	370	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
Benzo[g,h,i]perylene	**4400**		2300	250	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
Benzo[k]fluoranthene	**3000**		2300	300	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
Bis(2-chloroethoxy)methane	ND		2300	500	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
Bis(2-chloroethyl)ether	ND		2300	300	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
Bis(2-ethylhexyl) phthalate	ND		2300	800	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
Butyl benzyl phthalate	ND		2300	390	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
Caprolactam	ND		2300	700	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
Carbazole	**980**	**J**	2300	280	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
Chrysene	**5800**		2300	520	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
Di-n-butyl phthalate	ND		2300	400	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
Di-n-octyl phthalate	ND		2300	280	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
Dibenz(a,h)anthracene	**1100**	**J**	2300	410	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
Dibenzofuran	**540**	**J**	2300	280	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
Diethyl phthalate	ND		2300	300	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
Dimethyl phthalate	ND		2300	280	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
Fluoranthene	**16000**		2300	250	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
Fluorene	**840**	**J**	2300	280	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
Hexachlorobenzene	ND		2300	320	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
Hexachlorobutadiene	ND		2300	350	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
Hexachlorocyclopentadiene	ND		2300	320	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
Hexachloroethane	ND		2300	300	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
Indeno[1,2,3-cd]pyrene	**3800**		2300	290	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
Isophorone	ND		2300	500	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
N-Nitrosodi-n-propylamine	ND		2300	400	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
N-Nitrosodiphenylamine	ND		2300	1900	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
Naphthalene	**640**	**J**	2300	300	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
Nitrobenzene	ND		2300	260	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
Pentachlorophenol	ND		4600	2300	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
Phenanthrene	**9900**		2300	350	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
Phenol	ND		2300	360	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10
Pyrene	**13000**		2300	280	ug/Kg	☼	04/19/21 08:15	04/20/21 17:55	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*98*		*54 - 120*	*04/19/21 08:15*	*04/20/21 17:55*	*10*
2-Fluorobiphenyl	*107*		*60 - 120*	*04/19/21 08:15*	*04/20/21 17:55*	*10*
2-Fluorophenol	*99*		*52 - 120*	*04/19/21 08:15*	*04/20/21 17:55*	*10*
Nitrobenzene-d5	*105*		*53 - 120*	*04/19/21 08:15*	*04/20/21 17:55*	*10*
p-Terphenyl-d14	*108*		*79 - 130*	*04/19/21 08:15*	*04/20/21 17:55*	*10*
Phenol-d5	*92*		*54 - 120*	*04/19/21 08:15*	*04/20/21 17:55*	*10*

Client Sample ID: DW4-OUT-SP-005

Date Collected: 04/14/21 13:45
Date Received: 04/15/21 10:00

Lab Sample ID: 480-183377-5

Matrix: Solid
Percent Solids: 71.5

Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.040	0.0018	mg/L		04/20/21 14:51	04/21/21 15:05	1
2,4-Dinitrotoluene	ND	*+	0.020	0.0017	mg/L		04/20/21 14:51	04/21/21 15:05	1
Hexachlorobenzene	ND		0.020	0.0020	mg/L		04/20/21 14:51	04/21/21 15:05	1
Hexachlorobutadiene	ND		0.020	0.0027	mg/L		04/20/21 14:51	04/21/21 15:05	1
Hexachloroethane	ND		0.020	0.0023	mg/L		04/20/21 14:51	04/21/21 15:05	1
3-Methylphenol	ND		0.040	0.0016	mg/L		04/20/21 14:51	04/21/21 15:05	1
2-Methylphenol	ND		0.020	0.0016	mg/L		04/20/21 14:51	04/21/21 15:05	1
4-Methylphenol	ND		0.040	0.0014	mg/L		04/20/21 14:51	04/21/21 15:05	1
Nitrobenzene	ND		0.020	0.0011	mg/L		04/20/21 14:51	04/21/21 15:05	1
Pentachlorophenol	ND		0.040	0.0088	mg/L		04/20/21 14:51	04/21/21 15:05	1
Pyridine	ND		0.10	0.0016	mg/L		04/20/21 14:51	04/21/21 15:05	1
2,4,5-Trichlorophenol	ND		0.020	0.0019	mg/L		04/20/21 14:51	04/21/21 15:05	1
2,4,6-Trichlorophenol	ND		0.020	0.0024	mg/L		04/20/21 14:51	04/21/21 15:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*87*		*41 - 120*	*04/20/21 14:51*	*04/21/21 15:05*	*1*
2-Fluorobiphenyl	*97*		*48 - 120*	*04/20/21 14:51*	*04/21/21 15:05*	*1*
2-Fluorophenol	*49*		*35 - 120*	*04/20/21 14:51*	*04/21/21 15:05*	*1*
Nitrobenzene-d5	*96*		*46 - 120*	*04/20/21 14:51*	*04/21/21 15:05*	*1*
p-Terphenyl-d14	*95*		*60 - 148*	*04/20/21 14:51*	*04/21/21 15:05*	*1*
Phenol-d5	*33*		*22 - 120*	*04/20/21 14:51*	*04/21/21 15:05*	*1*

Method: 8081B - Organochlorine Pesticides (GC) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.00020	0.0000060	mg/L		04/20/21 11:51	04/22/21 13:18	1
Chlordane (technical)	ND		0.0020	0.000029	mg/L		04/20/21 11:51	04/22/21 13:18	1
Endrin	ND		0.00020	0.000014	mg/L		04/20/21 11:51	04/22/21 13:18	1
Heptachlor	ND		0.00020	0.0000085	mg/L		04/20/21 11:51	04/22/21 13:18	1
Heptachlor epoxide	ND		0.00020	0.0000053	mg/L		04/20/21 11:51	04/22/21 13:18	1
Methoxychlor	ND		0.00020	0.000014	mg/L		04/20/21 11:51	04/22/21 13:18	1
Toxaphene	ND		0.0020	0.00012	mg/L		04/20/21 11:51	04/22/21 13:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*65*		*20 - 120*	*04/20/21 11:51*	*04/22/21 13:18*	*1*
DCB Decachlorobiphenyl	*52*		*20 - 120*	*04/20/21 11:51*	*04/22/21 13:18*	*1*
Tetrachloro-m-xylene	*96*		*44 - 120*	*04/20/21 11:51*	*04/22/21 13:18*	*1*
Tetrachloro-m-xylene	*85*		*44 - 120*	*04/20/21 11:51*	*04/22/21 13:18*	*1*

Method: 8151 - TCLP Herbicides - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND		0.0020	0.00036	mg/L		04/20/21 11:55	04/21/21 19:12	1
2,4-D	ND		0.0020	0.00040	mg/L		04/20/21 11:55	04/21/21 19:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*27*	*S1-*	*48 - 132*	*04/20/21 11:55*	*04/21/21 19:12*	*1*
2,4-Dichlorophenylacetic acid	*12*	*S1-*	*48 - 132*	*04/20/21 11:55*	*04/21/21 19:12*	*1*

Method: 6010C - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.015	0.0056	mg/L		04/21/21 07:04	04/22/21 04:35	1
Barium	**0.39**	**J**	1.0	0.10	mg/L		04/21/21 07:04	04/22/21 04:35	1

Client Sample ID: DW4-OUT-SP-005
Date Collected: 04/14/21 13:45
Date Received: 04/15/21 10:00

Lab Sample ID: 480-183377-5
Matrix: Solid
Percent Solids: 71.5

Method: 6010C - Metals (ICP) - TCLP (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	**0.0055**		0.0020	0.00050	mg/L		04/21/21 07:04	04/22/21 04:35	1
Chromium	ND		0.020	0.010	mg/L		04/21/21 07:04	04/22/21 04:35	1
Lead	**0.022**		0.020	0.0030	mg/L		04/21/21 07:04	04/22/21 04:35	1
Selenium	ND		0.025	0.0087	mg/L		04/21/21 07:04	04/22/21 04:35	1
Silver	ND		0.0060	0.0017	mg/L		04/21/21 07:04	04/22/21 04:35	1

Method: 7470A - TCLP Mercury - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		04/20/21 14:21	04/20/21 19:08	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Flashpoint	**>180**		50.0	50.0	Degrees F			04/22/21 15:52	1
pH	**7.5**	**HF**	0.1	0.1	SU			04/20/21 13:00	1
Temperature	**20.4**	**HF**	0.001	0.001	Degrees C			04/20/21 13:00	1

Method: 8260C - TCLP Volatiles

Matrix: Solid

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TOL (80-120)	DCA (77-120)	BFB (73-120)	DBFM (75-123)
LCS 480-577160/5	Lab Control Sample	97	99	105	105
MB 480-577160/7	Method Blank	96	104	106	108

Surrogate Legend

TOL = Toluene-d8 (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260C - TCLP Volatiles

Matrix: Solid

Prep Type: TCLP

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCA (77-120)	TOL (80-120)	BFB (73-120)	DBFM (75-123)
480-183377-1	DW1-BLDG1-SP-001	102	95	106	108
480-183377-2	DW2-BLDG1-SP-002	104	91	102	113
480-183377-3	DW5-BLDG8-SP-003	107	105	109	112
480-183377-4	DW3-OUT-SP-004	108	95	106	108
480-183377-5	DW4-OUT-SP-005	102	97	103	106
LB 480-576813/1-A	Method Blank	104	98	107	105

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Solid

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TOL (71-125)	DCA (64-126)	BFB (72-126)	DBFM (60-140)
480-183377-1	DW1-BLDG1-SP-001	102	117	109	111
480-183377-2	DW2-BLDG1-SP-002	101	119	98	106
480-183377-3	DW5-BLDG8-SP-003	98	122	105	107
480-183377-4	DW3-OUT-SP-004	106	116	95	106
480-183377-5	DW4-OUT-SP-005	107	119	93	108
LCS 480-576876/1-A	Lab Control Sample	98	112	109	101
LCS 480-576924/1-A	Lab Control Sample	99	115	110	104
MB 480-576876/2-A	Method Blank	100	113	109	104
MB 480-576924/2-A	Method Blank	100	113	109	105

Surrogate Legend

TOL = Toluene-d8 (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)					
		TBP	FBP	2FP	NBZ	TPHd14	PHL
Lab Sample ID	Client Sample ID	(54-120)	(60-120)	(52-120)	(53-120)	(79-130)	(54-120)
480-183377-1	DW1-BLDG1-SP-001	80	92	77	86	97	82
480-183377-2	DW2-BLDG1-SP-002	106	96	77	81	108	80
480-183377-3	DW5-BLDG8-SP-003	93	94	71	71	91	70
480-183377-4	DW3-OUT-SP-004	102	97	79	102	94	85
480-183377-5	DW4-OUT-SP-005	98	107	99	105	108	92
LCS 480-576804/2-A	Lab Control Sample	90	90	80	87	99	78
MB 480-576804/1-A	Method Blank	76	94	80	90	107	82

Surrogate Legend

TBP = 2,4,6-Tribromophenol
FBP = 2-Fluorobiphenyl
2FP = 2-Fluorophenol
NBZ = Nitrobenzene-d5
TPHd14 = p-Terphenyl-d14
PHL = Phenol-d5

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)					
		TBP	FBP	2FP	NBZ	TPHd14	PHL
Lab Sample ID	Client Sample ID	(41-120)	(48-120)	(35-120)	(46-120)	(60-148)	(22-120)
LCS 480-577070/2-A	Lab Control Sample	95	100	53	97	106	36
LCSD 480-577070/3-A	Lab Control Sample Dup	96	97	51	97	108	34
MB 480-577070/1-A	Method Blank	75	89	47	87	103	30

Surrogate Legend

TBP = 2,4,6-Tribromophenol
FBP = 2-Fluorobiphenyl
2FP = 2-Fluorophenol
NBZ = Nitrobenzene-d5
TPHd14 = p-Terphenyl-d14
PHL = Phenol-d5

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Solid **Prep Type: TCLP**

		Percent Surrogate Recovery (Acceptance Limits)					
		TBP	FBP	2FP	NBZ	TPHd14	PHL
Lab Sample ID	Client Sample ID	(41-120)	(48-120)	(35-120)	(46-120)	(60-148)	(22-120)
480-183377-1	DW1-BLDG1-SP-001	86	99	51	98	90	34
480-183377-2	DW2-BLDG1-SP-002	84	102	48	98	101	32
480-183377-3	DW5-BLDG8-SP-003	89	99	50	95	84	33
480-183377-4	DW3-OUT-SP-004	82	93	47	94	95	30
480-183377-5	DW4-OUT-SP-005	87	97	49	96	95	33
LB 480-576811/1-F	Method Blank	89	100	51	100	107	34

Surrogate Legend

TBP = 2,4,6-Tribromophenol
FBP = 2-Fluorobiphenyl
2FP = 2-Fluorophenol
NBZ = Nitrobenzene-d5

TPHd14 = p-Terphenyl-d14
PHL = Phenol-d5

Method: 8081B - Organochlorine Pesticides (GC)

Matrix: Solid | **Prep Type: Total/NA**

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCBP1 (20-120)	DCBP2 (20-120)	TCX1 (44-120)	TCX2 (44-120)
LCS 480-576976/2-A	Lab Control Sample	53	43	79	85
LCSD 480-576976/3-A	Lab Control Sample Dup	52	45	77	81
MB 480-576976/1-A	Method Blank	50	49	94	81

Surrogate Legend
DCBP = DCB Decachlorobiphenyl
TCX = Tetrachloro-m-xylene

Method: 8081B - Organochlorine Pesticides (GC)

Matrix: Solid | **Prep Type: TCLP**

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCBP1 (20-120)	DCBP2 (20-120)	TCX1 (44-120)	TCX2 (44-120)
480-183377-1	DW1-BLDG1-SP-001	48	44	96	83
480-183377-2	DW2-BLDG1-SP-002	51	42	91	78
480-183377-3	DW5-BLDG8-SP-003	50	41	97	85
480-183377-4	DW3-OUT-SP-004	60	49	85	76
480-183377-5	DW4-OUT-SP-005	65	52	96	85
LB 480-576811/1-C	Method Blank	75	65	105	88

Surrogate Legend
DCBP = DCB Decachlorobiphenyl
TCX = Tetrachloro-m-xylene

Method: 8151 - TCLP Herbicides

Matrix: Solid | **Prep Type: Total/NA**

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCPAA1 (48-132)	DCPAA2 (48-132)
LCS 480-576977/2-A	Lab Control Sample	90	60
LCS 480-577918/2-A	Lab Control Sample	61	71
LCSD 480-576977/3-A	Lab Control Sample Dup	61	41 S1-
LCSD 480-577918/3-A	Lab Control Sample Dup	54	53
MB 480-576977/1-A	Method Blank	77	72
MB 480-577918/1-A	Method Blank	49	69

Surrogate Legend
DCPAA = 2,4-Dichlorophenylacetic acid

Method: 8151 - TCLP Herbicides

Matrix: Solid | **Prep Type: TCLP**

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCPAA1 (48-132)	DCPAA2 (48-132)
480-183377-1	DW1-BLDG1-SP-001	64	56
480-183377-2	DW2-BLDG1-SP-002	40 S1-	39 S1-
480-183377-3	DW5-BLDG8-SP-003	42 S1-	60

Client: Integral Consulting Inc | Job ID: 480-183377-1
Project/Site: Project EF1017

Method: 8151 - TCLP Herbicides (Continued)

Matrix: Solid | **Prep Type: TCLP**

		Percent Surrogate Recovery (Acceptance Limits)	
		DCPAA1	DCPAA2
Lab Sample ID	Client Sample ID	(48-132)	(48-132)
480-183377-4	DW3-OUT-SP-004	49	27 S1-
480-183377-5	DW4-OUT-SP-005	27 S1-	12 S1-
LB 480-576811/1-D	Method Blank	15 S1-	19 S1-
LB 480-577812/1-B	Method Blank	27 S1-	27 S1-

Surrogate Legend

DCPAA = 2,4-Dichlorophenylacetic acid

Method: 8260C - TCLP Volatiles

Lab Sample ID: MB 480-577160/7
Matrix: Solid
Analysis Batch: 577160

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.0010	0.00029	mg/L			04/21/21 11:04	1
1,2-Dichloroethane	ND		0.0010	0.00021	mg/L			04/21/21 11:04	1
2-Butanone (MEK)	ND		0.0050	0.0013	mg/L			04/21/21 11:04	1
Benzene	ND		0.0010	0.00041	mg/L			04/21/21 11:04	1
Carbon tetrachloride	ND		0.0010	0.00027	mg/L			04/21/21 11:04	1
Chlorobenzene	ND		0.0010	0.00075	mg/L			04/21/21 11:04	1
Chloroform	ND		0.0010	0.00034	mg/L			04/21/21 11:04	1
Tetrachloroethene	ND		0.0010	0.00036	mg/L			04/21/21 11:04	1
Trichloroethene	ND		0.0010	0.00046	mg/L			04/21/21 11:04	1
Vinyl chloride	ND		0.0010	0.00090	mg/L			04/21/21 11:04	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*96*		*80 - 120*		*04/21/21 11:04*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*77 - 120*		*04/21/21 11:04*	*1*
4-Bromofluorobenzene (Surr)	*106*		*73 - 120*		*04/21/21 11:04*	*1*
Dibromofluoromethane (Surr)	*108*		*75 - 123*		*04/21/21 11:04*	*1*

Lab Sample ID: LCS 480-577160/5
Matrix: Solid
Analysis Batch: 577160

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	0.0250	0.0283		mg/L		113	66 - 127
1,2-Dichloroethane	0.0250	0.0259		mg/L		104	75 - 120
2-Butanone (MEK)	0.125	0.163		mg/L		131	57 - 140
Benzene	0.0250	0.0263		mg/L		105	71 - 124
Carbon tetrachloride	0.0250	0.0268		mg/L		107	72 - 134
Chlorobenzene	0.0250	0.0258		mg/L		103	80 - 120
Chloroform	0.0250	0.0280		mg/L		112	73 - 127
Tetrachloroethene	0.0250	0.0279		mg/L		112	74 - 122
Trichloroethene	0.0250	0.0270		mg/L		108	74 - 123
Vinyl chloride	0.0250	0.0308		mg/L		123	65 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*97*		*80 - 120*
1,2-Dichloroethane-d4 (Surr)	*99*		*77 - 120*
4-Bromofluorobenzene (Surr)	*105*		*73 - 120*
Dibromofluoromethane (Surr)	*105*		*75 - 123*

Lab Sample ID: LB 480-576813/1-A
Matrix: Solid
Analysis Batch: 577160

Client Sample ID: Method Blank
Prep Type: TCLP

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.010	0.0029	mg/L			04/21/21 15:45	10
1,2-Dichloroethane	ND		0.010	0.0021	mg/L			04/21/21 15:45	10
2-Butanone (MEK)	ND		0.050	0.013	mg/L			04/21/21 15:45	10
Benzene	ND		0.010	0.0041	mg/L			04/21/21 15:45	10

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Method: 8260C - TCLP Volatiles (Continued)

Lab Sample ID: LB 480-576813/1-A
Matrix: Solid
Analysis Batch: 577160

Client Sample ID: Method Blank
Prep Type: TCLP

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	ND		0.010	0.0027	mg/L			04/21/21 15:45	10
Chlorobenzene	ND		0.010	0.0075	mg/L			04/21/21 15:45	10
Chloroform	ND		0.010	0.0034	mg/L			04/21/21 15:45	10
Tetrachloroethene	ND		0.010	0.0036	mg/L			04/21/21 15:45	10
Trichloroethene	ND		0.010	0.0046	mg/L			04/21/21 15:45	10
Vinyl chloride	ND		0.010	0.0090	mg/L			04/21/21 15:45	10

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*80 - 120*		*04/21/21 15:45*	*10*
1,2-Dichloroethane-d4 (Surr)	*104*		*77 - 120*		*04/21/21 15:45*	*10*
4-Bromofluorobenzene (Surr)	*107*		*73 - 120*		*04/21/21 15:45*	*10*
Dibromofluoromethane (Surr)	*105*		*75 - 123*		*04/21/21 15:45*	*10*

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 480-576876/2-A
Matrix: Solid
Analysis Batch: 576842

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 576876

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5.0	0.36	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
1,1,2,2-Tetrachloroethane	ND		5.0	0.81	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
1,1,2-Trichloroethane	ND		5.0	0.65	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		5.0	1.1	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
1,1-Dichloroethane	ND		5.0	0.61	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
1,1-Dichloroethene	ND		5.0	0.61	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
1,2,4-Trichlorobenzene	ND		5.0	0.30	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
1,2-Dibromo-3-Chloropropane	ND		5.0	2.5	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
1,2-Dichlorobenzene	ND		5.0	0.39	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
1,2-Dichloroethane	ND		5.0	0.25	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
1,2-Dichloropropane	ND		5.0	2.5	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
1,3-Dichlorobenzene	ND		5.0	0.26	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
1,4-Dichlorobenzene	ND		5.0	0.70	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
2-Butanone (MEK)	ND		25	1.8	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
2-Hexanone	ND		25	2.5	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
4-Methyl-2-pentanone (MIBK)	ND		25	1.6	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Acetone	ND		25	4.2	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Benzene	ND		5.0	0.25	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Bromodichloromethane	ND		5.0	0.67	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Bromoform	ND		5.0	2.5	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Bromomethane	ND		5.0	0.45	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Carbon disulfide	ND		5.0	2.5	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Carbon tetrachloride	ND		5.0	0.48	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Chlorobenzene	ND		5.0	0.66	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Dibromochloromethane	ND		5.0	0.64	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Chloroethane	ND		5.0	1.1	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Chloroform	ND		5.0	0.31	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Chloromethane	ND		5.0	0.30	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
cis-1,2-Dichloroethene	ND		5.0	0.64	ug/Kg		04/19/21 11:15	04/19/21 12:06	1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 480-576876/2-A
Matrix: Solid
Analysis Batch: 576842

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 576876

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,3-Dichloropropene	ND		5.0	0.72	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Cyclohexane	ND		5.0	0.70	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Dichlorodifluoromethane	ND		5.0	0.41	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Ethylbenzene	ND		5.0	0.35	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
1,2-Dibromoethane	ND		5.0	0.64	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Isopropylbenzene	ND		5.0	0.75	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Methyl acetate	ND		25	3.0	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Methyl tert-butyl ether	ND		5.0	0.49	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Methylcyclohexane	ND		5.0	0.76	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Methylene Chloride	ND		5.0	2.3	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Styrene	ND		5.0	0.25	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Tetrachloroethene	ND		5.0	0.67	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Toluene	ND		5.0	0.38	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
trans-1,2-Dichloroethene	ND		5.0	0.52	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
trans-1,3-Dichloropropene	ND		5.0	2.2	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Trichloroethene	ND		5.0	1.1	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Trichlorofluoromethane	ND		5.0	0.47	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Vinyl chloride	ND		5.0	0.61	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Xylenes, Total	ND		10	0.84	ug/Kg		04/19/21 11:15	04/19/21 12:06	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*71 - 125*	*04/19/21 11:15*	*04/19/21 12:06*	*1*
1,2-Dichloroethane-d4 (Surr)	*113*		*64 - 126*	*04/19/21 11:15*	*04/19/21 12:06*	*1*
4-Bromofluorobenzene (Surr)	*109*		*72 - 126*	*04/19/21 11:15*	*04/19/21 12:06*	*1*
Dibromofluoromethane (Surr)	*104*		*60 - 140*	*04/19/21 11:15*	*04/19/21 12:06*	*1*

Lab Sample ID: LCS 480-576876/1-A
Matrix: Solid
Analysis Batch: 576842

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 576876

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	50.0	53.5		ug/Kg		107	77 - 121
1,1,2,2-Tetrachloroethane	50.0	49.9		ug/Kg		100	80 - 120
1,1,2-Trichloroethane	50.0	45.7		ug/Kg		91	78 - 122
1,1,2-Trichloro-1,2,2-trifluoroethane	50.0	43.4		ug/Kg		87	60 - 140
1,1-Dichloroethane	50.0	46.6		ug/Kg		93	73 - 126
1,1-Dichloroethene	50.0	44.6		ug/Kg		89	59 - 125
1,2,4-Trichlorobenzene	50.0	52.7		ug/Kg		105	64 - 120
1,2-Dibromo-3-Chloropropane	50.0	55.6		ug/Kg		111	63 - 124
1,2-Dichlorobenzene	50.0	49.2		ug/Kg		98	75 - 120
1,2-Dichloroethane	50.0	52.5		ug/Kg		105	77 - 122
1,2-Dichloropropane	50.0	47.6		ug/Kg		95	75 - 124
1,3-Dichlorobenzene	50.0	49.6		ug/Kg		99	74 - 120
1,4-Dichlorobenzene	50.0	48.8		ug/Kg		98	73 - 120
2-Butanone (MEK)	250	255		ug/Kg		102	70 - 134
2-Hexanone	250	246		ug/Kg		98	59 - 130
4-Methyl-2-pentanone (MIBK)	250	229		ug/Kg		91	65 - 133
Acetone	250	266		ug/Kg		107	61 - 137

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 480-576876/1-A
Matrix: Solid
Analysis Batch: 576842

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 576876

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	50.0	46.8		ug/Kg		94	79 - 127
Bromodichloromethane	50.0	52.3		ug/Kg		105	80 - 122
Bromoform	50.0	52.9		ug/Kg		106	68 - 126
Bromomethane	50.0	48.8		ug/Kg		98	37 - 149
Carbon disulfide	50.0	43.3		ug/Kg		87	64 - 131
Carbon tetrachloride	50.0	52.0		ug/Kg		104	75 - 135
Chlorobenzene	50.0	43.6		ug/Kg		87	76 - 124
Dibromochloromethane	50.0	47.7		ug/Kg		95	76 - 125
Chloroethane	50.0	47.6		ug/Kg		95	69 - 135
Chloroform	50.0	48.4		ug/Kg		97	80 - 120
Chloromethane	50.0	40.6		ug/Kg		81	63 - 127
cis-1,2-Dichloroethene	50.0	46.7		ug/Kg		93	81 - 120
cis-1,3-Dichloropropene	50.0	51.0		ug/Kg		102	80 - 120
Cyclohexane	50.0	45.4		ug/Kg		91	65 - 120
Dichlorodifluoromethane	50.0	51.6		ug/Kg		103	57 - 142
Ethylbenzene	50.0	47.7		ug/Kg		95	80 - 120
1,2-Dibromoethane	50.0	44.9		ug/Kg		90	78 - 120
Isopropylbenzene	50.0	50.0		ug/Kg		100	72 - 120
Methyl acetate	100	92.1		ug/Kg		92	55 - 136
Methyl tert-butyl ether	50.0	50.6		ug/Kg		101	63 - 125
Methylcyclohexane	50.0	47.7		ug/Kg		95	60 - 140
Methylene Chloride	50.0	43.3		ug/Kg		87	61 - 127
Styrene	50.0	46.0		ug/Kg		92	80 - 120
Tetrachloroethene	50.0	48.4		ug/Kg		97	74 - 122
Toluene	50.0	45.7		ug/Kg		91	74 - 128
trans-1,2-Dichloroethene	50.0	47.4		ug/Kg		95	78 - 126
trans-1,3-Dichloropropene	50.0	50.6		ug/Kg		101	73 - 123
Trichloroethene	50.0	50.6		ug/Kg		101	77 - 129
Trichlorofluoromethane	50.0	61.3		ug/Kg		123	65 - 146
Vinyl chloride	50.0	44.9		ug/Kg		90	61 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*98*		*71 - 125*
1,2-Dichloroethane-d4 (Surr)	*112*		*64 - 126*
4-Bromofluorobenzene (Surr)	*109*		*72 - 126*
Dibromofluoromethane (Surr)	*101*		*60 - 140*

Lab Sample ID: MB 480-576924/2-A
Matrix: Solid
Analysis Batch: 576931

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 576924

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5.0	0.36	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
1,1,2,2-Tetrachloroethane	ND		5.0	0.81	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
1,1,2-Trichloroethane	ND		5.0	0.65	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		5.0	1.1	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
1,1-Dichloroethane	ND		5.0	0.61	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
1,1-Dichloroethene	ND		5.0	0.61	ug/Kg		04/19/21 17:08	04/19/21 22:19	1

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183377-1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 480-576924/2-A
Matrix: Solid
Analysis Batch: 576931

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 576924

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	ND		5.0	0.30	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
1,2-Dibromo-3-Chloropropane	ND		5.0	2.5	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
1,2-Dichlorobenzene	ND		5.0	0.39	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
1,2-Dichloroethane	ND		5.0	0.25	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
1,2-Dichloropropane	ND		5.0	2.5	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
1,3-Dichlorobenzene	ND		5.0	0.26	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
1,4-Dichlorobenzene	ND		5.0	0.70	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
2-Butanone (MEK)	ND		25	1.8	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
2-Hexanone	ND		25	2.5	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
4-Methyl-2-pentanone (MIBK)	ND		25	1.6	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
Acetone	ND		25	4.2	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
Benzene	ND		5.0	0.25	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
Bromodichloromethane	ND		5.0	0.67	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
Bromoform	ND		5.0	2.5	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
Bromomethane	ND		5.0	0.45	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
Carbon disulfide	ND		5.0	2.5	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
Carbon tetrachloride	ND		5.0	0.48	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
Chlorobenzene	ND		5.0	0.66	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
Dibromochloromethane	ND		5.0	0.64	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
Chloroethane	ND		5.0	1.1	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
Chloroform	ND		5.0	0.31	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
Chloromethane	ND		5.0	0.30	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
cis-1,2-Dichloroethene	ND		5.0	0.64	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
cis-1,3-Dichloropropene	ND		5.0	0.72	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
Cyclohexane	ND		5.0	0.70	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
Dichlorodifluoromethane	ND		5.0	0.41	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
Ethylbenzene	ND		5.0	0.35	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
1,2-Dibromoethane	ND		5.0	0.64	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
Isopropylbenzene	ND		5.0	0.75	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
Methyl acetate	ND		25	3.0	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
Methyl tert-butyl ether	ND		5.0	0.49	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
Methylcyclohexane	ND		5.0	0.76	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
Methylene Chloride	ND		5.0	2.3	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
Styrene	ND		5.0	0.25	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
Tetrachloroethene	ND		5.0	0.67	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
Toluene	ND		5.0	0.38	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
trans-1,2-Dichloroethene	ND		5.0	0.52	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
trans-1,3-Dichloropropene	ND		5.0	2.2	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
Trichloroethene	ND		5.0	1.1	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
Trichlorofluoromethane	ND		5.0	0.47	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
Vinyl chloride	ND		5.0	0.61	ug/Kg		04/19/21 17:08	04/19/21 22:19	1
Xylenes, Total	ND		10	0.84	ug/Kg		04/19/21 17:08	04/19/21 22:19	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*71 - 125*	*04/19/21 17:08*	*04/19/21 22:19*	*1*
1,2-Dichloroethane-d4 (Surr)	*113*		*64 - 126*	*04/19/21 17:08*	*04/19/21 22:19*	*1*
4-Bromofluorobenzene (Surr)	*109*		*72 - 126*	*04/19/21 17:08*	*04/19/21 22:19*	*1*
Dibromofluoromethane (Surr)	*105*		*60 - 140*	*04/19/21 17:08*	*04/19/21 22:19*	*1*

Eurofins TestAmerica, Buffalo

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 480-576924/1-A
Matrix: Solid
Analysis Batch: 576931

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 576924

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	50.0	54.4		ug/Kg		109	77 - 121
1,1,2,2-Tetrachloroethane	50.0	45.6		ug/Kg		91	80 - 120
1,1,2-Trichloroethane	50.0	44.0		ug/Kg		88	78 - 122
1,1,2-Trichloro-1,2,2-trifluoroethane	50.0	46.0		ug/Kg		92	60 - 140
1,1-Dichloroethane	50.0	47.5		ug/Kg		95	73 - 126
1,1-Dichloroethene	50.0	47.2		ug/Kg		94	59 - 125
1,2,4-Trichlorobenzene	50.0	51.2		ug/Kg		102	64 - 120
1,2-Dibromo-3-Chloropropane	50.0	47.6		ug/Kg		95	63 - 124
1,2-Dichlorobenzene	50.0	46.8		ug/Kg		94	75 - 120
1,2-Dichloroethane	50.0	52.7		ug/Kg		105	77 - 122
1,2-Dichloropropane	50.0	48.1		ug/Kg		96	75 - 124
1,3-Dichlorobenzene	50.0	48.1		ug/Kg		96	74 - 120
1,4-Dichlorobenzene	50.0	47.2		ug/Kg		94	73 - 120
2-Butanone (MEK)	250	223		ug/Kg		89	70 - 134
2-Hexanone	250	215		ug/Kg		86	59 - 130
4-Methyl-2-pentanone (MIBK)	250	204		ug/Kg		81	65 - 133
Acetone	250	239		ug/Kg		96	61 - 137
Benzene	50.0	47.5		ug/Kg		95	79 - 127
Bromodichloromethane	50.0	53.5		ug/Kg		107	80 - 122
Bromoform	50.0	50.1		ug/Kg		100	68 - 126
Bromomethane	50.0	52.8		ug/Kg		106	37 - 149
Carbon disulfide	50.0	44.4		ug/Kg		89	64 - 131
Carbon tetrachloride	50.0	54.0		ug/Kg		108	75 - 135
Chlorobenzene	50.0	43.7		ug/Kg		87	76 - 124
Dibromochloromethane	50.0	46.9		ug/Kg		94	76 - 125
Chloroethane	50.0	49.7		ug/Kg		99	69 - 135
Chloroform	50.0	50.3		ug/Kg		101	80 - 120
Chloromethane	50.0	45.1		ug/Kg		90	63 - 127
cis-1,2-Dichloroethene	50.0	47.6		ug/Kg		95	81 - 120
cis-1,3-Dichloropropene	50.0	51.5		ug/Kg		103	80 - 120
Cyclohexane	50.0	46.8		ug/Kg		94	65 - 120
Dichlorodifluoromethane	50.0	56.4		ug/Kg		113	57 - 142
Ethylbenzene	50.0	47.7		ug/Kg		95	80 - 120
1,2-Dibromoethane	50.0	44.2		ug/Kg		88	78 - 120
Isopropylbenzene	50.0	48.4		ug/Kg		97	72 - 120
Methyl acetate	100	83.0		ug/Kg		83	55 - 136
Methyl tert-butyl ether	50.0	49.1		ug/Kg		98	63 - 125
Methylcyclohexane	50.0	48.7		ug/Kg		97	60 - 140
Methylene Chloride	50.0	46.2		ug/Kg		92	61 - 127
Styrene	50.0	45.7		ug/Kg		91	80 - 120
Tetrachloroethene	50.0	49.6		ug/Kg		99	74 - 122
Toluene	50.0	46.0		ug/Kg		92	74 - 128
trans-1,2-Dichloroethene	50.0	46.9		ug/Kg		94	78 - 126
trans-1,3-Dichloropropene	50.0	49.7		ug/Kg		99	73 - 123
Trichloroethene	50.0	51.8		ug/Kg		104	77 - 129
Trichlorofluoromethane	50.0	68.1		ug/Kg		136	65 - 146
Vinyl chloride	50.0	47.6		ug/Kg		95	61 - 133

QC Sample Results

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 480-576924/1-A
Matrix: Solid
Analysis Batch: 576931

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 576924

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	*99*		*71 - 125*
1,2-Dichloroethane-d4 (Surr)	*115*		*64 - 126*
4-Bromofluorobenzene (Surr)	*110*		*72 - 126*
Dibromofluoromethane (Surr)	*104*		*60 - 140*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 480-576804/1-A
Matrix: Solid
Analysis Batch: 577005

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 576804

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biphenyl	ND		170	25	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
bis (2-chloroisopropyl) ether	ND		170	34	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
2,4-Dichlorophenol	ND		170	18	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
2,4-Dimethylphenol	ND		170	41	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
2,4-Dinitrophenol	ND		1700	780	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
2,4-Dinitrotoluene	ND		170	35	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
2,6-Dinitrotoluene	ND		170	20	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
2-Chloronaphthalene	ND		170	28	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
1,4-Dioxane	ND		100	55	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
2,4,5-Trichlorophenol	ND		170	46	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
2-Chlorophenol	ND		330	31	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
2,4,6-Trichlorophenol	ND		170	34	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
2-Methylnaphthalene	ND		170	34	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
2-Methylphenol	ND		170	20	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
2-Nitroaniline	ND		330	25	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
2-Nitrophenol	ND		170	48	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
3,3'-Dichlorobenzidine	ND		330	200	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
3-Nitroaniline	ND		330	47	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
4,6-Dinitro-2-methylphenol	ND		330	170	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
4-Bromophenyl phenyl ether	ND		170	24	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
4-Chloro-3-methylphenol	ND		170	42	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
4-Chloroaniline	ND		170	42	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
4-Chlorophenyl phenyl ether	ND		170	21	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
4-Methylphenol	ND		330	20	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
4-Nitroaniline	ND		330	89	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
4-Nitrophenol	ND		330	120	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Acenaphthene	ND		170	25	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Acenaphthylene	ND		170	22	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Acetophenone	ND		170	23	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Anthracene	ND		170	42	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Atrazine	ND		170	59	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Benzaldehyde	ND		170	130	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Benzo[a]anthracene	ND		170	17	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Benzo[a]pyrene	ND		170	25	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Benzo[b]fluoranthene	ND		170	27	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Benzo[g,h,i]perylene	ND		170	18	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Benzo[k]fluoranthene	ND		170	22	ug/Kg		04/19/21 08:15	04/20/21 11:04	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 480-576804/1-A
Matrix: Solid
Analysis Batch: 577005

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 576804

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-chloroethoxy)methane	ND		170	36	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Bis(2-chloroethyl)ether	ND		170	22	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Bis(2-ethylhexyl) phthalate	ND		170	58	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Butyl benzyl phthalate	ND		170	28	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Caprolactam	ND		170	51	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Carbazole	ND		170	20	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Chrysene	ND		170	38	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Di-n-butyl phthalate	ND		170	29	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Di-n-octyl phthalate	ND		170	20	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Dibenz(a,h)anthracene	ND		170	30	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Dibenzofuran	ND		170	20	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Diethyl phthalate	ND		170	22	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Dimethyl phthalate	ND		170	20	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Fluoranthene	ND		170	18	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Fluorene	ND		170	20	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Hexachlorobenzene	ND		170	23	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Hexachlorobutadiene	ND		170	25	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Hexachlorocyclopentadiene	ND		170	23	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Hexachloroethane	ND		170	22	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Indeno[1,2,3-cd]pyrene	ND		170	21	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Isophorone	ND		170	36	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
N-Nitrosodi-n-propylamine	ND		170	29	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
N-Nitrosodiphenylamine	ND		170	140	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Naphthalene	ND		170	22	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Nitrobenzene	ND		170	19	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Pentachlorophenol	ND		330	170	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Phenanthrene	ND		170	25	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Phenol	ND		170	26	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Pyrene	ND		170	20	ug/Kg		04/19/21 08:15	04/20/21 11:04	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*76*		*54 - 120*	*04/19/21 08:15*	*04/20/21 11:04*	*1*
2-Fluorobiphenyl	*94*		*60 - 120*	*04/19/21 08:15*	*04/20/21 11:04*	*1*
2-Fluorophenol	*80*		*52 - 120*	*04/19/21 08:15*	*04/20/21 11:04*	*1*
Nitrobenzene-d5	*90*		*53 - 120*	*04/19/21 08:15*	*04/20/21 11:04*	*1*
p-Terphenyl-d14	*107*		*79 - 130*	*04/19/21 08:15*	*04/20/21 11:04*	*1*
Phenol-d5	*82*		*54 - 120*	*04/19/21 08:15*	*04/20/21 11:04*	*1*

Lab Sample ID: LCS 480-576804/2-A
Matrix: Solid
Analysis Batch: 577005

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 576804

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Biphenyl	1660	1450		ug/Kg		87	59 - 120
bis (2-chloroisopropyl) ether	1660	1100		ug/Kg		66	44 - 120
2,4-Dichlorophenol	1660	1560		ug/Kg		94	61 - 120
2,4-Dimethylphenol	1660	1610		ug/Kg		97	59 - 120
2,4-Dinitrophenol	3320	3370		ug/Kg		102	41 - 146

QC Sample Results

Client: Integral Consulting Inc | Job ID: 480-183377-1
Project/Site: Project EF1017

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 480-576804/2-A | **Client Sample ID: Lab Control Sample**
Matrix: Solid | **Prep Type: Total/NA**
Analysis Batch: 577005 | **Prep Batch: 576804**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,4-Dinitrotoluene	1660	1670		ug/Kg		101	63 - 120
2,6-Dinitrotoluene	1660	1610		ug/Kg		97	66 - 120
2-Chloronaphthalene	1660	1470		ug/Kg		88	57 - 120
1,4-Dioxane	1660	713		ug/Kg		43	23 - 120
2,4,5-Trichlorophenol	1660	1580		ug/Kg		95	59 - 126
2-Chlorophenol	1660	1320		ug/Kg		80	53 - 120
2,4,6-Trichlorophenol	1660	1550		ug/Kg		94	59 - 123
2-Methylnaphthalene	1660	1440		ug/Kg		87	59 - 120
2-Methylphenol	1660	1380		ug/Kg		83	54 - 120
2-Nitroaniline	1660	1590		ug/Kg		96	61 - 120
2-Nitrophenol	1660	1500		ug/Kg		90	56 - 120
3,3'-Dichlorobenzidine	3320	3000		ug/Kg		90	54 - 120
3-Nitroaniline	1660	1320		ug/Kg		80	48 - 120
4,6-Dinitro-2-methylphenol	3320	3680		ug/Kg		111	49 - 122
4-Bromophenyl phenyl ether	1660	1570		ug/Kg		94	58 - 120
4-Chloro-3-methylphenol	1660	1710		ug/Kg		103	61 - 120
4-Chloroaniline	1660	1310		ug/Kg		79	38 - 120
4-Chlorophenyl phenyl ether	1660	1600		ug/Kg		97	63 - 124
4-Methylphenol	1660	1380		ug/Kg		83	55 - 120
4-Nitroaniline	1660	1550		ug/Kg		93	56 - 120
4-Nitrophenol	3320	3960		ug/Kg		119	43 - 147
Acenaphthene	1660	1480		ug/Kg		89	62 - 120
Acenaphthylene	1660	1520		ug/Kg		91	58 - 121
Acetophenone	1660	1410		ug/Kg		85	54 - 120
Anthracene	1660	1600		ug/Kg		97	62 - 120
Atrazine	3320	3470		ug/Kg		104	60 - 127
Benzaldehyde	3320	2350		ug/Kg		71	10 - 150
Benzo[a]anthracene	1660	1560		ug/Kg		94	65 - 120
Benzo[a]pyrene	1660	1800		ug/Kg		109	64 - 120
Benzo[b]fluoranthene	1660	1730		ug/Kg		104	64 - 120
Benzo[g,h,i]perylene	1660	1610		ug/Kg		97	45 - 145
Benzo[k]fluoranthene	1660	1510		ug/Kg		91	65 - 120
Bis(2-chloroethoxy)methane	1660	1400		ug/Kg		84	55 - 120
Bis(2-chloroethyl)ether	1660	1210		ug/Kg		73	45 - 120
Bis(2-ethylhexyl) phthalate	1660	1890		ug/Kg		114	61 - 133
Butyl benzyl phthalate	1660	1890		ug/Kg		114	61 - 129
Caprolactam	3320	2710		ug/Kg		82	47 - 120
Carbazole	1660	1700		ug/Kg		102	65 - 120
Chrysene	1660	1650		ug/Kg		99	64 - 120
Di-n-butyl phthalate	1660	1810		ug/Kg		109	58 - 130
Di-n-octyl phthalate	1660	1840		ug/Kg		111	57 - 133
Dibenz(a,h)anthracene	1660	1620		ug/Kg		97	54 - 132
Dibenzofuran	1660	1510		ug/Kg		91	63 - 120
Diethyl phthalate	1660	1740		ug/Kg		105	66 - 120
Dimethyl phthalate	1660	1690		ug/Kg		102	65 - 124
Fluoranthene	1660	1700		ug/Kg		102	62 - 120
Fluorene	1660	1580		ug/Kg		95	63 - 120
Hexachlorobenzene	1660	1620		ug/Kg		98	60 - 120
Hexachlorobutadiene	1660	1510		ug/Kg		91	45 - 120

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 480-576804/2-A
Matrix: Solid
Analysis Batch: 577005

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 576804

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Hexachlorocyclopentadiene	1660	1420		ug/Kg		86	47 - 120
Hexachloroethane	1660	1340		ug/Kg		81	41 - 120
Indeno[1,2,3-cd]pyrene	1660	1600		ug/Kg		97	56 - 134
Isophorone	1660	1470		ug/Kg		89	56 - 120
N-Nitrosodi-n-propylamine	1660	1370		ug/Kg		83	52 - 120
Naphthalene	1660	1370		ug/Kg		83	55 - 120
Nitrobenzene	1660	1420		ug/Kg		85	54 - 120
Pentachlorophenol	3320	2900		ug/Kg		87	51 - 120
Phenanthrene	1660	1580		ug/Kg		95	60 - 120
Phenol	1660	1330		ug/Kg		80	53 - 120
Pyrene	1660	1740		ug/Kg		105	61 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4,6-Tribromophenol	*90*		*54 - 120*
2-Fluorobiphenyl	*90*		*60 - 120*
2-Fluorophenol	*80*		*52 - 120*
Nitrobenzene-d5	*87*		*53 - 120*
p-Terphenyl-d14	*99*		*79 - 130*
Phenol-d5	*78*		*54 - 120*

Lab Sample ID: MB 480-577070/1-A
Matrix: Solid
Analysis Batch: 577181

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 577070

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.010	0.00045	mg/L		04/20/21 14:51	04/21/21 11:03	1
3-Methylphenol	ND		0.010	0.00040	mg/L		04/20/21 14:51	04/21/21 11:03	1
2,4-Dinitrotoluene	ND		0.0050	0.00043	mg/L		04/20/21 14:51	04/21/21 11:03	1
Pyridine	ND		0.025	0.00040	mg/L		04/20/21 14:51	04/21/21 11:03	1
2,4,5-Trichlorophenol	ND		0.0050	0.00048	mg/L		04/20/21 14:51	04/21/21 11:03	1
2,4,6-Trichlorophenol	ND		0.0050	0.00060	mg/L		04/20/21 14:51	04/21/21 11:03	1
2-Methylphenol	ND		0.0050	0.00040	mg/L		04/20/21 14:51	04/21/21 11:03	1
4-Methylphenol	ND		0.010	0.00035	mg/L		04/20/21 14:51	04/21/21 11:03	1
Hexachlorobenzene	ND		0.0050	0.00050	mg/L		04/20/21 14:51	04/21/21 11:03	1
Hexachlorobutadiene	ND		0.0050	0.00068	mg/L		04/20/21 14:51	04/21/21 11:03	1
Hexachloroethane	ND		0.0050	0.00058	mg/L		04/20/21 14:51	04/21/21 11:03	1
Nitrobenzene	ND		0.0050	0.00028	mg/L		04/20/21 14:51	04/21/21 11:03	1
Pentachlorophenol	ND		0.010	0.0022	mg/L		04/20/21 14:51	04/21/21 11:03	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*75*		*41 - 120*	*04/20/21 14:51*	*04/21/21 11:03*	*1*
2-Fluorobiphenyl	*89*		*48 - 120*	*04/20/21 14:51*	*04/21/21 11:03*	*1*
2-Fluorophenol	*47*		*35 - 120*	*04/20/21 14:51*	*04/21/21 11:03*	*1*
Nitrobenzene-d5	*87*		*46 - 120*	*04/20/21 14:51*	*04/21/21 11:03*	*1*
p-Terphenyl-d14	*103*		*60 - 148*	*04/20/21 14:51*	*04/21/21 11:03*	*1*
Phenol-d5	*30*		*22 - 120*	*04/20/21 14:51*	*04/21/21 11:03*	*1*

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183377-1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 480-577070/2-A
Matrix: Solid
Analysis Batch: 577181

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 577070

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dichlorobenzene	0.0500	0.0386		mg/L		77	51 - 120
3-Methylphenol	0.0500	0.0376		mg/L		75	39 - 120
2,4-Dinitrotoluene	0.0500	0.0561		mg/L		112	69 - 120
Pyridine	0.100	0.0358		mg/L		36	10 - 120
2,4,5-Trichlorophenol	0.0500	0.0508		mg/L		102	65 - 126
2,4,6-Trichlorophenol	0.0500	0.0530		mg/L		106	64 - 120
2-Methylphenol	0.0500	0.0403		mg/L		81	39 - 120
4-Methylphenol	0.0500	0.0376		mg/L		75	29 - 131
Hexachlorobenzene	0.0500	0.0526		mg/L		105	61 - 120
Hexachlorobutadiene	0.0500	0.0454		mg/L		91	35 - 120
Hexachloroethane	0.0500	0.0399		mg/L		80	43 - 120
Nitrobenzene	0.0500	0.0481		mg/L		96	53 - 123
Pentachlorophenol	0.100	0.0961		mg/L		96	29 - 136

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4,6-Tribromophenol	*95*		*41 - 120*
2-Fluorobiphenyl	*100*		*48 - 120*
2-Fluorophenol	*53*		*35 - 120*
Nitrobenzene-d5	*97*		*46 - 120*
p-Terphenyl-d14	*106*		*60 - 148*
Phenol-d5	*36*		*22 - 120*

Lab Sample ID: LCSD 480-577070/3-A
Matrix: Solid
Analysis Batch: 577181

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 577070

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dichlorobenzene	0.0500	0.0379		mg/L		76	51 - 120	2	36
3-Methylphenol	0.0500	0.0372		mg/L		74	39 - 120	1	30
2,4-Dinitrotoluene	0.0500	0.0604	*+	mg/L		121	69 - 120	7	20
Pyridine	0.100	0.0356		mg/L		36	10 - 120	1	49
2,4,5-Trichlorophenol	0.0500	0.0521		mg/L		104	65 - 126	3	18
2,4,6-Trichlorophenol	0.0500	0.0522		mg/L		104	64 - 120	2	19
2-Methylphenol	0.0500	0.0392		mg/L		78	39 - 120	3	27
4-Methylphenol	0.0500	0.0372		mg/L		74	29 - 131	1	24
Hexachlorobenzene	0.0500	0.0545		mg/L		109	61 - 120	4	15
Hexachlorobutadiene	0.0500	0.0435		mg/L		87	35 - 120	4	44
Hexachloroethane	0.0500	0.0394		mg/L		79	43 - 120	1	46
Nitrobenzene	0.0500	0.0475		mg/L		95	53 - 123	1	24
Pentachlorophenol	0.100	0.0991		mg/L		99	29 - 136	3	37

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2,4,6-Tribromophenol	*96*		*41 - 120*
2-Fluorobiphenyl	*97*		*48 - 120*
2-Fluorophenol	*51*		*35 - 120*
Nitrobenzene-d5	*97*		*46 - 120*
p-Terphenyl-d14	*108*		*60 - 148*
Phenol-d5	*34*		*22 - 120*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: LB 480-576811/1-F
Matrix: Solid
Analysis Batch: 577181

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 577070

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.040	0.0018	mg/L		04/20/21 14:51	04/21/21 12:16	1
3-Methylphenol	ND		0.040	0.0016	mg/L		04/20/21 14:51	04/21/21 12:16	1
2,4-Dinitrotoluene	ND		0.020	0.0017	mg/L		04/20/21 14:51	04/21/21 12:16	1
Pyridine	ND		0.10	0.0016	mg/L		04/20/21 14:51	04/21/21 12:16	1
2,4,5-Trichlorophenol	ND		0.020	0.0019	mg/L		04/20/21 14:51	04/21/21 12:16	1
2,4,6-Trichlorophenol	ND		0.020	0.0024	mg/L		04/20/21 14:51	04/21/21 12:16	1
2-Methylphenol	ND		0.020	0.0016	mg/L		04/20/21 14:51	04/21/21 12:16	1
4-Methylphenol	ND		0.040	0.0014	mg/L		04/20/21 14:51	04/21/21 12:16	1
Hexachlorobenzene	ND		0.020	0.0020	mg/L		04/20/21 14:51	04/21/21 12:16	1
Hexachlorobutadiene	ND		0.020	0.0027	mg/L		04/20/21 14:51	04/21/21 12:16	1
Hexachloroethane	ND		0.020	0.0023	mg/L		04/20/21 14:51	04/21/21 12:16	1
Nitrobenzene	ND		0.020	0.0011	mg/L		04/20/21 14:51	04/21/21 12:16	1
Pentachlorophenol	ND		0.040	0.0088	mg/L		04/20/21 14:51	04/21/21 12:16	1

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*89*		*41 - 120*	*04/20/21 14:51*	*04/21/21 12:16*	*1*
2-Fluorobiphenyl	*100*		*48 - 120*	*04/20/21 14:51*	*04/21/21 12:16*	*1*
2-Fluorophenol	*51*		*35 - 120*	*04/20/21 14:51*	*04/21/21 12:16*	*1*
Nitrobenzene-d5	*100*		*46 - 120*	*04/20/21 14:51*	*04/21/21 12:16*	*1*
p-Terphenyl-d14	*107*		*60 - 148*	*04/20/21 14:51*	*04/21/21 12:16*	*1*
Phenol-d5	*34*		*22 - 120*	*04/20/21 14:51*	*04/21/21 12:16*	*1*

Method: 8081B - Organochlorine Pesticides (GC)

Lab Sample ID: MB 480-576976/1-A
Matrix: Solid
Analysis Batch: 577331

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 576976

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.000050	0.0000015	mg/L		04/20/21 08:56	04/22/21 09:44	1
Chlordane (technical)	ND		0.00050	0.0000073	mg/L		04/20/21 08:56	04/22/21 09:44	1
Endrin	ND		0.000050	0.0000035	mg/L		04/20/21 08:56	04/22/21 09:44	1
Heptachlor	ND		0.000050	0.0000021	mg/L		04/20/21 08:56	04/22/21 09:44	1
Heptachlor epoxide	ND		0.000050	0.0000013	mg/L		04/20/21 08:56	04/22/21 09:44	1
Methoxychlor	ND		0.000050	0.0000035	mg/L		04/20/21 08:56	04/22/21 09:44	1
Toxaphene	ND		0.00050	0.000030	mg/L		04/20/21 08:56	04/22/21 09:44	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*50*		*20 - 120*	*04/20/21 08:56*	*04/22/21 09:44*	*1*
DCB Decachlorobiphenyl	*49*		*20 - 120*	*04/20/21 08:56*	*04/22/21 09:44*	*1*
Tetrachloro-m-xylene	*94*		*44 - 120*	*04/20/21 08:56*	*04/22/21 09:44*	*1*
Tetrachloro-m-xylene	*81*		*44 - 120*	*04/20/21 08:56*	*04/22/21 09:44*	*1*

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: LCS 480-576976/2-A
Matrix: Solid
Analysis Batch: 577331

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 576976

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
gamma-BHC (Lindane)	0.000500	0.000535		mg/L		107	56 - 120
Endrin	0.000500	0.000600		mg/L		120	65 - 135
Heptachlor	0.000500	0.000489		mg/L		98	58 - 120
Heptachlor epoxide	0.000500	0.000573		mg/L		115	65 - 125
Methoxychlor	0.000500	0.000587		mg/L		117	50 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*53*		*20 - 120*
DCB Decachlorobiphenyl	*43*		*20 - 120*
Tetrachloro-m-xylene	*79*		*44 - 120*
Tetrachloro-m-xylene	*85*		*44 - 120*

Lab Sample ID: LCSD 480-576976/3-A
Matrix: Solid
Analysis Batch: 577331

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 576976

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
gamma-BHC (Lindane)	0.000500	0.000507		mg/L		101	56 - 120	5	24
Endrin	0.000500	0.000552		mg/L		110	65 - 135	8	24
Heptachlor	0.000500	0.000460		mg/L		92	58 - 120	6	25
Heptachlor epoxide	0.000500	0.000534		mg/L		107	65 - 125	7	23
Methoxychlor	0.000500	0.000548		mg/L		110	50 - 150	7	26

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
DCB Decachlorobiphenyl	*52*		*20 - 120*
DCB Decachlorobiphenyl	*45*		*20 - 120*
Tetrachloro-m-xylene	*77*		*44 - 120*
Tetrachloro-m-xylene	*81*		*44 - 120*

Lab Sample ID: LB 480-576811/1-C
Matrix: Solid
Analysis Batch: 577331

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 576976

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.00020	0.0000060	mg/L		04/20/21 11:51	04/22/21 11:22	1
Chlordane (technical)	ND		0.0020	0.000029	mg/L		04/20/21 11:51	04/22/21 11:22	1
Endrin	ND		0.00020	0.000014	mg/L		04/20/21 11:51	04/22/21 11:22	1
Heptachlor	ND		0.00020	0.0000085	mg/L		04/20/21 11:51	04/22/21 11:22	1
Heptachlor epoxide	ND		0.00020	0.0000053	mg/L		04/20/21 11:51	04/22/21 11:22	1
Methoxychlor	ND		0.00020	0.000014	mg/L		04/20/21 11:51	04/22/21 11:22	1
Toxaphene	ND		0.0020	0.00012	mg/L		04/20/21 11:51	04/22/21 11:22	1

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*75*		*20 - 120*	*04/20/21 11:51*	*04/22/21 11:22*	*1*
DCB Decachlorobiphenyl	*65*		*20 - 120*	*04/20/21 11:51*	*04/22/21 11:22*	*1*
Tetrachloro-m-xylene	*105*		*44 - 120*	*04/20/21 11:51*	*04/22/21 11:22*	*1*
Tetrachloro-m-xylene	*88*		*44 - 120*	*04/20/21 11:51*	*04/22/21 11:22*	*1*

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183377-1

Method: 8151 - TCLP Herbicides

Lab Sample ID: MB 480-576977/1-A
Matrix: Solid
Analysis Batch: 577206

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 576977

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND		0.00050	0.000090	mg/L		04/20/21 09:00	04/21/21 13:16	1
2,4-D	ND		0.00050	0.00010	mg/L		04/20/21 09:00	04/21/21 13:16	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*77*		*48 - 132*	*04/20/21 09:00*	*04/21/21 13:16*	*1*
2,4-Dichlorophenylacetic acid	*72*		*48 - 132*	*04/20/21 09:00*	*04/21/21 13:16*	*1*

Lab Sample ID: LCS 480-576977/2-A
Matrix: Solid
Analysis Batch: 577206

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 576977

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Silvex (2,4,5-TP)	0.00200	0.00187		mg/L		94	49 - 150
2,4-D	0.00200	0.00197		mg/L		98	36 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*90*		*48 - 132*
2,4-Dichlorophenylacetic acid	*60*		*48 - 132*

Lab Sample ID: LCSD 480-576977/3-A
Matrix: Solid
Analysis Batch: 577206

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 576977

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Silvex (2,4,5-TP)	0.00200	0.00115		mg/L		57	49 - 150	48	50
2,4-D	0.00200	0.00115	*1	mg/L		57	36 - 150	53	50

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*61*		*48 - 132*
2,4-Dichlorophenylacetic acid	*41*	*S1-*	*48 - 132*

Lab Sample ID: MB 480-577918/1-A
Matrix: Solid
Analysis Batch: 578093

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 577918

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND		0.00050	0.000090	mg/L		04/26/21 10:16	04/28/21 01:47	1
2,4-D	ND		0.00050	0.00010	mg/L		04/26/21 10:16	04/28/21 01:47	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*49*		*48 - 132*	*04/26/21 10:16*	*04/28/21 01:47*	*1*
2,4-Dichlorophenylacetic acid	*69*		*48 - 132*	*04/26/21 10:16*	*04/28/21 01:47*	*1*

Method: 8151 - TCLP Herbicides (Continued)

Lab Sample ID: LCS 480-577918/2-A
Matrix: Solid
Analysis Batch: 578093

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 577918

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Silvex (2,4,5-TP)	0.00200	0.00145		mg/L		73	49 - 150
2,4-D	0.00200	0.00174		mg/L		87	36 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*61*		*48 - 132*
2,4-Dichlorophenylacetic acid	*71*		*48 - 132*

Lab Sample ID: LCSD 480-577918/3-A
Matrix: Solid
Analysis Batch: 578093

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 577918

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Silvex (2,4,5-TP)	0.00200	0.00120		mg/L		60	49 - 150	19	50
2,4-D	0.00200	0.00166		mg/L		83	36 - 150	5	50

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*54*		*48 - 132*
2,4-Dichlorophenylacetic acid	*53*		*48 - 132*

Lab Sample ID: LB 480-576811/1-D
Matrix: Solid
Analysis Batch: 577206

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 576977

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND		0.0020	0.00036	mg/L		04/20/21 11:55	04/21/21 15:45	1
2,4-D	ND		0.0020	0.00040	mg/L		04/20/21 11:55	04/21/21 15:45	1

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*15*	*S1-*	*48 - 132*	*04/20/21 11:55*	*04/21/21 15:45*	*1*
2,4-Dichlorophenylacetic acid	*19*	*S1-*	*48 - 132*	*04/20/21 11:55*	*04/21/21 15:45*	*1*

Lab Sample ID: LB 480-577812/1-B
Matrix: Solid
Analysis Batch: 578093

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 577918

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND		0.0020	0.00036	mg/L		04/26/21 10:16	04/28/21 03:16	1
2,4-D	ND		0.0020	0.00040	mg/L		04/26/21 10:16	04/28/21 03:16	1

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*27*	*S1-*	*48 - 132*	*04/26/21 10:16*	*04/28/21 03:16*	*1*
2,4-Dichlorophenylacetic acid	*27*	*S1-*	*48 - 132*	*04/26/21 10:16*	*04/28/21 03:16*	*1*

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 480-577027/2-A
Matrix: Solid
Analysis Batch: 577398

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 577027

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.015	0.0056	mg/L		04/21/21 07:04	04/22/21 03:38	1
Barium	ND		1.0	0.10	mg/L		04/21/21 07:04	04/22/21 03:38	1
Cadmium	ND		0.0020	0.00050	mg/L		04/21/21 07:04	04/22/21 03:38	1
Chromium	ND		0.020	0.010	mg/L		04/21/21 07:04	04/22/21 03:38	1
Lead	ND		0.020	0.0030	mg/L		04/21/21 07:04	04/22/21 03:38	1
Selenium	ND		0.025	0.0087	mg/L		04/21/21 07:04	04/22/21 03:38	1
Silver	ND		0.0060	0.0017	mg/L		04/21/21 07:04	04/22/21 03:38	1

Lab Sample ID: LCS 480-577027/3-A
Matrix: Solid
Analysis Batch: 577398

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 577027

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	1.00	1.12		mg/L		112	80 - 120
Barium	1.00	1.07		mg/L		107	80 - 120
Cadmium	1.00	1.06		mg/L		106	80 - 120
Chromium	1.00	1.04		mg/L		104	80 - 120
Lead	1.00	1.02		mg/L		102	80 - 120
Selenium	1.00	1.11		mg/L		111	80 - 120
Silver	1.00	1.11		mg/L		111	80 - 120

Lab Sample ID: LB 480-576811/1-B
Matrix: Solid
Analysis Batch: 577398

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 577027

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.015	0.0056	mg/L		04/21/21 07:04	04/22/21 03:34	1
Barium	ND		1.0	0.10	mg/L		04/21/21 07:04	04/22/21 03:34	1
Cadmium	ND		0.0020	0.00050	mg/L		04/21/21 07:04	04/22/21 03:34	1
Chromium	ND		0.020	0.010	mg/L		04/21/21 07:04	04/22/21 03:34	1
Lead	ND		0.020	0.0030	mg/L		04/21/21 07:04	04/22/21 03:34	1
Selenium	ND		0.025	0.0087	mg/L		04/21/21 07:04	04/22/21 03:34	1
Silver	ND		0.0060	0.0017	mg/L		04/21/21 07:04	04/22/21 03:34	1

Lab Sample ID: 480-183377-4 MS
Matrix: Solid
Analysis Batch: 577398

Client Sample ID: DW3-OUT-SP-004
Prep Type: TCLP
Prep Batch: 577027

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	ND		1.00	1.12		mg/L		112	75 - 125
Barium	0.57	J	1.00	1.68		mg/L		111	75 - 125
Cadmium	0.0062		1.00	1.07		mg/L		106	75 - 125
Chromium	ND		1.00	1.02		mg/L		102	75 - 125
Lead	0.081		1.00	1.09		mg/L		101	75 - 125
Selenium	ND		1.00	1.11		mg/L		111	75 - 125
Silver	ND		1.00	0.924		mg/L		92	75 - 125

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: 480-183377-4 MSD
Matrix: Solid
Analysis Batch: 577398

Client Sample ID: DW3-OUT-SP-004
Prep Type: TCLP
Prep Batch: 577027

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	ND		1.00	1.11		mg/L		111	75 - 125	0	20
Barium	0.57	J	1.00	1.68		mg/L		112	75 - 125	0	20
Cadmium	0.0062		1.00	1.07		mg/L		106	75 - 125	0	20
Chromium	ND		1.00	1.03		mg/L		103	75 - 125	1	20
Lead	0.081		1.00	1.09		mg/L		101	75 - 125	0	20
Selenium	ND		1.00	1.10		mg/L		110	75 - 125	1	20
Silver	ND		1.00	0.970		mg/L		97	75 - 125	5	20

Method: 7470A - TCLP Mercury

Lab Sample ID: MB 480-577042/2-A
Matrix: Solid
Analysis Batch: 577118

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 577042

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		04/20/21 14:21	04/20/21 18:51	1

Lab Sample ID: LCS 480-577042/3-A
Matrix: Solid
Analysis Batch: 577118

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 577042

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00668	0.00635		mg/L		95	80 - 120

Lab Sample ID: LB 480-576811/1-E
Matrix: Solid
Analysis Batch: 577118

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 577042

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		04/20/21 14:21	04/20/21 18:50	1

Lab Sample ID: 480-183377-4 MS
Matrix: Solid
Analysis Batch: 577118

Client Sample ID: DW3-OUT-SP-004
Prep Type: TCLP
Prep Batch: 577042

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND		0.00668	0.00582		mg/L		87	80 - 120

Lab Sample ID: 480-183377-4 MSD
Matrix: Solid
Analysis Batch: 577118

Client Sample ID: DW3-OUT-SP-004
Prep Type: TCLP
Prep Batch: 577042

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		0.00668	0.00570		mg/L		85	80 - 120	2	20

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183377-1

Method: 1010A - Ignitability, Pensky-Martens Closed-Cup Method

Lab Sample ID: LCS 480-577474/1
Matrix: Solid
Analysis Batch: 577474

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Flashpoint			81.0	79.00		Degrees F		98	97.5 - 102.5		

Lab Sample ID: 480-183377-1 DU
Matrix: Solid
Analysis Batch: 577474

Client Sample ID: DW1-BLDG1-SP-001
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Flashpoint	>180			>180.0		Degrees F				NC	10

Method: 9045D - pH

Lab Sample ID: LCS 480-577104/1
Matrix: Solid
Analysis Batch: 577104

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
pH			7.00	7.0		SU		100	99 - 101		

GC/MS VOA

Leach Batch: 576813

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-1	DW1-BLDG1-SP-001	TCLP	Solid	1311	
480-183377-2	DW2-BLDG1-SP-002	TCLP	Solid	1311	
480-183377-3	DW5-BLDG8-SP-003	TCLP	Solid	1311	
480-183377-4	DW3-OUT-SP-004	TCLP	Solid	1311	
480-183377-5	DW4-OUT-SP-005	TCLP	Solid	1311	
LB 480-576813/1-A	Method Blank	TCLP	Solid	1311	

Analysis Batch: 576842

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-1	DW1-BLDG1-SP-001	Total/NA	Solid	8260C	576876
480-183377-2	DW2-BLDG1-SP-002	Total/NA	Solid	8260C	576876
480-183377-4	DW3-OUT-SP-004	Total/NA	Solid	8260C	576876
MB 480-576876/2-A	Method Blank	Total/NA	Solid	8260C	576876
LCS 480-576876/1-A	Lab Control Sample	Total/NA	Solid	8260C	576876

Prep Batch: 576876

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-1	DW1-BLDG1-SP-001	Total/NA	Solid	5035A_L	
480-183377-2	DW2-BLDG1-SP-002	Total/NA	Solid	5035A_L	
480-183377-4	DW3-OUT-SP-004	Total/NA	Solid	5035A_L	
MB 480-576876/2-A	Method Blank	Total/NA	Solid	5035A_L	
LCS 480-576876/1-A	Lab Control Sample	Total/NA	Solid	5035A_L	

Prep Batch: 576924

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-3	DW5-BLDG8-SP-003	Total/NA	Solid	5035A_L	
480-183377-5	DW4-OUT-SP-005	Total/NA	Solid	5035A_L	
MB 480-576924/2-A	Method Blank	Total/NA	Solid	5035A_L	
LCS 480-576924/1-A	Lab Control Sample	Total/NA	Solid	5035A_L	

Analysis Batch: 576931

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-3	DW5-BLDG8-SP-003	Total/NA	Solid	8260C	576924
480-183377-5	DW4-OUT-SP-005	Total/NA	Solid	8260C	576924
MB 480-576924/2-A	Method Blank	Total/NA	Solid	8260C	576924
LCS 480-576924/1-A	Lab Control Sample	Total/NA	Solid	8260C	576924

Analysis Batch: 577160

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-1	DW1-BLDG1-SP-001	TCLP	Solid	8260C	576813
480-183377-2	DW2-BLDG1-SP-002	TCLP	Solid	8260C	576813
480-183377-3	DW5-BLDG8-SP-003	TCLP	Solid	8260C	576813
480-183377-4	DW3-OUT-SP-004	TCLP	Solid	8260C	576813
480-183377-5	DW4-OUT-SP-005	TCLP	Solid	8260C	576813
LB 480-576813/1-A	Method Blank	TCLP	Solid	8260C	576813
MB 480-577160/7	Method Blank	Total/NA	Solid	8260C	
LCS 480-577160/5	Lab Control Sample	Total/NA	Solid	8260C	

QC Association Summary

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183377-1

GC/MS Semi VOA

Prep Batch: 576804

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-1	DW1-BLDG1-SP-001	Total/NA	Solid	3550C	
480-183377-2	DW2-BLDG1-SP-002	Total/NA	Solid	3550C	
480-183377-3	DW5-BLDG8-SP-003	Total/NA	Solid	3550C	
480-183377-4	DW3-OUT-SP-004	Total/NA	Solid	3550C	
480-183377-5	DW4-OUT-SP-005	Total/NA	Solid	3550C	
MB 480-576804/1-A	Method Blank	Total/NA	Solid	3550C	
LCS 480-576804/2-A	Lab Control Sample	Total/NA	Solid	3550C	

Leach Batch: 576811

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-1	DW1-BLDG1-SP-001	TCLP	Solid	1311	
480-183377-2	DW2-BLDG1-SP-002	TCLP	Solid	1311	
480-183377-3	DW5-BLDG8-SP-003	TCLP	Solid	1311	
480-183377-4	DW3-OUT-SP-004	TCLP	Solid	1311	
480-183377-5	DW4-OUT-SP-005	TCLP	Solid	1311	
LB 480-576811/1-F	Method Blank	TCLP	Solid	1311	

Analysis Batch: 577005

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-1	DW1-BLDG1-SP-001	Total/NA	Solid	8270D	576804
480-183377-4	DW3-OUT-SP-004	Total/NA	Solid	8270D	576804
480-183377-5	DW4-OUT-SP-005	Total/NA	Solid	8270D	576804
MB 480-576804/1-A	Method Blank	Total/NA	Solid	8270D	576804
LCS 480-576804/2-A	Lab Control Sample	Total/NA	Solid	8270D	576804

Prep Batch: 577070

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-1	DW1-BLDG1-SP-001	TCLP	Solid	3510C	576811
480-183377-2	DW2-BLDG1-SP-002	TCLP	Solid	3510C	576811
480-183377-3	DW5-BLDG8-SP-003	TCLP	Solid	3510C	576811
480-183377-4	DW3-OUT-SP-004	TCLP	Solid	3510C	576811
480-183377-5	DW4-OUT-SP-005	TCLP	Solid	3510C	576811
LB 480-576811/1-F	Method Blank	TCLP	Solid	3510C	576811
MB 480-577070/1-A	Method Blank	Total/NA	Solid	3510C	
LCS 480-577070/2-A	Lab Control Sample	Total/NA	Solid	3510C	
LCSD 480-577070/3-A	Lab Control Sample Dup	Total/NA	Solid	3510C	

Analysis Batch: 577181

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-1	DW1-BLDG1-SP-001	TCLP	Solid	8270D	577070
480-183377-2	DW2-BLDG1-SP-002	TCLP	Solid	8270D	577070
480-183377-3	DW5-BLDG8-SP-003	TCLP	Solid	8270D	577070
480-183377-4	DW3-OUT-SP-004	TCLP	Solid	8270D	577070
480-183377-5	DW4-OUT-SP-005	TCLP	Solid	8270D	577070
LB 480-576811/1-F	Method Blank	TCLP	Solid	8270D	577070
MB 480-577070/1-A	Method Blank	Total/NA	Solid	8270D	577070
LCS 480-577070/2-A	Lab Control Sample	Total/NA	Solid	8270D	577070
LCSD 480-577070/3-A	Lab Control Sample Dup	Total/NA	Solid	8270D	577070

GC/MS Semi VOA

Analysis Batch: 577225

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-2	DW2-BLDG1-SP-002	Total/NA	Solid	8270D	576804
480-183377-3	DW5-BLDG8-SP-003	Total/NA	Solid	8270D	576804

GC Semi VOA

Leach Batch: 576811

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-1	DW1-BLDG1-SP-001	TCLP	Solid	1311	
480-183377-2	DW2-BLDG1-SP-002	TCLP	Solid	1311	
480-183377-3	DW5-BLDG8-SP-003	TCLP	Solid	1311	
480-183377-4	DW3-OUT-SP-004	TCLP	Solid	1311	
480-183377-5	DW4-OUT-SP-005	TCLP	Solid	1311	
LB 480-576811/1-C	Method Blank	TCLP	Solid	1311	
LB 480-576811/1-D	Method Blank	TCLP	Solid	1311	

Prep Batch: 576976

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-1	DW1-BLDG1-SP-001	TCLP	Solid	3510C	576811
480-183377-2	DW2-BLDG1-SP-002	TCLP	Solid	3510C	576811
480-183377-3	DW5-BLDG8-SP-003	TCLP	Solid	3510C	576811
480-183377-4	DW3-OUT-SP-004	TCLP	Solid	3510C	576811
480-183377-5	DW4-OUT-SP-005	TCLP	Solid	3510C	576811
LB 480-576811/1-C	Method Blank	TCLP	Solid	3510C	576811
MB 480-576976/1-A	Method Blank	Total/NA	Solid	3510C	
LCS 480-576976/2-A	Lab Control Sample	Total/NA	Solid	3510C	
LCSD 480-576976/3-A	Lab Control Sample Dup	Total/NA	Solid	3510C	

Prep Batch: 576977

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-1	DW1-BLDG1-SP-001	TCLP	Solid	8151A	576811
480-183377-4	DW3-OUT-SP-004	TCLP	Solid	8151A	576811
480-183377-5	DW4-OUT-SP-005	TCLP	Solid	8151A	576811
LB 480-576811/1-D	Method Blank	TCLP	Solid	8151A	576811
MB 480-576977/1-A	Method Blank	Total/NA	Solid	8151A	
LCS 480-576977/2-A	Lab Control Sample	Total/NA	Solid	8151A	
LCSD 480-576977/3-A	Lab Control Sample Dup	Total/NA	Solid	8151A	

Analysis Batch: 577206

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-1	DW1-BLDG1-SP-001	TCLP	Solid	8151	576977
480-183377-4	DW3-OUT-SP-004	TCLP	Solid	8151	576977
480-183377-5	DW4-OUT-SP-005	TCLP	Solid	8151	576977
LB 480-576811/1-D	Method Blank	TCLP	Solid	8151	576977
MB 480-576977/1-A	Method Blank	Total/NA	Solid	8151	576977
LCS 480-576977/2-A	Lab Control Sample	Total/NA	Solid	8151	576977
LCSD 480-576977/3-A	Lab Control Sample Dup	Total/NA	Solid	8151	576977

Analysis Batch: 577331

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-1	DW1-BLDG1-SP-001	TCLP	Solid	8081B	576976
480-183377-2	DW2-BLDG1-SP-002	TCLP	Solid	8081B	576976

GC Semi VOA (Continued)

Analysis Batch: 577331 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-3	DW5-BLDG8-SP-003	TCLP	Solid	8081B	576976
480-183377-4	DW3-OUT-SP-004	TCLP	Solid	8081B	576976
480-183377-5	DW4-OUT-SP-005	TCLP	Solid	8081B	576976
LB 480-576811/1-C	Method Blank	TCLP	Solid	8081B	576976
MB 480-576976/1-A	Method Blank	Total/NA	Solid	8081B	576976
LCS 480-576976/2-A	Lab Control Sample	Total/NA	Solid	8081B	576976
LCSD 480-576976/3-A	Lab Control Sample Dup	Total/NA	Solid	8081B	576976

Leach Batch: 577812

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-2	DW2-BLDG1-SP-002	TCLP	Solid	1311	
480-183377-3	DW5-BLDG8-SP-003	TCLP	Solid	1311	
LB 480-577812/1-B	Method Blank	TCLP	Solid	1311	

Prep Batch: 577918

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-2	DW2-BLDG1-SP-002	TCLP	Solid	8151A	577812
480-183377-3	DW5-BLDG8-SP-003	TCLP	Solid	8151A	577812
LB 480-577812/1-B	Method Blank	TCLP	Solid	8151A	577812
MB 480-577918/1-A	Method Blank	Total/NA	Solid	8151A	
LCS 480-577918/2-A	Lab Control Sample	Total/NA	Solid	8151A	
LCSD 480-577918/3-A	Lab Control Sample Dup	Total/NA	Solid	8151A	

Analysis Batch: 578093

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-2	DW2-BLDG1-SP-002	TCLP	Solid	8151	577918
480-183377-3	DW5-BLDG8-SP-003	TCLP	Solid	8151	577918
LB 480-577812/1-B	Method Blank	TCLP	Solid	8151	577918
MB 480-577918/1-A	Method Blank	Total/NA	Solid	8151	577918
LCS 480-577918/2-A	Lab Control Sample	Total/NA	Solid	8151	577918
LCSD 480-577918/3-A	Lab Control Sample Dup	Total/NA	Solid	8151	577918

Metals

Leach Batch: 576811

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-1	DW1-BLDG1-SP-001	TCLP	Solid	1311	
480-183377-2	DW2-BLDG1-SP-002	TCLP	Solid	1311	
480-183377-3	DW5-BLDG8-SP-003	TCLP	Solid	1311	
480-183377-4	DW3-OUT-SP-004	TCLP	Solid	1311	
480-183377-5	DW4-OUT-SP-005	TCLP	Solid	1311	
LB 480-576811/1-B	Method Blank	TCLP	Solid	1311	
LB 480-576811/1-E	Method Blank	TCLP	Solid	1311	
480-183377-4 MS	DW3-OUT-SP-004	TCLP	Solid	1311	
480-183377-4 MSD	DW3-OUT-SP-004	TCLP	Solid	1311	

Prep Batch: 577027

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-1	DW1-BLDG1-SP-001	TCLP	Solid	3010A	576811
480-183377-2	DW2-BLDG1-SP-002	TCLP	Solid	3010A	576811
480-183377-3	DW5-BLDG8-SP-003	TCLP	Solid	3010A	576811

Metals (Continued)

Prep Batch: 577027 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-4	DW3-OUT-SP-004	TCLP	Solid	3010A	576811
480-183377-5	DW4-OUT-SP-005	TCLP	Solid	3010A	576811
LB 480-576811/1-B	Method Blank	TCLP	Solid	3010A	576811
MB 480-577027/2-A	Method Blank	Total/NA	Solid	3010A	
LCS 480-577027/3-A	Lab Control Sample	Total/NA	Solid	3010A	
480-183377-4 MS	DW3-OUT-SP-004	TCLP	Solid	3010A	576811
480-183377-4 MSD	DW3-OUT-SP-004	TCLP	Solid	3010A	576811

Prep Batch: 577042

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-1	DW1-BLDG1-SP-001	TCLP	Solid	7470A	576811
480-183377-2	DW2-BLDG1-SP-002	TCLP	Solid	7470A	576811
480-183377-3	DW5-BLDG8-SP-003	TCLP	Solid	7470A	576811
480-183377-4	DW3-OUT-SP-004	TCLP	Solid	7470A	576811
480-183377-5	DW4-OUT-SP-005	TCLP	Solid	7470A	576811
LB 480-576811/1-E	Method Blank	TCLP	Solid	7470A	576811
MB 480-577042/2-A	Method Blank	Total/NA	Solid	7470A	
LCS 480-577042/3-A	Lab Control Sample	Total/NA	Solid	7470A	
480-183377-4 MS	DW3-OUT-SP-004	TCLP	Solid	7470A	576811
480-183377-4 MSD	DW3-OUT-SP-004	TCLP	Solid	7470A	576811

Analysis Batch: 577118

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-1	DW1-BLDG1-SP-001	TCLP	Solid	7470A	577042
480-183377-2	DW2-BLDG1-SP-002	TCLP	Solid	7470A	577042
480-183377-3	DW5-BLDG8-SP-003	TCLP	Solid	7470A	577042
480-183377-4	DW3-OUT-SP-004	TCLP	Solid	7470A	577042
480-183377-5	DW4-OUT-SP-005	TCLP	Solid	7470A	577042
LB 480-576811/1-E	Method Blank	TCLP	Solid	7470A	577042
MB 480-577042/2-A	Method Blank	Total/NA	Solid	7470A	577042
LCS 480-577042/3-A	Lab Control Sample	Total/NA	Solid	7470A	577042
480-183377-4 MS	DW3-OUT-SP-004	TCLP	Solid	7470A	577042
480-183377-4 MSD	DW3-OUT-SP-004	TCLP	Solid	7470A	577042

Analysis Batch: 577398

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-1	DW1-BLDG1-SP-001	TCLP	Solid	6010C	577027
480-183377-2	DW2-BLDG1-SP-002	TCLP	Solid	6010C	577027
480-183377-3	DW5-BLDG8-SP-003	TCLP	Solid	6010C	577027
480-183377-4	DW3-OUT-SP-004	TCLP	Solid	6010C	577027
480-183377-5	DW4-OUT-SP-005	TCLP	Solid	6010C	577027
LB 480-576811/1-B	Method Blank	TCLP	Solid	6010C	577027
MB 480-577027/2-A	Method Blank	Total/NA	Solid	6010C	577027
LCS 480-577027/3-A	Lab Control Sample	Total/NA	Solid	6010C	577027
480-183377-4 MS	DW3-OUT-SP-004	TCLP	Solid	6010C	577027
480-183377-4 MSD	DW3-OUT-SP-004	TCLP	Solid	6010C	577027

General Chemistry

Analysis Batch: 576699

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-1	DW1-BLDG1-SP-001	Total/NA	Solid	Moisture	
480-183377-2	DW2-BLDG1-SP-002	Total/NA	Solid	Moisture	
480-183377-3	DW5-BLDG8-SP-003	Total/NA	Solid	Moisture	
480-183377-4	DW3-OUT-SP-004	Total/NA	Solid	Moisture	
480-183377-5	DW4-OUT-SP-005	Total/NA	Solid	Moisture	

Analysis Batch: 577104

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-1	DW1-BLDG1-SP-001	Total/NA	Solid	9045D	
480-183377-2	DW2-BLDG1-SP-002	Total/NA	Solid	9045D	
480-183377-3	DW5-BLDG8-SP-003	Total/NA	Solid	9045D	
480-183377-4	DW3-OUT-SP-004	Total/NA	Solid	9045D	
480-183377-5	DW4-OUT-SP-005	Total/NA	Solid	9045D	
LCS 480-577104/1	Lab Control Sample	Total/NA	Solid	9045D	

Analysis Batch: 577474

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-1	DW1-BLDG1-SP-001	Total/NA	Solid	1010A	
480-183377-2	DW2-BLDG1-SP-002	Total/NA	Solid	1010A	
480-183377-3	DW5-BLDG8-SP-003	Total/NA	Solid	1010A	
480-183377-4	DW3-OUT-SP-004	Total/NA	Solid	1010A	
480-183377-5	DW4-OUT-SP-005	Total/NA	Solid	1010A	
LCS 480-577474/1	Lab Control Sample	Total/NA	Solid	1010A	
480-183377-1 DU	DW1-BLDG1-SP-001	Total/NA	Solid	1010A	

Client Sample ID: DW1-BLDG1-SP-001 — Lab Sample ID: 480-183377-1

Date Collected: 04/14/21 10:10 — **Matrix: Solid**
Date Received: 04/15/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			576813	04/19/21 08:59	LMS	TAL BUF
TCLP	Analysis	8260C		10	577160	04/21/21 16:58	CRL	TAL BUF
TCLP	Leach	1311			576811	04/19/21 08:50	LMS	TAL BUF
TCLP	Prep	3510C			577070	04/20/21 14:51	ATG	TAL BUF
TCLP	Analysis	8270D		1	577181	04/21/21 13:28	JMM	TAL BUF
TCLP	Leach	1311			576811	04/19/21 08:50	LMS	TAL BUF
TCLP	Prep	3510C			576976	04/20/21 11:51	JMP	TAL BUF
TCLP	Analysis	8081B		1	577331	04/22/21 12:01	JLS	TAL BUF
TCLP	Leach	1311			576811	04/19/21 08:50	LMS	TAL BUF
TCLP	Prep	8151A			576977	04/20/21 11:55	JMP	TAL BUF
TCLP	Analysis	8151		1	577206	04/21/21 16:44	RJS	TAL BUF
TCLP	Leach	1311			576811	04/19/21 08:50	LMS	TAL BUF
TCLP	Prep	3010A			577027	04/21/21 07:04	ADM	TAL BUF
TCLP	Analysis	6010C		1	577398	04/22/21 03:53	LMH	TAL BUF
TCLP	Leach	1311			576811	04/19/21 08:50	LMS	TAL BUF
TCLP	Prep	7470A			577042	04/20/21 14:21	BMB	TAL BUF
TCLP	Analysis	7470A		1	577118	04/20/21 18:56	BMB	TAL BUF
Total/NA	Analysis	1010A		1	577474	04/22/21 15:52	KEB	TAL BUF
Total/NA	Analysis	9045D		1	577104	04/20/21 13:00	CSS	TAL BUF
Total/NA	Analysis	Moisture		1	576699	04/16/21 18:58	CLA	TAL BUF

Client Sample ID: DW1-BLDG1-SP-001 — Lab Sample ID: 480-183377-1

Date Collected: 04/14/21 10:10 — **Matrix: Solid**
Date Received: 04/15/21 10:00 — **Percent Solids: 84.6**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035A_L			576876	04/19/21 11:15	WJD	TAL BUF
Total/NA	Analysis	8260C		1	576842	04/19/21 15:14	CDC	TAL BUF
Total/NA	Prep	3550C			576804	04/19/21 08:15	VXF	TAL BUF
Total/NA	Analysis	8270D		5	577005	04/20/21 16:18	PJQ	TAL BUF

Client Sample ID: DW2-BLDG1-SP-002 — Lab Sample ID: 480-183377-2

Date Collected: 04/14/21 10:45 — **Matrix: Solid**
Date Received: 04/15/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			576813	04/19/21 08:59	LMS	TAL BUF
TCLP	Analysis	8260C		10	577160	04/21/21 17:22	CRL	TAL BUF
TCLP	Leach	1311			576811	04/19/21 08:50	LMS	TAL BUF
TCLP	Prep	3510C			577070	04/20/21 14:51	ATG	TAL BUF
TCLP	Analysis	8270D		1	577181	04/21/21 13:52	JMM	TAL BUF
TCLP	Leach	1311			576811	04/19/21 08:50	LMS	TAL BUF
TCLP	Prep	3510C			576976	04/20/21 11:51	JMP	TAL BUF
TCLP	Analysis	8081B		1	577331	04/22/21 12:20	JLS	TAL BUF

Lab Chronicle

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183377-1

Client Sample ID: DW2-BLDG1-SP-002

Lab Sample ID: 480-183377-2

Date Collected: 04/14/21 10:45
Date Received: 04/15/21 10:00

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			577812	04/25/21 09:51	LMS	TAL BUF
TCLP	Prep	8151A			577918	04/26/21 10:16	JMP	TAL BUF
TCLP	Analysis	8151		1	578093	04/28/21 07:14	MAN	TAL BUF
TCLP	Leach	1311			576811	04/19/21 08:50	LMS	TAL BUF
TCLP	Prep	3010A			577027	04/21/21 07:04	ADM	TAL BUF
TCLP	Analysis	6010C		1	577398	04/22/21 04:08	LMH	TAL BUF
TCLP	Leach	1311			576811	04/19/21 08:50	LMS	TAL BUF
TCLP	Prep	7470A			577042	04/20/21 14:21	BMB	TAL BUF
TCLP	Analysis	7470A		1	577118	04/20/21 19:00	BMB	TAL BUF
Total/NA	Analysis	1010A		1	577474	04/22/21 15:52	KEB	TAL BUF
Total/NA	Analysis	9045D		1	577104	04/20/21 13:00	CSS	TAL BUF
Total/NA	Analysis	Moisture		1	576699	04/16/21 18:58	CLA	TAL BUF

Client Sample ID: DW2-BLDG1-SP-002

Lab Sample ID: 480-183377-2

Date Collected: 04/14/21 10:45
Date Received: 04/15/21 10:00

Matrix: Solid
Percent Solids: 88.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035A_L			576876	04/19/21 11:15	WJD	TAL BUF
Total/NA	Analysis	8260C		1	576842	04/19/21 15:38	CDC	TAL BUF
Total/NA	Prep	3550C			576804	04/19/21 08:15	VXF	TAL BUF
Total/NA	Analysis	8270D		10	577225	04/21/21 15:20	JMM	TAL BUF

Client Sample ID: DW5-BLDG8-SP-003

Lab Sample ID: 480-183377-3

Date Collected: 04/14/21 11:45
Date Received: 04/15/21 10:00

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			576813	04/19/21 08:59	LMS	TAL BUF
TCLP	Analysis	8260C		10	577160	04/21/21 17:47	CRL	TAL BUF
TCLP	Leach	1311			576811	04/19/21 08:50	LMS	TAL BUF
TCLP	Prep	3510C			577070	04/20/21 14:51	ATG	TAL BUF
TCLP	Analysis	8270D		1	577181	04/21/21 14:16	JMM	TAL BUF
TCLP	Leach	1311			576811	04/19/21 08:50	LMS	TAL BUF
TCLP	Prep	3510C			576976	04/20/21 11:51	JMP	TAL BUF
TCLP	Analysis	8081B		1	577331	04/22/21 12:40	JLS	TAL BUF
TCLP	Leach	1311			577812	04/25/21 09:51	LMS	TAL BUF
TCLP	Prep	8151A			577918	04/26/21 10:16	JMP	TAL BUF
TCLP	Analysis	8151		1	578093	04/28/21 07:44	MAN	TAL BUF
TCLP	Leach	1311			576811	04/19/21 08:50	LMS	TAL BUF
TCLP	Prep	3010A			577027	04/21/21 07:04	ADM	TAL BUF
TCLP	Analysis	6010C		1	577398	04/22/21 04:12	LMH	TAL BUF
TCLP	Leach	1311			576811	04/19/21 08:50	LMS	TAL BUF
TCLP	Prep	7470A			577042	04/20/21 14:21	BMB	TAL BUF
TCLP	Analysis	7470A		1	577118	04/20/21 19:01	BMB	TAL BUF

Lab Chronicle

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183377-1

Client Sample ID: DW5-BLDG8-SP-003
Lab Sample ID: 480-183377-3
Date Collected: 04/14/21 11:45
Matrix: Solid
Date Received: 04/15/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1010A		1	577474	04/22/21 15:52	KEB	TAL BUF
Total/NA	Analysis	9045D		1	577104	04/20/21 13:00	CSS	TAL BUF
Total/NA	Analysis	Moisture		1	576699	04/16/21 18:58	CLA	TAL BUF

Client Sample ID: DW5-BLDG8-SP-003
Lab Sample ID: 480-183377-3
Date Collected: 04/14/21 11:45
Matrix: Solid
Date Received: 04/15/21 10:00
Percent Solids: 97.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035A_L			576924	04/19/21 17:08	CDC	TAL BUF
Total/NA	Analysis	8260C		1	576931	04/20/21 03:48	WJD	TAL BUF
Total/NA	Prep	3550C			576804	04/19/21 08:15	VXF	TAL BUF
Total/NA	Analysis	8270D		5	577225	04/21/21 15:45	JMM	TAL BUF

Client Sample ID: DW3-OUT-SP-004
Lab Sample ID: 480-183377-4
Date Collected: 04/14/21 13:30
Matrix: Solid
Date Received: 04/15/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			576813	04/19/21 08:59	LMS	TAL BUF
TCLP	Analysis	8260C		10	577160	04/21/21 18:11	CRL	TAL BUF
TCLP	Leach	1311			576811	04/19/21 08:50	LMS	TAL BUF
TCLP	Prep	3510C			577070	04/20/21 14:51	ATG	TAL BUF
TCLP	Analysis	8270D		1	577181	04/21/21 14:40	JMM	TAL BUF
TCLP	Leach	1311			576811	04/19/21 08:50	LMS	TAL BUF
TCLP	Prep	3510C			576976	04/20/21 11:51	JMP	TAL BUF
TCLP	Analysis	8081B		1	577331	04/22/21 12:59	JLS	TAL BUF
TCLP	Leach	1311			576811	04/19/21 08:50	LMS	TAL BUF
TCLP	Prep	8151A			576977	04/20/21 11:55	JMP	TAL BUF
TCLP	Analysis	8151		1	577206	04/21/21 18:42	RJS	TAL BUF
TCLP	Leach	1311			576811	04/19/21 08:50	LMS	TAL BUF
TCLP	Prep	3010A			577027	04/21/21 07:04	ADM	TAL BUF
TCLP	Analysis	6010C		1	577398	04/22/21 04:16	LMH	TAL BUF
TCLP	Leach	1311			576811	04/19/21 08:50	LMS	TAL BUF
TCLP	Prep	7470A			577042	04/20/21 14:21	BMB	TAL BUF
TCLP	Analysis	7470A		1	577118	04/20/21 19:03	BMB	TAL BUF
Total/NA	Analysis	1010A		1	577474	04/22/21 15:52	KEB	TAL BUF
Total/NA	Analysis	9045D		1	577104	04/20/21 13:00	CSS	TAL BUF
Total/NA	Analysis	Moisture		1	576699	04/16/21 18:58	CLA	TAL BUF

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Client Sample ID: DW3-OUT-SP-004

Lab Sample ID: 480-183377-4

Date Collected: 04/14/21 13:30
Date Received: 04/15/21 10:00
Matrix: Solid
Percent Solids: 79.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035A_L			576876	04/19/21 11:15	WJD	TAL BUF
Total/NA	Analysis	8260C		1	576842	04/19/21 16:27	CDC	TAL BUF
Total/NA	Prep	3550C			576804	04/19/21 08:15	VXF	TAL BUF
Total/NA	Analysis	8270D		10	577005	04/20/21 17:31	PJQ	TAL BUF

Client Sample ID: DW4-OUT-SP-005

Lab Sample ID: 480-183377-5

Date Collected: 04/14/21 13:45
Date Received: 04/15/21 10:00
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			576813	04/19/21 08:59	LMS	TAL BUF
TCLP	Analysis	8260C		10	577160	04/21/21 18:35	CRL	TAL BUF
TCLP	Leach	1311			576811	04/19/21 08:50	LMS	TAL BUF
TCLP	Prep	3510C			577070	04/20/21 14:51	ATG	TAL BUF
TCLP	Analysis	8270D		1	577181	04/21/21 15:05	JMM	TAL BUF
TCLP	Leach	1311			576811	04/19/21 08:50	LMS	TAL BUF
TCLP	Prep	3510C			576976	04/20/21 11:51	JMP	TAL BUF
TCLP	Analysis	8081B		1	577331	04/22/21 13:18	JLS	TAL BUF
TCLP	Leach	1311			576811	04/19/21 08:50	LMS	TAL BUF
TCLP	Prep	8151A			576977	04/20/21 11:55	JMP	TAL BUF
TCLP	Analysis	8151		1	577206	04/21/21 19:12	RJS	TAL BUF
TCLP	Leach	1311			576811	04/19/21 08:50	LMS	TAL BUF
TCLP	Prep	3010A			577027	04/21/21 07:04	ADM	TAL BUF
TCLP	Analysis	6010C		1	577398	04/22/21 04:35	LMH	TAL BUF
TCLP	Leach	1311			576811	04/19/21 08:50	LMS	TAL BUF
TCLP	Prep	7470A			577042	04/20/21 14:21	BMB	TAL BUF
TCLP	Analysis	7470A		1	577118	04/20/21 19:08	BMB	TAL BUF
Total/NA	Analysis	1010A		1	577474	04/22/21 15:52	KEB	TAL BUF
Total/NA	Analysis	9045D		1	577104	04/20/21 13:00	CSS	TAL BUF
Total/NA	Analysis	Moisture		1	576699	04/16/21 18:58	CLA	TAL BUF

Client Sample ID: DW4-OUT-SP-005

Lab Sample ID: 480-183377-5

Date Collected: 04/14/21 13:45
Date Received: 04/15/21 10:00
Matrix: Solid
Percent Solids: 71.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035A_L			576924	04/19/21 17:08	CDC	TAL BUF
Total/NA	Analysis	8260C		1	576931	04/20/21 04:12	WJD	TAL BUF
Total/NA	Prep	3550C			576804	04/19/21 08:15	VXF	TAL BUF
Total/NA	Analysis	8270D		10	577005	04/20/21 17:55	PJQ	TAL BUF

Laboratory References:

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Accreditation/Certification Summary

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183377-1

Laboratory: Eurofins TestAmerica, Buffalo

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
New York	NELAP	10026	04-01-22

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
7470A	7470A	Solid	Mercury
9045D		Solid	Temperature
Moisture		Solid	Percent Moisture
Moisture		Solid	Percent Solids

Method Summary

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183377-1

Method	Method Description	Protocol	Laboratory
8260C	TCLP Volatiles	SW846	TAL BUF
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL BUF
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL BUF
8081B	Organochlorine Pesticides (GC)	SW846	TAL BUF
8151	TCLP Herbicides	SW846	TAL BUF
6010C	Metals (ICP)	SW846	TAL BUF
7470A	TCLP Mercury	SW846	TAL BUF
1010A	Ignitability, Pensky-Martens Closed-Cup Method	SW846	TAL BUF
9045D	pH	SW846	TAL BUF
Moisture	Percent Moisture	EPA	TAL BUF
1311	TCLP Extraction	SW846	TAL BUF
3010A	Preparation, Total Metals	SW846	TAL BUF
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	TAL BUF
3550C	Ultrasonic Extraction	SW846	TAL BUF
5030C	Purge and Trap	SW846	TAL BUF
5035A_L	Closed System Purge and Trap	SW846	TAL BUF
7470A	Preparation, Mercury	SW846	TAL BUF
8151A	Extraction (Herbicides)	SW846	TAL BUF

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Sample Summary

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183377-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
480-183377-1	DW1-BLDG1-SP-001	Solid	04/14/21 10:10	04/15/21 10:00	
480-183377-2	DW2-BLDG1-SP-002	Solid	04/14/21 10:45	04/15/21 10:00	
480-183377-3	DW5-BLDG8-SP-003	Solid	04/14/21 11:45	04/15/21 10:00	
480-183377-4	DW3-OUT-SP-004	Solid	04/14/21 13:30	04/15/21 10:00	
480-183377-5	DW4-OUT-SP-005	Solid	04/14/21 13:45	04/15/21 10:00	

Eurofins TestAmerica, Buffalo

10 Hazelwood Drive
Amherst, NY 14228-2298
Phone: 716-691-2600 Fax: 716-691-7991

Chain of Custody Record

eurofins | Environment Testing America

Client Information	Sampler: K. ZATWARNICKI	Lab PM: Fischer, Brian J	Carrier Tracking No(s):	COC No: 480-158821-34919.1
Client Contact: Mr. Glenn Esler	Phone:	E-Mail: Brian.Fischer@Eurofinset.com	State of Origin: NY	Page: Page 1 of 3
Company: Integral Consulting Inc	PWSID:	Analysis Requested		Job #:
Address: 319 SW Washington Ave Suite 1150	Due Date Requested:			Preservation Codes:
City: Portland	TAT Requested (days): Standard			A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid; M - Hexane, N - None, O - AsNaO2
State, Zip: OR, 97204	Compliance Project: Δ Yes Δ No			
Phone: 503-943-3617(Tel)	PO #: Purchase Order not required			
Email: gesler@integral-corp.com	WO #:			
Project Name: Project EF1017	Project #: 48023604			
Site:	SSOW#:			

480-183377 Chain of Custody

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010C, 7470A, 8081B, 8151A, 8270D	8260C - TCLP Volatiles	1010A, 8270D, 9045D	8260C - TCL list OLM04.2	8082A - TCL PCBs - OLM04.2	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	N	N	N	N		
DW1 - BLDG1-SP-001	4/14/21	1010	G	Solid	N	Y	X	X	X	X			
DW2 - BLDG1-SP-002		1045		Solid									
DW5 - BLDG8 - SP-003		1145		Solid									
DW3 - OUT - SP-004		1330		Solid									
DW4 - OUT - SP - 005		1345		Solid									
BLDG 3-SP-006		1430		Solid									
				Solid									
				Solid									
				Solid									
				Solid									
				Solid									

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Deliverable Requested: I, II, III, IV, Other (specify) Cat B lvl 2

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For ______ Months

Special Instructions/QC Requirements:

Empty Kit Relinquished by:		Date:	Time:		Method of Shipment:
Relinquished by: Katelyn Zatwarnicki	Date/Time: 4/14/21 1600	Company: Integral	Received by: C. Wallace	Date/Time: 4/15/21 1000	Company: TAB
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: #1 3.3		

Ver: 11/01/2020

Login Sample Receipt Checklist

Client: Integral Consulting Inc

Job Number: 480-183377-1

Login Number: 183377
List Number: 1
Creator: Wallace, Cameron

List Source: Eurofins TestAmerica, Buffalo

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	INTEGRAL
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	N/A	

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Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

Laboratory Job ID: 480-183377-2
Client Project/Site: Project EF1017

For:
Integral Consulting Inc
319 SW Washington Ave
Suite 1150
Portland, Oregon 97204

Attn: Mr. Glenn Esler

Authorized for release by:
5/11/2021 4:45:54 PM
Rebecca Jones, Project Management Assistant I
Rebecca.Jones@Eurofinset.com

Designee for

Brian Fischer, Manager of Project Management
(716)504-9835
Brian.Fischer@Eurofinset.com

The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
vs	Reported analyte concentrations are below 200 ug/kg and may be biased low due to the sample not being collected according to 5035A-L low-level specifications.

GC/MS Semi VOA

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

GC Semi VOA

Qualifier	Qualifier Description
*1	LCS/LCSD RPD exceeds control limits.
S1-	Surrogate recovery exceeds control limits, low biased.

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 480-183377-2

Laboratory: Eurofins TestAmerica, Buffalo

Narrative

Job Narrative
480-183377-2

Comments
No additional comments.

Receipt
The samples were received on 4/15/2021 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.3º C.

GC/MS VOA
Method 8260C: The following sample was analyzed at a reduced weight due to the nature of the sample matrix: BLDG-3-SP-006 (480-183377-6). Elevated reporting limits (RLs) are provided.

Method 8260C: The continuing calibration verification (CCV) associated with batch 480-577160 recovered above the upper control limit for Vinyl chloride. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated sample is impacted: BLDG-3-SP-006 (480-183377-6).

Method 8260C: The following samples were diluted due to the nature of the TCLP solid sample matrix: BLDG-3-SP-006 (480-183377-6) and (LB 480-576813/1-A). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC/MS Semi VOA
Method 8270D: The following sample was diluted due to color, appearance, and viscosity: BLDG-3-SP-006 (480-183377-6). Elevated reporting limits (RL) are provided.

Method 8270D: The laboratory control sample duplicate (LCSD) for preparation batch 480-576811 and 480-577070 and analytical batch 480-577181 recovered outside control limits for the following analytes: 2,4-Dinitrotoluene. These analytes were biased high in the LCSD and were not detected in the associated samples; therefore, the data have been reported.

Method 8270D: The following sample was diluted due to color, appearance, and viscosity: BLDG-3-SP-006 (480-183377-6). Elevated reporting limits (RL) are provided.

Method 8270D: The continuing calibration verification (CCV) associated with batch 480-577225 recovered outside acceptance criteria, low biased, for 2,2'-oxybis[1-chloropropane]. A reporting limit (RL) standard was analyzed, and the target analyte was detected. Since the associated samples were non-detect for this analyte, the data have been reported.

Method 8270D: The minimum response factor (RF) criteria for the continuing calibration verification (CCV) analyzed in batch 480-577225 was outside criteria for the following analyte(s): Bis(2-chloroethoxy)methane. As indicated in the reference method, sample analysis may proceed; however, any detection or non-detection for the affected analyte(s) is considered estimated.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC Semi VOA
Method 8151A: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 480-576811 and 480-576977 and analytical batch 480-577206 recovered outside control limits for the following analyte: 2,4-D

Method 8151A: Surrogate recovery for the following samples were outside control limits: BLDG-3-SP-006 (480-183377-6) and (LB 480-576811/1-D). This is routine for TCLP herbicides, due to the pH effects created during the leaching process, inhibiting the herbicide derivatization of the free acid components.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals

Job ID: 480-183377-2 (Continued)

Laboratory: Eurofins TestAmerica, Buffalo (Continued)

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
Methods 9045C, 9045D: This analysis is normally performed in the field and has a method-defined holding time of 15 minutes. The following sample has been qualified with the "HF" flag to indicate analysis was performed in the laboratory outside the 15 minute timeframe: BLDG-3-SP-006 (480-183377-6).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep
Method 3510C: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 480-576811 and 480-576976.

Method 8151A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 480-576811 and 480-576977.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample ID: BLDG-3-SP-006

Lab Sample ID: 480-183377-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acenaphthylene	700	J	2100	270	ug/Kg	10	☼	8270D	Total/NA
Anthracene	1000	J	2100	520	ug/Kg	10	☼	8270D	Total/NA
Benzo[a]anthracene	3900		2100	210	ug/Kg	10	☼	8270D	Total/NA
Benzo[a]pyrene	4800		2100	310	ug/Kg	10	☼	8270D	Total/NA
Benzo[b]fluoranthene	6900		2100	330	ug/Kg	10	☼	8270D	Total/NA
Benzo[g,h,i]perylene	4000		2100	220	ug/Kg	10	☼	8270D	Total/NA
Benzo[k]fluoranthene	3400		2100	270	ug/Kg	10	☼	8270D	Total/NA
Bis(2-ethylhexyl) phthalate	14000		2100	720	ug/Kg	10	☼	8270D	Total/NA
Carbazole	600	J	2100	250	ug/Kg	10	☼	8270D	Total/NA
Chrysene	6700		2100	470	ug/Kg	10	☼	8270D	Total/NA
Di-n-butyl phthalate	1300	J	2100	360	ug/Kg	10	☼	8270D	Total/NA
Di-n-octyl phthalate	860	J	2100	250	ug/Kg	10	☼	8270D	Total/NA
Dibenz(a,h)anthracene	1100	J	2100	370	ug/Kg	10	☼	8270D	Total/NA
Dibenzofuran	270	J	2100	250	ug/Kg	10	☼	8270D	Total/NA
Fluoranthene	13000		2100	220	ug/Kg	10	☼	8270D	Total/NA
Indeno[1,2,3-cd]pyrene	3500		2100	260	ug/Kg	10	☼	8270D	Total/NA
Phenanthrene	6000		2100	310	ug/Kg	10	☼	8270D	Total/NA
Pyrene	10000		2100	250	ug/Kg	10	☼	8270D	Total/NA
Arsenic	0.13		0.015	0.0056	mg/L	1		6010C	TCLP
Barium	2.0		1.0	0.10	mg/L	1		6010C	TCLP
Cadmium	0.012		0.0020	0.00050	mg/L	1		6010C	TCLP
Lead	114		0.10	0.015	mg/L	5		6010C	TCLP
Flashpoint	>180		50.0	50.0	Degrees F	1		1010A	Total/NA
pH	7.5	HF	0.1	0.1	SU	1		9045D	Total/NA
Temperature	21.1	HF	0.001	0.001	Degrees C	1		9045D	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183377-2

Client Sample ID: BLDG-3-SP-006

Lab Sample ID: 480-183377-6

Date Collected: 04/14/21 14:30
Date Received: 04/15/21 10:00

Matrix: Solid
Percent Solids: 79.1

Method: 8260C - TCLP Volatiles - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.010	0.0041	mg/L			04/21/21 18:59	10
Carbon tetrachloride	ND		0.010	0.0027	mg/L			04/21/21 18:59	10
Chlorobenzene	ND		0.010	0.0075	mg/L			04/21/21 18:59	10
Chloroform	ND		0.010	0.0034	mg/L			04/21/21 18:59	10
1,2-Dichloroethane	ND		0.010	0.0021	mg/L			04/21/21 18:59	10
1,1-Dichloroethene	ND		0.010	0.0029	mg/L			04/21/21 18:59	10
2-Butanone (MEK)	ND		0.050	0.013	mg/L			04/21/21 18:59	10
Tetrachloroethene	ND		0.010	0.0036	mg/L			04/21/21 18:59	10
Trichloroethene	ND		0.010	0.0046	mg/L			04/21/21 18:59	10
Vinyl chloride	ND		0.010	0.0090	mg/L			04/21/21 18:59	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*77 - 120*		*04/21/21 18:59*	*10*
Toluene-d8 (Surr)	*97*		*80 - 120*		*04/21/21 18:59*	*10*
4-Bromofluorobenzene (Surr)	*102*		*73 - 120*		*04/21/21 18:59*	*10*
Dibromofluoromethane (Surr)	*110*		*75 - 123*		*04/21/21 18:59*	*10*

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND	vs	55	4.0	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
1,1,2,2-Tetrachloroethane	ND	vs	55	8.8	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
1,1,2-Trichloroethane	ND	vs	55	7.1	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	vs	55	12	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
1,1-Dichloroethane	ND	vs	55	6.7	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
1,1-Dichloroethene	ND	vs	55	6.7	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
1,2,4-Trichlorobenzene	ND	vs	55	3.3	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
1,2-Dibromo-3-Chloropropane	ND	vs	55	27	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
1,2-Dichlorobenzene	ND	vs	55	4.3	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
1,2-Dichloroethane	ND	vs	55	2.7	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
1,2-Dichloropropane	ND	vs	55	27	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
1,3-Dichlorobenzene	ND	vs	55	2.8	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
1,4-Dichlorobenzene	ND	vs	55	7.6	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
2-Butanone (MEK)	ND	vs	270	20	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
2-Hexanone	ND	vs	270	27	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
4-Methyl-2-pentanone (MIBK)	ND	vs	270	18	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
Acetone	ND	vs	270	46	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
Benzene	ND	vs	55	2.7	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
Bromodichloromethane	ND	vs	55	7.3	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
Bromoform	ND	vs	55	27	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
Bromomethane	ND	vs	55	4.9	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
Carbon disulfide	ND	vs	55	27	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
Carbon tetrachloride	ND	vs	55	5.3	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
Chlorobenzene	ND	vs	55	7.2	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
Dibromochloromethane	ND	vs	55	7.0	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
Chloroethane	ND	vs	55	12	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
Chloroform	ND	vs	55	3.4	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
Chloromethane	ND	vs	55	3.3	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
cis-1,2-Dichloroethene	ND	vs	55	7.0	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
cis-1,3-Dichloropropene	ND	vs	55	7.9	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
Cyclohexane	ND	vs	55	7.6	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1

Client Sample ID: BLDG-3-SP-006
Date Collected: 04/14/21 14:30
Date Received: 04/15/21 10:00

Lab Sample ID: 480-183377-6
Matrix: Solid
Percent Solids: 79.1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND	vs	55	4.5	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
Ethylbenzene	ND	vs	55	3.8	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
1,2-Dibromoethane	ND	vs	55	7.0	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
Isopropylbenzene	ND	vs	55	8.2	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
Methyl acetate	ND	vs	270	33	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
Methyl tert-butyl ether	ND	vs	55	5.4	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
Methylcyclohexane	ND	vs	55	8.3	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
Methylene Chloride	ND	vs	55	25	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
Styrene	ND	vs	55	2.7	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
Tetrachloroethene	ND	vs	55	7.3	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
Toluene	ND	vs	55	4.1	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
trans-1,2-Dichloroethene	ND	vs	55	5.6	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
trans-1,3-Dichloropropene	ND	vs	55	24	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
Trichloroethene	ND	vs	55	12	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
Trichlorofluoromethane	ND	vs	55	5.2	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
Vinyl chloride	ND	vs	55	6.7	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1
Xylenes, Total	ND	vs	110	9.2	ug/Kg	☼	04/19/21 11:15	04/19/21 17:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*71 - 125*	*04/19/21 11:15*	*04/19/21 17:16*	*1*
1,2-Dichloroethane-d4 (Surr)	*111*		*64 - 126*	*04/19/21 11:15*	*04/19/21 17:16*	*1*
4-Bromofluorobenzene (Surr)	*105*		*72 - 126*	*04/19/21 11:15*	*04/19/21 17:16*	*1*
Dibromofluoromethane (Surr)	*104*		*60 - 140*	*04/19/21 11:15*	*04/19/21 17:16*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biphenyl	ND		2100	310	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
bis (2-chloroisopropyl) ether	ND		2100	420	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
2,4,5-Trichlorophenol	ND		2100	570	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
2,4,6-Trichlorophenol	ND		2100	420	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
2,4-Dichlorophenol	ND		2100	220	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
2,4-Dimethylphenol	ND		2100	510	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
2,4-Dinitrophenol	ND		21000	9700	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
2,4-Dinitrotoluene	ND		2100	430	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
2,6-Dinitrotoluene	ND		2100	250	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
2-Chloronaphthalene	ND		2100	350	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
1,4-Dioxane	ND		1200	680	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
2-Chlorophenol	ND		4100	380	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
2-Methylnaphthalene	ND		2100	420	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
2-Methylphenol	ND		2100	250	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
2-Nitroaniline	ND		4100	310	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
2-Nitrophenol	ND		2100	600	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
3,3'-Dichlorobenzidine	ND		4100	2500	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
3-Nitroaniline	ND		4100	580	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
4,6-Dinitro-2-methylphenol	ND		4100	2100	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
4-Bromophenyl phenyl ether	ND		2100	300	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
4-Chloro-3-methylphenol	ND		2100	520	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
4-Chloroaniline	ND		2100	520	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
4-Chlorophenyl phenyl ether	ND		2100	260	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
4-Methylphenol	ND		4100	250	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183377-2

Client Sample ID: BLDG-3-SP-006
Date Collected: 04/14/21 14:30
Date Received: 04/15/21 10:00

Lab Sample ID: 480-183377-6
Matrix: Solid
Percent Solids: 79.1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4-Nitroaniline	ND		4100	1100	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
4-Nitrophenol	ND		4100	1500	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
Acenaphthene	ND		2100	310	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
Acenaphthylene	**700**	**J**	2100	270	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
Acetophenone	ND		2100	290	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
Anthracene	**1000**	**J**	2100	520	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
Atrazine	ND		2100	730	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
Benzaldehyde	ND		2100	1700	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
Benzo[a]anthracene	**3900**		2100	210	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
Benzo[a]pyrene	**4800**		2100	310	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
Benzo[b]fluoranthene	**6900**		2100	330	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
Benzo[g,h,i]perylene	**4000**		2100	220	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
Benzo[k]fluoranthene	**3400**		2100	270	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
Bis(2-chloroethoxy)methane	ND		2100	450	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
Bis(2-chloroethyl)ether	ND		2100	270	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
Bis(2-ethylhexyl) phthalate	**14000**		2100	720	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
Butyl benzyl phthalate	ND		2100	350	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
Caprolactam	ND		2100	630	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
Carbazole	**600**	**J**	2100	250	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
Chrysene	**6700**		2100	470	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
Di-n-butyl phthalate	**1300**	**J**	2100	360	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
Di-n-octyl phthalate	**860**	**J**	2100	250	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
Dibenz(a,h)anthracene	**1100**	**J**	2100	370	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
Dibenzofuran	**270**	**J**	2100	250	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
Diethyl phthalate	ND		2100	270	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
Dimethyl phthalate	ND		2100	250	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
Fluoranthene	**13000**		2100	220	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
Fluorene	ND		2100	250	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
Hexachlorobenzene	ND		2100	290	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
Hexachlorobutadiene	ND		2100	310	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
Hexachlorocyclopentadiene	ND		2100	290	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
Hexachloroethane	ND		2100	270	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
Indeno[1,2,3-cd]pyrene	**3500**		2100	260	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
Isophorone	ND		2100	450	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
N-Nitrosodi-n-propylamine	ND		2100	360	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
N-Nitrosodiphenylamine	ND		2100	1700	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
Naphthalene	ND		2100	270	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
Nitrobenzene	ND		2100	240	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
Pentachlorophenol	ND		4100	2100	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
Phenanthrene	**6000**		2100	310	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
Phenol	ND		2100	320	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10
Pyrene	**10000**		2100	250	ug/Kg	☼	04/19/21 08:15	04/21/21 16:10	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*116*		*54 - 120*	*04/19/21 08:15*	*04/21/21 16:10*	*10*
2-Fluorobiphenyl	*94*		*60 - 120*	*04/19/21 08:15*	*04/21/21 16:10*	*10*
2-Fluorophenol	*76*		*52 - 120*	*04/19/21 08:15*	*04/21/21 16:10*	*10*
Nitrobenzene-d5	*87*		*53 - 120*	*04/19/21 08:15*	*04/21/21 16:10*	*10*
p-Terphenyl-d14	*108*		*79 - 130*	*04/19/21 08:15*	*04/21/21 16:10*	*10*
Phenol-d5	*80*		*54 - 120*	*04/19/21 08:15*	*04/21/21 16:10*	*10*

Client Sample ID: BLDG-3-SP-006
Date Collected: 04/14/21 14:30
Date Received: 04/15/21 10:00

Lab Sample ID: 480-183377-6
Matrix: Solid
Percent Solids: 79.1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.040	0.0018	mg/L		04/20/21 14:51	04/21/21 15:29	1
2,4-Dinitrotoluene	ND	*+	0.020	0.0017	mg/L		04/20/21 14:51	04/21/21 15:29	1
Hexachlorobenzene	ND		0.020	0.0020	mg/L		04/20/21 14:51	04/21/21 15:29	1
Hexachlorobutadiene	ND		0.020	0.0027	mg/L		04/20/21 14:51	04/21/21 15:29	1
Hexachloroethane	ND		0.020	0.0023	mg/L		04/20/21 14:51	04/21/21 15:29	1
3-Methylphenol	ND		0.040	0.0016	mg/L		04/20/21 14:51	04/21/21 15:29	1
2-Methylphenol	ND		0.020	0.0016	mg/L		04/20/21 14:51	04/21/21 15:29	1
4-Methylphenol	ND		0.040	0.0014	mg/L		04/20/21 14:51	04/21/21 15:29	1
Nitrobenzene	ND		0.020	0.0011	mg/L		04/20/21 14:51	04/21/21 15:29	1
Pentachlorophenol	ND		0.040	0.0088	mg/L		04/20/21 14:51	04/21/21 15:29	1
Pyridine	ND		0.10	0.0016	mg/L		04/20/21 14:51	04/21/21 15:29	1
2,4,5-Trichlorophenol	ND		0.020	0.0019	mg/L		04/20/21 14:51	04/21/21 15:29	1
2,4,6-Trichlorophenol	ND		0.020	0.0024	mg/L		04/20/21 14:51	04/21/21 15:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*89*		*41 - 120*	*04/20/21 14:51*	*04/21/21 15:29*	*1*
2-Fluorobiphenyl	*98*		*48 - 120*	*04/20/21 14:51*	*04/21/21 15:29*	*1*
2-Fluorophenol	*49*		*35 - 120*	*04/20/21 14:51*	*04/21/21 15:29*	*1*
Nitrobenzene-d5	*95*		*46 - 120*	*04/20/21 14:51*	*04/21/21 15:29*	*1*
p-Terphenyl-d14	*106*		*60 - 148*	*04/20/21 14:51*	*04/21/21 15:29*	*1*
Phenol-d5	*32*		*22 - 120*	*04/20/21 14:51*	*04/21/21 15:29*	*1*

Method: 8081B - Organochlorine Pesticides (GC) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.00020	0.0000060	mg/L		04/20/21 11:51	04/22/21 13:38	1
Chlordane (technical)	ND		0.0020	0.000029	mg/L		04/20/21 11:51	04/22/21 13:38	1
Endrin	ND		0.00020	0.000014	mg/L		04/20/21 11:51	04/22/21 13:38	1
Heptachlor	ND		0.00020	0.0000085	mg/L		04/20/21 11:51	04/22/21 13:38	1
Heptachlor epoxide	ND		0.00020	0.0000053	mg/L		04/20/21 11:51	04/22/21 13:38	1
Methoxychlor	ND		0.00020	0.000014	mg/L		04/20/21 11:51	04/22/21 13:38	1
Toxaphene	ND		0.0020	0.00012	mg/L		04/20/21 11:51	04/22/21 13:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*69*		*20 - 120*	*04/20/21 11:51*	*04/22/21 13:38*	*1*
DCB Decachlorobiphenyl	*53*		*20 - 120*	*04/20/21 11:51*	*04/22/21 13:38*	*1*
Tetrachloro-m-xylene	*98*		*44 - 120*	*04/20/21 11:51*	*04/22/21 13:38*	*1*
Tetrachloro-m-xylene	*78*		*44 - 120*	*04/20/21 11:51*	*04/22/21 13:38*	*1*

Method: 8151 - TCLP Herbicides - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND		0.0020	0.00036	mg/L		04/20/21 11:55	04/21/21 19:42	1
2,4-D	ND	*1	0.0020	0.00040	mg/L		04/20/21 11:55	04/21/21 19:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*30*	*S1-*	*48 - 132*	*04/20/21 11:55*	*04/21/21 19:42*	*1*
2,4-Dichlorophenylacetic acid	*38*	*S1-*	*48 - 132*	*04/20/21 11:55*	*04/21/21 19:42*	*1*

Method: 6010C - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.13**		0.015	0.0056	mg/L		04/21/21 07:04	04/22/21 04:39	1
Barium	**2.0**		1.0	0.10	mg/L		04/21/21 07:04	04/22/21 04:39	1

Client Sample ID: BLDG-3-SP-006
Date Collected: 04/14/21 14:30
Date Received: 04/15/21 10:00

Lab Sample ID: 480-183377-6
Matrix: Solid
Percent Solids: 79.1

Method: 6010C - Metals (ICP) - TCLP (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	**0.012**		0.0020	0.00050	mg/L		04/21/21 07:04	04/22/21 04:39	1
Chromium	ND		0.020	0.010	mg/L		04/21/21 07:04	04/22/21 04:39	1
Lead	**114**		0.10	0.015	mg/L		04/21/21 07:04	04/22/21 13:20	5
Selenium	ND		0.025	0.0087	mg/L		04/21/21 07:04	04/22/21 04:39	1
Silver	ND		0.0060	0.0017	mg/L		04/21/21 07:04	04/22/21 04:39	1

Method: 7470A - TCLP Mercury - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		04/20/21 14:21	04/20/21 19:09	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Flashpoint	**>180**		50.0	50.0	Degrees F			04/22/21 15:52	1
pH	**7.5**	**HF**	0.1	0.1	SU			04/20/21 13:00	1
Temperature	**21.1**	**HF**	0.001	0.001	Degrees C			04/20/21 13:00	1

Method: 8260C - TCLP Volatiles

Matrix: Solid

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TOL (80-120)	DCA (77-120)	BFB (73-120)	DBFM (75-123)
LCS 480-577160/5	Lab Control Sample	97	99	105	105
MB 480-577160/7	Method Blank	96	104	106	108

Surrogate Legend

TOL = Toluene-d8 (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260C - TCLP Volatiles

Matrix: Solid

Prep Type: TCLP

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCA (77-120)	TOL (80-120)	BFB (73-120)	DBFM (75-123)
480-183377-6	BLDG-3-SP-006	105	97	102	110
LB 480-576813/1-A	Method Blank	104	98	107	105

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Solid

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TOL (71-125)	DCA (64-126)	BFB (72-126)	DBFM (60-140)
480-183377-6	BLDG-3-SP-006	101	111	105	104
LCS 480-576876/1-A	Lab Control Sample	98	112	109	101
MB 480-576876/2-A	Method Blank	100	113	109	104

Surrogate Legend

TOL = Toluene-d8 (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Solid

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TBP (54-120)	FBP (60-120)	2FP (52-120)	NBZ (53-120)	TPHd14 (79-130)	PHL (54-120)
480-183377-6	BLDG-3-SP-006	116	94	76	87	108	80
LCS 480-576804/2-A	Lab Control Sample	90	90	80	87	99	78
MB 480-576804/1-A	Method Blank	76	94	80	90	107	82

Surrogate Legend

TBP = 2,4,6-Tribromophenol
FBP = 2-Fluorobiphenyl

2FP = 2-Fluorophenol
NBZ = Nitrobenzene-d5
TPHd14 = p-Terphenyl-d14
PHL = Phenol-d5

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Solid

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)					
		TBP	FBP	2FP	NBZ	TPHd14	PHL
Lab Sample ID	Client Sample ID	(41-120)	(48-120)	(35-120)	(46-120)	(60-148)	(22-120)
LCS 480-577070/2-A	Lab Control Sample	95	100	53	97	106	36
LCSD 480-577070/3-A	Lab Control Sample Dup	96	97	51	97	108	34
MB 480-577070/1-A	Method Blank	75	89	47	87	103	30

Surrogate Legend

TBP = 2,4,6-Tribromophenol
FBP = 2-Fluorobiphenyl
2FP = 2-Fluorophenol
NBZ = Nitrobenzene-d5
TPHd14 = p-Terphenyl-d14
PHL = Phenol-d5

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Solid

Prep Type: TCLP

		Percent Surrogate Recovery (Acceptance Limits)					
		TBP	FBP	2FP	NBZ	TPHd14	PHL
Lab Sample ID	Client Sample ID	(41-120)	(48-120)	(35-120)	(46-120)	(60-148)	(22-120)
480-183377-6	BLDG-3-SP-006	89	98	49	95	106	32
LB 480-576811/1-F	Method Blank	89	100	51	100	107	34

Surrogate Legend

TBP = 2,4,6-Tribromophenol
FBP = 2-Fluorobiphenyl
2FP = 2-Fluorophenol
NBZ = Nitrobenzene-d5
TPHd14 = p-Terphenyl-d14
PHL = Phenol-d5

Method: 8081B - Organochlorine Pesticides (GC)

Matrix: Solid

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCBP1	DCBP2	TCX1	TCX2
Lab Sample ID	Client Sample ID	(20-120)	(20-120)	(44-120)	(44-120)
LCS 480-576976/2-A	Lab Control Sample	53	43	79	85
LCSD 480-576976/3-A	Lab Control Sample Dup	52	45	77	81
MB 480-576976/1-A	Method Blank	50	49	94	81

Surrogate Legend

DCBP = DCB Decachlorobiphenyl
TCX = Tetrachloro-m-xylene

Surrogate Summary

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183377-2

Method: 8081B - Organochlorine Pesticides (GC)

Matrix: Solid **Prep Type: TCLP**

		Percent Surrogate Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	DCBP1 (20-120)	DCBP2 (20-120)	TCX1 (44-120)	TCX2 (44-120)
480-183377-6	BLDG-3-SP-006	69	53	98	78
LB 480-576811/1-C	Method Blank	75	65	105	88

Surrogate Legend

DCBP = DCB Decachlorobiphenyl
TCX = Tetrachloro-m-xylene

Method: 8151 - TCLP Herbicides

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	DCPAA1 (48-132)	DCPAA2 (48-132)
LCS 480-576977/2-A	Lab Control Sample	90	60
LCSD 480-576977/3-A	Lab Control Sample Dup	61	41 S1-
MB 480-576977/1-A	Method Blank	77	72

Surrogate Legend

DCPAA = 2,4-Dichlorophenylacetic acid

Method: 8151 - TCLP Herbicides

Matrix: Solid **Prep Type: TCLP**

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	DCPAA1 (48-132)	DCPAA2 (48-132)
480-183377-6	BLDG-3-SP-006	30 S1-	38 S1-
LB 480-576811/1-D	Method Blank	15 S1-	19 S1-

Surrogate Legend

DCPAA = 2,4-Dichlorophenylacetic acid

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183377-2

Method: 8260C - TCLP Volatiles

Lab Sample ID: MB 480-577160/7
Matrix: Solid
Analysis Batch: 577160

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.0010	0.00029	mg/L			04/21/21 11:04	1
1,2-Dichloroethane	ND		0.0010	0.00021	mg/L			04/21/21 11:04	1
2-Butanone (MEK)	ND		0.0050	0.0013	mg/L			04/21/21 11:04	1
Benzene	ND		0.0010	0.00041	mg/L			04/21/21 11:04	1
Carbon tetrachloride	ND		0.0010	0.00027	mg/L			04/21/21 11:04	1
Chlorobenzene	ND		0.0010	0.00075	mg/L			04/21/21 11:04	1
Chloroform	ND		0.0010	0.00034	mg/L			04/21/21 11:04	1
Tetrachloroethene	ND		0.0010	0.00036	mg/L			04/21/21 11:04	1
Trichloroethene	ND		0.0010	0.00046	mg/L			04/21/21 11:04	1
Vinyl chloride	ND		0.0010	0.00090	mg/L			04/21/21 11:04	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*96*		*80 - 120*		*04/21/21 11:04*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*77 - 120*		*04/21/21 11:04*	*1*
4-Bromofluorobenzene (Surr)	*106*		*73 - 120*		*04/21/21 11:04*	*1*
Dibromofluoromethane (Surr)	*108*		*75 - 123*		*04/21/21 11:04*	*1*

Lab Sample ID: LCS 480-577160/5
Matrix: Solid
Analysis Batch: 577160

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	0.0250	0.0283		mg/L		113	66 - 127
1,2-Dichloroethane	0.0250	0.0259		mg/L		104	75 - 120
2-Butanone (MEK)	0.125	0.163		mg/L		131	57 - 140
Benzene	0.0250	0.0263		mg/L		105	71 - 124
Carbon tetrachloride	0.0250	0.0268		mg/L		107	72 - 134
Chlorobenzene	0.0250	0.0258		mg/L		103	80 - 120
Chloroform	0.0250	0.0280		mg/L		112	73 - 127
Tetrachloroethene	0.0250	0.0279		mg/L		112	74 - 122
Trichloroethene	0.0250	0.0270		mg/L		108	74 - 123
Vinyl chloride	0.0250	0.0308		mg/L		123	65 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*97*		*80 - 120*
1,2-Dichloroethane-d4 (Surr)	*99*		*77 - 120*
4-Bromofluorobenzene (Surr)	*105*		*73 - 120*
Dibromofluoromethane (Surr)	*105*		*75 - 123*

Lab Sample ID: LB 480-576813/1-A
Matrix: Solid
Analysis Batch: 577160

Client Sample ID: Method Blank
Prep Type: TCLP

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.010	0.0029	mg/L			04/21/21 15:45	10
1,2-Dichloroethane	ND		0.010	0.0021	mg/L			04/21/21 15:45	10
2-Butanone (MEK)	ND		0.050	0.013	mg/L			04/21/21 15:45	10
Benzene	ND		0.010	0.0041	mg/L			04/21/21 15:45	10

Method: 8260C - TCLP Volatiles (Continued)

Lab Sample ID: LB 480-576813/1-A
Matrix: Solid
Analysis Batch: 577160

Client Sample ID: Method Blank
Prep Type: TCLP

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	ND		0.010	0.0027	mg/L			04/21/21 15:45	10
Chlorobenzene	ND		0.010	0.0075	mg/L			04/21/21 15:45	10
Chloroform	ND		0.010	0.0034	mg/L			04/21/21 15:45	10
Tetrachloroethene	ND		0.010	0.0036	mg/L			04/21/21 15:45	10
Trichloroethene	ND		0.010	0.0046	mg/L			04/21/21 15:45	10
Vinyl chloride	ND		0.010	0.0090	mg/L			04/21/21 15:45	10

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*80 - 120*		*04/21/21 15:45*	*10*
1,2-Dichloroethane-d4 (Surr)	*104*		*77 - 120*		*04/21/21 15:45*	*10*
4-Bromofluorobenzene (Surr)	*107*		*73 - 120*		*04/21/21 15:45*	*10*
Dibromofluoromethane (Surr)	*105*		*75 - 123*		*04/21/21 15:45*	*10*

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 480-576876/2-A
Matrix: Solid
Analysis Batch: 576842

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 576876

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5.0	0.36	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
1,1,2,2-Tetrachloroethane	ND		5.0	0.81	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
1,1,2-Trichloroethane	ND		5.0	0.65	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		5.0	1.1	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
1,1-Dichloroethane	ND		5.0	0.61	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
1,1-Dichloroethene	ND		5.0	0.61	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
1,2,4-Trichlorobenzene	ND		5.0	0.30	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
1,2-Dibromo-3-Chloropropane	ND		5.0	2.5	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
1,2-Dichlorobenzene	ND		5.0	0.39	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
1,2-Dichloroethane	ND		5.0	0.25	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
1,2-Dichloropropane	ND		5.0	2.5	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
1,3-Dichlorobenzene	ND		5.0	0.26	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
1,4-Dichlorobenzene	ND		5.0	0.70	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
2-Butanone (MEK)	ND		25	1.8	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
2-Hexanone	ND		25	2.5	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
4-Methyl-2-pentanone (MIBK)	ND		25	1.6	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Acetone	ND		25	4.2	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Benzene	ND		5.0	0.25	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Bromodichloromethane	ND		5.0	0.67	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Bromoform	ND		5.0	2.5	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Bromomethane	ND		5.0	0.45	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Carbon disulfide	ND		5.0	2.5	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Carbon tetrachloride	ND		5.0	0.48	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Chlorobenzene	ND		5.0	0.66	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Dibromochloromethane	ND		5.0	0.64	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Chloroethane	ND		5.0	1.1	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Chloroform	ND		5.0	0.31	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Chloromethane	ND		5.0	0.30	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
cis-1,2-Dichloroethene	ND		5.0	0.64	ug/Kg		04/19/21 11:15	04/19/21 12:06	1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 480-576876/2-A
Matrix: Solid
Analysis Batch: 576842
Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 576876

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,3-Dichloropropene	ND		5.0	0.72	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Cyclohexane	ND		5.0	0.70	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Dichlorodifluoromethane	ND		5.0	0.41	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Ethylbenzene	ND		5.0	0.35	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
1,2-Dibromoethane	ND		5.0	0.64	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Isopropylbenzene	ND		5.0	0.75	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Methyl acetate	ND		25	3.0	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Methyl tert-butyl ether	ND		5.0	0.49	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Methylcyclohexane	ND		5.0	0.76	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Methylene Chloride	ND		5.0	2.3	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Styrene	ND		5.0	0.25	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Tetrachloroethene	ND		5.0	0.67	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Toluene	ND		5.0	0.38	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
trans-1,2-Dichloroethene	ND		5.0	0.52	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
trans-1,3-Dichloropropene	ND		5.0	2.2	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Trichloroethene	ND		5.0	1.1	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Trichlorofluoromethane	ND		5.0	0.47	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Vinyl chloride	ND		5.0	0.61	ug/Kg		04/19/21 11:15	04/19/21 12:06	1
Xylenes, Total	ND		10	0.84	ug/Kg		04/19/21 11:15	04/19/21 12:06	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*71 - 125*	*04/19/21 11:15*	*04/19/21 12:06*	*1*
1,2-Dichloroethane-d4 (Surr)	*113*		*64 - 126*	*04/19/21 11:15*	*04/19/21 12:06*	*1*
4-Bromofluorobenzene (Surr)	*109*		*72 - 126*	*04/19/21 11:15*	*04/19/21 12:06*	*1*
Dibromofluoromethane (Surr)	*104*		*60 - 140*	*04/19/21 11:15*	*04/19/21 12:06*	*1*

Lab Sample ID: LCS 480-576876/1-A
Matrix: Solid
Analysis Batch: 576842
Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 576876

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	50.0	53.5		ug/Kg		107	77 - 121
1,1,2,2-Tetrachloroethane	50.0	49.9		ug/Kg		100	80 - 120
1,1,2-Trichloroethane	50.0	45.7		ug/Kg		91	78 - 122
1,1,2-Trichloro-1,2,2-trifluoroethane	50.0	43.4		ug/Kg		87	60 - 140
1,1-Dichloroethane	50.0	46.6		ug/Kg		93	73 - 126
1,1-Dichloroethene	50.0	44.6		ug/Kg		89	59 - 125
1,2,4-Trichlorobenzene	50.0	52.7		ug/Kg		105	64 - 120
1,2-Dibromo-3-Chloropropane	50.0	55.6		ug/Kg		111	63 - 124
1,2-Dichlorobenzene	50.0	49.2		ug/Kg		98	75 - 120
1,2-Dichloroethane	50.0	52.5		ug/Kg		105	77 - 122
1,2-Dichloropropane	50.0	47.6		ug/Kg		95	75 - 124
1,3-Dichlorobenzene	50.0	49.6		ug/Kg		99	74 - 120
1,4-Dichlorobenzene	50.0	48.8		ug/Kg		98	73 - 120
2-Butanone (MEK)	250	255		ug/Kg		102	70 - 134
2-Hexanone	250	246		ug/Kg		98	59 - 130
4-Methyl-2-pentanone (MIBK)	250	229		ug/Kg		91	65 - 133
Acetone	250	266		ug/Kg		107	61 - 137

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 480-576876/1-A
Matrix: Solid
Analysis Batch: 576842

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 576876

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	50.0	46.8		ug/Kg		94	79 - 127
Bromodichloromethane	50.0	52.3		ug/Kg		105	80 - 122
Bromoform	50.0	52.9		ug/Kg		106	68 - 126
Bromomethane	50.0	48.8		ug/Kg		98	37 - 149
Carbon disulfide	50.0	43.3		ug/Kg		87	64 - 131
Carbon tetrachloride	50.0	52.0		ug/Kg		104	75 - 135
Chlorobenzene	50.0	43.6		ug/Kg		87	76 - 124
Dibromochloromethane	50.0	47.7		ug/Kg		95	76 - 125
Chloroethane	50.0	47.6		ug/Kg		95	69 - 135
Chloroform	50.0	48.4		ug/Kg		97	80 - 120
Chloromethane	50.0	40.6		ug/Kg		81	63 - 127
cis-1,2-Dichloroethene	50.0	46.7		ug/Kg		93	81 - 120
cis-1,3-Dichloropropene	50.0	51.0		ug/Kg		102	80 - 120
Cyclohexane	50.0	45.4		ug/Kg		91	65 - 120
Dichlorodifluoromethane	50.0	51.6		ug/Kg		103	57 - 142
Ethylbenzene	50.0	47.7		ug/Kg		95	80 - 120
1,2-Dibromoethane	50.0	44.9		ug/Kg		90	78 - 120
Isopropylbenzene	50.0	50.0		ug/Kg		100	72 - 120
Methyl acetate	100	92.1		ug/Kg		92	55 - 136
Methyl tert-butyl ether	50.0	50.6		ug/Kg		101	63 - 125
Methylcyclohexane	50.0	47.7		ug/Kg		95	60 - 140
Methylene Chloride	50.0	43.3		ug/Kg		87	61 - 127
Styrene	50.0	46.0		ug/Kg		92	80 - 120
Tetrachloroethene	50.0	48.4		ug/Kg		97	74 - 122
Toluene	50.0	45.7		ug/Kg		91	74 - 128
trans-1,2-Dichloroethene	50.0	47.4		ug/Kg		95	78 - 126
trans-1,3-Dichloropropene	50.0	50.6		ug/Kg		101	73 - 123
Trichloroethene	50.0	50.6		ug/Kg		101	77 - 129
Trichlorofluoromethane	50.0	61.3		ug/Kg		123	65 - 146
Vinyl chloride	50.0	44.9		ug/Kg		90	61 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*98*		*71 - 125*
1,2-Dichloroethane-d4 (Surr)	*112*		*64 - 126*
4-Bromofluorobenzene (Surr)	*109*		*72 - 126*
Dibromofluoromethane (Surr)	*101*		*60 - 140*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 480-576804/1-A
Matrix: Solid
Analysis Batch: 577005

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 576804

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biphenyl	ND		170	25	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
bis (2-chloroisopropyl) ether	ND		170	34	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
2,4-Dichlorophenol	ND		170	18	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
2,4-Dimethylphenol	ND		170	41	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
2,4-Dinitrophenol	ND		1700	780	ug/Kg		04/19/21 08:15	04/20/21 11:04	1

QC Sample Results

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183377-2

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 480-576804/1-A
Matrix: Solid
Analysis Batch: 577005

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 576804

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4-Dinitrotoluene	ND		170	35	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
2,6-Dinitrotoluene	ND		170	20	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
2-Chloronaphthalene	ND		170	28	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
1,4-Dioxane	ND		100	55	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
2,4,5-Trichlorophenol	ND		170	46	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
2-Chlorophenol	ND		330	31	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
2,4,6-Trichlorophenol	ND		170	34	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
2-Methylnaphthalene	ND		170	34	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
2-Methylphenol	ND		170	20	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
2-Nitroaniline	ND		330	25	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
2-Nitrophenol	ND		170	48	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
3,3'-Dichlorobenzidine	ND		330	200	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
3-Nitroaniline	ND		330	47	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
4,6-Dinitro-2-methylphenol	ND		330	170	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
4-Bromophenyl phenyl ether	ND		170	24	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
4-Chloro-3-methylphenol	ND		170	42	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
4-Chloroaniline	ND		170	42	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
4-Chlorophenyl phenyl ether	ND		170	21	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
4-Methylphenol	ND		330	20	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
4-Nitroaniline	ND		330	89	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
4-Nitrophenol	ND		330	120	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Acenaphthene	ND		170	25	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Acenaphthylene	ND		170	22	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Acetophenone	ND		170	23	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Anthracene	ND		170	42	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Atrazine	ND		170	59	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Benzaldehyde	ND		170	130	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Benzo[a]anthracene	ND		170	17	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Benzo[a]pyrene	ND		170	25	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Benzo[b]fluoranthene	ND		170	27	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Benzo[g,h,i]perylene	ND		170	18	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Benzo[k]fluoranthene	ND		170	22	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Bis(2-chloroethoxy)methane	ND		170	36	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Bis(2-chloroethyl)ether	ND		170	22	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Bis(2-ethylhexyl) phthalate	ND		170	58	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Butyl benzyl phthalate	ND		170	28	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Caprolactam	ND		170	51	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Carbazole	ND		170	20	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Chrysene	ND		170	38	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Di-n-butyl phthalate	ND		170	29	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Di-n-octyl phthalate	ND		170	20	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Dibenz(a,h)anthracene	ND		170	30	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Dibenzofuran	ND		170	20	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Diethyl phthalate	ND		170	22	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Dimethyl phthalate	ND		170	20	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Fluoranthene	ND		170	18	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Fluorene	ND		170	20	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Hexachlorobenzene	ND		170	23	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Hexachlorobutadiene	ND		170	25	ug/Kg		04/19/21 08:15	04/20/21 11:04	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 480-576804/1-A
Matrix: Solid
Analysis Batch: 577005

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 576804

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexachlorocyclopentadiene	ND		170	23	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Hexachloroethane	ND		170	22	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Indeno[1,2,3-cd]pyrene	ND		170	21	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Isophorone	ND		170	36	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
N-Nitrosodi-n-propylamine	ND		170	29	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
N-Nitrosodiphenylamine	ND		170	140	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Naphthalene	ND		170	22	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Nitrobenzene	ND		170	19	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Pentachlorophenol	ND		330	170	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Phenanthrene	ND		170	25	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Phenol	ND		170	26	ug/Kg		04/19/21 08:15	04/20/21 11:04	1
Pyrene	ND		170	20	ug/Kg		04/19/21 08:15	04/20/21 11:04	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*76*		*54 - 120*	*04/19/21 08:15*	*04/20/21 11:04*	*1*
2-Fluorobiphenyl	*94*		*60 - 120*	*04/19/21 08:15*	*04/20/21 11:04*	*1*
2-Fluorophenol	*80*		*52 - 120*	*04/19/21 08:15*	*04/20/21 11:04*	*1*
Nitrobenzene-d5	*90*		*53 - 120*	*04/19/21 08:15*	*04/20/21 11:04*	*1*
p-Terphenyl-d14	*107*		*79 - 130*	*04/19/21 08:15*	*04/20/21 11:04*	*1*
Phenol-d5	*82*		*54 - 120*	*04/19/21 08:15*	*04/20/21 11:04*	*1*

Lab Sample ID: LCS 480-576804/2-A
Matrix: Solid
Analysis Batch: 577005

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 576804

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Biphenyl	1660	1450		ug/Kg		87	59 - 120
bis (2-chloroisopropyl) ether	1660	1100		ug/Kg		66	44 - 120
2,4-Dichlorophenol	1660	1560		ug/Kg		94	61 - 120
2,4-Dimethylphenol	1660	1610		ug/Kg		97	59 - 120
2,4-Dinitrophenol	3320	3370		ug/Kg		102	41 - 146
2,4-Dinitrotoluene	1660	1670		ug/Kg		101	63 - 120
2,6-Dinitrotoluene	1660	1610		ug/Kg		97	66 - 120
2-Chloronaphthalene	1660	1470		ug/Kg		88	57 - 120
1,4-Dioxane	1660	713		ug/Kg		43	23 - 120
2,4,5-Trichlorophenol	1660	1580		ug/Kg		95	59 - 126
2-Chlorophenol	1660	1320		ug/Kg		80	53 - 120
2,4,6-Trichlorophenol	1660	1550		ug/Kg		94	59 - 123
2-Methylnaphthalene	1660	1440		ug/Kg		87	59 - 120
2-Methylphenol	1660	1380		ug/Kg		83	54 - 120
2-Nitroaniline	1660	1590		ug/Kg		96	61 - 120
2-Nitrophenol	1660	1500		ug/Kg		90	56 - 120
3,3'-Dichlorobenzidine	3320	3000		ug/Kg		90	54 - 120
3-Nitroaniline	1660	1320		ug/Kg		80	48 - 120
4,6-Dinitro-2-methylphenol	3320	3680		ug/Kg		111	49 - 122
4-Bromophenyl phenyl ether	1660	1570		ug/Kg		94	58 - 120
4-Chloro-3-methylphenol	1660	1710		ug/Kg		103	61 - 120
4-Chloroaniline	1660	1310		ug/Kg		79	38 - 120

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 480-576804/2-A | **Client Sample ID: Lab Control Sample**
Matrix: Solid | **Prep Type: Total/NA**
Analysis Batch: 577005 | **Prep Batch: 576804**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
4-Chlorophenyl phenyl ether	1660	1600		ug/Kg		97	63 - 124
4-Methylphenol	1660	1380		ug/Kg		83	55 - 120
4-Nitroaniline	1660	1550		ug/Kg		93	56 - 120
4-Nitrophenol	3320	3960		ug/Kg		119	43 - 147
Acenaphthene	1660	1480		ug/Kg		89	62 - 120
Acenaphthylene	1660	1520		ug/Kg		91	58 - 121
Acetophenone	1660	1410		ug/Kg		85	54 - 120
Anthracene	1660	1600		ug/Kg		97	62 - 120
Atrazine	3320	3470		ug/Kg		104	60 - 127
Benzaldehyde	3320	2350		ug/Kg		71	10 - 150
Benzo[a]anthracene	1660	1560		ug/Kg		94	65 - 120
Benzo[a]pyrene	1660	1800		ug/Kg		109	64 - 120
Benzo[b]fluoranthene	1660	1730		ug/Kg		104	64 - 120
Benzo[g,h,i]perylene	1660	1610		ug/Kg		97	45 - 145
Benzo[k]fluoranthene	1660	1510		ug/Kg		91	65 - 120
Bis(2-chloroethoxy)methane	1660	1400		ug/Kg		84	55 - 120
Bis(2-chloroethyl)ether	1660	1210		ug/Kg		73	45 - 120
Bis(2-ethylhexyl) phthalate	1660	1890		ug/Kg		114	61 - 133
Butyl benzyl phthalate	1660	1890		ug/Kg		114	61 - 129
Caprolactam	3320	2710		ug/Kg		82	47 - 120
Carbazole	1660	1700		ug/Kg		102	65 - 120
Chrysene	1660	1650		ug/Kg		99	64 - 120
Di-n-butyl phthalate	1660	1810		ug/Kg		109	58 - 130
Di-n-octyl phthalate	1660	1840		ug/Kg		111	57 - 133
Dibenz(a,h)anthracene	1660	1620		ug/Kg		97	54 - 132
Dibenzofuran	1660	1510		ug/Kg		91	63 - 120
Diethyl phthalate	1660	1740		ug/Kg		105	66 - 120
Dimethyl phthalate	1660	1690		ug/Kg		102	65 - 124
Fluoranthene	1660	1700		ug/Kg		102	62 - 120
Fluorene	1660	1580		ug/Kg		95	63 - 120
Hexachlorobenzene	1660	1620		ug/Kg		98	60 - 120
Hexachlorobutadiene	1660	1510		ug/Kg		91	45 - 120
Hexachlorocyclopentadiene	1660	1420		ug/Kg		86	47 - 120
Hexachloroethane	1660	1340		ug/Kg		81	41 - 120
Indeno[1,2,3-cd]pyrene	1660	1600		ug/Kg		97	56 - 134
Isophorone	1660	1470		ug/Kg		89	56 - 120
N-Nitrosodi-n-propylamine	1660	1370		ug/Kg		83	52 - 120
Naphthalene	1660	1370		ug/Kg		83	55 - 120
Nitrobenzene	1660	1420		ug/Kg		85	54 - 120
Pentachlorophenol	3320	2900		ug/Kg		87	51 - 120
Phenanthrene	1660	1580		ug/Kg		95	60 - 120
Phenol	1660	1330		ug/Kg		80	53 - 120
Pyrene	1660	1740		ug/Kg		105	61 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4,6-Tribromophenol	*90*		*54 - 120*
2-Fluorobiphenyl	*90*		*60 - 120*
2-Fluorophenol	*80*		*52 - 120*

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 480-576804/2-A
Matrix: Solid
Analysis Batch: 577005

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 576804

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Nitrobenzene-d5	*87*		*53 - 120*
p-Terphenyl-d14	*99*		*79 - 130*
Phenol-d5	*78*		*54 - 120*

Lab Sample ID: MB 480-577070/1-A
Matrix: Solid
Analysis Batch: 577181

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 577070

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.010	0.00045	mg/L		04/20/21 14:51	04/21/21 11:03	1
3-Methylphenol	ND		0.010	0.00040	mg/L		04/20/21 14:51	04/21/21 11:03	1
2,4-Dinitrotoluene	ND		0.0050	0.00043	mg/L		04/20/21 14:51	04/21/21 11:03	1
Pyridine	ND		0.025	0.00040	mg/L		04/20/21 14:51	04/21/21 11:03	1
2,4,5-Trichlorophenol	ND		0.0050	0.00048	mg/L		04/20/21 14:51	04/21/21 11:03	1
2,4,6-Trichlorophenol	ND		0.0050	0.00060	mg/L		04/20/21 14:51	04/21/21 11:03	1
2-Methylphenol	ND		0.0050	0.00040	mg/L		04/20/21 14:51	04/21/21 11:03	1
4-Methylphenol	ND		0.010	0.00035	mg/L		04/20/21 14:51	04/21/21 11:03	1
Hexachlorobenzene	ND		0.0050	0.00050	mg/L		04/20/21 14:51	04/21/21 11:03	1
Hexachlorobutadiene	ND		0.0050	0.00068	mg/L		04/20/21 14:51	04/21/21 11:03	1
Hexachloroethane	ND		0.0050	0.00058	mg/L		04/20/21 14:51	04/21/21 11:03	1
Nitrobenzene	ND		0.0050	0.00028	mg/L		04/20/21 14:51	04/21/21 11:03	1
Pentachlorophenol	ND		0.010	0.0022	mg/L		04/20/21 14:51	04/21/21 11:03	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*75*		*41 - 120*	*04/20/21 14:51*	*04/21/21 11:03*	*1*
2-Fluorobiphenyl	*89*		*48 - 120*	*04/20/21 14:51*	*04/21/21 11:03*	*1*
2-Fluorophenol	*47*		*35 - 120*	*04/20/21 14:51*	*04/21/21 11:03*	*1*
Nitrobenzene-d5	*87*		*46 - 120*	*04/20/21 14:51*	*04/21/21 11:03*	*1*
p-Terphenyl-d14	*103*		*60 - 148*	*04/20/21 14:51*	*04/21/21 11:03*	*1*
Phenol-d5	*30*		*22 - 120*	*04/20/21 14:51*	*04/21/21 11:03*	*1*

Lab Sample ID: LCS 480-577070/2-A
Matrix: Solid
Analysis Batch: 577181

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 577070

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dichlorobenzene	0.0500	0.0386		mg/L		77	51 - 120
3-Methylphenol	0.0500	0.0376		mg/L		75	39 - 120
2,4-Dinitrotoluene	0.0500	0.0561		mg/L		112	69 - 120
Pyridine	0.100	0.0358		mg/L		36	10 - 120
2,4,5-Trichlorophenol	0.0500	0.0508		mg/L		102	65 - 126
2,4,6-Trichlorophenol	0.0500	0.0530		mg/L		106	64 - 120
2-Methylphenol	0.0500	0.0403		mg/L		81	39 - 120
4-Methylphenol	0.0500	0.0376		mg/L		75	29 - 131
Hexachlorobenzene	0.0500	0.0526		mg/L		105	61 - 120
Hexachlorobutadiene	0.0500	0.0454		mg/L		91	35 - 120
Hexachloroethane	0.0500	0.0399		mg/L		80	43 - 120
Nitrobenzene	0.0500	0.0481		mg/L		96	53 - 123

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 480-577070/2-A
Matrix: Solid
Analysis Batch: 577181

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 577070

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Pentachlorophenol	0.100	0.0961		mg/L		96	29 - 136

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4,6-Tribromophenol	*95*		*41 - 120*
2-Fluorobiphenyl	*100*		*48 - 120*
2-Fluorophenol	*53*		*35 - 120*
Nitrobenzene-d5	*97*		*46 - 120*
p-Terphenyl-d14	*106*		*60 - 148*
Phenol-d5	*36*		*22 - 120*

Lab Sample ID: LCSD 480-577070/3-A
Matrix: Solid
Analysis Batch: 577181

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 577070

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dichlorobenzene	0.0500	0.0379		mg/L		76	51 - 120	2	36
3-Methylphenol	0.0500	0.0372		mg/L		74	39 - 120	1	30
2,4-Dinitrotoluene	0.0500	0.0604	*+	mg/L		121	69 - 120	7	20
Pyridine	0.100	0.0356		mg/L		36	10 - 120	1	49
2,4,5-Trichlorophenol	0.0500	0.0521		mg/L		104	65 - 126	3	18
2,4,6-Trichlorophenol	0.0500	0.0522		mg/L		104	64 - 120	2	19
2-Methylphenol	0.0500	0.0392		mg/L		78	39 - 120	3	27
4-Methylphenol	0.0500	0.0372		mg/L		74	29 - 131	1	24
Hexachlorobenzene	0.0500	0.0545		mg/L		109	61 - 120	4	15
Hexachlorobutadiene	0.0500	0.0435		mg/L		87	35 - 120	4	44
Hexachloroethane	0.0500	0.0394		mg/L		79	43 - 120	1	46
Nitrobenzene	0.0500	0.0475		mg/L		95	53 - 123	1	24
Pentachlorophenol	0.100	0.0991		mg/L		99	29 - 136	3	37

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2,4,6-Tribromophenol	*96*		*41 - 120*
2-Fluorobiphenyl	*97*		*48 - 120*
2-Fluorophenol	*51*		*35 - 120*
Nitrobenzene-d5	*97*		*46 - 120*
p-Terphenyl-d14	*108*		*60 - 148*
Phenol-d5	*34*		*22 - 120*

Lab Sample ID: LB 480-576811/1-F
Matrix: Solid
Analysis Batch: 577181

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 577070

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.040	0.0018	mg/L		04/20/21 14:51	04/21/21 12:16	1
3-Methylphenol	ND		0.040	0.0016	mg/L		04/20/21 14:51	04/21/21 12:16	1
2,4-Dinitrotoluene	ND		0.020	0.0017	mg/L		04/20/21 14:51	04/21/21 12:16	1
Pyridine	ND		0.10	0.0016	mg/L		04/20/21 14:51	04/21/21 12:16	1
2,4,5-Trichlorophenol	ND		0.020	0.0019	mg/L		04/20/21 14:51	04/21/21 12:16	1
2,4,6-Trichlorophenol	ND		0.020	0.0024	mg/L		04/20/21 14:51	04/21/21 12:16	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LB 480-576811/1-F
Matrix: Solid
Analysis Batch: 577181

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 577070

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylphenol	ND		0.020	0.0016	mg/L		04/20/21 14:51	04/21/21 12:16	1
4-Methylphenol	ND		0.040	0.0014	mg/L		04/20/21 14:51	04/21/21 12:16	1
Hexachlorobenzene	ND		0.020	0.0020	mg/L		04/20/21 14:51	04/21/21 12:16	1
Hexachlorobutadiene	ND		0.020	0.0027	mg/L		04/20/21 14:51	04/21/21 12:16	1
Hexachloroethane	ND		0.020	0.0023	mg/L		04/20/21 14:51	04/21/21 12:16	1
Nitrobenzene	ND		0.020	0.0011	mg/L		04/20/21 14:51	04/21/21 12:16	1
Pentachlorophenol	ND		0.040	0.0088	mg/L		04/20/21 14:51	04/21/21 12:16	1

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*89*		*41 - 120*	*04/20/21 14:51*	*04/21/21 12:16*	*1*
2-Fluorobiphenyl	*100*		*48 - 120*	*04/20/21 14:51*	*04/21/21 12:16*	*1*
2-Fluorophenol	*51*		*35 - 120*	*04/20/21 14:51*	*04/21/21 12:16*	*1*
Nitrobenzene-d5	*100*		*46 - 120*	*04/20/21 14:51*	*04/21/21 12:16*	*1*
p-Terphenyl-d14	*107*		*60 - 148*	*04/20/21 14:51*	*04/21/21 12:16*	*1*
Phenol-d5	*34*		*22 - 120*	*04/20/21 14:51*	*04/21/21 12:16*	*1*

Method: 8081B - Organochlorine Pesticides (GC)

Lab Sample ID: MB 480-576976/1-A
Matrix: Solid
Analysis Batch: 577331

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 576976

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.000050	0.0000015	mg/L		04/20/21 08:56	04/22/21 09:44	1
Chlordane (technical)	ND		0.00050	0.0000073	mg/L		04/20/21 08:56	04/22/21 09:44	1
Endrin	ND		0.000050	0.0000035	mg/L		04/20/21 08:56	04/22/21 09:44	1
Heptachlor	ND		0.000050	0.0000021	mg/L		04/20/21 08:56	04/22/21 09:44	1
Heptachlor epoxide	ND		0.000050	0.0000013	mg/L		04/20/21 08:56	04/22/21 09:44	1
Methoxychlor	ND		0.000050	0.0000035	mg/L		04/20/21 08:56	04/22/21 09:44	1
Toxaphene	ND		0.00050	0.000030	mg/L		04/20/21 08:56	04/22/21 09:44	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*50*		*20 - 120*	*04/20/21 08:56*	*04/22/21 09:44*	*1*
DCB Decachlorobiphenyl	*49*		*20 - 120*	*04/20/21 08:56*	*04/22/21 09:44*	*1*
Tetrachloro-m-xylene	*94*		*44 - 120*	*04/20/21 08:56*	*04/22/21 09:44*	*1*
Tetrachloro-m-xylene	*81*		*44 - 120*	*04/20/21 08:56*	*04/22/21 09:44*	*1*

Lab Sample ID: LCS 480-576976/2-A
Matrix: Solid
Analysis Batch: 577331

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 576976

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
gamma-BHC (Lindane)	0.000500	0.000535		mg/L		107	56 - 120
Endrin	0.000500	0.000600		mg/L		120	65 - 135
Heptachlor	0.000500	0.000489		mg/L		98	58 - 120
Heptachlor epoxide	0.000500	0.000573		mg/L		115	65 - 125
Methoxychlor	0.000500	0.000587		mg/L		117	50 - 150

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: LCS 480-576976/2-A
Matrix: Solid
Analysis Batch: 577331

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 576976

Surrogate	LCS %Recovery	LCS Qualifier	Limits
DCB Decachlorobiphenyl	*53*		*20 - 120*
DCB Decachlorobiphenyl	*43*		*20 - 120*
Tetrachloro-m-xylene	*79*		*44 - 120*
Tetrachloro-m-xylene	*85*		*44 - 120*

Lab Sample ID: LCSD 480-576976/3-A
Matrix: Solid
Analysis Batch: 577331

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 576976

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
gamma-BHC (Lindane)	0.000500	0.000507		mg/L		101	56 - 120	5	24
Endrin	0.000500	0.000552		mg/L		110	65 - 135	8	24
Heptachlor	0.000500	0.000460		mg/L		92	58 - 120	6	25
Heptachlor epoxide	0.000500	0.000534		mg/L		107	65 - 125	7	23
Methoxychlor	0.000500	0.000548		mg/L		110	50 - 150	7	26

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
DCB Decachlorobiphenyl	*52*		*20 - 120*
DCB Decachlorobiphenyl	*45*		*20 - 120*
Tetrachloro-m-xylene	*77*		*44 - 120*
Tetrachloro-m-xylene	*81*		*44 - 120*

Lab Sample ID: LB 480-576811/1-C
Matrix: Solid
Analysis Batch: 577331

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 576976

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.00020	0.0000060	mg/L		04/20/21 11:51	04/22/21 11:22	1
Chlordane (technical)	ND		0.0020	0.000029	mg/L		04/20/21 11:51	04/22/21 11:22	1
Endrin	ND		0.00020	0.000014	mg/L		04/20/21 11:51	04/22/21 11:22	1
Heptachlor	ND		0.00020	0.0000085	mg/L		04/20/21 11:51	04/22/21 11:22	1
Heptachlor epoxide	ND		0.00020	0.0000053	mg/L		04/20/21 11:51	04/22/21 11:22	1
Methoxychlor	ND		0.00020	0.000014	mg/L		04/20/21 11:51	04/22/21 11:22	1
Toxaphene	ND		0.0020	0.00012	mg/L		04/20/21 11:51	04/22/21 11:22	1

Surrogate	LB %Recovery	LB Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	*75*		*20 - 120*	*04/20/21 11:51*	*04/22/21 11:22*	*1*
DCB Decachlorobiphenyl	*65*		*20 - 120*	*04/20/21 11:51*	*04/22/21 11:22*	*1*
Tetrachloro-m-xylene	*105*		*44 - 120*	*04/20/21 11:51*	*04/22/21 11:22*	*1*
Tetrachloro-m-xylene	*88*		*44 - 120*	*04/20/21 11:51*	*04/22/21 11:22*	*1*

Method: 8151 - TCLP Herbicides

Lab Sample ID: MB 480-576977/1-A
Matrix: Solid
Analysis Batch: 577206
Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 576977

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND		0.00050	0.000090	mg/L		04/20/21 09:00	04/21/21 13:16	1
2,4-D	ND		0.00050	0.00010	mg/L		04/20/21 09:00	04/21/21 13:16	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*77*		*48 - 132*	*04/20/21 09:00*	*04/21/21 13:16*	*1*
2,4-Dichlorophenylacetic acid	*72*		*48 - 132*	*04/20/21 09:00*	*04/21/21 13:16*	*1*

Lab Sample ID: LCS 480-576977/2-A
Matrix: Solid
Analysis Batch: 577206
Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 576977

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Silvex (2,4,5-TP)	0.00200	0.00187		mg/L		94	49 - 150
2,4-D	0.00200	0.00197		mg/L		98	36 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*90*		*48 - 132*
2,4-Dichlorophenylacetic acid	*60*		*48 - 132*

Lab Sample ID: LCSD 480-576977/3-A
Matrix: Solid
Analysis Batch: 577206
Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 576977

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Silvex (2,4,5-TP)	0.00200	0.00115		mg/L		57	49 - 150	48	50
2,4-D	0.00200	0.00115	*1	mg/L		57	36 - 150	53	50

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*61*		*48 - 132*
2,4-Dichlorophenylacetic acid	*41*	*S1-*	*48 - 132*

Lab Sample ID: LB 480-576811/1-D
Matrix: Solid
Analysis Batch: 577206
Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 576977

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND		0.0020	0.00036	mg/L		04/20/21 11:55	04/21/21 15:45	1
2,4-D	ND		0.0020	0.00040	mg/L		04/20/21 11:55	04/21/21 15:45	1

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*15*	*S1-*	*48 - 132*	*04/20/21 11:55*	*04/21/21 15:45*	*1*
2,4-Dichlorophenylacetic acid	*19*	*S1-*	*48 - 132*	*04/20/21 11:55*	*04/21/21 15:45*	*1*

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183377-2

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 480-577027/2-A
Matrix: Solid
Analysis Batch: 577398

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 577027

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.015	0.0056	mg/L		04/21/21 07:04	04/22/21 03:38	1
Barium	ND		1.0	0.10	mg/L		04/21/21 07:04	04/22/21 03:38	1
Cadmium	ND		0.0020	0.00050	mg/L		04/21/21 07:04	04/22/21 03:38	1
Chromium	ND		0.020	0.010	mg/L		04/21/21 07:04	04/22/21 03:38	1
Lead	ND		0.020	0.0030	mg/L		04/21/21 07:04	04/22/21 03:38	1
Selenium	ND		0.025	0.0087	mg/L		04/21/21 07:04	04/22/21 03:38	1
Silver	ND		0.0060	0.0017	mg/L		04/21/21 07:04	04/22/21 03:38	1

Lab Sample ID: LCS 480-577027/3-A
Matrix: Solid
Analysis Batch: 577398

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 577027

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	1.00	1.12		mg/L		112	80 - 120
Barium	1.00	1.07		mg/L		107	80 - 120
Cadmium	1.00	1.06		mg/L		106	80 - 120
Chromium	1.00	1.04		mg/L		104	80 - 120
Lead	1.00	1.02		mg/L		102	80 - 120
Selenium	1.00	1.11		mg/L		111	80 - 120
Silver	1.00	1.11		mg/L		111	80 - 120

Lab Sample ID: LB 480-576811/1-B
Matrix: Solid
Analysis Batch: 577398

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 577027

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.015	0.0056	mg/L		04/21/21 07:04	04/22/21 03:34	1
Barium	ND		1.0	0.10	mg/L		04/21/21 07:04	04/22/21 03:34	1
Cadmium	ND		0.0020	0.00050	mg/L		04/21/21 07:04	04/22/21 03:34	1
Chromium	ND		0.020	0.010	mg/L		04/21/21 07:04	04/22/21 03:34	1
Lead	ND		0.020	0.0030	mg/L		04/21/21 07:04	04/22/21 03:34	1
Selenium	ND		0.025	0.0087	mg/L		04/21/21 07:04	04/22/21 03:34	1
Silver	ND		0.0060	0.0017	mg/L		04/21/21 07:04	04/22/21 03:34	1

Method: 7470A - TCLP Mercury

Lab Sample ID: MB 480-577042/2-A
Matrix: Solid
Analysis Batch: 577118

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 577042

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		04/20/21 14:21	04/20/21 18:51	1

Lab Sample ID: LCS 480-577042/3-A
Matrix: Solid
Analysis Batch: 577118

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 577042

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00668	0.00635		mg/L		95	80 - 120

Method: 7470A - TCLP Mercury (Continued)

Lab Sample ID: LB 480-576811/1-E
Matrix: Solid
Analysis Batch: 577118

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 577042

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		04/20/21 14:21	04/20/21 18:50	1

Method: 1010A - Ignitability, Pensky-Martens Closed-Cup Method

Lab Sample ID: LCS 480-577474/1
Matrix: Solid
Analysis Batch: 577474

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Flashpoint	81.0	79.00		Degrees F		98	97.5 - 102.5

Method: 9045D - pH

Lab Sample ID: LCS 480-577104/1
Matrix: Solid
Analysis Batch: 577104

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH	7.00	7.0		SU		100	99 - 101

GC/MS VOA

Leach Batch: 576813

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-6	BLDG-3-SP-006	TCLP	Solid	1311	
LB 480-576813/1-A	Method Blank	TCLP	Solid	1311	

Analysis Batch: 576842

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-6	BLDG-3-SP-006	Total/NA	Solid	8260C	576876
MB 480-576876/2-A	Method Blank	Total/NA	Solid	8260C	576876
LCS 480-576876/1-A	Lab Control Sample	Total/NA	Solid	8260C	576876

Prep Batch: 576876

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-6	BLDG-3-SP-006	Total/NA	Solid	5035A_L	
MB 480-576876/2-A	Method Blank	Total/NA	Solid	5035A_L	
LCS 480-576876/1-A	Lab Control Sample	Total/NA	Solid	5035A_L	

Analysis Batch: 577160

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-6	BLDG-3-SP-006	TCLP	Solid	8260C	576813
LB 480-576813/1-A	Method Blank	TCLP	Solid	8260C	576813
MB 480-577160/7	Method Blank	Total/NA	Solid	8260C	
LCS 480-577160/5	Lab Control Sample	Total/NA	Solid	8260C	

GC/MS Semi VOA

Prep Batch: 576804

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-6	BLDG-3-SP-006	Total/NA	Solid	3550C	
MB 480-576804/1-A	Method Blank	Total/NA	Solid	3550C	
LCS 480-576804/2-A	Lab Control Sample	Total/NA	Solid	3550C	

Leach Batch: 576811

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-6	BLDG-3-SP-006	TCLP	Solid	1311	
LB 480-576811/1-F	Method Blank	TCLP	Solid	1311	

Analysis Batch: 577005

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 480-576804/1-A	Method Blank	Total/NA	Solid	8270D	576804
LCS 480-576804/2-A	Lab Control Sample	Total/NA	Solid	8270D	576804

Prep Batch: 577070

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-6	BLDG-3-SP-006	TCLP	Solid	3510C	576811
LB 480-576811/1-F	Method Blank	TCLP	Solid	3510C	576811
MB 480-577070/1-A	Method Blank	Total/NA	Solid	3510C	
LCS 480-577070/2-A	Lab Control Sample	Total/NA	Solid	3510C	
LCSD 480-577070/3-A	Lab Control Sample Dup	Total/NA	Solid	3510C	

Analysis Batch: 577181

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-6	BLDG-3-SP-006	TCLP	Solid	8270D	577070

GC/MS Semi VOA (Continued)

Analysis Batch: 577181 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LB 480-576811/1-F	Method Blank	TCLP	Solid	8270D	577070
MB 480-577070/1-A	Method Blank	Total/NA	Solid	8270D	577070
LCS 480-577070/2-A	Lab Control Sample	Total/NA	Solid	8270D	577070
LCSD 480-577070/3-A	Lab Control Sample Dup	Total/NA	Solid	8270D	577070

Analysis Batch: 577225

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-6	BLDG-3-SP-006	Total/NA	Solid	8270D	576804

GC Semi VOA

Leach Batch: 576811

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-6	BLDG-3-SP-006	TCLP	Solid	1311	
LB 480-576811/1-C	Method Blank	TCLP	Solid	1311	
LB 480-576811/1-D	Method Blank	TCLP	Solid	1311	

Prep Batch: 576976

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-6	BLDG-3-SP-006	TCLP	Solid	3510C	576811
LB 480-576811/1-C	Method Blank	TCLP	Solid	3510C	576811
MB 480-576976/1-A	Method Blank	Total/NA	Solid	3510C	
LCS 480-576976/2-A	Lab Control Sample	Total/NA	Solid	3510C	
LCSD 480-576976/3-A	Lab Control Sample Dup	Total/NA	Solid	3510C	

Prep Batch: 576977

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-6	BLDG-3-SP-006	TCLP	Solid	8151A	576811
LB 480-576811/1-D	Method Blank	TCLP	Solid	8151A	576811
MB 480-576977/1-A	Method Blank	Total/NA	Solid	8151A	
LCS 480-576977/2-A	Lab Control Sample	Total/NA	Solid	8151A	
LCSD 480-576977/3-A	Lab Control Sample Dup	Total/NA	Solid	8151A	

Analysis Batch: 577206

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-6	BLDG-3-SP-006	TCLP	Solid	8151	576977
LB 480-576811/1-D	Method Blank	TCLP	Solid	8151	576977
MB 480-576977/1-A	Method Blank	Total/NA	Solid	8151	576977
LCS 480-576977/2-A	Lab Control Sample	Total/NA	Solid	8151	576977
LCSD 480-576977/3-A	Lab Control Sample Dup	Total/NA	Solid	8151	576977

Analysis Batch: 577331

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-6	BLDG-3-SP-006	TCLP	Solid	8081B	576976
LB 480-576811/1-C	Method Blank	TCLP	Solid	8081B	576976
MB 480-576976/1-A	Method Blank	Total/NA	Solid	8081B	576976
LCS 480-576976/2-A	Lab Control Sample	Total/NA	Solid	8081B	576976
LCSD 480-576976/3-A	Lab Control Sample Dup	Total/NA	Solid	8081B	576976

QC Association Summary

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183377-2

Metals

Leach Batch: 576811

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-6	BLDG-3-SP-006	TCLP	Solid	1311	
LB 480-576811/1-B	Method Blank	TCLP	Solid	1311	
LB 480-576811/1-E	Method Blank	TCLP	Solid	1311	

Prep Batch: 577027

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-6	BLDG-3-SP-006	TCLP	Solid	3010A	576811
LB 480-576811/1-B	Method Blank	TCLP	Solid	3010A	576811
MB 480-577027/2-A	Method Blank	Total/NA	Solid	3010A	
LCS 480-577027/3-A	Lab Control Sample	Total/NA	Solid	3010A	

Prep Batch: 577042

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-6	BLDG-3-SP-006	TCLP	Solid	7470A	576811
LB 480-576811/1-E	Method Blank	TCLP	Solid	7470A	576811
MB 480-577042/2-A	Method Blank	Total/NA	Solid	7470A	
LCS 480-577042/3-A	Lab Control Sample	Total/NA	Solid	7470A	

Analysis Batch: 577118

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-6	BLDG-3-SP-006	TCLP	Solid	7470A	577042
LB 480-576811/1-E	Method Blank	TCLP	Solid	7470A	577042
MB 480-577042/2-A	Method Blank	Total/NA	Solid	7470A	577042
LCS 480-577042/3-A	Lab Control Sample	Total/NA	Solid	7470A	577042

Analysis Batch: 577398

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-6	BLDG-3-SP-006	TCLP	Solid	6010C	577027
LB 480-576811/1-B	Method Blank	TCLP	Solid	6010C	577027
MB 480-577027/2-A	Method Blank	Total/NA	Solid	6010C	577027
LCS 480-577027/3-A	Lab Control Sample	Total/NA	Solid	6010C	577027

Analysis Batch: 577579

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-6	BLDG-3-SP-006	TCLP	Solid	6010C	577027

General Chemistry

Analysis Batch: 576699

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-6	BLDG-3-SP-006	Total/NA	Solid	Moisture	

Analysis Batch: 577104

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-6	BLDG-3-SP-006	Total/NA	Solid	9045D	
LCS 480-577104/1	Lab Control Sample	Total/NA	Solid	9045D	

Analysis Batch: 577474

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183377-6	BLDG-3-SP-006	Total/NA	Solid	1010A	
LCS 480-577474/1	Lab Control Sample	Total/NA	Solid	1010A	

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Client Sample ID: BLDG-3-SP-006

Date Collected: 04/14/21 14:30
Date Received: 04/15/21 10:00

Lab Sample ID: 480-183377-6
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			576813	04/19/21 08:59	LMS	TAL BUF
TCLP	Analysis	8260C		10	577160	04/21/21 18:59	CRL	TAL BUF
TCLP	Leach	1311			576811	04/19/21 08:50	LMS	TAL BUF
TCLP	Prep	3510C			577070	04/20/21 14:51	ATG	TAL BUF
TCLP	Analysis	8270D		1	577181	04/21/21 15:29	JMM	TAL BUF
TCLP	Leach	1311			576811	04/19/21 08:50	LMS	TAL BUF
TCLP	Prep	3510C			576976	04/20/21 11:51	JMP	TAL BUF
TCLP	Analysis	8081B		1	577331	04/22/21 13:38	JLS	TAL BUF
TCLP	Leach	1311			576811	04/19/21 08:50	LMS	TAL BUF
TCLP	Prep	8151A			576977	04/20/21 11:55	JMP	TAL BUF
TCLP	Analysis	8151		1	577206	04/21/21 19:42	RJS	TAL BUF
TCLP	Leach	1311			576811	04/19/21 08:50	LMS	TAL BUF
TCLP	Prep	3010A			577027	04/21/21 07:04	ADM	TAL BUF
TCLP	Analysis	6010C		1	577398	04/22/21 04:39	LMH	TAL BUF
TCLP	Leach	1311			576811	04/19/21 08:50	LMS	TAL BUF
TCLP	Prep	3010A			577027	04/21/21 07:04	ADM	TAL BUF
TCLP	Analysis	6010C		5	577579	04/22/21 13:20	LMH	TAL BUF
TCLP	Leach	1311			576811	04/19/21 08:50	LMS	TAL BUF
TCLP	Prep	7470A			577042	04/20/21 14:21	BMB	TAL BUF
TCLP	Analysis	7470A		1	577118	04/20/21 19:09	BMB	TAL BUF
Total/NA	Analysis	1010A		1	577474	04/22/21 15:52	KEB	TAL BUF
Total/NA	Analysis	9045D		1	577104	04/20/21 13:00	CSS	TAL BUF
Total/NA	Analysis	Moisture		1	576699	04/16/21 18:58	CLA	TAL BUF

Client Sample ID: BLDG-3-SP-006

Date Collected: 04/14/21 14:30
Date Received: 04/15/21 10:00

Lab Sample ID: 480-183377-6
Matrix: Solid
Percent Solids: 79.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035A_L			576876	04/19/21 11:15	WJD	TAL BUF
Total/NA	Analysis	8260C		1	576842	04/19/21 17:16	CDC	TAL BUF
Total/NA	Prep	3550C			576804	04/19/21 08:15	VXF	TAL BUF
Total/NA	Analysis	8270D		10	577225	04/21/21 16:10	JMM	TAL BUF

Laboratory References:

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Accreditation/Certification Summary

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183377-2

Laboratory: Eurofins TestAmerica, Buffalo

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
New York	NELAP	10026	04-01-22

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
7470A	7470A	Solid	Mercury
9045D		Solid	Temperature
Moisture		Solid	Percent Moisture
Moisture		Solid	Percent Solids

Method Summary

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183377-2

Method	Method Description	Protocol	Laboratory
8260C	TCLP Volatiles	SW846	TAL BUF
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL BUF
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL BUF
8081B	Organochlorine Pesticides (GC)	SW846	TAL BUF
8151	TCLP Herbicides	SW846	TAL BUF
6010C	Metals (ICP)	SW846	TAL BUF
7470A	TCLP Mercury	SW846	TAL BUF
1010A	Ignitability, Pensky-Martens Closed-Cup Method	SW846	TAL BUF
9045D	pH	SW846	TAL BUF
Moisture	Percent Moisture	EPA	TAL BUF
1311	TCLP Extraction	SW846	TAL BUF
3010A	Preparation, Total Metals	SW846	TAL BUF
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	TAL BUF
3550C	Ultrasonic Extraction	SW846	TAL BUF
5030C	Purge and Trap	SW846	TAL BUF
5035A_L	Closed System Purge and Trap	SW846	TAL BUF
7470A	Preparation, Mercury	SW846	TAL BUF
8151A	Extraction (Herbicides)	SW846	TAL BUF

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Sample Summary

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183377-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
480-183377-6	BLDG-3-SP-006	Solid	04/14/21 14:30	04/15/21 10:00	

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone: 716-691-2600 Fax: 716-691-7991

Chain of Custody Record

eurofins | Environment Testing America

Client Information	Sampler: K. ZATWARNICKI	Lab PM: Fischer, Brian J	Carrier Tracking No(s):	COC No: 480-158821-34919.1
Client Contact: Mr. Glenn Esler	Phone:	E-Mail: Brian.Fischer@Eurofinset.com	State of Origin: NY	Page: Page 1 of 3
Company: Integral Consulting Inc	PWSID:	Analysis Requested		Job #:
Address: 319 SW Washington Ave Suite 1150	Due Date Requested:			Preservation Codes: A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, M - Hexane, N - None, O - AsNaO2
City: Portland	TAT Requested (days): Standard			
State, Zip: OR, 97204	Compliance Project: Yes No			
Phone: 503-943-3617(Tel)	PO #: Purchase Order not required			
Email: gesler@integral-corp.com	WO #:			
Project Name: Project EF1017	Project #: 48023604			
Site:	SSOW#:			

480-183377 Chain of Custody

ahydrate

y)

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010C, 7470A, 8081B, 8151A, 8270D	8260C - TCLP Volatiles	1010A, 8270D, 9045D	8260C - TCL list OLM04.2	8082A - TCL PCBs - OLM04.2	Total Number of	Special Instructions/Note:
			Preservation Code:				N	N	N	N	N		
DW1 - BLDG1-SP-001	4/14/21	1010	G	Solid	N	Y	X	X	X	X			
DW2 - BLDG1-SP-002		1045		Solid									
DW5 - BLDG8 - SP-003		1145		Solid									
DW3 - OUT - SP-004		1330		Solid									
DW4 - OUT - SP - 005		1345		Solid									
BLDG 3-SP-006		1430		Solid									
				Solid									
				Solid									
				Solid									
				Solid									
				Solid									

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For ________ Months

Deliverable Requested: I, II, III, IV, Other (specify) Cat B lvl 2

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Katelyn Zatwarnicki	4/14/21 1600	Integral	C Walker	4/15/21 1000	TAB

Custody Seals Intact: Yes No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: #1 3.3

Ver: 11/01/2020

Login Sample Receipt Checklist

Client: Integral Consulting Inc

Job Number: 480-183377-2

Login Number: 183377
List Number: 1
Creator: Wallace, Cameron

List Source: Eurofins TestAmerica, Buffalo

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	INTEGRAL
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	N/A	

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

Laboratory Job ID: 480-183421-1
Client Project/Site: Project EF1017

For:
Integral Consulting Inc
319 SW Washington Ave
Suite 1150
Portland, Oregon 97204

Attn: Mr. Glenn Esler

Authorized for release by:
4/26/2021 4:40:46 PM

Brian Fischer, Manager of Project Management
(716)504-9835
Brian.Fischer@Eurofinset.com

The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183421-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
vs	Reported analyte concentrations are below 200 ug/kg and may be biased low due to the sample not being collected according to 5035A-L low-level specifications.

GC/MS Semi VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
S1-	Surrogate recovery exceeds control limits, low biased.

GC Semi VOA

Qualifier	Qualifier Description
S1-	Surrogate recovery exceeds control limits, low biased.

Metals

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Glossary (Continued)

Abbreviation	These commonly used abbreviations may or may not be present in this report.
TNTC	Too Numerous To Count

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Job ID: 480-183421-1

Laboratory: Eurofins TestAmerica, Buffalo

Narrative

Job Narrative
480-183421-1

Comments
No additional comments.

Receipt
The samples were received on 4/16/2021 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.1º C.

GC/MS VOA
Method 8260C: The continuing calibration verification (CCV) associated with batch 480-576959 recovered above the upper control limit for Trichlorofluoromethane. The sample(s) associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated sample is impacted: BLDG5-SP-007 (480-183421-1).

Method 8260C: The following sample was analyzed at a reduced weight to bring the concentration of target analytes within the calibration range: BLDG6-SP-008 (480-183421-2). Elevated reporting limits (RLs) are provided.

Method 8260C: The continuing calibration verification (CCVIS) associated with batch 480-577108 recovered above the upper control limit for Carbon tetrachloride, 1,2-Dichloroethane, 1,1,1-Trichloroethane and Trichlorofluoromethane. The samples associated with this CCVIS were non-detect for the affected analytes; therefore, the data have been reported. The associated samples are impacted: BLDG6-SP-008 (480-183421-2) and BLDG6-SP-009 (480-183421-3).

Method 8260C: The continuing calibration verification (CCV) associated with batch 480-577162 recovered above the upper control limit for 2-Butanone (MEK). The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: BLDG5-SP-007 (480-183421-1), BLDG6-SP-008 (480-183421-2) and BLDG6-SP-009 (480-183421-3).

Method 8260C: The following samples were diluted due to the nature of the TCLP matrix: BLDG5-SP-007 (480-183421-1), BLDG6-SP-008 (480-183421-2), BLDG6-SP-009 (480-183421-3) and (LB 480-577047/1-A). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC/MS Semi VOA
Method 8270D: The following samples were diluted due to color, appearance, and viscosity: BLDG5-SP-007 (480-183421-1) and BLDG6-SP-009 (480-183421-3). Elevated reporting limits (RL) are provided.

Method 8270D: The continuing calibration verification (CCV) associated with batch 480-577594 recovered above the upper control limit for 4-Nitrophenol. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: BLDG5-SP-007 (480-183421-1), BLDG6-SP-008 (480-183421-2) and BLDG6-SP-009 (480-183421-3).

Method 8270D: Six surrogates are used for this analysis. The laboratory's SOP allows one acid and one base of these surrogates to be outside acceptance criteria without performing re-extraction/re-analysis. The following sample contained an allowable number of surrogate compounds outside limits: BLDG6-SP-009 (480-183421-3). These results have been reported and qualified.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC Semi VOA
Method 8151A: Surrogate recovery for the following samples were outside control limits: BLDG5-SP-007 (480-183421-1), BLDG6-SP-009 (480-183421-3) and (LB 480-577044/1-B). This is routine for TCLP herbicides, due to the pH effects created during the leaching process, inhibiting the herbicide derivatization of the free acid components.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Job ID: 480-183421-1 (Continued)

Laboratory: Eurofins TestAmerica, Buffalo (Continued)

Metals

Method 6010C: The recovery of post spike, (480-183421-A-3-D PDS), associated with batch 480-577585, exhibited results outside quality control limits for Total Silver and Arsenic. However, the serial dilution (SD) of this sample was compliant, therefore no corrective action was necessary.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry

Methods 9045C, 9045D: This analysis is normally performed in the field and has a method-defined holding time of 15 minutes. The following samples has been qualified with the "HF" flag to indicate analysis was performed in the laboratory outside the 15 minute timeframe: BLDG5-SP-007 (480-183421-1), BLDG6-SP-008 (480-183421-2) and BLDG6-SP-009 (480-183421-3).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

Method 3510C: Due to the matrix, the initial volume(s) used for the following samples deviated from the standard procedure: BLDG5-SP-007 (480-183421-1) and BLDG6-SP-008 (480-183421-2). The reporting limits (RLs) have been adjusted proportionately.

Method 3550C: Due to the matrix, the initial volume(s) used for the following samples deviated from the standard procedure: 8270 DBLDG6-SP-008 (480-183421-2) and BLDG6-SP-009 (480-183421-3). The reporting limits (RLs) have been adjusted proportionately.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183421-1

Client Sample ID: BLDG5-SP-007 — Lab Sample ID: 480-183421-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Bis(2-ethylhexyl) phthalate	1100	J	1800	630	ug/Kg	10	☼	8270D	Total/NA
Butyl benzyl phthalate	1300	J	1800	300	ug/Kg	10	☼	8270D	Total/NA
Di-n-butyl phthalate	490	J	1800	310	ug/Kg	10	☼	8270D	Total/NA
Fluoranthene	190	J	1800	190	ug/Kg	10	☼	8270D	Total/NA
Barium	1.5		1.0	0.10	mg/L	1		6010C	TCLP
Cadmium	0.023		0.0020	0.00050	mg/L	1		6010C	TCLP
Lead	0.095		0.020	0.0030	mg/L	1		6010C	TCLP
Selenium	0.036		0.025	0.0087	mg/L	1		6010C	TCLP
Silver	0.0032	J	0.0060	0.0017	mg/L	1		6010C	TCLP
Flashpoint	>176		50.0	50.0	Degrees F	1		1010A	Total/NA
pH	8.5	HF	0.1	0.1	SU	1		9045D	Total/NA
Temperature	19.9	HF	0.001	0.001	Degrees C	1		9045D	Total/NA

Client Sample ID: BLDG6-SP-008 — Lab Sample ID: 480-183421-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
2-Butanone (MEK) - DL	220	vs	140	10	ug/Kg	1	☼	8260C	Total/NA
Acetone - DL	3500	vs	140	23	ug/Kg	1	☼	8260C	Total/NA
Bis(2-ethylhexyl) phthalate	400	J	1100	360	ug/Kg	1	☼	8270D	Total/NA
Lead	0.0038	J	0.020	0.0030	mg/L	1		6010C	TCLP
Flashpoint	>176		50.0	50.0	Degrees F	1		1010A	Total/NA
pH	4.2	HF	0.1	0.1	SU	1		9045D	Total/NA
Temperature	19.8	HF	0.001	0.001	Degrees C	1		9045D	Total/NA

Client Sample ID: BLDG6-SP-009 — Lab Sample ID: 480-183421-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.23	J	1.0	0.10	mg/L	1		6010C	TCLP
Cadmium	0.00084	J	0.0020	0.00050	mg/L	1		6010C	TCLP
Lead	0.078		0.020	0.0030	mg/L	1		6010C	TCLP
Flashpoint	>176		50.0	50.0	Degrees F	1		1010A	Total/NA
pH	8.2	HF	0.1	0.1	SU	1		9045D	Total/NA
Temperature	20.2	HF	0.001	0.001	Degrees C	1		9045D	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client Sample ID: BLDG5-SP-007
Date Collected: 04/15/21 08:50
Date Received: 04/16/21 10:00

Lab Sample ID: 480-183421-1
Matrix: Solid
Percent Solids: 91.5

Method: 8260C - TCLP Volatiles - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.010	0.0041	mg/L			04/21/21 16:47	10
Carbon tetrachloride	ND		0.010	0.0027	mg/L			04/21/21 16:47	10
Chlorobenzene	ND		0.010	0.0075	mg/L			04/21/21 16:47	10
Chloroform	ND		0.010	0.0034	mg/L			04/21/21 16:47	10
1,2-Dichloroethane	ND		0.010	0.0021	mg/L			04/21/21 16:47	10
1,1-Dichloroethene	ND		0.010	0.0029	mg/L			04/21/21 16:47	10
2-Butanone (MEK)	ND		0.050	0.013	mg/L			04/21/21 16:47	10
Tetrachloroethene	ND		0.010	0.0036	mg/L			04/21/21 16:47	10
Trichloroethene	ND		0.010	0.0046	mg/L			04/21/21 16:47	10
Vinyl chloride	ND		0.010	0.0090	mg/L			04/21/21 16:47	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*77 - 120*		*04/21/21 16:47*	*10*
Toluene-d8 (Surr)	*93*		*80 - 120*		*04/21/21 16:47*	*10*
4-Bromofluorobenzene (Surr)	*91*		*73 - 120*		*04/21/21 16:47*	*10*
Dibromofluoromethane (Surr)	*99*		*75 - 123*		*04/21/21 16:47*	*10*

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND	vs	5.3	0.39	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
1,1,2,2-Tetrachloroethane	ND	vs	5.3	0.86	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
1,1,2-Trichloroethane	ND	vs	5.3	0.69	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	vs	5.3	1.2	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
1,1-Dichloroethane	ND	vs	5.3	0.65	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
1,1-Dichloroethene	ND	vs	5.3	0.65	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
1,2,4-Trichlorobenzene	ND	vs	5.3	0.32	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
1,2-Dibromo-3-Chloropropane	ND	vs	5.3	2.7	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
1,2-Dichlorobenzene	ND	vs	5.3	0.41	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
1,2-Dichloroethane	ND	vs	5.3	0.27	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
1,2-Dichloropropane	ND	vs	5.3	2.7	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
1,3-Dichlorobenzene	ND	vs	5.3	0.27	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
1,4-Dichlorobenzene	ND	vs	5.3	0.74	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
2-Butanone (MEK)	ND	vs	27	1.9	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
2-Hexanone	ND	vs	27	2.7	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
4-Methyl-2-pentanone (MIBK)	ND	vs	27	1.7	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
Acetone	ND	vs	27	4.5	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
Benzene	ND	vs	5.3	0.26	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
Bromodichloromethane	ND	vs	5.3	0.71	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
Bromoform	ND	vs	5.3	2.7	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
Bromomethane	ND	vs	5.3	0.48	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
Carbon disulfide	ND	vs	5.3	2.7	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
Carbon tetrachloride	ND	vs	5.3	0.51	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
Chlorobenzene	ND	vs	5.3	0.70	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
Dibromochloromethane	ND	vs	5.3	0.68	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
Chloroethane	ND	vs	5.3	1.2	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
Chloroform	ND	vs	5.3	0.33	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
Chloromethane	ND	vs	5.3	0.32	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
cis-1,2-Dichloroethene	ND	vs	5.3	0.68	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
cis-1,3-Dichloropropene	ND	vs	5.3	0.76	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
Cyclohexane	ND	vs	5.3	0.74	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1

Client Sample ID: BLDG5-SP-007
Lab Sample ID: 480-183421-1

Date Collected: 04/15/21 08:50
Matrix: Solid
Date Received: 04/16/21 10:00
Percent Solids: 91.5

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND	vs	5.3	0.44	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
Ethylbenzene	ND	vs	5.3	0.37	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
1,2-Dibromoethane	ND	vs	5.3	0.68	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
Isopropylbenzene	ND	vs	5.3	0.80	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
Methyl acetate	ND	vs	27	3.2	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
Methyl tert-butyl ether	ND	vs	5.3	0.52	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
Methylcyclohexane	ND	vs	5.3	0.81	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
Methylene Chloride	ND	vs	5.3	2.4	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
Styrene	ND	vs	5.3	0.27	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
Tetrachloroethene	ND	vs	5.3	0.71	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
Toluene	ND	vs	5.3	0.40	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
trans-1,2-Dichloroethene	ND	vs	5.3	0.55	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
trans-1,3-Dichloropropene	ND	vs	5.3	2.3	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
Trichloroethene	ND	vs	5.3	1.2	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
Trichlorofluoromethane	ND	vs	5.3	0.50	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
Vinyl chloride	ND	vs	5.3	0.65	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1
Xylenes, Total	ND	vs	11	0.89	ug/Kg	☼	04/20/21 10:26	04/20/21 14:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*71 - 125*	*04/20/21 10:26*	*04/20/21 14:45*	*1*
1,2-Dichloroethane-d4 (Surr)	*121*		*64 - 126*	*04/20/21 10:26*	*04/20/21 14:45*	*1*
4-Bromofluorobenzene (Surr)	*106*		*72 - 126*	*04/20/21 10:26*	*04/20/21 14:45*	*1*
Dibromofluoromethane (Surr)	*106*		*60 - 140*	*04/20/21 10:26*	*04/20/21 14:45*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biphenyl	ND		1800	270	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
bis (2-chloroisopropyl) ether	ND		1800	370	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
2,4,5-Trichlorophenol	ND		1800	500	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
2,4,6-Trichlorophenol	ND		1800	370	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
2,4-Dichlorophenol	ND		1800	190	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
2,4-Dimethylphenol	ND		1800	440	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
2,4-Dinitrophenol	ND		18000	8500	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
2,4-Dinitrotoluene	ND		1800	380	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
2,6-Dinitrotoluene	ND		1800	220	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
2-Chloronaphthalene	ND		1800	300	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
1,4-Dioxane	ND		1100	590	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
2-Chlorophenol	ND		3600	340	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
2-Methylnaphthalene	ND		1800	370	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
2-Methylphenol	ND		1800	220	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
2-Nitroaniline	ND		3600	270	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
2-Nitrophenol	ND		1800	520	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
3,3'-Dichlorobenzidine	ND		3600	2200	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
3-Nitroaniline	ND		3600	510	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
4,6-Dinitro-2-methylphenol	ND		3600	1800	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
4-Bromophenyl phenyl ether	ND		1800	260	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
4-Chloro-3-methylphenol	ND		1800	450	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
4-Chloroaniline	ND		1800	450	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
4-Chlorophenyl phenyl ether	ND		1800	230	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
4-Methylphenol	ND		3600	220	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10

Client Sample Results

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183421-1

Client Sample ID: BLDG5-SP-007

Date Collected: 04/15/21 08:50
Date Received: 04/16/21 10:00

Lab Sample ID: 480-183421-1

Matrix: Solid
Percent Solids: 91.5

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4-Nitroaniline	ND		3600	960	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
4-Nitrophenol	ND		3600	1300	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
Acenaphthene	ND		1800	270	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
Acenaphthylene	ND		1800	240	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
Acetophenone	ND		1800	250	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
Anthracene	ND		1800	450	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
Atrazine	ND		1800	640	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
Benzaldehyde	ND		1800	1500	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
Benzo[a]anthracene	ND		1800	180	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
Benzo[a]pyrene	ND		1800	270	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
Benzo[b]fluoranthene	ND		1800	290	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
Benzo[g,h,i]perylene	ND		1800	190	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
Benzo[k]fluoranthene	ND		1800	240	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
Bis(2-chloroethoxy)methane	ND		1800	390	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
Bis(2-chloroethyl)ether	ND		1800	240	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
Bis(2-ethylhexyl) phthalate	**1100**	**J**	1800	630	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
Butyl benzyl phthalate	**1300**	**J**	1800	300	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
Caprolactam	ND		1800	550	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
Carbazole	ND		1800	220	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
Chrysene	ND		1800	410	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
Di-n-butyl phthalate	**490**	**J**	1800	310	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
Di-n-octyl phthalate	ND		1800	220	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
Dibenz(a,h)anthracene	ND		1800	320	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
Dibenzofuran	ND		1800	220	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
Diethyl phthalate	ND		1800	240	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
Dimethyl phthalate	ND		1800	220	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
Fluoranthene	**190**	**J**	1800	190	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
Fluorene	ND		1800	220	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
Hexachlorobenzene	ND		1800	250	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
Hexachlorobutadiene	ND		1800	270	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
Hexachlorocyclopentadiene	ND		1800	250	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
Hexachloroethane	ND		1800	240	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
Indeno[1,2,3-cd]pyrene	ND		1800	230	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
Isophorone	ND		1800	390	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
N-Nitrosodi-n-propylamine	ND		1800	310	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
N-Nitrosodiphenylamine	ND		1800	1500	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
Naphthalene	ND		1800	240	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
Nitrobenzene	ND		1800	210	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
Pentachlorophenol	ND		3600	1800	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
Phenanthrene	ND		1800	270	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
Phenol	ND		1800	280	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10
Pyrene	ND		1800	220	ug/Kg	☼	04/22/21 08:24	04/23/21 11:48	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*93*		*54 - 120*	*04/22/21 08:24*	*04/23/21 11:48*	*10*
2-Fluorobiphenyl	*102*		*60 - 120*	*04/22/21 08:24*	*04/23/21 11:48*	*10*
2-Fluorophenol	*82*		*52 - 120*	*04/22/21 08:24*	*04/23/21 11:48*	*10*
Nitrobenzene-d5	*92*		*53 - 120*	*04/22/21 08:24*	*04/23/21 11:48*	*10*
p-Terphenyl-d14	*111*		*79 - 130*	*04/22/21 08:24*	*04/23/21 11:48*	*10*
Phenol-d5	*89*		*54 - 120*	*04/22/21 08:24*	*04/23/21 11:48*	*10*

Client Sample Results

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183421-1

Client Sample ID: BLDG5-SP-007
Date Collected: 04/15/21 08:50
Date Received: 04/16/21 10:00

Lab Sample ID: 480-183421-1
Matrix: Solid
Percent Solids: 91.5

Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.10	0.0045	mg/L		04/21/21 14:44	04/22/21 18:49	1
2,4-Dinitrotoluene	ND		0.050	0.0043	mg/L		04/21/21 14:44	04/22/21 18:49	1
Hexachlorobenzene	ND		0.050	0.0050	mg/L		04/21/21 14:44	04/22/21 18:49	1
Hexachlorobutadiene	ND		0.050	0.0068	mg/L		04/21/21 14:44	04/22/21 18:49	1
Hexachloroethane	ND		0.050	0.0058	mg/L		04/21/21 14:44	04/22/21 18:49	1
3-Methylphenol	ND		0.10	0.0040	mg/L		04/21/21 14:44	04/22/21 18:49	1
2-Methylphenol	ND		0.050	0.0040	mg/L		04/21/21 14:44	04/22/21 18:49	1
4-Methylphenol	ND		0.10	0.0035	mg/L		04/21/21 14:44	04/22/21 18:49	1
Nitrobenzene	ND		0.050	0.0028	mg/L		04/21/21 14:44	04/22/21 18:49	1
Pentachlorophenol	ND		0.10	0.022	mg/L		04/21/21 14:44	04/22/21 18:49	1
Pyridine	ND		0.25	0.0040	mg/L		04/21/21 14:44	04/22/21 18:49	1
2,4,5-Trichlorophenol	ND		0.050	0.0048	mg/L		04/21/21 14:44	04/22/21 18:49	1
2,4,6-Trichlorophenol	ND		0.050	0.0060	mg/L		04/21/21 14:44	04/22/21 18:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*88*		*41 - 120*	*04/21/21 14:44*	*04/22/21 18:49*	*1*
2-Fluorobiphenyl	*100*		*48 - 120*	*04/21/21 14:44*	*04/22/21 18:49*	*1*
2-Fluorophenol	*49*		*35 - 120*	*04/21/21 14:44*	*04/22/21 18:49*	*1*
Nitrobenzene-d5	*97*		*46 - 120*	*04/21/21 14:44*	*04/22/21 18:49*	*1*
p-Terphenyl-d14	*87*		*60 - 148*	*04/21/21 14:44*	*04/22/21 18:49*	*1*
Phenol-d5	*32*		*22 - 120*	*04/21/21 14:44*	*04/22/21 18:49*	*1*

Method: 8081B - Organochlorine Pesticides (GC) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.00050	0.000015	mg/L		04/21/21 14:47	04/23/21 10:44	1
Chlordane (technical)	ND		0.0050	0.000073	mg/L		04/21/21 14:47	04/23/21 10:44	1
Endrin	ND		0.00050	0.000035	mg/L		04/21/21 14:47	04/23/21 10:44	1
Heptachlor	ND		0.00050	0.000021	mg/L		04/21/21 14:47	04/23/21 10:44	1
Heptachlor epoxide	ND		0.00050	0.000013	mg/L		04/21/21 14:47	04/23/21 10:44	1
Methoxychlor	ND		0.00050	0.000035	mg/L		04/21/21 14:47	04/23/21 10:44	1
Toxaphene	ND		0.0050	0.00030	mg/L		04/21/21 14:47	04/23/21 10:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*104*		*20 - 120*	*04/21/21 14:47*	*04/23/21 10:44*	*1*
DCB Decachlorobiphenyl	*84*		*20 - 120*	*04/21/21 14:47*	*04/23/21 10:44*	*1*
Tetrachloro-m-xylene	*88*		*44 - 120*	*04/21/21 14:47*	*04/23/21 10:44*	*1*
Tetrachloro-m-xylene	*76*		*44 - 120*	*04/21/21 14:47*	*04/23/21 10:44*	*1*

Method: 8151 - TCLP Herbicides - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND		0.0020	0.00036	mg/L		04/21/21 10:27	04/22/21 19:42	1
2,4-D	ND		0.0020	0.00040	mg/L		04/21/21 10:27	04/22/21 19:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*30*	*S1-*	*48 - 132*	*04/21/21 10:27*	*04/22/21 19:42*	*1*
2,4-Dichlorophenylacetic acid	*40*	*S1-*	*48 - 132*	*04/21/21 10:27*	*04/22/21 19:42*	*1*

Method: 6010C - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.015	0.0056	mg/L		04/21/21 10:58	04/22/21 20:01	1
Barium	**1.5**		1.0	0.10	mg/L		04/21/21 10:58	04/22/21 20:01	1

Client Sample ID: BLDG5-SP-007
Date Collected: 04/15/21 08:50
Date Received: 04/16/21 10:00

Lab Sample ID: 480-183421-1
Matrix: Solid
Percent Solids: 91.5

Method: 6010C - Metals (ICP) - TCLP (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	**0.023**		0.0020	0.00050	mg/L		04/21/21 10:58	04/22/21 20:01	1
Chromium	ND		0.020	0.010	mg/L		04/21/21 10:58	04/22/21 20:01	1
Lead	**0.095**		0.020	0.0030	mg/L		04/21/21 10:58	04/22/21 20:01	1
Selenium	**0.036**		0.025	0.0087	mg/L		04/21/21 10:58	04/22/21 20:01	1
Silver	**0.0032**	**J**	0.0060	0.0017	mg/L		04/21/21 10:58	04/22/21 20:01	1

Method: 7470A - TCLP Mercury - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		04/21/21 13:26	04/21/21 18:11	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Flashpoint	**>176**		50.0	50.0	Degrees F			04/22/21 15:44	1
pH	**8.5**	**HF**	0.1	0.1	SU			04/20/21 13:00	1
Temperature	**19.9**	**HF**	0.001	0.001	Degrees C			04/20/21 13:00	1

Client Sample ID: BLDG6-SP-008
Date Collected: 04/15/21 10:20
Date Received: 04/16/21 10:00

Lab Sample ID: 480-183421-2
Matrix: Solid
Percent Solids: 85.2

Method: 8260C - TCLP Volatiles - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.010	0.0041	mg/L			04/21/21 17:11	10
Carbon tetrachloride	ND		0.010	0.0027	mg/L			04/21/21 17:11	10
Chlorobenzene	ND		0.010	0.0075	mg/L			04/21/21 17:11	10
Chloroform	ND		0.010	0.0034	mg/L			04/21/21 17:11	10
1,2-Dichloroethane	ND		0.010	0.0021	mg/L			04/21/21 17:11	10
1,1-Dichloroethene	ND		0.010	0.0029	mg/L			04/21/21 17:11	10
2-Butanone (MEK)	ND		0.050	0.013	mg/L			04/21/21 17:11	10
Tetrachloroethene	ND		0.010	0.0036	mg/L			04/21/21 17:11	10
Trichloroethene	ND		0.010	0.0046	mg/L			04/21/21 17:11	10
Vinyl chloride	ND		0.010	0.0090	mg/L			04/21/21 17:11	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*77 - 120*		*04/21/21 17:11*	*10*
Toluene-d8 (Surr)	*94*		*80 - 120*		*04/21/21 17:11*	*10*
4-Bromofluorobenzene (Surr)	*92*		*73 - 120*		*04/21/21 17:11*	*10*
Dibromofluoromethane (Surr)	*98*		*75 - 123*		*04/21/21 17:11*	*10*

Method: 8260C - Volatile Organic Compounds by GC/MS - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND	vs	28	2.0	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
1,1,2,2-Tetrachloroethane	ND	vs	28	4.5	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
1,1,2-Trichloroethane	ND	vs	28	3.6	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	vs	28	6.3	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
1,1-Dichloroethane	ND	vs	28	3.4	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
1,1-Dichloroethene	ND	vs	28	3.4	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
1,2,4-Trichlorobenzene	ND	vs	28	1.7	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
1,2-Dibromo-3-Chloropropane	ND	vs	28	14	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
1,2-Dichlorobenzene	ND	vs	28	2.2	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
1,2-Dichloroethane	ND	vs	28	1.4	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1

Client Sample ID: BLDG6-SP-008

Lab Sample ID: 480-183421-2

Date Collected: 04/15/21 10:20
Matrix: Solid
Date Received: 04/16/21 10:00
Percent Solids: 85.2

Method: 8260C - Volatile Organic Compounds by GC/MS - DL (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichloropropane	ND	vs	28	14	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
1,3-Dichlorobenzene	ND	vs	28	1.4	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
1,4-Dichlorobenzene	ND	vs	28	3.9	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
2-Butanone (MEK)	**220**	**vs**	140	10	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
2-Hexanone	ND	vs	140	14	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
4-Methyl-2-pentanone (MIBK)	ND	vs	140	9.1	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
Acetone	**3500**	**vs**	140	23	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
Benzene	ND	vs	28	1.4	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
Bromodichloromethane	ND	vs	28	3.7	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
Bromoform	ND	vs	28	14	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
Bromomethane	ND	vs	28	2.5	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
Carbon disulfide	ND	vs	28	14	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
Carbon tetrachloride	ND	vs	28	2.7	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
Chlorobenzene	ND	vs	28	3.7	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
Dibromochloromethane	ND	vs	28	3.5	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
Chloroethane	ND	vs	28	6.3	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
Chloroform	ND	vs	28	1.7	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
Chloromethane	ND	vs	28	1.7	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
cis-1,2-Dichloroethene	ND	vs	28	3.5	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
cis-1,3-Dichloropropene	ND	vs	28	4.0	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
Cyclohexane	ND	vs	28	3.9	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
Dichlorodifluoromethane	ND	vs	28	2.3	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
Ethylbenzene	ND	vs	28	1.9	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
1,2-Dibromoethane	ND	vs	28	3.6	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
Isopropylbenzene	ND	vs	28	4.2	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
Methyl acetate	ND	vs	140	17	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
Methyl tert-butyl ether	ND	vs	28	2.7	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
Methylcyclohexane	ND	vs	28	4.2	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
Methylene Chloride	ND	vs	28	13	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
Styrene	ND	vs	28	1.4	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
Tetrachloroethene	ND	vs	28	3.7	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
Toluene	ND	vs	28	2.1	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
trans-1,2-Dichloroethene	ND	vs	28	2.9	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
trans-1,3-Dichloropropene	ND	vs	28	12	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
Trichloroethene	ND	vs	28	6.1	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
Trichlorofluoromethane	ND	vs	28	2.6	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
Vinyl chloride	ND	vs	28	3.4	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1
Xylenes, Total	ND	vs	55	4.6	ug/Kg	☼	04/20/21 18:46	04/20/21 22:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*71 - 125*	*04/20/21 18:46*	*04/20/21 22:13*	*1*
1,2-Dichloroethane-d4 (Surr)	*118*		*64 - 126*	*04/20/21 18:46*	*04/20/21 22:13*	*1*
4-Bromofluorobenzene (Surr)	*110*		*72 - 126*	*04/20/21 18:46*	*04/20/21 22:13*	*1*
Dibromofluoromethane (Surr)	*109*		*60 - 140*	*04/20/21 18:46*	*04/20/21 22:13*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biphenyl	ND		1100	160	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
bis (2-chloroisopropyl) ether	ND		1100	210	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
2,4,5-Trichlorophenol	ND		1100	290	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183421-1

Client Sample ID: BLDG6-SP-008
Date Collected: 04/15/21 10:20
Date Received: 04/16/21 10:00

Lab Sample ID: 480-183421-2
Matrix: Solid
Percent Solids: 85.2

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	ND		1100	210	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
2,4-Dichlorophenol	ND		1100	110	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
2,4-Dimethylphenol	ND		1100	260	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
2,4-Dinitrophenol	ND		10000	4900	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
2,4-Dinitrotoluene	ND		1100	220	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
2,6-Dinitrotoluene	ND		1100	130	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
2-Chloronaphthalene	ND		1100	180	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
1,4-Dioxane	ND		630	340	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
2-Chlorophenol	ND		2100	190	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
2-Methylnaphthalene	ND		1100	210	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
2-Methylphenol	ND		1100	130	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
2-Nitroaniline	ND		2100	160	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
2-Nitrophenol	ND		1100	300	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
3,3'-Dichlorobenzidine	ND		2100	1300	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
3-Nitroaniline	ND		2100	290	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
4,6-Dinitro-2-methylphenol	ND		2100	1100	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
4-Bromophenyl phenyl ether	ND		1100	150	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
4-Chloro-3-methylphenol	ND		1100	260	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
4-Chloroaniline	ND		1100	260	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
4-Chlorophenyl phenyl ether	ND		1100	130	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
4-Methylphenol	ND		2100	130	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
4-Nitroaniline	ND		2100	560	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
4-Nitrophenol	ND		2100	750	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
Acenaphthene	ND		1100	160	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
Acenaphthylene	ND		1100	140	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
Acetophenone	ND		1100	140	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
Anthracene	ND		1100	260	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
Atrazine	ND		1100	370	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
Benzaldehyde	ND		1100	850	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
Benzo[a]anthracene	ND		1100	110	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
Benzo[a]pyrene	ND		1100	160	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
Benzo[b]fluoranthene	ND		1100	170	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
Benzo[g,h,i]perylene	ND		1100	110	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
Benzo[k]fluoranthene	ND		1100	140	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
Bis(2-chloroethoxy)methane	ND		1100	230	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
Bis(2-chloroethyl)ether	ND		1100	140	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
Bis(2-ethylhexyl) phthalate	**400**	**J**	1100	360	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
Butyl benzyl phthalate	ND		1100	180	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
Caprolactam	ND		1100	320	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
Carbazole	ND		1100	130	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
Chrysene	ND		1100	240	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
Di-n-butyl phthalate	ND		1100	180	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
Di-n-octyl phthalate	ND		1100	130	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
Dibenz(a,h)anthracene	ND		1100	190	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
Dibenzofuran	ND		1100	130	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
Diethyl phthalate	ND		1100	140	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
Dimethyl phthalate	ND		1100	130	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
Fluoranthene	ND		1100	110	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
Fluorene	ND		1100	130	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1

Client Sample ID: BLDG6-SP-008
Lab Sample ID: 480-183421-2

Date Collected: 04/15/21 10:20
Matrix: Solid
Date Received: 04/16/21 10:00
Percent Solids: 85.2

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexachlorobenzene	ND		1100	140	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
Hexachlorobutadiene	ND		1100	160	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
Hexachlorocyclopentadiene	ND		1100	140	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
Hexachloroethane	ND		1100	140	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
Indeno[1,2,3-cd]pyrene	ND		1100	130	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
Isophorone	ND		1100	230	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
N-Nitrosodi-n-propylamine	ND		1100	180	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
N-Nitrosodiphenylamine	ND		1100	860	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
Naphthalene	ND		1100	140	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
Nitrobenzene	ND		1100	120	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
Pentachlorophenol	ND		2100	1100	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
Phenanthrene	ND		1100	160	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
Phenol	ND		1100	160	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1
Pyrene	ND		1100	130	ug/Kg	☼	04/22/21 08:24	04/23/21 12:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*96*		*54 - 120*	*04/22/21 08:24*	*04/23/21 12:12*	*1*
2-Fluorobiphenyl	*96*		*60 - 120*	*04/22/21 08:24*	*04/23/21 12:12*	*1*
2-Fluorophenol	*81*		*52 - 120*	*04/22/21 08:24*	*04/23/21 12:12*	*1*
Nitrobenzene-d5	*94*		*53 - 120*	*04/22/21 08:24*	*04/23/21 12:12*	*1*
p-Terphenyl-d14	*109*		*79 - 130*	*04/22/21 08:24*	*04/23/21 12:12*	*1*
Phenol-d5	*84*		*54 - 120*	*04/22/21 08:24*	*04/23/21 12:12*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.10	0.0045	mg/L		04/21/21 14:44	04/22/21 16:24	1
2,4-Dinitrotoluene	ND		0.050	0.0043	mg/L		04/21/21 14:44	04/22/21 16:24	1
Hexachlorobenzene	ND		0.050	0.0050	mg/L		04/21/21 14:44	04/22/21 16:24	1
Hexachlorobutadiene	ND		0.050	0.0068	mg/L		04/21/21 14:44	04/22/21 16:24	1
Hexachloroethane	ND		0.050	0.0058	mg/L		04/21/21 14:44	04/22/21 16:24	1
3-Methylphenol	ND		0.10	0.0040	mg/L		04/21/21 14:44	04/22/21 16:24	1
2-Methylphenol	ND		0.050	0.0040	mg/L		04/21/21 14:44	04/22/21 16:24	1
4-Methylphenol	ND		0.10	0.0035	mg/L		04/21/21 14:44	04/22/21 16:24	1
Nitrobenzene	ND		0.050	0.0028	mg/L		04/21/21 14:44	04/22/21 16:24	1
Pentachlorophenol	ND		0.10	0.022	mg/L		04/21/21 14:44	04/22/21 16:24	1
Pyridine	ND		0.25	0.0040	mg/L		04/21/21 14:44	04/22/21 16:24	1
2,4,5-Trichlorophenol	ND		0.050	0.0048	mg/L		04/21/21 14:44	04/22/21 16:24	1
2,4,6-Trichlorophenol	ND		0.050	0.0060	mg/L		04/21/21 14:44	04/22/21 16:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*83*		*41 - 120*	*04/21/21 14:44*	*04/22/21 16:24*	*1*
2-Fluorobiphenyl	*96*		*48 - 120*	*04/21/21 14:44*	*04/22/21 16:24*	*1*
2-Fluorophenol	*49*		*35 - 120*	*04/21/21 14:44*	*04/22/21 16:24*	*1*
Nitrobenzene-d5	*97*		*46 - 120*	*04/21/21 14:44*	*04/22/21 16:24*	*1*
p-Terphenyl-d14	*103*		*60 - 148*	*04/21/21 14:44*	*04/22/21 16:24*	*1*
Phenol-d5	*33*		*22 - 120*	*04/21/21 14:44*	*04/22/21 16:24*	*1*

Method: 8081B - Organochlorine Pesticides (GC) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.00050	0.000015	mg/L		04/21/21 14:47	04/23/21 11:04	1

Client Sample ID: BLDG6-SP-008

Lab Sample ID: 480-183421-2
Date Collected: 04/15/21 10:20
Matrix: Solid
Date Received: 04/16/21 10:00
Percent Solids: 85.2

Method: 8081B - Organochlorine Pesticides (GC) - TCLP (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlordane (technical)	ND		0.0050	0.000073	mg/L		04/21/21 14:47	04/23/21 11:04	1
Endrin	ND		0.00050	0.000035	mg/L		04/21/21 14:47	04/23/21 11:04	1
Heptachlor	ND		0.00050	0.000021	mg/L		04/21/21 14:47	04/23/21 11:04	1
Heptachlor epoxide	ND		0.00050	0.000013	mg/L		04/21/21 14:47	04/23/21 11:04	1
Methoxychlor	ND		0.00050	0.000035	mg/L		04/21/21 14:47	04/23/21 11:04	1
Toxaphene	ND		0.0050	0.00030	mg/L		04/21/21 14:47	04/23/21 11:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*76*		*20 - 120*	*04/21/21 14:47*	*04/23/21 11:04*	*1*
DCB Decachlorobiphenyl	*65*		*20 - 120*	*04/21/21 14:47*	*04/23/21 11:04*	*1*
Tetrachloro-m-xylene	*63*		*44 - 120*	*04/21/21 14:47*	*04/23/21 11:04*	*1*
Tetrachloro-m-xylene	*77*		*44 - 120*	*04/21/21 14:47*	*04/23/21 11:04*	*1*

Method: 8151 - TCLP Herbicides - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND		0.0020	0.00036	mg/L		04/21/21 10:27	04/22/21 20:12	1
2,4-D	ND		0.0020	0.00040	mg/L		04/21/21 10:27	04/22/21 20:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*50*		*48 - 132*	*04/21/21 10:27*	*04/22/21 20:12*	*1*
2,4-Dichlorophenylacetic acid	*43*	*S1-*	*48 - 132*	*04/21/21 10:27*	*04/22/21 20:12*	*1*

Method: 6010C - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.015	0.0056	mg/L		04/21/21 10:58	04/22/21 20:05	1
Barium	ND		1.0	0.10	mg/L		04/21/21 10:58	04/22/21 20:05	1
Cadmium	ND		0.0020	0.00050	mg/L		04/21/21 10:58	04/22/21 20:05	1
Chromium	ND		0.020	0.010	mg/L		04/21/21 10:58	04/22/21 20:05	1
Lead	**0.0038**	**J**	0.020	0.0030	mg/L		04/21/21 10:58	04/22/21 20:05	1
Selenium	ND		0.025	0.0087	mg/L		04/21/21 10:58	04/22/21 20:05	1
Silver	ND		0.0060	0.0017	mg/L		04/21/21 10:58	04/22/21 20:05	1

Method: 7470A - TCLP Mercury - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		04/21/21 13:26	04/21/21 18:13	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Flashpoint	**>176**		50.0	50.0	Degrees F			04/22/21 15:44	1
pH	**4.2**	**HF**	0.1	0.1	SU			04/20/21 13:00	1
Temperature	**19.8**	**HF**	0.001	0.001	Degrees C			04/20/21 13:00	1

Client Sample ID: BLDG6-SP-009

Lab Sample ID: 480-183421-3
Date Collected: 04/15/21 11:05
Matrix: Solid
Date Received: 04/16/21 10:00
Percent Solids: 96.3

Method: 8260C - TCLP Volatiles - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.010	0.0041	mg/L			04/21/21 17:34	10
Carbon tetrachloride	ND		0.010	0.0027	mg/L			04/21/21 17:34	10
Chlorobenzene	ND		0.010	0.0075	mg/L			04/21/21 17:34	10

Client Sample ID: BLDG6-SP-009
Date Collected: 04/15/21 11:05
Date Received: 04/16/21 10:00

Lab Sample ID: 480-183421-3
Matrix: Solid
Percent Solids: 96.3

Method: 8260C - TCLP Volatiles - TCLP (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroform	ND		0.010	0.0034	mg/L			04/21/21 17:34	10
1,2-Dichloroethane	ND		0.010	0.0021	mg/L			04/21/21 17:34	10
1,1-Dichloroethene	ND		0.010	0.0029	mg/L			04/21/21 17:34	10
2-Butanone (MEK)	ND		0.050	0.013	mg/L			04/21/21 17:34	10
Tetrachloroethene	ND		0.010	0.0036	mg/L			04/21/21 17:34	10
Trichloroethene	ND		0.010	0.0046	mg/L			04/21/21 17:34	10
Vinyl chloride	ND		0.010	0.0090	mg/L			04/21/21 17:34	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*77 - 120*		*04/21/21 17:34*	*10*
Toluene-d8 (Surr)	*92*		*80 - 120*		*04/21/21 17:34*	*10*
4-Bromofluorobenzene (Surr)	*91*		*73 - 120*		*04/21/21 17:34*	*10*
Dibromofluoromethane (Surr)	*97*		*75 - 123*		*04/21/21 17:34*	*10*

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND	vs	5.1	0.37	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
1,1,2,2-Tetrachloroethane	ND	vs	5.1	0.83	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
1,1,2-Trichloroethane	ND	vs	5.1	0.67	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	vs	5.1	1.2	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
1,1-Dichloroethane	ND	vs	5.1	0.63	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
1,1-Dichloroethene	ND	vs	5.1	0.63	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
1,2,4-Trichlorobenzene	ND	vs	5.1	0.31	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
1,2-Dibromo-3-Chloropropane	ND	vs	5.1	2.6	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
1,2-Dichlorobenzene	ND	vs	5.1	0.40	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
1,2-Dichloroethane	ND	vs	5.1	0.26	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
1,2-Dichloropropane	ND	vs	5.1	2.6	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
1,3-Dichlorobenzene	ND	vs	5.1	0.26	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
1,4-Dichlorobenzene	ND	vs	5.1	0.72	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
2-Butanone (MEK)	ND	vs	26	1.9	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
2-Hexanone	ND	vs	26	2.6	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
4-Methyl-2-pentanone (MIBK)	ND	vs	26	1.7	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
Acetone	ND	vs	26	4.3	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
Benzene	ND	vs	5.1	0.25	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
Bromodichloromethane	ND	vs	5.1	0.69	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
Bromoform	ND	vs	5.1	2.6	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
Bromomethane	ND	vs	5.1	0.46	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
Carbon disulfide	ND	vs	5.1	2.6	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
Carbon tetrachloride	ND	vs	5.1	0.50	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
Chlorobenzene	ND	vs	5.1	0.68	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
Dibromochloromethane	ND	vs	5.1	0.66	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
Chloroethane	ND	vs	5.1	1.2	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
Chloroform	ND	vs	5.1	0.32	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
Chloromethane	ND	vs	5.1	0.31	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
cis-1,2-Dichloroethene	ND	vs	5.1	0.66	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
cis-1,3-Dichloropropene	ND	vs	5.1	0.74	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
Cyclohexane	ND	vs	5.1	0.72	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
Dichlorodifluoromethane	ND	vs	5.1	0.42	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
Ethylbenzene	ND	vs	5.1	0.35	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
1,2-Dibromoethane	ND	vs	5.1	0.66	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1

Client Sample ID: BLDG6-SP-009
Date Collected: 04/15/21 11:05
Date Received: 04/16/21 10:00

Lab Sample ID: 480-183421-3
Matrix: Solid
Percent Solids: 96.3

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Isopropylbenzene	ND	vs	5.1	0.77	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
Methyl acetate	ND	vs	26	3.1	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
Methyl tert-butyl ether	ND	vs	5.1	0.50	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
Methylcyclohexane	ND	vs	5.1	0.78	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
Methylene Chloride	ND	vs	5.1	2.4	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
Styrene	ND	vs	5.1	0.26	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
Tetrachloroethene	ND	vs	5.1	0.69	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
Toluene	ND	vs	5.1	0.39	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
trans-1,2-Dichloroethene	ND	vs	5.1	0.53	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
trans-1,3-Dichloropropene	ND	vs	5.1	2.3	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
Trichloroethene	ND	vs	5.1	1.1	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
Trichlorofluoromethane	ND	vs	5.1	0.49	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
Vinyl chloride	ND	vs	5.1	0.63	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1
Xylenes, Total	ND	vs	10	0.86	ug/Kg	☼	04/20/21 18:46	04/20/21 22:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*71 - 125*	*04/20/21 18:46*	*04/20/21 22:38*	*1*
1,2-Dichloroethane-d4 (Surr)	*121*		*64 - 126*	*04/20/21 18:46*	*04/20/21 22:38*	*1*
4-Bromofluorobenzene (Surr)	*112*		*72 - 126*	*04/20/21 18:46*	*04/20/21 22:38*	*1*
Dibromofluoromethane (Surr)	*108*		*60 - 140*	*04/20/21 18:46*	*04/20/21 22:38*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biphenyl	ND		4700	690	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
bis (2-chloroisopropyl) ether	ND		4700	940	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
2,4,5-Trichlorophenol	ND		4700	1300	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
2,4,6-Trichlorophenol	ND		4700	940	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
2,4-Dichlorophenol	ND		4700	500	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
2,4-Dimethylphenol	ND		4700	1100	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
2,4-Dinitrophenol	ND		46000	22000	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
2,4-Dinitrotoluene	ND		4700	970	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
2,6-Dinitrotoluene	ND		4700	550	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
2-Chloronaphthalene	ND		4700	770	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
1,4-Dioxane	ND		2800	1500	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
2-Chlorophenol	ND		9100	850	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
2-Methylnaphthalene	ND		4700	940	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
2-Methylphenol	ND		4700	550	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
2-Nitroaniline	ND		9100	690	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
2-Nitrophenol	ND		4700	1300	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
3,3'-Dichlorobenzidine	ND		9100	5500	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
3-Nitroaniline	ND		9100	1300	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
4,6-Dinitro-2-methylphenol	ND		9100	4700	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
4-Bromophenyl phenyl ether	ND		4700	660	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
4-Chloro-3-methylphenol	ND		4700	1200	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
4-Chloroaniline	ND		4700	1200	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
4-Chlorophenyl phenyl ether	ND		4700	580	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
4-Methylphenol	ND		9100	550	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
4-Nitroaniline	ND		9100	2500	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
4-Nitrophenol	ND		9100	3300	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
Acenaphthene	ND		4700	690	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5

Client Sample ID: BLDG6-SP-009
Date Collected: 04/15/21 11:05
Date Received: 04/16/21 10:00

Lab Sample ID: 480-183421-3
Matrix: Solid
Percent Solids: 96.3

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthylene	ND		4700	610	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
Acetophenone	ND		4700	630	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
Anthracene	ND		4700	1200	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
Atrazine	ND		4700	1600	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
Benzaldehyde	ND		4700	3700	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
Benzo[a]anthracene	ND		4700	470	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
Benzo[a]pyrene	ND		4700	690	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
Benzo[b]fluoranthene	ND		4700	740	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
Benzo[g,h,i]perylene	ND		4700	500	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
Benzo[k]fluoranthene	ND		4700	610	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
Bis(2-chloroethoxy)methane	ND		4700	990	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
Bis(2-chloroethyl)ether	ND		4700	610	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
Bis(2-ethylhexyl) phthalate	ND		4700	1600	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
Butyl benzyl phthalate	ND		4700	770	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
Caprolactam	ND		4700	1400	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
Carbazole	ND		4700	550	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
Chrysene	ND		4700	1000	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
Di-n-butyl phthalate	ND		4700	800	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
Di-n-octyl phthalate	ND		4700	550	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
Dibenz(a,h)anthracene	ND		4700	830	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
Dibenzofuran	ND		4700	550	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
Diethyl phthalate	ND		4700	610	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
Dimethyl phthalate	ND		4700	550	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
Fluoranthene	ND		4700	500	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
Fluorene	ND		4700	550	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
Hexachlorobenzene	ND		4700	630	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
Hexachlorobutadiene	ND		4700	690	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
Hexachlorocyclopentadiene	ND		4700	630	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
Hexachloroethane	ND		4700	610	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
Indeno[1,2,3-cd]pyrene	ND		4700	580	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
Isophorone	ND		4700	990	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
N-Nitrosodi-n-propylamine	ND		4700	800	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
N-Nitrosodiphenylamine	ND		4700	3800	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
Naphthalene	ND		4700	610	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
Nitrobenzene	ND		4700	520	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
Pentachlorophenol	ND		9100	4700	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
Phenanthrene	ND		4700	690	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
Phenol	ND		4700	720	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5
Pyrene	ND		4700	550	ug/Kg	☼	04/22/21 08:24	04/23/21 12:36	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*52*	*S1-*	*54 - 120*	*04/22/21 08:24*	*04/23/21 12:36*	*5*
2-Fluorobiphenyl	*84*		*60 - 120*	*04/22/21 08:24*	*04/23/21 12:36*	*5*
2-Fluorophenol	*61*		*52 - 120*	*04/22/21 08:24*	*04/23/21 12:36*	*5*
Nitrobenzene-d5	*79*		*53 - 120*	*04/22/21 08:24*	*04/23/21 12:36*	*5*
p-Terphenyl-d14	*94*		*79 - 130*	*04/22/21 08:24*	*04/23/21 12:36*	*5*
Phenol-d5	*79*		*54 - 120*	*04/22/21 08:24*	*04/23/21 12:36*	*5*

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183421-1

Client Sample ID: BLDG6-SP-009
Date Collected: 04/15/21 11:05
Date Received: 04/16/21 10:00

Lab Sample ID: 480-183421-3
Matrix: Solid
Percent Solids: 96.3

Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.040	0.0018	mg/L		04/21/21 14:44	04/22/21 16:48	1
2,4-Dinitrotoluene	ND		0.020	0.0017	mg/L		04/21/21 14:44	04/22/21 16:48	1
Hexachlorobenzene	ND		0.020	0.0020	mg/L		04/21/21 14:44	04/22/21 16:48	1
Hexachlorobutadiene	ND		0.020	0.0027	mg/L		04/21/21 14:44	04/22/21 16:48	1
Hexachloroethane	ND		0.020	0.0023	mg/L		04/21/21 14:44	04/22/21 16:48	1
3-Methylphenol	ND		0.040	0.0016	mg/L		04/21/21 14:44	04/22/21 16:48	1
2-Methylphenol	ND		0.020	0.0016	mg/L		04/21/21 14:44	04/22/21 16:48	1
4-Methylphenol	ND		0.040	0.0014	mg/L		04/21/21 14:44	04/22/21 16:48	1
Nitrobenzene	ND		0.020	0.0011	mg/L		04/21/21 14:44	04/22/21 16:48	1
Pentachlorophenol	ND		0.040	0.0088	mg/L		04/21/21 14:44	04/22/21 16:48	1
Pyridine	ND		0.10	0.0016	mg/L		04/21/21 14:44	04/22/21 16:48	1
2,4,5-Trichlorophenol	ND		0.020	0.0019	mg/L		04/21/21 14:44	04/22/21 16:48	1
2,4,6-Trichlorophenol	ND		0.020	0.0024	mg/L		04/21/21 14:44	04/22/21 16:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*84*		*41 - 120*	*04/21/21 14:44*	*04/22/21 16:48*	*1*
2-Fluorobiphenyl	*101*		*48 - 120*	*04/21/21 14:44*	*04/22/21 16:48*	*1*
2-Fluorophenol	*52*		*35 - 120*	*04/21/21 14:44*	*04/22/21 16:48*	*1*
Nitrobenzene-d5	*98*		*46 - 120*	*04/21/21 14:44*	*04/22/21 16:48*	*1*
p-Terphenyl-d14	*109*		*60 - 148*	*04/21/21 14:44*	*04/22/21 16:48*	*1*
Phenol-d5	*34*		*22 - 120*	*04/21/21 14:44*	*04/22/21 16:48*	*1*

Method: 8081B - Organochlorine Pesticides (GC) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.00020	0.0000060	mg/L		04/21/21 14:47	04/23/21 11:23	1
Chlordane (technical)	ND		0.0020	0.000029	mg/L		04/21/21 14:47	04/23/21 11:23	1
Endrin	ND		0.00020	0.000014	mg/L		04/21/21 14:47	04/23/21 11:23	1
Heptachlor	ND		0.00020	0.0000085	mg/L		04/21/21 14:47	04/23/21 11:23	1
Heptachlor epoxide	ND		0.00020	0.0000053	mg/L		04/21/21 14:47	04/23/21 11:23	1
Methoxychlor	ND		0.00020	0.000014	mg/L		04/21/21 14:47	04/23/21 11:23	1
Toxaphene	ND		0.0020	0.00012	mg/L		04/21/21 14:47	04/23/21 11:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*117*		*20 - 120*	*04/21/21 14:47*	*04/23/21 11:23*	*1*
DCB Decachlorobiphenyl	*89*		*20 - 120*	*04/21/21 14:47*	*04/23/21 11:23*	*1*
Tetrachloro-m-xylene	*74*		*44 - 120*	*04/21/21 14:47*	*04/23/21 11:23*	*1*
Tetrachloro-m-xylene	*80*		*44 - 120*	*04/21/21 14:47*	*04/23/21 11:23*	*1*

Method: 8151 - TCLP Herbicides - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND		0.0020	0.00036	mg/L		04/21/21 10:27	04/22/21 20:41	1
2,4-D	ND		0.0020	0.00040	mg/L		04/21/21 10:27	04/22/21 20:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*41*	*S1-*	*48 - 132*	*04/21/21 10:27*	*04/22/21 20:41*	*1*
2,4-Dichlorophenylacetic acid	*47*	*S1-*	*48 - 132*	*04/21/21 10:27*	*04/22/21 20:41*	*1*

Method: 6010C - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.015	0.0056	mg/L		04/21/21 10:58	04/22/21 20:09	1
Barium	**0.23**	**J**	1.0	0.10	mg/L		04/21/21 10:58	04/22/21 20:09	1

Client Sample ID: BLDG6-SP-009

Date Collected: 04/15/21 11:05
Date Received: 04/16/21 10:00

Lab Sample ID: 480-183421-3
Matrix: Solid
Percent Solids: 96.3

Method: 6010C - Metals (ICP) - TCLP (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	0.00084	J	0.0020	0.00050	mg/L		04/21/21 10:58	04/22/21 20:09	1
Chromium	ND		0.020	0.010	mg/L		04/21/21 10:58	04/22/21 20:09	1
Lead	0.078		0.020	0.0030	mg/L		04/21/21 10:58	04/22/21 20:09	1
Selenium	ND		0.025	0.0087	mg/L		04/21/21 10:58	04/22/21 20:09	1
Silver	ND		0.0060	0.0017	mg/L		04/21/21 10:58	04/22/21 20:09	1

Method: 7470A - TCLP Mercury - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	F1	0.00020	0.00012	mg/L		04/21/21 13:26	04/21/21 18:14	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Flashpoint	>176		50.0	50.0	Degrees F			04/22/21 15:44	1
pH	8.2	HF	0.1	0.1	SU			04/20/21 13:00	1
Temperature	20.2	HF	0.001	0.001	Degrees C			04/20/21 13:00	1

Surrogate Summary

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183421-1

Method: 8260C - TCLP Volatiles

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		TOL	DCA	BFB	DBFM
Lab Sample ID	Client Sample ID	(80-120)	(77-120)	(73-120)	(75-123)
LCS 480-577162/5	Lab Control Sample	95	96	93	98
MB 480-577162/7	Method Blank	90	99	89	101

Surrogate Legend

TOL = Toluene-d8 (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260C - TCLP Volatiles

Matrix: Solid **Prep Type: TCLP**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	TOL	BFB	DBFM
Lab Sample ID	Client Sample ID	(77-120)	(80-120)	(73-120)	(75-123)
480-183421-1	BLDG5-SP-007	102	93	91	99
480-183421-2	BLDG6-SP-008	101	94	92	98
480-183421-3	BLDG6-SP-009	99	92	91	97
LB 480-577047/1-A	Method Blank	100	92	90	97

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		TOL	DCA	BFB	DBFM
Lab Sample ID	Client Sample ID	(71-125)	(64-126)	(72-126)	(60-140)
480-183421-1	BLDG5-SP-007	101	121	106	106
480-183421-2 - DL	BLDG6-SP-008	100	118	110	109
480-183421-3	BLDG6-SP-009	98	121	112	108
LCS 480-576925/1-A	Lab Control Sample	97	117	111	101
LCS 480-577024/1-A	Lab Control Sample	96	119	114	108
LCS 480-577107/1-A	Lab Control Sample	96	120	109	104
MB 480-576925/2-A	Method Blank	98	117	110	109
MB 480-577024/2-A	Method Blank	100	118	111	105
MB 480-577107/2-A	Method Blank	95	115	108	105

Surrogate Legend

TOL = Toluene-d8 (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)					
		TBP	FBP	2FP	NBZ	TPHd14	PHL
Lab Sample ID	Client Sample ID	(54-120)	(60-120)	(52-120)	(53-120)	(79-130)	(54-120)
480-183421-1	BLDG5-SP-007	93	102	82	92	111	89
480-183421-2	BLDG6-SP-008	96	96	81	94	109	84
480-183421-3	BLDG6-SP-009	52 S1-	84	61	79	94	79
LCS 480-577340/2-A	Lab Control Sample	92	90	74	86	101	77
MB 480-577340/1-A	Method Blank	87	98	87	95	112	87

Surrogate Legend

TBP = 2,4,6-Tribromophenol
FBP = 2-Fluorobiphenyl
2FP = 2-Fluorophenol
NBZ = Nitrobenzene-d5
TPHd14 = p-Terphenyl-d14
PHL = Phenol-d5

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)					
		TBP	FBP	2FP	NBZ	TPHd14	PHL
Lab Sample ID	Client Sample ID	(41-120)	(48-120)	(35-120)	(46-120)	(60-148)	(22-120)
LCS 480-577247/2-A	Lab Control Sample	96	101	53	98	113	35
LCSD 480-577247/3-A	Lab Control Sample Dup	92	99	50	94	105	33
MB 480-577247/1-A	Method Blank	76	103	50	96	113	34

Surrogate Legend

TBP = 2,4,6-Tribromophenol
FBP = 2-Fluorobiphenyl
2FP = 2-Fluorophenol
NBZ = Nitrobenzene-d5
TPHd14 = p-Terphenyl-d14
PHL = Phenol-d5

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Solid **Prep Type: TCLP**

		Percent Surrogate Recovery (Acceptance Limits)					
		TBP	FBP	2FP	NBZ	TPHd14	PHL
Lab Sample ID	Client Sample ID	(41-120)	(48-120)	(35-120)	(46-120)	(60-148)	(22-120)
480-183421-1	BLDG5-SP-007	88	100	49	97	87	32
480-183421-2	BLDG6-SP-008	83	96	49	97	103	33
480-183421-3	BLDG6-SP-009	84	101	52	98	109	34
LB 480-577044/1-E	Method Blank	89	103	55	102	114	36

Surrogate Legend

TBP = 2,4,6-Tribromophenol
FBP = 2-Fluorobiphenyl
2FP = 2-Fluorophenol
NBZ = Nitrobenzene-d5
TPHd14 = p-Terphenyl-d14
PHL = Phenol-d5

Surrogate Summary

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183421-1

Method: 8081B - Organochlorine Pesticides (GC)

Matrix: Solid **Prep Type: Total/NA**

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCBP1 (20-120)	DCBP2 (20-120)	TCX1 (44-120)	TCX2 (44-120)
LCS 480-577248/2-A	Lab Control Sample	76	58	103	91
LCSD 480-577248/3-A	Lab Control Sample Dup	76	57	105	93
MB 480-577248/1-A	Method Blank	72	56	107	95

Surrogate Legend

DCBP = DCB Decachlorobiphenyl
TCX = Tetrachloro-m-xylene

Method: 8081B - Organochlorine Pesticides (GC)

Matrix: Solid **Prep Type: TCLP**

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCBP1 (20-120)	DCBP2 (20-120)	TCX1 (44-120)	TCX2 (44-120)
480-183421-1	BLDG5-SP-007	104	84	88	76
480-183421-2	BLDG6-SP-008	76	65	63	77
480-183421-3	BLDG6-SP-009	117	89	74	80
LB 480-577044/1-F	Method Blank	94	72	106	87

Surrogate Legend

DCBP = DCB Decachlorobiphenyl
TCX = Tetrachloro-m-xylene

Method: 8151 - TCLP Herbicides

Matrix: Solid **Prep Type: Total/NA**

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCPAA1 (48-132)	DCPAA2 (48-132)
LCS 480-577175/2-A	Lab Control Sample	80	58
MB 480-577175/1-A	Method Blank	73	65

Surrogate Legend

DCPAA = 2,4-Dichlorophenylacetic acid

Method: 8151 - TCLP Herbicides

Matrix: Solid **Prep Type: TCLP**

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCPAA1 (48-132)	DCPAA2 (48-132)
480-183421-1	BLDG5-SP-007	30 S1-	40 S1-
480-183421-2	BLDG6-SP-008	50	43 S1-
480-183421-3	BLDG6-SP-009	41 S1-	47 S1-
LB 480-577044/1-B	Method Blank	42 S1-	32 S1-

Surrogate Legend

DCPAA = 2,4-Dichlorophenylacetic acid

Method: 8260C - TCLP Volatiles

Lab Sample ID: MB 480-577162/7
Matrix: Solid
Analysis Batch: 577162

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.0010	0.00029	mg/L			04/21/21 11:11	1
1,2-Dichloroethane	ND		0.0010	0.00021	mg/L			04/21/21 11:11	1
2-Butanone (MEK)	ND		0.0050	0.0013	mg/L			04/21/21 11:11	1
Benzene	ND		0.0010	0.00041	mg/L			04/21/21 11:11	1
Carbon tetrachloride	ND		0.0010	0.00027	mg/L			04/21/21 11:11	1
Chlorobenzene	ND		0.0010	0.00075	mg/L			04/21/21 11:11	1
Chloroform	ND		0.0010	0.00034	mg/L			04/21/21 11:11	1
Tetrachloroethene	ND		0.0010	0.00036	mg/L			04/21/21 11:11	1
Trichloroethene	ND		0.0010	0.00046	mg/L			04/21/21 11:11	1
Vinyl chloride	ND		0.0010	0.00090	mg/L			04/21/21 11:11	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*90*		*80 - 120*		*04/21/21 11:11*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*77 - 120*		*04/21/21 11:11*	*1*
4-Bromofluorobenzene (Surr)	*89*		*73 - 120*		*04/21/21 11:11*	*1*
Dibromofluoromethane (Surr)	*101*		*75 - 123*		*04/21/21 11:11*	*1*

Lab Sample ID: LCS 480-577162/5
Matrix: Solid
Analysis Batch: 577162

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	0.0250	0.0261		mg/L		104	66 - 127
1,2-Dichloroethane	0.0250	0.0266		mg/L		106	75 - 120
2-Butanone (MEK)	0.125	0.149		mg/L		119	57 - 140
Benzene	0.0250	0.0258		mg/L		103	71 - 124
Carbon tetrachloride	0.0250	0.0261		mg/L		104	72 - 134
Chlorobenzene	0.0250	0.0259		mg/L		104	80 - 120
Chloroform	0.0250	0.0241		mg/L		96	73 - 127
Tetrachloroethene	0.0250	0.0257		mg/L		103	74 - 122
Trichloroethene	0.0250	0.0253		mg/L		101	74 - 123
Vinyl chloride	0.0250	0.0212		mg/L		85	65 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*95*		*80 - 120*
1,2-Dichloroethane-d4 (Surr)	*96*		*77 - 120*
4-Bromofluorobenzene (Surr)	*93*		*73 - 120*
Dibromofluoromethane (Surr)	*98*		*75 - 123*

Lab Sample ID: LB 480-577047/1-A
Matrix: Solid
Analysis Batch: 577162

Client Sample ID: Method Blank
Prep Type: TCLP

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.010	0.0029	mg/L			04/21/21 16:24	10
1,2-Dichloroethane	ND		0.010	0.0021	mg/L			04/21/21 16:24	10
2-Butanone (MEK)	ND		0.050	0.013	mg/L			04/21/21 16:24	10
Benzene	ND		0.010	0.0041	mg/L			04/21/21 16:24	10

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183421-1

Method: 8260C - TCLP Volatiles (Continued)

Lab Sample ID: LB 480-577047/1-A
Matrix: Solid
Analysis Batch: 577162

Client Sample ID: Method Blank
Prep Type: TCLP

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	ND		0.010	0.0027	mg/L			04/21/21 16:24	10
Chlorobenzene	ND		0.010	0.0075	mg/L			04/21/21 16:24	10
Chloroform	ND		0.010	0.0034	mg/L			04/21/21 16:24	10
Tetrachloroethene	ND		0.010	0.0036	mg/L			04/21/21 16:24	10
Trichloroethene	ND		0.010	0.0046	mg/L			04/21/21 16:24	10
Vinyl chloride	ND		0.010	0.0090	mg/L			04/21/21 16:24	10

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*92*		*80 - 120*		*04/21/21 16:24*	*10*
1,2-Dichloroethane-d4 (Surr)	*100*		*77 - 120*		*04/21/21 16:24*	*10*
4-Bromofluorobenzene (Surr)	*90*		*73 - 120*		*04/21/21 16:24*	*10*
Dibromofluoromethane (Surr)	*97*		*75 - 123*		*04/21/21 16:24*	*10*

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 480-576925/2-A
Matrix: Solid
Analysis Batch: 576959

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 576925

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5.0	0.36	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
1,1,2,2-Tetrachloroethane	ND		5.0	0.81	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
1,1,2-Trichloroethane	ND		5.0	0.65	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		5.0	1.1	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
1,1-Dichloroethane	ND		5.0	0.61	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
1,1-Dichloroethene	ND		5.0	0.61	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
1,2,4-Trichlorobenzene	ND		5.0	0.30	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
1,2-Dibromo-3-Chloropropane	ND		5.0	2.5	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
1,2-Dichlorobenzene	ND		5.0	0.39	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
1,2-Dichloroethane	ND		5.0	0.25	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
1,2-Dichloropropane	ND		5.0	2.5	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
1,3-Dichlorobenzene	ND		5.0	0.26	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
1,4-Dichlorobenzene	ND		5.0	0.70	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
2-Butanone (MEK)	ND		25	1.8	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
2-Hexanone	ND		25	2.5	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
4-Methyl-2-pentanone (MIBK)	ND		25	1.6	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
Acetone	ND		25	4.2	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
Benzene	ND		5.0	0.25	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
Bromodichloromethane	ND		5.0	0.67	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
Bromoform	ND		5.0	2.5	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
Bromomethane	ND		5.0	0.45	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
Carbon disulfide	ND		5.0	2.5	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
Carbon tetrachloride	ND		5.0	0.48	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
Chlorobenzene	ND		5.0	0.66	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
Dibromochloromethane	ND		5.0	0.64	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
Chloroethane	ND		5.0	1.1	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
Chloroform	ND		5.0	0.31	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
Chloromethane	ND		5.0	0.30	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
cis-1,2-Dichloroethene	ND		5.0	0.64	ug/Kg		04/19/21 17:09	04/20/21 11:32	1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 480-576925/2-A
Matrix: Solid
Analysis Batch: 576959

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 576925

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,3-Dichloropropene	ND		5.0	0.72	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
Cyclohexane	ND		5.0	0.70	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
Dichlorodifluoromethane	ND		5.0	0.41	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
Ethylbenzene	ND		5.0	0.35	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
1,2-Dibromoethane	ND		5.0	0.64	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
Isopropylbenzene	ND		5.0	0.75	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
Methyl acetate	ND		25	3.0	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
Methyl tert-butyl ether	ND		5.0	0.49	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
Methylcyclohexane	ND		5.0	0.76	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
Methylene Chloride	ND		5.0	2.3	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
Styrene	ND		5.0	0.25	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
Tetrachloroethene	ND		5.0	0.67	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
Toluene	ND		5.0	0.38	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
trans-1,2-Dichloroethene	ND		5.0	0.52	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
trans-1,3-Dichloropropene	ND		5.0	2.2	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
Trichloroethene	ND		5.0	1.1	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
Trichlorofluoromethane	ND		5.0	0.47	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
Vinyl chloride	ND		5.0	0.61	ug/Kg		04/19/21 17:09	04/20/21 11:32	1
Xylenes, Total	ND		10	0.84	ug/Kg		04/19/21 17:09	04/20/21 11:32	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*71 - 125*	*04/19/21 17:09*	*04/20/21 11:32*	*1*
1,2-Dichloroethane-d4 (Surr)	*117*		*64 - 126*	*04/19/21 17:09*	*04/20/21 11:32*	*1*
4-Bromofluorobenzene (Surr)	*110*		*72 - 126*	*04/19/21 17:09*	*04/20/21 11:32*	*1*
Dibromofluoromethane (Surr)	*109*		*60 - 140*	*04/19/21 17:09*	*04/20/21 11:32*	*1*

Lab Sample ID: LCS 480-576925/1-A
Matrix: Solid
Analysis Batch: 576959

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 576925

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	50.0	57.5		ug/Kg		115	77 - 121
1,1,2,2-Tetrachloroethane	50.0	44.7		ug/Kg		89	80 - 120
1,1,2-Trichloroethane	50.0	43.3		ug/Kg		87	78 - 122
1,1,2-Trichloro-1,2,2-trifluoroethane	50.0	47.4		ug/Kg		95	60 - 140
1,1-Dichloroethane	50.0	48.0		ug/Kg		96	73 - 126
1,1-Dichloroethene	50.0	47.4		ug/Kg		95	59 - 125
1,2,4-Trichlorobenzene	50.0	52.6		ug/Kg		105	64 - 120
1,2-Dibromo-3-Chloropropane	50.0	52.5		ug/Kg		105	63 - 124
1,2-Dichlorobenzene	50.0	48.2		ug/Kg		96	75 - 120
1,2-Dichloroethane	50.0	56.5		ug/Kg		113	77 - 122
1,2-Dichloropropane	50.0	48.2		ug/Kg		96	75 - 124
1,3-Dichlorobenzene	50.0	48.8		ug/Kg		98	74 - 120
1,4-Dichlorobenzene	50.0	47.6		ug/Kg		95	73 - 120
2-Butanone (MEK)	250	235		ug/Kg		94	70 - 134
2-Hexanone	250	223		ug/Kg		89	59 - 130
4-Methyl-2-pentanone (MIBK)	250	205		ug/Kg		82	65 - 133
Acetone	250	247		ug/Kg		99	61 - 137

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 480-576925/1-A
Matrix: Solid
Analysis Batch: 576959

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 576925

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	50.0	47.1		ug/Kg		94	79 - 127
Bromodichloromethane	50.0	54.8		ug/Kg		110	80 - 122
Bromoform	50.0	52.4		ug/Kg		105	68 - 126
Bromomethane	50.0	52.7		ug/Kg		105	37 - 149
Carbon disulfide	50.0	45.3		ug/Kg		91	64 - 131
Carbon tetrachloride	50.0	56.5		ug/Kg		113	75 - 135
Chlorobenzene	50.0	42.8		ug/Kg		86	76 - 124
Dibromochloromethane	50.0	45.7		ug/Kg		91	76 - 125
Chloroethane	50.0	50.0		ug/Kg		100	69 - 135
Chloroform	50.0	51.4		ug/Kg		103	80 - 120
Chloromethane	50.0	44.8		ug/Kg		90	63 - 127
cis-1,2-Dichloroethene	50.0	48.9		ug/Kg		98	81 - 120
cis-1,3-Dichloropropene	50.0	50.4		ug/Kg		101	80 - 120
Cyclohexane	50.0	45.4		ug/Kg		91	65 - 120
Dichlorodifluoromethane	50.0	60.4		ug/Kg		121	57 - 142
Ethylbenzene	50.0	47.3		ug/Kg		95	80 - 120
1,2-Dibromoethane	50.0	43.0		ug/Kg		86	78 - 120
Isopropylbenzene	50.0	49.0		ug/Kg		98	72 - 120
Methyl acetate	100	88.1		ug/Kg		88	55 - 136
Methyl tert-butyl ether	50.0	51.2		ug/Kg		102	63 - 125
Methylcyclohexane	50.0	46.2		ug/Kg		92	60 - 140
Methylene Chloride	50.0	43.9		ug/Kg		88	61 - 127
Styrene	50.0	44.8		ug/Kg		90	80 - 120
Tetrachloroethene	50.0	49.9		ug/Kg		100	74 - 122
Toluene	50.0	44.7		ug/Kg		89	74 - 128
trans-1,2-Dichloroethene	50.0	48.2		ug/Kg		96	78 - 126
trans-1,3-Dichloropropene	50.0	49.6		ug/Kg		99	73 - 123
Trichloroethene	50.0	51.6		ug/Kg		103	77 - 129
Trichlorofluoromethane	50.0	68.3		ug/Kg		137	65 - 146
Vinyl chloride	50.0	47.4		ug/Kg		95	61 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*97*		*71 - 125*
1,2-Dichloroethane-d4 (Surr)	*117*		*64 - 126*
4-Bromofluorobenzene (Surr)	*111*		*72 - 126*
Dibromofluoromethane (Surr)	*101*		*60 - 140*

Lab Sample ID: MB 480-577024/2-A
Matrix: Solid
Analysis Batch: 576959

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 577024

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5.0	0.36	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
1,1,2,2-Tetrachloroethane	ND		5.0	0.81	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
1,1,2-Trichloroethane	ND		5.0	0.65	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		5.0	1.1	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
1,1-Dichloroethane	ND		5.0	0.61	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
1,1-Dichloroethene	ND		5.0	0.61	ug/Kg		04/20/21 10:26	04/20/21 11:57	1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 480-577024/2-A
Client Sample ID: Method Blank
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 576959
Prep Batch: 577024

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	ND		5.0	0.30	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
1,2-Dibromo-3-Chloropropane	ND		5.0	2.5	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
1,2-Dichlorobenzene	ND		5.0	0.39	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
1,2-Dichloroethane	ND		5.0	0.25	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
1,2-Dichloropropane	ND		5.0	2.5	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
1,3-Dichlorobenzene	ND		5.0	0.26	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
1,4-Dichlorobenzene	ND		5.0	0.70	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
2-Butanone (MEK)	ND		25	1.8	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
2-Hexanone	ND		25	2.5	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
4-Methyl-2-pentanone (MIBK)	ND		25	1.6	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
Acetone	ND		25	4.2	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
Benzene	ND		5.0	0.25	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
Bromodichloromethane	ND		5.0	0.67	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
Bromoform	ND		5.0	2.5	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
Bromomethane	ND		5.0	0.45	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
Carbon disulfide	ND		5.0	2.5	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
Carbon tetrachloride	ND		5.0	0.48	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
Chlorobenzene	ND		5.0	0.66	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
Dibromochloromethane	ND		5.0	0.64	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
Chloroethane	ND		5.0	1.1	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
Chloroform	ND		5.0	0.31	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
Chloromethane	ND		5.0	0.30	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
cis-1,2-Dichloroethene	ND		5.0	0.64	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
cis-1,3-Dichloropropene	ND		5.0	0.72	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
Cyclohexane	ND		5.0	0.70	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
Dichlorodifluoromethane	ND		5.0	0.41	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
Ethylbenzene	ND		5.0	0.35	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
1,2-Dibromoethane	ND		5.0	0.64	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
Isopropylbenzene	ND		5.0	0.75	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
Methyl acetate	ND		25	3.0	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
Methyl tert-butyl ether	ND		5.0	0.49	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
Methylcyclohexane	ND		5.0	0.76	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
Methylene Chloride	ND		5.0	2.3	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
Styrene	ND		5.0	0.25	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
Tetrachloroethene	ND		5.0	0.67	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
Toluene	ND		5.0	0.38	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
trans-1,2-Dichloroethene	ND		5.0	0.52	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
trans-1,3-Dichloropropene	ND		5.0	2.2	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
Trichloroethene	ND		5.0	1.1	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
Trichlorofluoromethane	ND		5.0	0.47	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
Vinyl chloride	ND		5.0	0.61	ug/Kg		04/20/21 10:26	04/20/21 11:57	1
Xylenes, Total	ND		10	0.84	ug/Kg		04/20/21 10:26	04/20/21 11:57	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*71 - 125*	*04/20/21 10:26*	*04/20/21 11:57*	*1*
1,2-Dichloroethane-d4 (Surr)	*118*		*64 - 126*	*04/20/21 10:26*	*04/20/21 11:57*	*1*
4-Bromofluorobenzene (Surr)	*111*		*72 - 126*	*04/20/21 10:26*	*04/20/21 11:57*	*1*
Dibromofluoromethane (Surr)	*105*		*60 - 140*	*04/20/21 10:26*	*04/20/21 11:57*	*1*

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183421-1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 480-577024/1-A
Matrix: Solid
Analysis Batch: 576959

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 577024

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	50.0	54.4		ug/Kg		109	77 - 121
1,1,2,2-Tetrachloroethane	50.0	46.4		ug/Kg		93	80 - 120
1,1,2-Trichloroethane	50.0	44.0		ug/Kg		88	78 - 122
1,1,2-Trichloro-1,2,2-trifluoroethane	50.0	43.9		ug/Kg		88	60 - 140
1,1-Dichloroethane	50.0	46.0		ug/Kg		92	73 - 126
1,1-Dichloroethene	50.0	43.5		ug/Kg		87	59 - 125
1,2,4-Trichlorobenzene	50.0	51.1		ug/Kg		102	64 - 120
1,2-Dibromo-3-Chloropropane	50.0	55.9		ug/Kg		112	63 - 124
1,2-Dichlorobenzene	50.0	46.0		ug/Kg		92	75 - 120
1,2-Dichloroethane	50.0	56.6		ug/Kg		113	77 - 122
1,2-Dichloropropane	50.0	46.4		ug/Kg		93	75 - 124
1,3-Dichlorobenzene	50.0	45.2		ug/Kg		90	74 - 120
1,4-Dichlorobenzene	50.0	45.2		ug/Kg		90	73 - 120
2-Butanone (MEK)	250	269		ug/Kg		108	70 - 134
2-Hexanone	250	245		ug/Kg		98	59 - 130
4-Methyl-2-pentanone (MIBK)	250	225		ug/Kg		90	65 - 133
Acetone	250	287		ug/Kg		115	61 - 137
Benzene	50.0	45.2		ug/Kg		90	79 - 127
Bromodichloromethane	50.0	54.8		ug/Kg		110	80 - 122
Bromoform	50.0	52.7		ug/Kg		105	68 - 126
Bromomethane	50.0	49.1		ug/Kg		98	37 - 149
Carbon disulfide	50.0	42.5		ug/Kg		85	64 - 131
Carbon tetrachloride	50.0	52.4		ug/Kg		105	75 - 135
Chlorobenzene	50.0	40.3		ug/Kg		81	76 - 124
Dibromochloromethane	50.0	47.3		ug/Kg		95	76 - 125
Chloroethane	50.0	44.7		ug/Kg		89	69 - 135
Chloroform	50.0	50.3		ug/Kg		101	80 - 120
Chloromethane	50.0	43.7		ug/Kg		87	63 - 127
cis-1,2-Dichloroethene	50.0	45.2		ug/Kg		90	81 - 120
cis-1,3-Dichloropropene	50.0	50.4		ug/Kg		101	80 - 120
Cyclohexane	50.0	42.5		ug/Kg		85	65 - 120
Dichlorodifluoromethane	50.0	55.9		ug/Kg		112	57 - 142
Ethylbenzene	50.0	43.8		ug/Kg		88	80 - 120
1,2-Dibromoethane	50.0	44.5		ug/Kg		89	78 - 120
Isopropylbenzene	50.0	44.4		ug/Kg		89	72 - 120
Methyl acetate	100	97.2		ug/Kg		97	55 - 136
Methyl tert-butyl ether	50.0	53.0		ug/Kg		106	63 - 125
Methylcyclohexane	50.0	42.5		ug/Kg		85	60 - 140
Methylene Chloride	50.0	43.8		ug/Kg		88	61 - 127
Styrene	50.0	42.0		ug/Kg		84	80 - 120
Tetrachloroethene	50.0	44.5		ug/Kg		89	74 - 122
Toluene	50.0	42.0		ug/Kg		84	74 - 128
trans-1,2-Dichloroethene	50.0	44.9		ug/Kg		90	78 - 126
trans-1,3-Dichloropropene	50.0	48.0		ug/Kg		96	73 - 123
Trichloroethene	50.0	48.2		ug/Kg		96	77 - 129
Trichlorofluoromethane	50.0	59.3		ug/Kg		119	65 - 146
Vinyl chloride	50.0	44.2		ug/Kg		88	61 - 133

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 480-577024/1-A
Matrix: Solid
Analysis Batch: 576959

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 577024

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	*96*		*71 - 125*
1,2-Dichloroethane-d4 (Surr)	*119*		*64 - 126*
4-Bromofluorobenzene (Surr)	*114*		*72 - 126*
Dibromofluoromethane (Surr)	*108*		*60 - 140*

Lab Sample ID: MB 480-577107/2-A
Matrix: Solid
Analysis Batch: 577108

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 577107

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5.0	0.36	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
1,1,2,2-Tetrachloroethane	ND		5.0	0.81	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
1,1,2-Trichloroethane	ND		5.0	0.65	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		5.0	1.1	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
1,1-Dichloroethane	ND		5.0	0.61	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
1,1-Dichloroethene	ND		5.0	0.61	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
1,2,4-Trichlorobenzene	ND		5.0	0.30	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
1,2-Dibromo-3-Chloropropane	ND		5.0	2.5	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
1,2-Dichlorobenzene	ND		5.0	0.39	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
1,2-Dichloroethane	ND		5.0	0.25	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
1,2-Dichloropropane	ND		5.0	2.5	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
1,3-Dichlorobenzene	ND		5.0	0.26	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
1,4-Dichlorobenzene	ND		5.0	0.70	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
2-Butanone (MEK)	ND		25	1.8	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
2-Hexanone	ND		25	2.5	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
4-Methyl-2-pentanone (MIBK)	ND		25	1.6	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Acetone	ND		25	4.2	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Benzene	ND		5.0	0.25	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Bromodichloromethane	ND		5.0	0.67	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Bromoform	ND		5.0	2.5	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Bromomethane	ND		5.0	0.45	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Carbon disulfide	ND		5.0	2.5	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Carbon tetrachloride	ND		5.0	0.48	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Chlorobenzene	ND		5.0	0.66	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Dibromochloromethane	ND		5.0	0.64	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Chloroethane	ND		5.0	1.1	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Chloroform	ND		5.0	0.31	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Chloromethane	ND		5.0	0.30	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
cis-1,2-Dichloroethene	ND		5.0	0.64	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
cis-1,3-Dichloropropene	ND		5.0	0.72	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Cyclohexane	ND		5.0	0.70	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Dichlorodifluoromethane	ND		5.0	0.41	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Ethylbenzene	ND		5.0	0.35	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
1,2-Dibromoethane	ND		5.0	0.64	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Isopropylbenzene	ND		5.0	0.75	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Methyl acetate	ND		25	3.0	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Methyl tert-butyl ether	ND		5.0	0.49	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Methylcyclohexane	ND		5.0	0.76	ug/Kg		04/20/21 18:46	04/20/21 21:42	1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 480-577107/2-A
Matrix: Solid
Analysis Batch: 577108

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 577107

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Chloride	ND		5.0	2.3	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Styrene	ND		5.0	0.25	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Tetrachloroethene	ND		5.0	0.67	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Toluene	ND		5.0	0.38	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
trans-1,2-Dichloroethene	ND		5.0	0.52	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
trans-1,3-Dichloropropene	ND		5.0	2.2	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Trichloroethene	ND		5.0	1.1	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Trichlorofluoromethane	ND		5.0	0.47	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Vinyl chloride	ND		5.0	0.61	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Xylenes, Total	ND		10	0.84	ug/Kg		04/20/21 18:46	04/20/21 21:42	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*95*		*71 - 125*	*04/20/21 18:46*	*04/20/21 21:42*	*1*
1,2-Dichloroethane-d4 (Surr)	*115*		*64 - 126*	*04/20/21 18:46*	*04/20/21 21:42*	*1*
4-Bromofluorobenzene (Surr)	*108*		*72 - 126*	*04/20/21 18:46*	*04/20/21 21:42*	*1*
Dibromofluoromethane (Surr)	*105*		*60 - 140*	*04/20/21 18:46*	*04/20/21 21:42*	*1*

Lab Sample ID: LCS 480-577107/1-A
Matrix: Solid
Analysis Batch: 577108

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 577107

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	50.0	56.6		ug/Kg		113	77 - 121
1,1,2,2-Tetrachloroethane	50.0	43.4		ug/Kg		87	80 - 120
1,1,2-Trichloroethane	50.0	41.9		ug/Kg		84	78 - 122
1,1,2-Trichloro-1,2,2-trifluoroethane	50.0	44.5		ug/Kg		89	60 - 140
1,1-Dichloroethane	50.0	46.9		ug/Kg		94	73 - 126
1,1-Dichloroethene	50.0	46.3		ug/Kg		93	59 - 125
1,2,4-Trichlorobenzene	50.0	49.5		ug/Kg		99	64 - 120
1,2-Dibromo-3-Chloropropane	50.0	48.9		ug/Kg		98	63 - 124
1,2-Dichlorobenzene	50.0	46.0		ug/Kg		92	75 - 120
1,2-Dichloroethane	50.0	56.5		ug/Kg		113	77 - 122
1,2-Dichloropropane	50.0	46.1		ug/Kg		92	75 - 124
1,3-Dichlorobenzene	50.0	46.5		ug/Kg		93	74 - 120
1,4-Dichlorobenzene	50.0	45.4		ug/Kg		91	73 - 120
2-Butanone (MEK)	250	229		ug/Kg		92	70 - 134
2-Hexanone	250	209		ug/Kg		84	59 - 130
4-Methyl-2-pentanone (MIBK)	250	199		ug/Kg		80	65 - 133
Acetone	250	247		ug/Kg		99	61 - 137
Benzene	50.0	45.5		ug/Kg		91	79 - 127
Bromodichloromethane	50.0	53.0		ug/Kg		106	80 - 122
Bromoform	50.0	49.7		ug/Kg		99	68 - 126
Bromomethane	50.0	49.1		ug/Kg		98	37 - 149
Carbon disulfide	50.0	43.9		ug/Kg		88	64 - 131
Carbon tetrachloride	50.0	55.0		ug/Kg		110	75 - 135
Chlorobenzene	50.0	41.1		ug/Kg		82	76 - 124
Dibromochloromethane	50.0	45.7		ug/Kg		91	76 - 125
Chloroethane	50.0	46.3		ug/Kg		93	69 - 135

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183421-1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 480-577107/1-A
Matrix: Solid
Analysis Batch: 577108

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 577107

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloroform	50.0	50.2		ug/Kg		100	80 - 120
Chloromethane	50.0	41.6		ug/Kg		83	63 - 127
cis-1,2-Dichloroethene	50.0	46.5		ug/Kg		93	81 - 120
cis-1,3-Dichloropropene	50.0	50.5		ug/Kg		101	80 - 120
Cyclohexane	50.0	45.6		ug/Kg		91	65 - 120
Dichlorodifluoromethane	50.0	51.4		ug/Kg		103	57 - 142
Ethylbenzene	50.0	44.9		ug/Kg		90	80 - 120
1,2-Dibromoethane	50.0	41.4		ug/Kg		83	78 - 120
Isopropylbenzene	50.0	46.4		ug/Kg		93	72 - 120
Methyl acetate	100	84.7		ug/Kg		85	55 - 136
Methyl tert-butyl ether	50.0	49.5		ug/Kg		99	63 - 125
Methylcyclohexane	50.0	46.7		ug/Kg		93	60 - 140
Methylene Chloride	50.0	43.2		ug/Kg		86	61 - 127
Styrene	50.0	42.8		ug/Kg		86	80 - 120
Tetrachloroethene	50.0	47.0		ug/Kg		94	74 - 122
Toluene	50.0	42.3		ug/Kg		85	74 - 128
trans-1,2-Dichloroethene	50.0	45.8		ug/Kg		92	78 - 126
trans-1,3-Dichloropropene	50.0	47.8		ug/Kg		96	73 - 123
Trichloroethene	50.0	51.0		ug/Kg		102	77 - 129
Trichlorofluoromethane	50.0	58.8		ug/Kg		118	65 - 146
Vinyl chloride	50.0	44.2		ug/Kg		88	61 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*96*		*71 - 125*
1,2-Dichloroethane-d4 (Surr)	*120*		*64 - 126*
4-Bromofluorobenzene (Surr)	*109*		*72 - 126*
Dibromofluoromethane (Surr)	*104*		*60 - 140*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 480-577247/1-A
Matrix: Solid
Analysis Batch: 577355

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 577247

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.010	0.00045	mg/L		04/21/21 14:44	04/22/21 13:58	1
3-Methylphenol	ND		0.010	0.00040	mg/L		04/21/21 14:44	04/22/21 13:58	1
2,4-Dinitrotoluene	ND		0.0050	0.00043	mg/L		04/21/21 14:44	04/22/21 13:58	1
Pyridine	ND		0.025	0.00040	mg/L		04/21/21 14:44	04/22/21 13:58	1
2,4,5-Trichlorophenol	ND		0.0050	0.00048	mg/L		04/21/21 14:44	04/22/21 13:58	1
2,4,6-Trichlorophenol	ND		0.0050	0.00060	mg/L		04/21/21 14:44	04/22/21 13:58	1
2-Methylphenol	ND		0.0050	0.00040	mg/L		04/21/21 14:44	04/22/21 13:58	1
4-Methylphenol	ND		0.010	0.00035	mg/L		04/21/21 14:44	04/22/21 13:58	1
Hexachlorobenzene	ND		0.0050	0.00050	mg/L		04/21/21 14:44	04/22/21 13:58	1
Hexachlorobutadiene	ND		0.0050	0.00068	mg/L		04/21/21 14:44	04/22/21 13:58	1
Hexachloroethane	ND		0.0050	0.00058	mg/L		04/21/21 14:44	04/22/21 13:58	1
Nitrobenzene	ND		0.0050	0.00028	mg/L		04/21/21 14:44	04/22/21 13:58	1
Pentachlorophenol	ND		0.010	0.0022	mg/L		04/21/21 14:44	04/22/21 13:58	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 480-577247/1-A
Matrix: Solid
Analysis Batch: 577355

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 577247

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	76		41 - 120	04/21/21 14:44	04/22/21 13:58	1
2-Fluorobiphenyl	103		48 - 120	04/21/21 14:44	04/22/21 13:58	1
2-Fluorophenol	50		35 - 120	04/21/21 14:44	04/22/21 13:58	1
Nitrobenzene-d5	96		46 - 120	04/21/21 14:44	04/22/21 13:58	1
p-Terphenyl-d14	113		60 - 148	04/21/21 14:44	04/22/21 13:58	1
Phenol-d5	34		22 - 120	04/21/21 14:44	04/22/21 13:58	1

Lab Sample ID: LCS 480-577247/2-A
Matrix: Solid
Analysis Batch: 577355

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 577247

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dichlorobenzene	0.0500	0.0396		mg/L		79	51 - 120
3-Methylphenol	0.0500	0.0363		mg/L		73	39 - 120
2,4-Dinitrotoluene	0.0500	0.0577		mg/L		115	69 - 120
Pyridine	0.100	0.0350		mg/L		35	10 - 120
2,4,5-Trichlorophenol	0.0500	0.0525		mg/L		105	65 - 126
2,4,6-Trichlorophenol	0.0500	0.0527		mg/L		105	64 - 120
2-Methylphenol	0.0500	0.0383		mg/L		77	39 - 120
4-Methylphenol	0.0500	0.0363		mg/L		73	29 - 131
Hexachlorobenzene	0.0500	0.0542		mg/L		108	61 - 120
Hexachlorobutadiene	0.0500	0.0483		mg/L		97	35 - 120
Hexachloroethane	0.0500	0.0412		mg/L		82	43 - 120
Nitrobenzene	0.0500	0.0474		mg/L		95	53 - 123
Pentachlorophenol	0.100	0.0840		mg/L		84	29 - 136

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2,4,6-Tribromophenol	96		41 - 120
2-Fluorobiphenyl	101		48 - 120
2-Fluorophenol	53		35 - 120
Nitrobenzene-d5	98		46 - 120
p-Terphenyl-d14	113		60 - 148
Phenol-d5	35		22 - 120

Lab Sample ID: LCSD 480-577247/3-A
Matrix: Solid
Analysis Batch: 577355

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 577247

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dichlorobenzene	0.0500	0.0391		mg/L		78	51 - 120	1	36
3-Methylphenol	0.0500	0.0351		mg/L		70	39 - 120	3	30
2,4-Dinitrotoluene	0.0500	0.0557		mg/L		111	69 - 120	3	20
Pyridine	0.100	0.0363		mg/L		36	10 - 120	4	49
2,4,5-Trichlorophenol	0.0500	0.0520		mg/L		104	65 - 126	1	18
2,4,6-Trichlorophenol	0.0500	0.0493		mg/L		99	64 - 120	7	19
2-Methylphenol	0.0500	0.0360		mg/L		72	39 - 120	6	27
4-Methylphenol	0.0500	0.0351		mg/L		70	29 - 131	3	24
Hexachlorobenzene	0.0500	0.0525		mg/L		105	61 - 120	3	15

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 480-577247/3-A
Matrix: Solid
Analysis Batch: 577355

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 577247

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Hexachlorobutadiene	0.0500	0.0462		mg/L		92	35 - 120	4	44
Hexachloroethane	0.0500	0.0418		mg/L		84	43 - 120	1	46
Nitrobenzene	0.0500	0.0467		mg/L		93	53 - 123	1	24
Pentachlorophenol	0.100	0.0869		mg/L		87	29 - 136	3	37

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2,4,6-Tribromophenol	*92*		*41 - 120*
2-Fluorobiphenyl	*99*		*48 - 120*
2-Fluorophenol	*50*		*35 - 120*
Nitrobenzene-d5	*94*		*46 - 120*
p-Terphenyl-d14	*105*		*60 - 148*
Phenol-d5	*33*		*22 - 120*

Lab Sample ID: MB 480-577340/1-A
Matrix: Solid
Analysis Batch: 577594

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 577340

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biphenyl	ND		170	25	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
bis (2-chloroisopropyl) ether	ND		170	34	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
2,4-Dichlorophenol	ND		170	18	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
2,4-Dimethylphenol	ND		170	41	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
2,4-Dinitrophenol	ND		1700	780	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
2,4-Dinitrotoluene	ND		170	35	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
2,6-Dinitrotoluene	ND		170	20	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
2-Chloronaphthalene	ND		170	28	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
1,4-Dioxane	ND		100	55	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
2,4,5-Trichlorophenol	ND		170	46	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
2-Chlorophenol	ND		330	31	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
2,4,6-Trichlorophenol	ND		170	34	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
2-Methylnaphthalene	ND		170	34	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
2-Methylphenol	ND		170	20	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
2-Nitroaniline	ND		330	25	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
2-Nitrophenol	ND		170	48	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
3,3'-Dichlorobenzidine	ND		330	200	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
3-Nitroaniline	ND		330	47	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
4,6-Dinitro-2-methylphenol	ND		330	170	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
4-Bromophenyl phenyl ether	ND		170	24	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
4-Chloro-3-methylphenol	ND		170	42	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
4-Chloroaniline	ND		170	42	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
4-Chlorophenyl phenyl ether	ND		170	21	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
4-Methylphenol	ND		330	20	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
4-Nitroaniline	ND		330	89	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
4-Nitrophenol	ND		330	120	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
Acenaphthene	ND		170	25	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
Acenaphthylene	ND		170	22	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
Acetophenone	ND		170	23	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
Anthracene	ND		170	42	ug/Kg		04/22/21 08:24	04/23/21 10:59	1

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183421-1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 480-577340/1-A
Matrix: Solid
Analysis Batch: 577594

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 577340

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Atrazine	ND		170	59	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
Benzaldehyde	ND		170	130	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
Benzo[a]anthracene	ND		170	17	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
Benzo[a]pyrene	ND		170	25	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
Benzo[b]fluoranthene	ND		170	27	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
Benzo[g,h,i]perylene	ND		170	18	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
Benzo[k]fluoranthene	ND		170	22	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
Bis(2-chloroethoxy)methane	ND		170	36	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
Bis(2-chloroethyl)ether	ND		170	22	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
Bis(2-ethylhexyl) phthalate	ND		170	58	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
Butyl benzyl phthalate	ND		170	28	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
Caprolactam	ND		170	51	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
Carbazole	ND		170	20	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
Chrysene	ND		170	38	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
Di-n-butyl phthalate	ND		170	29	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
Di-n-octyl phthalate	ND		170	20	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
Dibenz(a,h)anthracene	ND		170	30	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
Dibenzofuran	ND		170	20	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
Diethyl phthalate	ND		170	22	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
Dimethyl phthalate	ND		170	20	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
Fluoranthene	ND		170	18	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
Fluorene	ND		170	20	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
Hexachlorobenzene	ND		170	23	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
Hexachlorobutadiene	ND		170	25	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
Hexachlorocyclopentadiene	ND		170	23	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
Hexachloroethane	ND		170	22	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
Indeno[1,2,3-cd]pyrene	ND		170	21	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
Isophorone	ND		170	36	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
N-Nitrosodi-n-propylamine	ND		170	29	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
N-Nitrosodiphenylamine	ND		170	140	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
Naphthalene	ND		170	22	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
Nitrobenzene	ND		170	19	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
Pentachlorophenol	ND		330	170	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
Phenanthrene	ND		170	25	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
Phenol	ND		170	26	ug/Kg		04/22/21 08:24	04/23/21 10:59	1
Pyrene	ND		170	20	ug/Kg		04/22/21 08:24	04/23/21 10:59	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*87*		*54 - 120*	*04/22/21 08:24*	*04/23/21 10:59*	*1*
2-Fluorobiphenyl	*98*		*60 - 120*	*04/22/21 08:24*	*04/23/21 10:59*	*1*
2-Fluorophenol	*87*		*52 - 120*	*04/22/21 08:24*	*04/23/21 10:59*	*1*
Nitrobenzene-d5	*95*		*53 - 120*	*04/22/21 08:24*	*04/23/21 10:59*	*1*
p-Terphenyl-d14	*112*		*79 - 130*	*04/22/21 08:24*	*04/23/21 10:59*	*1*
Phenol-d5	*87*		*54 - 120*	*04/22/21 08:24*	*04/23/21 10:59*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 480-577340/2-A
Client Sample ID: Lab Control Sample
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 577594
Prep Batch: 577340

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Biphenyl	1660	1430		ug/Kg		86	59 - 120
bis (2-chloroisopropyl) ether	1660	1020		ug/Kg		62	44 - 120
2,4-Dichlorophenol	1660	1570		ug/Kg		94	61 - 120
2,4-Dimethylphenol	1660	1640		ug/Kg		99	59 - 120
2,4-Dinitrophenol	3320	3290		ug/Kg		99	41 - 146
2,4-Dinitrotoluene	1660	1740		ug/Kg		105	63 - 120
2,6-Dinitrotoluene	1660	1620		ug/Kg		98	66 - 120
2-Chloronaphthalene	1660	1480		ug/Kg		89	57 - 120
1,4-Dioxane	1660	683		ug/Kg		41	23 - 120
2,4,5-Trichlorophenol	1660	1640		ug/Kg		99	59 - 126
2-Chlorophenol	1660	1300		ug/Kg		78	53 - 120
2,4,6-Trichlorophenol	1660	1600		ug/Kg		97	59 - 123
2-Methylnaphthalene	1660	1410		ug/Kg		85	59 - 120
2-Methylphenol	1660	1310		ug/Kg		79	54 - 120
2-Nitroaniline	1660	1610		ug/Kg		97	61 - 120
2-Nitrophenol	1660	1490		ug/Kg		90	56 - 120
3,3'-Dichlorobenzidine	3320	3060		ug/Kg		92	54 - 120
3-Nitroaniline	1660	1340		ug/Kg		81	48 - 120
4,6-Dinitro-2-methylphenol	3320	3760		ug/Kg		113	49 - 122
4-Bromophenyl phenyl ether	1660	1620		ug/Kg		98	58 - 120
4-Chloro-3-methylphenol	1660	1740		ug/Kg		105	61 - 120
4-Chloroaniline	1660	1320		ug/Kg		80	38 - 120
4-Chlorophenyl phenyl ether	1660	1680		ug/Kg		101	63 - 124
4-Methylphenol	1660	1330		ug/Kg		80	55 - 120
4-Nitroaniline	1660	1620		ug/Kg		98	56 - 120
4-Nitrophenol	3320	4130		ug/Kg		124	43 - 147
Acenaphthene	1660	1520		ug/Kg		92	62 - 120
Acenaphthylene	1660	1510		ug/Kg		91	58 - 121
Acetophenone	1660	1340		ug/Kg		80	54 - 120
Anthracene	1660	1590		ug/Kg		96	62 - 120
Atrazine	3320	3490		ug/Kg		105	60 - 127
Benzaldehyde	3320	2150		ug/Kg		65	10 - 150
Benzo[a]anthracene	1660	1640		ug/Kg		99	65 - 120
Benzo[a]pyrene	1660	1850		ug/Kg		111	64 - 120
Benzo[b]fluoranthene	1660	1690		ug/Kg		102	64 - 120
Benzo[g,h,i]perylene	1660	1690		ug/Kg		102	45 - 145
Benzo[k]fluoranthene	1660	1580		ug/Kg		95	65 - 120
Bis(2-chloroethoxy)methane	1660	1380		ug/Kg		83	55 - 120
Bis(2-chloroethyl)ether	1660	1160		ug/Kg		70	45 - 120
Bis(2-ethylhexyl) phthalate	1660	1950		ug/Kg		117	61 - 133
Butyl benzyl phthalate	1660	1880		ug/Kg		113	61 - 129
Caprolactam	3320	2810		ug/Kg		85	47 - 120
Carbazole	1660	1710		ug/Kg		103	65 - 120
Chrysene	1660	1730		ug/Kg		104	64 - 120
Di-n-butyl phthalate	1660	1810		ug/Kg		109	58 - 130
Di-n-octyl phthalate	1660	1880		ug/Kg		113	57 - 133
Dibenz(a,h)anthracene	1660	1690		ug/Kg		102	54 - 132
Dibenzofuran	1660	1530		ug/Kg		92	63 - 120

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 480-577340/2-A
Matrix: Solid
Analysis Batch: 577594

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 577340

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Diethyl phthalate	1660	1760		ug/Kg		106	66 - 120
Dimethyl phthalate	1660	1660		ug/Kg		100	65 - 124
Fluoranthene	1660	1760		ug/Kg		106	62 - 120
Fluorene	1660	1530		ug/Kg		92	63 - 120
Hexachlorobenzene	1660	1670		ug/Kg		101	60 - 120
Hexachlorobutadiene	1660	1520		ug/Kg		91	45 - 120
Hexachlorocyclopentadiene	1660	1350		ug/Kg		82	47 - 120
Hexachloroethane	1660	1300		ug/Kg		78	41 - 120
Indeno[1,2,3-cd]pyrene	1660	1680		ug/Kg		101	56 - 134
Isophorone	1660	1450		ug/Kg		88	56 - 120
N-Nitrosodi-n-propylamine	1660	1270		ug/Kg		77	52 - 120
Naphthalene	1660	1320		ug/Kg		80	55 - 120
Nitrobenzene	1660	1410		ug/Kg		85	54 - 120
Pentachlorophenol	3320	3110		ug/Kg		94	51 - 120
Phenanthrene	1660	1590		ug/Kg		96	60 - 120
Phenol	1660	1220		ug/Kg		73	53 - 120
Pyrene	1660	1790		ug/Kg		108	61 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4,6-Tribromophenol	*92*		*54 - 120*
2-Fluorobiphenyl	*90*		*60 - 120*
2-Fluorophenol	*74*		*52 - 120*
Nitrobenzene-d5	*86*		*53 - 120*
p-Terphenyl-d14	*101*		*79 - 130*
Phenol-d5	*77*		*54 - 120*

Lab Sample ID: LB 480-577044/1-E
Matrix: Solid
Analysis Batch: 577355

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 577247

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.040	0.0018	mg/L		04/21/21 14:44	04/22/21 15:11	1
3-Methylphenol	ND		0.040	0.0016	mg/L		04/21/21 14:44	04/22/21 15:11	1
2,4-Dinitrotoluene	ND		0.020	0.0017	mg/L		04/21/21 14:44	04/22/21 15:11	1
Pyridine	ND		0.10	0.0016	mg/L		04/21/21 14:44	04/22/21 15:11	1
2,4,5-Trichlorophenol	ND		0.020	0.0019	mg/L		04/21/21 14:44	04/22/21 15:11	1
2,4,6-Trichlorophenol	ND		0.020	0.0024	mg/L		04/21/21 14:44	04/22/21 15:11	1
2-Methylphenol	ND		0.020	0.0016	mg/L		04/21/21 14:44	04/22/21 15:11	1
4-Methylphenol	ND		0.040	0.0014	mg/L		04/21/21 14:44	04/22/21 15:11	1
Hexachlorobenzene	ND		0.020	0.0020	mg/L		04/21/21 14:44	04/22/21 15:11	1
Hexachlorobutadiene	ND		0.020	0.0027	mg/L		04/21/21 14:44	04/22/21 15:11	1
Hexachloroethane	ND		0.020	0.0023	mg/L		04/21/21 14:44	04/22/21 15:11	1
Nitrobenzene	ND		0.020	0.0011	mg/L		04/21/21 14:44	04/22/21 15:11	1
Pentachlorophenol	ND		0.040	0.0088	mg/L		04/21/21 14:44	04/22/21 15:11	1

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*89*		*41 - 120*	*04/21/21 14:44*	*04/22/21 15:11*	*1*
2-Fluorobiphenyl	*103*		*48 - 120*	*04/21/21 14:44*	*04/22/21 15:11*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LB 480-577044/1-E
Matrix: Solid
Analysis Batch: 577355

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 577247

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorophenol	*55*		*35 - 120*	*04/21/21 14:44*	*04/22/21 15:11*	*1*
Nitrobenzene-d5	*102*		*46 - 120*	*04/21/21 14:44*	*04/22/21 15:11*	*1*
p-Terphenyl-d14	*114*		*60 - 148*	*04/21/21 14:44*	*04/22/21 15:11*	*1*
Phenol-d5	*36*		*22 - 120*	*04/21/21 14:44*	*04/22/21 15:11*	*1*

Method: 8081B - Organochlorine Pesticides (GC)

Lab Sample ID: MB 480-577248/1-A
Matrix: Solid
Analysis Batch: 577331

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 577248

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.000050	0.0000015	mg/L		04/21/21 14:47	04/22/21 14:17	1
Chlordane (technical)	ND		0.00050	0.0000073	mg/L		04/21/21 14:47	04/22/21 14:17	1
Endrin	ND		0.000050	0.0000035	mg/L		04/21/21 14:47	04/22/21 14:17	1
Heptachlor	ND		0.000050	0.0000021	mg/L		04/21/21 14:47	04/22/21 14:17	1
Heptachlor epoxide	ND		0.000050	0.0000013	mg/L		04/21/21 14:47	04/22/21 14:17	1
Methoxychlor	ND		0.000050	0.0000035	mg/L		04/21/21 14:47	04/22/21 14:17	1
Toxaphene	ND		0.00050	0.000030	mg/L		04/21/21 14:47	04/22/21 14:17	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*72*		*20 - 120*	*04/21/21 14:47*	*04/22/21 14:17*	*1*
DCB Decachlorobiphenyl	*56*		*20 - 120*	*04/21/21 14:47*	*04/22/21 14:17*	*1*
Tetrachloro-m-xylene	*107*		*44 - 120*	*04/21/21 14:47*	*04/22/21 14:17*	*1*
Tetrachloro-m-xylene	*95*		*44 - 120*	*04/21/21 14:47*	*04/22/21 14:17*	*1*

Lab Sample ID: LCS 480-577248/2-A
Matrix: Solid
Analysis Batch: 577331

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 577248

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
gamma-BHC (Lindane)	0.000500	0.000491		mg/L		98	56 - 120
Endrin	0.000500	0.000548		mg/L		110	65 - 135
Heptachlor	0.000500	0.000475		mg/L		95	58 - 120
Heptachlor epoxide	0.000500	0.000577		mg/L		115	65 - 125
Methoxychlor	0.000500	0.000477		mg/L		95	50 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*76*		*20 - 120*
DCB Decachlorobiphenyl	*58*		*20 - 120*
Tetrachloro-m-xylene	*103*		*44 - 120*
Tetrachloro-m-xylene	*91*		*44 - 120*

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: LCSD 480-577248/3-A
Matrix: Solid
Analysis Batch: 577331

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 577248

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
gamma-BHC (Lindane)	0.000500	0.000497		mg/L		99	56 - 120	1	24
Endrin	0.000500	0.000556		mg/L		111	65 - 135	1	24
Heptachlor	0.000500	0.000478		mg/L		96	58 - 120	1	25
Heptachlor epoxide	0.000500	0.000591		mg/L		118	65 - 125	2	23
Methoxychlor	0.000500	0.000480		mg/L		96	50 - 150	1	26

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
DCB Decachlorobiphenyl	*76*		*20 - 120*
DCB Decachlorobiphenyl	*57*		*20 - 120*
Tetrachloro-m-xylene	*105*		*44 - 120*
Tetrachloro-m-xylene	*93*		*44 - 120*

Lab Sample ID: LB 480-577044/1-F
Matrix: Solid
Analysis Batch: 577331

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 577248

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.00020	0.0000060	mg/L		04/21/21 14:47	04/22/21 15:15	1
Chlordane (technical)	ND		0.0020	0.000029	mg/L		04/21/21 14:47	04/22/21 15:15	1
Endrin	ND		0.00020	0.000014	mg/L		04/21/21 14:47	04/22/21 15:15	1
Heptachlor	ND		0.00020	0.0000085	mg/L		04/21/21 14:47	04/22/21 15:15	1
Heptachlor epoxide	ND		0.00020	0.0000053	mg/L		04/21/21 14:47	04/22/21 15:15	1
Methoxychlor	ND		0.00020	0.000014	mg/L		04/21/21 14:47	04/22/21 15:15	1
Toxaphene	ND		0.0020	0.00012	mg/L		04/21/21 14:47	04/22/21 15:15	1

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*94*		*20 - 120*	*04/21/21 14:47*	*04/22/21 15:15*	*1*
DCB Decachlorobiphenyl	*72*		*20 - 120*	*04/21/21 14:47*	*04/22/21 15:15*	*1*
Tetrachloro-m-xylene	*106*		*44 - 120*	*04/21/21 14:47*	*04/22/21 15:15*	*1*
Tetrachloro-m-xylene	*87*		*44 - 120*	*04/21/21 14:47*	*04/22/21 15:15*	*1*

Method: 8151 - TCLP Herbicides

Lab Sample ID: MB 480-577175/1-A
Matrix: Solid
Analysis Batch: 577395

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 577175

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND		0.00050	0.000090	mg/L		04/21/21 08:59	04/22/21 14:13	1
2,4-D	ND		0.00050	0.00010	mg/L		04/21/21 08:59	04/22/21 14:13	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*73*		*48 - 132*	*04/21/21 08:59*	*04/22/21 14:13*	*1*
2,4-Dichlorophenylacetic acid	*65*		*48 - 132*	*04/21/21 08:59*	*04/22/21 14:13*	*1*

Method: 8151 - TCLP Herbicides (Continued)

Lab Sample ID: LCS 480-577175/2-A
Matrix: Solid
Analysis Batch: 577395

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 577175

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Silvex (2,4,5-TP)	0.00200	0.00158		mg/L		79	49 - 150
2,4-D	0.00200	0.00171		mg/L		86	36 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*80*		*48 - 132*
2,4-Dichlorophenylacetic acid	*58*		*48 - 132*

Lab Sample ID: LB 480-577044/1-B
Matrix: Solid
Analysis Batch: 577395

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 577175

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND		0.0020	0.00036	mg/L		04/21/21 10:27	04/22/21 16:43	1
2,4-D	ND		0.0020	0.00040	mg/L		04/21/21 10:27	04/22/21 16:43	1

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*42*	*S1-*	*48 - 132*	*04/21/21 10:27*	*04/22/21 16:43*	*1*
2,4-Dichlorophenylacetic acid	*32*	*S1-*	*48 - 132*	*04/21/21 10:27*	*04/22/21 16:43*	*1*

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 480-577201/2-A
Matrix: Solid
Analysis Batch: 577585

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 577201

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.015	0.0056	mg/L		04/21/21 10:58	04/22/21 19:53	1
Barium	ND		1.0	0.10	mg/L		04/21/21 10:58	04/22/21 19:53	1
Cadmium	ND		0.0020	0.00050	mg/L		04/21/21 10:58	04/22/21 19:53	1
Chromium	ND		0.020	0.010	mg/L		04/21/21 10:58	04/22/21 19:53	1
Lead	ND		0.020	0.0030	mg/L		04/21/21 10:58	04/22/21 19:53	1
Selenium	ND		0.025	0.0087	mg/L		04/21/21 10:58	04/22/21 19:53	1
Silver	ND		0.0060	0.0017	mg/L		04/21/21 10:58	04/22/21 19:53	1

Lab Sample ID: LCS 480-577201/3-A
Matrix: Solid
Analysis Batch: 577585

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 577201

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	1.00	1.12		mg/L		112	80 - 120
Barium	1.00	1.03		mg/L		103	80 - 120
Cadmium	1.00	1.07		mg/L		107	80 - 120
Chromium	1.00	1.02		mg/L		102	80 - 120
Lead	1.00	1.03		mg/L		103	80 - 120
Selenium	1.00	1.11		mg/L		111	80 - 120
Silver	1.00	1.09		mg/L		109	80 - 120

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: LB 480-577044/1-C
Matrix: Solid
Analysis Batch: 577585

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 577201

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.015	0.0056	mg/L		04/21/21 10:58	04/22/21 19:50	1
Barium	ND		1.0	0.10	mg/L		04/21/21 10:58	04/22/21 19:50	1
Cadmium	ND		0.0020	0.00050	mg/L		04/21/21 10:58	04/22/21 19:50	1
Chromium	ND		0.020	0.010	mg/L		04/21/21 10:58	04/22/21 19:50	1
Lead	ND		0.020	0.0030	mg/L		04/21/21 10:58	04/22/21 19:50	1
Selenium	ND		0.025	0.0087	mg/L		04/21/21 10:58	04/22/21 19:50	1
Silver	ND		0.0060	0.0017	mg/L		04/21/21 10:58	04/22/21 19:50	1

Lab Sample ID: 480-183421-3 MS
Matrix: Solid
Analysis Batch: 577585

Client Sample ID: BLDG6-SP-009
Prep Type: TCLP
Prep Batch: 577201

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	ND		1.00	1.13		mg/L		113	75 - 125
Barium	0.23	J	1.00	1.27		mg/L		104	75 - 125
Cadmium	0.00084	J	1.00	1.08		mg/L		108	75 - 125
Chromium	ND		1.00	0.973		mg/L		97	75 - 125
Lead	0.078		1.00	1.08		mg/L		100	75 - 125
Selenium	ND		1.00	1.12		mg/L		112	75 - 125
Silver	ND		1.00	1.10		mg/L		110	75 - 125

Lab Sample ID: 480-183421-3 MSD
Matrix: Solid
Analysis Batch: 577585

Client Sample ID: BLDG6-SP-009
Prep Type: TCLP
Prep Batch: 577201

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	ND		1.00	1.18		mg/L		118	75 - 125	4	20
Barium	0.23	J	1.00	1.31		mg/L		109	75 - 125	4	20
Cadmium	0.00084	J	1.00	1.12		mg/L		112	75 - 125	3	20
Chromium	ND		1.00	1.03		mg/L		103	75 - 125	6	20
Lead	0.078		1.00	1.12		mg/L		104	75 - 125	4	20
Selenium	ND		1.00	1.15		mg/L		115	75 - 125	3	20
Silver	ND		1.00	1.16		mg/L		116	75 - 125	5	20

Method: 7470A - TCLP Mercury

Lab Sample ID: MB 480-577222/2-A
Matrix: Solid
Analysis Batch: 577294

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 577222

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		04/21/21 13:26	04/21/21 18:09	1

Lab Sample ID: LCS 480-577222/3-A
Matrix: Solid
Analysis Batch: 577294

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 577222

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00668	0.00593		mg/L		89	80 - 120

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Method: 7470A - TCLP Mercury (Continued)

Lab Sample ID: LB 480-577044/1-D
Matrix: Solid
Analysis Batch: 577294

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 577222

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		04/21/21 13:26	04/21/21 18:07	1

Lab Sample ID: 480-183421-3 MS
Matrix: Solid
Analysis Batch: 577294

Client Sample ID: BLDG6-SP-009
Prep Type: TCLP
Prep Batch: 577222

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND	F1	0.00668	0.00507	F1	mg/L		76	80 - 120

Lab Sample ID: 480-183421-3 MSD
Matrix: Solid
Analysis Batch: 577294

Client Sample ID: BLDG6-SP-009
Prep Type: TCLP
Prep Batch: 577222

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND	F1	0.00668	0.00513	F1	mg/L		77	80 - 120	1	20

Method: 1010A - Ignitability, Pensky-Martens Closed-Cup Method

Lab Sample ID: LCS 480-577473/1
Matrix: Solid
Analysis Batch: 577473

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Flashpoint	81.0	80.00		Degrees F		99	97.5 - 102.5

Lab Sample ID: 480-183421-1 DU
Matrix: Solid
Analysis Batch: 577473

Client Sample ID: BLDG5-SP-007
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Flashpoint	>176		>176.0		Degrees F		NC	10

Method: 9045D - pH

Lab Sample ID: LCS 480-577104/1
Matrix: Solid
Analysis Batch: 577104

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH	7.00	7.0		SU		100	99 - 101

GC/MS VOA

Prep Batch: 576925

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 480-576925/2-A	Method Blank	Total/NA	Solid	5035	
LCS 480-576925/1-A	Lab Control Sample	Total/NA	Solid	5035	

Analysis Batch: 576959

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183421-1	BLDG5-SP-007	Total/NA	Solid	8260C	577024
MB 480-576925/2-A	Method Blank	Total/NA	Solid	8260C	576925
MB 480-577024/2-A	Method Blank	Total/NA	Solid	8260C	577024
LCS 480-576925/1-A	Lab Control Sample	Total/NA	Solid	8260C	576925
LCS 480-577024/1-A	Lab Control Sample	Total/NA	Solid	8260C	577024

Prep Batch: 577024

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183421-1	BLDG5-SP-007	Total/NA	Solid	5035A_L	
MB 480-577024/2-A	Method Blank	Total/NA	Solid	5035A_L	
LCS 480-577024/1-A	Lab Control Sample	Total/NA	Solid	5035A_L	

Leach Batch: 577047

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183421-1	BLDG5-SP-007	TCLP	Solid	1311	
480-183421-2	BLDG6-SP-008	TCLP	Solid	1311	
480-183421-3	BLDG6-SP-009	TCLP	Solid	1311	
LB 480-577047/1-A	Method Blank	TCLP	Solid	1311	

Prep Batch: 577107

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183421-2 - DL	BLDG6-SP-008	Total/NA	Solid	5035A_L	
480-183421-3	BLDG6-SP-009	Total/NA	Solid	5035A_L	
MB 480-577107/2-A	Method Blank	Total/NA	Solid	5035A_L	
LCS 480-577107/1-A	Lab Control Sample	Total/NA	Solid	5035A_L	

Analysis Batch: 577108

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183421-2 - DL	BLDG6-SP-008	Total/NA	Solid	8260C	577107
480-183421-3	BLDG6-SP-009	Total/NA	Solid	8260C	577107
MB 480-577107/2-A	Method Blank	Total/NA	Solid	8260C	577107
LCS 480-577107/1-A	Lab Control Sample	Total/NA	Solid	8260C	577107

Analysis Batch: 577162

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183421-1	BLDG5-SP-007	TCLP	Solid	8260C	577047
480-183421-2	BLDG6-SP-008	TCLP	Solid	8260C	577047
480-183421-3	BLDG6-SP-009	TCLP	Solid	8260C	577047
LB 480-577047/1-A	Method Blank	TCLP	Solid	8260C	577047
MB 480-577162/7	Method Blank	Total/NA	Solid	8260C	
LCS 480-577162/5	Lab Control Sample	Total/NA	Solid	8260C	

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Leach Batch: 577044

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183421-1	BLDG5-SP-007	TCLP	Solid	1311	
480-183421-2	BLDG6-SP-008	TCLP	Solid	1311	
480-183421-3	BLDG6-SP-009	TCLP	Solid	1311	
LB 480-577044/1-E	Method Blank	TCLP	Solid	1311	

Prep Batch: 577247

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183421-1	BLDG5-SP-007	TCLP	Solid	3510C	577044
480-183421-2	BLDG6-SP-008	TCLP	Solid	3510C	577044
480-183421-3	BLDG6-SP-009	TCLP	Solid	3510C	577044
LB 480-577044/1-E	Method Blank	TCLP	Solid	3510C	577044
MB 480-577247/1-A	Method Blank	Total/NA	Solid	3510C	
LCS 480-577247/2-A	Lab Control Sample	Total/NA	Solid	3510C	
LCSD 480-577247/3-A	Lab Control Sample Dup	Total/NA	Solid	3510C	

Prep Batch: 577340

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183421-1	BLDG5-SP-007	Total/NA	Solid	3550C	
480-183421-2	BLDG6-SP-008	Total/NA	Solid	3550C	
480-183421-3	BLDG6-SP-009	Total/NA	Solid	3550C	
MB 480-577340/1-A	Method Blank	Total/NA	Solid	3550C	
LCS 480-577340/2-A	Lab Control Sample	Total/NA	Solid	3550C	

Analysis Batch: 577355

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183421-1	BLDG5-SP-007	TCLP	Solid	8270D	577247
480-183421-2	BLDG6-SP-008	TCLP	Solid	8270D	577247
480-183421-3	BLDG6-SP-009	TCLP	Solid	8270D	577247
LB 480-577044/1-E	Method Blank	TCLP	Solid	8270D	577247
MB 480-577247/1-A	Method Blank	Total/NA	Solid	8270D	577247
LCS 480-577247/2-A	Lab Control Sample	Total/NA	Solid	8270D	577247
LCSD 480-577247/3-A	Lab Control Sample Dup	Total/NA	Solid	8270D	577247

Analysis Batch: 577594

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183421-1	BLDG5-SP-007	Total/NA	Solid	8270D	577340
480-183421-2	BLDG6-SP-008	Total/NA	Solid	8270D	577340
480-183421-3	BLDG6-SP-009	Total/NA	Solid	8270D	577340
MB 480-577340/1-A	Method Blank	Total/NA	Solid	8270D	577340
LCS 480-577340/2-A	Lab Control Sample	Total/NA	Solid	8270D	577340

GC Semi VOA

Leach Batch: 577044

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183421-1	BLDG5-SP-007	TCLP	Solid	1311	
480-183421-2	BLDG6-SP-008	TCLP	Solid	1311	
480-183421-3	BLDG6-SP-009	TCLP	Solid	1311	
LB 480-577044/1-B	Method Blank	TCLP	Solid	1311	
LB 480-577044/1-F	Method Blank	TCLP	Solid	1311	

GC Semi VOA

Prep Batch: 577175

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183421-1	BLDG5-SP-007	TCLP	Solid	8151A	577044
480-183421-2	BLDG6-SP-008	TCLP	Solid	8151A	577044
480-183421-3	BLDG6-SP-009	TCLP	Solid	8151A	577044
LB 480-577044/1-B	Method Blank	TCLP	Solid	8151A	577044
MB 480-577175/1-A	Method Blank	Total/NA	Solid	8151A	
LCS 480-577175/2-A	Lab Control Sample	Total/NA	Solid	8151A	

Prep Batch: 577248

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183421-1	BLDG5-SP-007	TCLP	Solid	3510C	577044
480-183421-2	BLDG6-SP-008	TCLP	Solid	3510C	577044
480-183421-3	BLDG6-SP-009	TCLP	Solid	3510C	577044
LB 480-577044/1-F	Method Blank	TCLP	Solid	3510C	577044
MB 480-577248/1-A	Method Blank	Total/NA	Solid	3510C	
LCS 480-577248/2-A	Lab Control Sample	Total/NA	Solid	3510C	
LCSD 480-577248/3-A	Lab Control Sample Dup	Total/NA	Solid	3510C	

Analysis Batch: 577331

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LB 480-577044/1-F	Method Blank	TCLP	Solid	8081B	577248
MB 480-577248/1-A	Method Blank	Total/NA	Solid	8081B	577248
LCS 480-577248/2-A	Lab Control Sample	Total/NA	Solid	8081B	577248
LCSD 480-577248/3-A	Lab Control Sample Dup	Total/NA	Solid	8081B	577248

Analysis Batch: 577395

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183421-1	BLDG5-SP-007	TCLP	Solid	8151	577175
480-183421-2	BLDG6-SP-008	TCLP	Solid	8151	577175
480-183421-3	BLDG6-SP-009	TCLP	Solid	8151	577175
LB 480-577044/1-B	Method Blank	TCLP	Solid	8151	577175
MB 480-577175/1-A	Method Blank	Total/NA	Solid	8151	577175
LCS 480-577175/2-A	Lab Control Sample	Total/NA	Solid	8151	577175

Analysis Batch: 577555

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183421-1	BLDG5-SP-007	TCLP	Solid	8081B	577248
480-183421-2	BLDG6-SP-008	TCLP	Solid	8081B	577248
480-183421-3	BLDG6-SP-009	TCLP	Solid	8081B	577248

Metals

Leach Batch: 577044

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183421-1	BLDG5-SP-007	TCLP	Solid	1311	
480-183421-2	BLDG6-SP-008	TCLP	Solid	1311	
480-183421-3	BLDG6-SP-009	TCLP	Solid	1311	
LB 480-577044/1-C	Method Blank	TCLP	Solid	1311	
LB 480-577044/1-D	Method Blank	TCLP	Solid	1311	
480-183421-3 MS	BLDG6-SP-009	TCLP	Solid	1311	
480-183421-3 MSD	BLDG6-SP-009	TCLP	Solid	1311	

Metals

Prep Batch: 577201

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183421-1	BLDG5-SP-007	TCLP	Solid	3010A	577044
480-183421-2	BLDG6-SP-008	TCLP	Solid	3010A	577044
480-183421-3	BLDG6-SP-009	TCLP	Solid	3010A	577044
LB 480-577044/1-C	Method Blank	TCLP	Solid	3010A	577044
MB 480-577201/2-A	Method Blank	Total/NA	Solid	3010A	
LCS 480-577201/3-A	Lab Control Sample	Total/NA	Solid	3010A	
480-183421-3 MS	BLDG6-SP-009	TCLP	Solid	3010A	577044
480-183421-3 MSD	BLDG6-SP-009	TCLP	Solid	3010A	577044

Prep Batch: 577222

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183421-1	BLDG5-SP-007	TCLP	Solid	7470A	577044
480-183421-2	BLDG6-SP-008	TCLP	Solid	7470A	577044
480-183421-3	BLDG6-SP-009	TCLP	Solid	7470A	577044
LB 480-577044/1-D	Method Blank	TCLP	Solid	7470A	577044
MB 480-577222/2-A	Method Blank	Total/NA	Solid	7470A	
LCS 480-577222/3-A	Lab Control Sample	Total/NA	Solid	7470A	
480-183421-3 MS	BLDG6-SP-009	TCLP	Solid	7470A	577044
480-183421-3 MSD	BLDG6-SP-009	TCLP	Solid	7470A	577044

Analysis Batch: 577294

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183421-1	BLDG5-SP-007	TCLP	Solid	7470A	577222
480-183421-2	BLDG6-SP-008	TCLP	Solid	7470A	577222
480-183421-3	BLDG6-SP-009	TCLP	Solid	7470A	577222
LB 480-577044/1-D	Method Blank	TCLP	Solid	7470A	577222
MB 480-577222/2-A	Method Blank	Total/NA	Solid	7470A	577222
LCS 480-577222/3-A	Lab Control Sample	Total/NA	Solid	7470A	577222
480-183421-3 MS	BLDG6-SP-009	TCLP	Solid	7470A	577222
480-183421-3 MSD	BLDG6-SP-009	TCLP	Solid	7470A	577222

Analysis Batch: 577585

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183421-1	BLDG5-SP-007	TCLP	Solid	6010C	577201
480-183421-2	BLDG6-SP-008	TCLP	Solid	6010C	577201
480-183421-3	BLDG6-SP-009	TCLP	Solid	6010C	577201
LB 480-577044/1-C	Method Blank	TCLP	Solid	6010C	577201
MB 480-577201/2-A	Method Blank	Total/NA	Solid	6010C	577201
LCS 480-577201/3-A	Lab Control Sample	Total/NA	Solid	6010C	577201
480-183421-3 MS	BLDG6-SP-009	TCLP	Solid	6010C	577201
480-183421-3 MSD	BLDG6-SP-009	TCLP	Solid	6010C	577201

General Chemistry

Analysis Batch: 577104

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183421-1	BLDG5-SP-007	Total/NA	Solid	9045D	
480-183421-2	BLDG6-SP-008	Total/NA	Solid	9045D	
480-183421-3	BLDG6-SP-009	Total/NA	Solid	9045D	
LCS 480-577104/1	Lab Control Sample	Total/NA	Solid	9045D	

QC Association Summary

General Chemistry

Analysis Batch: 577473

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183421-1	BLDG5-SP-007	Total/NA	Solid	1010A	
480-183421-2	BLDG6-SP-008	Total/NA	Solid	1010A	
480-183421-3	BLDG6-SP-009	Total/NA	Solid	1010A	
LCS 480-577473/1	Lab Control Sample	Total/NA	Solid	1010A	
480-183421-1 DU	BLDG5-SP-007	Total/NA	Solid	1010A	

Analysis Batch: 577835

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183421-1	BLDG5-SP-007	Total/NA	Solid	Moisture	
480-183421-2	BLDG6-SP-008	Total/NA	Solid	Moisture	
480-183421-3	BLDG6-SP-009	Total/NA	Solid	Moisture	

Client Sample ID: BLDG5-SP-007
Date Collected: 04/15/21 08:50
Date Received: 04/16/21 10:00

Lab Sample ID: 480-183421-1
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			577047	04/20/21 13:05	LMS	TAL BUF
TCLP	Analysis	8260C		10	577162	04/21/21 16:47	LCH	TAL BUF
TCLP	Leach	1311			577044	04/20/21 13:04	LMS	TAL BUF
TCLP	Prep	3510C			577247	04/21/21 14:44	ATG	TAL BUF
TCLP	Analysis	8270D		1	577355	04/22/21 18:49	JMM	TAL BUF
TCLP	Leach	1311			577044	04/20/21 13:04	LMS	TAL BUF
TCLP	Prep	3510C			577248	04/21/21 14:47	ATG	TAL BUF
TCLP	Analysis	8081B		1	577555	04/23/21 10:44	JLS	TAL BUF
TCLP	Leach	1311			577044	04/20/21 13:04	LMS	TAL BUF
TCLP	Prep	8151A			577175	04/21/21 10:27	JMP	TAL BUF
TCLP	Analysis	8151		1	577395	04/22/21 19:42	MAN	TAL BUF
TCLP	Leach	1311			577044	04/20/21 13:04	LMS	TAL BUF
TCLP	Prep	3010A			577201	04/21/21 10:58	KMP	TAL BUF
TCLP	Analysis	6010C		1	577585	04/22/21 20:01	LMH	TAL BUF
TCLP	Leach	1311			577044	04/20/21 13:04	LMS	TAL BUF
TCLP	Prep	7470A			577222	04/21/21 13:26	BMB	TAL BUF
TCLP	Analysis	7470A		1	577294	04/21/21 18:11	BMB	TAL BUF
Total/NA	Analysis	1010A		1	577473	04/22/21 15:44	KEB	TAL BUF
Total/NA	Analysis	9045D		1	577104	04/20/21 13:00	CSS	TAL BUF
Total/NA	Analysis	Moisture		1	577835	04/25/21 17:01	DSC	TAL BUF

Client Sample ID: BLDG5-SP-007
Date Collected: 04/15/21 08:50
Date Received: 04/16/21 10:00

Lab Sample ID: 480-183421-1
Matrix: Solid
Percent Solids: 91.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035A_L			577024	04/20/21 10:26	WJD	TAL BUF
Total/NA	Analysis	8260C		1	576959	04/20/21 14:45	CDC	TAL BUF
Total/NA	Prep	3550C			577340	04/22/21 08:24	VXF	TAL BUF
Total/NA	Analysis	8270D		10	577594	04/23/21 11:48	JMM	TAL BUF

Client Sample ID: BLDG6-SP-008
Date Collected: 04/15/21 10:20
Date Received: 04/16/21 10:00

Lab Sample ID: 480-183421-2
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			577047	04/20/21 13:05	LMS	TAL BUF
TCLP	Analysis	8260C		10	577162	04/21/21 17:11	LCH	TAL BUF
TCLP	Leach	1311			577044	04/20/21 13:04	LMS	TAL BUF
TCLP	Prep	3510C			577247	04/21/21 14:44	ATG	TAL BUF
TCLP	Analysis	8270D		1	577355	04/22/21 16:24	JMM	TAL BUF
TCLP	Leach	1311			577044	04/20/21 13:04	LMS	TAL BUF
TCLP	Prep	3510C			577248	04/21/21 14:47	ATG	TAL BUF
TCLP	Analysis	8081B		1	577555	04/23/21 11:04	JLS	TAL BUF

Client Sample ID: BLDG6-SP-008
Lab Sample ID: 480-183421-2
Date Collected: 04/15/21 10:20
Matrix: Solid
Date Received: 04/16/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			577044	04/20/21 13:04	LMS	TAL BUF
TCLP	Prep	8151A			577175	04/21/21 10:27	JMP	TAL BUF
TCLP	Analysis	8151		1	577395	04/22/21 20:12	MAN	TAL BUF
TCLP	Leach	1311			577044	04/20/21 13:04	LMS	TAL BUF
TCLP	Prep	3010A			577201	04/21/21 10:58	KMP	TAL BUF
TCLP	Analysis	6010C		1	577585	04/22/21 20:05	LMH	TAL BUF
TCLP	Leach	1311			577044	04/20/21 13:04	LMS	TAL BUF
TCLP	Prep	7470A			577222	04/21/21 13:26	BMB	TAL BUF
TCLP	Analysis	7470A		1	577294	04/21/21 18:13	BMB	TAL BUF
Total/NA	Analysis	1010A		1	577473	04/22/21 15:44	KEB	TAL BUF
Total/NA	Analysis	9045D		1	577104	04/20/21 13:00	CSS	TAL BUF
Total/NA	Analysis	Moisture		1	577835	04/25/21 17:01	DSC	TAL BUF

Client Sample ID: BLDG6-SP-008
Lab Sample ID: 480-183421-2
Date Collected: 04/15/21 10:20
Matrix: Solid
Date Received: 04/16/21 10:00
Percent Solids: 85.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035A_L	DL		577107	04/20/21 18:46	CDC	TAL BUF
Total/NA	Analysis	8260C	DL	1	577108	04/20/21 22:13	WJD	TAL BUF
Total/NA	Prep	3550C			577340	04/22/21 08:24	VXF	TAL BUF
Total/NA	Analysis	8270D		1	577594	04/23/21 12:12	JMM	TAL BUF

Client Sample ID: BLDG6-SP-009
Lab Sample ID: 480-183421-3
Date Collected: 04/15/21 11:05
Matrix: Solid
Date Received: 04/16/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			577047	04/20/21 13:05	LMS	TAL BUF
TCLP	Analysis	8260C		10	577162	04/21/21 17:34	LCH	TAL BUF
TCLP	Leach	1311			577044	04/20/21 13:04	LMS	TAL BUF
TCLP	Prep	3510C			577247	04/21/21 14:44	ATG	TAL BUF
TCLP	Analysis	8270D		1	577355	04/22/21 16:48	JMM	TAL BUF
TCLP	Leach	1311			577044	04/20/21 13:04	LMS	TAL BUF
TCLP	Prep	3510C			577248	04/21/21 14:47	ATG	TAL BUF
TCLP	Analysis	8081B		1	577555	04/23/21 11:23	JLS	TAL BUF
TCLP	Leach	1311			577044	04/20/21 13:04	LMS	TAL BUF
TCLP	Prep	8151A			577175	04/21/21 10:27	JMP	TAL BUF
TCLP	Analysis	8151		1	577395	04/22/21 20:41	MAN	TAL BUF
TCLP	Leach	1311			577044	04/20/21 13:04	LMS	TAL BUF
TCLP	Prep	3010A			577201	04/21/21 10:58	KMP	TAL BUF
TCLP	Analysis	6010C		1	577585	04/22/21 20:09	LMH	TAL BUF
TCLP	Leach	1311			577044	04/20/21 13:04	LMS	TAL BUF
TCLP	Prep	7470A			577222	04/21/21 13:26	BMB	TAL BUF
TCLP	Analysis	7470A		1	577294	04/21/21 18:14	BMB	TAL BUF

Lab Chronicle

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183421-1

Client Sample ID: BLDG6-SP-009

Lab Sample ID: 480-183421-3

Date Collected: 04/15/21 11:05
Date Received: 04/16/21 10:00

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1010A		1	577473	04/22/21 15:44	KEB	TAL BUF
Total/NA	Analysis	9045D		1	577104	04/20/21 13:00	CSS	TAL BUF
Total/NA	Analysis	Moisture		1	577835	04/25/21 17:01	DSC	TAL BUF

Client Sample ID: BLDG6-SP-009

Lab Sample ID: 480-183421-3

Date Collected: 04/15/21 11:05
Date Received: 04/16/21 10:00

Matrix: Solid
Percent Solids: 96.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035A_L			577107	04/20/21 18:46	CDC	TAL BUF
Total/NA	Analysis	8260C		1	577108	04/20/21 22:38	WJD	TAL BUF
Total/NA	Prep	3550C			577340	04/22/21 08:24	VXF	TAL BUF
Total/NA	Analysis	8270D		5	577594	04/23/21 12:36	JMM	TAL BUF

Laboratory References:

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Accreditation/Certification Summary

Laboratory: Eurofins TestAmerica, Buffalo

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
New York	NELAP	10026	04-01-22

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
7470A	7470A	Solid	Mercury
9045D		Solid	Temperature
Moisture		Solid	Percent Moisture
Moisture		Solid	Percent Solids

Method Summary

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183421-1

Method	Method Description	Protocol	Laboratory
8260C	TCLP Volatiles	SW846	TAL BUF
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL BUF
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL BUF
8081B	Organochlorine Pesticides (GC)	SW846	TAL BUF
8151	TCLP Herbicides	SW846	TAL BUF
6010C	Metals (ICP)	SW846	TAL BUF
7470A	TCLP Mercury	SW846	TAL BUF
1010A	Ignitability, Pensky-Martens Closed-Cup Method	SW846	TAL BUF
9045D	pH	SW846	TAL BUF
Moisture	Percent Moisture	EPA	TAL BUF
1311	TCLP Extraction	SW846	TAL BUF
3010A	Preparation, Total Metals	SW846	TAL BUF
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	TAL BUF
3550C	Ultrasonic Extraction	SW846	TAL BUF
5030C	Purge and Trap	SW846	TAL BUF
5035A_L	Closed System Purge and Trap	SW846	TAL BUF
7470A	Preparation, Mercury	SW846	TAL BUF
8151A	Extraction (Herbicides)	SW846	TAL BUF

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Sample Summary

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183421-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
480-183421-1	BLDG5-SP-007	Solid	04/15/21 08:50	04/16/21 10:00	
480-183421-2	BLDG6-SP-008	Solid	04/15/21 10:20	04/16/21 10:00	
480-183421-3	BLDG6-SP-009	Solid	04/15/21 11:05	04/16/21 10:00	

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone: 716-691-2600 Fax: 716-691-7991

Chain of Custody Record

eurofins Environment Testing America

Client Information
Client Contact: Mr. Glenn Esler
Company: Integral Consulting Inc
Address: 319 SW Washington Ave Suite 1150
City: Portland
State, Zip: OR, 97204
Phone: 503-943-3617(Tel)
Email: gesler@integral-corp.com
Project Name: Project EF1017
Site:

Sampler: K. ZATWARNICKI
Phone:
PWSID:
Due Date Requested:
TAT Requested (days): Standard
Compliance Project: Δ Yes Δ No
PO #: Purchase Order not required
WO #:
Project #: 48023604
SSOW#:

Lab PM: Fischer, Brian J
E-Mail: Brian.Fischer@Eurofinset.com
Carrier Tracking No(s):
State of Origin: NY
COC No: 480-158821-34919.2
Page: Page 1 of 1
Job #:

Analysis Requested

Preservation Codes:
A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
M - Hexane
N - None
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2S2O3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - pH 4-5
Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010C, 7470A, 8081B, 8151A, 8270D TCLP	8260C - TCLP Volatiles	1010A, ~~8270D~~, 9045D	8260C - TCL list OLM04.2	8082A - TCL PCBs - OLM04.2	8270D TCL SVOCs	Total Number of containers	Special Instructions/Note:
				Preservation Code:			N	N	N	N	N			
BLDG5-SP-007	4/15/21	0850	G	Solid	N		X	X	X	X		X		
BLDG6-SP-008	↓	1020	↓	Solid			↓	↓	↓	↓		↓		
BLDG6-SP-009	↓	1105	↓	Solid			↓	↓	↓	↓		↓		
				Solid										
				Solid										
				Solid										
				Solid										
				Solid										
				Solid										
				Water										
				Water										

480-183421 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For ________ Months

Deliverable Requested: I, II, III, IV, Other (specify) Cat B lvl 2
Special Instructions/QC Requirements:

Empty Kit Relinquished by: Date: Time: Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Katelyn Zatwarnicki	4/15/21 1300	Integral	[illegible signature]	4/16/21 1000	TAS

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks: #1 #1 3.1

Ver: 11/01/2020

Login Sample Receipt Checklist

Client: Integral Consulting Inc

Job Number: 480-183421-1

Login Number: 183421
List Number: 1
Creator: Sabuda, Brendan D

List Source: Eurofins TestAmerica, Buffalo

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	3.1 #1 ICE
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	True	

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

Laboratory Job ID: 480-183541-1
Client Project/Site: Project EF1017

For:
Integral Consulting Inc
319 SW Washington Ave
Suite 1150
Portland, Oregon 97204

Attn: Mr. Glenn Esler

Authorized for release by:
4/27/2021 5:21:33 PM

Brian Fischer, Manager of Project Management
(716)504-9835
Brian.Fischer@Eurofinset.com

The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

Table of Contents

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
*3	ISTD response or retention time outside acceptable limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
S1+	Surrogate recovery exceeds control limits, high biased.
vs	Reported analyte concentrations are below 200 ug/kg and may be biased low due to the sample not being collected according to 5035A-L low-level specifications.

GC/MS Semi VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

GC Semi VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
S1-	Surrogate recovery exceeds control limits, low biased.
S1+	Surrogate recovery exceeds control limits, high biased.

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)

Glossary (Continued)

Abbreviation	These commonly used abbreviations may or may not be present in this report.
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 480-183541-1

Laboratory: Eurofins TestAmerica, Buffalo

Narrative

Job Narrative
480-183541-1

Comments
No additional comments.

Receipt
The samples were received on 4/20/2021 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.1º C.

GC/MS VOA
Method 8260C: The continuing calibration verification (CCVIS) associated with batch 480-577108 recovered above the upper control limit for Carbon tetrachloride, 1,2-Dichloroethane, 1,1,1-Trichloroethane and Trichlorofluoromethane. The samples associated with this CCVIS were non-detect for the affected analytes; therefore, the data have been reported. The associated samples are impacted: K-23-BLDG12-SP-010 (480-183541-1), BLDG1-CRUSH-SP-011 (480-183541-2) and BLDG5-DUCT-SP-012 (480-183541-3).

Method 8260C: Internal standard and surrogate standard responses were outside of acceptance limits for the following sample due to the light and powdery nature of the sample matrix: BLDG5-DUCT-SP-012 (480-183541-3).

Method 8260C: The following samples were diluted due to the nature of the TCLP solid sample matrix: K-23-BLDG12-SP-010 (480-183541-1), BLDG1-CRUSH-SP-011 (480-183541-2), BLDG5-DUCT-SP-012 (480-183541-3) and (LB 480-577413/1-A). Elevated reporting limits (RLs) are provided.

Method 8260C: The continuing calibration verification (CCV) associated with batch 480-577664 recovered above the upper control limit for 2-Butanone (MEK). The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: K-23-BLDG12-SP-010 (480-183541-1), BLDG1-CRUSH-SP-011 (480-183541-2) and BLDG5-DUCT-SP-012 (480-183541-3).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC/MS Semi VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC Semi VOA
Method 8151A: Surrogate recovery for the following sample was outside control limits: (LB 480-577371/1-D). This is routine for TCLP herbicides, due to the pH effects created during the leaching process, inhibiting the herbicide derivatization of the free acid components.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
Methods 9045C, 9045D: This analysis is normally performed in the field and has a method-defined holding time of 15 minutes. The following samples has been qualified with the "HF" flag to indicate analysis was performed in the laboratory outside the 15 minute timeframe: K-23-BLDG12-SP-010 (480-183541-1), BLDG1-CRUSH-SP-011 (480-183541-2) and BLDG5-DUCT-SP-012 (480-183541-3).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep
Method 3510C: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 480-577371, 480-577371 and 480-577573.

Method 3510C: Due to the matrix, the initial volume(s) used for the following samples deviated from the standard procedure: K-23-BLDG12-SP-010 (480-183541-1) and BLDG1-CRUSH-SP-011 (480-183541-2). The reporting limits (RLs) have been adjusted

Job ID: 480-183541-1 (Continued)

Laboratory: Eurofins TestAmerica, Buffalo (Continued)

proportionately.

Method 3550C: Due to the matrix, the initial volume(s) used for the following samples deviated from the standard procedure: 8270 DK-23-BLDG12-SP-010 (480-183541-1), BLDG1-CRUSH-SP-011 (480-183541-2) and BLDG5-DUCT-SP-012 (480-183541-3). The reporting limits (RLs) have been adjusted proportionately.

Method 8151A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 480-577371, 480-577371, 480-577574 and 480-577574.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183541-1

Client Sample ID: K-23-BLDG12-SP-010 — Lab Sample ID: 480-183541-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	4.4	J vs	25	4.2	ug/Kg	1		8260C	Total/NA
Bis(2-ethylhexyl) phthalate	280	J	480	160	ug/Kg	1		8270D	Total/NA
Barium	0.22	J	1.0	0.10	mg/L	1		6010C	TCLP
Cadmium	0.011		0.0020	0.00050	mg/L	1		6010C	TCLP
Chromium	0.059		0.020	0.010	mg/L	1		6010C	TCLP
Lead	0.024		0.020	0.0030	mg/L	1		6010C	TCLP
Selenium	0.015	J	0.025	0.0087	mg/L	1		6010C	TCLP
Flashpoint	>180		50.0	50.0	Degrees F	1		1010A	Total/NA
pH	8.4	HF	0.1	0.1	SU	1		9045D	Total/NA
Temperature	19.3	HF	0.001	0.001	Degrees C	1		9045D	Total/NA

Client Sample ID: BLDG1-CRUSH-SP-011 — Lab Sample ID: 480-183541-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
2-Butanone (MEK)	36	vs	25	1.8	ug/Kg	1		8260C	Total/NA
2-Hexanone	11	J vs	25	2.5	ug/Kg	1		8260C	Total/NA
4-Methyl-2-pentanone (MIBK)	2.7	J vs	25	1.6	ug/Kg	1		8260C	Total/NA
Acetone	130	vs	25	4.2	ug/Kg	1		8260C	Total/NA
Benzene	0.65	J vs	4.9	0.24	ug/Kg	1		8260C	Total/NA
Isopropylbenzene	0.80	J vs	4.9	0.74	ug/Kg	1		8260C	Total/NA
Styrene	0.60	J vs	4.9	0.25	ug/Kg	1		8260C	Total/NA
Toluene	0.66	J vs	4.9	0.37	ug/Kg	1		8260C	Total/NA
Benzo[b]fluoranthene	170	J	870	140	ug/Kg	1		8270D	Total/NA
Benzo[g,h,i]perylene	110	J	870	92	ug/Kg	1		8270D	Total/NA
Bis(2-ethylhexyl) phthalate	3400		870	300	ug/Kg	1		8270D	Total/NA
Butyl benzyl phthalate	730	J	870	140	ug/Kg	1		8270D	Total/NA
Fluoranthene	270	J	870	92	ug/Kg	1		8270D	Total/NA
Phenanthrene	250	J	870	130	ug/Kg	1		8270D	Total/NA
Pyrene	190	J	870	100	ug/Kg	1		8270D	Total/NA
gamma-BHC (Lindane)	0.00011	J	0.00020	0.0000060	mg/L	1		8081B	TCLP
Methoxychlor	0.00017	J	0.00020	0.000014	mg/L	1		8081B	TCLP
Arsenic	0.020		0.015	0.0056	mg/L	1		6010C	TCLP
Barium	1.5		1.0	0.10	mg/L	1		6010C	TCLP
Cadmium	0.089		0.0020	0.00050	mg/L	1		6010C	TCLP
Chromium	0.13		0.020	0.010	mg/L	1		6010C	TCLP
Lead	1.4		0.020	0.0030	mg/L	1		6010C	TCLP
Selenium	0.012	J	0.025	0.0087	mg/L	1		6010C	TCLP
Silver	0.014		0.0060	0.0017	mg/L	1		6010C	TCLP
Flashpoint	>180		50.0	50.0	Degrees F	1		1010A	Total/NA
pH	6.2	HF	0.1	0.1	SU	1		9045D	Total/NA
Temperature	19.4	HF	0.001	0.001	Degrees C	1		9045D	Total/NA

Client Sample ID: BLDG5-DUCT-SP-012 — Lab Sample ID: 480-183541-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	63	vs	25	4.1	ug/Kg	1		8260C	Total/NA
Cyclohexane	13	vs	4.9	0.69	ug/Kg	1		8260C	Total/NA
Methylcyclohexane	3.0	J vs	4.9	0.75	ug/Kg	1		8260C	Total/NA
Bis(2-ethylhexyl) phthalate	2400		990	340	ug/Kg	1		8270D	Total/NA
Di-n-butyl phthalate	220	J	990	170	ug/Kg	1		8270D	Total/NA
Di-n-octyl phthalate	360	J	990	120	ug/Kg	1		8270D	Total/NA
Arsenic	0.065		0.015	0.0056	mg/L	1		6010C	TCLP

This Detection Summary does not include radiochemical test results.

Client Sample ID: BLDG5-DUCT-SP-012 (Continued)

Lab Sample ID: 480-183541-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.24	J	1.0	0.10	mg/L	1		6010C	TCLP
Cadmium	0.011		0.0020	0.00050	mg/L	1		6010C	TCLP
Lead	1.6		0.020	0.0030	mg/L	1		6010C	TCLP
Flashpoint	>180		50.0	50.0	Degrees F	1		1010A	Total/NA
pH	7.9	HF	0.1	0.1	SU	1		9045D	Total/NA
Temperature	19.4	HF	0.001	0.001	Degrees C	1		9045D	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: K-23-BLDG12-SP-010
Lab Sample ID: 480-183541-1

Date Collected: 04/19/21 08:55
Matrix: Solid
Date Received: 04/20/21 10:00

Method: 8260C - TCLP Volatiles - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.010	0.0041	mg/L			04/24/21 00:16	10
Carbon tetrachloride	ND		0.010	0.0027	mg/L			04/24/21 00:16	10
Chlorobenzene	ND		0.010	0.0075	mg/L			04/24/21 00:16	10
Chloroform	ND		0.010	0.0034	mg/L			04/24/21 00:16	10
1,2-Dichloroethane	ND		0.010	0.0021	mg/L			04/24/21 00:16	10
1,1-Dichloroethene	ND		0.010	0.0029	mg/L			04/24/21 00:16	10
2-Butanone (MEK)	ND		0.050	0.013	mg/L			04/24/21 00:16	10
Tetrachloroethene	ND		0.010	0.0036	mg/L			04/24/21 00:16	10
Trichloroethene	ND		0.010	0.0046	mg/L			04/24/21 00:16	10
Vinyl chloride	ND		0.010	0.0090	mg/L			04/24/21 00:16	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*77 - 120*		*04/24/21 00:16*	*10*
Toluene-d8 (Surr)	*93*		*80 - 120*		*04/24/21 00:16*	*10*
4-Bromofluorobenzene (Surr)	*92*		*73 - 120*		*04/24/21 00:16*	*10*
Dibromofluoromethane (Surr)	*100*		*75 - 123*		*04/24/21 00:16*	*10*

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND	vs	5.0	0.36	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
1,1,2,2-Tetrachloroethane	ND	vs	5.0	0.81	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
1,1,2-Trichloroethane	ND	vs	5.0	0.65	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	vs	5.0	1.1	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
1,1-Dichloroethane	ND	vs	5.0	0.61	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
1,1-Dichloroethene	ND	vs	5.0	0.61	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
1,2,4-Trichlorobenzene	ND	vs	5.0	0.30	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
1,2-Dibromo-3-Chloropropane	ND	vs	5.0	2.5	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
1,2-Dichlorobenzene	ND	vs	5.0	0.39	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
1,2-Dichloroethane	ND	vs	5.0	0.25	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
1,2-Dichloropropane	ND	vs	5.0	2.5	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
1,3-Dichlorobenzene	ND	vs	5.0	0.26	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
1,4-Dichlorobenzene	ND	vs	5.0	0.70	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
2-Butanone (MEK)	ND	vs	25	1.8	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
2-Hexanone	ND	vs	25	2.5	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
4-Methyl-2-pentanone (MIBK)	ND	vs	25	1.6	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
Acetone	**4.4**	**J vs**	25	4.2	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
Benzene	ND	vs	5.0	0.24	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
Bromodichloromethane	ND	vs	5.0	0.67	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
Bromoform	ND	vs	5.0	2.5	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
Bromomethane	ND	vs	5.0	0.45	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
Carbon disulfide	ND	vs	5.0	2.5	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
Carbon tetrachloride	ND	vs	5.0	0.48	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
Chlorobenzene	ND	vs	5.0	0.66	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
Dibromochloromethane	ND	vs	5.0	0.64	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
Chloroethane	ND	vs	5.0	1.1	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
Chloroform	ND	vs	5.0	0.31	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
Chloromethane	ND	vs	5.0	0.30	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
cis-1,2-Dichloroethene	ND	vs	5.0	0.64	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
cis-1,3-Dichloropropene	ND	vs	5.0	0.72	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
Cyclohexane	ND	vs	5.0	0.70	ug/Kg		04/20/21 18:46	04/20/21 23:02	1

Client Sample ID: K-23-BLDG12-SP-010
Date Collected: 04/19/21 08:55
Date Received: 04/20/21 10:00

Lab Sample ID: 480-183541-1
Matrix: Solid

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND	vs	5.0	0.41	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
Ethylbenzene	ND	vs	5.0	0.34	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
1,2-Dibromoethane	ND	vs	5.0	0.64	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
Isopropylbenzene	ND	vs	5.0	0.75	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
Methyl acetate	ND	vs	25	3.0	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
Methyl tert-butyl ether	ND	vs	5.0	0.49	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
Methylcyclohexane	ND	vs	5.0	0.76	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
Methylene Chloride	ND	vs	5.0	2.3	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
Styrene	ND	vs	5.0	0.25	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
Tetrachloroethene	ND	vs	5.0	0.67	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
Toluene	ND	vs	5.0	0.38	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
trans-1,2-Dichloroethene	ND	vs	5.0	0.51	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
trans-1,3-Dichloropropene	ND	vs	5.0	2.2	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
Trichloroethene	ND	vs	5.0	1.1	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
Trichlorofluoromethane	ND	vs	5.0	0.47	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
Vinyl chloride	ND	vs	5.0	0.61	ug/Kg		04/20/21 18:46	04/20/21 23:02	1
Xylenes, Total	ND	vs	9.9	0.83	ug/Kg		04/20/21 18:46	04/20/21 23:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*71 - 125*	*04/20/21 18:46*	*04/20/21 23:02*	*1*
1,2-Dichloroethane-d4 (Surr)	*120*		*64 - 126*	*04/20/21 18:46*	*04/20/21 23:02*	*1*
4-Bromofluorobenzene (Surr)	*109*		*72 - 126*	*04/20/21 18:46*	*04/20/21 23:02*	*1*
Dibromofluoromethane (Surr)	*104*		*60 - 140*	*04/20/21 18:46*	*04/20/21 23:02*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biphenyl	ND		480	71	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
bis (2-chloroisopropyl) ether	ND		480	96	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
2,4,5-Trichlorophenol	ND		480	130	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
2,4,6-Trichlorophenol	ND		480	96	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
2,4-Dichlorophenol	ND		480	51	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
2,4-Dimethylphenol	ND		480	120	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
2,4-Dinitrophenol	ND		4700	2200	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
2,4-Dinitrotoluene	ND		480	99	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
2,6-Dinitrotoluene	ND		480	57	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
2-Chloronaphthalene	ND		480	79	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
1,4-Dioxane	ND		280	160	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
2-Chlorophenol	ND		940	88	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
2-Methylnaphthalene	ND		480	96	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
2-Methylphenol	ND		480	57	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
2-Nitroaniline	ND		940	71	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
2-Nitrophenol	ND		480	140	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
3,3'-Dichlorobenzidine	ND		940	570	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
3-Nitroaniline	ND		940	130	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
4,6-Dinitro-2-methylphenol	ND		940	480	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
4-Bromophenyl phenyl ether	ND		480	68	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
4-Chloro-3-methylphenol	ND		480	120	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
4-Chloroaniline	ND		480	120	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
4-Chlorophenyl phenyl ether	ND		480	60	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
4-Methylphenol	ND		940	57	ug/Kg		04/23/21 10:13	04/26/21 18:36	1

Client Sample ID: K-23-BLDG12-SP-010
Date Collected: 04/19/21 08:55
Date Received: 04/20/21 10:00

Lab Sample ID: 480-183541-1
Matrix: Solid

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4-Nitroaniline	ND		940	250	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
4-Nitrophenol	ND		940	340	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
Acenaphthene	ND		480	71	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
Acenaphthylene	ND		480	62	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
Acetophenone	ND		480	65	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
Anthracene	ND		480	120	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
Atrazine	ND		480	170	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
Benzaldehyde	ND		480	380	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
Benzo[a]anthracene	ND		480	48	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
Benzo[a]pyrene	ND		480	71	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
Benzo[b]fluoranthene	ND		480	77	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
Benzo[g,h,i]perylene	ND		480	51	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
Benzo[k]fluoranthene	ND		480	62	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
Bis(2-chloroethoxy)methane	ND		480	100	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
Bis(2-chloroethyl)ether	ND		480	62	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
Bis(2-ethylhexyl) phthalate	**280**	**J**	480	160	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
Butyl benzyl phthalate	ND		480	79	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
Caprolactam	ND		480	140	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
Carbazole	ND		480	57	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
Chrysene	ND		480	110	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
Di-n-butyl phthalate	ND		480	82	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
Di-n-octyl phthalate	ND		480	57	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
Dibenz(a,h)anthracene	ND		480	85	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
Dibenzofuran	ND		480	57	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
Diethyl phthalate	ND		480	62	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
Dimethyl phthalate	ND		480	57	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
Fluoranthene	ND		480	51	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
Fluorene	ND		480	57	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
Hexachlorobenzene	ND		480	65	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
Hexachlorobutadiene	ND		480	71	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
Hexachlorocyclopentadiene	ND		480	65	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
Hexachloroethane	ND		480	62	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
Indeno[1,2,3-cd]pyrene	ND		480	60	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
Isophorone	ND		480	100	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
N-Nitrosodi-n-propylamine	ND		480	82	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
N-Nitrosodiphenylamine	ND		480	390	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
Naphthalene	ND		480	62	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
Nitrobenzene	ND		480	54	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
Pentachlorophenol	ND		940	480	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
Phenanthrene	ND		480	71	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
Phenol	ND		480	74	ug/Kg		04/23/21 10:13	04/26/21 18:36	1
Pyrene	ND		480	57	ug/Kg		04/23/21 10:13	04/26/21 18:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*120*		*54 - 120*	*04/23/21 10:13*	*04/26/21 18:36*	*1*
2-Fluorobiphenyl	*91*		*60 - 120*	*04/23/21 10:13*	*04/26/21 18:36*	*1*
2-Fluorophenol	*78*		*52 - 120*	*04/23/21 10:13*	*04/26/21 18:36*	*1*
Nitrobenzene-d5	*86*		*53 - 120*	*04/23/21 10:13*	*04/26/21 18:36*	*1*
p-Terphenyl-d14	*103*		*79 - 130*	*04/23/21 10:13*	*04/26/21 18:36*	*1*
Phenol-d5	*82*		*54 - 120*	*04/23/21 10:13*	*04/26/21 18:36*	*1*

Client Sample ID: K-23-BLDG12-SP-010

Lab Sample ID: 480-183541-1

Date Collected: 04/19/21 08:55

Matrix: Solid

Date Received: 04/20/21 10:00

Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.10	0.0045	mg/L		04/23/21 14:56	04/26/21 14:55	1
2,4-Dinitrotoluene	ND		0.050	0.0043	mg/L		04/23/21 14:56	04/26/21 14:55	1
Hexachlorobenzene	ND		0.050	0.0050	mg/L		04/23/21 14:56	04/26/21 14:55	1
Hexachlorobutadiene	ND		0.050	0.0068	mg/L		04/23/21 14:56	04/26/21 14:55	1
Hexachloroethane	ND		0.050	0.0058	mg/L		04/23/21 14:56	04/26/21 14:55	1
3-Methylphenol	ND		0.10	0.0040	mg/L		04/23/21 14:56	04/26/21 14:55	1
2-Methylphenol	ND		0.050	0.0040	mg/L		04/23/21 14:56	04/26/21 14:55	1
4-Methylphenol	ND		0.10	0.0035	mg/L		04/23/21 14:56	04/26/21 14:55	1
Nitrobenzene	ND		0.050	0.0028	mg/L		04/23/21 14:56	04/26/21 14:55	1
Pentachlorophenol	ND		0.10	0.022	mg/L		04/23/21 14:56	04/26/21 14:55	1
Pyridine	ND		0.25	0.0040	mg/L		04/23/21 14:56	04/26/21 14:55	1
2,4,5-Trichlorophenol	ND		0.050	0.0048	mg/L		04/23/21 14:56	04/26/21 14:55	1
2,4,6-Trichlorophenol	ND		0.050	0.0060	mg/L		04/23/21 14:56	04/26/21 14:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*85*		*41 - 120*	*04/23/21 14:56*	*04/26/21 14:55*	*1*
2-Fluorobiphenyl	*98*		*48 - 120*	*04/23/21 14:56*	*04/26/21 14:55*	*1*
2-Fluorophenol	*47*		*35 - 120*	*04/23/21 14:56*	*04/26/21 14:55*	*1*
Nitrobenzene-d5	*94*		*46 - 120*	*04/23/21 14:56*	*04/26/21 14:55*	*1*
p-Terphenyl-d14	*112*		*60 - 148*	*04/23/21 14:56*	*04/26/21 14:55*	*1*
Phenol-d5	*32*		*22 - 120*	*04/23/21 14:56*	*04/26/21 14:55*	*1*

Method: 8081B - Organochlorine Pesticides (GC) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.00020	0.0000060	mg/L		04/23/21 10:41	04/26/21 16:10	1
Chlordane (technical)	ND		0.0020	0.000029	mg/L		04/23/21 10:41	04/26/21 16:10	1
Endrin	ND		0.00020	0.000014	mg/L		04/23/21 10:41	04/26/21 16:10	1
Heptachlor	ND		0.00020	0.0000085	mg/L		04/23/21 10:41	04/26/21 16:10	1
Heptachlor epoxide	ND		0.00020	0.0000053	mg/L		04/23/21 10:41	04/26/21 16:10	1
Methoxychlor	ND		0.00020	0.000014	mg/L		04/23/21 10:41	04/26/21 16:10	1
Toxaphene	ND		0.0020	0.00012	mg/L		04/23/21 10:41	04/26/21 16:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*56*		*20 - 120*	*04/23/21 10:41*	*04/26/21 16:10*	*1*
DCB Decachlorobiphenyl	*53*		*20 - 120*	*04/23/21 10:41*	*04/26/21 16:10*	*1*
Tetrachloro-m-xylene	*96*		*44 - 120*	*04/23/21 10:41*	*04/26/21 16:10*	*1*
Tetrachloro-m-xylene	*82*		*44 - 120*	*04/23/21 10:41*	*04/26/21 16:10*	*1*

Method: 8151 - TCLP Herbicides - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND		0.0020	0.00036	mg/L		04/23/21 10:54	04/26/21 11:55	1
2,4-D	ND		0.0020	0.00040	mg/L		04/23/21 10:54	04/26/21 11:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*51*		*48 - 132*	*04/23/21 10:54*	*04/26/21 11:55*	*1*
2,4-Dichlorophenylacetic acid	*55*		*48 - 132*	*04/23/21 10:54*	*04/26/21 11:55*	*1*

Method: 6010C - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.015	0.0056	mg/L		04/23/21 11:00	04/23/21 18:49	1
Barium	**0.22**	**J**	1.0	0.10	mg/L		04/23/21 11:00	04/23/21 18:49	1

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183541-1

Client Sample ID: K-23-BLDG12-SP-010

Lab Sample ID: 480-183541-1
Date Collected: 04/19/21 08:55
Matrix: Solid
Date Received: 04/20/21 10:00

Method: 6010C - Metals (ICP) - TCLP (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	0.011		0.0020	0.00050	mg/L		04/23/21 11:00	04/23/21 18:49	1
Chromium	0.059		0.020	0.010	mg/L		04/23/21 11:00	04/23/21 18:49	1
Lead	0.024		0.020	0.0030	mg/L		04/23/21 11:00	04/23/21 18:49	1
Selenium	0.015	J	0.025	0.0087	mg/L		04/23/21 11:00	04/23/21 18:49	1
Silver	ND		0.0060	0.0017	mg/L		04/23/21 11:00	04/23/21 18:49	1

Method: 7470A - TCLP Mercury - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		04/23/21 13:50	04/23/21 18:38	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Flashpoint	>180		50.0	50.0	Degrees F			04/25/21 17:04	1
pH	8.4	HF	0.1	0.1	SU			04/26/21 15:45	1
Temperature	19.3	HF	0.001	0.001	Degrees C			04/26/21 15:45	1

Client Sample ID: BLDG1-CRUSH-SP-011

Lab Sample ID: 480-183541-2
Date Collected: 04/19/21 09:45
Matrix: Solid
Date Received: 04/20/21 10:00

Method: 8260C - TCLP Volatiles - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.010	0.0041	mg/L			04/24/21 00:38	10
Carbon tetrachloride	ND		0.010	0.0027	mg/L			04/24/21 00:38	10
Chlorobenzene	ND		0.010	0.0075	mg/L			04/24/21 00:38	10
Chloroform	ND		0.010	0.0034	mg/L			04/24/21 00:38	10
1,2-Dichloroethane	ND		0.010	0.0021	mg/L			04/24/21 00:38	10
1,1-Dichloroethene	ND		0.010	0.0029	mg/L			04/24/21 00:38	10
2-Butanone (MEK)	ND		0.050	0.013	mg/L			04/24/21 00:38	10
Tetrachloroethene	ND		0.010	0.0036	mg/L			04/24/21 00:38	10
Trichloroethene	ND		0.010	0.0046	mg/L			04/24/21 00:38	10
Vinyl chloride	ND		0.010	0.0090	mg/L			04/24/21 00:38	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*77 - 120*		*04/24/21 00:38*	*10*
Toluene-d8 (Surr)	*94*		*80 - 120*		*04/24/21 00:38*	*10*
4-Bromofluorobenzene (Surr)	*90*		*73 - 120*		*04/24/21 00:38*	*10*
Dibromofluoromethane (Surr)	*99*		*75 - 123*		*04/24/21 00:38*	*10*

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND	vs	4.9	0.36	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
1,1,2,2-Tetrachloroethane	ND	vs	4.9	0.80	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
1,1,2-Trichloroethane	ND	vs	4.9	0.64	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	vs	4.9	1.1	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
1,1-Dichloroethane	ND	vs	4.9	0.60	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
1,1-Dichloroethene	ND	vs	4.9	0.60	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
1,2,4-Trichlorobenzene	ND	vs	4.9	0.30	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
1,2-Dibromo-3-Chloropropane	ND	vs	4.9	2.5	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
1,2-Dichlorobenzene	ND	vs	4.9	0.39	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
1,2-Dichloroethane	ND	vs	4.9	0.25	ug/Kg		04/20/21 18:46	04/20/21 23:27	1

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Client Sample ID: BLDG1-CRUSH-SP-011

Lab Sample ID: 480-183541-2

Date Collected: 04/19/21 09:45

Matrix: Solid

Date Received: 04/20/21 10:00

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichloropropane	ND	vs	4.9	2.5	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
1,3-Dichlorobenzene	ND	vs	4.9	0.25	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
1,4-Dichlorobenzene	ND	vs	4.9	0.69	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
2-Butanone (MEK)	**36**	**vs**	25	1.8	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
2-Hexanone	**11**	**J vs**	25	2.5	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
4-Methyl-2-pentanone (MIBK)	**2.7**	**J vs**	25	1.6	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
Acetone	**130**	**vs**	25	4.2	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
Benzene	**0.65**	**J vs**	4.9	0.24	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
Bromodichloromethane	ND	vs	4.9	0.66	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
Bromoform	ND	vs	4.9	2.5	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
Bromomethane	ND	vs	4.9	0.44	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
Carbon disulfide	ND	vs	4.9	2.5	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
Carbon tetrachloride	ND	vs	4.9	0.48	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
Chlorobenzene	ND	vs	4.9	0.65	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
Dibromochloromethane	ND	vs	4.9	0.63	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
Chloroethane	ND	vs	4.9	1.1	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
Chloroform	ND	vs	4.9	0.30	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
Chloromethane	ND	vs	4.9	0.30	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
cis-1,2-Dichloroethene	ND	vs	4.9	0.63	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
cis-1,3-Dichloropropene	ND	vs	4.9	0.71	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
Cyclohexane	ND	vs	4.9	0.69	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
Dichlorodifluoromethane	ND	vs	4.9	0.41	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
Ethylbenzene	ND	vs	4.9	0.34	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
1,2-Dibromoethane	ND	vs	4.9	0.63	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
Isopropylbenzene	**0.80**	**J vs**	4.9	0.74	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
Methyl acetate	ND	vs	25	3.0	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
Methyl tert-butyl ether	ND	vs	4.9	0.48	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
Methylcyclohexane	ND	vs	4.9	0.75	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
Methylene Chloride	ND	vs	4.9	2.3	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
Styrene	**0.60**	**J vs**	4.9	0.25	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
Tetrachloroethene	ND	vs	4.9	0.66	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
Toluene	**0.66**	**J vs**	4.9	0.37	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
trans-1,2-Dichloroethene	ND	vs	4.9	0.51	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
trans-1,3-Dichloropropene	ND	vs	4.9	2.2	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
Trichloroethene	ND	vs	4.9	1.1	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
Trichlorofluoromethane	ND	vs	4.9	0.47	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
Vinyl chloride	ND	vs	4.9	0.60	ug/Kg		04/20/21 18:46	04/20/21 23:27	1
Xylenes, Total	ND	vs	9.9	0.83	ug/Kg		04/20/21 18:46	04/20/21 23:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*104*		*71 - 125*	*04/20/21 18:46*	*04/20/21 23:27*	*1*
1,2-Dichloroethane-d4 (Surr)	*117*		*64 - 126*	*04/20/21 18:46*	*04/20/21 23:27*	*1*
4-Bromofluorobenzene (Surr)	*98*		*72 - 126*	*04/20/21 18:46*	*04/20/21 23:27*	*1*
Dibromofluoromethane (Surr)	*103*		*60 - 140*	*04/20/21 18:46*	*04/20/21 23:27*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biphenyl	ND		870	130	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
bis (2-chloroisopropyl) ether	ND		870	170	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
2,4,5-Trichlorophenol	ND		870	240	ug/Kg		04/23/21 10:13	04/26/21 19:01	1

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183541-1

Client Sample ID: BLDG1-CRUSH-SP-011
Date Collected: 04/19/21 09:45
Date Received: 04/20/21 10:00

Lab Sample ID: 480-183541-2
Matrix: Solid

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	ND		870	170	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
2,4-Dichlorophenol	ND		870	92	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
2,4-Dimethylphenol	ND		870	210	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
2,4-Dinitrophenol	ND		8500	4000	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
2,4-Dinitrotoluene	ND		870	180	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
2,6-Dinitrotoluene	ND		870	100	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
2-Chloronaphthalene	ND		870	140	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
1,4-Dioxane	ND		510	280	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
2-Chlorophenol	ND		1700	160	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
2-Methylnaphthalene	ND		870	170	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
2-Methylphenol	ND		870	100	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
2-Nitroaniline	ND		1700	130	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
2-Nitrophenol	ND		870	250	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
3,3'-Dichlorobenzidine	ND		1700	1000	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
3-Nitroaniline	ND		1700	240	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
4,6-Dinitro-2-methylphenol	ND		1700	870	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
4-Bromophenyl phenyl ether	ND		870	120	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
4-Chloro-3-methylphenol	ND		870	220	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
4-Chloroaniline	ND		870	220	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
4-Chlorophenyl phenyl ether	ND		870	110	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
4-Methylphenol	ND		1700	100	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
4-Nitroaniline	ND		1700	460	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
4-Nitrophenol	ND		1700	610	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
Acenaphthene	ND		870	130	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
Acenaphthylene	ND		870	110	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
Acetophenone	ND		870	120	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
Anthracene	ND		870	220	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
Atrazine	ND		870	300	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
Benzaldehyde	ND		870	690	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
Benzo[a]anthracene	ND		870	87	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
Benzo[a]pyrene	ND		870	130	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
Benzo[b]fluoranthene	**170**	**J**	870	140	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
Benzo[g,h,i]perylene	**110**	**J**	870	92	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
Benzo[k]fluoranthene	ND		870	110	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
Bis(2-chloroethoxy)methane	ND		870	180	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
Bis(2-chloroethyl)ether	ND		870	110	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
Bis(2-ethylhexyl) phthalate	**3400**		870	300	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
Butyl benzyl phthalate	**730**	**J**	870	140	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
Caprolactam	ND		870	260	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
Carbazole	ND		870	100	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
Chrysene	ND		870	190	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
Di-n-butyl phthalate	ND		870	150	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
Di-n-octyl phthalate	ND		870	100	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
Dibenz(a,h)anthracene	ND		870	150	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
Dibenzofuran	ND		870	100	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
Diethyl phthalate	ND		870	110	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
Dimethyl phthalate	ND		870	100	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
Fluoranthene	**270**	**J**	870	92	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
Fluorene	ND		870	100	ug/Kg		04/23/21 10:13	04/26/21 19:01	1

Client Sample ID: BLDG1-CRUSH-SP-011

Lab Sample ID: 480-183541-2

Date Collected: 04/19/21 09:45

Matrix: Solid

Date Received: 04/20/21 10:00

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexachlorobenzene	ND		870	120	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
Hexachlorobutadiene	ND		870	130	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
Hexachlorocyclopentadiene	ND		870	120	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
Hexachloroethane	ND		870	110	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
Indeno[1,2,3-cd]pyrene	ND		870	110	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
Isophorone	ND		870	180	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
N-Nitrosodi-n-propylamine	ND		870	150	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
N-Nitrosodiphenylamine	ND		870	710	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
Naphthalene	ND		870	110	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
Nitrobenzene	ND		870	97	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
Pentachlorophenol	ND		1700	870	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
Phenanthrene	**250**	**J**	870	130	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
Phenol	ND		870	130	ug/Kg		04/23/21 10:13	04/26/21 19:01	1
Pyrene	**190**	**J**	870	100	ug/Kg		04/23/21 10:13	04/26/21 19:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*103*		*54 - 120*	*04/23/21 10:13*	*04/26/21 19:01*	*1*
2-Fluorobiphenyl	*91*		*60 - 120*	*04/23/21 10:13*	*04/26/21 19:01*	*1*
2-Fluorophenol	*79*		*52 - 120*	*04/23/21 10:13*	*04/26/21 19:01*	*1*
Nitrobenzene-d5	*85*		*53 - 120*	*04/23/21 10:13*	*04/26/21 19:01*	*1*
p-Terphenyl-d14	*109*		*79 - 130*	*04/23/21 10:13*	*04/26/21 19:01*	*1*
Phenol-d5	*87*		*54 - 120*	*04/23/21 10:13*	*04/26/21 19:01*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.10	0.0045	mg/L		04/23/21 14:56	04/26/21 15:19	1
2,4-Dinitrotoluene	ND		0.050	0.0043	mg/L		04/23/21 14:56	04/26/21 15:19	1
Hexachlorobenzene	ND		0.050	0.0050	mg/L		04/23/21 14:56	04/26/21 15:19	1
Hexachlorobutadiene	ND		0.050	0.0068	mg/L		04/23/21 14:56	04/26/21 15:19	1
Hexachloroethane	ND		0.050	0.0058	mg/L		04/23/21 14:56	04/26/21 15:19	1
3-Methylphenol	ND		0.10	0.0040	mg/L		04/23/21 14:56	04/26/21 15:19	1
2-Methylphenol	ND		0.050	0.0040	mg/L		04/23/21 14:56	04/26/21 15:19	1
4-Methylphenol	ND		0.10	0.0035	mg/L		04/23/21 14:56	04/26/21 15:19	1
Nitrobenzene	ND		0.050	0.0028	mg/L		04/23/21 14:56	04/26/21 15:19	1
Pentachlorophenol	ND		0.10	0.022	mg/L		04/23/21 14:56	04/26/21 15:19	1
Pyridine	ND		0.25	0.0040	mg/L		04/23/21 14:56	04/26/21 15:19	1
2,4,5-Trichlorophenol	ND		0.050	0.0048	mg/L		04/23/21 14:56	04/26/21 15:19	1
2,4,6-Trichlorophenol	ND		0.050	0.0060	mg/L		04/23/21 14:56	04/26/21 15:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*97*		*41 - 120*	*04/23/21 14:56*	*04/26/21 15:19*	*1*
2-Fluorobiphenyl	*103*		*48 - 120*	*04/23/21 14:56*	*04/26/21 15:19*	*1*
2-Fluorophenol	*48*		*35 - 120*	*04/23/21 14:56*	*04/26/21 15:19*	*1*
Nitrobenzene-d5	*94*		*46 - 120*	*04/23/21 14:56*	*04/26/21 15:19*	*1*
p-Terphenyl-d14	*102*		*60 - 148*	*04/23/21 14:56*	*04/26/21 15:19*	*1*
Phenol-d5	*33*		*22 - 120*	*04/23/21 14:56*	*04/26/21 15:19*	*1*

Method: 8081B - Organochlorine Pesticides (GC) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	**0.00011**	**J**	0.00020	0.0000060	mg/L		04/23/21 10:41	04/26/21 16:35	1

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183541-1

Client Sample ID: BLDG1-CRUSH-SP-011
Lab Sample ID: 480-183541-2
Date Collected: 04/19/21 09:45
Matrix: Solid
Date Received: 04/20/21 10:00

Method: 8081B - Organochlorine Pesticides (GC) - TCLP (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlordane (technical)	ND		0.0020	0.000029	mg/L		04/23/21 10:41	04/26/21 16:35	1
Endrin	ND		0.00020	0.000014	mg/L		04/23/21 10:41	04/26/21 16:35	1
Heptachlor	ND		0.00020	0.0000085	mg/L		04/23/21 10:41	04/26/21 16:35	1
Heptachlor epoxide	ND		0.00020	0.0000053	mg/L		04/23/21 10:41	04/26/21 16:35	1
Methoxychlor	**0.00017**	**J**	0.00020	0.000014	mg/L		04/23/21 10:41	04/26/21 16:35	1
Toxaphene	ND		0.0020	0.00012	mg/L		04/23/21 10:41	04/26/21 16:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*55*		*20 - 120*	*04/23/21 10:41*	*04/26/21 16:35*	*1*
DCB Decachlorobiphenyl	*37*		*20 - 120*	*04/23/21 10:41*	*04/26/21 16:35*	*1*
Tetrachloro-m-xylene	*77*		*44 - 120*	*04/23/21 10:41*	*04/26/21 16:35*	*1*
Tetrachloro-m-xylene	*102*		*44 - 120*	*04/23/21 10:41*	*04/26/21 16:35*	*1*

Method: 8151 - TCLP Herbicides - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND		0.0020	0.00036	mg/L		04/23/21 10:54	04/26/21 12:25	1
2,4-D	ND		0.0020	0.00040	mg/L		04/23/21 10:54	04/26/21 12:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*85*		*48 - 132*	*04/23/21 10:54*	*04/26/21 12:25*	*1*
2,4-Dichlorophenylacetic acid	*73*		*48 - 132*	*04/23/21 10:54*	*04/26/21 12:25*	*1*

Method: 6010C - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.020**		0.015	0.0056	mg/L		04/23/21 11:00	04/23/21 18:52	1
Barium	**1.5**		1.0	0.10	mg/L		04/23/21 11:00	04/23/21 18:52	1
Cadmium	**0.089**		0.0020	0.00050	mg/L		04/23/21 11:00	04/23/21 18:52	1
Chromium	**0.13**		0.020	0.010	mg/L		04/23/21 11:00	04/23/21 18:52	1
Lead	**1.4**		0.020	0.0030	mg/L		04/23/21 11:00	04/23/21 18:52	1
Selenium	**0.012**	**J**	0.025	0.0087	mg/L		04/23/21 11:00	04/23/21 18:52	1
Silver	**0.014**		0.0060	0.0017	mg/L		04/23/21 11:00	04/23/21 18:52	1

Method: 7470A - TCLP Mercury - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		04/23/21 13:50	04/23/21 18:39	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Flashpoint	**>180**		50.0	50.0	Degrees F			04/25/21 17:04	1
pH	**6.2**	**HF**	0.1	0.1	SU			04/26/21 15:45	1
Temperature	**19.4**	**HF**	0.001	0.001	Degrees C			04/26/21 15:45	1

Client Sample ID: BLDG5-DUCT-SP-012
Lab Sample ID: 480-183541-3
Date Collected: 04/19/21 10:15
Matrix: Solid
Date Received: 04/20/21 10:00

Method: 8260C - TCLP Volatiles - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.010	0.0041	mg/L			04/24/21 01:00	10
Carbon tetrachloride	ND		0.010	0.0027	mg/L			04/24/21 01:00	10
Chlorobenzene	ND		0.010	0.0075	mg/L			04/24/21 01:00	10

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Client Sample ID: BLDG5-DUCT-SP-012

Lab Sample ID: 480-183541-3

Date Collected: 04/19/21 10:15

Matrix: Solid

Date Received: 04/20/21 10:00

Method: 8260C - TCLP Volatiles - TCLP (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroform	ND		0.010	0.0034	mg/L			04/24/21 01:00	10
1,2-Dichloroethane	ND		0.010	0.0021	mg/L			04/24/21 01:00	10
1,1-Dichloroethene	ND		0.010	0.0029	mg/L			04/24/21 01:00	10
2-Butanone (MEK)	ND		0.050	0.013	mg/L			04/24/21 01:00	10
Tetrachloroethene	ND		0.010	0.0036	mg/L			04/24/21 01:00	10
Trichloroethene	ND		0.010	0.0046	mg/L			04/24/21 01:00	10
Vinyl chloride	ND		0.010	0.0090	mg/L			04/24/21 01:00	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*77 - 120*		*04/24/21 01:00*	*10*
Toluene-d8 (Surr)	*95*		*80 - 120*		*04/24/21 01:00*	*10*
4-Bromofluorobenzene (Surr)	*88*		*73 - 120*		*04/24/21 01:00*	*10*
Dibromofluoromethane (Surr)	*92*		*75 - 123*		*04/24/21 01:00*	*10*

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND	vs	4.9	0.36	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
1,1,2,2-Tetrachloroethane	ND	vs *3	4.9	0.80	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
1,1,2-Trichloroethane	ND	vs	4.9	0.64	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	vs	4.9	1.1	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
1,1-Dichloroethane	ND	vs	4.9	0.60	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
1,1-Dichloroethene	ND	vs	4.9	0.60	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
1,2,4-Trichlorobenzene	ND	vs *3	4.9	0.30	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
1,2-Dibromo-3-Chloropropane	ND	vs *3	4.9	2.5	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
1,2-Dichlorobenzene	ND	vs *3	4.9	0.38	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
1,2-Dichloroethane	ND	vs	4.9	0.25	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
1,2-Dichloropropane	ND	vs	4.9	2.5	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
1,3-Dichlorobenzene	ND	vs *3	4.9	0.25	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
1,4-Dichlorobenzene	ND	vs *3	4.9	0.69	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
2-Butanone (MEK)	ND	vs	25	1.8	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
2-Hexanone	ND	vs	25	2.5	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
4-Methyl-2-pentanone (MIBK)	ND	vs	25	1.6	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
Acetone	**63**	**vs**	25	4.1	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
Benzene	ND	vs	4.9	0.24	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
Bromodichloromethane	ND	vs	4.9	0.66	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
Bromoform	ND	vs	4.9	2.5	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
Bromomethane	ND	vs	4.9	0.44	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
Carbon disulfide	ND	vs	4.9	2.5	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
Carbon tetrachloride	ND	vs	4.9	0.47	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
Chlorobenzene	ND	vs	4.9	0.65	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
Dibromochloromethane	ND	vs	4.9	0.63	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
Chloroethane	ND	vs	4.9	1.1	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
Chloroform	ND	vs	4.9	0.30	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
Chloromethane	ND	vs	4.9	0.30	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
cis-1,2-Dichloroethene	ND	vs	4.9	0.63	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
cis-1,3-Dichloropropene	ND	vs	4.9	0.71	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
Cyclohexane	**13**	**vs**	4.9	0.69	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
Dichlorodifluoromethane	ND	vs	4.9	0.40	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
Ethylbenzene	ND	vs	4.9	0.34	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
1,2-Dibromoethane	ND	vs	4.9	0.63	ug/Kg		04/20/21 18:46	04/20/21 23:51	1

Client Sample ID: BLDG5-DUCT-SP-012
Lab Sample ID: 480-183541-3

Date Collected: 04/19/21 10:15
Matrix: Solid
Date Received: 04/20/21 10:00

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Isopropylbenzene	ND	vs *3	4.9	0.74	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
Methyl acetate	ND	vs	25	3.0	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
Methyl tert-butyl ether	ND	vs	4.9	0.48	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
Methylcyclohexane	**3.0**	**J vs**	4.9	0.75	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
Methylene Chloride	ND	vs	4.9	2.3	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
Styrene	ND	vs	4.9	0.25	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
Tetrachloroethene	ND	vs	4.9	0.66	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
Toluene	ND	vs	4.9	0.37	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
trans-1,2-Dichloroethene	ND	vs	4.9	0.51	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
trans-1,3-Dichloropropene	ND	vs	4.9	2.2	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
Trichloroethene	ND	vs	4.9	1.1	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
Trichlorofluoromethane	ND	vs	4.9	0.46	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
Vinyl chloride	ND	vs	4.9	0.60	ug/Kg		04/20/21 18:46	04/20/21 23:51	1
Xylenes, Total	ND	vs	9.8	0.82	ug/Kg		04/20/21 18:46	04/20/21 23:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*106*		*71 - 125*	*04/20/21 18:46*	*04/20/21 23:51*	*1*
1,2-Dichloroethane-d4 (Surr)	*132*	*S1+*	*64 - 126*	*04/20/21 18:46*	*04/20/21 23:51*	*1*
4-Bromofluorobenzene (Surr)	*89*		*72 - 126*	*04/20/21 18:46*	*04/20/21 23:51*	*1*
Dibromofluoromethane (Surr)	*112*		*60 - 140*	*04/20/21 18:46*	*04/20/21 23:51*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biphenyl	ND		990	150	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
bis (2-chloroisopropyl) ether	ND		990	200	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
2,4,5-Trichlorophenol	ND		990	270	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
2,4,6-Trichlorophenol	ND		990	200	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
2,4-Dichlorophenol	ND		990	110	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
2,4-Dimethylphenol	ND		990	240	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
2,4-Dinitrophenol	ND		9700	4600	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
2,4-Dinitrotoluene	ND		990	200	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
2,6-Dinitrotoluene	ND		990	120	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
2-Chloronaphthalene	ND		990	160	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
1,4-Dioxane	ND		580	320	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
2-Chlorophenol	ND		1900	180	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
2-Methylnaphthalene	ND		990	200	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
2-Methylphenol	ND		990	120	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
2-Nitroaniline	ND		1900	150	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
2-Nitrophenol	ND		990	280	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
3,3'-Dichlorobenzidine	ND		1900	1200	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
3-Nitroaniline	ND		1900	270	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
4,6-Dinitro-2-methylphenol	ND		1900	990	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
4-Bromophenyl phenyl ether	ND		990	140	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
4-Chloro-3-methylphenol	ND		990	250	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
4-Chloroaniline	ND		990	250	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
4-Chlorophenyl phenyl ether	ND		990	120	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
4-Methylphenol	ND		1900	120	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
4-Nitroaniline	ND		1900	520	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
4-Nitrophenol	ND		1900	690	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
Acenaphthene	ND		990	150	ug/Kg		04/23/21 10:13	04/26/21 19:26	1

Client Sample ID: BLDG5-DUCT-SP-012

Date Collected: 04/19/21 10:15
Date Received: 04/20/21 10:00

Lab Sample ID: 480-183541-3
Matrix: Solid

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthylene	ND		990	130	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
Acetophenone	ND		990	130	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
Anthracene	ND		990	250	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
Atrazine	ND		990	340	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
Benzaldehyde	ND		990	790	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
Benzo[a]anthracene	ND		990	99	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
Benzo[a]pyrene	ND		990	150	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
Benzo[b]fluoranthene	ND		990	160	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
Benzo[g,h,i]perylene	ND		990	110	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
Benzo[k]fluoranthene	ND		990	130	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
Bis(2-chloroethoxy)methane	ND		990	210	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
Bis(2-chloroethyl)ether	ND		990	130	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
Bis(2-ethylhexyl) phthalate	**2400**		990	340	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
Butyl benzyl phthalate	ND		990	160	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
Caprolactam	ND		990	300	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
Carbazole	ND		990	120	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
Chrysene	ND		990	220	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
Di-n-butyl phthalate	**220**	**J**	990	170	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
Di-n-octyl phthalate	**360**	**J**	990	120	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
Dibenz(a,h)anthracene	ND		990	180	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
Dibenzofuran	ND		990	120	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
Diethyl phthalate	ND		990	130	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
Dimethyl phthalate	ND		990	120	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
Fluoranthene	ND		990	110	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
Fluorene	ND		990	120	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
Hexachlorobenzene	ND		990	130	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
Hexachlorobutadiene	ND		990	150	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
Hexachlorocyclopentadiene	ND		990	130	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
Hexachloroethane	ND		990	130	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
Indeno[1,2,3-cd]pyrene	ND		990	120	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
Isophorone	ND		990	210	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
N-Nitrosodi-n-propylamine	ND		990	170	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
N-Nitrosodiphenylamine	ND		990	810	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
Naphthalene	ND		990	130	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
Nitrobenzene	ND		990	110	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
Pentachlorophenol	ND		1900	990	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
Phenanthrene	ND		990	150	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
Phenol	ND		990	150	ug/Kg		04/23/21 10:13	04/26/21 19:26	1
Pyrene	ND		990	120	ug/Kg		04/23/21 10:13	04/26/21 19:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*76*		*54 - 120*	*04/23/21 10:13*	*04/26/21 19:26*	*1*
2-Fluorobiphenyl	*75*		*60 - 120*	*04/23/21 10:13*	*04/26/21 19:26*	*1*
2-Fluorophenol	*76*		*52 - 120*	*04/23/21 10:13*	*04/26/21 19:26*	*1*
Nitrobenzene-d5	*87*		*53 - 120*	*04/23/21 10:13*	*04/26/21 19:26*	*1*
p-Terphenyl-d14	*94*		*79 - 130*	*04/23/21 10:13*	*04/26/21 19:26*	*1*
Phenol-d5	*88*		*54 - 120*	*04/23/21 10:13*	*04/26/21 19:26*	*1*

Client Sample ID: BLDG5-DUCT-SP-012

Date Collected: 04/19/21 10:15
Date Received: 04/20/21 10:00

Lab Sample ID: 480-183541-3
Matrix: Solid

Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.040	0.0018	mg/L		04/23/21 14:56	04/26/21 15:43	1
2,4-Dinitrotoluene	ND		0.020	0.0017	mg/L		04/23/21 14:56	04/26/21 15:43	1
Hexachlorobenzene	ND		0.020	0.0020	mg/L		04/23/21 14:56	04/26/21 15:43	1
Hexachlorobutadiene	ND		0.020	0.0027	mg/L		04/23/21 14:56	04/26/21 15:43	1
Hexachloroethane	ND		0.020	0.0023	mg/L		04/23/21 14:56	04/26/21 15:43	1
3-Methylphenol	ND		0.040	0.0016	mg/L		04/23/21 14:56	04/26/21 15:43	1
2-Methylphenol	ND		0.020	0.0016	mg/L		04/23/21 14:56	04/26/21 15:43	1
4-Methylphenol	ND		0.040	0.0014	mg/L		04/23/21 14:56	04/26/21 15:43	1
Nitrobenzene	ND		0.020	0.0011	mg/L		04/23/21 14:56	04/26/21 15:43	1
Pentachlorophenol	ND		0.040	0.0088	mg/L		04/23/21 14:56	04/26/21 15:43	1
Pyridine	ND		0.10	0.0016	mg/L		04/23/21 14:56	04/26/21 15:43	1
2,4,5-Trichlorophenol	ND		0.020	0.0019	mg/L		04/23/21 14:56	04/26/21 15:43	1
2,4,6-Trichlorophenol	ND		0.020	0.0024	mg/L		04/23/21 14:56	04/26/21 15:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*98*		*41 - 120*	*04/23/21 14:56*	*04/26/21 15:43*	*1*
2-Fluorobiphenyl	*104*		*48 - 120*	*04/23/21 14:56*	*04/26/21 15:43*	*1*
2-Fluorophenol	*52*		*35 - 120*	*04/23/21 14:56*	*04/26/21 15:43*	*1*
Nitrobenzene-d5	*103*		*46 - 120*	*04/23/21 14:56*	*04/26/21 15:43*	*1*
p-Terphenyl-d14	*95*		*60 - 148*	*04/23/21 14:56*	*04/26/21 15:43*	*1*
Phenol-d5	*34*		*22 - 120*	*04/23/21 14:56*	*04/26/21 15:43*	*1*

Method: 8081B - Organochlorine Pesticides (GC) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.00020	0.0000060	mg/L		04/23/21 10:41	04/26/21 17:01	1
Chlordane (technical)	ND		0.0020	0.000029	mg/L		04/23/21 10:41	04/26/21 17:01	1
Endrin	ND		0.00020	0.000014	mg/L		04/23/21 10:41	04/26/21 17:01	1
Heptachlor	ND		0.00020	0.0000085	mg/L		04/23/21 10:41	04/26/21 17:01	1
Heptachlor epoxide	ND		0.00020	0.0000053	mg/L		04/23/21 10:41	04/26/21 17:01	1
Methoxychlor	ND		0.00020	0.000014	mg/L		04/23/21 10:41	04/26/21 17:01	1
Toxaphene	ND		0.0020	0.00012	mg/L		04/23/21 10:41	04/26/21 17:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*39*		*20 - 120*	*04/23/21 10:41*	*04/26/21 17:01*	*1*
DCB Decachlorobiphenyl	*28*		*20 - 120*	*04/23/21 10:41*	*04/26/21 17:01*	*1*
Tetrachloro-m-xylene	*85*		*44 - 120*	*04/23/21 10:41*	*04/26/21 17:01*	*1*
Tetrachloro-m-xylene	*124*	*S1+*	*44 - 120*	*04/23/21 10:41*	*04/26/21 17:01*	*1*

Method: 8151 - TCLP Herbicides - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND		0.0020	0.00036	mg/L		04/23/21 10:54	04/26/21 12:55	1
2,4-D	ND		0.0020	0.00040	mg/L		04/23/21 10:54	04/26/21 12:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*74*		*48 - 132*	*04/23/21 10:54*	*04/26/21 12:55*	*1*
2,4-Dichlorophenylacetic acid	*62*		*48 - 132*	*04/23/21 10:54*	*04/26/21 12:55*	*1*

Method: 6010C - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.065**		0.015	0.0056	mg/L		04/23/21 11:00	04/23/21 19:07	1
Barium	**0.24**	**J**	1.0	0.10	mg/L		04/23/21 11:00	04/23/21 19:07	1

Client Sample Results

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183541-1

Client Sample ID: BLDG5-DUCT-SP-012

Lab Sample ID: 480-183541-3
Date Collected: 04/19/21 10:15
Matrix: Solid
Date Received: 04/20/21 10:00

Method: 6010C - Metals (ICP) - TCLP (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	0.011		0.0020	0.00050	mg/L		04/23/21 11:00	04/23/21 19:07	1
Chromium	ND		0.020	0.010	mg/L		04/23/21 11:00	04/23/21 19:07	1
Lead	1.6		0.020	0.0030	mg/L		04/23/21 11:00	04/23/21 19:07	1
Selenium	ND		0.025	0.0087	mg/L		04/23/21 11:00	04/23/21 19:07	1
Silver	ND		0.0060	0.0017	mg/L		04/23/21 11:00	04/23/21 19:07	1

Method: 7470A - TCLP Mercury - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		04/23/21 13:50	04/23/21 18:41	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Flashpoint	>180		50.0	50.0	Degrees F			04/25/21 17:04	1
pH	7.9	HF	0.1	0.1	SU			04/26/21 15:45	1
Temperature	19.4	HF	0.001	0.001	Degrees C			04/26/21 15:45	1

Method: 8260C - TCLP Volatiles

Matrix: Solid **Prep Type: Total/NA**

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TOL (80-120)	DCA (77-120)	BFB (73-120)	DBFM (75-123)
LCS 480-577664/6	Lab Control Sample	98	94	90	95
MB 480-577664/8	Method Blank	97	93	92	89

Surrogate Legend

TOL = Toluene-d8 (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260C - TCLP Volatiles

Matrix: Solid **Prep Type: TCLP**

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCA (77-120)	TOL (80-120)	BFB (73-120)	DBFM (75-123)
480-183541-1	K-23-BLDG12-SP-010	92	93	92	100
480-183541-2	BLDG1-CRUSH-SP-011	94	94	90	99
480-183541-3	BLDG5-DUCT-SP-012	95	95	88	92
LB 480-577413/1-A	Method Blank	97	98	91	101

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Solid **Prep Type: Total/NA**

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TOL (71-125)	DCA (64-126)	BFB (72-126)	DBFM (60-140)
480-183541-1	K-23-BLDG12-SP-010	98	120	109	104
480-183541-2	BLDG1-CRUSH-SP-011	104	117	98	103
480-183541-3	BLDG5-DUCT-SP-012	106	132 S1+	89	112
LCS 480-577107/1-A	Lab Control Sample	96	120	109	104
MB 480-577107/2-A	Method Blank	95	115	108	105

Surrogate Legend

TOL = Toluene-d8 (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Solid **Prep Type: Total/NA**

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TBP (54-120)	FBP (60-120)	2FP (52-120)	NBZ (53-120)	TPHd14 (79-130)	PHL (54-120)
480-183541-1	K-23-BLDG12-SP-010	120	91	78	86	103	82
480-183541-2	BLDG1-CRUSH-SP-011	103	91	79	85	109	87

Surrogate Summary

Client: Integral Consulting Inc — Job ID: 480-183541-1
Project/Site: Project EF1017

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Matrix: Solid — **Prep Type: Total/NA**

Lab Sample ID	Client Sample ID	TBP (54-120)	FBP (60-120)	2FP (52-120)	NBZ (53-120)	TPHd14 (79-130)	PHL (54-120)
		Percent Surrogate Recovery (Acceptance Limits)					
480-183541-3	BLDG5-DUCT-SP-012	76	75	76	87	94	88
LCS 480-577604/2-A	Lab Control Sample	102	92	85	87	105	89
MB 480-577604/1-A	Method Blank	78	78	73	76	99	75

Surrogate Legend

TBP = 2,4,6-Tribromophenol
FBP = 2-Fluorobiphenyl
2FP = 2-Fluorophenol
NBZ = Nitrobenzene-d5
TPHd14 = p-Terphenyl-d14
PHL = Phenol-d5

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Solid — **Prep Type: Total/NA**

Lab Sample ID	Client Sample ID	TBP (41-120)	FBP (48-120)	2FP (35-120)	NBZ (46-120)	TPHd14 (60-148)	PHL (22-120)
		Percent Surrogate Recovery (Acceptance Limits)					
LCS 480-577666/2-A	Lab Control Sample	92	101	48	91	104	33
LCSD 480-577666/3-A	Lab Control Sample Dup	98	102	51	99	110	36
MB 480-577666/1-A	Method Blank	75	91	43	84	102	30

Surrogate Legend

TBP = 2,4,6-Tribromophenol
FBP = 2-Fluorobiphenyl
2FP = 2-Fluorophenol
NBZ = Nitrobenzene-d5
TPHd14 = p-Terphenyl-d14
PHL = Phenol-d5

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Solid — **Prep Type: TCLP**

Lab Sample ID	Client Sample ID	TBP (41-120)	FBP (48-120)	2FP (35-120)	NBZ (46-120)	TPHd14 (60-148)	PHL (22-120)
		Percent Surrogate Recovery (Acceptance Limits)					
480-183541-1	K-23-BLDG12-SP-010	85	98	47	94	112	32
480-183541-2	BLDG1-CRUSH-SP-011	97	103	48	94	102	33
480-183541-3	BLDG5-DUCT-SP-012	98	104	52	103	95	34
LB 480-577371/1-F	Method Blank	84	98	49	93	103	33

Surrogate Legend

TBP = 2,4,6-Tribromophenol
FBP = 2-Fluorobiphenyl
2FP = 2-Fluorophenol
NBZ = Nitrobenzene-d5
TPHd14 = p-Terphenyl-d14
PHL = Phenol-d5

Surrogate Summary

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183541-1

Method: 8081B - Organochlorine Pesticides (GC)

Matrix: Solid **Prep Type: Total/NA**

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCBP1 (20-120)	DCBP2 (20-120)	TCX1 (44-120)	TCX2 (44-120)
LCS 480-577573/2-A	Lab Control Sample	55	48	103	93
LCSD 480-577573/3-A	Lab Control Sample Dup	51	51	92	87
MB 480-577573/1-A	Method Blank	55	49	109	89

Surrogate Legend

DCBP = DCB Decachlorobiphenyl
TCX = Tetrachloro-m-xylene

Method: 8081B - Organochlorine Pesticides (GC)

Matrix: Solid **Prep Type: TCLP**

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCBP1 (20-120)	DCBP2 (20-120)	TCX1 (44-120)	TCX2 (44-120)
480-183541-1	K-23-BLDG12-SP-010	56	53	96	82
480-183541-2	BLDG1-CRUSH-SP-011	55	37	77	102
480-183541-3	BLDG5-DUCT-SP-012	39	28	85	124 S1+
LB 480-577371/1-B	Method Blank	72	71	98	86

Surrogate Legend

DCBP = DCB Decachlorobiphenyl
TCX = Tetrachloro-m-xylene

Method: 8151 - TCLP Herbicides

Matrix: Solid **Prep Type: Total/NA**

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCPAA1 (48-132)	DCPAA2 (48-132)
LCS 480-577574/2-A	Lab Control Sample	60	53
LCSD 480-577574/3-A	Lab Control Sample Dup	80	83
MB 480-577574/1-A	Method Blank	86	66

Surrogate Legend

DCPAA = 2,4-Dichlorophenylacetic acid

Method: 8151 - TCLP Herbicides

Matrix: Solid **Prep Type: TCLP**

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCPAA1 (48-132)	DCPAA2 (48-132)
480-183541-1	K-23-BLDG12-SP-010	51	55
480-183541-2	BLDG1-CRUSH-SP-011	85	73
480-183541-3	BLDG5-DUCT-SP-012	74	62
LB 480-577371/1-D	Method Blank	49	35 S1-

Surrogate Legend

DCPAA = 2,4-Dichlorophenylacetic acid

QC Sample Results

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183541-1

Method: 8260C - TCLP Volatiles

Lab Sample ID: MB 480-577664/8
Matrix: Solid
Analysis Batch: 577664

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.0010	0.00029	mg/L			04/23/21 21:41	1
1,2-Dichloroethane	ND		0.0010	0.00021	mg/L			04/23/21 21:41	1
2-Butanone (MEK)	ND		0.0050	0.0013	mg/L			04/23/21 21:41	1
Benzene	ND		0.0010	0.00041	mg/L			04/23/21 21:41	1
Carbon tetrachloride	ND		0.0010	0.00027	mg/L			04/23/21 21:41	1
Chlorobenzene	ND		0.0010	0.00075	mg/L			04/23/21 21:41	1
Chloroform	ND		0.0010	0.00034	mg/L			04/23/21 21:41	1
Tetrachloroethene	ND		0.0010	0.00036	mg/L			04/23/21 21:41	1
Trichloroethene	ND		0.0010	0.00046	mg/L			04/23/21 21:41	1
Vinyl chloride	ND		0.0010	0.00090	mg/L			04/23/21 21:41	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*97*		*80 - 120*		*04/23/21 21:41*	*1*
1,2-Dichloroethane-d4 (Surr)	*93*		*77 - 120*		*04/23/21 21:41*	*1*
4-Bromofluorobenzene (Surr)	*92*		*73 - 120*		*04/23/21 21:41*	*1*
Dibromofluoromethane (Surr)	*89*		*75 - 123*		*04/23/21 21:41*	*1*

Lab Sample ID: LCS 480-577664/6
Matrix: Solid
Analysis Batch: 577664

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	0.0250	0.0237		mg/L		95	66 - 127
1,2-Dichloroethane	0.0250	0.0247		mg/L		99	75 - 120
2-Butanone (MEK)	0.125	0.155		mg/L		124	57 - 140
Benzene	0.0250	0.0252		mg/L		101	71 - 124
Carbon tetrachloride	0.0250	0.0250		mg/L		100	72 - 134
Chlorobenzene	0.0250	0.0249		mg/L		100	80 - 120
Chloroform	0.0250	0.0260		mg/L		104	73 - 127
Tetrachloroethene	0.0250	0.0238		mg/L		95	74 - 122
Trichloroethene	0.0250	0.0242		mg/L		97	74 - 123
Vinyl chloride	0.0250	0.0257		mg/L		103	65 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*98*		*80 - 120*
1,2-Dichloroethane-d4 (Surr)	*94*		*77 - 120*
4-Bromofluorobenzene (Surr)	*90*		*73 - 120*
Dibromofluoromethane (Surr)	*95*		*75 - 123*

Lab Sample ID: LB 480-577413/1-A
Matrix: Solid
Analysis Batch: 577664

Client Sample ID: Method Blank
Prep Type: TCLP

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.010	0.0029	mg/L			04/23/21 22:03	10
1,2-Dichloroethane	ND		0.010	0.0021	mg/L			04/23/21 22:03	10
2-Butanone (MEK)	ND		0.050	0.013	mg/L			04/23/21 22:03	10
Benzene	ND		0.010	0.0041	mg/L			04/23/21 22:03	10

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183541-1

Method: 8260C - TCLP Volatiles (Continued)

Lab Sample ID: LB 480-577413/1-A
Matrix: Solid
Analysis Batch: 577664

Client Sample ID: Method Blank
Prep Type: TCLP

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	ND		0.010	0.0027	mg/L			04/23/21 22:03	10
Chlorobenzene	ND		0.010	0.0075	mg/L			04/23/21 22:03	10
Chloroform	ND		0.010	0.0034	mg/L			04/23/21 22:03	10
Tetrachloroethene	ND		0.010	0.0036	mg/L			04/23/21 22:03	10
Trichloroethene	ND		0.010	0.0046	mg/L			04/23/21 22:03	10
Vinyl chloride	ND		0.010	0.0090	mg/L			04/23/21 22:03	10

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*80 - 120*		*04/23/21 22:03*	*10*
1,2-Dichloroethane-d4 (Surr)	*97*		*77 - 120*		*04/23/21 22:03*	*10*
4-Bromofluorobenzene (Surr)	*91*		*73 - 120*		*04/23/21 22:03*	*10*
Dibromofluoromethane (Surr)	*101*		*75 - 123*		*04/23/21 22:03*	*10*

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 480-577107/2-A
Matrix: Solid
Analysis Batch: 577108

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 577107

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5.0	0.36	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
1,1,2,2-Tetrachloroethane	ND		5.0	0.81	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
1,1,2-Trichloroethane	ND		5.0	0.65	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		5.0	1.1	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
1,1-Dichloroethane	ND		5.0	0.61	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
1,1-Dichloroethene	ND		5.0	0.61	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
1,2,4-Trichlorobenzene	ND		5.0	0.30	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
1,2-Dibromo-3-Chloropropane	ND		5.0	2.5	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
1,2-Dichlorobenzene	ND		5.0	0.39	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
1,2-Dichloroethane	ND		5.0	0.25	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
1,2-Dichloropropane	ND		5.0	2.5	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
1,3-Dichlorobenzene	ND		5.0	0.26	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
1,4-Dichlorobenzene	ND		5.0	0.70	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
2-Butanone (MEK)	ND		25	1.8	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
2-Hexanone	ND		25	2.5	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
4-Methyl-2-pentanone (MIBK)	ND		25	1.6	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Acetone	ND		25	4.2	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Benzene	ND		5.0	0.25	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Bromodichloromethane	ND		5.0	0.67	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Bromoform	ND		5.0	2.5	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Bromomethane	ND		5.0	0.45	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Carbon disulfide	ND		5.0	2.5	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Carbon tetrachloride	ND		5.0	0.48	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Chlorobenzene	ND		5.0	0.66	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Dibromochloromethane	ND		5.0	0.64	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Chloroethane	ND		5.0	1.1	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Chloroform	ND		5.0	0.31	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Chloromethane	ND		5.0	0.30	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
cis-1,2-Dichloroethene	ND		5.0	0.64	ug/Kg		04/20/21 18:46	04/20/21 21:42	1

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183541-1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 480-577107/2-A
Matrix: Solid
Analysis Batch: 577108

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 577107

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,3-Dichloropropene	ND		5.0	0.72	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Cyclohexane	ND		5.0	0.70	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Dichlorodifluoromethane	ND		5.0	0.41	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Ethylbenzene	ND		5.0	0.35	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
1,2-Dibromoethane	ND		5.0	0.64	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Isopropylbenzene	ND		5.0	0.75	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Methyl acetate	ND		25	3.0	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Methyl tert-butyl ether	ND		5.0	0.49	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Methylcyclohexane	ND		5.0	0.76	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Methylene Chloride	ND		5.0	2.3	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Styrene	ND		5.0	0.25	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Tetrachloroethene	ND		5.0	0.67	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Toluene	ND		5.0	0.38	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
trans-1,2-Dichloroethene	ND		5.0	0.52	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
trans-1,3-Dichloropropene	ND		5.0	2.2	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Trichloroethene	ND		5.0	1.1	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Trichlorofluoromethane	ND		5.0	0.47	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Vinyl chloride	ND		5.0	0.61	ug/Kg		04/20/21 18:46	04/20/21 21:42	1
Xylenes, Total	ND		10	0.84	ug/Kg		04/20/21 18:46	04/20/21 21:42	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*95*		*71 - 125*	*04/20/21 18:46*	*04/20/21 21:42*	*1*
1,2-Dichloroethane-d4 (Surr)	*115*		*64 - 126*	*04/20/21 18:46*	*04/20/21 21:42*	*1*
4-Bromofluorobenzene (Surr)	*108*		*72 - 126*	*04/20/21 18:46*	*04/20/21 21:42*	*1*
Dibromofluoromethane (Surr)	*105*		*60 - 140*	*04/20/21 18:46*	*04/20/21 21:42*	*1*

Lab Sample ID: LCS 480-577107/1-A
Matrix: Solid
Analysis Batch: 577108

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 577107

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	50.0	56.6		ug/Kg		113	77 - 121
1,1,2,2-Tetrachloroethane	50.0	43.4		ug/Kg		87	80 - 120
1,1,2-Trichloroethane	50.0	41.9		ug/Kg		84	78 - 122
1,1,2-Trichloro-1,2,2-trifluoroethane	50.0	44.5		ug/Kg		89	60 - 140
1,1-Dichloroethane	50.0	46.9		ug/Kg		94	73 - 126
1,1-Dichloroethene	50.0	46.3		ug/Kg		93	59 - 125
1,2,4-Trichlorobenzene	50.0	49.5		ug/Kg		99	64 - 120
1,2-Dibromo-3-Chloropropane	50.0	48.9		ug/Kg		98	63 - 124
1,2-Dichlorobenzene	50.0	46.0		ug/Kg		92	75 - 120
1,2-Dichloroethane	50.0	56.5		ug/Kg		113	77 - 122
1,2-Dichloropropane	50.0	46.1		ug/Kg		92	75 - 124
1,3-Dichlorobenzene	50.0	46.5		ug/Kg		93	74 - 120
1,4-Dichlorobenzene	50.0	45.4		ug/Kg		91	73 - 120
2-Butanone (MEK)	250	229		ug/Kg		92	70 - 134
2-Hexanone	250	209		ug/Kg		84	59 - 130
4-Methyl-2-pentanone (MIBK)	250	199		ug/Kg		80	65 - 133
Acetone	250	247		ug/Kg		99	61 - 137

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 480-577107/1-A
Matrix: Solid
Analysis Batch: 577108

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 577107

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	50.0	45.5		ug/Kg		91	79 - 127
Bromodichloromethane	50.0	53.0		ug/Kg		106	80 - 122
Bromoform	50.0	49.7		ug/Kg		99	68 - 126
Bromomethane	50.0	49.1		ug/Kg		98	37 - 149
Carbon disulfide	50.0	43.9		ug/Kg		88	64 - 131
Carbon tetrachloride	50.0	55.0		ug/Kg		110	75 - 135
Chlorobenzene	50.0	41.1		ug/Kg		82	76 - 124
Dibromochloromethane	50.0	45.7		ug/Kg		91	76 - 125
Chloroethane	50.0	46.3		ug/Kg		93	69 - 135
Chloroform	50.0	50.2		ug/Kg		100	80 - 120
Chloromethane	50.0	41.6		ug/Kg		83	63 - 127
cis-1,2-Dichloroethene	50.0	46.5		ug/Kg		93	81 - 120
cis-1,3-Dichloropropene	50.0	50.5		ug/Kg		101	80 - 120
Cyclohexane	50.0	45.6		ug/Kg		91	65 - 120
Dichlorodifluoromethane	50.0	51.4		ug/Kg		103	57 - 142
Ethylbenzene	50.0	44.9		ug/Kg		90	80 - 120
1,2-Dibromoethane	50.0	41.4		ug/Kg		83	78 - 120
Isopropylbenzene	50.0	46.4		ug/Kg		93	72 - 120
Methyl acetate	100	84.7		ug/Kg		85	55 - 136
Methyl tert-butyl ether	50.0	49.5		ug/Kg		99	63 - 125
Methylcyclohexane	50.0	46.7		ug/Kg		93	60 - 140
Methylene Chloride	50.0	43.2		ug/Kg		86	61 - 127
Styrene	50.0	42.8		ug/Kg		86	80 - 120
Tetrachloroethene	50.0	47.0		ug/Kg		94	74 - 122
Toluene	50.0	42.3		ug/Kg		85	74 - 128
trans-1,2-Dichloroethene	50.0	45.8		ug/Kg		92	78 - 126
trans-1,3-Dichloropropene	50.0	47.8		ug/Kg		96	73 - 123
Trichloroethene	50.0	51.0		ug/Kg		102	77 - 129
Trichlorofluoromethane	50.0	58.8		ug/Kg		118	65 - 146
Vinyl chloride	50.0	44.2		ug/Kg		88	61 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*96*		*71 - 125*
1,2-Dichloroethane-d4 (Surr)	*120*		*64 - 126*
4-Bromofluorobenzene (Surr)	*109*		*72 - 126*
Dibromofluoromethane (Surr)	*104*		*60 - 140*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 480-577604/1-A
Matrix: Solid
Analysis Batch: 577969

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 577604

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biphenyl	ND		170	24	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
bis (2-chloroisopropyl) ether	ND		170	33	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
2,4-Dichlorophenol	ND		170	18	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
2,4-Dimethylphenol	ND		170	40	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
2,4-Dinitrophenol	ND		1600	770	ug/Kg		04/23/21 10:13	04/26/21 15:18	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 480-577604/1-A
Matrix: Solid
Analysis Batch: 577969

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 577604

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4-Dinitrotoluene	ND		170	34	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
2,6-Dinitrotoluene	ND		170	20	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
2-Chloronaphthalene	ND		170	27	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
1,4-Dioxane	ND		98	54	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
2,4,5-Trichlorophenol	ND		170	45	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
2-Chlorophenol	ND		320	30	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
2,4,6-Trichlorophenol	ND		170	33	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
2-Methylnaphthalene	ND		170	33	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
2-Methylphenol	ND		170	20	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
2-Nitroaniline	ND		320	24	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
2-Nitrophenol	ND		170	47	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
3,3'-Dichlorobenzidine	ND		320	200	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
3-Nitroaniline	ND		320	46	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
4,6-Dinitro-2-methylphenol	ND		320	170	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
4-Bromophenyl phenyl ether	ND		170	23	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
4-Chloro-3-methylphenol	ND		170	41	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
4-Chloroaniline	ND		170	41	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
4-Chlorophenyl phenyl ether	ND		170	21	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
4-Methylphenol	ND		320	20	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
4-Nitroaniline	ND		320	87	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
4-Nitrophenol	ND		320	120	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Acenaphthene	ND		170	24	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Acenaphthylene	ND		170	22	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Acetophenone	ND		170	23	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Anthracene	ND		170	41	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Atrazine	ND		170	58	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Benzaldehyde	ND		170	130	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Benzo[a]anthracene	ND		170	17	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Benzo[a]pyrene	ND		170	24	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Benzo[b]fluoranthene	ND		170	26	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Benzo[g,h,i]perylene	ND		170	18	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Benzo[k]fluoranthene	ND		170	22	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Bis(2-chloroethoxy)methane	ND		170	35	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Bis(2-chloroethyl)ether	ND		170	22	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Bis(2-ethylhexyl) phthalate	ND		170	57	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Butyl benzyl phthalate	ND		170	27	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Caprolactam	ND		170	50	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Carbazole	ND		170	20	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Chrysene	ND		170	37	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Di-n-butyl phthalate	ND		170	28	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Di-n-octyl phthalate	ND		170	20	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Dibenz(a,h)anthracene	ND		170	29	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Dibenzofuran	ND		170	20	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Diethyl phthalate	ND		170	22	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Dimethyl phthalate	ND		170	20	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Fluoranthene	ND		170	18	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Fluorene	ND		170	20	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Hexachlorobenzene	ND		170	23	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Hexachlorobutadiene	ND		170	24	ug/Kg		04/23/21 10:13	04/26/21 15:18	1

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 480-577604/1-A
Matrix: Solid
Analysis Batch: 577969

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 577604

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexachlorocyclopentadiene	ND		170	23	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Hexachloroethane	ND		170	22	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Indeno[1,2,3-cd]pyrene	ND		170	21	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Isophorone	ND		170	35	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
N-Nitrosodi-n-propylamine	ND		170	28	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
N-Nitrosodiphenylamine	ND		170	140	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Naphthalene	ND		170	22	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Nitrobenzene	ND		170	19	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Pentachlorophenol	ND		320	170	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Phenanthrene	ND		170	24	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Phenol	ND		170	25	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Pyrene	ND		170	20	ug/Kg		04/23/21 10:13	04/26/21 15:18	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*78*		*54 - 120*	*04/23/21 10:13*	*04/26/21 15:18*	*1*
2-Fluorobiphenyl	*78*		*60 - 120*	*04/23/21 10:13*	*04/26/21 15:18*	*1*
2-Fluorophenol	*73*		*52 - 120*	*04/23/21 10:13*	*04/26/21 15:18*	*1*
Nitrobenzene-d5	*76*		*53 - 120*	*04/23/21 10:13*	*04/26/21 15:18*	*1*
p-Terphenyl-d14	*99*		*79 - 130*	*04/23/21 10:13*	*04/26/21 15:18*	*1*
Phenol-d5	*75*		*54 - 120*	*04/23/21 10:13*	*04/26/21 15:18*	*1*

Lab Sample ID: LCS 480-577604/2-A
Matrix: Solid
Analysis Batch: 577969

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 577604

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Biphenyl	1650	1510		ug/Kg		91	59 - 120
bis (2-chloroisopropyl) ether	1650	1360		ug/Kg		82	44 - 120
2,4-Dichlorophenol	1650	1420		ug/Kg		86	61 - 120
2,4-Dimethylphenol	1650	1520		ug/Kg		92	59 - 120
2,4-Dinitrophenol	3310	2940		ug/Kg		89	41 - 146
2,4-Dinitrotoluene	1650	1650		ug/Kg		100	63 - 120
2,6-Dinitrotoluene	1650	1670		ug/Kg		101	66 - 120
2-Chloronaphthalene	1650	1520		ug/Kg		92	57 - 120
1,4-Dioxane	1650	833		ug/Kg		50	23 - 120
2,4,5-Trichlorophenol	1650	1640		ug/Kg		99	59 - 126
2-Chlorophenol	1650	1380		ug/Kg		84	53 - 120
2,4,6-Trichlorophenol	1650	1580		ug/Kg		96	59 - 123
2-Methylnaphthalene	1650	1430		ug/Kg		87	59 - 120
2-Methylphenol	1650	1460		ug/Kg		89	54 - 120
2-Nitroaniline	1650	1640		ug/Kg		99	61 - 120
2-Nitrophenol	1650	1400		ug/Kg		85	56 - 120
3,3'-Dichlorobenzidine	3310	2620		ug/Kg		79	54 - 120
3-Nitroaniline	1650	1390		ug/Kg		84	48 - 120
4,6-Dinitro-2-methylphenol	3310	3230		ug/Kg		98	49 - 122
4-Bromophenyl phenyl ether	1650	1650		ug/Kg		100	58 - 120
4-Chloro-3-methylphenol	1650	1630		ug/Kg		99	61 - 120
4-Chloroaniline	1650	1270		ug/Kg		77	38 - 120

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 480-577604/2-A
Client Sample ID: Lab Control Sample
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 577969
Prep Batch: 577604

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
4-Chlorophenyl phenyl ether	1650	1560		ug/Kg		94	63 - 124
4-Methylphenol	1650	1520		ug/Kg		92	55 - 120
4-Nitroaniline	1650	1570		ug/Kg		95	56 - 120
4-Nitrophenol	3310	3340		ug/Kg		101	43 - 147
Acenaphthene	1650	1550		ug/Kg		94	62 - 120
Acenaphthylene	1650	1570		ug/Kg		95	58 - 121
Acetophenone	1650	1460		ug/Kg		88	54 - 120
Anthracene	1650	1700		ug/Kg		103	62 - 120
Atrazine	3310	3440		ug/Kg		104	60 - 127
Benzaldehyde	3310	2360		ug/Kg		71	10 - 150
Benzo[a]anthracene	1650	1680		ug/Kg		102	65 - 120
Benzo[a]pyrene	1650	1690		ug/Kg		103	64 - 120
Benzo[b]fluoranthene	1650	1740		ug/Kg		105	64 - 120
Benzo[g,h,i]perylene	1650	1680		ug/Kg		102	45 - 145
Benzo[k]fluoranthene	1650	1710		ug/Kg		104	65 - 120
Bis(2-chloroethoxy)methane	1650	1440		ug/Kg		87	55 - 120
Bis(2-chloroethyl)ether	1650	1370		ug/Kg		83	45 - 120
Bis(2-ethylhexyl) phthalate	1650	1640		ug/Kg		99	61 - 133
Butyl benzyl phthalate	1650	1730		ug/Kg		104	61 - 129
Caprolactam	3310	3390		ug/Kg		103	47 - 120
Carbazole	1650	1680		ug/Kg		102	65 - 120
Chrysene	1650	1630		ug/Kg		98	64 - 120
Di-n-butyl phthalate	1650	1710		ug/Kg		103	58 - 130
Di-n-octyl phthalate	1650	1630		ug/Kg		99	57 - 133
Dibenz(a,h)anthracene	1650	1700		ug/Kg		103	54 - 132
Dibenzofuran	1650	1570		ug/Kg		95	63 - 120
Diethyl phthalate	1650	1670		ug/Kg		101	66 - 120
Dimethyl phthalate	1650	1660		ug/Kg		101	65 - 124
Fluoranthene	1650	1680		ug/Kg		102	62 - 120
Fluorene	1650	1640		ug/Kg		99	63 - 120
Hexachlorobenzene	1650	1570		ug/Kg		95	60 - 120
Hexachlorobutadiene	1650	1320		ug/Kg		80	45 - 120
Hexachlorocyclopentadiene	1650	1380		ug/Kg		84	47 - 120
Hexachloroethane	1650	1240		ug/Kg		75	41 - 120
Indeno[1,2,3-cd]pyrene	1650	1670		ug/Kg		101	56 - 134
Isophorone	1650	1530		ug/Kg		92	56 - 120
N-Nitrosodi-n-propylamine	1650	1420		ug/Kg		86	52 - 120
Naphthalene	1650	1390		ug/Kg		84	55 - 120
Nitrobenzene	1650	1350		ug/Kg		82	54 - 120
Pentachlorophenol	3310	3130		ug/Kg		95	51 - 120
Phenanthrene	1650	1670		ug/Kg		101	60 - 120
Phenol	1650	1430		ug/Kg		86	53 - 120
Pyrene	1650	1690		ug/Kg		102	61 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4,6-Tribromophenol	*102*		*54 - 120*
2-Fluorobiphenyl	*92*		*60 - 120*
2-Fluorophenol	*85*		*52 - 120*

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 480-577604/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 577969 — **Prep Batch: 577604**

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Nitrobenzene-d5	*87*		*53 - 120*
p-Terphenyl-d14	*105*		*79 - 130*
Phenol-d5	*89*		*54 - 120*

Lab Sample ID: MB 480-577666/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 577897 — **Prep Batch: 577666**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.010	0.00045	mg/L		04/23/21 14:56	04/26/21 12:54	1
3-Methylphenol	ND		0.010	0.00040	mg/L		04/23/21 14:56	04/26/21 12:54	1
2,4-Dinitrotoluene	ND		0.0050	0.00043	mg/L		04/23/21 14:56	04/26/21 12:54	1
Pyridine	ND		0.025	0.00040	mg/L		04/23/21 14:56	04/26/21 12:54	1
2,4,5-Trichlorophenol	ND		0.0050	0.00048	mg/L		04/23/21 14:56	04/26/21 12:54	1
2,4,6-Trichlorophenol	ND		0.0050	0.00060	mg/L		04/23/21 14:56	04/26/21 12:54	1
2-Methylphenol	ND		0.0050	0.00040	mg/L		04/23/21 14:56	04/26/21 12:54	1
4-Methylphenol	ND		0.010	0.00035	mg/L		04/23/21 14:56	04/26/21 12:54	1
Hexachlorobenzene	ND		0.0050	0.00050	mg/L		04/23/21 14:56	04/26/21 12:54	1
Hexachlorobutadiene	ND		0.0050	0.00068	mg/L		04/23/21 14:56	04/26/21 12:54	1
Hexachloroethane	ND		0.0050	0.00058	mg/L		04/23/21 14:56	04/26/21 12:54	1
Nitrobenzene	ND		0.0050	0.00028	mg/L		04/23/21 14:56	04/26/21 12:54	1
Pentachlorophenol	ND		0.010	0.0022	mg/L		04/23/21 14:56	04/26/21 12:54	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	*75*		*41 - 120*	*04/23/21 14:56*	*04/26/21 12:54*	*1*
2-Fluorobiphenyl	*91*		*48 - 120*	*04/23/21 14:56*	*04/26/21 12:54*	*1*
2-Fluorophenol	*43*		*35 - 120*	*04/23/21 14:56*	*04/26/21 12:54*	*1*
Nitrobenzene-d5	*84*		*46 - 120*	*04/23/21 14:56*	*04/26/21 12:54*	*1*
p-Terphenyl-d14	*102*		*60 - 148*	*04/23/21 14:56*	*04/26/21 12:54*	*1*
Phenol-d5	*30*		*22 - 120*	*04/23/21 14:56*	*04/26/21 12:54*	*1*

Lab Sample ID: LCS 480-577666/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 577897 — **Prep Batch: 577666**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dichlorobenzene	0.0500	0.0354		mg/L		71	51 - 120
3-Methylphenol	0.0500	0.0333		mg/L		67	39 - 120
2,4-Dinitrotoluene	0.0500	0.0550		mg/L		110	69 - 120
Pyridine	0.100	0.0329		mg/L		33	10 - 120
2,4,5-Trichlorophenol	0.0500	0.0530		mg/L		106	65 - 126
2,4,6-Trichlorophenol	0.0500	0.0517		mg/L		103	64 - 120
2-Methylphenol	0.0500	0.0365		mg/L		73	39 - 120
4-Methylphenol	0.0500	0.0333		mg/L		67	29 - 131
Hexachlorobenzene	0.0500	0.0486		mg/L		97	61 - 120
Hexachlorobutadiene	0.0500	0.0423		mg/L		85	35 - 120
Hexachloroethane	0.0500	0.0363		mg/L		73	43 - 120
Nitrobenzene	0.0500	0.0447		mg/L		89	53 - 123

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 480-577666/2-A
Matrix: Solid
Analysis Batch: 577897

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 577666

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Pentachlorophenol	0.100	0.0911		mg/L		91	29 - 136

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4,6-Tribromophenol	*92*		*41 - 120*
2-Fluorobiphenyl	*101*		*48 - 120*
2-Fluorophenol	*48*		*35 - 120*
Nitrobenzene-d5	*91*		*46 - 120*
p-Terphenyl-d14	*104*		*60 - 148*
Phenol-d5	*33*		*22 - 120*

Lab Sample ID: LCSD 480-577666/3-A
Matrix: Solid
Analysis Batch: 577897

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 577666

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dichlorobenzene	0.0500	0.0365		mg/L		73	51 - 120	3	36
3-Methylphenol	0.0500	0.0366		mg/L		73	39 - 120	9	30
2,4-Dinitrotoluene	0.0500	0.0592		mg/L		118	69 - 120	7	20
Pyridine	0.100	0.0388		mg/L		39	10 - 120	17	49
2,4,5-Trichlorophenol	0.0500	0.0535		mg/L		107	65 - 126	1	18
2,4,6-Trichlorophenol	0.0500	0.0545		mg/L		109	64 - 120	5	19
2-Methylphenol	0.0500	0.0387		mg/L		77	39 - 120	6	27
4-Methylphenol	0.0500	0.0366		mg/L		73	29 - 131	10	24
Hexachlorobenzene	0.0500	0.0529		mg/L		106	61 - 120	9	15
Hexachlorobutadiene	0.0500	0.0458		mg/L		92	35 - 120	8	44
Hexachloroethane	0.0500	0.0378		mg/L		76	43 - 120	4	46
Nitrobenzene	0.0500	0.0470		mg/L		94	53 - 123	5	24
Pentachlorophenol	0.100	0.0966		mg/L		97	29 - 136	6	37

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2,4,6-Tribromophenol	*98*		*41 - 120*
2-Fluorobiphenyl	*102*		*48 - 120*
2-Fluorophenol	*51*		*35 - 120*
Nitrobenzene-d5	*99*		*46 - 120*
p-Terphenyl-d14	*110*		*60 - 148*
Phenol-d5	*36*		*22 - 120*

Lab Sample ID: LB 480-577371/1-F
Matrix: Solid
Analysis Batch: 577897

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 577666

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.040	0.0018	mg/L		04/23/21 14:56	04/26/21 14:06	1
3-Methylphenol	ND		0.040	0.0016	mg/L		04/23/21 14:56	04/26/21 14:06	1
2,4-Dinitrotoluene	ND		0.020	0.0017	mg/L		04/23/21 14:56	04/26/21 14:06	1
Pyridine	ND		0.10	0.0016	mg/L		04/23/21 14:56	04/26/21 14:06	1
2,4,5-Trichlorophenol	ND		0.020	0.0019	mg/L		04/23/21 14:56	04/26/21 14:06	1
2,4,6-Trichlorophenol	ND		0.020	0.0024	mg/L		04/23/21 14:56	04/26/21 14:06	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LB 480-577371/1-F
Matrix: Solid
Analysis Batch: 577897

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 577666

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylphenol	ND		0.020	0.0016	mg/L		04/23/21 14:56	04/26/21 14:06	1
4-Methylphenol	ND		0.040	0.0014	mg/L		04/23/21 14:56	04/26/21 14:06	1
Hexachlorobenzene	ND		0.020	0.0020	mg/L		04/23/21 14:56	04/26/21 14:06	1
Hexachlorobutadiene	ND		0.020	0.0027	mg/L		04/23/21 14:56	04/26/21 14:06	1
Hexachloroethane	ND		0.020	0.0023	mg/L		04/23/21 14:56	04/26/21 14:06	1
Nitrobenzene	ND		0.020	0.0011	mg/L		04/23/21 14:56	04/26/21 14:06	1
Pentachlorophenol	ND		0.040	0.0088	mg/L		04/23/21 14:56	04/26/21 14:06	1

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*84*		*41 - 120*	*04/23/21 14:56*	*04/26/21 14:06*	*1*
2-Fluorobiphenyl	*98*		*48 - 120*	*04/23/21 14:56*	*04/26/21 14:06*	*1*
2-Fluorophenol	*49*		*35 - 120*	*04/23/21 14:56*	*04/26/21 14:06*	*1*
Nitrobenzene-d5	*93*		*46 - 120*	*04/23/21 14:56*	*04/26/21 14:06*	*1*
p-Terphenyl-d14	*103*		*60 - 148*	*04/23/21 14:56*	*04/26/21 14:06*	*1*
Phenol-d5	*33*		*22 - 120*	*04/23/21 14:56*	*04/26/21 14:06*	*1*

Method: 8081B - Organochlorine Pesticides (GC)

Lab Sample ID: MB 480-577573/1-A
Matrix: Solid
Analysis Batch: 577867

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 577573

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.000050	0.0000015	mg/L		04/23/21 08:53	04/26/21 14:04	1
Chlordane (technical)	ND		0.00050	0.0000073	mg/L		04/23/21 08:53	04/26/21 14:04	1
Endrin	ND		0.000050	0.0000035	mg/L		04/23/21 08:53	04/26/21 14:04	1
Heptachlor	ND		0.000050	0.0000021	mg/L		04/23/21 08:53	04/26/21 14:04	1
Heptachlor epoxide	ND		0.000050	0.0000013	mg/L		04/23/21 08:53	04/26/21 14:04	1
Methoxychlor	ND		0.000050	0.0000035	mg/L		04/23/21 08:53	04/26/21 14:04	1
Toxaphene	ND		0.00050	0.000030	mg/L		04/23/21 08:53	04/26/21 14:04	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*55*		*20 - 120*	*04/23/21 08:53*	*04/26/21 14:04*	*1*
DCB Decachlorobiphenyl	*49*		*20 - 120*	*04/23/21 08:53*	*04/26/21 14:04*	*1*
Tetrachloro-m-xylene	*109*		*44 - 120*	*04/23/21 08:53*	*04/26/21 14:04*	*1*
Tetrachloro-m-xylene	*89*		*44 - 120*	*04/23/21 08:53*	*04/26/21 14:04*	*1*

Lab Sample ID: LCS 480-577573/2-A
Matrix: Solid
Analysis Batch: 577867

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 577573

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
gamma-BHC (Lindane)	0.000500	0.000533		mg/L		107	56 - 120
Endrin	0.000500	0.000645		mg/L		129	65 - 135
Heptachlor	0.000500	0.000465		mg/L		93	58 - 120
Heptachlor epoxide	0.000500	0.000623		mg/L		125	65 - 125
Methoxychlor	0.000500	0.000519		mg/L		104	50 - 150

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183541-1

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: LCS 480-577573/2-A
Matrix: Solid
Analysis Batch: 577867

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 577573

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*55*		*20 - 120*
DCB Decachlorobiphenyl	*48*		*20 - 120*
Tetrachloro-m-xylene	*103*		*44 - 120*
Tetrachloro-m-xylene	*93*		*44 - 120*

Lab Sample ID: LCSD 480-577573/3-A
Matrix: Solid
Analysis Batch: 577867

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 577573

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
gamma-BHC (Lindane)	0.000500	0.000507		mg/L		101	56 - 120	5	24
Endrin	0.000500	0.000603		mg/L		121	65 - 135	7	24
Heptachlor	0.000500	0.000417		mg/L		83	58 - 120	11	25
Heptachlor epoxide	0.000500	0.000578		mg/L		116	65 - 125	8	23
Methoxychlor	0.000500	0.000463		mg/L		93	50 - 150	11	26

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
DCB Decachlorobiphenyl	*51*		*20 - 120*
DCB Decachlorobiphenyl	*51*		*20 - 120*
Tetrachloro-m-xylene	*92*		*44 - 120*
Tetrachloro-m-xylene	*87*		*44 - 120*

Lab Sample ID: LB 480-577371/1-B
Matrix: Solid
Analysis Batch: 577867

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 577573

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.00020	0.0000060	mg/L		04/23/21 10:41	04/26/21 15:45	1
Chlordane (technical)	ND		0.0020	0.000029	mg/L		04/23/21 10:41	04/26/21 15:45	1
Endrin	ND		0.00020	0.000014	mg/L		04/23/21 10:41	04/26/21 15:45	1
Heptachlor	ND		0.00020	0.0000085	mg/L		04/23/21 10:41	04/26/21 15:45	1
Heptachlor epoxide	ND		0.00020	0.0000053	mg/L		04/23/21 10:41	04/26/21 15:45	1
Methoxychlor	ND		0.00020	0.000014	mg/L		04/23/21 10:41	04/26/21 15:45	1
Toxaphene	ND		0.0020	0.00012	mg/L		04/23/21 10:41	04/26/21 15:45	1

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*72*		*20 - 120*	*04/23/21 10:41*	*04/26/21 15:45*	*1*
DCB Decachlorobiphenyl	*71*		*20 - 120*	*04/23/21 10:41*	*04/26/21 15:45*	*1*
Tetrachloro-m-xylene	*98*		*44 - 120*	*04/23/21 10:41*	*04/26/21 15:45*	*1*
Tetrachloro-m-xylene	*86*		*44 - 120*	*04/23/21 10:41*	*04/26/21 15:45*	*1*

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183541-1

Method: 8151 - TCLP Herbicides

Lab Sample ID: MB 480-577574/1-A
Matrix: Solid
Analysis Batch: 577871

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 577574

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND		0.00050	0.000090	mg/L		04/23/21 08:57	04/26/21 09:26	1
2,4-D	ND		0.00050	0.00010	mg/L		04/23/21 08:57	04/26/21 09:26	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*86*		*48 - 132*	*04/23/21 08:57*	*04/26/21 09:26*	*1*
2,4-Dichlorophenylacetic acid	*66*		*48 - 132*	*04/23/21 08:57*	*04/26/21 09:26*	*1*

Lab Sample ID: LCS 480-577574/2-A
Matrix: Solid
Analysis Batch: 577871

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 577574

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Silvex (2,4,5-TP)	0.00200	0.00159		mg/L		79	49 - 150
2,4-D	0.00200	0.00192		mg/L		96	36 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*60*		*48 - 132*
2,4-Dichlorophenylacetic acid	*53*		*48 - 132*

Lab Sample ID: LCSD 480-577574/3-A
Matrix: Solid
Analysis Batch: 577871

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 577574

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Silvex (2,4,5-TP)	0.00200	0.00178		mg/L		89	49 - 150	12	50
2,4-D	0.00200	0.00200		mg/L		100	36 - 150	4	50

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*80*		*48 - 132*
2,4-Dichlorophenylacetic acid	*83*		*48 - 132*

Lab Sample ID: LB 480-577371/1-D
Matrix: Solid
Analysis Batch: 577871

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 577574

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND		0.0020	0.00036	mg/L		04/23/21 10:54	04/26/21 11:25	1
2,4-D	ND		0.0020	0.00040	mg/L		04/23/21 10:54	04/26/21 11:25	1

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*49*		*48 - 132*	*04/23/21 10:54*	*04/26/21 11:25*	*1*
2,4-Dichlorophenylacetic acid	*35*	*S1-*	*48 - 132*	*04/23/21 10:54*	*04/26/21 11:25*	*1*

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 480-577606/2-A
Matrix: Solid
Analysis Batch: 577749
Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 577606

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.015	0.0056	mg/L		04/23/21 11:00	04/23/21 17:56	1
Barium	ND		1.0	0.10	mg/L		04/23/21 11:00	04/23/21 17:56	1
Cadmium	ND		0.0020	0.00050	mg/L		04/23/21 11:00	04/23/21 17:56	1
Chromium	ND		0.020	0.010	mg/L		04/23/21 11:00	04/23/21 17:56	1
Lead	ND		0.020	0.0030	mg/L		04/23/21 11:00	04/23/21 17:56	1
Selenium	ND		0.025	0.0087	mg/L		04/23/21 11:00	04/23/21 17:56	1
Silver	ND		0.0060	0.0017	mg/L		04/23/21 11:00	04/23/21 17:56	1

Lab Sample ID: LCS 480-577606/3-A
Matrix: Solid
Analysis Batch: 577749
Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 577606

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	1.00	1.11		mg/L		111	80 - 120
Barium	1.00	1.02		mg/L		102	80 - 120
Cadmium	1.00	1.05		mg/L		105	80 - 120
Chromium	1.00	1.03		mg/L		103	80 - 120
Lead	1.00	1.01		mg/L		101	80 - 120
Selenium	1.00	1.11		mg/L		111	80 - 120
Silver	1.00	1.06		mg/L		106	80 - 120

Lab Sample ID: LB 480-577371/1-C
Matrix: Solid
Analysis Batch: 577749
Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 577606

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.015	0.0056	mg/L		04/23/21 11:00	04/23/21 17:52	1
Barium	ND		1.0	0.10	mg/L		04/23/21 11:00	04/23/21 17:52	1
Cadmium	ND		0.0020	0.00050	mg/L		04/23/21 11:00	04/23/21 17:52	1
Chromium	ND		0.020	0.010	mg/L		04/23/21 11:00	04/23/21 17:52	1
Lead	ND		0.020	0.0030	mg/L		04/23/21 11:00	04/23/21 17:52	1
Selenium	ND		0.025	0.0087	mg/L		04/23/21 11:00	04/23/21 17:52	1
Silver	ND		0.0060	0.0017	mg/L		04/23/21 11:00	04/23/21 17:52	1

Method: 7470A - TCLP Mercury

Lab Sample ID: MB 480-577638/2-A
Matrix: Solid
Analysis Batch: 577703
Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 577638

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		04/23/21 13:50	04/23/21 18:22	1

Lab Sample ID: LCS 480-577638/3-A
Matrix: Solid
Analysis Batch: 577703
Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 577638

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00668	0.00605		mg/L		91	80 - 120

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183541-1

Method: 7470A - TCLP Mercury (Continued)

Lab Sample ID: LB 480-577371/1-E
Matrix: Solid
Analysis Batch: 577703

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 577638

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		04/23/21 13:50	04/23/21 18:21	1

Method: 1010A - Ignitability, Pensky-Martens Closed-Cup Method

Lab Sample ID: LCS 480-577836/1
Matrix: Solid
Analysis Batch: 577836

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Flashpoint	81.0	79.00		Degrees F		98	97.5 - 102.5

Lab Sample ID: 480-183541-1 DU
Matrix: Solid
Analysis Batch: 577836

Client Sample ID: K-23-BLDG12-SP-010
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Flashpoint	>180		>180.0		Degrees F		NC	10

Method: 9045D - pH

Lab Sample ID: LCS 480-578008/1
Matrix: Solid
Analysis Batch: 578008

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH	7.00	7.1		SU		101	99 - 101

GC/MS VOA

Prep Batch: 577107

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183541-1	K-23-BLDG12-SP-010	Total/NA	Solid	5035A_L	
480-183541-2	BLDG1-CRUSH-SP-011	Total/NA	Solid	5035A_L	
480-183541-3	BLDG5-DUCT-SP-012	Total/NA	Solid	5035A_L	
MB 480-577107/2-A	Method Blank	Total/NA	Solid	5035A_L	
LCS 480-577107/1-A	Lab Control Sample	Total/NA	Solid	5035A_L	

Analysis Batch: 577108

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183541-1	K-23-BLDG12-SP-010	Total/NA	Solid	8260C	577107
480-183541-2	BLDG1-CRUSH-SP-011	Total/NA	Solid	8260C	577107
480-183541-3	BLDG5-DUCT-SP-012	Total/NA	Solid	8260C	577107
MB 480-577107/2-A	Method Blank	Total/NA	Solid	8260C	577107
LCS 480-577107/1-A	Lab Control Sample	Total/NA	Solid	8260C	577107

Leach Batch: 577413

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183541-1	K-23-BLDG12-SP-010	TCLP	Solid	1311	
480-183541-2	BLDG1-CRUSH-SP-011	TCLP	Solid	1311	
480-183541-3	BLDG5-DUCT-SP-012	TCLP	Solid	1311	
LB 480-577413/1-A	Method Blank	TCLP	Solid	1311	

Analysis Batch: 577664

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183541-1	K-23-BLDG12-SP-010	TCLP	Solid	8260C	577413
480-183541-2	BLDG1-CRUSH-SP-011	TCLP	Solid	8260C	577413
480-183541-3	BLDG5-DUCT-SP-012	TCLP	Solid	8260C	577413
LB 480-577413/1-A	Method Blank	TCLP	Solid	8260C	577413
MB 480-577664/8	Method Blank	Total/NA	Solid	8260C	
LCS 480-577664/6	Lab Control Sample	Total/NA	Solid	8260C	

GC/MS Semi VOA

Leach Batch: 577371

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183541-1	K-23-BLDG12-SP-010	TCLP	Solid	1311	
480-183541-2	BLDG1-CRUSH-SP-011	TCLP	Solid	1311	
480-183541-3	BLDG5-DUCT-SP-012	TCLP	Solid	1311	
LB 480-577371/1-F	Method Blank	TCLP	Solid	1311	

Prep Batch: 577604

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183541-1	K-23-BLDG12-SP-010	Total/NA	Solid	3550C	
480-183541-2	BLDG1-CRUSH-SP-011	Total/NA	Solid	3550C	
480-183541-3	BLDG5-DUCT-SP-012	Total/NA	Solid	3550C	
MB 480-577604/1-A	Method Blank	Total/NA	Solid	3550C	
LCS 480-577604/2-A	Lab Control Sample	Total/NA	Solid	3550C	

Prep Batch: 577666

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183541-1	K-23-BLDG12-SP-010	TCLP	Solid	3510C	577371
480-183541-2	BLDG1-CRUSH-SP-011	TCLP	Solid	3510C	577371

GC/MS Semi VOA (Continued)

Prep Batch: 577666 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183541-3	BLDG5-DUCT-SP-012	TCLP	Solid	3510C	577371
LB 480-577371/1-F	Method Blank	TCLP	Solid	3510C	577371
MB 480-577666/1-A	Method Blank	Total/NA	Solid	3510C	
LCS 480-577666/2-A	Lab Control Sample	Total/NA	Solid	3510C	
LCSD 480-577666/3-A	Lab Control Sample Dup	Total/NA	Solid	3510C	

Analysis Batch: 577897

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183541-1	K-23-BLDG12-SP-010	TCLP	Solid	8270D	577666
480-183541-2	BLDG1-CRUSH-SP-011	TCLP	Solid	8270D	577666
480-183541-3	BLDG5-DUCT-SP-012	TCLP	Solid	8270D	577666
LB 480-577371/1-F	Method Blank	TCLP	Solid	8270D	577666
MB 480-577666/1-A	Method Blank	Total/NA	Solid	8270D	577666
LCS 480-577666/2-A	Lab Control Sample	Total/NA	Solid	8270D	577666
LCSD 480-577666/3-A	Lab Control Sample Dup	Total/NA	Solid	8270D	577666

Analysis Batch: 577969

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183541-1	K-23-BLDG12-SP-010	Total/NA	Solid	8270D	577604
480-183541-2	BLDG1-CRUSH-SP-011	Total/NA	Solid	8270D	577604
480-183541-3	BLDG5-DUCT-SP-012	Total/NA	Solid	8270D	577604
MB 480-577604/1-A	Method Blank	Total/NA	Solid	8270D	577604
LCS 480-577604/2-A	Lab Control Sample	Total/NA	Solid	8270D	577604

GC Semi VOA

Leach Batch: 577371

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183541-1	K-23-BLDG12-SP-010	TCLP	Solid	1311	
480-183541-2	BLDG1-CRUSH-SP-011	TCLP	Solid	1311	
480-183541-3	BLDG5-DUCT-SP-012	TCLP	Solid	1311	
LB 480-577371/1-B	Method Blank	TCLP	Solid	1311	
LB 480-577371/1-D	Method Blank	TCLP	Solid	1311	

Prep Batch: 577573

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183541-1	K-23-BLDG12-SP-010	TCLP	Solid	3510C	577371
480-183541-2	BLDG1-CRUSH-SP-011	TCLP	Solid	3510C	577371
480-183541-3	BLDG5-DUCT-SP-012	TCLP	Solid	3510C	577371
LB 480-577371/1-B	Method Blank	TCLP	Solid	3510C	577371
MB 480-577573/1-A	Method Blank	Total/NA	Solid	3510C	
LCS 480-577573/2-A	Lab Control Sample	Total/NA	Solid	3510C	
LCSD 480-577573/3-A	Lab Control Sample Dup	Total/NA	Solid	3510C	

Prep Batch: 577574

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183541-1	K-23-BLDG12-SP-010	TCLP	Solid	8151A	577371
480-183541-2	BLDG1-CRUSH-SP-011	TCLP	Solid	8151A	577371
480-183541-3	BLDG5-DUCT-SP-012	TCLP	Solid	8151A	577371
LB 480-577371/1-D	Method Blank	TCLP	Solid	8151A	577371
MB 480-577574/1-A	Method Blank	Total/NA	Solid	8151A	

GC Semi VOA (Continued)

Prep Batch: 577574 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 480-577574/2-A	Lab Control Sample	Total/NA	Solid	8151A	
LCSD 480-577574/3-A	Lab Control Sample Dup	Total/NA	Solid	8151A	

Analysis Batch: 577867

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183541-1	K-23-BLDG12-SP-010	TCLP	Solid	8081B	577573
480-183541-2	BLDG1-CRUSH-SP-011	TCLP	Solid	8081B	577573
480-183541-3	BLDG5-DUCT-SP-012	TCLP	Solid	8081B	577573
LB 480-577371/1-B	Method Blank	TCLP	Solid	8081B	577573
MB 480-577573/1-A	Method Blank	Total/NA	Solid	8081B	577573
LCS 480-577573/2-A	Lab Control Sample	Total/NA	Solid	8081B	577573
LCSD 480-577573/3-A	Lab Control Sample Dup	Total/NA	Solid	8081B	577573

Analysis Batch: 577871

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183541-1	K-23-BLDG12-SP-010	TCLP	Solid	8151	577574
480-183541-2	BLDG1-CRUSH-SP-011	TCLP	Solid	8151	577574
480-183541-3	BLDG5-DUCT-SP-012	TCLP	Solid	8151	577574
LB 480-577371/1-D	Method Blank	TCLP	Solid	8151	577574
MB 480-577574/1-A	Method Blank	Total/NA	Solid	8151	577574
LCS 480-577574/2-A	Lab Control Sample	Total/NA	Solid	8151	577574
LCSD 480-577574/3-A	Lab Control Sample Dup	Total/NA	Solid	8151	577574

Metals

Leach Batch: 577371

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183541-1	K-23-BLDG12-SP-010	TCLP	Solid	1311	
480-183541-2	BLDG1-CRUSH-SP-011	TCLP	Solid	1311	
480-183541-3	BLDG5-DUCT-SP-012	TCLP	Solid	1311	
LB 480-577371/1-C	Method Blank	TCLP	Solid	1311	
LB 480-577371/1-E	Method Blank	TCLP	Solid	1311	

Prep Batch: 577606

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183541-1	K-23-BLDG12-SP-010	TCLP	Solid	3010A	577371
480-183541-2	BLDG1-CRUSH-SP-011	TCLP	Solid	3010A	577371
480-183541-3	BLDG5-DUCT-SP-012	TCLP	Solid	3010A	577371
LB 480-577371/1-C	Method Blank	TCLP	Solid	3010A	577371
MB 480-577606/2-A	Method Blank	Total/NA	Solid	3010A	
LCS 480-577606/3-A	Lab Control Sample	Total/NA	Solid	3010A	

Prep Batch: 577638

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183541-1	K-23-BLDG12-SP-010	TCLP	Solid	7470A	577371
480-183541-2	BLDG1-CRUSH-SP-011	TCLP	Solid	7470A	577371
480-183541-3	BLDG5-DUCT-SP-012	TCLP	Solid	7470A	577371
LB 480-577371/1-E	Method Blank	TCLP	Solid	7470A	577371
MB 480-577638/2-A	Method Blank	Total/NA	Solid	7470A	
LCS 480-577638/3-A	Lab Control Sample	Total/NA	Solid	7470A	

QC Association Summary

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183541-1

Metals

Analysis Batch: 577703

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183541-1	K-23-BLDG12-SP-010	TCLP	Solid	7470A	577638
480-183541-2	BLDG1-CRUSH-SP-011	TCLP	Solid	7470A	577638
480-183541-3	BLDG5-DUCT-SP-012	TCLP	Solid	7470A	577638
LB 480-577371/1-E	Method Blank	TCLP	Solid	7470A	577638
MB 480-577638/2-A	Method Blank	Total/NA	Solid	7470A	577638
LCS 480-577638/3-A	Lab Control Sample	Total/NA	Solid	7470A	577638

Analysis Batch: 577749

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183541-1	K-23-BLDG12-SP-010	TCLP	Solid	6010C	577606
480-183541-2	BLDG1-CRUSH-SP-011	TCLP	Solid	6010C	577606
480-183541-3	BLDG5-DUCT-SP-012	TCLP	Solid	6010C	577606
LB 480-577371/1-C	Method Blank	TCLP	Solid	6010C	577606
MB 480-577606/2-A	Method Blank	Total/NA	Solid	6010C	577606
LCS 480-577606/3-A	Lab Control Sample	Total/NA	Solid	6010C	577606

General Chemistry

Analysis Batch: 577836

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183541-1	K-23-BLDG12-SP-010	Total/NA	Solid	1010A	
480-183541-2	BLDG1-CRUSH-SP-011	Total/NA	Solid	1010A	
480-183541-3	BLDG5-DUCT-SP-012	Total/NA	Solid	1010A	
LCS 480-577836/1	Lab Control Sample	Total/NA	Solid	1010A	
480-183541-1 DU	K-23-BLDG12-SP-010	Total/NA	Solid	1010A	

Analysis Batch: 578008

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183541-1	K-23-BLDG12-SP-010	Total/NA	Solid	9045D	
480-183541-2	BLDG1-CRUSH-SP-011	Total/NA	Solid	9045D	
480-183541-3	BLDG5-DUCT-SP-012	Total/NA	Solid	9045D	
LCS 480-578008/1	Lab Control Sample	Total/NA	Solid	9045D	

Lab Chronicle

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183541-1

Client Sample ID: K-23-BLDG12-SP-010

Lab Sample ID: 480-183541-1
Date Collected: 04/19/21 08:55
Matrix: Solid
Date Received: 04/20/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			577413	04/22/21 11:35	LMS	TAL BUF
TCLP	Analysis	8260C		10	577664	04/24/21 00:16	CRL	TAL BUF
Total/NA	Prep	5035A_L			577107	04/20/21 18:46	CDC	TAL BUF
Total/NA	Analysis	8260C		1	577108	04/20/21 23:02	WJD	TAL BUF
TCLP	Leach	1311			577371	04/22/21 09:55	LMS	TAL BUF
TCLP	Prep	3510C			577666	04/23/21 14:56	ATG	TAL BUF
TCLP	Analysis	8270D		1	577897	04/26/21 14:55	JMM	TAL BUF
Total/NA	Prep	3550C			577604	04/23/21 10:13	VXF	TAL BUF
Total/NA	Analysis	8270D		1	577969	04/26/21 18:36	PJQ	TAL BUF
TCLP	Leach	1311			577371	04/22/21 09:55	LMS	TAL BUF
TCLP	Prep	3510C			577573	04/23/21 10:41	JMP	TAL BUF
TCLP	Analysis	8081B		1	577867	04/26/21 16:10	JLS	TAL BUF
TCLP	Leach	1311			577371	04/22/21 09:55	LMS	TAL BUF
TCLP	Prep	8151A			577574	04/23/21 10:54	JMP	TAL BUF
TCLP	Analysis	8151		1	577871	04/26/21 11:55	MAN	TAL BUF
TCLP	Leach	1311			577371	04/22/21 09:55	LMS	TAL BUF
TCLP	Prep	3010A			577606	04/23/21 11:00	KMP	TAL BUF
TCLP	Analysis	6010C		1	577749	04/23/21 18:49	LMH	TAL BUF
TCLP	Leach	1311			577371	04/22/21 09:55	LMS	TAL BUF
TCLP	Prep	7470A			577638	04/23/21 13:50	BMB	TAL BUF
TCLP	Analysis	7470A		1	577703	04/23/21 18:38	BMB	TAL BUF
Total/NA	Analysis	1010A		1	577836	04/25/21 17:04	KEB	TAL BUF
Total/NA	Analysis	9045D		1	578008	04/26/21 15:45	KEB	TAL BUF

Client Sample ID: BLDG1-CRUSH-SP-011

Lab Sample ID: 480-183541-2
Date Collected: 04/19/21 09:45
Matrix: Solid
Date Received: 04/20/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			577413	04/22/21 11:35	LMS	TAL BUF
TCLP	Analysis	8260C		10	577664	04/24/21 00:38	CRL	TAL BUF
Total/NA	Prep	5035A_L			577107	04/20/21 18:46	CDC	TAL BUF
Total/NA	Analysis	8260C		1	577108	04/20/21 23:27	WJD	TAL BUF
TCLP	Leach	1311			577371	04/22/21 09:55	LMS	TAL BUF
TCLP	Prep	3510C			577666	04/23/21 14:56	ATG	TAL BUF
TCLP	Analysis	8270D		1	577897	04/26/21 15:19	JMM	TAL BUF
Total/NA	Prep	3550C			577604	04/23/21 10:13	VXF	TAL BUF
Total/NA	Analysis	8270D		1	577969	04/26/21 19:01	PJQ	TAL BUF
TCLP	Leach	1311			577371	04/22/21 09:55	LMS	TAL BUF
TCLP	Prep	3510C			577573	04/23/21 10:41	JMP	TAL BUF
TCLP	Analysis	8081B		1	577867	04/26/21 16:35	JLS	TAL BUF
TCLP	Leach	1311			577371	04/22/21 09:55	LMS	TAL BUF
TCLP	Prep	8151A			577574	04/23/21 10:54	JMP	TAL BUF
TCLP	Analysis	8151		1	577871	04/26/21 12:25	MAN	TAL BUF

Client Sample ID: BLDG1-CRUSH-SP-011

Lab Sample ID: 480-183541-2

Date Collected: 04/19/21 09:45
Matrix: Solid
Date Received: 04/20/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			577371	04/22/21 09:55	LMS	TAL BUF
TCLP	Prep	3010A			577606	04/23/21 11:00	KMP	TAL BUF
TCLP	Analysis	6010C		1	577749	04/23/21 18:52	LMH	TAL BUF
TCLP	Leach	1311			577371	04/22/21 09:55	LMS	TAL BUF
TCLP	Prep	7470A			577638	04/23/21 13:50	BMB	TAL BUF
TCLP	Analysis	7470A		1	577703	04/23/21 18:39	BMB	TAL BUF
Total/NA	Analysis	1010A		1	577836	04/25/21 17:04	KEB	TAL BUF
Total/NA	Analysis	9045D		1	578008	04/26/21 15:45	KEB	TAL BUF

Client Sample ID: BLDG5-DUCT-SP-012

Lab Sample ID: 480-183541-3

Date Collected: 04/19/21 10:15
Matrix: Solid
Date Received: 04/20/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			577413	04/22/21 11:35	LMS	TAL BUF
TCLP	Analysis	8260C		10	577664	04/24/21 01:00	CRL	TAL BUF
Total/NA	Prep	5035A_L			577107	04/20/21 18:46	CDC	TAL BUF
Total/NA	Analysis	8260C		1	577108	04/20/21 23:51	WJD	TAL BUF
TCLP	Leach	1311			577371	04/22/21 10:56	LMS	TAL BUF
TCLP	Prep	3510C			577666	04/23/21 14:56	ATG	TAL BUF
TCLP	Analysis	8270D		1	577897	04/26/21 15:43	JMM	TAL BUF
Total/NA	Prep	3550C			577604	04/23/21 10:13	VXF	TAL BUF
Total/NA	Analysis	8270D		1	577969	04/26/21 19:26	PJQ	TAL BUF
TCLP	Leach	1311			577371	04/22/21 10:56	LMS	TAL BUF
TCLP	Prep	3510C			577573	04/23/21 10:41	JMP	TAL BUF
TCLP	Analysis	8081B		1	577867	04/26/21 17:01	JLS	TAL BUF
TCLP	Leach	1311			577371	04/22/21 10:56	LMS	TAL BUF
TCLP	Prep	8151A			577574	04/23/21 10:54	JMP	TAL BUF
TCLP	Analysis	8151		1	577871	04/26/21 12:55	MAN	TAL BUF
TCLP	Leach	1311			577371	04/22/21 10:56	LMS	TAL BUF
TCLP	Prep	3010A			577606	04/23/21 11:00	KMP	TAL BUF
TCLP	Analysis	6010C		1	577749	04/23/21 19:07	LMH	TAL BUF
TCLP	Leach	1311			577371	04/22/21 10:56	LMS	TAL BUF
TCLP	Prep	7470A			577638	04/23/21 13:50	BMB	TAL BUF
TCLP	Analysis	7470A		1	577703	04/23/21 18:41	BMB	TAL BUF
Total/NA	Analysis	1010A		1	577836	04/25/21 17:04	KEB	TAL BUF
Total/NA	Analysis	9045D		1	578008	04/26/21 15:45	KEB	TAL BUF

Laboratory References:

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Accreditation/Certification Summary

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183541-1

Laboratory: Eurofins TestAmerica, Buffalo

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
New York	NELAP	10026	04-01-22

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
7470A	7470A	Solid	Mercury
9045D		Solid	Temperature

Method Summary

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183541-1

Method	Method Description	Protocol	Laboratory
8260C	TCLP Volatiles	SW846	TAL BUF
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL BUF
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL BUF
8081B	Organochlorine Pesticides (GC)	SW846	TAL BUF
8151	TCLP Herbicides	SW846	TAL BUF
6010C	Metals (ICP)	SW846	TAL BUF
7470A	TCLP Mercury	SW846	TAL BUF
1010A	Ignitability, Pensky-Martens Closed-Cup Method	SW846	TAL BUF
9045D	pH	SW846	TAL BUF
1311	TCLP Extraction	SW846	TAL BUF
3010A	Preparation, Total Metals	SW846	TAL BUF
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	TAL BUF
3550C	Ultrasonic Extraction	SW846	TAL BUF
5030C	Purge and Trap	SW846	TAL BUF
5035A_L	Closed System Purge and Trap	SW846	TAL BUF
7470A	Preparation, Mercury	SW846	TAL BUF
8151A	Extraction (Herbicides)	SW846	TAL BUF

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Sample Summary

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183541-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
480-183541-1	K-23-BLDG12-SP-010	Solid	04/19/21 08:55	04/20/21 10:00	
480-183541-2	BLDG1-CRUSH-SP-011	Solid	04/19/21 09:45	04/20/21 10:00	
480-183541-3	BLDG5-DUCT-SP-012	Solid	04/19/21 10:15	04/20/21 10:00	

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone: 716-691-2600 Fax: 716-691-7991

Chain of Custody Record

COC 1 of 2

eurofins | Environment Testing America

Client Information	Sampler: K. ZATWARNICKI	Lab PM: Fischer, Brian J	Carrier Tracking No(s):
Client Contact: Mr. Glenn Esler	Phone:	E-Mail: Brian.Fischer@Eurofinset.com	State of Origin: NY
Company: Integral Consulting Inc	PWSID:		COC No: 480-158821-34919.2
Address: 319 SW Washington Ave Suite 1150	Due Date Requested:		Page: Page 1 of 1
City: Portland	TAT Requested (days): RUSH ⚹ FASTEST TAT		Job #:
State, Zip: OR, 97204	Compliance Project: Δ Yes Δ No		
Phone: 503-943-3617(Tel)	PO #: Purchase Order not required		
Email: gesler@integral-corp.com	WO #:		
Project Name: Project EF1017	Project #: 48023604		
Site:	SSOW#:		

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010C, 7470A, 8081B, 8151A, 8270D TCLP	8260C - TCLP Volatiles	1010A, [redacted], 9045D	8260C - TCL list OLM04.2	8082A - TCL PCBs - OLM04.2	8270D TCL SVOCs	Total Number of containers	Special Instructions/Note:
				Preservation Code:	X	X	N	N	N	N	N	N	X	
K-23-BLDG12-SP-010	4/19/21	0855	G	Solid	N		X	X	X	X		X		⚹ RUSH
				Solid										
				Solid										
				Solid										
				Solid										
				Solid										
				Solid										
				Solid										
				Solid										
				Water										
				Water										

480-183541 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Deliverable Requested: I, II, III, IV, Other (specify) Cat B Lvl 2

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For ______ Months

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
Katelyn Zatwarnicki	4/19/21 1300	Integral			
			[signature]	4/20/21 1000	TAMS

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks: 3.1 #1

Ver: 11/01/2020

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone: 716-691-2600 Fax: 716-691-7991

Chain of Custody Record

COC 2 of 2

eurofins | Environment Testing America

Client Information			
Client Contact: Mr. Glenn Esler	Sampler: K. ZATWARNICKI	Lab PM: Fischer, Brian J	Carrier Tracking No(s):
Company: Integral Consulting Inc	Phone:	E-Mail: Brian.Fischer@Eurofinset.com	State of Origin: NY
	PWSID:		COC No: 480-158821-34919.1
Address: 319 SW Washington Ave Suite 1150	Due Date Requested:		Page: Page 1 of 3
City: Portland	TAT Requested (days):		Job #:
State, Zip: OR, 97204	Compliance Project: Δ Yes Δ No		
Phone: 503-943-3617(Tel)	PO #: Purchase Order not required		
Email: gesler@integral-corp.com	WO #:		
Project Name: Project EF1017	Project #: 48023604		
Site:	SSOW#:		

Analysis Requested

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010C, 7470A, 8081B, 8151A, 8270D TCLP	8260C - TCLP Volatiles	1010A, ~~8270D~~-9045D	8260C - TCL list OLM04.2	8082A - TCL PCBs - OLM04.2	8270D TCL SVOCs							Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	N	N	N	N	N								
BLDG1-CRUSH-SP-011	4/19/21	0945	G	Solid	N		X	X	X	X		X								
BLDG5-DUCT-SP-012	4/19/21	1015	G	Solid	N		X	X	X	X		X								
				Solid																
				Solid																
				Solid																
				Solid																
				Solid																
				Solid																
				Solid																
				Solid																
				Solid																

Preservation Codes:
A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
M - Hexane
N - None
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2S2O3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - pH 4-5
Z - other (specify)
Other:

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown* ☐ *Radiological*

Deliverable Requested: I, II, III, IV, Other (specify) CAT B LVL II

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☒ *Disposal By Lab* ☐ *Archive For ________ Months*

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Katlyn Zatwarnicki	4/19/21 1300	Integral			
			[signature]	4/20/21 1000	TA-B

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 3.1 #1

Ver: 11/01/2020

Login Sample Receipt Checklist

Client: Integral Consulting Inc

Job Number: 480-183541-1

Login Number: 183541
List Number: 1
Creator: Stopa, Erik S

List Source: Eurofins TestAmerica, Buffalo

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	INTEGRAL
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	N/A	
Chlorine Residual checked.	N/A	

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

Laboratory Job ID: 480-183631-1
Client Project/Site: Project EF1017

For:
Integral Consulting Inc
319 SW Washington Ave
Suite 1150
Portland, Oregon 97204

Attn: Mr. Glenn Esler

Authorized for release by:
4/29/2021 8:34:10 AM
Rebecca Jones, Project Management Assistant I
Rebecca.Jones@Eurofinset.com

Designee for

Brian Fischer, Manager of Project Management
(716)504-9835
Brian.Fischer@Eurofinset.com

The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
F1	MS and/or MSD recovery exceeds control limits.
F2	MS/MSD RPD exceeds control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
vs	Reported analyte concentrations are below 200 ug/kg and may be biased low due to the sample not being collected according to 5035A- L low-level specifications.

GC/MS Semi VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

GC Semi VOA

Qualifier	Qualifier Description
S1-	Surrogate recovery exceeds control limits, low biased.
S1+	Surrogate recovery exceeds control limits, high biased.

Metals

Qualifier	Qualifier Description
^+	Continuing Calibration Verification (CCV) is outside acceptance limits, high biased.
F1	MS and/or MSD recovery exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control

Glossary (Continued)

Abbreviation	These commonly used abbreviations may or may not be present in this report.
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183631-1

Job ID: 480-183631-1

Laboratory: Eurofins TestAmerica, Buffalo

Narrative

Job Narrative
480-183631-1

Comments
No additional comments.

Receipt
The samples were received on 4/21/2021 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.3º C.

Receipt Exceptions

Offspec material, was not dirt. Percent moisture offset removed from method requirement: BLDG1-BIN12-SP-013 (480-183631-1), BLDG1-BIN11-SP-014 (480-183631-2), BLDG1-BIN10-SP-015 (480-183631-3), BLDG1-BIN9-SP-016 (480-183631-4) and BLDG1-BIN8-SP-017 (480-183631-5).

GC/MS VOA
Method 8260C: The following samples were analyzed art a reduced weight due to the powdery nature of the sample matrix: BLDG1-BIN9-SP-016 (480-183631-4), BLDG1-BIN8-SP-017 (480-183631-5), (480-183631-D-5-B MS) and (480-183631-D-5-C MSD). Elevated reporting limits (RLs) are provided.

Method 8260C: The following sample was analyzed at a reduced weight due to the powdery nature of the sample matrix: BLDG1-BIN12-SP-013 (480-183631-1). Elevated reporting limits (RLs) are provided.

Method 8260C: The following samples were diluted due to the nature of the TCLP solid sample matrix: BLDG1-BIN12-SP-013 (480-183631-1), BLDG1-BIN11-SP-014 (480-183631-2), BLDG1-BIN10-SP-015 (480-183631-3), BLDG1-BIN9-SP-016 (480-183631-4), BLDG1-BIN8-SP-017 (480-183631-5) and (LB 480-577814/1-A). Elevated reporting limits (RLs) are provided.

Method 8260C: The continuing calibration verification (CCV) associated with batch 480-578098 recovered above the upper control limit for Carbon tetrachloride. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: BLDG1-BIN12-SP-013 (480-183631-1), BLDG1-BIN11-SP-014 (480-183631-2), BLDG1-BIN10-SP-015 (480-183631-3), BLDG1-BIN9-SP-016 (480-183631-4) and BLDG1-BIN8-SP-017 (480-183631-5).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC/MS Semi VOA
Method 8270D: The following samples were diluted due to color and appearance: BLDG1-BIN12-SP-013 (480-183631-1), BLDG1-BIN10-SP-015 (480-183631-3) and BLDG1-BIN9-SP-016 (480-183631-4). Elevated reporting limits (RL) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC Semi VOA
Method 8082A: The following samples were diluted due to the nature of the sample matrix: BLDG1-3RDOIL1-SP-018 (480-183631-6), BLDG1-3RDOIL2-SP-019 (480-183631-7) and BLDG1-2NDOIL3-SP-020 (480-183631-8). Elevated reporting limits (RLs) are provided.

Method 8082A: Surrogate recovery for the following sample was outside control limits: BLDG1-2NDOIL3-SP-020 (480-183631-8). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8151A: The continuing calibration verification (CCV) associated with batch 480-578093 recovered above the upper control limit for Silvex (2,4,5-TP). The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: BLDG1-BIN12-SP-013 (480-183631-1), BLDG1-BIN11-SP-014 (480-183631-2), BLDG1-BIN10-SP-015 (480-183631-3), BLDG1-BIN9-SP-016 (480-183631-4) and BLDG1-BIN8-SP-017 (480-183631-5).

Method 8151A: Surrogate recovery for the following samples were outside control limits: BLDG1-BIN12-SP-013 (480-183631-1), BLDG1-BIN11-SP-014 (480-183631-2), BLDG1-BIN10-SP-015 (480-183631-3), BLDG1-BIN9-SP-016 (480-183631-4),

Job ID: 480-183631-1 (Continued)

Laboratory: Eurofins TestAmerica, Buffalo (Continued)

BLDG1-BIN8-SP-017 (480-183631-5) and (LB 480-577812/1-B). This is routine for TCLP herbicides, due to the pH effects created during the leaching process, inhibiting the herbicide derivatization of the free acid components.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals

Method 6010C: The low level continuing calibration verification (CCVL 480-578334/25) recovered above the upper control limit for Total Chromium. The samples associated with this CCVL were either less than the reporting limit (RL) for this analyte or contained this analyte at a concentration greater than 10X the value found in the CCVL; therefore, re-analysis of samples BLDG1-BIN11-SP-014 (480-183631-2), BLDG1-BIN10-SP-015 (480-183631-3), (LCS 480-577921/3-A), (MB 480-577921/2-A), (480-183631-A-2-G MS), (480-183631-A-2-H MSD), (480-183631-A-2-F PDS) and (480-183631-A-2-F SD ^5) was not performed.

Method 6010C: The following samples were diluted due to the presence of Total Iron which interferes with Silver Arsenic, Cadmium, Chromium, Lead, and Selenium: BLDG1-BIN12-SP-013 (480-183631-1), BLDG1-BIN9-SP-016 (480-183631-4) and BLDG1-BIN8-SP-017 (480-183631-5). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry

Methods 9045C, 9045D: This analysis is normally performed in the field and has a method-defined holding time of 15 minutes. The following samples has been qualified with the "HF" flag to indicate analysis was performed in the laboratory outside the 15 minute timeframe: BLDG1-BIN9-SP-016 (480-183631-4) and BLDG1-BIN8-SP-017 (480-183631-5).

Method 9045D: This analysis is normally performed in the field and has a method-defined holding time of 15 minutes. The following samples has been qualified with the "HF" flag to indicate analysis was performed in the laboratory outside the 15 minute timeframe: BLDG1-BIN12-SP-013 (480-183631-1), BLDG1-BIN11-SP-014 (480-183631-2) and BLDG1-BIN10-SP-015 (480-183631-3).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

Method 3510C: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 480-577812 and 480-577920.

Method 3510C: Due to the matrix, the initial volume(s) used for the following samples deviated from the standard procedure: BLDG1-BIN12-SP-013 (480-183631-1), BLDG1-BIN9-SP-016 (480-183631-4) and BLDG1-BIN8-SP-017 (480-183631-5). The reporting limits (RLs) have been adjusted proportionately.

Method 3550C: Due to the matrix, the initial volume(s) used for the following samples deviated from the standard procedure: 8270 DBLDG1-BIN12-SP-013 (480-183631-1), BLDG1-BIN11-SP-014 (480-183631-2), BLDG1-BIN10-SP-015 (480-183631-3), BLDG1-BIN9-SP-016 (480-183631-4) and BLDG1-BIN8-SP-017 (480-183631-5). The reporting limits (RLs) have been adjusted proportionately.

Method 8151A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 480-577812 and 480-577918.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183631-1

Client Sample ID: BLDG1-BIN12-SP-013 — Lab Sample ID: 480-183631-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	76	J vs	120	21	ug/Kg	1		8260C	Total/NA
Benzene	1.6	J vs	25	1.2	ug/Kg	1		8260C	Total/NA
Styrene	3.3	J vs B	25	1.2	ug/Kg	1		8260C	Total/NA
Barium	0.29	J	1.0	0.10	mg/L	1		6010C	TCLP
Chromium	0.17		0.040	0.020	mg/L	2		6010C	TCLP
Lead	0.086		0.040	0.0060	mg/L	2		6010C	TCLP
Selenium	0.060		0.050	0.017	mg/L	2		6010C	TCLP
Flashpoint	>180		50.0	50.0	Degrees F	1		1010A	Total/NA
pH	7.9	HF	0.1	0.1	SU	1		9045D	Total/NA
Temperature	21.8	HF	0.001	0.001	Degrees C	1		9045D	Total/NA

Client Sample ID: BLDG1-BIN11-SP-014 — Lab Sample ID: 480-183631-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	0.0036	J	0.020	0.0030	mg/L	1		6010C	TCLP
Flashpoint	>180		50.0	50.0	Degrees F	1		1010A	Total/NA
pH	7.7	HF	0.1	0.1	SU	1		9045D	Total/NA
Temperature	21.5	HF	0.001	0.001	Degrees C	1		9045D	Total/NA

Client Sample ID: BLDG1-BIN10-SP-015 — Lab Sample ID: 480-183631-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	4.5	J vs	24	4.1	ug/Kg	1		8260C	Total/NA
Cadmium	0.00059	J	0.0020	0.00050	mg/L	1		6010C	TCLP
Chromium	0.15		0.020	0.010	mg/L	1		6010C	TCLP
Lead	0.029		0.020	0.0030	mg/L	1		6010C	TCLP
Silver	0.0032	J	0.0060	0.0017	mg/L	1		6010C	TCLP
Flashpoint	>180		50.0	50.0	Degrees F	1		1010A	Total/NA
pH	7.6	HF	0.1	0.1	SU	1		9045D	Total/NA
Temperature	21.6	HF	0.001	0.001	Degrees C	1		9045D	Total/NA

Client Sample ID: BLDG1-BIN9-SP-016 — Lab Sample ID: 480-183631-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	61	J vs	130	21	ug/Kg	1		8260C	Total/NA
Benzene	1.7	J vs	25	1.2	ug/Kg	1		8260C	Total/NA
Styrene	2.1	J vs	25	1.3	ug/Kg	1		8260C	Total/NA
Toluene	2.0	J vs	25	1.9	ug/Kg	1		8260C	Total/NA
Chromium	0.58		0.040	0.020	mg/L	2		6010C	TCLP
Lead	0.080		0.040	0.0060	mg/L	2		6010C	TCLP
Selenium	0.061		0.050	0.017	mg/L	2		6010C	TCLP
Flashpoint	>180		50.0	50.0	Degrees F	1		1010A	Total/NA
pH	8.0	HF	0.1	0.1	SU	1		9045D	Total/NA
Temperature	19.0	HF	0.001	0.001	Degrees C	1		9045D	Total/NA

Client Sample ID: BLDG1-BIN8-SP-017 — Lab Sample ID: 480-183631-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	62	J vs F1	120	21	ug/Kg	1		8260C	Total/NA
Benzene	1.7	J vs	25	1.2	ug/Kg	1		8260C	Total/NA
Styrene	1.5	J vs	25	1.2	ug/Kg	1		8260C	Total/NA
Toluene	2.1	J vs	25	1.9	ug/Kg	1		8260C	Total/NA
Bis(2-ethylhexyl) phthalate	360	J	880	300	ug/Kg	1		8270D	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183631-1

Client Sample ID: BLDG1-BIN8-SP-017 (Continued)

Lab Sample ID: 480-183631-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Butyl benzyl phthalate	390	J	880	150	ug/Kg	1		8270D	Total/NA
Di-n-octyl phthalate	200	J	880	100	ug/Kg	1		8270D	Total/NA
Chromium	0.98		0.040	0.020	mg/L	2		6010C	TCLP
Lead	0.090		0.040	0.0060	mg/L	2		6010C	TCLP
Selenium	0.062		0.050	0.017	mg/L	2		6010C	TCLP
Flashpoint	>180		50.0	50.0	Degrees F	1		1010A	Total/NA
pH	8.2	HF	0.1	0.1	SU	1		9045D	Total/NA
Temperature	18.8	HF	0.001	0.001	Degrees C	1		9045D	Total/NA

Client Sample ID: BLDG1-3RDOIL1-SP-018

Lab Sample ID: 480-183631-6

No Detections.

Client Sample ID: BLDG1-3RDOIL2-SP-019

Lab Sample ID: 480-183631-7

No Detections.

Client Sample ID: BLDG1-2NDOIL3-SP-020

Lab Sample ID: 480-183631-8

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: BLDG1-BIN12-SP-013

Lab Sample ID: 480-183631-1

Date Collected: 04/20/21 11:00

Matrix: Solid

Date Received: 04/21/21 10:00

Method: 8260C - TCLP Volatiles - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.010	0.0041	mg/L			04/27/21 23:56	10
Carbon tetrachloride	ND		0.010	0.0027	mg/L			04/27/21 23:56	10
Chlorobenzene	ND		0.010	0.0075	mg/L			04/27/21 23:56	10
Chloroform	ND		0.010	0.0034	mg/L			04/27/21 23:56	10
1,2-Dichloroethane	ND		0.010	0.0021	mg/L			04/27/21 23:56	10
1,1-Dichloroethene	ND		0.010	0.0029	mg/L			04/27/21 23:56	10
2-Butanone (MEK)	ND		0.050	0.013	mg/L			04/27/21 23:56	10
Tetrachloroethene	ND		0.010	0.0036	mg/L			04/27/21 23:56	10
Trichloroethene	ND		0.010	0.0046	mg/L			04/27/21 23:56	10
Vinyl chloride	ND		0.010	0.0090	mg/L			04/27/21 23:56	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*77 - 120*		*04/27/21 23:56*	*10*
Toluene-d8 (Surr)	*111*		*80 - 120*		*04/27/21 23:56*	*10*
4-Bromofluorobenzene (Surr)	*112*		*73 - 120*		*04/27/21 23:56*	*10*
Dibromofluoromethane (Surr)	*113*		*75 - 123*		*04/27/21 23:56*	*10*

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND	vs	25	1.8	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
1,1,2,2-Tetrachloroethane	ND	vs	25	4.0	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
1,1,2-Trichloroethane	ND	vs	25	3.2	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	vs	25	5.6	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
1,1-Dichloroethane	ND	vs	25	3.0	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
1,1-Dichloroethene	ND	vs	25	3.0	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
1,2,4-Trichlorobenzene	ND	vs	25	1.5	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
1,2-Dibromo-3-Chloropropane	ND	vs	25	12	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
1,2-Dichlorobenzene	ND	vs	25	1.9	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
1,2-Dichloroethane	ND	vs	25	1.2	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
1,2-Dichloropropane	ND	vs	25	12	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
1,3-Dichlorobenzene	ND	vs	25	1.3	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
1,4-Dichlorobenzene	ND	vs	25	3.5	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
2-Butanone (MEK)	ND	vs	120	9.1	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
2-Hexanone	ND	vs	120	12	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
4-Methyl-2-pentanone (MIBK)	ND	vs	120	8.1	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
Acetone	**76**	**J vs**	120	21	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
Benzene	**1.6**	**J vs**	25	1.2	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
Bromodichloromethane	ND	vs	25	3.3	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
Bromoform	ND	vs	25	12	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
Bromomethane	ND	vs	25	2.2	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
Carbon disulfide	ND	vs	25	12	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
Carbon tetrachloride	ND	vs	25	2.4	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
Chlorobenzene	ND	vs	25	3.3	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
Dibromochloromethane	ND	vs	25	3.2	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
Chloroethane	ND	vs	25	5.6	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
Chloroform	ND	vs	25	1.5	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
Chloromethane	ND	vs	25	1.5	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
cis-1,2-Dichloroethene	ND	vs	25	3.2	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
cis-1,3-Dichloropropene	ND	vs	25	3.6	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
Cyclohexane	ND	vs	25	3.5	ug/Kg		04/22/21 18:06	04/24/21 17:36	1

Client Sample ID: BLDG1-BIN12-SP-013
Lab Sample ID: 480-183631-1
Date Collected: 04/20/21 11:00
Matrix: Solid
Date Received: 04/21/21 10:00

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND	vs	25	2.0	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
Ethylbenzene	ND	vs	25	1.7	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
1,2-Dibromoethane	ND	vs	25	3.2	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
Isopropylbenzene	ND	vs	25	3.7	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
Methyl acetate	ND	vs	120	15	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
Methyl tert-butyl ether	ND	vs	25	2.4	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
Methylcyclohexane	ND	vs	25	3.8	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
Methylene Chloride	ND	vs	25	11	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
Styrene	**3.3**	**J vs B**	25	1.2	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
Tetrachloroethene	ND	vs	25	3.3	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
Toluene	ND	vs	25	1.9	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
trans-1,2-Dichloroethene	ND	vs	25	2.6	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
trans-1,3-Dichloropropene	ND	vs	25	11	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
Trichloroethene	ND	vs	25	5.4	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
Trichlorofluoromethane	ND	vs	25	2.3	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
Vinyl chloride	ND	vs	25	3.0	ug/Kg		04/22/21 18:06	04/24/21 17:36	1
Xylenes, Total	ND	vs	50	4.2	ug/Kg		04/22/21 18:06	04/24/21 17:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*71 - 125*	*04/22/21 18:06*	*04/24/21 17:36*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*64 - 126*	*04/22/21 18:06*	*04/24/21 17:36*	*1*
4-Bromofluorobenzene (Surr)	*93*		*72 - 126*	*04/22/21 18:06*	*04/24/21 17:36*	*1*
Dibromofluoromethane (Surr)	*97*		*60 - 140*	*04/22/21 18:06*	*04/24/21 17:36*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biphenyl	ND		4800	710	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
bis (2-chloroisopropyl) ether	ND		4800	970	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
2,4,5-Trichlorophenol	ND		4800	1300	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
2,4,6-Trichlorophenol	ND		4800	970	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
2,4-Dichlorophenol	ND		4800	510	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
2,4-Dimethylphenol	ND		4800	1200	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
2,4-Dinitrophenol	ND		47000	22000	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
2,4-Dinitrotoluene	ND		4800	1000	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
2,6-Dinitrotoluene	ND		4800	570	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
2-Chloronaphthalene	ND		4800	800	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
1,4-Dioxane	ND		2900	1600	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
2-Chlorophenol	ND		9400	880	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
2-Methylnaphthalene	ND		4800	970	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
2-Methylphenol	ND		4800	570	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
2-Nitroaniline	ND		9400	710	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
2-Nitrophenol	ND		4800	1400	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
3,3'-Dichlorobenzidine	ND		9400	5700	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
3-Nitroaniline	ND		9400	1300	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
4,6-Dinitro-2-methylphenol	ND		9400	4800	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
4-Bromophenyl phenyl ether	ND		4800	680	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
4-Chloro-3-methylphenol	ND		4800	1200	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
4-Chloroaniline	ND		4800	1200	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
4-Chlorophenyl phenyl ether	ND		4800	600	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
4-Methylphenol	ND		9400	570	ug/Kg		04/23/21 10:13	04/26/21 19:50	5

Client: Integral Consulting Inc — Job ID: 480-183631-1
Project/Site: Project EF1017

Client Sample ID: BLDG1-BIN12-SP-013 — **Lab Sample ID: 480-183631-1**
Date Collected: 04/20/21 11:00 — **Matrix: Solid**
Date Received: 04/21/21 10:00

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4-Nitroaniline	ND		9400	2500	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
4-Nitrophenol	ND		9400	3400	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
Acenaphthene	ND		4800	710	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
Acenaphthylene	ND		4800	630	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
Acetophenone	ND		4800	660	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
Anthracene	ND		4800	1200	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
Atrazine	ND		4800	1700	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
Benzaldehyde	ND		4800	3800	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
Benzo[a]anthracene	ND		4800	480	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
Benzo[a]pyrene	ND		4800	710	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
Benzo[b]fluoranthene	ND		4800	770	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
Benzo[g,h,i]perylene	ND		4800	510	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
Benzo[k]fluoranthene	ND		4800	630	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
Bis(2-chloroethoxy)methane	ND		4800	1000	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
Bis(2-chloroethyl)ether	ND		4800	630	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
Bis(2-ethylhexyl) phthalate	ND		4800	1700	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
Butyl benzyl phthalate	ND		4800	800	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
Caprolactam	ND		4800	1500	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
Carbazole	ND		4800	570	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
Chrysene	ND		4800	1100	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
Di-n-butyl phthalate	ND		4800	830	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
Di-n-octyl phthalate	ND		4800	570	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
Dibenz(a,h)anthracene	ND		4800	860	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
Dibenzofuran	ND		4800	570	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
Diethyl phthalate	ND		4800	630	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
Dimethyl phthalate	ND		4800	570	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
Fluoranthene	ND		4800	510	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
Fluorene	ND		4800	570	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
Hexachlorobenzene	ND		4800	660	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
Hexachlorobutadiene	ND		4800	710	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
Hexachlorocyclopentadiene	ND		4800	660	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
Hexachloroethane	ND		4800	630	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
Indeno[1,2,3-cd]pyrene	ND		4800	600	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
Isophorone	ND		4800	1000	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
N-Nitrosodi-n-propylamine	ND		4800	830	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
N-Nitrosodiphenylamine	ND		4800	3900	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
Naphthalene	ND		4800	630	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
Nitrobenzene	ND		4800	540	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
Pentachlorophenol	ND		9400	4800	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
Phenanthrene	ND		4800	710	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
Phenol	ND		4800	740	ug/Kg		04/23/21 10:13	04/26/21 19:50	5
Pyrene	ND		4800	570	ug/Kg		04/23/21 10:13	04/26/21 19:50	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*75*		*54 - 120*	*04/23/21 10:13*	*04/26/21 19:50*	*5*
2-Fluorobiphenyl	*80*		*60 - 120*	*04/23/21 10:13*	*04/26/21 19:50*	*5*
2-Fluorophenol	*75*		*52 - 120*	*04/23/21 10:13*	*04/26/21 19:50*	*5*
Nitrobenzene-d5	*67*		*53 - 120*	*04/23/21 10:13*	*04/26/21 19:50*	*5*
p-Terphenyl-d14	*95*		*79 - 130*	*04/23/21 10:13*	*04/26/21 19:50*	*5*
Phenol-d5	*70*		*54 - 120*	*04/23/21 10:13*	*04/26/21 19:50*	*5*

Client Sample ID: BLDG1-BIN12-SP-013

Lab Sample ID: 480-183631-1

Date Collected: 04/20/21 11:00
Matrix: Solid
Date Received: 04/21/21 10:00

Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.10	0.0045	mg/L		04/26/21 14:45	04/27/21 14:01	1
2,4-Dinitrotoluene	ND		0.050	0.0043	mg/L		04/26/21 14:45	04/27/21 14:01	1
Hexachlorobenzene	ND		0.050	0.0050	mg/L		04/26/21 14:45	04/27/21 14:01	1
Hexachlorobutadiene	ND		0.050	0.0068	mg/L		04/26/21 14:45	04/27/21 14:01	1
Hexachloroethane	ND		0.050	0.0058	mg/L		04/26/21 14:45	04/27/21 14:01	1
3-Methylphenol	ND		0.10	0.0040	mg/L		04/26/21 14:45	04/27/21 14:01	1
2-Methylphenol	ND		0.050	0.0040	mg/L		04/26/21 14:45	04/27/21 14:01	1
4-Methylphenol	ND		0.10	0.0035	mg/L		04/26/21 14:45	04/27/21 14:01	1
Nitrobenzene	ND		0.050	0.0028	mg/L		04/26/21 14:45	04/27/21 14:01	1
Pentachlorophenol	ND		0.10	0.022	mg/L		04/26/21 14:45	04/27/21 14:01	1
Pyridine	ND		0.25	0.0040	mg/L		04/26/21 14:45	04/27/21 14:01	1
2,4,5-Trichlorophenol	ND		0.050	0.0048	mg/L		04/26/21 14:45	04/27/21 14:01	1
2,4,6-Trichlorophenol	ND		0.050	0.0060	mg/L		04/26/21 14:45	04/27/21 14:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*98*		*41 - 120*	*04/26/21 14:45*	*04/27/21 14:01*	*1*
2-Fluorobiphenyl	*107*		*48 - 120*	*04/26/21 14:45*	*04/27/21 14:01*	*1*
2-Fluorophenol	*55*		*35 - 120*	*04/26/21 14:45*	*04/27/21 14:01*	*1*
Nitrobenzene-d5	*100*		*46 - 120*	*04/26/21 14:45*	*04/27/21 14:01*	*1*
p-Terphenyl-d14	*91*		*60 - 148*	*04/26/21 14:45*	*04/27/21 14:01*	*1*
Phenol-d5	*37*		*22 - 120*	*04/26/21 14:45*	*04/27/21 14:01*	*1*

Method: 8081B - Organochlorine Pesticides (GC) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.00020	0.0000060	mg/L		04/26/21 10:21	04/27/21 14:17	1
Chlordane (technical)	ND		0.0020	0.000029	mg/L		04/26/21 10:21	04/27/21 14:17	1
Endrin	ND		0.00020	0.000014	mg/L		04/26/21 10:21	04/27/21 14:17	1
Heptachlor	ND		0.00020	0.0000085	mg/L		04/26/21 10:21	04/27/21 14:17	1
Heptachlor epoxide	ND		0.00020	0.0000053	mg/L		04/26/21 10:21	04/27/21 14:17	1
Methoxychlor	ND		0.00020	0.000014	mg/L		04/26/21 10:21	04/27/21 14:17	1
Toxaphene	ND		0.0020	0.00012	mg/L		04/26/21 10:21	04/27/21 14:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*43*		*20 - 120*	*04/26/21 10:21*	*04/27/21 14:17*	*1*
DCB Decachlorobiphenyl	*57*		*20 - 120*	*04/26/21 10:21*	*04/27/21 14:17*	*1*
Tetrachloro-m-xylene	*86*		*44 - 120*	*04/26/21 10:21*	*04/27/21 14:17*	*1*
Tetrachloro-m-xylene	*78*		*44 - 120*	*04/26/21 10:21*	*04/27/21 14:17*	*1*

Method: 8151 - TCLP Herbicides - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND		0.0020	0.00036	mg/L		04/26/21 10:16	04/28/21 03:46	1
2,4-D	ND		0.0020	0.00040	mg/L		04/26/21 10:16	04/28/21 03:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*38*	*S1-*	*48 - 132*	*04/26/21 10:16*	*04/28/21 03:46*	*1*
2,4-Dichlorophenylacetic acid	*25*	*S1-*	*48 - 132*	*04/26/21 10:16*	*04/28/21 03:46*	*1*

Method: 6010C - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.030	0.011	mg/L		04/26/21 10:40	04/27/21 19:26	2
Barium	**0.29**	**J**	1.0	0.10	mg/L		04/26/21 10:40	04/27/21 18:37	1

Client Sample ID: BLDG1-BIN12-SP-013 **Lab Sample ID: 480-183631-1**
Date Collected: 04/20/21 11:00 **Matrix: Solid**
Date Received: 04/21/21 10:00

Method: 6010C - Metals (ICP) - TCLP (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		0.0040	0.0010	mg/L		04/26/21 10:40	04/27/21 19:26	2
Chromium	**0.17**		0.040	0.020	mg/L		04/26/21 10:40	04/27/21 19:26	2
Lead	**0.086**		0.040	0.0060	mg/L		04/26/21 10:40	04/27/21 19:26	2
Selenium	**0.060**		0.050	0.017	mg/L		04/26/21 10:40	04/27/21 19:26	2
Silver	ND		0.012	0.0034	mg/L		04/26/21 10:40	04/27/21 19:26	2

Method: 7470A - TCLP Mercury - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		04/26/21 14:00	04/26/21 19:15	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Flashpoint	**>180**		50.0	50.0	Degrees F			04/27/21 17:05	1
pH	**7.9**	**HF**	0.1	0.1	SU			04/27/21 11:00	1
Temperature	**21.8**	**HF**	0.001	0.001	Degrees C			04/27/21 11:00	1

Client Sample ID: BLDG1-BIN11-SP-014 **Lab Sample ID: 480-183631-2**
Date Collected: 04/20/21 11:15 **Matrix: Solid**
Date Received: 04/21/21 10:00

Method: 8260C - TCLP Volatiles - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.010	0.0041	mg/L			04/28/21 00:21	10
Carbon tetrachloride	ND		0.010	0.0027	mg/L			04/28/21 00:21	10
Chlorobenzene	ND		0.010	0.0075	mg/L			04/28/21 00:21	10
Chloroform	ND		0.010	0.0034	mg/L			04/28/21 00:21	10
1,2-Dichloroethane	ND		0.010	0.0021	mg/L			04/28/21 00:21	10
1,1-Dichloroethene	ND		0.010	0.0029	mg/L			04/28/21 00:21	10
2-Butanone (MEK)	ND		0.050	0.013	mg/L			04/28/21 00:21	10
Tetrachloroethene	ND		0.010	0.0036	mg/L			04/28/21 00:21	10
Trichloroethene	ND		0.010	0.0046	mg/L			04/28/21 00:21	10
Vinyl chloride	ND		0.010	0.0090	mg/L			04/28/21 00:21	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*77 - 120*		*04/28/21 00:21*	*10*
Toluene-d8 (Surr)	*108*		*80 - 120*		*04/28/21 00:21*	*10*
4-Bromofluorobenzene (Surr)	*106*		*73 - 120*		*04/28/21 00:21*	*10*
Dibromofluoromethane (Surr)	*108*		*75 - 123*		*04/28/21 00:21*	*10*

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND	vs	5.0	0.36	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
1,1,2,2-Tetrachloroethane	ND	vs	5.0	0.81	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
1,1,2-Trichloroethane	ND	vs	5.0	0.65	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	vs	5.0	1.1	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
1,1-Dichloroethane	ND	vs	5.0	0.61	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
1,1-Dichloroethene	ND	vs	5.0	0.61	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
1,2,4-Trichlorobenzene	ND	vs	5.0	0.30	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
1,2-Dibromo-3-Chloropropane	ND	vs	5.0	2.5	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
1,2-Dichlorobenzene	ND	vs	5.0	0.39	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
1,2-Dichloroethane	ND	vs	5.0	0.25	ug/Kg		04/22/21 18:06	04/24/21 18:01	1

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Client Sample ID: BLDG1-BIN11-SP-014
Date Collected: 04/20/21 11:15
Date Received: 04/21/21 10:00

Lab Sample ID: 480-183631-2
Matrix: Solid

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichloropropane	ND	vs	5.0	2.5	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
1,3-Dichlorobenzene	ND	vs	5.0	0.26	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
1,4-Dichlorobenzene	ND	vs	5.0	0.70	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
2-Butanone (MEK)	ND	vs	25	1.8	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
2-Hexanone	ND	vs	25	2.5	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
4-Methyl-2-pentanone (MIBK)	ND	vs	25	1.6	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
Acetone	ND	vs	25	4.2	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
Benzene	ND	vs	5.0	0.24	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
Bromodichloromethane	ND	vs	5.0	0.67	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
Bromoform	ND	vs	5.0	2.5	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
Bromomethane	ND	vs	5.0	0.45	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
Carbon disulfide	ND	vs	5.0	2.5	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
Carbon tetrachloride	ND	vs	5.0	0.48	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
Chlorobenzene	ND	vs	5.0	0.66	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
Dibromochloromethane	ND	vs	5.0	0.64	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
Chloroethane	ND	vs	5.0	1.1	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
Chloroform	ND	vs	5.0	0.31	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
Chloromethane	ND	vs	5.0	0.30	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
cis-1,2-Dichloroethene	ND	vs	5.0	0.64	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
cis-1,3-Dichloropropene	ND	vs	5.0	0.72	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
Cyclohexane	ND	vs	5.0	0.70	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
Dichlorodifluoromethane	ND	vs	5.0	0.41	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
Ethylbenzene	ND	vs	5.0	0.34	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
1,2-Dibromoethane	ND	vs	5.0	0.64	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
Isopropylbenzene	ND	vs	5.0	0.75	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
Methyl acetate	ND	vs	25	3.0	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
Methyl tert-butyl ether	ND	vs	5.0	0.49	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
Methylcyclohexane	ND	vs	5.0	0.76	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
Methylene Chloride	ND	vs	5.0	2.3	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
Styrene	ND	vs	5.0	0.25	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
Tetrachloroethene	ND	vs	5.0	0.67	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
Toluene	ND	vs	5.0	0.38	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
trans-1,2-Dichloroethene	ND	vs	5.0	0.51	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
trans-1,3-Dichloropropene	ND	vs	5.0	2.2	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
Trichloroethene	ND	vs	5.0	1.1	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
Trichlorofluoromethane	ND	vs	5.0	0.47	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
Vinyl chloride	ND	vs	5.0	0.61	ug/Kg		04/22/21 18:06	04/24/21 18:01	1
Xylenes, Total	ND	vs	10	0.84	ug/Kg		04/22/21 18:06	04/24/21 18:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*71 - 125*	*04/22/21 18:06*	*04/24/21 18:01*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*64 - 126*	*04/22/21 18:06*	*04/24/21 18:01*	*1*
4-Bromofluorobenzene (Surr)	*96*		*72 - 126*	*04/22/21 18:06*	*04/24/21 18:01*	*1*
Dibromofluoromethane (Surr)	*99*		*60 - 140*	*04/22/21 18:06*	*04/24/21 18:01*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biphenyl	ND		990	150	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
bis (2-chloroisopropyl) ether	ND		990	200	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
2,4,5-Trichlorophenol	ND		990	270	ug/Kg		04/23/21 10:13	04/26/21 20:15	1

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183631-1

Client Sample ID: BLDG1-BIN11-SP-014
Date Collected: 04/20/21 11:15
Date Received: 04/21/21 10:00

Lab Sample ID: 480-183631-2
Matrix: Solid

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	ND		990	200	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
2,4-Dichlorophenol	ND		990	100	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
2,4-Dimethylphenol	ND		990	240	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
2,4-Dinitrophenol	ND		9700	4600	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
2,4-Dinitrotoluene	ND		990	200	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
2,6-Dinitrotoluene	ND		990	120	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
2-Chloronaphthalene	ND		990	160	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
1,4-Dioxane	ND		580	320	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
2-Chlorophenol	ND		1900	180	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
2-Methylnaphthalene	ND		990	200	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
2-Methylphenol	ND		990	120	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
2-Nitroaniline	ND		1900	150	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
2-Nitrophenol	ND		990	280	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
3,3'-Dichlorobenzidine	ND		1900	1200	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
3-Nitroaniline	ND		1900	270	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
4,6-Dinitro-2-methylphenol	ND		1900	990	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
4-Bromophenyl phenyl ether	ND		990	140	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
4-Chloro-3-methylphenol	ND		990	240	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
4-Chloroaniline	ND		990	240	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
4-Chlorophenyl phenyl ether	ND		990	120	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
4-Methylphenol	ND		1900	120	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
4-Nitroaniline	ND		1900	520	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
4-Nitrophenol	ND		1900	690	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
Acenaphthene	ND		990	150	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
Acenaphthylene	ND		990	130	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
Acetophenone	ND		990	130	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
Anthracene	ND		990	240	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
Atrazine	ND		990	340	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
Benzaldehyde	ND		990	790	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
Benzo[a]anthracene	ND		990	99	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
Benzo[a]pyrene	ND		990	150	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
Benzo[b]fluoranthene	ND		990	160	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
Benzo[g,h,i]perylene	ND		990	100	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
Benzo[k]fluoranthene	ND		990	130	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
Bis(2-chloroethoxy)methane	ND		990	210	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
Bis(2-chloroethyl)ether	ND		990	130	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
Bis(2-ethylhexyl) phthalate	ND		990	340	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
Butyl benzyl phthalate	ND		990	160	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
Caprolactam	ND		990	300	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
Carbazole	ND		990	120	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
Chrysene	ND		990	220	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
Di-n-butyl phthalate	ND		990	170	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
Di-n-octyl phthalate	ND		990	120	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
Dibenz(a,h)anthracene	ND		990	170	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
Dibenzofuran	ND		990	120	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
Diethyl phthalate	ND		990	130	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
Dimethyl phthalate	ND		990	120	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
Fluoranthene	ND		990	100	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
Fluorene	ND		990	120	ug/Kg		04/23/21 10:13	04/26/21 20:15	1

Client Sample ID: BLDG1-BIN11-SP-014
Lab Sample ID: 480-183631-2
Date Collected: 04/20/21 11:15
Matrix: Solid
Date Received: 04/21/21 10:00

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexachlorobenzene	ND		990	130	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
Hexachlorobutadiene	ND		990	150	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
Hexachlorocyclopentadiene	ND		990	130	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
Hexachloroethane	ND		990	130	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
Indeno[1,2,3-cd]pyrene	ND		990	120	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
Isophorone	ND		990	210	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
N-Nitrosodi-n-propylamine	ND		990	170	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
N-Nitrosodiphenylamine	ND		990	800	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
Naphthalene	ND		990	130	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
Nitrobenzene	ND		990	110	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
Pentachlorophenol	ND		1900	990	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
Phenanthrene	ND		990	150	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
Phenol	ND		990	150	ug/Kg		04/23/21 10:13	04/26/21 20:15	1
Pyrene	ND		990	120	ug/Kg		04/23/21 10:13	04/26/21 20:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*79*		*54 - 120*	*04/23/21 10:13*	*04/26/21 20:15*	*1*
2-Fluorobiphenyl	*82*		*60 - 120*	*04/23/21 10:13*	*04/26/21 20:15*	*1*
2-Fluorophenol	*68*		*52 - 120*	*04/23/21 10:13*	*04/26/21 20:15*	*1*
Nitrobenzene-d5	*75*		*53 - 120*	*04/23/21 10:13*	*04/26/21 20:15*	*1*
p-Terphenyl-d14	*98*		*79 - 130*	*04/23/21 10:13*	*04/26/21 20:15*	*1*
Phenol-d5	*76*		*54 - 120*	*04/23/21 10:13*	*04/26/21 20:15*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.040	0.0018	mg/L		04/26/21 14:45	04/27/21 14:25	1
2,4-Dinitrotoluene	ND		0.020	0.0017	mg/L		04/26/21 14:45	04/27/21 14:25	1
Hexachlorobenzene	ND		0.020	0.0020	mg/L		04/26/21 14:45	04/27/21 14:25	1
Hexachlorobutadiene	ND		0.020	0.0027	mg/L		04/26/21 14:45	04/27/21 14:25	1
Hexachloroethane	ND		0.020	0.0023	mg/L		04/26/21 14:45	04/27/21 14:25	1
3-Methylphenol	ND		0.040	0.0016	mg/L		04/26/21 14:45	04/27/21 14:25	1
2-Methylphenol	ND		0.020	0.0016	mg/L		04/26/21 14:45	04/27/21 14:25	1
4-Methylphenol	ND		0.040	0.0014	mg/L		04/26/21 14:45	04/27/21 14:25	1
Nitrobenzene	ND		0.020	0.0011	mg/L		04/26/21 14:45	04/27/21 14:25	1
Pentachlorophenol	ND		0.040	0.0088	mg/L		04/26/21 14:45	04/27/21 14:25	1
Pyridine	ND		0.10	0.0016	mg/L		04/26/21 14:45	04/27/21 14:25	1
2,4,5-Trichlorophenol	ND		0.020	0.0019	mg/L		04/26/21 14:45	04/27/21 14:25	1
2,4,6-Trichlorophenol	ND		0.020	0.0024	mg/L		04/26/21 14:45	04/27/21 14:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*85*		*41 - 120*	*04/26/21 14:45*	*04/27/21 14:25*	*1*
2-Fluorobiphenyl	*105*		*48 - 120*	*04/26/21 14:45*	*04/27/21 14:25*	*1*
2-Fluorophenol	*51*		*35 - 120*	*04/26/21 14:45*	*04/27/21 14:25*	*1*
Nitrobenzene-d5	*99*		*46 - 120*	*04/26/21 14:45*	*04/27/21 14:25*	*1*
p-Terphenyl-d14	*118*		*60 - 148*	*04/26/21 14:45*	*04/27/21 14:25*	*1*
Phenol-d5	*34*		*22 - 120*	*04/26/21 14:45*	*04/27/21 14:25*	*1*

Method: 8081B - Organochlorine Pesticides (GC) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.00020	0.0000060	mg/L		04/26/21 10:21	04/28/21 10:34	1

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183631-1

Client Sample ID: BLDG1-BIN11-SP-014

Lab Sample ID: 480-183631-2
Date Collected: 04/20/21 11:15
Matrix: Solid
Date Received: 04/21/21 10:00

Method: 8081B - Organochlorine Pesticides (GC) - TCLP (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlordane (technical)	ND		0.0020	0.000029	mg/L		04/26/21 10:21	04/28/21 10:34	1
Endrin	ND		0.00020	0.000014	mg/L		04/26/21 10:21	04/28/21 10:34	1
Heptachlor	ND		0.00020	0.0000085	mg/L		04/26/21 10:21	04/28/21 10:34	1
Heptachlor epoxide	ND		0.00020	0.0000053	mg/L		04/26/21 10:21	04/28/21 10:34	1
Methoxychlor	ND		0.00020	0.000014	mg/L		04/26/21 10:21	04/28/21 10:34	1
Toxaphene	ND		0.0020	0.00012	mg/L		04/26/21 10:21	04/28/21 10:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*63*		*20 - 120*	*04/26/21 10:21*	*04/28/21 10:34*	*1*
DCB Decachlorobiphenyl	*69*		*20 - 120*	*04/26/21 10:21*	*04/28/21 10:34*	*1*
Tetrachloro-m-xylene	*90*		*44 - 120*	*04/26/21 10:21*	*04/28/21 10:34*	*1*
Tetrachloro-m-xylene	*88*		*44 - 120*	*04/26/21 10:21*	*04/28/21 10:34*	*1*

Method: 8151 - TCLP Herbicides - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND		0.0020	0.00036	mg/L		04/26/21 10:16	04/28/21 04:16	1
2,4-D	ND		0.0020	0.00040	mg/L		04/26/21 10:16	04/28/21 04:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*21*	*S1-*	*48 - 132*	*04/26/21 10:16*	*04/28/21 04:16*	*1*
2,4-Dichlorophenylacetic acid	*20*	*S1-*	*48 - 132*	*04/26/21 10:16*	*04/28/21 04:16*	*1*

Method: 6010C - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.015	0.0056	mg/L		04/26/21 10:40	04/27/21 18:40	1
Barium	ND		1.0	0.10	mg/L		04/26/21 10:40	04/27/21 18:40	1
Cadmium	ND		0.0020	0.00050	mg/L		04/26/21 10:40	04/27/21 18:40	1
Chromium	ND	^+	0.020	0.010	mg/L		04/26/21 10:40	04/27/21 18:40	1
Lead	**0.0036**	**J**	0.020	0.0030	mg/L		04/26/21 10:40	04/27/21 18:40	1
Selenium	ND		0.025	0.0087	mg/L		04/26/21 10:40	04/27/21 18:40	1
Silver	ND		0.0060	0.0017	mg/L		04/26/21 10:40	04/27/21 18:40	1

Method: 7470A - TCLP Mercury - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	F1	0.00020	0.00012	mg/L		04/26/21 14:00	04/26/21 19:17	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Flashpoint	**>180**		50.0	50.0	Degrees F			04/27/21 17:05	1
pH	**7.7**	**HF**	0.1	0.1	SU			04/27/21 11:00	1
Temperature	**21.5**	**HF**	0.001	0.001	Degrees C			04/27/21 11:00	1

Client Sample ID: BLDG1-BIN10-SP-015

Lab Sample ID: 480-183631-3
Date Collected: 04/20/21 11:30
Matrix: Solid
Date Received: 04/21/21 10:00

Method: 8260C - TCLP Volatiles - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.010	0.0041	mg/L			04/28/21 00:45	10
Carbon tetrachloride	ND		0.010	0.0027	mg/L			04/28/21 00:45	10
Chlorobenzene	ND		0.010	0.0075	mg/L			04/28/21 00:45	10

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Client Sample ID: BLDG1-BIN10-SP-015

Lab Sample ID: 480-183631-3

Date Collected: 04/20/21 11:30

Matrix: Solid

Date Received: 04/21/21 10:00

Method: 8260C - TCLP Volatiles - TCLP (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroform	ND		0.010	0.0034	mg/L			04/28/21 00:45	10
1,2-Dichloroethane	ND		0.010	0.0021	mg/L			04/28/21 00:45	10
1,1-Dichloroethene	ND		0.010	0.0029	mg/L			04/28/21 00:45	10
2-Butanone (MEK)	ND		0.050	0.013	mg/L			04/28/21 00:45	10
Tetrachloroethene	ND		0.010	0.0036	mg/L			04/28/21 00:45	10
Trichloroethene	ND		0.010	0.0046	mg/L			04/28/21 00:45	10
Vinyl chloride	ND		0.010	0.0090	mg/L			04/28/21 00:45	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*118*		*77 - 120*		*04/28/21 00:45*	*10*
Toluene-d8 (Surr)	*108*		*80 - 120*		*04/28/21 00:45*	*10*
4-Bromofluorobenzene (Surr)	*112*		*73 - 120*		*04/28/21 00:45*	*10*
Dibromofluoromethane (Surr)	*116*		*75 - 123*		*04/28/21 00:45*	*10*

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND	vs	4.9	0.35	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
1,1,2,2-Tetrachloroethane	ND	vs	4.9	0.79	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
1,1,2-Trichloroethane	ND	vs	4.9	0.63	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	vs	4.9	1.1	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
1,1-Dichloroethane	ND	vs	4.9	0.59	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
1,1-Dichloroethene	ND	vs	4.9	0.59	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
1,2,4-Trichlorobenzene	ND	vs	4.9	0.30	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
1,2-Dibromo-3-Chloropropane	ND	vs	4.9	2.4	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
1,2-Dichlorobenzene	ND	vs	4.9	0.38	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
1,2-Dichloroethane	ND	vs	4.9	0.24	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
1,2-Dichloropropane	ND	vs	4.9	2.4	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
1,3-Dichlorobenzene	ND	vs	4.9	0.25	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
1,4-Dichlorobenzene	ND	vs	4.9	0.68	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
2-Butanone (MEK)	ND	vs	24	1.8	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
2-Hexanone	ND	vs	24	2.4	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
4-Methyl-2-pentanone (MIBK)	ND	vs	24	1.6	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
Acetone	**4.5**	**J vs**	24	4.1	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
Benzene	ND	vs	4.9	0.24	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
Bromodichloromethane	ND	vs	4.9	0.65	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
Bromoform	ND	vs	4.9	2.4	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
Bromomethane	ND	vs	4.9	0.44	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
Carbon disulfide	ND	vs	4.9	2.4	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
Carbon tetrachloride	ND	vs	4.9	0.47	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
Chlorobenzene	ND	vs	4.9	0.64	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
Dibromochloromethane	ND	vs	4.9	0.62	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
Chloroethane	ND	vs	4.9	1.1	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
Chloroform	ND	vs	4.9	0.30	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
Chloromethane	ND	vs	4.9	0.29	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
cis-1,2-Dichloroethene	ND	vs	4.9	0.62	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
cis-1,3-Dichloropropene	ND	vs	4.9	0.70	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
Cyclohexane	ND	vs	4.9	0.68	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
Dichlorodifluoromethane	ND	vs	4.9	0.40	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
Ethylbenzene	ND	vs	4.9	0.33	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
1,2-Dibromoethane	ND	vs	4.9	0.62	ug/Kg		04/24/21 09:55	04/25/21 03:48	1

Client Sample ID: BLDG1-BIN10-SP-015
Date Collected: 04/20/21 11:30
Date Received: 04/21/21 10:00

Lab Sample ID: 480-183631-3
Matrix: Solid

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Isopropylbenzene	ND	vs	4.9	0.73	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
Methyl acetate	ND	vs	24	2.9	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
Methyl tert-butyl ether	ND	vs	4.9	0.48	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
Methylcyclohexane	ND	vs	4.9	0.74	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
Methylene Chloride	ND	vs	4.9	2.2	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
Styrene	ND	vs	4.9	0.24	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
Tetrachloroethene	ND	vs	4.9	0.65	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
Toluene	ND	vs	4.9	0.37	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
trans-1,2-Dichloroethene	ND	vs	4.9	0.50	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
trans-1,3-Dichloropropene	ND	vs	4.9	2.1	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
Trichloroethene	ND	vs	4.9	1.1	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
Trichlorofluoromethane	ND	vs	4.9	0.46	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
Vinyl chloride	ND	vs	4.9	0.59	ug/Kg		04/24/21 09:55	04/25/21 03:48	1
Xylenes, Total	ND	vs	9.7	0.82	ug/Kg		04/24/21 09:55	04/25/21 03:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*71 - 125*	*04/24/21 09:55*	*04/25/21 03:48*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*64 - 126*	*04/24/21 09:55*	*04/25/21 03:48*	*1*
4-Bromofluorobenzene (Surr)	*96*		*72 - 126*	*04/24/21 09:55*	*04/25/21 03:48*	*1*
Dibromofluoromethane (Surr)	*97*		*60 - 140*	*04/24/21 09:55*	*04/25/21 03:48*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biphenyl	ND		5100	750	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
bis (2-chloroisopropyl) ether	ND		5100	1000	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
2,4,5-Trichlorophenol	ND		5100	1400	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
2,4,6-Trichlorophenol	ND		5100	1000	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
2,4-Dichlorophenol	ND		5100	540	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
2,4-Dimethylphenol	ND		5100	1200	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
2,4-Dinitrophenol	ND		50000	23000	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
2,4-Dinitrotoluene	ND		5100	1000	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
2,6-Dinitrotoluene	ND		5100	600	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
2-Chloronaphthalene	ND		5100	830	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
1,4-Dioxane	ND		3000	1600	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
2-Chlorophenol	ND		9800	920	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
2-Methylnaphthalene	ND		5100	1000	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
2-Methylphenol	ND		5100	600	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
2-Nitroaniline	ND		9800	750	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
2-Nitrophenol	ND		5100	1400	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
3,3'-Dichlorobenzidine	ND		9800	6000	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
3-Nitroaniline	ND		9800	1400	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
4,6-Dinitro-2-methylphenol	ND		9800	5100	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
4-Bromophenyl phenyl ether	ND		5100	720	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
4-Chloro-3-methylphenol	ND		5100	1300	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
4-Chloroaniline	ND		5100	1300	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
4-Chlorophenyl phenyl ether	ND		5100	630	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
4-Methylphenol	ND		9800	600	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
4-Nitroaniline	ND		9800	2700	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
4-Nitrophenol	ND		9800	3500	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
Acenaphthene	ND		5100	750	ug/Kg		04/23/21 10:13	04/26/21 20:40	5

Client Sample Results

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183631-1

Client Sample ID: BLDG1-BIN10-SP-015
Date Collected: 04/20/21 11:30
Date Received: 04/21/21 10:00

Lab Sample ID: 480-183631-3
Matrix: Solid

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthylene	ND		5100	660	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
Acetophenone	ND		5100	690	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
Anthracene	ND		5100	1300	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
Atrazine	ND		5100	1800	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
Benzaldehyde	ND		5100	4000	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
Benzo[a]anthracene	ND		5100	510	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
Benzo[a]pyrene	ND		5100	750	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
Benzo[b]fluoranthene	ND		5100	810	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
Benzo[g,h,i]perylene	ND		5100	540	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
Benzo[k]fluoranthene	ND		5100	660	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
Bis(2-chloroethoxy)methane	ND		5100	1100	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
Bis(2-chloroethyl)ether	ND		5100	660	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
Bis(2-ethylhexyl) phthalate	ND		5100	1700	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
Butyl benzyl phthalate	ND		5100	830	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
Caprolactam	ND		5100	1500	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
Carbazole	ND		5100	600	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
Chrysene	ND		5100	1100	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
Di-n-butyl phthalate	ND		5100	860	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
Di-n-octyl phthalate	ND		5100	600	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
Dibenz(a,h)anthracene	ND		5100	890	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
Dibenzofuran	ND		5100	600	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
Diethyl phthalate	ND		5100	660	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
Dimethyl phthalate	ND		5100	600	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
Fluoranthene	ND		5100	540	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
Fluorene	ND		5100	600	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
Hexachlorobenzene	ND		5100	690	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
Hexachlorobutadiene	ND		5100	750	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
Hexachlorocyclopentadiene	ND		5100	690	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
Hexachloroethane	ND		5100	660	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
Indeno[1,2,3-cd]pyrene	ND		5100	630	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
Isophorone	ND		5100	1100	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
N-Nitrosodi-n-propylamine	ND		5100	860	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
N-Nitrosodiphenylamine	ND		5100	4100	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
Naphthalene	ND		5100	660	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
Nitrobenzene	ND		5100	570	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
Pentachlorophenol	ND		9800	5100	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
Phenanthrene	ND		5100	750	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
Phenol	ND		5100	780	ug/Kg		04/23/21 10:13	04/26/21 20:40	5
Pyrene	ND		5100	600	ug/Kg		04/23/21 10:13	04/26/21 20:40	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*88*		*54 - 120*	*04/23/21 10:13*	*04/26/21 20:40*	*5*
2-Fluorobiphenyl	*103*		*60 - 120*	*04/23/21 10:13*	*04/26/21 20:40*	*5*
2-Fluorophenol	*93*		*52 - 120*	*04/23/21 10:13*	*04/26/21 20:40*	*5*
Nitrobenzene-d5	*96*		*53 - 120*	*04/23/21 10:13*	*04/26/21 20:40*	*5*
p-Terphenyl-d14	*119*		*79 - 130*	*04/23/21 10:13*	*04/26/21 20:40*	*5*
Phenol-d5	*95*		*54 - 120*	*04/23/21 10:13*	*04/26/21 20:40*	*5*

Client Sample ID: BLDG1-BIN10-SP-015

Date Collected: 04/20/21 11:30
Date Received: 04/21/21 10:00

Lab Sample ID: 480-183631-3
Matrix: Solid

Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.040	0.0018	mg/L		04/26/21 14:45	04/27/21 14:49	1
2,4-Dinitrotoluene	ND		0.020	0.0017	mg/L		04/26/21 14:45	04/27/21 14:49	1
Hexachlorobenzene	ND		0.020	0.0020	mg/L		04/26/21 14:45	04/27/21 14:49	1
Hexachlorobutadiene	ND		0.020	0.0027	mg/L		04/26/21 14:45	04/27/21 14:49	1
Hexachloroethane	ND		0.020	0.0023	mg/L		04/26/21 14:45	04/27/21 14:49	1
3-Methylphenol	ND		0.040	0.0016	mg/L		04/26/21 14:45	04/27/21 14:49	1
2-Methylphenol	ND		0.020	0.0016	mg/L		04/26/21 14:45	04/27/21 14:49	1
4-Methylphenol	ND		0.040	0.0014	mg/L		04/26/21 14:45	04/27/21 14:49	1
Nitrobenzene	ND		0.020	0.0011	mg/L		04/26/21 14:45	04/27/21 14:49	1
Pentachlorophenol	ND		0.040	0.0088	mg/L		04/26/21 14:45	04/27/21 14:49	1
Pyridine	ND		0.10	0.0016	mg/L		04/26/21 14:45	04/27/21 14:49	1
2,4,5-Trichlorophenol	ND		0.020	0.0019	mg/L		04/26/21 14:45	04/27/21 14:49	1
2,4,6-Trichlorophenol	ND		0.020	0.0024	mg/L		04/26/21 14:45	04/27/21 14:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*85*		*41 - 120*	*04/26/21 14:45*	*04/27/21 14:49*	*1*
2-Fluorobiphenyl	*97*		*48 - 120*	*04/26/21 14:45*	*04/27/21 14:49*	*1*
2-Fluorophenol	*48*		*35 - 120*	*04/26/21 14:45*	*04/27/21 14:49*	*1*
Nitrobenzene-d5	*90*		*46 - 120*	*04/26/21 14:45*	*04/27/21 14:49*	*1*
p-Terphenyl-d14	*110*		*60 - 148*	*04/26/21 14:45*	*04/27/21 14:49*	*1*
Phenol-d5	*33*		*22 - 120*	*04/26/21 14:45*	*04/27/21 14:49*	*1*

Method: 8081B - Organochlorine Pesticides (GC) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.00020	0.0000060	mg/L		04/26/21 10:21	04/28/21 10:53	1
Chlordane (technical)	ND		0.0020	0.000029	mg/L		04/26/21 10:21	04/28/21 10:53	1
Endrin	ND		0.00020	0.000014	mg/L		04/26/21 10:21	04/28/21 10:53	1
Heptachlor	ND		0.00020	0.0000085	mg/L		04/26/21 10:21	04/28/21 10:53	1
Heptachlor epoxide	ND		0.00020	0.0000053	mg/L		04/26/21 10:21	04/28/21 10:53	1
Methoxychlor	ND		0.00020	0.000014	mg/L		04/26/21 10:21	04/28/21 10:53	1
Toxaphene	ND		0.0020	0.00012	mg/L		04/26/21 10:21	04/28/21 10:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*46*		*20 - 120*	*04/26/21 10:21*	*04/28/21 10:53*	*1*
DCB Decachlorobiphenyl	*57*		*20 - 120*	*04/26/21 10:21*	*04/28/21 10:53*	*1*
Tetrachloro-m-xylene	*81*		*44 - 120*	*04/26/21 10:21*	*04/28/21 10:53*	*1*
Tetrachloro-m-xylene	*82*		*44 - 120*	*04/26/21 10:21*	*04/28/21 10:53*	*1*

Method: 8151 - TCLP Herbicides - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND		0.0020	0.00036	mg/L		04/26/21 10:16	04/28/21 04:46	1
2,4-D	ND		0.0020	0.00040	mg/L		04/26/21 10:16	04/28/21 04:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*29*	*S1-*	*48 - 132*	*04/26/21 10:16*	*04/28/21 04:46*	*1*
2,4-Dichlorophenylacetic acid	*38*	*S1-*	*48 - 132*	*04/26/21 10:16*	*04/28/21 04:46*	*1*

Method: 6010C - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.015	0.0056	mg/L		04/26/21 10:40	04/27/21 18:59	1
Barium	ND		1.0	0.10	mg/L		04/26/21 10:40	04/27/21 18:59	1

Client Sample ID: BLDG1-BIN10-SP-015
Lab Sample ID: 480-183631-3
Date Collected: 04/20/21 11:30
Matrix: Solid
Date Received: 04/21/21 10:00

Method: 6010C - Metals (ICP) - TCLP (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	0.00059	J	0.0020	0.00050	mg/L		04/26/21 10:40	04/27/21 18:59	1
Chromium	0.15		0.020	0.010	mg/L		04/26/21 10:40	04/27/21 18:59	1
Lead	0.029		0.020	0.0030	mg/L		04/26/21 10:40	04/27/21 18:59	1
Selenium	ND		0.025	0.0087	mg/L		04/26/21 10:40	04/27/21 18:59	1
Silver	0.0032	J	0.0060	0.0017	mg/L		04/26/21 10:40	04/27/21 18:59	1

Method: 7470A - TCLP Mercury - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		04/26/21 14:00	04/26/21 19:22	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Flashpoint	>180		50.0	50.0	Degrees F			04/27/21 17:05	1
pH	7.6	HF	0.1	0.1	SU			04/27/21 11:00	1
Temperature	21.6	HF	0.001	0.001	Degrees C			04/27/21 11:00	1

Client Sample ID: BLDG1-BIN9-SP-016
Lab Sample ID: 480-183631-4
Date Collected: 04/20/21 11:45
Matrix: Solid
Date Received: 04/21/21 10:00

Method: 8260C - TCLP Volatiles - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.010	0.0041	mg/L			04/28/21 01:09	10
Carbon tetrachloride	ND		0.010	0.0027	mg/L			04/28/21 01:09	10
Chlorobenzene	ND		0.010	0.0075	mg/L			04/28/21 01:09	10
Chloroform	ND		0.010	0.0034	mg/L			04/28/21 01:09	10
1,2-Dichloroethane	ND		0.010	0.0021	mg/L			04/28/21 01:09	10
1,1-Dichloroethene	ND		0.010	0.0029	mg/L			04/28/21 01:09	10
2-Butanone (MEK)	ND		0.050	0.013	mg/L			04/28/21 01:09	10
Tetrachloroethene	ND		0.010	0.0036	mg/L			04/28/21 01:09	10
Trichloroethene	ND		0.010	0.0046	mg/L			04/28/21 01:09	10
Vinyl chloride	ND		0.010	0.0090	mg/L			04/28/21 01:09	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*77 - 120*		*04/28/21 01:09*	*10*
Toluene-d8 (Surr)	*108*		*80 - 120*		*04/28/21 01:09*	*10*
4-Bromofluorobenzene (Surr)	*108*		*73 - 120*		*04/28/21 01:09*	*10*
Dibromofluoromethane (Surr)	*113*		*75 - 123*		*04/28/21 01:09*	*10*

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND	vs	25	1.8	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
1,1,2,2-Tetrachloroethane	ND	vs	25	4.1	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
1,1,2-Trichloroethane	ND	vs	25	3.3	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	vs	25	5.7	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
1,1-Dichloroethane	ND	vs	25	3.1	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
1,1-Dichloroethene	ND	vs	25	3.1	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
1,2,4-Trichlorobenzene	ND	vs	25	1.5	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
1,2-Dibromo-3-Chloropropane	ND	vs	25	13	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
1,2-Dichlorobenzene	ND	vs	25	2.0	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
1,2-Dichloroethane	ND	vs	25	1.3	ug/Kg		04/24/21 09:55	04/25/21 04:13	1

Client Sample ID: BLDG1-BIN9-SP-016
Date Collected: 04/20/21 11:45
Date Received: 04/21/21 10:00

Lab Sample ID: 480-183631-4
Matrix: Solid

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichloropropane	ND	vs	25	13	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
1,3-Dichlorobenzene	ND	vs	25	1.3	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
1,4-Dichlorobenzene	ND	vs	25	3.5	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
2-Butanone (MEK)	ND	vs	130	9.2	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
2-Hexanone	ND	vs	130	13	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
4-Methyl-2-pentanone (MIBK)	ND	vs	130	8.2	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
Acetone	**61**	**J vs**	130	21	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
Benzene	**1.7**	**J vs**	25	1.2	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
Bromodichloromethane	ND	vs	25	3.4	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
Bromoform	ND	vs	25	13	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
Bromomethane	ND	vs	25	2.3	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
Carbon disulfide	ND	vs	25	13	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
Carbon tetrachloride	ND	vs	25	2.4	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
Chlorobenzene	ND	vs	25	3.3	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
Dibromochloromethane	ND	vs	25	3.2	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
Chloroethane	ND	vs	25	5.7	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
Chloroform	ND	vs	25	1.5	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
Chloromethane	ND	vs	25	1.5	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
cis-1,2-Dichloroethene	ND	vs	25	3.2	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
cis-1,3-Dichloropropene	ND	vs	25	3.6	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
Cyclohexane	ND	vs	25	3.5	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
Dichlorodifluoromethane	ND	vs	25	2.1	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
Ethylbenzene	ND	vs	25	1.7	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
1,2-Dibromoethane	ND	vs	25	3.2	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
Isopropylbenzene	ND	vs	25	3.8	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
Methyl acetate	ND	vs	130	15	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
Methyl tert-butyl ether	ND	vs	25	2.5	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
Methylcyclohexane	ND	vs	25	3.8	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
Methylene Chloride	ND	vs	25	12	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
Styrene	**2.1**	**J vs**	25	1.3	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
Tetrachloroethene	ND	vs	25	3.4	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
Toluene	**2.0**	**J vs**	25	1.9	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
trans-1,2-Dichloroethene	ND	vs	25	2.6	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
trans-1,3-Dichloropropene	ND	vs	25	11	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
Trichloroethene	ND	vs	25	5.5	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
Trichlorofluoromethane	ND	vs	25	2.4	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
Vinyl chloride	ND	vs	25	3.1	ug/Kg		04/24/21 09:55	04/25/21 04:13	1
Xylenes, Total	ND	vs	50	4.2	ug/Kg		04/24/21 09:55	04/25/21 04:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*71 - 125*	*04/24/21 09:55*	*04/25/21 04:13*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*64 - 126*	*04/24/21 09:55*	*04/25/21 04:13*	*1*
4-Bromofluorobenzene (Surr)	*92*		*72 - 126*	*04/24/21 09:55*	*04/25/21 04:13*	*1*
Dibromofluoromethane (Surr)	*96*		*60 - 140*	*04/24/21 09:55*	*04/25/21 04:13*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biphenyl	ND		5000	730	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
bis (2-chloroisopropyl) ether	ND		5000	990	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
2,4,5-Trichlorophenol	ND		5000	1300	ug/Kg		04/23/21 10:13	04/26/21 21:04	5

Client Sample Results

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183631-1

Client Sample ID: BLDG1-BIN9-SP-016
Date Collected: 04/20/21 11:45
Date Received: 04/21/21 10:00

Lab Sample ID: 480-183631-4
Matrix: Solid

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	ND		5000	990	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
2,4-Dichlorophenol	ND		5000	520	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
2,4-Dimethylphenol	ND		5000	1200	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
2,4-Dinitrophenol	ND		48000	23000	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
2,4-Dinitrotoluene	ND		5000	1000	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
2,6-Dinitrotoluene	ND		5000	580	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
2-Chloronaphthalene	ND		5000	820	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
1,4-Dioxane	ND		2900	1600	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
2-Chlorophenol	ND		9600	900	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
2-Methylnaphthalene	ND		5000	990	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
2-Methylphenol	ND		5000	580	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
2-Nitroaniline	ND		9600	730	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
2-Nitrophenol	ND		5000	1400	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
3,3'-Dichlorobenzidine	ND		9600	5800	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
3-Nitroaniline	ND		9600	1400	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
4,6-Dinitro-2-methylphenol	ND		9600	5000	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
4-Bromophenyl phenyl ether	ND		5000	700	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
4-Chloro-3-methylphenol	ND		5000	1200	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
4-Chloroaniline	ND		5000	1200	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
4-Chlorophenyl phenyl ether	ND		5000	610	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
4-Methylphenol	ND		9600	580	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
4-Nitroaniline	ND		9600	2600	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
4-Nitrophenol	ND		9600	3500	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
Acenaphthene	ND		5000	730	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
Acenaphthylene	ND		5000	640	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
Acetophenone	ND		5000	670	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
Anthracene	ND		5000	1200	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
Atrazine	ND		5000	1700	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
Benzaldehyde	ND		5000	3900	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
Benzo[a]anthracene	ND		5000	500	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
Benzo[a]pyrene	ND		5000	730	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
Benzo[b]fluoranthene	ND		5000	790	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
Benzo[g,h,i]perylene	ND		5000	520	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
Benzo[k]fluoranthene	ND		5000	640	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
Bis(2-chloroethoxy)methane	ND		5000	1000	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
Bis(2-chloroethyl)ether	ND		5000	640	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
Bis(2-ethylhexyl) phthalate	ND		5000	1700	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
Butyl benzyl phthalate	ND		5000	820	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
Caprolactam	ND		5000	1500	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
Carbazole	ND		5000	580	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
Chrysene	ND		5000	1100	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
Di-n-butyl phthalate	ND		5000	840	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
Di-n-octyl phthalate	ND		5000	580	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
Dibenz(a,h)anthracene	ND		5000	870	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
Dibenzofuran	ND		5000	580	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
Diethyl phthalate	ND		5000	640	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
Dimethyl phthalate	ND		5000	580	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
Fluoranthene	ND		5000	520	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
Fluorene	ND		5000	580	ug/Kg		04/23/21 10:13	04/26/21 21:04	5

Client Sample ID: BLDG1-BIN9-SP-016
Date Collected: 04/20/21 11:45
Date Received: 04/21/21 10:00

Lab Sample ID: 480-183631-4
Matrix: Solid

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexachlorobenzene	ND		5000	670	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
Hexachlorobutadiene	ND		5000	730	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
Hexachlorocyclopentadiene	ND		5000	670	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
Hexachloroethane	ND		5000	640	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
Indeno[1,2,3-cd]pyrene	ND		5000	610	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
Isophorone	ND		5000	1000	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
N-Nitrosodi-n-propylamine	ND		5000	840	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
N-Nitrosodiphenylamine	ND		5000	4000	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
Naphthalene	ND		5000	640	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
Nitrobenzene	ND		5000	550	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
Pentachlorophenol	ND		9600	5000	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
Phenanthrene	ND		5000	730	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
Phenol	ND		5000	760	ug/Kg		04/23/21 10:13	04/26/21 21:04	5
Pyrene	ND		5000	580	ug/Kg		04/23/21 10:13	04/26/21 21:04	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*78*		*54 - 120*	*04/23/21 10:13*	*04/26/21 21:04*	*5*
2-Fluorobiphenyl	*84*		*60 - 120*	*04/23/21 10:13*	*04/26/21 21:04*	*5*
2-Fluorophenol	*72*		*52 - 120*	*04/23/21 10:13*	*04/26/21 21:04*	*5*
Nitrobenzene-d5	*72*		*53 - 120*	*04/23/21 10:13*	*04/26/21 21:04*	*5*
p-Terphenyl-d14	*97*		*79 - 130*	*04/23/21 10:13*	*04/26/21 21:04*	*5*
Phenol-d5	*72*		*54 - 120*	*04/23/21 10:13*	*04/26/21 21:04*	*5*

Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.10	0.0045	mg/L		04/26/21 14:45	04/27/21 15:13	1
2,4-Dinitrotoluene	ND		0.050	0.0043	mg/L		04/26/21 14:45	04/27/21 15:13	1
Hexachlorobenzene	ND		0.050	0.0050	mg/L		04/26/21 14:45	04/27/21 15:13	1
Hexachlorobutadiene	ND		0.050	0.0068	mg/L		04/26/21 14:45	04/27/21 15:13	1
Hexachloroethane	ND		0.050	0.0058	mg/L		04/26/21 14:45	04/27/21 15:13	1
3-Methylphenol	ND		0.10	0.0040	mg/L		04/26/21 14:45	04/27/21 15:13	1
2-Methylphenol	ND		0.050	0.0040	mg/L		04/26/21 14:45	04/27/21 15:13	1
4-Methylphenol	ND		0.10	0.0035	mg/L		04/26/21 14:45	04/27/21 15:13	1
Nitrobenzene	ND		0.050	0.0028	mg/L		04/26/21 14:45	04/27/21 15:13	1
Pentachlorophenol	ND		0.10	0.022	mg/L		04/26/21 14:45	04/27/21 15:13	1
Pyridine	ND		0.25	0.0040	mg/L		04/26/21 14:45	04/27/21 15:13	1
2,4,5-Trichlorophenol	ND		0.050	0.0048	mg/L		04/26/21 14:45	04/27/21 15:13	1
2,4,6-Trichlorophenol	ND		0.050	0.0060	mg/L		04/26/21 14:45	04/27/21 15:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*84*		*41 - 120*	*04/26/21 14:45*	*04/27/21 15:13*	*1*
2-Fluorobiphenyl	*101*		*48 - 120*	*04/26/21 14:45*	*04/27/21 15:13*	*1*
2-Fluorophenol	*51*		*35 - 120*	*04/26/21 14:45*	*04/27/21 15:13*	*1*
Nitrobenzene-d5	*94*		*46 - 120*	*04/26/21 14:45*	*04/27/21 15:13*	*1*
p-Terphenyl-d14	*104*		*60 - 148*	*04/26/21 14:45*	*04/27/21 15:13*	*1*
Phenol-d5	*35*		*22 - 120*	*04/26/21 14:45*	*04/27/21 15:13*	*1*

Method: 8081B - Organochlorine Pesticides (GC) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.00020	0.0000060	mg/L		04/26/21 10:21	04/28/21 11:13	1

Client Sample ID: BLDG1-BIN9-SP-016

Lab Sample ID: 480-183631-4
Date Collected: 04/20/21 11:45
Matrix: Solid
Date Received: 04/21/21 10:00

Method: 8081B - Organochlorine Pesticides (GC) - TCLP (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlordane (technical)	ND		0.0020	0.000029	mg/L		04/26/21 10:21	04/28/21 11:13	1
Endrin	ND		0.00020	0.000014	mg/L		04/26/21 10:21	04/28/21 11:13	1
Heptachlor	ND		0.00020	0.0000085	mg/L		04/26/21 10:21	04/28/21 11:13	1
Heptachlor epoxide	ND		0.00020	0.0000053	mg/L		04/26/21 10:21	04/28/21 11:13	1
Methoxychlor	ND		0.00020	0.000014	mg/L		04/26/21 10:21	04/28/21 11:13	1
Toxaphene	ND		0.0020	0.00012	mg/L		04/26/21 10:21	04/28/21 11:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*33*		*20 - 120*	*04/26/21 10:21*	*04/28/21 11:13*	*1*
DCB Decachlorobiphenyl	*41*		*20 - 120*	*04/26/21 10:21*	*04/28/21 11:13*	*1*
Tetrachloro-m-xylene	*82*		*44 - 120*	*04/26/21 10:21*	*04/28/21 11:13*	*1*
Tetrachloro-m-xylene	*72*		*44 - 120*	*04/26/21 10:21*	*04/28/21 11:13*	*1*

Method: 8151 - TCLP Herbicides - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND		0.0020	0.00036	mg/L		04/26/21 10:16	04/28/21 05:15	1
2,4-D	ND		0.0020	0.00040	mg/L		04/26/21 10:16	04/28/21 05:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*30*	*S1-*	*48 - 132*	*04/26/21 10:16*	*04/28/21 05:15*	*1*
2,4-Dichlorophenylacetic acid	*28*	*S1-*	*48 - 132*	*04/26/21 10:16*	*04/28/21 05:15*	*1*

Method: 6010C - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.030	0.011	mg/L		04/26/21 10:40	04/27/21 19:30	2
Barium	ND		1.0	0.10	mg/L		04/26/21 10:40	04/27/21 19:03	1
Cadmium	ND		0.0040	0.0010	mg/L		04/26/21 10:40	04/27/21 19:30	2
Chromium	**0.58**		0.040	0.020	mg/L		04/26/21 10:40	04/27/21 19:30	2
Lead	**0.080**		0.040	0.0060	mg/L		04/26/21 10:40	04/27/21 19:30	2
Selenium	**0.061**		0.050	0.017	mg/L		04/26/21 10:40	04/27/21 19:30	2
Silver	ND		0.012	0.0034	mg/L		04/26/21 10:40	04/27/21 19:30	2

Method: 7470A - TCLP Mercury - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		04/26/21 14:00	04/26/21 19:23	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Flashpoint	**>180**		50.0	50.0	Degrees F			04/27/21 17:05	1
pH	**8.0**	**HF**	0.1	0.1	SU			04/26/21 15:45	1
Temperature	**19.0**	**HF**	0.001	0.001	Degrees C			04/26/21 15:45	1

Client Sample ID: BLDG1-BIN8-SP-017

Lab Sample ID: 480-183631-5
Date Collected: 04/20/21 12:00
Matrix: Solid
Date Received: 04/21/21 10:00

Method: 8260C - TCLP Volatiles - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.010	0.0041	mg/L			04/28/21 01:32	10
Carbon tetrachloride	ND		0.010	0.0027	mg/L			04/28/21 01:32	10
Chlorobenzene	ND		0.010	0.0075	mg/L			04/28/21 01:32	10

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183631-1

Client Sample ID: BLDG1-BIN8-SP-017
Date Collected: 04/20/21 12:00
Date Received: 04/21/21 10:00

Lab Sample ID: 480-183631-5
Matrix: Solid

Method: 8260C - TCLP Volatiles - TCLP (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroform	ND		0.010	0.0034	mg/L			04/28/21 01:32	10
1,2-Dichloroethane	ND		0.010	0.0021	mg/L			04/28/21 01:32	10
1,1-Dichloroethene	ND		0.010	0.0029	mg/L			04/28/21 01:32	10
2-Butanone (MEK)	ND		0.050	0.013	mg/L			04/28/21 01:32	10
Tetrachloroethene	ND		0.010	0.0036	mg/L			04/28/21 01:32	10
Trichloroethene	ND		0.010	0.0046	mg/L			04/28/21 01:32	10
Vinyl chloride	ND		0.010	0.0090	mg/L			04/28/21 01:32	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*77 - 120*		*04/28/21 01:32*	*10*
Toluene-d8 (Surr)	*109*		*80 - 120*		*04/28/21 01:32*	*10*
4-Bromofluorobenzene (Surr)	*114*		*73 - 120*		*04/28/21 01:32*	*10*
Dibromofluoromethane (Surr)	*119*		*75 - 123*		*04/28/21 01:32*	*10*

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND	vs	25	1.8	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
1,1,2,2-Tetrachloroethane	ND	vs F1	25	4.0	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
1,1,2-Trichloroethane	ND	vs	25	3.2	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	vs	25	5.6	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
1,1-Dichloroethane	ND	vs	25	3.0	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
1,1-Dichloroethene	ND	vs F1	25	3.0	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
1,2,4-Trichlorobenzene	ND	vs F1	25	1.5	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
1,2-Dibromo-3-Chloropropane	ND	vs F1 F2	25	12	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
1,2-Dichlorobenzene	ND	vs	25	1.9	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
1,2-Dichloroethane	ND	vs	25	1.2	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
1,2-Dichloropropane	ND	vs	25	12	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
1,3-Dichlorobenzene	ND	vs	25	1.3	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
1,4-Dichlorobenzene	ND	vs	25	3.5	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
2-Butanone (MEK)	ND	vs F1	120	9.1	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
2-Hexanone	ND	vs	120	12	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
4-Methyl-2-pentanone (MIBK)	ND	vs	120	8.1	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
Acetone	**62**	**J vs F1**	120	21	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
Benzene	**1.7**	**J vs**	25	1.2	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
Bromodichloromethane	ND	vs F1 F2	25	3.3	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
Bromoform	ND	vs F1 F2	25	12	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
Bromomethane	ND	vs	25	2.2	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
Carbon disulfide	ND	vs F1	25	12	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
Carbon tetrachloride	ND	vs F1	25	2.4	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
Chlorobenzene	ND	vs	25	3.3	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
Dibromochloromethane	ND	vs F1 F2	25	3.2	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
Chloroethane	ND	vs	25	5.6	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
Chloroform	ND	vs	25	1.5	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
Chloromethane	ND	vs	25	1.5	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
cis-1,2-Dichloroethene	ND	vs	25	3.2	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
cis-1,3-Dichloropropene	ND	vs F1 F2	25	3.6	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
Cyclohexane	ND	vs	25	3.5	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
Dichlorodifluoromethane	ND	vs	25	2.0	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
Ethylbenzene	ND	vs	25	1.7	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
1,2-Dibromoethane	ND	vs F1	25	3.2	ug/Kg		04/24/21 09:55	04/25/21 04:37	1

Client Sample Results

Client: Integral Consulting Inc
Job ID: 480-183631-1
Project/Site: Project EF1017

Client Sample ID: BLDG1-BIN8-SP-017
Lab Sample ID: 480-183631-5

Date Collected: 04/20/21 12:00
Matrix: Solid
Date Received: 04/21/21 10:00

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Isopropylbenzene	ND	vs	25	3.7	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
Methyl acetate	ND	vs	120	15	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
Methyl tert-butyl ether	ND	vs	25	2.4	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
Methylcyclohexane	ND	vs	25	3.8	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
Methylene Chloride	ND	vs	25	11	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
Styrene	**1.5**	**J vs**	25	1.2	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
Tetrachloroethene	ND	vs	25	3.3	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
Toluene	**2.1**	**J vs**	25	1.9	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
trans-1,2-Dichloroethene	ND	vs	25	2.6	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
trans-1,3-Dichloropropene	ND	vs F1 F2	25	11	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
Trichloroethene	ND	vs	25	5.4	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
Trichlorofluoromethane	ND	vs	25	2.3	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
Vinyl chloride	ND	vs	25	3.0	ug/Kg		04/24/21 09:55	04/25/21 04:37	1
Xylenes, Total	ND	vs	50	4.2	ug/Kg		04/24/21 09:55	04/25/21 04:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*71 - 125*	*04/24/21 09:55*	*04/25/21 04:37*	*1*
1,2-Dichloroethane-d4 (Surr)	*96*		*64 - 126*	*04/24/21 09:55*	*04/25/21 04:37*	*1*
4-Bromofluorobenzene (Surr)	*92*		*72 - 126*	*04/24/21 09:55*	*04/25/21 04:37*	*1*
Dibromofluoromethane (Surr)	*94*		*60 - 140*	*04/24/21 09:55*	*04/25/21 04:37*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biphenyl	ND		880	130	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
bis (2-chloroisopropyl) ether	ND		880	180	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
2,4,5-Trichlorophenol	ND		880	240	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
2,4,6-Trichlorophenol	ND		880	180	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
2,4-Dichlorophenol	ND		880	93	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
2,4-Dimethylphenol	ND		880	210	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
2,4-Dinitrophenol	ND		8600	4100	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
2,4-Dinitrotoluene	ND		880	180	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
2,6-Dinitrotoluene	ND		880	100	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
2-Chloronaphthalene	ND		880	150	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
1,4-Dioxane	ND		520	280	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
2-Chlorophenol	ND		1700	160	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
2-Methylnaphthalene	ND		880	180	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
2-Methylphenol	ND		880	100	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
2-Nitroaniline	ND		1700	130	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
2-Nitrophenol	ND		880	250	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
3,3'-Dichlorobenzidine	ND		1700	1000	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
3-Nitroaniline	ND		1700	240	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
4,6-Dinitro-2-methylphenol	ND		1700	880	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
4-Bromophenyl phenyl ether	ND		880	120	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
4-Chloro-3-methylphenol	ND		880	220	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
4-Chloroaniline	ND		880	220	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
4-Chlorophenyl phenyl ether	ND		880	110	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
4-Methylphenol	ND		1700	100	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
4-Nitroaniline	ND		1700	460	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
4-Nitrophenol	ND		1700	620	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
Acenaphthene	ND		880	130	ug/Kg		04/23/21 10:13	04/26/21 21:29	1

Client Sample Results

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183631-1

Client Sample ID: BLDG1-BIN8-SP-017

Lab Sample ID: 480-183631-5

Date Collected: 04/20/21 12:00
Matrix: Solid
Date Received: 04/21/21 10:00

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthylene	ND		880	110	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
Acetophenone	ND		880	120	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
Anthracene	ND		880	220	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
Atrazine	ND		880	310	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
Benzaldehyde	ND		880	700	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
Benzo[a]anthracene	ND		880	88	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
Benzo[a]pyrene	ND		880	130	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
Benzo[b]fluoranthene	ND		880	140	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
Benzo[g,h,i]perylene	ND		880	93	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
Benzo[k]fluoranthene	ND		880	110	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
Bis(2-chloroethoxy)methane	ND		880	190	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
Bis(2-chloroethyl)ether	ND		880	110	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
Bis(2-ethylhexyl) phthalate	**360**	**J**	880	300	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
Butyl benzyl phthalate	**390**	**J**	880	150	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
Caprolactam	ND		880	260	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
Carbazole	ND		880	100	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
Chrysene	ND		880	200	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
Di-n-butyl phthalate	ND		880	150	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
Di-n-octyl phthalate	**200**	**J**	880	100	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
Dibenz(a,h)anthracene	ND		880	160	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
Dibenzofuran	ND		880	100	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
Diethyl phthalate	ND		880	110	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
Dimethyl phthalate	ND		880	100	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
Fluoranthene	ND		880	93	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
Fluorene	ND		880	100	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
Hexachlorobenzene	ND		880	120	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
Hexachlorobutadiene	ND		880	130	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
Hexachlorocyclopentadiene	ND		880	120	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
Hexachloroethane	ND		880	110	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
Indeno[1,2,3-cd]pyrene	ND		880	110	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
Isophorone	ND		880	190	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
N-Nitrosodi-n-propylamine	ND		880	150	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
N-Nitrosodiphenylamine	ND		880	720	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
Naphthalene	ND		880	110	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
Nitrobenzene	ND		880	98	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
Pentachlorophenol	ND		1700	880	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
Phenanthrene	ND		880	130	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
Phenol	ND		880	130	ug/Kg		04/23/21 10:13	04/26/21 21:29	1
Pyrene	ND		880	100	ug/Kg		04/23/21 10:13	04/26/21 21:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*90*		*54 - 120*	*04/23/21 10:13*	*04/26/21 21:29*	*1*
2-Fluorobiphenyl	*89*		*60 - 120*	*04/23/21 10:13*	*04/26/21 21:29*	*1*
2-Fluorophenol	*77*		*52 - 120*	*04/23/21 10:13*	*04/26/21 21:29*	*1*
Nitrobenzene-d5	*82*		*53 - 120*	*04/23/21 10:13*	*04/26/21 21:29*	*1*
p-Terphenyl-d14	*98*		*79 - 130*	*04/23/21 10:13*	*04/26/21 21:29*	*1*
Phenol-d5	*79*		*54 - 120*	*04/23/21 10:13*	*04/26/21 21:29*	*1*

Client Sample ID: BLDG1-BIN8-SP-017

Lab Sample ID: 480-183631-5

Date Collected: 04/20/21 12:00

Matrix: Solid

Date Received: 04/21/21 10:00

Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.10	0.0045	mg/L		04/26/21 14:45	04/27/21 15:37	1
2,4-Dinitrotoluene	ND		0.050	0.0043	mg/L		04/26/21 14:45	04/27/21 15:37	1
Hexachlorobenzene	ND		0.050	0.0050	mg/L		04/26/21 14:45	04/27/21 15:37	1
Hexachlorobutadiene	ND		0.050	0.0068	mg/L		04/26/21 14:45	04/27/21 15:37	1
Hexachloroethane	ND		0.050	0.0058	mg/L		04/26/21 14:45	04/27/21 15:37	1
3-Methylphenol	ND		0.10	0.0040	mg/L		04/26/21 14:45	04/27/21 15:37	1
2-Methylphenol	ND		0.050	0.0040	mg/L		04/26/21 14:45	04/27/21 15:37	1
4-Methylphenol	ND		0.10	0.0035	mg/L		04/26/21 14:45	04/27/21 15:37	1
Nitrobenzene	ND		0.050	0.0028	mg/L		04/26/21 14:45	04/27/21 15:37	1
Pentachlorophenol	ND		0.10	0.022	mg/L		04/26/21 14:45	04/27/21 15:37	1
Pyridine	ND		0.25	0.0040	mg/L		04/26/21 14:45	04/27/21 15:37	1
2,4,5-Trichlorophenol	ND		0.050	0.0048	mg/L		04/26/21 14:45	04/27/21 15:37	1
2,4,6-Trichlorophenol	ND		0.050	0.0060	mg/L		04/26/21 14:45	04/27/21 15:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*83*		*41 - 120*	*04/26/21 14:45*	*04/27/21 15:37*	*1*
2-Fluorobiphenyl	*99*		*48 - 120*	*04/26/21 14:45*	*04/27/21 15:37*	*1*
2-Fluorophenol	*49*		*35 - 120*	*04/26/21 14:45*	*04/27/21 15:37*	*1*
Nitrobenzene-d5	*93*		*46 - 120*	*04/26/21 14:45*	*04/27/21 15:37*	*1*
p-Terphenyl-d14	*97*		*60 - 148*	*04/26/21 14:45*	*04/27/21 15:37*	*1*
Phenol-d5	*33*		*22 - 120*	*04/26/21 14:45*	*04/27/21 15:37*	*1*

Method: 8081B - Organochlorine Pesticides (GC) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.00020	0.0000060	mg/L		04/26/21 10:21	04/28/21 11:32	1
Chlordane (technical)	ND		0.0020	0.000029	mg/L		04/26/21 10:21	04/28/21 11:32	1
Endrin	ND		0.00020	0.000014	mg/L		04/26/21 10:21	04/28/21 11:32	1
Heptachlor	ND		0.00020	0.0000085	mg/L		04/26/21 10:21	04/28/21 11:32	1
Heptachlor epoxide	ND		0.00020	0.0000053	mg/L		04/26/21 10:21	04/28/21 11:32	1
Methoxychlor	ND		0.00020	0.000014	mg/L		04/26/21 10:21	04/28/21 11:32	1
Toxaphene	ND		0.0020	0.00012	mg/L		04/26/21 10:21	04/28/21 11:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*24*		*20 - 120*	*04/26/21 10:21*	*04/28/21 11:32*	*1*
DCB Decachlorobiphenyl	*28*		*20 - 120*	*04/26/21 10:21*	*04/28/21 11:32*	*1*
Tetrachloro-m-xylene	*70*		*44 - 120*	*04/26/21 10:21*	*04/28/21 11:32*	*1*
Tetrachloro-m-xylene	*65*		*44 - 120*	*04/26/21 10:21*	*04/28/21 11:32*	*1*

Method: 8151 - TCLP Herbicides - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND		0.0020	0.00036	mg/L		04/26/21 10:16	04/28/21 05:45	1
2,4-D	ND		0.0020	0.00040	mg/L		04/26/21 10:16	04/28/21 05:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*35*	*S1-*	*48 - 132*	*04/26/21 10:16*	*04/28/21 05:45*	*1*
2,4-Dichlorophenylacetic acid	*28*	*S1-*	*48 - 132*	*04/26/21 10:16*	*04/28/21 05:45*	*1*

Method: 6010C - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.030	0.011	mg/L		04/26/21 10:40	04/27/21 19:34	2
Barium	ND		1.0	0.10	mg/L		04/26/21 10:40	04/27/21 19:18	1

Client Sample ID: BLDG1-BIN8-SP-017

Lab Sample ID: 480-183631-5
Date Collected: 04/20/21 12:00
Matrix: Solid
Date Received: 04/21/21 10:00

Method: 6010C - Metals (ICP) - TCLP (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		0.0040	0.0010	mg/L		04/26/21 10:40	04/27/21 19:34	2
Chromium	**0.98**		0.040	0.020	mg/L		04/26/21 10:40	04/27/21 19:34	2
Lead	**0.090**		0.040	0.0060	mg/L		04/26/21 10:40	04/27/21 19:34	2
Selenium	**0.062**		0.050	0.017	mg/L		04/26/21 10:40	04/27/21 19:34	2
Silver	ND		0.012	0.0034	mg/L		04/26/21 10:40	04/27/21 19:34	2

Method: 7470A - TCLP Mercury - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		04/26/21 14:00	04/26/21 19:27	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Flashpoint	**>180**		50.0	50.0	Degrees F			04/27/21 17:05	1
pH	**8.2**	**HF**	0.1	0.1	SU			04/26/21 15:45	1
Temperature	**18.8**	**HF**	0.001	0.001	Degrees C			04/26/21 15:45	1

Client Sample ID: BLDG1-3RDOIL1-SP-018

Lab Sample ID: 480-183631-6
Date Collected: 04/20/21 14:00
Matrix: Waste
Date Received: 04/21/21 10:00

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		19	3.8	mg/Kg		04/26/21 07:24	04/28/21 01:30	5
PCB-1221	ND		19	3.8	mg/Kg		04/26/21 07:24	04/28/21 01:30	5
PCB-1232	ND		19	3.8	mg/Kg		04/26/21 07:24	04/28/21 01:30	5
PCB-1242	ND		19	3.8	mg/Kg		04/26/21 07:24	04/28/21 01:30	5
PCB-1248	ND		19	3.8	mg/Kg		04/26/21 07:24	04/28/21 01:30	5
PCB-1254	ND		19	0.90	mg/Kg		04/26/21 07:24	04/28/21 01:30	5
PCB-1260	ND		19	0.90	mg/Kg		04/26/21 07:24	04/28/21 01:30	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*214*	*S1+*	*60 - 154*	*04/26/21 07:24*	*04/28/21 01:30*	*5*
Tetrachloro-m-xylene	*90*		*60 - 154*	*04/26/21 07:24*	*04/28/21 01:30*	*5*
DCB Decachlorobiphenyl	*95*		*65 - 174*	*04/26/21 07:24*	*04/28/21 01:30*	*5*
DCB Decachlorobiphenyl	*79*		*65 - 174*	*04/26/21 07:24*	*04/28/21 01:30*	*5*

Client Sample ID: BLDG1-3RDOIL2-SP-019

Lab Sample ID: 480-183631-7
Date Collected: 04/20/21 14:20
Matrix: Waste
Date Received: 04/21/21 10:00

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		42	8.2	mg/Kg		04/26/21 07:24	04/28/21 01:46	10
PCB-1221	ND		42	8.2	mg/Kg		04/26/21 07:24	04/28/21 01:46	10
PCB-1232	ND		42	8.2	mg/Kg		04/26/21 07:24	04/28/21 01:46	10
PCB-1242	ND		42	8.2	mg/Kg		04/26/21 07:24	04/28/21 01:46	10
PCB-1248	ND		42	8.2	mg/Kg		04/26/21 07:24	04/28/21 01:46	10
PCB-1254	ND		42	2.0	mg/Kg		04/26/21 07:24	04/28/21 01:46	10
PCB-1260	ND		42	2.0	mg/Kg		04/26/21 07:24	04/28/21 01:46	10

Client Sample ID: BLDG1-3RDOIL2-SP-019
Lab Sample ID: 480-183631-7
Date Collected: 04/20/21 14:20
Matrix: Waste
Date Received: 04/21/21 10:00

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	*95*		*60 - 154*	*04/26/21 07:24*	*04/28/21 01:46*	*10*
Tetrachloro-m-xylene	*95*		*60 - 154*	*04/26/21 07:24*	*04/28/21 01:46*	*10*
DCB Decachlorobiphenyl	*106*		*65 - 174*	*04/26/21 07:24*	*04/28/21 01:46*	*10*
DCB Decachlorobiphenyl	*119*		*65 - 174*	*04/26/21 07:24*	*04/28/21 01:46*	*10*

Client Sample ID: BLDG1-2NDOIL3-SP-020
Lab Sample ID: 480-183631-8
Date Collected: 04/20/21 14:50
Matrix: Waste
Date Received: 04/21/21 10:00

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		36	7.0	mg/Kg		04/26/21 07:24	04/28/21 02:02	10
PCB-1221	ND		36	7.0	mg/Kg		04/26/21 07:24	04/28/21 02:02	10
PCB-1232	ND		36	7.0	mg/Kg		04/26/21 07:24	04/28/21 02:02	10
PCB-1242	ND		36	7.0	mg/Kg		04/26/21 07:24	04/28/21 02:02	10
PCB-1248	ND		36	7.0	mg/Kg		04/26/21 07:24	04/28/21 02:02	10
PCB-1254	ND		36	1.7	mg/Kg		04/26/21 07:24	04/28/21 02:02	10
PCB-1260	ND		36	1.7	mg/Kg		04/26/21 07:24	04/28/21 02:02	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	*934*	*S1+*	*60 - 154*	*04/26/21 07:24*	*04/28/21 02:02*	*10*
Tetrachloro-m-xylene	*40*	*S1-*	*60 - 154*	*04/26/21 07:24*	*04/28/21 02:02*	*10*
DCB Decachlorobiphenyl	*99*		*65 - 174*	*04/26/21 07:24*	*04/28/21 02:02*	*10*
DCB Decachlorobiphenyl	*115*		*65 - 174*	*04/26/21 07:24*	*04/28/21 02:02*	*10*

Surrogate Summary

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183631-1

Method: 8260C - TCLP Volatiles

Matrix: Solid

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		TOL	DCA	BFB	DBFM
Lab Sample ID	Client Sample ID	(80-120)	(77-120)	(73-120)	(75-123)
LCS 480-578098/6	Lab Control Sample	107	106	109	109
MB 480-578098/8	Method Blank	113	118	112	120

Surrogate Legend

TOL = Toluene-d8 (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260C - TCLP Volatiles

Matrix: Solid

Prep Type: TCLP

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	TOL	BFB	DBFM
Lab Sample ID	Client Sample ID	(77-120)	(80-120)	(73-120)	(75-123)
480-183631-1	BLDG1-BIN12-SP-013	112	111	112	113
480-183631-2	BLDG1-BIN11-SP-014	110	108	106	108
480-183631-3	BLDG1-BIN10-SP-015	118	108	112	116
480-183631-4	BLDG1-BIN9-SP-016	111	108	108	113
480-183631-5	BLDG1-BIN8-SP-017	116	109	114	119
LB 480-577814/1-A	Method Blank	114	109	109	112

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Solid

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		TOL	DCA	BFB	DBFM
Lab Sample ID	Client Sample ID	(71-125)	(64-126)	(72-126)	(60-140)
480-183631-1	BLDG1-BIN12-SP-013	100	103	93	97
480-183631-2	BLDG1-BIN11-SP-014	99	103	96	99
480-183631-3	BLDG1-BIN10-SP-015	99	101	96	97
480-183631-4	BLDG1-BIN9-SP-016	101	101	92	96
480-183631-5	BLDG1-BIN8-SP-017	101	96	92	94
480-183631-5 MS	BLDG1-BIN8-SP-017	104	90	91	96
480-183631-5 MSD	BLDG1-BIN8-SP-017	102	89	93	91
LCS 480-577496/1-A	Lab Control Sample	100	98	97	100
LCS 480-577756/1-A	Lab Control Sample	98	101	97	99
MB 480-577496/2-A	Method Blank	99	103	98	97
MB 480-577756/2-A	Method Blank	98	104	97	100

Surrogate Legend

TOL = Toluene-d8 (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)

Surrogate Summary

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183631-1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)					
		TBP	FBP	2FP	NBZ	TPHd14	PHL
Lab Sample ID	**Client Sample ID**	**(54-120)**	**(60-120)**	**(52-120)**	**(53-120)**	**(79-130)**	**(54-120)**
480-183631-1	BLDG1-BIN12-SP-013	75	80	75	67	95	70
480-183631-2	BLDG1-BIN11-SP-014	79	82	68	75	98	76
480-183631-3	BLDG1-BIN10-SP-015	88	103	93	96	119	95
480-183631-4	BLDG1-BIN9-SP-016	78	84	72	72	97	72
480-183631-5	BLDG1-BIN8-SP-017	90	89	77	82	98	79
LCS 480-577604/2-A	Lab Control Sample	102	92	85	87	105	89
MB 480-577604/1-A	Method Blank	78	78	73	76	99	75

Surrogate Legend

TBP = 2,4,6-Tribromophenol
FBP = 2-Fluorobiphenyl
2FP = 2-Fluorophenol
NBZ = Nitrobenzene-d5
TPHd14 = p-Terphenyl-d14
PHL = Phenol-d5

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)					
		TBP	FBP	2FP	NBZ	TPHd14	PHL
Lab Sample ID	**Client Sample ID**	**(41-120)**	**(48-120)**	**(35-120)**	**(46-120)**	**(60-148)**	**(22-120)**
LCS 480-577984/2-A	Lab Control Sample	93	102	49	91	110	32
LCSD 480-577984/3-A	Lab Control Sample Dup	94	107	53	98	111	35
MB 480-577984/1-A	Method Blank	80	104	51	95	115	34

Surrogate Legend

TBP = 2,4,6-Tribromophenol
FBP = 2-Fluorobiphenyl
2FP = 2-Fluorophenol
NBZ = Nitrobenzene-d5
TPHd14 = p-Terphenyl-d14
PHL = Phenol-d5

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Solid **Prep Type: TCLP**

		Percent Surrogate Recovery (Acceptance Limits)					
		TBP	FBP	2FP	NBZ	TPHd14	PHL
Lab Sample ID	**Client Sample ID**	**(41-120)**	**(48-120)**	**(35-120)**	**(46-120)**	**(60-148)**	**(22-120)**
480-183631-1	BLDG1-BIN12-SP-013	98	107	55	100	91	37
480-183631-2	BLDG1-BIN11-SP-014	85	105	51	99	118	34
480-183631-3	BLDG1-BIN10-SP-015	85	97	48	90	110	33
480-183631-4	BLDG1-BIN9-SP-016	84	101	51	94	104	35
480-183631-5	BLDG1-BIN8-SP-017	83	99	49	93	97	33
LB 480-577812/1-F	Method Blank	81	102	50	96	113	33

Surrogate Legend

TBP = 2,4,6-Tribromophenol
FBP = 2-Fluorobiphenyl
2FP = 2-Fluorophenol
NBZ = Nitrobenzene-d5

TPHd14 = p-Terphenyl-d14

PHL = Phenol-d5

Method: 8081B - Organochlorine Pesticides (GC)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCBP1	DCBP2	TCX1	TCX2
Lab Sample ID	Client Sample ID	(20-120)	(20-120)	(44-120)	(44-120)
LCS 480-577920/2-A	Lab Control Sample	34	35	85	80
LCSD 480-577920/3-A	Lab Control Sample Dup	33	35	85	81
MB 480-577920/1-A	Method Blank	41	40	87	80

Surrogate Legend

DCBP = DCB Decachlorobiphenyl

TCX = Tetrachloro-m-xylene

Method: 8081B - Organochlorine Pesticides (GC)

Matrix: Solid **Prep Type: TCLP**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCBP1	DCBP2	TCX1	TCX2
Lab Sample ID	Client Sample ID	(20-120)	(20-120)	(44-120)	(44-120)
480-183631-1	BLDG1-BIN12-SP-013	43	57	86	78
480-183631-2	BLDG1-BIN11-SP-014	63	69	90	88
480-183631-3	BLDG1-BIN10-SP-015	46	57	81	82
480-183631-4	BLDG1-BIN9-SP-016	33	41	82	72
480-183631-5	BLDG1-BIN8-SP-017	24	28	70	65
LB 480-577812/1-C	Method Blank	67	68	92	85

Surrogate Legend

DCBP = DCB Decachlorobiphenyl

TCX = Tetrachloro-m-xylene

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Matrix: Waste **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		TCX1	TCX2	DCBP1	DCBP2
Lab Sample ID	Client Sample ID	(60-154)	(60-154)	(65-174)	(65-174)
480-183631-6	BLDG1-3RDOIL1-SP-018	214 S1+	90	95	79
480-183631-7	BLDG1-3RDOIL2-SP-019	95	95	106	119
480-183631-8	BLDG1-2NDOIL3-SP-020	934 S1+	40 S1-	99	115
LCS 480-577855/2-A	Lab Control Sample	77	83	107	122
MB 480-577855/1-A	Method Blank	73	79	102	124

Surrogate Legend

TCX = Tetrachloro-m-xylene

DCBP = DCB Decachlorobiphenyl

Method: 8151 - TCLP Herbicides

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
		DCPAA1	DCPAA2
Lab Sample ID	Client Sample ID	(48-132)	(48-132)
LCS 480-577918/2-A	Lab Control Sample	61	71
LCSD 480-577918/3-A	Lab Control Sample Dup	54	53
MB 480-577918/1-A	Method Blank	49	69

Surrogate Legend

DCPAA = 2,4-Dichlorophenylacetic acid

Method: 8151 - TCLP Herbicides

Matrix: Solid **Prep Type: TCLP**

		Percent Surrogate Recovery (Acceptance Limits)	
		DCPAA1	DCPAA2
Lab Sample ID	Client Sample ID	(48-132)	(48-132)
480-183631-1	BLDG1-BIN12-SP-013	38 S1-	25 S1-
480-183631-2	BLDG1-BIN11-SP-014	21 S1-	20 S1-
480-183631-3	BLDG1-BIN10-SP-015	29 S1-	38 S1-
480-183631-4	BLDG1-BIN9-SP-016	30 S1-	28 S1-
480-183631-5	BLDG1-BIN8-SP-017	35 S1-	28 S1-
LB 480-577812/1-B	Method Blank	27 S1-	27 S1-

Surrogate Legend

DCPAA = 2,4-Dichlorophenylacetic acid

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183631-1

Method: 8260C - TCLP Volatiles

Lab Sample ID: MB 480-578098/8
Matrix: Solid
Analysis Batch: 578098

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.0010	0.00029	mg/L			04/27/21 23:09	1
1,2-Dichloroethane	ND		0.0010	0.00021	mg/L			04/27/21 23:09	1
2-Butanone (MEK)	ND		0.0050	0.0013	mg/L			04/27/21 23:09	1
Benzene	ND		0.0010	0.00041	mg/L			04/27/21 23:09	1
Carbon tetrachloride	ND		0.0010	0.00027	mg/L			04/27/21 23:09	1
Chlorobenzene	ND		0.0010	0.00075	mg/L			04/27/21 23:09	1
Chloroform	ND		0.0010	0.00034	mg/L			04/27/21 23:09	1
Tetrachloroethene	ND		0.0010	0.00036	mg/L			04/27/21 23:09	1
Trichloroethene	ND		0.0010	0.00046	mg/L			04/27/21 23:09	1
Vinyl chloride	ND		0.0010	0.00090	mg/L			04/27/21 23:09	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*113*		*80 - 120*		*04/27/21 23:09*	*1*
1,2-Dichloroethane-d4 (Surr)	*118*		*77 - 120*		*04/27/21 23:09*	*1*
4-Bromofluorobenzene (Surr)	*112*		*73 - 120*		*04/27/21 23:09*	*1*
Dibromofluoromethane (Surr)	*120*		*75 - 123*		*04/27/21 23:09*	*1*

Lab Sample ID: LCS 480-578098/6
Matrix: Solid
Analysis Batch: 578098

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	0.0250	0.0234		mg/L		94	66 - 127
1,2-Dichloroethane	0.0250	0.0250		mg/L		100	75 - 120
2-Butanone (MEK)	0.125	0.119		mg/L		95	57 - 140
Benzene	0.0250	0.0257		mg/L		103	71 - 124
Carbon tetrachloride	0.0250	0.0275		mg/L		110	72 - 134
Chlorobenzene	0.0250	0.0269		mg/L		108	80 - 120
Chloroform	0.0250	0.0248		mg/L		99	73 - 127
Tetrachloroethene	0.0250	0.0253		mg/L		101	74 - 122
Trichloroethene	0.0250	0.0266		mg/L		106	74 - 123
Vinyl chloride	0.0250	0.0226		mg/L		90	65 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*107*		*80 - 120*
1,2-Dichloroethane-d4 (Surr)	*106*		*77 - 120*
4-Bromofluorobenzene (Surr)	*109*		*73 - 120*
Dibromofluoromethane (Surr)	*109*		*75 - 123*

Lab Sample ID: LB 480-577814/1-A
Matrix: Solid
Analysis Batch: 578098

Client Sample ID: Method Blank
Prep Type: TCLP

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.010	0.0029	mg/L			04/27/21 23:32	10
1,2-Dichloroethane	ND		0.010	0.0021	mg/L			04/27/21 23:32	10
2-Butanone (MEK)	ND		0.050	0.013	mg/L			04/27/21 23:32	10
Benzene	ND		0.010	0.0041	mg/L			04/27/21 23:32	10

Method: 8260C - TCLP Volatiles (Continued)

Lab Sample ID: LB 480-577814/1-A
Matrix: Solid
Analysis Batch: 578098

Client Sample ID: Method Blank
Prep Type: TCLP

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	ND		0.010	0.0027	mg/L			04/27/21 23:32	10
Chlorobenzene	ND		0.010	0.0075	mg/L			04/27/21 23:32	10
Chloroform	ND		0.010	0.0034	mg/L			04/27/21 23:32	10
Tetrachloroethene	ND		0.010	0.0036	mg/L			04/27/21 23:32	10
Trichloroethene	ND		0.010	0.0046	mg/L			04/27/21 23:32	10
Vinyl chloride	ND		0.010	0.0090	mg/L			04/27/21 23:32	10

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*109*		*80 - 120*		*04/27/21 23:32*	*10*
1,2-Dichloroethane-d4 (Surr)	*114*		*77 - 120*		*04/27/21 23:32*	*10*
4-Bromofluorobenzene (Surr)	*109*		*73 - 120*		*04/27/21 23:32*	*10*
Dibromofluoromethane (Surr)	*112*		*75 - 123*		*04/27/21 23:32*	*10*

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 480-577496/2-A
Matrix: Solid
Analysis Batch: 577732

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 577496

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5.0	0.36	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
1,1,2,2-Tetrachloroethane	ND		5.0	0.81	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
1,1,2-Trichloroethane	ND		5.0	0.65	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		5.0	1.1	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
1,1-Dichloroethane	ND		5.0	0.61	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
1,1-Dichloroethene	ND		5.0	0.61	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
1,2,4-Trichlorobenzene	ND		5.0	0.30	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
1,2-Dibromo-3-Chloropropane	ND		5.0	2.5	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
1,2-Dichlorobenzene	ND		5.0	0.39	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
1,2-Dichloroethane	ND		5.0	0.25	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
1,2-Dichloropropane	ND		5.0	2.5	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
1,3-Dichlorobenzene	ND		5.0	0.26	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
1,4-Dichlorobenzene	ND		5.0	0.70	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
2-Butanone (MEK)	ND		25	1.8	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
2-Hexanone	ND		25	2.5	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
4-Methyl-2-pentanone (MIBK)	ND		25	1.6	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
Acetone	ND		25	4.2	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
Benzene	ND		5.0	0.25	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
Bromodichloromethane	ND		5.0	0.67	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
Bromoform	ND		5.0	2.5	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
Bromomethane	ND		5.0	0.45	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
Carbon disulfide	ND		5.0	2.5	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
Carbon tetrachloride	ND		5.0	0.48	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
Chlorobenzene	ND		5.0	0.66	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
Dibromochloromethane	ND		5.0	0.64	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
Chloroethane	ND		5.0	1.1	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
Chloroform	ND		5.0	0.31	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
Chloromethane	ND		5.0	0.30	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
cis-1,2-Dichloroethene	ND		5.0	0.64	ug/Kg		04/22/21 18:06	04/24/21 09:29	1

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 480-577496/2-A
Client Sample ID: Method Blank
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 577732
Prep Batch: 577496

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,3-Dichloropropene	ND		5.0	0.72	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
Cyclohexane	ND		5.0	0.70	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
Dichlorodifluoromethane	ND		5.0	0.41	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
Ethylbenzene	ND		5.0	0.35	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
1,2-Dibromoethane	ND		5.0	0.64	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
Isopropylbenzene	ND		5.0	0.75	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
Methyl acetate	ND		25	3.0	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
Methyl tert-butyl ether	ND		5.0	0.49	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
Methylcyclohexane	ND		5.0	0.76	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
Methylene Chloride	ND		5.0	2.3	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
Styrene	0.265	J	5.0	0.25	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
Tetrachloroethene	ND		5.0	0.67	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
Toluene	ND		5.0	0.38	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
trans-1,2-Dichloroethene	ND		5.0	0.52	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
trans-1,3-Dichloropropene	ND		5.0	2.2	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
Trichloroethene	ND		5.0	1.1	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
Trichlorofluoromethane	ND		5.0	0.47	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
Vinyl chloride	ND		5.0	0.61	ug/Kg		04/22/21 18:06	04/24/21 09:29	1
Xylenes, Total	ND		10	0.84	ug/Kg		04/22/21 18:06	04/24/21 09:29	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*71 - 125*	*04/22/21 18:06*	*04/24/21 09:29*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*64 - 126*	*04/22/21 18:06*	*04/24/21 09:29*	*1*
4-Bromofluorobenzene (Surr)	*98*		*72 - 126*	*04/22/21 18:06*	*04/24/21 09:29*	*1*
Dibromofluoromethane (Surr)	*97*		*60 - 140*	*04/22/21 18:06*	*04/24/21 09:29*	*1*

Lab Sample ID: LCS 480-577496/1-A
Client Sample ID: Lab Control Sample
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 577732
Prep Batch: 577496

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	50.0	48.9		ug/Kg		98	77 - 121
1,1,2,2-Tetrachloroethane	50.0	51.7		ug/Kg		103	80 - 120
1,1,2-Trichloroethane	50.0	48.3		ug/Kg		97	78 - 122
1,1,2-Trichloro-1,2,2-trifluoroethane	50.0	48.6		ug/Kg		97	60 - 140
1,1-Dichloroethane	50.0	48.3		ug/Kg		97	73 - 126
1,1-Dichloroethene	50.0	48.9		ug/Kg		98	59 - 125
1,2,4-Trichlorobenzene	50.0	50.4		ug/Kg		101	64 - 120
1,2-Dibromo-3-Chloropropane	50.0	54.7		ug/Kg		109	63 - 124
1,2-Dichlorobenzene	50.0	48.9		ug/Kg		98	75 - 120
1,2-Dichloroethane	50.0	46.7		ug/Kg		93	77 - 122
1,2-Dichloropropane	50.0	47.2		ug/Kg		94	75 - 124
1,3-Dichlorobenzene	50.0	48.0		ug/Kg		96	74 - 120
1,4-Dichlorobenzene	50.0	48.2		ug/Kg		96	73 - 120
2-Butanone (MEK)	250	250		ug/Kg		100	70 - 134
2-Hexanone	250	253		ug/Kg		101	59 - 130
4-Methyl-2-pentanone (MIBK)	250	258		ug/Kg		103	65 - 133
Acetone	250	247		ug/Kg		99	61 - 137

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 480-577496/1-A
Matrix: Solid
Analysis Batch: 577732

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 577496

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	50.0	47.8		ug/Kg		96	79 - 127
Bromodichloromethane	50.0	49.8		ug/Kg		100	80 - 122
Bromoform	50.0	46.7		ug/Kg		93	68 - 126
Bromomethane	50.0	51.3		ug/Kg		103	37 - 149
Carbon disulfide	50.0	49.3		ug/Kg		99	64 - 131
Carbon tetrachloride	50.0	50.1		ug/Kg		100	75 - 135
Chlorobenzene	50.0	47.2		ug/Kg		94	76 - 124
Dibromochloromethane	50.0	52.2		ug/Kg		104	76 - 125
Chloroethane	50.0	51.6		ug/Kg		103	69 - 135
Chloroform	50.0	47.6		ug/Kg		95	80 - 120
Chloromethane	50.0	51.1		ug/Kg		102	63 - 127
cis-1,2-Dichloroethene	50.0	48.6		ug/Kg		97	81 - 120
cis-1,3-Dichloropropene	50.0	49.2		ug/Kg		98	80 - 120
Cyclohexane	50.0	48.6		ug/Kg		97	65 - 120
Dichlorodifluoromethane	50.0	48.1		ug/Kg		96	57 - 142
Ethylbenzene	50.0	48.2		ug/Kg		96	80 - 120
1,2-Dibromoethane	50.0	48.5		ug/Kg		97	78 - 120
Isopropylbenzene	50.0	50.7		ug/Kg		101	72 - 120
Methyl acetate	100	99.3		ug/Kg		99	55 - 136
Methyl tert-butyl ether	50.0	50.7		ug/Kg		101	63 - 125
Methylcyclohexane	50.0	47.3		ug/Kg		95	60 - 140
Methylene Chloride	50.0	51.6		ug/Kg		103	61 - 127
Styrene	50.0	46.6		ug/Kg		93	80 - 120
Tetrachloroethene	50.0	47.4		ug/Kg		95	74 - 122
Toluene	50.0	47.7		ug/Kg		95	74 - 128
trans-1,2-Dichloroethene	50.0	48.8		ug/Kg		98	78 - 126
trans-1,3-Dichloropropene	50.0	50.4		ug/Kg		101	73 - 123
Trichloroethene	50.0	47.0		ug/Kg		94	77 - 129
Trichlorofluoromethane	50.0	48.5		ug/Kg		97	65 - 146
Vinyl chloride	50.0	53.1		ug/Kg		106	61 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*100*		*71 - 125*
1,2-Dichloroethane-d4 (Surr)	*98*		*64 - 126*
4-Bromofluorobenzene (Surr)	*97*		*72 - 126*
Dibromofluoromethane (Surr)	*100*		*60 - 140*

Lab Sample ID: MB 480-577756/2-A
Matrix: Solid
Analysis Batch: 577759

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 577756

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5.0	0.36	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
1,1,2,2-Tetrachloroethane	ND		5.0	0.81	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
1,1,2-Trichloroethane	ND		5.0	0.65	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		5.0	1.1	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
1,1-Dichloroethane	ND		5.0	0.61	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
1,1-Dichloroethene	ND		5.0	0.61	ug/Kg		04/24/21 09:55	04/24/21 20:51	1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 480-577756/2-A
Matrix: Solid
Analysis Batch: 577759

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 577756

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	ND		5.0	0.30	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
1,2-Dibromo-3-Chloropropane	ND		5.0	2.5	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
1,2-Dichlorobenzene	ND		5.0	0.39	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
1,2-Dichloroethane	ND		5.0	0.25	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
1,2-Dichloropropane	ND		5.0	2.5	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
1,3-Dichlorobenzene	ND		5.0	0.26	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
1,4-Dichlorobenzene	ND		5.0	0.70	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
2-Butanone (MEK)	ND		25	1.8	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
2-Hexanone	ND		25	2.5	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
4-Methyl-2-pentanone (MIBK)	ND		25	1.6	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
Acetone	ND		25	4.2	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
Benzene	ND		5.0	0.25	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
Bromodichloromethane	ND		5.0	0.67	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
Bromoform	ND		5.0	2.5	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
Bromomethane	ND		5.0	0.45	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
Carbon disulfide	ND		5.0	2.5	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
Carbon tetrachloride	ND		5.0	0.48	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
Chlorobenzene	ND		5.0	0.66	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
Dibromochloromethane	ND		5.0	0.64	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
Chloroethane	ND		5.0	1.1	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
Chloroform	ND		5.0	0.31	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
Chloromethane	ND		5.0	0.30	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
cis-1,2-Dichloroethene	ND		5.0	0.64	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
cis-1,3-Dichloropropene	ND		5.0	0.72	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
Cyclohexane	ND		5.0	0.70	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
Dichlorodifluoromethane	ND		5.0	0.41	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
Ethylbenzene	ND		5.0	0.35	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
1,2-Dibromoethane	ND		5.0	0.64	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
Isopropylbenzene	ND		5.0	0.75	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
Methyl acetate	ND		25	3.0	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
Methyl tert-butyl ether	ND		5.0	0.49	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
Methylcyclohexane	ND		5.0	0.76	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
Methylene Chloride	ND		5.0	2.3	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
Styrene	ND		5.0	0.25	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
Tetrachloroethene	ND		5.0	0.67	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
Toluene	ND		5.0	0.38	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
trans-1,2-Dichloroethene	ND		5.0	0.52	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
trans-1,3-Dichloropropene	ND		5.0	2.2	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
Trichloroethene	ND		5.0	1.1	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
Trichlorofluoromethane	ND		5.0	0.47	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
Vinyl chloride	ND		5.0	0.61	ug/Kg		04/24/21 09:55	04/24/21 20:51	1
Xylenes, Total	ND		10	0.84	ug/Kg		04/24/21 09:55	04/24/21 20:51	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*71 - 125*	*04/24/21 09:55*	*04/24/21 20:51*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*64 - 126*	*04/24/21 09:55*	*04/24/21 20:51*	*1*
4-Bromofluorobenzene (Surr)	*97*		*72 - 126*	*04/24/21 09:55*	*04/24/21 20:51*	*1*
Dibromofluoromethane (Surr)	*100*		*60 - 140*	*04/24/21 09:55*	*04/24/21 20:51*	*1*

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 480-577756/1-A
Matrix: Solid
Analysis Batch: 577759

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 577756

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	50.0	47.6		ug/Kg		95	77 - 121
1,1,2,2-Tetrachloroethane	50.0	49.7		ug/Kg		99	80 - 120
1,1,2-Trichloroethane	50.0	49.4		ug/Kg		99	78 - 122
1,1,2-Trichloro-1,2,2-trifluoroethane	50.0	45.3		ug/Kg		91	60 - 140
1,1-Dichloroethane	50.0	48.3		ug/Kg		97	73 - 126
1,1-Dichloroethene	50.0	45.2		ug/Kg		90	59 - 125
1,2,4-Trichlorobenzene	50.0	44.3		ug/Kg		89	64 - 120
1,2-Dibromo-3-Chloropropane	50.0	52.4		ug/Kg		105	63 - 124
1,2-Dichlorobenzene	50.0	47.6		ug/Kg		95	75 - 120
1,2-Dichloroethane	50.0	49.1		ug/Kg		98	77 - 122
1,2-Dichloropropane	50.0	50.6		ug/Kg		101	75 - 124
1,3-Dichlorobenzene	50.0	47.3		ug/Kg		95	74 - 120
1,4-Dichlorobenzene	50.0	47.5		ug/Kg		95	73 - 120
2-Butanone (MEK)	250	258		ug/Kg		103	70 - 134
2-Hexanone	250	256		ug/Kg		103	59 - 130
4-Methyl-2-pentanone (MIBK)	250	254		ug/Kg		101	65 - 133
Acetone	250	235		ug/Kg		94	61 - 137
Benzene	50.0	48.7		ug/Kg		97	79 - 127
Bromodichloromethane	50.0	51.6		ug/Kg		103	80 - 122
Bromoform	50.0	47.1		ug/Kg		94	68 - 126
Bromomethane	50.0	46.6		ug/Kg		93	37 - 149
Carbon disulfide	50.0	46.1		ug/Kg		92	64 - 131
Carbon tetrachloride	50.0	48.5		ug/Kg		97	75 - 135
Chlorobenzene	50.0	47.8		ug/Kg		96	76 - 124
Dibromochloromethane	50.0	53.5		ug/Kg		107	76 - 125
Chloroethane	50.0	46.8		ug/Kg		94	69 - 135
Chloroform	50.0	47.8		ug/Kg		96	80 - 120
Chloromethane	50.0	44.7		ug/Kg		89	63 - 127
cis-1,2-Dichloroethene	50.0	47.8		ug/Kg		96	81 - 120
cis-1,3-Dichloropropene	50.0	51.8		ug/Kg		104	80 - 120
Cyclohexane	50.0	46.4		ug/Kg		93	65 - 120
Dichlorodifluoromethane	50.0	43.7		ug/Kg		87	57 - 142
Ethylbenzene	50.0	46.7		ug/Kg		93	80 - 120
1,2-Dibromoethane	50.0	49.6		ug/Kg		99	78 - 120
Isopropylbenzene	50.0	47.8		ug/Kg		96	72 - 120
Methyl acetate	100	103		ug/Kg		103	55 - 136
Methyl tert-butyl ether	50.0	48.4		ug/Kg		97	63 - 125
Methylcyclohexane	50.0	46.5		ug/Kg		93	60 - 140
Methylene Chloride	50.0	49.8		ug/Kg		100	61 - 127
Styrene	50.0	47.4		ug/Kg		95	80 - 120
Tetrachloroethene	50.0	45.5		ug/Kg		91	74 - 122
Toluene	50.0	47.4		ug/Kg		95	74 - 128
trans-1,2-Dichloroethene	50.0	47.2		ug/Kg		94	78 - 126
trans-1,3-Dichloropropene	50.0	51.1		ug/Kg		102	73 - 123
Trichloroethene	50.0	48.5		ug/Kg		97	77 - 129
Trichlorofluoromethane	50.0	44.5		ug/Kg		89	65 - 146
Vinyl chloride	50.0	46.9		ug/Kg		94	61 - 133

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 480-577756/1-A
Matrix: Solid
Analysis Batch: 577759

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 577756

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*98*		*71 - 125*
1,2-Dichloroethane-d4 (Surr)	*101*		*64 - 126*
4-Bromofluorobenzene (Surr)	*97*		*72 - 126*
Dibromofluoromethane (Surr)	*99*		*60 - 140*

Lab Sample ID: 480-183631-5 MS
Matrix: Solid
Analysis Batch: 577759

Client Sample ID: BLDG1-BIN8-SP-017
Prep Type: Total/NA
Prep Batch: 577756

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	ND	vs	243	206	vs	ug/Kg		85	77 - 121
1,1,2,2-Tetrachloroethane	ND	vs F1	243	186	vs F1	ug/Kg		77	80 - 120
1,1,2-Trichloroethane	ND	vs	243	208	vs	ug/Kg		86	78 - 122
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	vs	243	208	vs	ug/Kg		86	60 - 140
1,1-Dichloroethane	ND	vs	243	253	vs	ug/Kg		104	73 - 126
1,1-Dichloroethene	ND	vs F1	243	327	vs F1	ug/Kg		135	59 - 125
1,2,4-Trichlorobenzene	ND	vs F1	243	129	vs F1	ug/Kg		53	64 - 120
1,2-Dibromo-3-Chloropropane	ND	vs F1 F2	243	67.3	vs F1	ug/Kg		28	63 - 124
1,2-Dichlorobenzene	ND	vs	243	202	vs	ug/Kg		83	75 - 120
1,2-Dichloroethane	ND	vs	243	208	vs	ug/Kg		86	77 - 122
1,2-Dichloropropane	ND	vs	243	228	vs	ug/Kg		94	75 - 124
1,3-Dichlorobenzene	ND	vs	243	200	vs	ug/Kg		83	74 - 120
1,4-Dichlorobenzene	ND	vs	243	199	vs	ug/Kg		82	73 - 120
2-Butanone (MEK)	ND	vs F1	1210	837	vs F1	ug/Kg		69	70 - 134
2-Hexanone	ND	vs	1210	914	vs	ug/Kg		75	59 - 130
4-Methyl-2-pentanone (MIBK)	ND	vs	1210	987	vs	ug/Kg		81	65 - 133
Acetone	62	J vs F1	1210	838	vs	ug/Kg		64	61 - 137
Benzene	1.7	J vs	243	241	vs	ug/Kg		99	79 - 127
Bromodichloromethane	ND	vs F1 F2	243	50.6	vs F1	ug/Kg		21	80 - 122
Bromoform	ND	vs F1 F2	243	35.4	vs F1	ug/Kg		15	68 - 126
Bromomethane	ND	vs	243	283	vs	ug/Kg		117	37 - 149
Carbon disulfide	ND	vs F1	243	108	vs F1	ug/Kg		45	64 - 131
Carbon tetrachloride	ND	vs F1	243	144	vs F1	ug/Kg		59	75 - 135
Chlorobenzene	ND	vs	243	227	vs	ug/Kg		94	76 - 124
Dibromochloromethane	ND	vs F1 F2	243	37.9	vs F1	ug/Kg		16	76 - 125
Chloroethane	ND	vs	243	290	vs	ug/Kg		120	69 - 135
Chloroform	ND	vs	243	238	vs	ug/Kg		98	80 - 120
Chloromethane	ND	vs	243	279	vs	ug/Kg		115	63 - 127
cis-1,2-Dichloroethene	ND	vs	243	239	vs	ug/Kg		99	80 - 120
cis-1,3-Dichloropropene	ND	vs F1 F2	243	54.0	vs F1	ug/Kg		22	80 - 120
Cyclohexane	ND	vs	243	223	vs	ug/Kg		92	65 - 120
Dichlorodifluoromethane	ND	vs	243	233	vs	ug/Kg		96	57 - 142
Ethylbenzene	ND	vs	243	231	vs	ug/Kg		95	80 - 120
1,2-Dibromoethane	ND	vs F1	243	129	vs F1	ug/Kg		53	78 - 120
Isopropylbenzene	ND	vs	243	239	vs	ug/Kg		99	72 - 120
Methyl acetate	ND	vs	485	363	vs	ug/Kg		75	55 - 136
Methyl tert-butyl ether	ND	vs	243	219	vs	ug/Kg		90	63 - 125
Methylcyclohexane	ND	vs	243	183	vs	ug/Kg		75	60 - 140

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 480-183631-5 MS
Client Sample ID: BLDG1-BIN8-SP-017
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 577759
Prep Batch: 577756

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Chloride	ND	vs	243	274	vs	ug/Kg		113	61 - 127
Styrene	1.5	J vs	243	199	vs	ug/Kg		81	80 - 120
Tetrachloroethene	ND	vs	243	213	vs	ug/Kg		88	74 - 122
Toluene	2.1	J vs	243	243	vs	ug/Kg		99	74 - 128
trans-1,2-Dichloroethene	ND	vs	243	232	vs	ug/Kg		96	78 - 126
trans-1,3-Dichloropropene	ND	vs F1 F2	243	55.8	vs F1	ug/Kg		23	73 - 123
Trichloroethene	ND	vs	243	221	vs	ug/Kg		91	77 - 129
Trichlorofluoromethane	ND	vs	243	219	vs	ug/Kg		90	65 - 146
Vinyl chloride	ND	vs	243	264	vs	ug/Kg		109	61 - 133

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Toluene-d8 (Surr)	*104*		*71 - 125*
1,2-Dichloroethane-d4 (Surr)	*90*		*64 - 126*
4-Bromofluorobenzene (Surr)	*91*		*72 - 126*
Dibromofluoromethane (Surr)	*96*		*60 - 140*

Lab Sample ID: 480-183631-5 MSD
Client Sample ID: BLDG1-BIN8-SP-017
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 577759
Prep Batch: 577756

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane	ND	vs	240	194	vs	ug/Kg		81	77 - 121	6	30
1,1,2,2-Tetrachloroethane	ND	vs F1	240	185	vs F1	ug/Kg		77	80 - 120	1	30
1,1,2-Trichloroethane	ND	vs	240	204	vs	ug/Kg		85	78 - 122	2	30
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	vs	240	189	vs	ug/Kg		79	60 - 140	10	30
1,1-Dichloroethane	ND	vs	240	227	vs	ug/Kg		94	73 - 126	11	30
1,1-Dichloroethene	ND	vs F1	240	265	vs	ug/Kg		110	59 - 125	21	30
1,2,4-Trichlorobenzene	ND	vs F1	240	135	vs F1	ug/Kg		56	64 - 120	5	30
1,2-Dibromo-3-Chloropropane	ND	vs F1 F2	240	95.2	vs F1 F2	ug/Kg		40	63 - 124	34	30
1,2-Dichlorobenzene	ND	vs	240	198	vs	ug/Kg		83	75 - 120	2	30
1,2-Dichloroethane	ND	vs	240	204	vs	ug/Kg		85	77 - 122	2	30
1,2-Dichloropropane	ND	vs	240	222	vs	ug/Kg		92	75 - 124	3	30
1,3-Dichlorobenzene	ND	vs	240	199	vs	ug/Kg		83	74 - 120	1	30
1,4-Dichlorobenzene	ND	vs	240	199	vs	ug/Kg		83	73 - 120	0	30
2-Butanone (MEK)	ND	vs F1	1200	854	vs	ug/Kg		71	70 - 134	2	30
2-Hexanone	ND	vs	1200	936	vs	ug/Kg		78	59 - 130	2	30
4-Methyl-2-pentanone (MIBK)	ND	vs	1200	945	vs	ug/Kg		79	65 - 133	4	30
Acetone	62	J vs F1	1200	785	vs F1	ug/Kg		60	61 - 137	7	30
Benzene	1.7	J vs	240	223	vs	ug/Kg		92	79 - 127	8	30
Bromodichloromethane	ND	vs F1 F2	240	77.9	vs F1 F2	ug/Kg		32	80 - 122	43	30
Bromoform	ND	vs F1 F2	240	51.9	vs F1 F2	ug/Kg		22	68 - 126	38	30
Bromomethane	ND	vs	240	248	vs	ug/Kg		103	37 - 149	13	30
Carbon disulfide	ND	vs F1	240	111	vs F1	ug/Kg		46	64 - 131	3	30
Carbon tetrachloride	ND	vs F1	240	149	vs F1	ug/Kg		62	75 - 135	4	30
Chlorobenzene	ND	vs	240	218	vs	ug/Kg		91	76 - 124	4	30
Dibromochloromethane	ND	vs F1 F2	240	63.0	vs F1 F2	ug/Kg		26	76 - 125	50	30
Chloroethane	ND	vs	240	250	vs	ug/Kg		104	69 - 135	15	30
Chloroform	ND	vs	240	222	vs	ug/Kg		93	80 - 120	7	30

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 480-183631-5 MSD
Matrix: Solid
Analysis Batch: 577759

Client Sample ID: BLDG1-BIN8-SP-017
Prep Type: Total/NA
Prep Batch: 577756

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloromethane	ND	vs	240	240	vs	ug/Kg		100	63 - 127	15	30
cis-1,2-Dichloroethene	ND	vs	240	216	vs	ug/Kg		90	80 - 120	10	30
cis-1,3-Dichloropropene	ND	vs F1 F2	240	81.5	vs F1 F2	ug/Kg		34	80 - 120	41	30
Cyclohexane	ND	vs	240	199	vs	ug/Kg		83	65 - 120	11	30
Dichlorodifluoromethane	ND	vs	240	206	vs	ug/Kg		86	57 - 142	12	30
Ethylbenzene	ND	vs	240	216	vs	ug/Kg		90	80 - 120	7	30
1,2-Dibromoethane	ND	vs F1	240	144	vs F1	ug/Kg		60	78 - 120	11	30
Isopropylbenzene	ND	vs	240	224	vs	ug/Kg		93	72 - 120	7	30
Methyl acetate	ND	vs	481	351	vs	ug/Kg		73	55 - 136	3	30
Methyl tert-butyl ether	ND	vs	240	197	vs	ug/Kg		82	63 - 125	11	30
Methylcyclohexane	ND	vs	240	173	vs	ug/Kg		72	60 - 140	6	30
Methylene Chloride	ND	vs	240	241	vs	ug/Kg		100	61 - 127	13	30
Styrene	1.5	J vs	240	193	vs	ug/Kg		80	80 - 120	3	30
Tetrachloroethene	ND	vs	240	200	vs	ug/Kg		83	74 - 122	6	30
Toluene	2.1	J vs	240	225	vs	ug/Kg		93	74 - 128	8	30
trans-1,2-Dichloroethene	ND	vs	240	208	vs	ug/Kg		86	78 - 126	11	30
trans-1,3-Dichloropropene	ND	vs F1 F2	240	82.3	vs F1 F2	ug/Kg		34	73 - 123	38	30
Trichloroethene	ND	vs	240	208	vs	ug/Kg		86	77 - 129	6	30
Trichlorofluoromethane	ND	vs	240	199	vs	ug/Kg		83	65 - 146	9	30
Vinyl chloride	ND	vs	240	228	vs	ug/Kg		95	61 - 133	15	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*102*		*71 - 125*
1,2-Dichloroethane-d4 (Surr)	*89*		*64 - 126*
4-Bromofluorobenzene (Surr)	*93*		*72 - 126*
Dibromofluoromethane (Surr)	*91*		*60 - 140*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 480-577604/1-A
Matrix: Solid
Analysis Batch: 577969

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 577604

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biphenyl	ND		170	24	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
bis (2-chloroisopropyl) ether	ND		170	33	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
2,4-Dichlorophenol	ND		170	18	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
2,4-Dimethylphenol	ND		170	40	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
2,4-Dinitrophenol	ND		1600	770	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
2,4-Dinitrotoluene	ND		170	34	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
2,6-Dinitrotoluene	ND		170	20	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
2-Chloronaphthalene	ND		170	27	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
1,4-Dioxane	ND		98	54	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
2,4,5-Trichlorophenol	ND		170	45	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
2-Chlorophenol	ND		320	30	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
2,4,6-Trichlorophenol	ND		170	33	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
2-Methylnaphthalene	ND		170	33	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
2-Methylphenol	ND		170	20	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
2-Nitroaniline	ND		320	24	ug/Kg		04/23/21 10:13	04/26/21 15:18	1

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183631-1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 480-577604/1-A
Matrix: Solid
Analysis Batch: 577969

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 577604

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Nitrophenol	ND		170	47	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
3,3'-Dichlorobenzidine	ND		320	200	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
3-Nitroaniline	ND		320	46	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
4,6-Dinitro-2-methylphenol	ND		320	170	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
4-Bromophenyl phenyl ether	ND		170	23	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
4-Chloro-3-methylphenol	ND		170	41	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
4-Chloroaniline	ND		170	41	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
4-Chlorophenyl phenyl ether	ND		170	21	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
4-Methylphenol	ND		320	20	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
4-Nitroaniline	ND		320	87	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
4-Nitrophenol	ND		320	120	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Acenaphthene	ND		170	24	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Acenaphthylene	ND		170	22	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Acetophenone	ND		170	23	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Anthracene	ND		170	41	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Atrazine	ND		170	58	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Benzaldehyde	ND		170	130	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Benzo[a]anthracene	ND		170	17	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Benzo[a]pyrene	ND		170	24	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Benzo[b]fluoranthene	ND		170	26	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Benzo[g,h,i]perylene	ND		170	18	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Benzo[k]fluoranthene	ND		170	22	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Bis(2-chloroethoxy)methane	ND		170	35	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Bis(2-chloroethyl)ether	ND		170	22	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Bis(2-ethylhexyl) phthalate	ND		170	57	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Butyl benzyl phthalate	ND		170	27	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Caprolactam	ND		170	50	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Carbazole	ND		170	20	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Chrysene	ND		170	37	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Di-n-butyl phthalate	ND		170	28	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Di-n-octyl phthalate	ND		170	20	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Dibenz(a,h)anthracene	ND		170	29	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Dibenzofuran	ND		170	20	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Diethyl phthalate	ND		170	22	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Dimethyl phthalate	ND		170	20	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Fluoranthene	ND		170	18	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Fluorene	ND		170	20	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Hexachlorobenzene	ND		170	23	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Hexachlorobutadiene	ND		170	24	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Hexachlorocyclopentadiene	ND		170	23	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Hexachloroethane	ND		170	22	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Indeno[1,2,3-cd]pyrene	ND		170	21	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Isophorone	ND		170	35	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
N-Nitrosodi-n-propylamine	ND		170	28	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
N-Nitrosodiphenylamine	ND		170	140	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Naphthalene	ND		170	22	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Nitrobenzene	ND		170	19	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Pentachlorophenol	ND		320	170	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Phenanthrene	ND		170	24	ug/Kg		04/23/21 10:13	04/26/21 15:18	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 480-577604/1-A
Matrix: Solid
Analysis Batch: 577969

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 577604

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenol	ND		170	25	ug/Kg		04/23/21 10:13	04/26/21 15:18	1
Pyrene	ND		170	20	ug/Kg		04/23/21 10:13	04/26/21 15:18	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*78*		*54 - 120*	*04/23/21 10:13*	*04/26/21 15:18*	*1*
2-Fluorobiphenyl	*78*		*60 - 120*	*04/23/21 10:13*	*04/26/21 15:18*	*1*
2-Fluorophenol	*73*		*52 - 120*	*04/23/21 10:13*	*04/26/21 15:18*	*1*
Nitrobenzene-d5	*76*		*53 - 120*	*04/23/21 10:13*	*04/26/21 15:18*	*1*
p-Terphenyl-d14	*99*		*79 - 130*	*04/23/21 10:13*	*04/26/21 15:18*	*1*
Phenol-d5	*75*		*54 - 120*	*04/23/21 10:13*	*04/26/21 15:18*	*1*

Lab Sample ID: LCS 480-577604/2-A
Matrix: Solid
Analysis Batch: 577969

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 577604

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Biphenyl	1650	1510		ug/Kg		91	59 - 120
bis (2-chloroisopropyl) ether	1650	1360		ug/Kg		82	44 - 120
2,4-Dichlorophenol	1650	1420		ug/Kg		86	61 - 120
2,4-Dimethylphenol	1650	1520		ug/Kg		92	59 - 120
2,4-Dinitrophenol	3310	2940		ug/Kg		89	41 - 146
2,4-Dinitrotoluene	1650	1650		ug/Kg		100	63 - 120
2,6-Dinitrotoluene	1650	1670		ug/Kg		101	66 - 120
2-Chloronaphthalene	1650	1520		ug/Kg		92	57 - 120
1,4-Dioxane	1650	833		ug/Kg		50	23 - 120
2,4,5-Trichlorophenol	1650	1640		ug/Kg		99	59 - 126
2-Chlorophenol	1650	1380		ug/Kg		84	53 - 120
2,4,6-Trichlorophenol	1650	1580		ug/Kg		96	59 - 123
2-Methylnaphthalene	1650	1430		ug/Kg		87	59 - 120
2-Methylphenol	1650	1460		ug/Kg		89	54 - 120
2-Nitroaniline	1650	1640		ug/Kg		99	61 - 120
2-Nitrophenol	1650	1400		ug/Kg		85	56 - 120
3,3'-Dichlorobenzidine	3310	2620		ug/Kg		79	54 - 120
3-Nitroaniline	1650	1390		ug/Kg		84	48 - 120
4,6-Dinitro-2-methylphenol	3310	3230		ug/Kg		98	49 - 122
4-Bromophenyl phenyl ether	1650	1650		ug/Kg		100	58 - 120
4-Chloro-3-methylphenol	1650	1630		ug/Kg		99	61 - 120
4-Chloroaniline	1650	1270		ug/Kg		77	38 - 120
4-Chlorophenyl phenyl ether	1650	1560		ug/Kg		94	63 - 124
4-Methylphenol	1650	1520		ug/Kg		92	55 - 120
4-Nitroaniline	1650	1570		ug/Kg		95	56 - 120
4-Nitrophenol	3310	3340		ug/Kg		101	43 - 147
Acenaphthene	1650	1550		ug/Kg		94	62 - 120
Acenaphthylene	1650	1570		ug/Kg		95	58 - 121
Acetophenone	1650	1460		ug/Kg		88	54 - 120
Anthracene	1650	1700		ug/Kg		103	62 - 120
Atrazine	3310	3440		ug/Kg		104	60 - 127
Benzaldehyde	3310	2360		ug/Kg		71	10 - 150

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 480-577604/2-A
Matrix: Solid
Analysis Batch: 577969

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 577604

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzo[a]anthracene	1650	1680		ug/Kg		102	65 - 120
Benzo[a]pyrene	1650	1690		ug/Kg		103	64 - 120
Benzo[b]fluoranthene	1650	1740		ug/Kg		105	64 - 120
Benzo[g,h,i]perylene	1650	1680		ug/Kg		102	45 - 145
Benzo[k]fluoranthene	1650	1710		ug/Kg		104	65 - 120
Bis(2-chloroethoxy)methane	1650	1440		ug/Kg		87	55 - 120
Bis(2-chloroethyl)ether	1650	1370		ug/Kg		83	45 - 120
Bis(2-ethylhexyl) phthalate	1650	1640		ug/Kg		99	61 - 133
Butyl benzyl phthalate	1650	1730		ug/Kg		104	61 - 129
Caprolactam	3310	3390		ug/Kg		103	47 - 120
Carbazole	1650	1680		ug/Kg		102	65 - 120
Chrysene	1650	1630		ug/Kg		98	64 - 120
Di-n-butyl phthalate	1650	1710		ug/Kg		103	58 - 130
Di-n-octyl phthalate	1650	1630		ug/Kg		99	57 - 133
Dibenz(a,h)anthracene	1650	1700		ug/Kg		103	54 - 132
Dibenzofuran	1650	1570		ug/Kg		95	63 - 120
Diethyl phthalate	1650	1670		ug/Kg		101	66 - 120
Dimethyl phthalate	1650	1660		ug/Kg		101	65 - 124
Fluoranthene	1650	1680		ug/Kg		102	62 - 120
Fluorene	1650	1640		ug/Kg		99	63 - 120
Hexachlorobenzene	1650	1570		ug/Kg		95	60 - 120
Hexachlorobutadiene	1650	1320		ug/Kg		80	45 - 120
Hexachlorocyclopentadiene	1650	1380		ug/Kg		84	47 - 120
Hexachloroethane	1650	1240		ug/Kg		75	41 - 120
Indeno[1,2,3-cd]pyrene	1650	1670		ug/Kg		101	56 - 134
Isophorone	1650	1530		ug/Kg		92	56 - 120
N-Nitrosodi-n-propylamine	1650	1420		ug/Kg		86	52 - 120
Naphthalene	1650	1390		ug/Kg		84	55 - 120
Nitrobenzene	1650	1350		ug/Kg		82	54 - 120
Pentachlorophenol	3310	3130		ug/Kg		95	51 - 120
Phenanthrene	1650	1670		ug/Kg		101	60 - 120
Phenol	1650	1430		ug/Kg		86	53 - 120
Pyrene	1650	1690		ug/Kg		102	61 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4,6-Tribromophenol	*102*		*54 - 120*
2-Fluorobiphenyl	*92*		*60 - 120*
2-Fluorophenol	*85*		*52 - 120*
Nitrobenzene-d5	*87*		*53 - 120*
p-Terphenyl-d14	*105*		*79 - 130*
Phenol-d5	*89*		*54 - 120*

Lab Sample ID: MB 480-577984/1-A
Matrix: Solid
Analysis Batch: 578080

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 577984

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.010	0.00045	mg/L		04/26/21 14:45	04/27/21 12:25	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 480-577984/1-A
Matrix: Solid
Analysis Batch: 578080

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 577984

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
3-Methylphenol	ND		0.010	0.00040	mg/L		04/26/21 14:45	04/27/21 12:25	1
2,4-Dinitrotoluene	ND		0.0050	0.00043	mg/L		04/26/21 14:45	04/27/21 12:25	1
Pyridine	ND		0.025	0.00040	mg/L		04/26/21 14:45	04/27/21 12:25	1
2,4,5-Trichlorophenol	ND		0.0050	0.00048	mg/L		04/26/21 14:45	04/27/21 12:25	1
2,4,6-Trichlorophenol	ND		0.0050	0.00060	mg/L		04/26/21 14:45	04/27/21 12:25	1
2-Methylphenol	ND		0.0050	0.00040	mg/L		04/26/21 14:45	04/27/21 12:25	1
4-Methylphenol	ND		0.010	0.00035	mg/L		04/26/21 14:45	04/27/21 12:25	1
Hexachlorobenzene	ND		0.0050	0.00050	mg/L		04/26/21 14:45	04/27/21 12:25	1
Hexachlorobutadiene	ND		0.0050	0.00068	mg/L		04/26/21 14:45	04/27/21 12:25	1
Hexachloroethane	ND		0.0050	0.00058	mg/L		04/26/21 14:45	04/27/21 12:25	1
Nitrobenzene	ND		0.0050	0.00028	mg/L		04/26/21 14:45	04/27/21 12:25	1
Pentachlorophenol	ND		0.010	0.0022	mg/L		04/26/21 14:45	04/27/21 12:25	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*80*		*41 - 120*	*04/26/21 14:45*	*04/27/21 12:25*	*1*
2-Fluorobiphenyl	*104*		*48 - 120*	*04/26/21 14:45*	*04/27/21 12:25*	*1*
2-Fluorophenol	*51*		*35 - 120*	*04/26/21 14:45*	*04/27/21 12:25*	*1*
Nitrobenzene-d5	*95*		*46 - 120*	*04/26/21 14:45*	*04/27/21 12:25*	*1*
p-Terphenyl-d14	*115*		*60 - 148*	*04/26/21 14:45*	*04/27/21 12:25*	*1*
Phenol-d5	*34*		*22 - 120*	*04/26/21 14:45*	*04/27/21 12:25*	*1*

Lab Sample ID: LCS 480-577984/2-A
Matrix: Solid
Analysis Batch: 578080

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 577984

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dichlorobenzene	0.0500	0.0357		mg/L		71	51 - 120
3-Methylphenol	0.0500	0.0341		mg/L		68	39 - 120
2,4-Dinitrotoluene	0.0500	0.0541		mg/L		108	69 - 120
Pyridine	0.100	0.0249	J	mg/L		25	10 - 120
2,4,5-Trichlorophenol	0.0500	0.0521		mg/L		104	65 - 126
2,4,6-Trichlorophenol	0.0500	0.0504		mg/L		101	64 - 120
2-Methylphenol	0.0500	0.0372		mg/L		74	39 - 120
4-Methylphenol	0.0500	0.0341		mg/L		68	29 - 131
Hexachlorobenzene	0.0500	0.0530		mg/L		106	61 - 120
Hexachlorobutadiene	0.0500	0.0449		mg/L		90	35 - 120
Hexachloroethane	0.0500	0.0370		mg/L		74	43 - 120
Nitrobenzene	0.0500	0.0455		mg/L		91	53 - 123
Pentachlorophenol	0.100	0.0943		mg/L		94	29 - 136

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4,6-Tribromophenol	*93*		*41 - 120*
2-Fluorobiphenyl	*102*		*48 - 120*
2-Fluorophenol	*49*		*35 - 120*
Nitrobenzene-d5	*91*		*46 - 120*
p-Terphenyl-d14	*110*		*60 - 148*
Phenol-d5	*32*		*22 - 120*

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 480-577984/3-A
Matrix: Solid
Analysis Batch: 578080

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 577984

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dichlorobenzene	0.0500	0.0386		mg/L		77	51 - 120	8	36
3-Methylphenol	0.0500	0.0374		mg/L		75	39 - 120	9	30
2,4-Dinitrotoluene	0.0500	0.0586		mg/L		117	69 - 120	8	20
Pyridine	0.100	0.0315		mg/L		31	10 - 120	24	49
2,4,5-Trichlorophenol	0.0500	0.0541		mg/L		108	65 - 126	4	18
2,4,6-Trichlorophenol	0.0500	0.0539		mg/L		108	64 - 120	7	19
2-Methylphenol	0.0500	0.0392		mg/L		78	39 - 120	5	27
4-Methylphenol	0.0500	0.0374		mg/L		75	29 - 131	9	24
Hexachlorobenzene	0.0500	0.0549		mg/L		110	61 - 120	4	15
Hexachlorobutadiene	0.0500	0.0494		mg/L		99	35 - 120	10	44
Hexachloroethane	0.0500	0.0399		mg/L		80	43 - 120	7	46
Nitrobenzene	0.0500	0.0485		mg/L		97	53 - 123	6	24
Pentachlorophenol	0.100	0.0976		mg/L		98	29 - 136	3	37

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2,4,6-Tribromophenol	*94*		*41 - 120*
2-Fluorobiphenyl	*107*		*48 - 120*
2-Fluorophenol	*53*		*35 - 120*
Nitrobenzene-d5	*98*		*46 - 120*
p-Terphenyl-d14	*111*		*60 - 148*
Phenol-d5	*35*		*22 - 120*

Lab Sample ID: LB 480-577812/1-F
Matrix: Solid
Analysis Batch: 578080

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 577984

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.040	0.0018	mg/L		04/26/21 14:45	04/27/21 13:37	1
3-Methylphenol	ND		0.040	0.0016	mg/L		04/26/21 14:45	04/27/21 13:37	1
2,4-Dinitrotoluene	ND		0.020	0.0017	mg/L		04/26/21 14:45	04/27/21 13:37	1
Pyridine	ND		0.10	0.0016	mg/L		04/26/21 14:45	04/27/21 13:37	1
2,4,5-Trichlorophenol	ND		0.020	0.0019	mg/L		04/26/21 14:45	04/27/21 13:37	1
2,4,6-Trichlorophenol	ND		0.020	0.0024	mg/L		04/26/21 14:45	04/27/21 13:37	1
2-Methylphenol	ND		0.020	0.0016	mg/L		04/26/21 14:45	04/27/21 13:37	1
4-Methylphenol	ND		0.040	0.0014	mg/L		04/26/21 14:45	04/27/21 13:37	1
Hexachlorobenzene	ND		0.020	0.0020	mg/L		04/26/21 14:45	04/27/21 13:37	1
Hexachlorobutadiene	ND		0.020	0.0027	mg/L		04/26/21 14:45	04/27/21 13:37	1
Hexachloroethane	ND		0.020	0.0023	mg/L		04/26/21 14:45	04/27/21 13:37	1
Nitrobenzene	ND		0.020	0.0011	mg/L		04/26/21 14:45	04/27/21 13:37	1
Pentachlorophenol	ND		0.040	0.0088	mg/L		04/26/21 14:45	04/27/21 13:37	1

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*81*		*41 - 120*	*04/26/21 14:45*	*04/27/21 13:37*	*1*
2-Fluorobiphenyl	*102*		*48 - 120*	*04/26/21 14:45*	*04/27/21 13:37*	*1*
2-Fluorophenol	*50*		*35 - 120*	*04/26/21 14:45*	*04/27/21 13:37*	*1*
Nitrobenzene-d5	*96*		*46 - 120*	*04/26/21 14:45*	*04/27/21 13:37*	*1*
p-Terphenyl-d14	*113*		*60 - 148*	*04/26/21 14:45*	*04/27/21 13:37*	*1*
Phenol-d5	*33*		*22 - 120*	*04/26/21 14:45*	*04/27/21 13:37*	*1*

Method: 8081B - Organochlorine Pesticides (GC)

Lab Sample ID: MB 480-577920/1-A
Matrix: Solid
Analysis Batch: 578043

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 577920

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.000050	0.0000015	mg/L		04/26/21 10:21	04/27/21 11:22	1
Chlordane (technical)	ND		0.00050	0.0000073	mg/L		04/26/21 10:21	04/27/21 11:22	1
Endrin	ND		0.000050	0.0000035	mg/L		04/26/21 10:21	04/27/21 11:22	1
Heptachlor	ND		0.000050	0.0000021	mg/L		04/26/21 10:21	04/27/21 11:22	1
Heptachlor epoxide	ND		0.000050	0.0000013	mg/L		04/26/21 10:21	04/27/21 11:22	1
Methoxychlor	ND		0.000050	0.0000035	mg/L		04/26/21 10:21	04/27/21 11:22	1
Toxaphene	ND		0.00050	0.000030	mg/L		04/26/21 10:21	04/27/21 11:22	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*41*		*20 - 120*	*04/26/21 10:21*	*04/27/21 11:22*	*1*
DCB Decachlorobiphenyl	*40*		*20 - 120*	*04/26/21 10:21*	*04/27/21 11:22*	*1*
Tetrachloro-m-xylene	*87*		*44 - 120*	*04/26/21 10:21*	*04/27/21 11:22*	*1*
Tetrachloro-m-xylene	*80*		*44 - 120*	*04/26/21 10:21*	*04/27/21 11:22*	*1*

Lab Sample ID: LCS 480-577920/2-A
Matrix: Solid
Analysis Batch: 578043

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 577920

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
gamma-BHC (Lindane)	0.000500	0.000468		mg/L		94	56 - 120
Endrin	0.000500	0.000521		mg/L		104	65 - 135
Heptachlor	0.000500	0.000444		mg/L		89	58 - 120
Heptachlor epoxide	0.000500	0.000494		mg/L		99	65 - 125
Methoxychlor	0.000500	0.000505		mg/L		101	50 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*34*		*20 - 120*
DCB Decachlorobiphenyl	*35*		*20 - 120*
Tetrachloro-m-xylene	*85*		*44 - 120*
Tetrachloro-m-xylene	*80*		*44 - 120*

Lab Sample ID: LCSD 480-577920/3-A
Matrix: Solid
Analysis Batch: 578043

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 577920

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
gamma-BHC (Lindane)	0.000500	0.000465		mg/L		93	56 - 120	1	24
Endrin	0.000500	0.000521		mg/L		104	65 - 135	0	24
Heptachlor	0.000500	0.000435		mg/L		87	58 - 120	2	25
Heptachlor epoxide	0.000500	0.000496		mg/L		99	65 - 125	0	23
Methoxychlor	0.000500	0.000519		mg/L		104	50 - 150	3	26

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
DCB Decachlorobiphenyl	*33*		*20 - 120*
DCB Decachlorobiphenyl	*35*		*20 - 120*
Tetrachloro-m-xylene	*85*		*44 - 120*
Tetrachloro-m-xylene	*81*		*44 - 120*

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: LB 480-577812/1-C
Matrix: Solid
Analysis Batch: 578043

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 577920

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.00020	0.0000060	mg/L		04/26/21 10:21	04/27/21 13:57	1
Chlordane (technical)	ND		0.0020	0.000029	mg/L		04/26/21 10:21	04/27/21 13:57	1
Endrin	ND		0.00020	0.000014	mg/L		04/26/21 10:21	04/27/21 13:57	1
Heptachlor	ND		0.00020	0.0000085	mg/L		04/26/21 10:21	04/27/21 13:57	1
Heptachlor epoxide	ND		0.00020	0.0000053	mg/L		04/26/21 10:21	04/27/21 13:57	1
Methoxychlor	ND		0.00020	0.000014	mg/L		04/26/21 10:21	04/27/21 13:57	1
Toxaphene	ND		0.0020	0.00012	mg/L		04/26/21 10:21	04/27/21 13:57	1

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*67*		*20 - 120*	*04/26/21 10:21*	*04/27/21 13:57*	*1*
DCB Decachlorobiphenyl	*68*		*20 - 120*	*04/26/21 10:21*	*04/27/21 13:57*	*1*
Tetrachloro-m-xylene	*92*		*44 - 120*	*04/26/21 10:21*	*04/27/21 13:57*	*1*
Tetrachloro-m-xylene	*85*		*44 - 120*	*04/26/21 10:21*	*04/27/21 13:57*	*1*

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Lab Sample ID: MB 480-577855/1-A
Matrix: Waste
Analysis Batch: 578150

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 577855

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		3.3	0.65	mg/Kg		04/26/21 07:24	04/27/21 23:55	1
PCB-1221	ND		3.3	0.65	mg/Kg		04/26/21 07:24	04/27/21 23:55	1
PCB-1232	ND		3.3	0.65	mg/Kg		04/26/21 07:24	04/27/21 23:55	1
PCB-1242	ND		3.3	0.65	mg/Kg		04/26/21 07:24	04/27/21 23:55	1
PCB-1248	ND		3.3	0.65	mg/Kg		04/26/21 07:24	04/27/21 23:55	1
PCB-1254	ND		3.3	0.16	mg/Kg		04/26/21 07:24	04/27/21 23:55	1
PCB-1260	ND		3.3	0.16	mg/Kg		04/26/21 07:24	04/27/21 23:55	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*73*		*60 - 154*	*04/26/21 07:24*	*04/27/21 23:55*	*1*
Tetrachloro-m-xylene	*79*		*60 - 154*	*04/26/21 07:24*	*04/27/21 23:55*	*1*
DCB Decachlorobiphenyl	*102*		*65 - 174*	*04/26/21 07:24*	*04/27/21 23:55*	*1*
DCB Decachlorobiphenyl	*124*		*65 - 174*	*04/26/21 07:24*	*04/27/21 23:55*	*1*

Lab Sample ID: LCS 480-577855/2-A
Matrix: Waste
Analysis Batch: 578150

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 577855

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
PCB-1016	31.3	25.6		mg/Kg		82	51 - 185
PCB-1260	31.3	32.5		mg/Kg		104	61 - 184

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tetrachloro-m-xylene	*77*		*60 - 154*
Tetrachloro-m-xylene	*83*		*60 - 154*
DCB Decachlorobiphenyl	*107*		*65 - 174*
DCB Decachlorobiphenyl	*122*		*65 - 174*

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183631-1

Method: 8151 - TCLP Herbicides

Lab Sample ID: MB 480-577918/1-A
Matrix: Solid
Analysis Batch: 578093

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 577918

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND		0.00050	0.000090	mg/L		04/26/21 10:16	04/28/21 01:47	1
2,4-D	ND		0.00050	0.00010	mg/L		04/26/21 10:16	04/28/21 01:47	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*49*		*48 - 132*	*04/26/21 10:16*	*04/28/21 01:47*	*1*
2,4-Dichlorophenylacetic acid	*69*		*48 - 132*	*04/26/21 10:16*	*04/28/21 01:47*	*1*

Lab Sample ID: LCS 480-577918/2-A
Matrix: Solid
Analysis Batch: 578093

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 577918

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Silvex (2,4,5-TP)	0.00200	0.00145		mg/L		73	49 - 150
2,4-D	0.00200	0.00174		mg/L		87	36 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*61*		*48 - 132*
2,4-Dichlorophenylacetic acid	*71*		*48 - 132*

Lab Sample ID: LCSD 480-577918/3-A
Matrix: Solid
Analysis Batch: 578093

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 577918

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Silvex (2,4,5-TP)	0.00200	0.00120		mg/L		60	49 - 150	19	50
2,4-D	0.00200	0.00166		mg/L		83	36 - 150	5	50

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*54*		*48 - 132*
2,4-Dichlorophenylacetic acid	*53*		*48 - 132*

Lab Sample ID: LB 480-577812/1-B
Matrix: Solid
Analysis Batch: 578093

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 577918

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND		0.0020	0.00036	mg/L		04/26/21 10:16	04/28/21 03:16	1
2,4-D	ND		0.0020	0.00040	mg/L		04/26/21 10:16	04/28/21 03:16	1

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*27*	*S1-*	*48 - 132*	*04/26/21 10:16*	*04/28/21 03:16*	*1*
2,4-Dichlorophenylacetic acid	*27*	*S1-*	*48 - 132*	*04/26/21 10:16*	*04/28/21 03:16*	*1*

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183631-1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 480-577921/2-A
Matrix: Solid
Analysis Batch: 578334

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 577921

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.015	0.0056	mg/L		04/26/21 10:40	04/27/21 18:18	1
Barium	ND		1.0	0.10	mg/L		04/26/21 10:40	04/27/21 18:18	1
Cadmium	ND		0.0020	0.00050	mg/L		04/26/21 10:40	04/27/21 18:18	1
Chromium	ND	^+	0.020	0.010	mg/L		04/26/21 10:40	04/27/21 18:18	1
Lead	ND		0.020	0.0030	mg/L		04/26/21 10:40	04/27/21 18:18	1
Selenium	ND		0.025	0.0087	mg/L		04/26/21 10:40	04/27/21 18:18	1
Silver	ND		0.0060	0.0017	mg/L		04/26/21 10:40	04/27/21 18:18	1

Lab Sample ID: LCS 480-577921/3-A
Matrix: Solid
Analysis Batch: 578334

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 577921

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	1.00	1.12		mg/L		112	80 - 120
Barium	1.00	1.03		mg/L		103	80 - 120
Cadmium	1.00	1.06		mg/L		106	80 - 120
Chromium	1.00	1.02	^+	mg/L		102	80 - 120
Lead	1.00	1.02		mg/L		102	80 - 120
Selenium	1.00	1.11		mg/L		111	80 - 120
Silver	1.00	1.07		mg/L		107	80 - 120

Lab Sample ID: LB 480-577812/1-D
Matrix: Solid
Analysis Batch: 578377

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 577921

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.015	0.0056	mg/L		04/26/21 10:40	04/28/21 12:35	1
Barium	ND		1.0	0.10	mg/L		04/26/21 10:40	04/28/21 12:35	1
Cadmium	ND		0.0020	0.00050	mg/L		04/26/21 10:40	04/28/21 12:35	1
Chromium	ND		0.020	0.010	mg/L		04/26/21 10:40	04/28/21 12:35	1
Lead	ND		0.020	0.0030	mg/L		04/26/21 10:40	04/28/21 12:35	1
Selenium	ND		0.025	0.0087	mg/L		04/26/21 10:40	04/28/21 12:35	1
Silver	ND		0.0060	0.0017	mg/L		04/26/21 10:40	04/28/21 12:35	1

Lab Sample ID: 480-183631-2 MS
Matrix: Solid
Analysis Batch: 578334

Client Sample ID: BLDG1-BIN11-SP-014
Prep Type: TCLP
Prep Batch: 577921

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	ND		1.00	1.09		mg/L		109	75 - 125
Barium	ND		1.00	1.03		mg/L		103	75 - 125
Cadmium	ND		1.00	1.04		mg/L		104	75 - 125
Chromium	ND	^+	1.00	0.993	^+	mg/L		99	75 - 125
Lead	0.0036	J	1.00	1.01		mg/L		101	75 - 125
Selenium	ND		1.00	1.08		mg/L		108	75 - 125
Silver	ND		1.00	1.05		mg/L		105	75 - 125

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: 480-183631-2 MSD
Matrix: Solid
Analysis Batch: 578334

Client Sample ID: BLDG1-BIN11-SP-014
Prep Type: TCLP
Prep Batch: 577921

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	ND		1.00	1.09		mg/L		109	75 - 125	1	20
Barium	ND		1.00	1.04		mg/L		104	75 - 125	1	20
Cadmium	ND		1.00	1.04		mg/L		104	75 - 125	1	20
Chromium	ND	^+	1.00	1.01	^+	mg/L		101	75 - 125	2	20
Lead	0.0036	J	1.00	1.03		mg/L		103	75 - 125	1	20
Selenium	ND		1.00	1.08		mg/L		108	75 - 125	0	20
Silver	ND		1.00	1.06		mg/L		106	75 - 125	1	20

Method: 7470A - TCLP Mercury

Lab Sample ID: MB 480-577964/2-A
Matrix: Solid
Analysis Batch: 578015

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 577964

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		04/26/21 14:00	04/26/21 19:13	1

Lab Sample ID: LCS 480-577964/3-A
Matrix: Solid
Analysis Batch: 578015

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 577964

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00668	0.00597		mg/L		89	80 - 120

Lab Sample ID: LB 480-577812/1-E
Matrix: Solid
Analysis Batch: 578015

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 577964

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		04/26/21 14:00	04/26/21 19:11	1

Lab Sample ID: 480-183631-2 MS
Matrix: Solid
Analysis Batch: 578015

Client Sample ID: BLDG1-BIN11-SP-014
Prep Type: TCLP
Prep Batch: 577964

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND	F1	0.00668	0.00493	F1	mg/L		74	80 - 120

Lab Sample ID: 480-183631-2 MSD
Matrix: Solid
Analysis Batch: 578015

Client Sample ID: BLDG1-BIN11-SP-014
Prep Type: TCLP
Prep Batch: 577964

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND	F1	0.00668	0.00487	F1	mg/L		73	80 - 120	1	20

Method: 1010A - Ignitability, Pensky-Martens Closed-Cup Method

Lab Sample ID: LCS 480-578201/1
Matrix: Solid
Analysis Batch: 578201

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Flashpoint	81.0	79.00		Degrees F		98	97.5 - 102.5

Method: 9045D - pH

Lab Sample ID: LCS 480-578008/1
Matrix: Solid
Analysis Batch: 578008

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH	7.00	7.1		SU		101	99 - 101

Lab Sample ID: LCS 480-578238/1
Matrix: Solid
Analysis Batch: 578238

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH	7.00	7.0		SU		100	99 - 101

GC/MS VOA

Prep Batch: 577496

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183631-1	BLDG1-BIN12-SP-013	Total/NA	Solid	5035A_L	
480-183631-2	BLDG1-BIN11-SP-014	Total/NA	Solid	5035A_L	
MB 480-577496/2-A	Method Blank	Total/NA	Solid	5035A_L	
LCS 480-577496/1-A	Lab Control Sample	Total/NA	Solid	5035A_L	

Analysis Batch: 577732

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183631-1	BLDG1-BIN12-SP-013	Total/NA	Solid	8260C	577496
480-183631-2	BLDG1-BIN11-SP-014	Total/NA	Solid	8260C	577496
MB 480-577496/2-A	Method Blank	Total/NA	Solid	8260C	577496
LCS 480-577496/1-A	Lab Control Sample	Total/NA	Solid	8260C	577496

Prep Batch: 577756

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183631-3	BLDG1-BIN10-SP-015	Total/NA	Solid	5035A_L	
480-183631-4	BLDG1-BIN9-SP-016	Total/NA	Solid	5035A_L	
480-183631-5	BLDG1-BIN8-SP-017	Total/NA	Solid	5035A_L	
MB 480-577756/2-A	Method Blank	Total/NA	Solid	5035A_L	
LCS 480-577756/1-A	Lab Control Sample	Total/NA	Solid	5035A_L	
480-183631-5 MS	BLDG1-BIN8-SP-017	Total/NA	Solid	5035A_L	
480-183631-5 MSD	BLDG1-BIN8-SP-017	Total/NA	Solid	5035A_L	

Analysis Batch: 577759

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183631-3	BLDG1-BIN10-SP-015	Total/NA	Solid	8260C	577756
480-183631-4	BLDG1-BIN9-SP-016	Total/NA	Solid	8260C	577756
480-183631-5	BLDG1-BIN8-SP-017	Total/NA	Solid	8260C	577756
MB 480-577756/2-A	Method Blank	Total/NA	Solid	8260C	577756
LCS 480-577756/1-A	Lab Control Sample	Total/NA	Solid	8260C	577756
480-183631-5 MS	BLDG1-BIN8-SP-017	Total/NA	Solid	8260C	577756
480-183631-5 MSD	BLDG1-BIN8-SP-017	Total/NA	Solid	8260C	577756

Leach Batch: 577814

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183631-1	BLDG1-BIN12-SP-013	TCLP	Solid	1311	
480-183631-2	BLDG1-BIN11-SP-014	TCLP	Solid	1311	
480-183631-3	BLDG1-BIN10-SP-015	TCLP	Solid	1311	
480-183631-4	BLDG1-BIN9-SP-016	TCLP	Solid	1311	
480-183631-5	BLDG1-BIN8-SP-017	TCLP	Solid	1311	
LB 480-577814/1-A	Method Blank	TCLP	Solid	1311	

Analysis Batch: 578098

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183631-1	BLDG1-BIN12-SP-013	TCLP	Solid	8260C	577814
480-183631-2	BLDG1-BIN11-SP-014	TCLP	Solid	8260C	577814
480-183631-3	BLDG1-BIN10-SP-015	TCLP	Solid	8260C	577814
480-183631-4	BLDG1-BIN9-SP-016	TCLP	Solid	8260C	577814
480-183631-5	BLDG1-BIN8-SP-017	TCLP	Solid	8260C	577814
LB 480-577814/1-A	Method Blank	TCLP	Solid	8260C	577814
MB 480-578098/8	Method Blank	Total/NA	Solid	8260C	
LCS 480-578098/6	Lab Control Sample	Total/NA	Solid	8260C	

GC/MS Semi VOA

Prep Batch: 577604

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183631-1	BLDG1-BIN12-SP-013	Total/NA	Solid	3550C	
480-183631-2	BLDG1-BIN11-SP-014	Total/NA	Solid	3550C	
480-183631-3	BLDG1-BIN10-SP-015	Total/NA	Solid	3550C	
480-183631-4	BLDG1-BIN9-SP-016	Total/NA	Solid	3550C	
480-183631-5	BLDG1-BIN8-SP-017	Total/NA	Solid	3550C	
MB 480-577604/1-A	Method Blank	Total/NA	Solid	3550C	
LCS 480-577604/2-A	Lab Control Sample	Total/NA	Solid	3550C	

Leach Batch: 577812

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183631-1	BLDG1-BIN12-SP-013	TCLP	Solid	1311	
480-183631-2	BLDG1-BIN11-SP-014	TCLP	Solid	1311	
480-183631-3	BLDG1-BIN10-SP-015	TCLP	Solid	1311	
480-183631-4	BLDG1-BIN9-SP-016	TCLP	Solid	1311	
480-183631-5	BLDG1-BIN8-SP-017	TCLP	Solid	1311	
LB 480-577812/1-F	Method Blank	TCLP	Solid	1311	

Analysis Batch: 577969

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183631-1	BLDG1-BIN12-SP-013	Total/NA	Solid	8270D	577604
480-183631-2	BLDG1-BIN11-SP-014	Total/NA	Solid	8270D	577604
480-183631-3	BLDG1-BIN10-SP-015	Total/NA	Solid	8270D	577604
480-183631-4	BLDG1-BIN9-SP-016	Total/NA	Solid	8270D	577604
480-183631-5	BLDG1-BIN8-SP-017	Total/NA	Solid	8270D	577604
MB 480-577604/1-A	Method Blank	Total/NA	Solid	8270D	577604
LCS 480-577604/2-A	Lab Control Sample	Total/NA	Solid	8270D	577604

Prep Batch: 577984

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183631-1	BLDG1-BIN12-SP-013	TCLP	Solid	3510C	577812
480-183631-2	BLDG1-BIN11-SP-014	TCLP	Solid	3510C	577812
480-183631-3	BLDG1-BIN10-SP-015	TCLP	Solid	3510C	577812
480-183631-4	BLDG1-BIN9-SP-016	TCLP	Solid	3510C	577812
480-183631-5	BLDG1-BIN8-SP-017	TCLP	Solid	3510C	577812
LB 480-577812/1-F	Method Blank	TCLP	Solid	3510C	577812
MB 480-577984/1-A	Method Blank	Total/NA	Solid	3510C	
LCS 480-577984/2-A	Lab Control Sample	Total/NA	Solid	3510C	
LCSD 480-577984/3-A	Lab Control Sample Dup	Total/NA	Solid	3510C	

Analysis Batch: 578080

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183631-1	BLDG1-BIN12-SP-013	TCLP	Solid	8270D	577984
480-183631-2	BLDG1-BIN11-SP-014	TCLP	Solid	8270D	577984
480-183631-3	BLDG1-BIN10-SP-015	TCLP	Solid	8270D	577984
480-183631-4	BLDG1-BIN9-SP-016	TCLP	Solid	8270D	577984
480-183631-5	BLDG1-BIN8-SP-017	TCLP	Solid	8270D	577984
LB 480-577812/1-F	Method Blank	TCLP	Solid	8270D	577984
MB 480-577984/1-A	Method Blank	Total/NA	Solid	8270D	577984
LCS 480-577984/2-A	Lab Control Sample	Total/NA	Solid	8270D	577984
LCSD 480-577984/3-A	Lab Control Sample Dup	Total/NA	Solid	8270D	577984

GC Semi VOA

Leach Batch: 577812

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183631-1	BLDG1-BIN12-SP-013	TCLP	Solid	1311	
480-183631-2	BLDG1-BIN11-SP-014	TCLP	Solid	1311	
480-183631-3	BLDG1-BIN10-SP-015	TCLP	Solid	1311	
480-183631-4	BLDG1-BIN9-SP-016	TCLP	Solid	1311	
480-183631-5	BLDG1-BIN8-SP-017	TCLP	Solid	1311	
LB 480-577812/1-B	Method Blank	TCLP	Solid	1311	
LB 480-577812/1-C	Method Blank	TCLP	Solid	1311	

Prep Batch: 577855

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183631-6	BLDG1-3RDOIL1-SP-018	Total/NA	Waste	3580A	
480-183631-7	BLDG1-3RDOIL2-SP-019	Total/NA	Waste	3580A	
480-183631-8	BLDG1-2NDOIL3-SP-020	Total/NA	Waste	3580A	
MB 480-577855/1-A	Method Blank	Total/NA	Waste	3580A	
LCS 480-577855/2-A	Lab Control Sample	Total/NA	Waste	3580A	

Prep Batch: 577918

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183631-1	BLDG1-BIN12-SP-013	TCLP	Solid	8151A	577812
480-183631-2	BLDG1-BIN11-SP-014	TCLP	Solid	8151A	577812
480-183631-3	BLDG1-BIN10-SP-015	TCLP	Solid	8151A	577812
480-183631-4	BLDG1-BIN9-SP-016	TCLP	Solid	8151A	577812
480-183631-5	BLDG1-BIN8-SP-017	TCLP	Solid	8151A	577812
LB 480-577812/1-B	Method Blank	TCLP	Solid	8151A	577812
MB 480-577918/1-A	Method Blank	Total/NA	Solid	8151A	
LCS 480-577918/2-A	Lab Control Sample	Total/NA	Solid	8151A	
LCSD 480-577918/3-A	Lab Control Sample Dup	Total/NA	Solid	8151A	

Prep Batch: 577920

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183631-1	BLDG1-BIN12-SP-013	TCLP	Solid	3510C	577812
480-183631-2	BLDG1-BIN11-SP-014	TCLP	Solid	3510C	577812
480-183631-3	BLDG1-BIN10-SP-015	TCLP	Solid	3510C	577812
480-183631-4	BLDG1-BIN9-SP-016	TCLP	Solid	3510C	577812
480-183631-5	BLDG1-BIN8-SP-017	TCLP	Solid	3510C	577812
LB 480-577812/1-C	Method Blank	TCLP	Solid	3510C	577812
MB 480-577920/1-A	Method Blank	Total/NA	Solid	3510C	
LCS 480-577920/2-A	Lab Control Sample	Total/NA	Solid	3510C	
LCSD 480-577920/3-A	Lab Control Sample Dup	Total/NA	Solid	3510C	

Analysis Batch: 578043

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183631-1	BLDG1-BIN12-SP-013	TCLP	Solid	8081B	577920
LB 480-577812/1-C	Method Blank	TCLP	Solid	8081B	577920
MB 480-577920/1-A	Method Blank	Total/NA	Solid	8081B	577920
LCS 480-577920/2-A	Lab Control Sample	Total/NA	Solid	8081B	577920
LCSD 480-577920/3-A	Lab Control Sample Dup	Total/NA	Solid	8081B	577920

Analysis Batch: 578093

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183631-1	BLDG1-BIN12-SP-013	TCLP	Solid	8151	577918

GC Semi VOA (Continued)

Analysis Batch: 578093 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183631-2	BLDG1-BIN11-SP-014	TCLP	Solid	8151	577918
480-183631-3	BLDG1-BIN10-SP-015	TCLP	Solid	8151	577918
480-183631-4	BLDG1-BIN9-SP-016	TCLP	Solid	8151	577918
480-183631-5	BLDG1-BIN8-SP-017	TCLP	Solid	8151	577918
LB 480-577812/1-B	Method Blank	TCLP	Solid	8151	577918
MB 480-577918/1-A	Method Blank	Total/NA	Solid	8151	577918
LCS 480-577918/2-A	Lab Control Sample	Total/NA	Solid	8151	577918
LCSD 480-577918/3-A	Lab Control Sample Dup	Total/NA	Solid	8151	577918

Analysis Batch: 578150

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183631-6	BLDG1-3RDOIL1-SP-018	Total/NA	Waste	8082A	577855
480-183631-7	BLDG1-3RDOIL2-SP-019	Total/NA	Waste	8082A	577855
480-183631-8	BLDG1-2NDOIL3-SP-020	Total/NA	Waste	8082A	577855
MB 480-577855/1-A	Method Blank	Total/NA	Waste	8082A	577855
LCS 480-577855/2-A	Lab Control Sample	Total/NA	Waste	8082A	577855

Analysis Batch: 578270

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183631-2	BLDG1-BIN11-SP-014	TCLP	Solid	8081B	577920
480-183631-3	BLDG1-BIN10-SP-015	TCLP	Solid	8081B	577920
480-183631-4	BLDG1-BIN9-SP-016	TCLP	Solid	8081B	577920
480-183631-5	BLDG1-BIN8-SP-017	TCLP	Solid	8081B	577920

Metals

Leach Batch: 577812

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183631-1	BLDG1-BIN12-SP-013	TCLP	Solid	1311	
480-183631-2	BLDG1-BIN11-SP-014	TCLP	Solid	1311	
480-183631-3	BLDG1-BIN10-SP-015	TCLP	Solid	1311	
480-183631-4	BLDG1-BIN9-SP-016	TCLP	Solid	1311	
480-183631-5	BLDG1-BIN8-SP-017	TCLP	Solid	1311	
LB 480-577812/1-D	Method Blank	TCLP	Solid	1311	
LB 480-577812/1-E	Method Blank	TCLP	Solid	1311	
480-183631-2 MS	BLDG1-BIN11-SP-014	TCLP	Solid	1311	
480-183631-2 MSD	BLDG1-BIN11-SP-014	TCLP	Solid	1311	

Prep Batch: 577921

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183631-1	BLDG1-BIN12-SP-013	TCLP	Solid	3010A	577812
480-183631-2	BLDG1-BIN11-SP-014	TCLP	Solid	3010A	577812
480-183631-3	BLDG1-BIN10-SP-015	TCLP	Solid	3010A	577812
480-183631-4	BLDG1-BIN9-SP-016	TCLP	Solid	3010A	577812
480-183631-5	BLDG1-BIN8-SP-017	TCLP	Solid	3010A	577812
LB 480-577812/1-D	Method Blank	TCLP	Solid	3010A	577812
MB 480-577921/2-A	Method Blank	Total/NA	Solid	3010A	
LCS 480-577921/3-A	Lab Control Sample	Total/NA	Solid	3010A	
480-183631-2 MS	BLDG1-BIN11-SP-014	TCLP	Solid	3010A	577812
480-183631-2 MSD	BLDG1-BIN11-SP-014	TCLP	Solid	3010A	577812

Metals

Prep Batch: 577964

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183631-1	BLDG1-BIN12-SP-013	TCLP	Solid	7470A	577812
480-183631-2	BLDG1-BIN11-SP-014	TCLP	Solid	7470A	577812
480-183631-3	BLDG1-BIN10-SP-015	TCLP	Solid	7470A	577812
480-183631-4	BLDG1-BIN9-SP-016	TCLP	Solid	7470A	577812
480-183631-5	BLDG1-BIN8-SP-017	TCLP	Solid	7470A	577812
LB 480-577812/1-E	Method Blank	TCLP	Solid	7470A	577812
MB 480-577964/2-A	Method Blank	Total/NA	Solid	7470A	
LCS 480-577964/3-A	Lab Control Sample	Total/NA	Solid	7470A	
480-183631-2 MS	BLDG1-BIN11-SP-014	TCLP	Solid	7470A	577812
480-183631-2 MSD	BLDG1-BIN11-SP-014	TCLP	Solid	7470A	577812

Analysis Batch: 578015

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183631-1	BLDG1-BIN12-SP-013	TCLP	Solid	7470A	577964
480-183631-2	BLDG1-BIN11-SP-014	TCLP	Solid	7470A	577964
480-183631-3	BLDG1-BIN10-SP-015	TCLP	Solid	7470A	577964
480-183631-4	BLDG1-BIN9-SP-016	TCLP	Solid	7470A	577964
480-183631-5	BLDG1-BIN8-SP-017	TCLP	Solid	7470A	577964
LB 480-577812/1-E	Method Blank	TCLP	Solid	7470A	577964
MB 480-577964/2-A	Method Blank	Total/NA	Solid	7470A	577964
LCS 480-577964/3-A	Lab Control Sample	Total/NA	Solid	7470A	577964
480-183631-2 MS	BLDG1-BIN11-SP-014	TCLP	Solid	7470A	577964
480-183631-2 MSD	BLDG1-BIN11-SP-014	TCLP	Solid	7470A	577964

Analysis Batch: 578334

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183631-1	BLDG1-BIN12-SP-013	TCLP	Solid	6010C	577921
480-183631-1	BLDG1-BIN12-SP-013	TCLP	Solid	6010C	577921
480-183631-2	BLDG1-BIN11-SP-014	TCLP	Solid	6010C	577921
480-183631-3	BLDG1-BIN10-SP-015	TCLP	Solid	6010C	577921
480-183631-4	BLDG1-BIN9-SP-016	TCLP	Solid	6010C	577921
480-183631-4	BLDG1-BIN9-SP-016	TCLP	Solid	6010C	577921
480-183631-5	BLDG1-BIN8-SP-017	TCLP	Solid	6010C	577921
480-183631-5	BLDG1-BIN8-SP-017	TCLP	Solid	6010C	577921
MB 480-577921/2-A	Method Blank	Total/NA	Solid	6010C	577921
LCS 480-577921/3-A	Lab Control Sample	Total/NA	Solid	6010C	577921
480-183631-2 MS	BLDG1-BIN11-SP-014	TCLP	Solid	6010C	577921
480-183631-2 MSD	BLDG1-BIN11-SP-014	TCLP	Solid	6010C	577921

Analysis Batch: 578377

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LB 480-577812/1-D	Method Blank	TCLP	Solid	6010C	577921

General Chemistry

Analysis Batch: 578008

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183631-4	BLDG1-BIN9-SP-016	Total/NA	Solid	9045D	
480-183631-5	BLDG1-BIN8-SP-017	Total/NA	Solid	9045D	
LCS 480-578008/1	Lab Control Sample	Total/NA	Solid	9045D	

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183631-1

General Chemistry

Analysis Batch: 578201

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183631-1	BLDG1-BIN12-SP-013	Total/NA	Solid	1010A	
480-183631-2	BLDG1-BIN11-SP-014	Total/NA	Solid	1010A	
480-183631-3	BLDG1-BIN10-SP-015	Total/NA	Solid	1010A	
480-183631-4	BLDG1-BIN9-SP-016	Total/NA	Solid	1010A	
480-183631-5	BLDG1-BIN8-SP-017	Total/NA	Solid	1010A	
LCS 480-578201/1	Lab Control Sample	Total/NA	Solid	1010A	

Analysis Batch: 578238

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183631-1	BLDG1-BIN12-SP-013	Total/NA	Solid	9045D	
480-183631-2	BLDG1-BIN11-SP-014	Total/NA	Solid	9045D	
480-183631-3	BLDG1-BIN10-SP-015	Total/NA	Solid	9045D	
LCS 480-578238/1	Lab Control Sample	Total/NA	Solid	9045D	

Lab Chronicle

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183631-1

Client Sample ID: BLDG1-BIN12-SP-013

Lab Sample ID: 480-183631-1

Date Collected: 04/20/21 11:00
Date Received: 04/21/21 10:00

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			577814	04/25/21 09:56	LMS	TAL BUF
TCLP	Analysis	8260C		10	578098	04/27/21 23:56	CRL	TAL BUF
Total/NA	Prep	5035A_L			577496	04/22/21 18:06	CDC	TAL BUF
Total/NA	Analysis	8260C		1	577732	04/24/21 17:36	WJD	TAL BUF
TCLP	Leach	1311			577812	04/25/21 09:51	LMS	TAL BUF
TCLP	Prep	3510C			577984	04/26/21 14:45	ATG	TAL BUF
TCLP	Analysis	8270D		1	578080	04/27/21 14:01	JMM	TAL BUF
Total/NA	Prep	3550C			577604	04/23/21 10:13	VXF	TAL BUF
Total/NA	Analysis	8270D		5	577969	04/26/21 19:50	PJQ	TAL BUF
TCLP	Leach	1311			577812	04/25/21 09:51	LMS	TAL BUF
TCLP	Prep	3510C			577920	04/26/21 10:21	JMP	TAL BUF
TCLP	Analysis	8081B		1	578043	04/27/21 14:17	JLS	TAL BUF
TCLP	Leach	1311			577812	04/25/21 09:51	LMS	TAL BUF
TCLP	Prep	8151A			577918	04/26/21 10:16	JMP	TAL BUF
TCLP	Analysis	8151		1	578093	04/28/21 03:46	MAN	TAL BUF
TCLP	Leach	1311			577812	04/25/21 09:51	LMS	TAL BUF
TCLP	Prep	3010A			577921	04/26/21 10:40	KMP	TAL BUF
TCLP	Analysis	6010C		1	578334	04/27/21 18:37	LMH	TAL BUF
TCLP	Leach	1311			577812	04/25/21 09:51	LMS	TAL BUF
TCLP	Prep	3010A			577921	04/26/21 10:40	KMP	TAL BUF
TCLP	Analysis	6010C		2	578334	04/27/21 19:26	LMH	TAL BUF
TCLP	Leach	1311			577812	04/25/21 09:51	LMS	TAL BUF
TCLP	Prep	7470A			577964	04/26/21 14:00	BMB	TAL BUF
TCLP	Analysis	7470A		1	578015	04/26/21 19:15	BMB	TAL BUF
Total/NA	Analysis	1010A		1	578201	04/27/21 17:05	KEB	TAL BUF
Total/NA	Analysis	9045D		1	578238	04/27/21 11:00	CSS	TAL BUF

Client Sample ID: BLDG1-BIN11-SP-014

Lab Sample ID: 480-183631-2

Date Collected: 04/20/21 11:15
Date Received: 04/21/21 10:00

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			577814	04/25/21 09:56	LMS	TAL BUF
TCLP	Analysis	8260C		10	578098	04/28/21 00:21	CRL	TAL BUF
Total/NA	Prep	5035A_L			577496	04/22/21 18:06	CDC	TAL BUF
Total/NA	Analysis	8260C		1	577732	04/24/21 18:01	WJD	TAL BUF
TCLP	Leach	1311			577812	04/25/21 09:51	LMS	TAL BUF
TCLP	Prep	3510C			577984	04/26/21 14:45	ATG	TAL BUF
TCLP	Analysis	8270D		1	578080	04/27/21 14:25	JMM	TAL BUF
Total/NA	Prep	3550C			577604	04/23/21 10:13	VXF	TAL BUF
Total/NA	Analysis	8270D		1	577969	04/26/21 20:15	PJQ	TAL BUF
TCLP	Leach	1311			577812	04/25/21 09:51	LMS	TAL BUF
TCLP	Prep	3510C			577920	04/26/21 10:21	JMP	TAL BUF
TCLP	Analysis	8081B		1	578270	04/28/21 10:34	JLS	TAL BUF

Client Sample ID: BLDG1-BIN11-SP-014
Lab Sample ID: 480-183631-2
Date Collected: 04/20/21 11:15
Matrix: Solid
Date Received: 04/21/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			577812	04/25/21 09:51	LMS	TAL BUF
TCLP	Prep	8151A			577918	04/26/21 10:16	JMP	TAL BUF
TCLP	Analysis	8151		1	578093	04/28/21 04:16	MAN	TAL BUF
TCLP	Leach	1311			577812	04/25/21 09:51	LMS	TAL BUF
TCLP	Prep	3010A			577921	04/26/21 10:40	KMP	TAL BUF
TCLP	Analysis	6010C		1	578334	04/27/21 18:40	LMH	TAL BUF
TCLP	Leach	1311			577812	04/25/21 09:51	LMS	TAL BUF
TCLP	Prep	7470A			577964	04/26/21 14:00	BMB	TAL BUF
TCLP	Analysis	7470A		1	578015	04/26/21 19:17	BMB	TAL BUF
Total/NA	Analysis	1010A		1	578201	04/27/21 17:05	KEB	TAL BUF
Total/NA	Analysis	9045D		1	578238	04/27/21 11:00	CSS	TAL BUF

Client Sample ID: BLDG1-BIN10-SP-015
Lab Sample ID: 480-183631-3
Date Collected: 04/20/21 11:30
Matrix: Solid
Date Received: 04/21/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			577814	04/25/21 09:56	LMS	TAL BUF
TCLP	Analysis	8260C		10	578098	04/28/21 00:45	CRL	TAL BUF
Total/NA	Prep	5035A_L			577756	04/24/21 09:55	CDC	TAL BUF
Total/NA	Analysis	8260C		1	577759	04/25/21 03:48	WJD	TAL BUF
TCLP	Leach	1311			577812	04/25/21 09:51	LMS	TAL BUF
TCLP	Prep	3510C			577984	04/26/21 14:45	ATG	TAL BUF
TCLP	Analysis	8270D		1	578080	04/27/21 14:49	JMM	TAL BUF
Total/NA	Prep	3550C			577604	04/23/21 10:13	VXF	TAL BUF
Total/NA	Analysis	8270D		5	577969	04/26/21 20:40	PJQ	TAL BUF
TCLP	Leach	1311			577812	04/25/21 09:51	LMS	TAL BUF
TCLP	Prep	3510C			577920	04/26/21 10:21	JMP	TAL BUF
TCLP	Analysis	8081B		1	578270	04/28/21 10:53	JLS	TAL BUF
TCLP	Leach	1311			577812	04/25/21 09:51	LMS	TAL BUF
TCLP	Prep	8151A			577918	04/26/21 10:16	JMP	TAL BUF
TCLP	Analysis	8151		1	578093	04/28/21 04:46	MAN	TAL BUF
TCLP	Leach	1311			577812	04/25/21 09:51	LMS	TAL BUF
TCLP	Prep	3010A			577921	04/26/21 10:40	KMP	TAL BUF
TCLP	Analysis	6010C		1	578334	04/27/21 18:59	LMH	TAL BUF
TCLP	Leach	1311			577812	04/25/21 09:51	LMS	TAL BUF
TCLP	Prep	7470A			577964	04/26/21 14:00	BMB	TAL BUF
TCLP	Analysis	7470A		1	578015	04/26/21 19:22	BMB	TAL BUF
Total/NA	Analysis	1010A		1	578201	04/27/21 17:05	KEB	TAL BUF
Total/NA	Analysis	9045D		1	578238	04/27/21 11:00	CSS	TAL BUF

Client Sample ID: BLDG1-BIN9-SP-016
Lab Sample ID: 480-183631-4
Date Collected: 04/20/21 11:45
Matrix: Solid
Date Received: 04/21/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			577814	04/25/21 09:56	LMS	TAL BUF
TCLP	Analysis	8260C		10	578098	04/28/21 01:09	CRL	TAL BUF
Total/NA	Prep	5035A_L			577756	04/24/21 09:55	CDC	TAL BUF
Total/NA	Analysis	8260C		1	577759	04/25/21 04:13	WJD	TAL BUF
TCLP	Leach	1311			577812	04/25/21 09:51	LMS	TAL BUF
TCLP	Prep	3510C			577984	04/26/21 14:45	ATG	TAL BUF
TCLP	Analysis	8270D		1	578080	04/27/21 15:13	JMM	TAL BUF
Total/NA	Prep	3550C			577604	04/23/21 10:13	VXF	TAL BUF
Total/NA	Analysis	8270D		5	577969	04/26/21 21:04	PJQ	TAL BUF
TCLP	Leach	1311			577812	04/25/21 09:51	LMS	TAL BUF
TCLP	Prep	3510C			577920	04/26/21 10:21	JMP	TAL BUF
TCLP	Analysis	8081B		1	578270	04/28/21 11:13	JLS	TAL BUF
TCLP	Leach	1311			577812	04/25/21 09:51	LMS	TAL BUF
TCLP	Prep	8151A			577918	04/26/21 10:16	JMP	TAL BUF
TCLP	Analysis	8151		1	578093	04/28/21 05:15	MAN	TAL BUF
TCLP	Leach	1311			577812	04/25/21 09:51	LMS	TAL BUF
TCLP	Prep	3010A			577921	04/26/21 10:40	KMP	TAL BUF
TCLP	Analysis	6010C		1	578334	04/27/21 19:03	LMH	TAL BUF
TCLP	Leach	1311			577812	04/25/21 09:51	LMS	TAL BUF
TCLP	Prep	3010A			577921	04/26/21 10:40	KMP	TAL BUF
TCLP	Analysis	6010C		2	578334	04/27/21 19:30	LMH	TAL BUF
TCLP	Leach	1311			577812	04/25/21 09:51	LMS	TAL BUF
TCLP	Prep	7470A			577964	04/26/21 14:00	BMB	TAL BUF
TCLP	Analysis	7470A		1	578015	04/26/21 19:23	BMB	TAL BUF
Total/NA	Analysis	1010A		1	578201	04/27/21 17:05	KEB	TAL BUF
Total/NA	Analysis	9045D		1	578008	04/26/21 15:45	KEB	TAL BUF

Client Sample ID: BLDG1-BIN8-SP-017
Lab Sample ID: 480-183631-5
Date Collected: 04/20/21 12:00
Matrix: Solid
Date Received: 04/21/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			577814	04/25/21 09:56	LMS	TAL BUF
TCLP	Analysis	8260C		10	578098	04/28/21 01:32	CRL	TAL BUF
Total/NA	Prep	5035A_L			577756	04/24/21 09:55	CDC	TAL BUF
Total/NA	Analysis	8260C		1	577759	04/25/21 04:37	WJD	TAL BUF
TCLP	Leach	1311			577812	04/25/21 09:51	LMS	TAL BUF
TCLP	Prep	3510C			577984	04/26/21 14:45	ATG	TAL BUF
TCLP	Analysis	8270D		1	578080	04/27/21 15:37	JMM	TAL BUF
Total/NA	Prep	3550C			577604	04/23/21 10:13	VXF	TAL BUF
Total/NA	Analysis	8270D		1	577969	04/26/21 21:29	PJQ	TAL BUF
TCLP	Leach	1311			577812	04/25/21 09:51	LMS	TAL BUF
TCLP	Prep	3510C			577920	04/26/21 10:21	JMP	TAL BUF
TCLP	Analysis	8081B		1	578270	04/28/21 11:32	JLS	TAL BUF

Lab Chronicle

Client: Integral Consulting Inc | Job ID: 480-183631-1
Project/Site: Project EF1017

Client Sample ID: BLDG1-BIN8-SP-017 | Lab Sample ID: 480-183631-5

Date Collected: 04/20/21 12:00 | **Matrix: Solid**
Date Received: 04/21/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			577812	04/25/21 09:51	LMS	TAL BUF
TCLP	Prep	8151A			577918	04/26/21 10:16	JMP	TAL BUF
TCLP	Analysis	8151		1	578093	04/28/21 05:45	MAN	TAL BUF
TCLP	Leach	1311			577812	04/25/21 09:51	LMS	TAL BUF
TCLP	Prep	3010A			577921	04/26/21 10:40	KMP	TAL BUF
TCLP	Analysis	6010C		1	578334	04/27/21 19:18	LMH	TAL BUF
TCLP	Leach	1311			577812	04/25/21 09:51	LMS	TAL BUF
TCLP	Prep	3010A			577921	04/26/21 10:40	KMP	TAL BUF
TCLP	Analysis	6010C		2	578334	04/27/21 19:34	LMH	TAL BUF
TCLP	Leach	1311			577812	04/25/21 09:51	LMS	TAL BUF
TCLP	Prep	7470A			577964	04/26/21 14:00	BMB	TAL BUF
TCLP	Analysis	7470A		1	578015	04/26/21 19:27	BMB	TAL BUF
Total/NA	Analysis	1010A		1	578201	04/27/21 17:05	KEB	TAL BUF
Total/NA	Analysis	9045D		1	578008	04/26/21 15:45	KEB	TAL BUF

Client Sample ID: BLDG1-3RDOIL1-SP-018 | Lab Sample ID: 480-183631-6

Date Collected: 04/20/21 14:00 | **Matrix: Waste**
Date Received: 04/21/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3580A			577855	04/26/21 07:24	SMP	TAL BUF
Total/NA	Analysis	8082A		5	578150	04/28/21 01:30	NC	TAL BUF

Client Sample ID: BLDG1-3RDOIL2-SP-019 | Lab Sample ID: 480-183631-7

Date Collected: 04/20/21 14:20 | **Matrix: Waste**
Date Received: 04/21/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3580A			577855	04/26/21 07:24	SMP	TAL BUF
Total/NA	Analysis	8082A		10	578150	04/28/21 01:46	NC	TAL BUF

Client Sample ID: BLDG1-2NDOIL3-SP-020 | Lab Sample ID: 480-183631-8

Date Collected: 04/20/21 14:50 | **Matrix: Waste**
Date Received: 04/21/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3580A			577855	04/26/21 07:24	SMP	TAL BUF
Total/NA	Analysis	8082A		10	578150	04/28/21 02:02	NC	TAL BUF

Laboratory References:

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Accreditation/Certification Summary

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183631-1

Laboratory: Eurofins TestAmerica, Buffalo

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
New York	NELAP	10026	04-01-22

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
7470A	7470A	Solid	Mercury
9045D		Solid	Temperature

Method Summary

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183631-1

Method	Method Description	Protocol	Laboratory
8260C	TCLP Volatiles	SW846	TAL BUF
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL BUF
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL BUF
8081B	Organochlorine Pesticides (GC)	SW846	TAL BUF
8082A	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	SW846	TAL BUF
8151	TCLP Herbicides	SW846	TAL BUF
6010C	Metals (ICP)	SW846	TAL BUF
7470A	TCLP Mercury	SW846	TAL BUF
1010A	Ignitability, Pensky-Martens Closed-Cup Method	SW846	TAL BUF
9045D	pH	SW846	TAL BUF
1311	TCLP Extraction	SW846	TAL BUF
3010A	Preparation, Total Metals	SW846	TAL BUF
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	TAL BUF
3550C	Ultrasonic Extraction	SW846	TAL BUF
3580A	Waste Dilution	SW846	TAL BUF
5030C	Purge and Trap	SW846	TAL BUF
5035A_L	Closed System Purge and Trap	SW846	TAL BUF
7470A	Preparation, Mercury	SW846	TAL BUF
8151A	Extraction (Herbicides)	SW846	TAL BUF

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Sample Summary

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183631-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
480-183631-1	BLDG1-BIN12-SP-013	Solid	04/20/21 11:00	04/21/21 10:00	
480-183631-2	BLDG1-BIN11-SP-014	Solid	04/20/21 11:15	04/21/21 10:00	
480-183631-3	BLDG1-BIN10-SP-015	Solid	04/20/21 11:30	04/21/21 10:00	
480-183631-4	BLDG1-BIN9-SP-016	Solid	04/20/21 11:45	04/21/21 10:00	
480-183631-5	BLDG1-BIN8-SP-017	Solid	04/20/21 12:00	04/21/21 10:00	
480-183631-6	BLDG1-3RDOIL1-SP-018	Waste	04/20/21 14:00	04/21/21 10:00	
480-183631-7	BLDG1-3RDOIL2-SP-019	Waste	04/20/21 14:20	04/21/21 10:00	
480-183631-8	BLDG1-2NDOIL3-SP-020	Waste	04/20/21 14:50	04/21/21 10:00	

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone: 716-691-2600 Fax: 716-691-7991

Chain of Custody Record

eurofins | Environment Testing America

Client Information	Sampler: K. ZATWARNICKI	Lab PM: Fischer, Brian J	Carrier Tracking No(s):	COC No: 480-158821-34919.2
Client Contact: Mr. Glenn Esler	Phone:	E-Mail: Brian.Fischer@Eurofinset.com	State of Origin: NY	Page: Page 1 of 1
Company: Integral Consulting Inc	PWSID:			Job #:
Address: 319 SW Washington Ave Suite 1150	Due Date Requested:			
City: Portland	TAT Requested (days): 5-days			
State, Zip: OR, 97204	Compliance Project: Δ Yes Δ No			
Phone: 503-943-3617(Tel)	PO #: Purchase Order not required			
Email: gesler@integral-corp.com	WO #:			
Project Name: Project EF1017	Project #: 48023604			
Site:	SSOW#:			

Analysis Requested

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010C, 7470A, 8081B, 8151A, 8270D TCLP	8260C - TCLP Volatiles	1010A, 8270D, 9045D	8260C - TCL list OLM04.2	8082A - TCL PCBs - OLM04.2	8270D TCL SVOCs	Total Number of containers	Special Instructions/Note:
				Preservation Code:			N	N	N	N	N			
BLDG1-BIN12-SP-013	4/20/21	1100	G	Solid	N		X	X	X	X		X		
BLDG1-BIN11-SP-014		1115		Solid										
BLDG1-BIN10-SP-015		1130		Solid										
BLDG1-BIN9-SP-016		1145		Solid										
BLDG1-BIN8-SP-017		1200		Solid										
BLDG1-3RDOIL1-SP-018		1400		~~Solid~~ OIL							X			
BLDG1-3RDOIL2-SP-019		1420		~~Solid~~ OIL							X			
BLDG1-2NDOIL3-SP-020		1450		~~Solid~~ OIL							X			
				Solid										
				Water										
				Water										

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

480-183631 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Deliverable Requested: I, II, III, IV, Other (specify) CAT B LVL 2

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For ______ Months

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:		Method of Shipment:	
Relinquished by: Katelyn Zatwarnicki	Date/Time: 4/20/21 1800	Company: Integral	Received by: [signature]	Date/Time: 4/21/21 1000	Company: TAS
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: #1 3.3		

Ver: 11/01/2020

Login Sample Receipt Checklist

Client: Integral Consulting Inc

Job Number: 480-183631-1

Login Number: 183631
List Number: 1
Creator: Kolb, Chris M

List Source: Eurofins TestAmerica, Buffalo

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	intergal
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	N/A	

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ANALYTICAL REPORT

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

Laboratory Job ID: 480-183850-1
Client Project/Site: Project EF1017

For:
Integral Consulting Inc
319 SW Washington Ave
Suite 1150
Portland, Oregon 97204

Attn: Mr. Glenn Esler

Authorized for release by:
5/4/2021 5:43:22 PM
Rebecca Jones, Project Management Assistant I
Rebecca.Jones@Eurofinset.com

Designee for

Brian Fischer, Manager of Project Management
(716)504-9835
Brian.Fischer@Eurofinset.com

LINKS

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The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Definitions/Glossary

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183850-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
vs	Reported analyte concentrations are below 200 ug/kg and may be biased low due to the sample not being collected according to 5035A-L low-level specifications.

GC/MS Semi VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
S1-	Surrogate recovery exceeds control limits, low biased.

GC Semi VOA

Qualifier	Qualifier Description
*3	ISTD response or retention time outside acceptable limits.
S1-	Surrogate recovery exceeds control limits, low biased.
S1+	Surrogate recovery exceeds control limits, high biased.

Metals

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)

Glossary (Continued)

Abbreviation	These commonly used abbreviations may or may not be present in this report.
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Job ID: 480-183850-1

Laboratory: Eurofins TestAmerica, Buffalo

Narrative

Job Narrative
480-183850-1

Comments
No additional comments.

Receipt
The samples were received on 4/27/2021 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.4º C.

GC/MS VOA
Method 8260C: The continuing calibration verification (CCV) associated with batch 480-578486 recovered above the upper control limit for 2-Butanone (MEK) and 2-Hexanone. The samples associated with this CCV were non-detects above the reporting limit for the affected analytes; therefore, the data have been reported. The associated samples are impacted: BLDG1-BIN 7-SP-029 (480-183850-9), BLDG1-BIN 6-SP-030 (480-183850-10) and BLDG1-BIN 5-SP-031 (480-183850-11).

Method 8260C: The following samples were analyzed at a reduced weight due to the fine powder nature of the sample matrix: BLDG1-BIN 7-SP-029 (480-183850-9), BLDG1-BIN 6-SP-030 (480-183850-10), BLDG1-BIN 5-SP-031 (480-183850-11), (480-183850-A-11-B MS) and (480-183850-A-11-C MSD). Elevated reporting limits (RLs) are provided.

Method 8260C: The continuing calibration verification (CCV) associated with batch 480-578858 recovered outside acceptance criteria, low biased, for 2-Butanone (MEK). A reporting limit (RL) standard was analyzed, and the target analyte was detected. Since the associated samples were non-detect for this analyte, the data have been reported. The associated samples are: BLDG1-BIN 7-SP-029 (480-183850-9), BLDG1-BIN 6-SP-030 (480-183850-10) and BLDG1-BIN 5-SP-031 (480-183850-11).

Method 8260C: The following samples were diluted due to the TCLP solid nature of the sample matrix: BLDG1-BIN 7-SP-029 (480-183850-9), BLDG1-BIN 6-SP-030 (480-183850-10), BLDG1-BIN 5-SP-031 (480-183850-11) and (LB 480-578566/1-A). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC/MS Semi VOA
Method 8270D: The laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 480-578481 and analytical batch 480-578805 recovered outside control limits for the following surrogate: p-Terphenyl-d14. This surrogate is biased low and no detections were found for associated analytes in the following affected samples: BLDG1-BIN 7-SP-029 (480-183850-9), BLDG1-BIN 6-SP-030 (480-183850-10) and BLDG1-BIN 5-SP-031 (480-183850-11). Therefore, the data has been reported. BLDG1-BIN 7-SP-029 (480-183850-9), BLDG1-BIN 6-SP-030 (480-183850-10) and BLDG1-BIN 5-SP-031 (480-183850-11)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC Semi VOA
Method 8081B: The internal standard was inadvertently added twice. The added reagent amount has been adjusted accordingly: BLDG1-BIN 5-SP-031 (480-183850-11).

Method 8082A: The following samples were diluted due to the nature of the sample matrix: BLDG1-3RD OIL4-SP-021 (480-183850-1), BLDG1-2ND OIL5-SP-022 (480-183850-2), BLDG1-2ND OIL6-SP-023 (480-183850-3), BLDG1-1ST OIL7-SP-024 (480-183850-4), BLDG1-1ST OIL8-SP-025 (480-183850-5), BLDG2-2T CRANE-SP-026 (480-183850-6), BLDG4-1T CRANE-SP-027 (480-183850-7) and BLDG4-1T CRANE-SP-028 (480-183850-8). Elevated reporting limits (RLs) are provided.

Method 8082A: Surrogate recovery for the following samples were outside control limits: BLDG1-3RD OIL4-SP-021 (480-183850-1), BLDG1-2ND OIL5-SP-022 (480-183850-2), BLDG1-1ST OIL7-SP-024 (480-183850-4), BLDG2-2T CRANE-SP-026 (480-183850-6), BLDG4-1T CRANE-SP-027 (480-183850-7) and BLDG4-1T CRANE-SP-028 (480-183850-8). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8151A: Surrogate recovery for the following samples were outside control limits: BLDG1-BIN 6-SP-030 (480-183850-10),

Job ID: 480-183850-1 (Continued)

Laboratory: Eurofins TestAmerica, Buffalo (Continued)

BLDG1-BIN 5-SP-031 (480-183850-11) and (LB 480-578564/1-D). This is routine for TCLP herbicides, due to the pH effects created during the leaching process, inhibiting the herbicide derivatization of the free acid components.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals
Method 6010C: The following sample was diluted due to the presence of Total Iron which interferes with Silver, Arsenic, Cadmium, Chromium, Lead, and Selenium: BLDG1-BIN 7-SP-029 (480-183850-9). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry
Methods 9045C, 9045D: This analysis is normally performed in the field and has a method-defined holding time of 15 minutes. The following samples has been qualified with the "HF" flag to indicate analysis was performed in the laboratory outside the 15 minute timeframe: BLDG1-BIN 7-SP-029 (480-183850-9), BLDG1-BIN 6-SP-030 (480-183850-10) and BLDG1-BIN 5-SP-031 (480-183850-11).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep
Method 3510C: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 480-578564 and 480-578722.

Method 3510C: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 480-578564 and 480-578777.

Method 3550C: Due to the matrix, the initial volume(s) used for the following samples deviated from the standard procedure: 8270 DBLDG1-BIN 7-SP-029 (480-183850-9), BLDG1-BIN 6-SP-030 (480-183850-10) and BLDG1-BIN 5-SP-031 (480-183850-11). The reporting limits (RLs) have been adjusted proportionately.

Method 8151A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 480-578564 and 480-578724.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183850-1

Client Sample ID: BLDG1-3RD OIL4-SP-021 — Lab Sample ID: 480-183850-1

No Detections.

Client Sample ID: BLDG1-2ND OIL5-SP-022 — Lab Sample ID: 480-183850-2

No Detections.

Client Sample ID: BLDG1-2ND OIL6-SP-023 — Lab Sample ID: 480-183850-3

No Detections.

Client Sample ID: BLDG1-1ST OIL7-SP-024 — Lab Sample ID: 480-183850-4

No Detections.

Client Sample ID: BLDG1-1ST OIL8-SP-025 — Lab Sample ID: 480-183850-5

No Detections.

Client Sample ID: BLDG2-2T CRANE-SP-026 — Lab Sample ID: 480-183850-6

No Detections.

Client Sample ID: BLDG4-1T CRANE-SP-027 — Lab Sample ID: 480-183850-7

No Detections.

Client Sample ID: BLDG4-1T CRANE-SP-028 — Lab Sample ID: 480-183850-8

No Detections.

Client Sample ID: BLDG1-BIN 7-SP-029 — Lab Sample ID: 480-183850-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	47	J vs	230	39	ug/Kg	1	☼	8260C	Total/NA
Bis(2-ethylhexyl) phthalate	540	J	990	340	ug/Kg	1	☼	8270D	Total/NA
Butyl benzyl phthalate	260	J	990	160	ug/Kg	1	☼	8270D	Total/NA
Cadmium	0.0018	J	0.0040	0.0010	mg/L	2		6010C	TCLP
Chromium	1.3		0.040	0.020	mg/L	2		6010C	TCLP
Lead	0.053		0.040	0.0060	mg/L	2		6010C	TCLP
Flashpoint	>180		50.0	50.0	Degrees F	1		1010A	Total/NA
pH	7.7	HF	0.1	0.1	SU	1		9045D	Total/NA
Temperature	22.1	HF	0.001	0.001	Degrees C	1		9045D	Total/NA

Client Sample ID: BLDG1-BIN 6-SP-030 — Lab Sample ID: 480-183850-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	0.033		0.020	0.010	mg/L	1		6010C	TCLP
Lead	0.0094	J	0.020	0.0030	mg/L	1		6010C	TCLP
Flashpoint	>180		50.0	50.0	Degrees F	1		1010A	Total/NA
pH	7.3	HF	0.1	0.1	SU	1		9045D	Total/NA
Temperature	22.1	HF	0.001	0.001	Degrees C	1		9045D	Total/NA

Client Sample ID: BLDG1-BIN 5-SP-031 — Lab Sample ID: 480-183850-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.15	J	1.0	0.10	mg/L	1		6010C	TCLP
Chromium	0.21		0.020	0.010	mg/L	1		6010C	TCLP
Lead	0.023		0.020	0.0030	mg/L	1		6010C	TCLP
Selenium	0.0091	J	0.025	0.0087	mg/L	1		6010C	TCLP

This Detection Summary does not include radiochemical test results.

Client Sample ID: BLDG1-BIN 5-SP-031 (Continued)

Lab Sample ID: 480-183850-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Silver	0.0027	J	0.0060	0.0017	mg/L	1		6010C	TCLP
Flashpoint	>180		50.0	50.0	Degrees F	1		1010A	Total/NA
pH	8.5	HF	0.1	0.1	SU	1		9045D	Total/NA
Temperature	22.0	HF	0.001	0.001	Degrees C	1		9045D	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: BLDG1-3RD OIL4-SP-021

Lab Sample ID: 480-183850-1

Date Collected: 04/21/21 07:40
Matrix: Waste
Date Received: 04/27/21 10:00

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		77	15	mg/Kg		04/30/21 07:09	05/03/21 00:44	20
PCB-1221	ND		77	15	mg/Kg		04/30/21 07:09	05/03/21 00:44	20
PCB-1232	ND		77	15	mg/Kg		04/30/21 07:09	05/03/21 00:44	20
PCB-1242	ND		77	15	mg/Kg		04/30/21 07:09	05/03/21 00:44	20
PCB-1248	ND		77	15	mg/Kg		04/30/21 07:09	05/03/21 00:44	20
PCB-1254	ND		77	3.6	mg/Kg		04/30/21 07:09	05/03/21 00:44	20
PCB-1260	ND		77	3.6	mg/Kg		04/30/21 07:09	05/03/21 00:44	20

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*169*	*S1+*	*60 - 154*	*04/30/21 07:09*	*05/03/21 00:44*	*20*
Tetrachloro-m-xylene	*105*		*60 - 154*	*04/30/21 07:09*	*05/03/21 00:44*	*20*
DCB Decachlorobiphenyl	*212*	*S1+*	*65 - 174*	*04/30/21 07:09*	*05/03/21 00:44*	*20*
DCB Decachlorobiphenyl	*45*	*S1-*	*65 - 174*	*04/30/21 07:09*	*05/03/21 00:44*	*20*

Client Sample ID: BLDG1-2ND OIL5-SP-022

Lab Sample ID: 480-183850-2

Date Collected: 04/21/21 08:45
Matrix: Waste
Date Received: 04/27/21 10:00

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		19	3.8	mg/Kg		04/30/21 07:09	05/03/21 01:00	5
PCB-1221	ND		19	3.8	mg/Kg		04/30/21 07:09	05/03/21 01:00	5
PCB-1232	ND		19	3.8	mg/Kg		04/30/21 07:09	05/03/21 01:00	5
PCB-1242	ND		19	3.8	mg/Kg		04/30/21 07:09	05/03/21 01:00	5
PCB-1248	ND		19	3.8	mg/Kg		04/30/21 07:09	05/03/21 01:00	5
PCB-1254	ND		19	0.90	mg/Kg		04/30/21 07:09	05/03/21 01:00	5
PCB-1260	ND		19	0.90	mg/Kg		04/30/21 07:09	05/03/21 01:00	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*165*	*S1+*	*60 - 154*	*04/30/21 07:09*	*05/03/21 01:00*	*5*
Tetrachloro-m-xylene	*112*		*60 - 154*	*04/30/21 07:09*	*05/03/21 01:00*	*5*
DCB Decachlorobiphenyl	*115*		*65 - 174*	*04/30/21 07:09*	*05/03/21 01:00*	*5*
DCB Decachlorobiphenyl	*87*		*65 - 174*	*04/30/21 07:09*	*05/03/21 01:00*	*5*

Client Sample ID: BLDG1-2ND OIL6-SP-023

Lab Sample ID: 480-183850-3

Date Collected: 04/21/21 09:30
Matrix: Waste
Date Received: 04/27/21 10:00

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		28	5.4	mg/Kg		04/30/21 07:09	05/03/21 01:16	10
PCB-1221	ND		28	5.4	mg/Kg		04/30/21 07:09	05/03/21 01:16	10
PCB-1232	ND		28	5.4	mg/Kg		04/30/21 07:09	05/03/21 01:16	10
PCB-1242	ND		28	5.4	mg/Kg		04/30/21 07:09	05/03/21 01:16	10
PCB-1248	ND		28	5.4	mg/Kg		04/30/21 07:09	05/03/21 01:16	10
PCB-1254	ND		28	1.3	mg/Kg		04/30/21 07:09	05/03/21 01:16	10
PCB-1260	ND		28	1.3	mg/Kg		04/30/21 07:09	05/03/21 01:16	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*93*		*60 - 154*	*04/30/21 07:09*	*05/03/21 01:16*	*10*
Tetrachloro-m-xylene	*88*		*60 - 154*	*04/30/21 07:09*	*05/03/21 01:16*	*10*

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Client Sample ID: BLDG1-2ND OIL6-SP-023 — Lab Sample ID: 480-183850-3

Date Collected: 04/21/21 09:30 — **Matrix: Waste**
Date Received: 04/27/21 10:00

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*120*		*65 - 174*	*04/30/21 07:09*	*05/03/21 01:16*	*10*
DCB Decachlorobiphenyl	*65*		*65 - 174*	*04/30/21 07:09*	*05/03/21 01:16*	*10*

Client Sample ID: BLDG1-1ST OIL7-SP-024 — Lab Sample ID: 480-183850-4

Date Collected: 04/21/21 09:45 — **Matrix: Waste**
Date Received: 04/27/21 10:00

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		33	6.5	mg/Kg		04/30/21 07:09	05/03/21 01:32	10
PCB-1221	ND		33	6.5	mg/Kg		04/30/21 07:09	05/03/21 01:32	10
PCB-1232	ND		33	6.5	mg/Kg		04/30/21 07:09	05/03/21 01:32	10
PCB-1242	ND		33	6.5	mg/Kg		04/30/21 07:09	05/03/21 01:32	10
PCB-1248	ND		33	6.5	mg/Kg		04/30/21 07:09	05/03/21 01:32	10
PCB-1254	ND		33	1.6	mg/Kg		04/30/21 07:09	05/03/21 01:32	10
PCB-1260	ND		33	1.6	mg/Kg		04/30/21 07:09	05/03/21 01:32	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*368*	*S1+*	*60 - 154*	*04/30/21 07:09*	*05/03/21 01:32*	*10*
Tetrachloro-m-xylene	*80*		*60 - 154*	*04/30/21 07:09*	*05/03/21 01:32*	*10*
DCB Decachlorobiphenyl	*106*		*65 - 174*	*04/30/21 07:09*	*05/03/21 01:32*	*10*
DCB Decachlorobiphenyl	*65*		*65 - 174*	*04/30/21 07:09*	*05/03/21 01:32*	*10*

Client Sample ID: BLDG1-1ST OIL8-SP-025 — Lab Sample ID: 480-183850-5

Date Collected: 04/21/21 10:00 — **Matrix: Waste**
Date Received: 04/27/21 10:00

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		18	3.5	mg/Kg		04/30/21 07:09	05/03/21 01:48	5
PCB-1221	ND		18	3.5	mg/Kg		04/30/21 07:09	05/03/21 01:48	5
PCB-1232	ND		18	3.5	mg/Kg		04/30/21 07:09	05/03/21 01:48	5
PCB-1242	ND		18	3.5	mg/Kg		04/30/21 07:09	05/03/21 01:48	5
PCB-1248	ND		18	3.5	mg/Kg		04/30/21 07:09	05/03/21 01:48	5
PCB-1254	ND		18	0.84	mg/Kg		04/30/21 07:09	05/03/21 01:48	5
PCB-1260	ND		18	0.84	mg/Kg		04/30/21 07:09	05/03/21 01:48	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*96*		*60 - 154*	*04/30/21 07:09*	*05/03/21 01:48*	*5*
Tetrachloro-m-xylene	*96*		*60 - 154*	*04/30/21 07:09*	*05/03/21 01:48*	*5*
DCB Decachlorobiphenyl	*106*		*65 - 174*	*04/30/21 07:09*	*05/03/21 01:48*	*5*
DCB Decachlorobiphenyl	*78*		*65 - 174*	*04/30/21 07:09*	*05/03/21 01:48*	*5*

Client Sample ID: BLDG2-2T CRANE-SP-026 — Lab Sample ID: 480-183850-6

Date Collected: 04/26/21 09:15 — **Matrix: Waste**
Date Received: 04/27/21 10:00

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		33	6.5	mg/Kg		04/30/21 07:09	05/03/21 02:04	10
PCB-1221	ND		33	6.5	mg/Kg		04/30/21 07:09	05/03/21 02:04	10

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Client Sample ID: BLDG2-2T CRANE-SP-026

Lab Sample ID: 480-183850-6

Date Collected: 04/26/21 09:15

Matrix: Waste

Date Received: 04/27/21 10:00

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1232	ND		33	6.5	mg/Kg		04/30/21 07:09	05/03/21 02:04	10
PCB-1242	ND		33	6.5	mg/Kg		04/30/21 07:09	05/03/21 02:04	10
PCB-1248	ND		33	6.5	mg/Kg		04/30/21 07:09	05/03/21 02:04	10
PCB-1254	ND		33	1.6	mg/Kg		04/30/21 07:09	05/03/21 02:04	10
PCB-1260	ND		33	1.6	mg/Kg		04/30/21 07:09	05/03/21 02:04	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*227*	*S1+*	*60 - 154*	*04/30/21 07:09*	*05/03/21 02:04*	*10*
Tetrachloro-m-xylene	*166*	*S1+*	*60 - 154*	*04/30/21 07:09*	*05/03/21 02:04*	*10*
DCB Decachlorobiphenyl	*134*		*65 - 174*	*04/30/21 07:09*	*05/03/21 02:04*	*10*
DCB Decachlorobiphenyl	*68*		*65 - 174*	*04/30/21 07:09*	*05/03/21 02:04*	*10*

Client Sample ID: BLDG4-1T CRANE-SP-027

Lab Sample ID: 480-183850-7

Date Collected: 04/26/21 09:45

Matrix: Waste

Date Received: 04/27/21 10:00

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		56	11	mg/Kg		04/30/21 07:09	05/03/21 02:20	20
PCB-1221	ND		56	11	mg/Kg		04/30/21 07:09	05/03/21 02:20	20
PCB-1232	ND		56	11	mg/Kg		04/30/21 07:09	05/03/21 02:20	20
PCB-1242	ND		56	11	mg/Kg		04/30/21 07:09	05/03/21 02:20	20
PCB-1248	ND		56	11	mg/Kg		04/30/21 07:09	05/03/21 02:20	20
PCB-1254	ND		56	2.6	mg/Kg		04/30/21 07:09	05/03/21 02:20	20
PCB-1260	ND		56	2.6	mg/Kg		04/30/21 07:09	05/03/21 02:20	20

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*173*	*S1+*	*60 - 154*	*04/30/21 07:09*	*05/03/21 02:20*	*20*
Tetrachloro-m-xylene	*108*		*60 - 154*	*04/30/21 07:09*	*05/03/21 02:20*	*20*
DCB Decachlorobiphenyl	*168*		*65 - 174*	*04/30/21 07:09*	*05/03/21 02:20*	*20*
DCB Decachlorobiphenyl	*56*	*S1-*	*65 - 174*	*04/30/21 07:09*	*05/03/21 02:20*	*20*

Client Sample ID: BLDG4-1T CRANE-SP-028

Lab Sample ID: 480-183850-8

Date Collected: 04/26/21 10:00

Matrix: Waste

Date Received: 04/27/21 10:00

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		77	15	mg/Kg		04/30/21 07:09	05/03/21 02:36	20
PCB-1221	ND		77	15	mg/Kg		04/30/21 07:09	05/03/21 02:36	20
PCB-1232	ND		77	15	mg/Kg		04/30/21 07:09	05/03/21 02:36	20
PCB-1242	ND		77	15	mg/Kg		04/30/21 07:09	05/03/21 02:36	20
PCB-1248	ND		77	15	mg/Kg		04/30/21 07:09	05/03/21 02:36	20
PCB-1254	ND		77	3.6	mg/Kg		04/30/21 07:09	05/03/21 02:36	20
PCB-1260	ND		77	3.6	mg/Kg		04/30/21 07:09	05/03/21 02:36	20

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*125*		*60 - 154*	*04/30/21 07:09*	*05/03/21 02:36*	*20*
Tetrachloro-m-xylene	*86*		*60 - 154*	*04/30/21 07:09*	*05/03/21 02:36*	*20*
DCB Decachlorobiphenyl	*192*	*S1+*	*65 - 174*	*04/30/21 07:09*	*05/03/21 02:36*	*20*
DCB Decachlorobiphenyl	*63*	*S1-*	*65 - 174*	*04/30/21 07:09*	*05/03/21 02:36*	*20*

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183850-1

Client Sample ID: BLDG1-BIN 7-SP-029
Date Collected: 04/26/21 10:30
Date Received: 04/27/21 10:00

Lab Sample ID: 480-183850-9
Matrix: Solid
Percent Solids: 98.9

Method: 8260C - TCLP Volatiles - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.010	0.0041	mg/L			05/01/21 17:08	10
Carbon tetrachloride	ND		0.010	0.0027	mg/L			05/01/21 17:08	10
Chlorobenzene	ND		0.010	0.0075	mg/L			05/01/21 17:08	10
Chloroform	ND		0.010	0.0034	mg/L			05/01/21 17:08	10
1,2-Dichloroethane	ND		0.010	0.0021	mg/L			05/01/21 17:08	10
1,1-Dichloroethene	ND		0.010	0.0029	mg/L			05/01/21 17:08	10
2-Butanone (MEK)	ND		0.050	0.013	mg/L			05/01/21 17:08	10
Tetrachloroethene	ND		0.010	0.0036	mg/L			05/01/21 17:08	10
Trichloroethene	ND		0.010	0.0046	mg/L			05/01/21 17:08	10
Vinyl chloride	ND		0.010	0.0090	mg/L			05/01/21 17:08	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*77 - 120*		*05/01/21 17:08*	*10*
Toluene-d8 (Surr)	*105*		*80 - 120*		*05/01/21 17:08*	*10*
4-Bromofluorobenzene (Surr)	*105*		*73 - 120*		*05/01/21 17:08*	*10*
Dibromofluoromethane (Surr)	*119*		*75 - 123*		*05/01/21 17:08*	*10*

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND	vs	46	3.3	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
1,1,2,2-Tetrachloroethane	ND	vs	46	7.5	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
1,1,2-Trichloroethane	ND	vs	46	6.0	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	vs	46	10	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
1,1-Dichloroethane	ND	vs	46	5.6	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
1,1-Dichloroethene	ND	vs	46	5.6	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
1,2,4-Trichlorobenzene	ND	vs	46	2.8	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
1,2-Dibromo-3-Chloropropane	ND	vs	46	23	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
1,2-Dichlorobenzene	ND	vs	46	3.6	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
1,2-Dichloroethane	ND	vs	46	2.3	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
1,2-Dichloropropane	ND	vs	46	23	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
1,3-Dichlorobenzene	ND	vs	46	2.4	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
1,4-Dichlorobenzene	ND	vs	46	6.4	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
2-Butanone (MEK)	ND	vs	230	17	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
2-Hexanone	ND	vs	230	23	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
4-Methyl-2-pentanone (MIBK)	ND	vs	230	15	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
Acetone	**47**	**J vs**	230	39	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
Benzene	ND	vs	46	2.3	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
Bromodichloromethane	ND	vs	46	6.2	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
Bromoform	ND	vs	46	23	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
Bromomethane	ND	vs	46	4.1	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
Carbon disulfide	ND	vs	46	23	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
Carbon tetrachloride	ND	vs	46	4.4	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
Chlorobenzene	ND	vs	46	6.1	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
Dibromochloromethane	ND	vs	46	5.9	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
Chloroethane	ND	vs	46	10	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
Chloroform	ND	vs	46	2.8	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
Chloromethane	ND	vs	46	2.8	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
cis-1,2-Dichloroethene	ND	vs	46	5.9	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
cis-1,3-Dichloropropene	ND	vs	46	6.6	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
Cyclohexane	ND	vs	46	6.4	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183850-1

Client Sample ID: BLDG1-BIN 7-SP-029
Date Collected: 04/26/21 10:30
Date Received: 04/27/21 10:00

Lab Sample ID: 480-183850-9
Matrix: Solid
Percent Solids: 98.9

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND	vs	46	3.8	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
Ethylbenzene	ND	vs	46	3.2	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
1,2-Dibromoethane	ND	vs	46	5.9	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
Isopropylbenzene	ND	vs	46	6.9	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
Methyl acetate	ND	vs	230	28	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
Methyl tert-butyl ether	ND	vs	46	4.5	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
Methylcyclohexane	ND	vs	46	7.0	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
Methylene Chloride	ND	vs	46	21	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
Styrene	ND	vs	46	2.3	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
Tetrachloroethene	ND	vs	46	6.2	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
Toluene	ND	vs	46	3.5	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
trans-1,2-Dichloroethene	ND	vs	46	4.7	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
trans-1,3-Dichloropropene	ND	vs	46	20	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
Trichloroethene	ND	vs	46	10	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
Trichlorofluoromethane	ND	vs	46	4.3	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
Vinyl chloride	ND	vs	46	5.6	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1
Xylenes, Total	ND	vs	92	7.7	ug/Kg	☼	04/29/21 10:03	04/29/21 17:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*71 - 125*	*04/29/21 10:03*	*04/29/21 17:53*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*64 - 126*	*04/29/21 10:03*	*04/29/21 17:53*	*1*
4-Bromofluorobenzene (Surr)	*95*		*72 - 126*	*04/29/21 10:03*	*04/29/21 17:53*	*1*
Dibromofluoromethane (Surr)	*94*		*60 - 140*	*04/29/21 10:03*	*04/29/21 17:53*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biphenyl	ND		990	150	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
bis (2-chloroisopropyl) ether	ND		990	200	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
2,4,5-Trichlorophenol	ND		990	270	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
2,4,6-Trichlorophenol	ND		990	200	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
2,4-Dichlorophenol	ND		990	110	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
2,4-Dimethylphenol	ND		990	240	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
2,4-Dinitrophenol	ND		9700	4600	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
2,4-Dinitrotoluene	ND		990	200	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
2,6-Dinitrotoluene	ND		990	120	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
2-Chloronaphthalene	ND		990	160	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
1,4-Dioxane	ND		580	320	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
2-Chlorophenol	ND		1900	180	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
2-Methylnaphthalene	ND		990	200	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
2-Methylphenol	ND		990	120	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
2-Nitroaniline	ND		1900	150	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
2-Nitrophenol	ND		990	280	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
3,3'-Dichlorobenzidine	ND		1900	1200	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
3-Nitroaniline	ND		1900	270	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
4,6-Dinitro-2-methylphenol	ND		1900	990	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
4-Bromophenyl phenyl ether	ND		990	140	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
4-Chloro-3-methylphenol	ND		990	250	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
4-Chloroaniline	ND		990	250	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
4-Chlorophenyl phenyl ether	ND		990	120	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
4-Methylphenol	ND		1900	120	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1

Client Sample ID: BLDG1-BIN 7-SP-029
Lab Sample ID: 480-183850-9
Date Collected: 04/26/21 10:30
Matrix: Solid
Date Received: 04/27/21 10:00
Percent Solids: 98.9

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4-Nitroaniline	ND		1900	520	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
4-Nitrophenol	ND		1900	700	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
Acenaphthene	ND		990	150	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
Acenaphthylene	ND		990	130	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
Acetophenone	ND		990	130	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
Anthracene	ND		990	250	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
Atrazine	ND		990	340	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
Benzaldehyde	ND		990	790	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
Benzo[a]anthracene	ND		990	99	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
Benzo[a]pyrene	ND		990	150	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
Benzo[b]fluoranthene	ND		990	160	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
Benzo[g,h,i]perylene	ND		990	110	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
Benzo[k]fluoranthene	ND		990	130	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
Bis(2-chloroethoxy)methane	ND		990	210	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
Bis(2-chloroethyl)ether	ND		990	130	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
Bis(2-ethylhexyl) phthalate	**540**	**J**	990	340	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
Butyl benzyl phthalate	**260**	**J**	990	160	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
Caprolactam	ND		990	300	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
Carbazole	ND		990	120	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
Chrysene	ND		990	220	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
Di-n-butyl phthalate	ND		990	170	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
Di-n-octyl phthalate	ND		990	120	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
Dibenz(a,h)anthracene	ND		990	180	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
Dibenzofuran	ND		990	120	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
Diethyl phthalate	ND		990	130	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
Dimethyl phthalate	ND		990	120	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
Fluoranthene	ND		990	110	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
Fluorene	ND		990	120	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
Hexachlorobenzene	ND		990	130	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
Hexachlorobutadiene	ND		990	150	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
Hexachlorocyclopentadiene	ND		990	130	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
Hexachloroethane	ND		990	130	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
Indeno[1,2,3-cd]pyrene	ND		990	120	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
Isophorone	ND		990	210	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
N-Nitrosodi-n-propylamine	ND		990	170	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
N-Nitrosodiphenylamine	ND		990	810	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
Naphthalene	ND		990	130	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
Nitrobenzene	ND		990	110	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
Pentachlorophenol	ND		1900	990	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
Phenanthrene	ND		990	150	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
Phenol	ND		990	150	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1
Pyrene	ND		990	120	ug/Kg	☼	04/29/21 09:48	05/01/21 00:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*82*		*54 - 120*	*04/29/21 09:48*	*05/01/21 00:35*	*1*
2-Fluorobiphenyl	*83*		*60 - 120*	*04/29/21 09:48*	*05/01/21 00:35*	*1*
2-Fluorophenol	*74*		*52 - 120*	*04/29/21 09:48*	*05/01/21 00:35*	*1*
Nitrobenzene-d5	*80*		*53 - 120*	*04/29/21 09:48*	*05/01/21 00:35*	*1*
p-Terphenyl-d14	*91*		*79 - 130*	*04/29/21 09:48*	*05/01/21 00:35*	*1*
Phenol-d5	*79*		*54 - 120*	*04/29/21 09:48*	*05/01/21 00:35*	*1*

Client Sample Results

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183850-1

Client Sample ID: BLDG1-BIN 7-SP-029

Date Collected: 04/26/21 10:30
Date Received: 04/27/21 10:00

Lab Sample ID: 480-183850-9
Matrix: Solid
Percent Solids: 98.9

Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.040	0.0018	mg/L		04/30/21 11:21	05/03/21 22:28	1
2,4-Dinitrotoluene	ND		0.020	0.0017	mg/L		04/30/21 11:21	05/03/21 22:28	1
Hexachlorobenzene	ND		0.020	0.0020	mg/L		04/30/21 11:21	05/03/21 22:28	1
Hexachlorobutadiene	ND		0.020	0.0027	mg/L		04/30/21 11:21	05/03/21 22:28	1
Hexachloroethane	ND		0.020	0.0023	mg/L		04/30/21 11:21	05/03/21 22:28	1
3-Methylphenol	ND		0.040	0.0016	mg/L		04/30/21 11:21	05/03/21 22:28	1
2-Methylphenol	ND		0.020	0.0016	mg/L		04/30/21 11:21	05/03/21 22:28	1
4-Methylphenol	ND		0.040	0.0014	mg/L		04/30/21 11:21	05/03/21 22:28	1
Nitrobenzene	ND		0.020	0.0011	mg/L		04/30/21 11:21	05/03/21 22:28	1
Pentachlorophenol	ND		0.040	0.0088	mg/L		04/30/21 11:21	05/03/21 22:28	1
Pyridine	ND		0.10	0.0016	mg/L		04/30/21 11:21	05/03/21 22:28	1
2,4,5-Trichlorophenol	ND		0.020	0.0019	mg/L		04/30/21 11:21	05/03/21 22:28	1
2,4,6-Trichlorophenol	ND		0.020	0.0024	mg/L		04/30/21 11:21	05/03/21 22:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*96*		*41 - 120*	*04/30/21 11:21*	*05/03/21 22:28*	*1*
2-Fluorobiphenyl	*86*		*48 - 120*	*04/30/21 11:21*	*05/03/21 22:28*	*1*
2-Fluorophenol	*42*		*35 - 120*	*04/30/21 11:21*	*05/03/21 22:28*	*1*
Nitrobenzene-d5	*83*		*46 - 120*	*04/30/21 11:21*	*05/03/21 22:28*	*1*
p-Terphenyl-d14	*86*		*60 - 148*	*04/30/21 11:21*	*05/03/21 22:28*	*1*
Phenol-d5	*28*		*22 - 120*	*04/30/21 11:21*	*05/03/21 22:28*	*1*

Method: 8081B - Organochlorine Pesticides (GC) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.00020	0.0000060	mg/L		04/30/21 11:16	05/03/21 13:56	1
Chlordane (technical)	ND		0.0020	0.000029	mg/L		04/30/21 11:16	05/03/21 13:56	1
Endrin	ND		0.00020	0.000014	mg/L		04/30/21 11:16	05/03/21 13:56	1
Heptachlor	ND		0.00020	0.0000085	mg/L		04/30/21 11:16	05/03/21 13:56	1
Heptachlor epoxide	ND		0.00020	0.0000053	mg/L		04/30/21 11:16	05/03/21 13:56	1
Methoxychlor	ND		0.00020	0.000014	mg/L		04/30/21 11:16	05/03/21 13:56	1
Toxaphene	ND		0.0020	0.00012	mg/L		04/30/21 11:16	05/03/21 13:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*53*		*20 - 120*	*04/30/21 11:16*	*05/03/21 13:56*	*1*
DCB Decachlorobiphenyl	*49*		*20 - 120*	*04/30/21 11:16*	*05/03/21 13:56*	*1*
Tetrachloro-m-xylene	*61*		*44 - 120*	*04/30/21 11:16*	*05/03/21 13:56*	*1*
Tetrachloro-m-xylene	*50*		*44 - 120*	*04/30/21 11:16*	*05/03/21 13:56*	*1*

Method: 8151 - TCLP Herbicides - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND		0.0020	0.00036	mg/L		04/30/21 11:19	05/04/21 02:50	1
2,4-D	ND		0.0020	0.00040	mg/L		04/30/21 11:19	05/04/21 02:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*48*		*48 - 132*	*04/30/21 11:19*	*05/04/21 02:50*	*1*
2,4-Dichlorophenylacetic acid	*49*		*48 - 132*	*04/30/21 11:19*	*05/04/21 02:50*	*1*

Method: 6010C - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.030	0.011	mg/L		04/30/21 11:30	05/03/21 15:48	2
Barium	ND		1.0	0.10	mg/L		04/30/21 11:30	05/01/21 01:36	1

Client Sample ID: BLDG1-BIN 7-SP-029

Lab Sample ID: 480-183850-9

Date Collected: 04/26/21 10:30
Matrix: Solid
Date Received: 04/27/21 10:00
Percent Solids: 98.9

Method: 6010C - Metals (ICP) - TCLP (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	**0.0018**	**J**	0.0040	0.0010	mg/L		04/30/21 11:30	05/03/21 15:48	2
Chromium	**1.3**		0.040	0.020	mg/L		04/30/21 11:30	05/03/21 15:48	2
Lead	**0.053**		0.040	0.0060	mg/L		04/30/21 11:30	05/03/21 15:48	2
Selenium	ND		0.050	0.017	mg/L		04/30/21 11:30	05/03/21 15:48	2
Silver	ND		0.012	0.0034	mg/L		04/30/21 11:30	05/03/21 15:48	2

Method: 7470A - TCLP Mercury - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		04/30/21 13:54	04/30/21 18:50	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Flashpoint	**>180**		50.0	50.0	Degrees F			05/03/21 18:22	1
pH	**7.7**	**HF**	0.1	0.1	SU			05/04/21 11:30	1
Temperature	**22.1**	**HF**	0.001	0.001	Degrees C			05/04/21 11:30	1

Client Sample ID: BLDG1-BIN 6-SP-030

Lab Sample ID: 480-183850-10

Date Collected: 04/26/21 10:40
Matrix: Solid
Date Received: 04/27/21 10:00
Percent Solids: 100.0

Method: 8260C - TCLP Volatiles - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.010	0.0041	mg/L			05/01/21 17:30	10
Carbon tetrachloride	ND		0.010	0.0027	mg/L			05/01/21 17:30	10
Chlorobenzene	ND		0.010	0.0075	mg/L			05/01/21 17:30	10
Chloroform	ND		0.010	0.0034	mg/L			05/01/21 17:30	10
1,2-Dichloroethane	ND		0.010	0.0021	mg/L			05/01/21 17:30	10
1,1-Dichloroethene	ND		0.010	0.0029	mg/L			05/01/21 17:30	10
2-Butanone (MEK)	ND		0.050	0.013	mg/L			05/01/21 17:30	10
Tetrachloroethene	ND		0.010	0.0036	mg/L			05/01/21 17:30	10
Trichloroethene	ND		0.010	0.0046	mg/L			05/01/21 17:30	10
Vinyl chloride	ND		0.010	0.0090	mg/L			05/01/21 17:30	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*77 - 120*		*05/01/21 17:30*	*10*
Toluene-d8 (Surr)	*100*		*80 - 120*		*05/01/21 17:30*	*10*
4-Bromofluorobenzene (Surr)	*96*		*73 - 120*		*05/01/21 17:30*	*10*
Dibromofluoromethane (Surr)	*117*		*75 - 123*		*05/01/21 17:30*	*10*

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND	vs	48	3.5	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
1,1,2,2-Tetrachloroethane	ND	vs	48	7.8	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
1,1,2-Trichloroethane	ND	vs	48	6.3	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	vs	48	11	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
1,1-Dichloroethane	ND	vs	48	5.9	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
1,1-Dichloroethene	ND	vs	48	5.9	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
1,2,4-Trichlorobenzene	ND	vs	48	2.9	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
1,2-Dibromo-3-Chloropropane	ND	vs	48	24	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
1,2-Dichlorobenzene	ND	vs	48	3.8	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
1,2-Dichloroethane	ND	vs	48	2.4	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183850-1

Client Sample ID: BLDG1-BIN 6-SP-030
Date Collected: 04/26/21 10:40
Date Received: 04/27/21 10:00

Lab Sample ID: 480-183850-10
Matrix: Solid
Percent Solids: 100.0

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichloropropane	ND	vs	48	24	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
1,3-Dichlorobenzene	ND	vs	48	2.5	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
1,4-Dichlorobenzene	ND	vs	48	6.7	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
2-Butanone (MEK)	ND	vs	240	18	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
2-Hexanone	ND	vs	240	24	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
4-Methyl-2-pentanone (MIBK)	ND	vs	240	16	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
Acetone	ND	vs	240	40	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
Benzene	ND	vs	48	2.4	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
Bromodichloromethane	ND	vs	48	6.4	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
Bromoform	ND	vs	48	24	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
Bromomethane	ND	vs	48	4.3	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
Carbon disulfide	ND	vs	48	24	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
Carbon tetrachloride	ND	vs	48	4.7	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
Chlorobenzene	ND	vs	48	6.3	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
Dibromochloromethane	ND	vs	48	6.2	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
Chloroethane	ND	vs	48	11	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
Chloroform	ND	vs	48	3.0	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
Chloromethane	ND	vs	48	2.9	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
cis-1,2-Dichloroethene	ND	vs	48	6.2	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
cis-1,3-Dichloropropene	ND	vs	48	6.9	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
Cyclohexane	ND	vs	48	6.7	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
Dichlorodifluoromethane	ND	vs	48	4.0	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
Ethylbenzene	ND	vs	48	3.3	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
1,2-Dibromoethane	ND	vs	48	6.2	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
Isopropylbenzene	ND	vs	48	7.3	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
Methyl acetate	ND	vs	240	29	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
Methyl tert-butyl ether	ND	vs	48	4.7	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
Methylcyclohexane	ND	vs	48	7.3	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
Methylene Chloride	ND	vs	48	22	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
Styrene	ND	vs	48	2.4	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
Tetrachloroethene	ND	vs	48	6.5	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
Toluene	ND	vs	48	3.6	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
trans-1,2-Dichloroethene	ND	vs	48	5.0	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
trans-1,3-Dichloropropene	ND	vs	48	21	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
Trichloroethene	ND	vs	48	11	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
Trichlorofluoromethane	ND	vs	48	4.5	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
Vinyl chloride	ND	vs	48	5.9	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1
Xylenes, Total	ND	vs	96	8.1	ug/Kg	☼	04/29/21 10:03	04/29/21 18:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*71 - 125*	*04/29/21 10:03*	*04/29/21 18:16*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*64 - 126*	*04/29/21 10:03*	*04/29/21 18:16*	*1*
4-Bromofluorobenzene (Surr)	*95*		*72 - 126*	*04/29/21 10:03*	*04/29/21 18:16*	*1*
Dibromofluoromethane (Surr)	*100*		*60 - 140*	*04/29/21 10:03*	*04/29/21 18:16*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biphenyl	ND		880	130	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
bis (2-chloroisopropyl) ether	ND		880	180	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
2,4,5-Trichlorophenol	ND		880	240	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1

Client Sample ID: BLDG1-BIN 6-SP-030
Lab Sample ID: 480-183850-10

Date Collected: 04/26/21 10:40
Matrix: Solid
Date Received: 04/27/21 10:00
Percent Solids: 100.0

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	ND		880	180	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
2,4-Dichlorophenol	ND		880	94	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
2,4-Dimethylphenol	ND		880	210	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
2,4-Dinitrophenol	ND		8600	4100	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
2,4-Dinitrotoluene	ND		880	180	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
2,6-Dinitrotoluene	ND		880	100	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
2-Chloronaphthalene	ND		880	150	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
1,4-Dioxane	ND		520	290	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
2-Chlorophenol	ND		1700	160	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
2-Methylnaphthalene	ND		880	180	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
2-Methylphenol	ND		880	100	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
2-Nitroaniline	ND		1700	130	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
2-Nitrophenol	ND		880	250	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
3,3'-Dichlorobenzidine	ND		1700	1000	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
3-Nitroaniline	ND		1700	240	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
4,6-Dinitro-2-methylphenol	ND		1700	880	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
4-Bromophenyl phenyl ether	ND		880	120	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
4-Chloro-3-methylphenol	ND		880	220	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
4-Chloroaniline	ND		880	220	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
4-Chlorophenyl phenyl ether	ND		880	110	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
4-Methylphenol	ND		1700	100	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
4-Nitroaniline	ND		1700	460	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
4-Nitrophenol	ND		1700	620	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
Acenaphthene	ND		880	130	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
Acenaphthylene	ND		880	110	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
Acetophenone	ND		880	120	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
Anthracene	ND		880	220	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
Atrazine	ND		880	310	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
Benzaldehyde	ND		880	700	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
Benzo[a]anthracene	ND		880	88	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
Benzo[a]pyrene	ND		880	130	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
Benzo[b]fluoranthene	ND		880	140	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
Benzo[g,h,i]perylene	ND		880	94	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
Benzo[k]fluoranthene	ND		880	110	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
Bis(2-chloroethoxy)methane	ND		880	190	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
Bis(2-chloroethyl)ether	ND		880	110	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
Bis(2-ethylhexyl) phthalate	ND		880	300	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
Butyl benzyl phthalate	ND		880	150	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
Caprolactam	ND		880	270	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
Carbazole	ND		880	100	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
Chrysene	ND		880	200	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
Di-n-butyl phthalate	ND		880	150	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
Di-n-octyl phthalate	ND		880	100	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
Dibenz(a,h)anthracene	ND		880	160	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
Dibenzofuran	ND		880	100	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
Diethyl phthalate	ND		880	110	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
Dimethyl phthalate	ND		880	100	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
Fluoranthene	ND		880	94	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
Fluorene	ND		880	100	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1

Client Sample ID: BLDG1-BIN 6-SP-030

Date Collected: 04/26/21 10:40
Date Received: 04/27/21 10:00

Lab Sample ID: 480-183850-10

Matrix: Solid
Percent Solids: 100.0

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexachlorobenzene	ND		880	120	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
Hexachlorobutadiene	ND		880	130	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
Hexachlorocyclopentadiene	ND		880	120	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
Hexachloroethane	ND		880	110	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
Indeno[1,2,3-cd]pyrene	ND		880	110	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
Isophorone	ND		880	190	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
N-Nitrosodi-n-propylamine	ND		880	150	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
N-Nitrosodiphenylamine	ND		880	720	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
Naphthalene	ND		880	110	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
Nitrobenzene	ND		880	99	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
Pentachlorophenol	ND		1700	880	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
Phenanthrene	ND		880	130	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
Phenol	ND		880	140	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1
Pyrene	ND		880	100	ug/Kg	☼	04/29/21 09:48	05/01/21 01:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*96*		*54 - 120*	*04/29/21 09:48*	*05/01/21 01:00*	*1*
2-Fluorobiphenyl	*89*		*60 - 120*	*04/29/21 09:48*	*05/01/21 01:00*	*1*
2-Fluorophenol	*79*		*52 - 120*	*04/29/21 09:48*	*05/01/21 01:00*	*1*
Nitrobenzene-d5	*82*		*53 - 120*	*04/29/21 09:48*	*05/01/21 01:00*	*1*
p-Terphenyl-d14	*105*		*79 - 130*	*04/29/21 09:48*	*05/01/21 01:00*	*1*
Phenol-d5	*82*		*54 - 120*	*04/29/21 09:48*	*05/01/21 01:00*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.040	0.0018	mg/L		04/30/21 11:21	05/03/21 22:53	1
2,4-Dinitrotoluene	ND		0.020	0.0017	mg/L		04/30/21 11:21	05/03/21 22:53	1
Hexachlorobenzene	ND		0.020	0.0020	mg/L		04/30/21 11:21	05/03/21 22:53	1
Hexachlorobutadiene	ND		0.020	0.0027	mg/L		04/30/21 11:21	05/03/21 22:53	1
Hexachloroethane	ND		0.020	0.0023	mg/L		04/30/21 11:21	05/03/21 22:53	1
3-Methylphenol	ND		0.040	0.0016	mg/L		04/30/21 11:21	05/03/21 22:53	1
2-Methylphenol	ND		0.020	0.0016	mg/L		04/30/21 11:21	05/03/21 22:53	1
4-Methylphenol	ND		0.040	0.0014	mg/L		04/30/21 11:21	05/03/21 22:53	1
Nitrobenzene	ND		0.020	0.0011	mg/L		04/30/21 11:21	05/03/21 22:53	1
Pentachlorophenol	ND		0.040	0.0088	mg/L		04/30/21 11:21	05/03/21 22:53	1
Pyridine	ND		0.10	0.0016	mg/L		04/30/21 11:21	05/03/21 22:53	1
2,4,5-Trichlorophenol	ND		0.020	0.0019	mg/L		04/30/21 11:21	05/03/21 22:53	1
2,4,6-Trichlorophenol	ND		0.020	0.0024	mg/L		04/30/21 11:21	05/03/21 22:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*95*		*41 - 120*	*04/30/21 11:21*	*05/03/21 22:53*	*1*
2-Fluorobiphenyl	*87*		*48 - 120*	*04/30/21 11:21*	*05/03/21 22:53*	*1*
2-Fluorophenol	*45*		*35 - 120*	*04/30/21 11:21*	*05/03/21 22:53*	*1*
Nitrobenzene-d5	*85*		*46 - 120*	*04/30/21 11:21*	*05/03/21 22:53*	*1*
p-Terphenyl-d14	*86*		*60 - 148*	*04/30/21 11:21*	*05/03/21 22:53*	*1*
Phenol-d5	*28*		*22 - 120*	*04/30/21 11:21*	*05/03/21 22:53*	*1*

Method: 8081B - Organochlorine Pesticides (GC) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.00020	0.0000060	mg/L		04/30/21 11:16	05/03/21 14:15	1

Client Sample ID: BLDG1-BIN 6-SP-030
Date Collected: 04/26/21 10:40
Date Received: 04/27/21 10:00

Lab Sample ID: 480-183850-10
Matrix: Solid
Percent Solids: 100.0

Method: 8081B - Organochlorine Pesticides (GC) - TCLP (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlordane (technical)	ND		0.0020	0.000029	mg/L		04/30/21 11:16	05/03/21 14:15	1
Endrin	ND		0.00020	0.000014	mg/L		04/30/21 11:16	05/03/21 14:15	1
Heptachlor	ND		0.00020	0.0000085	mg/L		04/30/21 11:16	05/03/21 14:15	1
Heptachlor epoxide	ND		0.00020	0.0000053	mg/L		04/30/21 11:16	05/03/21 14:15	1
Methoxychlor	ND		0.00020	0.000014	mg/L		04/30/21 11:16	05/03/21 14:15	1
Toxaphene	ND		0.0020	0.00012	mg/L		04/30/21 11:16	05/03/21 14:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*68*		*20 - 120*	*04/30/21 11:16*	*05/03/21 14:15*	*1*
DCB Decachlorobiphenyl	*65*		*20 - 120*	*04/30/21 11:16*	*05/03/21 14:15*	*1*
Tetrachloro-m-xylene	*61*		*44 - 120*	*04/30/21 11:16*	*05/03/21 14:15*	*1*
Tetrachloro-m-xylene	*52*		*44 - 120*	*04/30/21 11:16*	*05/03/21 14:15*	*1*

Method: 8151 - TCLP Herbicides - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND		0.0020	0.00036	mg/L		04/30/21 11:19	05/04/21 03:19	1
2,4-D	ND		0.0020	0.00040	mg/L		04/30/21 11:19	05/04/21 03:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*38*	*S1-*	*48 - 132*	*04/30/21 11:19*	*05/04/21 03:19*	*1*
2,4-Dichlorophenylacetic acid	*36*	*S1-*	*48 - 132*	*04/30/21 11:19*	*05/04/21 03:19*	*1*

Method: 6010C - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.015	0.0056	mg/L		04/30/21 11:30	05/01/21 01:40	1
Barium	ND		1.0	0.10	mg/L		04/30/21 11:30	05/01/21 01:40	1
Cadmium	ND		0.0020	0.00050	mg/L		04/30/21 11:30	05/01/21 01:40	1
Chromium	**0.033**		0.020	0.010	mg/L		04/30/21 11:30	05/01/21 01:40	1
Lead	**0.0094**	**J**	0.020	0.0030	mg/L		04/30/21 11:30	05/01/21 01:40	1
Selenium	ND		0.025	0.0087	mg/L		04/30/21 11:30	05/01/21 01:40	1
Silver	ND		0.0060	0.0017	mg/L		04/30/21 11:30	05/01/21 01:40	1

Method: 7470A - TCLP Mercury - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	F1	0.00020	0.00012	mg/L		04/30/21 13:54	04/30/21 18:51	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Flashpoint	**>180**		50.0	50.0	Degrees F			05/03/21 18:22	1
pH	**7.3**	**HF**	0.1	0.1	SU			05/04/21 11:30	1
Temperature	**22.1**	**HF**	0.001	0.001	Degrees C			05/04/21 11:30	1

Client Sample ID: BLDG1-BIN 5-SP-031
Date Collected: 04/26/21 00:00
Date Received: 04/27/21 10:00

Lab Sample ID: 480-183850-11
Matrix: Solid
Percent Solids: 100.0

Method: 8260C - TCLP Volatiles - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.010	0.0041	mg/L			05/01/21 17:52	10
Carbon tetrachloride	ND		0.010	0.0027	mg/L			05/01/21 17:52	10
Chlorobenzene	ND		0.010	0.0075	mg/L			05/01/21 17:52	10

Client Sample ID: BLDG1-BIN 5-SP-031
Lab Sample ID: 480-183850-11

Date Collected: 04/26/21 00:00
Matrix: Solid
Date Received: 04/27/21 10:00
Percent Solids: 100.0

Method: 8260C - TCLP Volatiles - TCLP (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroform	ND		0.010	0.0034	mg/L			05/01/21 17:52	10
1,2-Dichloroethane	ND		0.010	0.0021	mg/L			05/01/21 17:52	10
1,1-Dichloroethene	ND		0.010	0.0029	mg/L			05/01/21 17:52	10
2-Butanone (MEK)	ND		0.050	0.013	mg/L			05/01/21 17:52	10
Tetrachloroethene	ND		0.010	0.0036	mg/L			05/01/21 17:52	10
Trichloroethene	ND		0.010	0.0046	mg/L			05/01/21 17:52	10
Vinyl chloride	ND		0.010	0.0090	mg/L			05/01/21 17:52	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*77 - 120*		*05/01/21 17:52*	*10*
Toluene-d8 (Surr)	*105*		*80 - 120*		*05/01/21 17:52*	*10*
4-Bromofluorobenzene (Surr)	*107*		*73 - 120*		*05/01/21 17:52*	*10*
Dibromofluoromethane (Surr)	*117*		*75 - 123*		*05/01/21 17:52*	*10*

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND	vs	45	3.2	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
1,1,2,2-Tetrachloroethane	ND	F1 vs	45	7.2	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
1,1,2-Trichloroethane	ND	vs	45	5.8	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	vs	45	10	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
1,1-Dichloroethane	ND	vs	45	5.4	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
1,1-Dichloroethene	ND	vs	45	5.5	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
1,2,4-Trichlorobenzene	ND	vs	45	2.7	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
1,2-Dibromo-3-Chloropropane	ND	vs	45	22	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
1,2-Dichlorobenzene	ND	vs	45	3.5	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
1,2-Dichloroethane	ND	vs	45	2.2	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
1,2-Dichloropropane	ND	vs	45	22	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
1,3-Dichlorobenzene	ND	vs	45	2.3	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
1,4-Dichlorobenzene	ND	vs	45	6.3	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
2-Butanone (MEK)	ND	F1 vs	220	16	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
2-Hexanone	ND	vs	220	22	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
4-Methyl-2-pentanone (MIBK)	ND	vs	220	15	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
Acetone	ND	vs	220	38	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
Benzene	ND	vs	45	2.2	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
Bromodichloromethane	ND	vs	45	6.0	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
Bromoform	ND	F1 vs	45	22	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
Bromomethane	ND	vs	45	4.0	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
Carbon disulfide	ND	vs	45	22	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
Carbon tetrachloride	ND	vs	45	4.3	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
Chlorobenzene	ND	vs	45	5.9	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
Dibromochloromethane	ND	vs	45	5.7	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
Chloroethane	ND	vs	45	10	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
Chloroform	ND	vs	45	2.8	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
Chloromethane	ND	vs	45	2.7	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
cis-1,2-Dichloroethene	ND	vs	45	5.7	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
cis-1,3-Dichloropropene	ND	vs	45	6.4	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
Cyclohexane	ND	vs	45	6.3	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
Dichlorodifluoromethane	ND	vs	45	3.7	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
Ethylbenzene	ND	vs	45	3.1	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
1,2-Dibromoethane	ND	F1 vs	45	5.7	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1

Client Sample ID: BLDG1-BIN 5-SP-031
Date Collected: 04/26/21 00:00
Date Received: 04/27/21 10:00

Lab Sample ID: 480-183850-11
Matrix: Solid
Percent Solids: 100.0

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Isopropylbenzene	ND	vs	45	6.7	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
Methyl acetate	ND	vs	220	27	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
Methyl tert-butyl ether	ND	vs	45	4.4	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
Methylcyclohexane	ND	vs	45	6.8	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
Methylene Chloride	ND	vs	45	21	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
Styrene	ND	vs	45	2.2	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
Tetrachloroethene	ND	vs	45	6.0	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
Toluene	ND	vs	45	3.4	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
trans-1,2-Dichloroethene	ND	vs	45	4.6	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
trans-1,3-Dichloropropene	ND	vs	45	20	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
Trichloroethene	ND	vs	45	9.8	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
Trichlorofluoromethane	ND	vs	45	4.2	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
Vinyl chloride	ND	vs	45	5.4	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1
Xylenes, Total	ND	vs	89	7.5	ug/Kg	☼	04/29/21 10:03	04/29/21 18:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*71 - 125*	*04/29/21 10:03*	*04/29/21 18:41*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*64 - 126*	*04/29/21 10:03*	*04/29/21 18:41*	*1*
4-Bromofluorobenzene (Surr)	*95*		*72 - 126*	*04/29/21 10:03*	*04/29/21 18:41*	*1*
Dibromofluoromethane (Surr)	*96*		*60 - 140*	*04/29/21 10:03*	*04/29/21 18:41*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biphenyl	ND		970	140	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
bis (2-chloroisopropyl) ether	ND		970	190	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
2,4,5-Trichlorophenol	ND		970	260	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
2,4,6-Trichlorophenol	ND		970	190	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
2,4-Dichlorophenol	ND		970	100	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
2,4-Dimethylphenol	ND		970	230	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
2,4-Dinitrophenol	ND		9500	4500	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
2,4-Dinitrotoluene	ND		970	200	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
2,6-Dinitrotoluene	ND		970	110	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
2-Chloronaphthalene	ND		970	160	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
1,4-Dioxane	ND		570	310	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
2-Chlorophenol	ND		1900	180	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
2-Methylnaphthalene	ND		970	190	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
2-Methylphenol	ND		970	110	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
2-Nitroaniline	ND		1900	140	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
2-Nitrophenol	ND		970	270	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
3,3'-Dichlorobenzidine	ND		1900	1100	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
3-Nitroaniline	ND		1900	270	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
4,6-Dinitro-2-methylphenol	ND		1900	970	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
4-Bromophenyl phenyl ether	ND		970	140	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
4-Chloro-3-methylphenol	ND		970	240	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
4-Chloroaniline	ND		970	240	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
4-Chlorophenyl phenyl ether	ND		970	120	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
4-Methylphenol	ND		1900	110	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
4-Nitroaniline	ND		1900	510	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
4-Nitrophenol	ND		1900	680	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
Acenaphthene	ND		970	140	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1

Client: Integral Consulting Inc
Project/Site: Project EF1017
Job ID: 480-183850-1

Client Sample ID: BLDG1-BIN 5-SP-031
Date Collected: 04/26/21 00:00
Date Received: 04/27/21 10:00

Lab Sample ID: 480-183850-11
Matrix: Solid
Percent Solids: 100.0

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthylene	ND		970	130	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
Acetophenone	ND		970	130	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
Anthracene	ND		970	240	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
Atrazine	ND		970	340	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
Benzaldehyde	ND		970	770	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
Benzo[a]anthracene	ND		970	97	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
Benzo[a]pyrene	ND		970	140	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
Benzo[b]fluoranthene	ND		970	150	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
Benzo[g,h,i]perylene	ND		970	100	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
Benzo[k]fluoranthene	ND		970	130	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
Bis(2-chloroethoxy)methane	ND		970	210	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
Bis(2-chloroethyl)ether	ND		970	130	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
Bis(2-ethylhexyl) phthalate	ND		970	330	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
Butyl benzyl phthalate	ND		970	160	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
Caprolactam	ND		970	290	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
Carbazole	ND		970	110	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
Chrysene	ND		970	220	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
Di-n-butyl phthalate	ND		970	170	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
Di-n-octyl phthalate	ND		970	110	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
Dibenz(a,h)anthracene	ND		970	170	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
Dibenzofuran	ND		970	110	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
Diethyl phthalate	ND		970	130	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
Dimethyl phthalate	ND		970	110	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
Fluoranthene	ND		970	100	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
Fluorene	ND		970	110	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
Hexachlorobenzene	ND		970	130	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
Hexachlorobutadiene	ND		970	140	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
Hexachlorocyclopentadiene	ND		970	130	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
Hexachloroethane	ND		970	130	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
Indeno[1,2,3-cd]pyrene	ND		970	120	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
Isophorone	ND		970	210	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
N-Nitrosodi-n-propylamine	ND		970	170	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
N-Nitrosodiphenylamine	ND		970	790	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
Naphthalene	ND		970	130	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
Nitrobenzene	ND		970	110	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
Pentachlorophenol	ND		1900	970	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
Phenanthrene	ND		970	140	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
Phenol	ND		970	150	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1
Pyrene	ND		970	110	ug/Kg	☼	04/29/21 09:48	05/01/21 01:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*85*		*54 - 120*	*04/29/21 09:48*	*05/01/21 01:24*	*1*
2-Fluorobiphenyl	*91*		*60 - 120*	*04/29/21 09:48*	*05/01/21 01:24*	*1*
2-Fluorophenol	*74*		*52 - 120*	*04/29/21 09:48*	*05/01/21 01:24*	*1*
Nitrobenzene-d5	*85*		*53 - 120*	*04/29/21 09:48*	*05/01/21 01:24*	*1*
p-Terphenyl-d14	*106*		*79 - 130*	*04/29/21 09:48*	*05/01/21 01:24*	*1*
Phenol-d5	*84*		*54 - 120*	*04/29/21 09:48*	*05/01/21 01:24*	*1*

Client Sample Results

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183850-1

Client Sample ID: BLDG1-BIN 5-SP-031
Date Collected: 04/26/21 00:00
Date Received: 04/27/21 10:00

Lab Sample ID: 480-183850-11
Matrix: Solid
Percent Solids: 100.0

Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.040	0.0018	mg/L		04/30/21 11:21	05/03/21 23:17	1
2,4-Dinitrotoluene	ND		0.020	0.0017	mg/L		04/30/21 11:21	05/03/21 23:17	1
Hexachlorobenzene	ND		0.020	0.0020	mg/L		04/30/21 11:21	05/03/21 23:17	1
Hexachlorobutadiene	ND		0.020	0.0027	mg/L		04/30/21 11:21	05/03/21 23:17	1
Hexachloroethane	ND		0.020	0.0023	mg/L		04/30/21 11:21	05/03/21 23:17	1
3-Methylphenol	ND		0.040	0.0016	mg/L		04/30/21 11:21	05/03/21 23:17	1
2-Methylphenol	ND		0.020	0.0016	mg/L		04/30/21 11:21	05/03/21 23:17	1
4-Methylphenol	ND		0.040	0.0014	mg/L		04/30/21 11:21	05/03/21 23:17	1
Nitrobenzene	ND		0.020	0.0011	mg/L		04/30/21 11:21	05/03/21 23:17	1
Pentachlorophenol	ND		0.040	0.0088	mg/L		04/30/21 11:21	05/03/21 23:17	1
Pyridine	ND		0.10	0.0016	mg/L		04/30/21 11:21	05/03/21 23:17	1
2,4,5-Trichlorophenol	ND		0.020	0.0019	mg/L		04/30/21 11:21	05/03/21 23:17	1
2,4,6-Trichlorophenol	ND		0.020	0.0024	mg/L		04/30/21 11:21	05/03/21 23:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*99*		*41 - 120*	*04/30/21 11:21*	*05/03/21 23:17*	*1*
2-Fluorobiphenyl	*82*		*48 - 120*	*04/30/21 11:21*	*05/03/21 23:17*	*1*
2-Fluorophenol	*42*		*35 - 120*	*04/30/21 11:21*	*05/03/21 23:17*	*1*
Nitrobenzene-d5	*76*		*46 - 120*	*04/30/21 11:21*	*05/03/21 23:17*	*1*
p-Terphenyl-d14	*86*		*60 - 148*	*04/30/21 11:21*	*05/03/21 23:17*	*1*
Phenol-d5	*28*		*22 - 120*	*04/30/21 11:21*	*05/03/21 23:17*	*1*

Method: 8081B - Organochlorine Pesticides (GC) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.00020	0.0000060	mg/L		04/30/21 11:16	05/03/21 14:35	1
Chlordane (technical)	ND		0.0020	0.000029	mg/L		04/30/21 11:16	05/03/21 14:35	1
Endrin	ND		0.00020	0.000014	mg/L		04/30/21 11:16	05/03/21 14:35	1
Heptachlor	ND		0.00020	0.0000085	mg/L		04/30/21 11:16	05/03/21 14:35	1
Heptachlor epoxide	ND		0.00020	0.0000053	mg/L		04/30/21 11:16	05/03/21 14:35	1
Methoxychlor	ND		0.00020	0.000014	mg/L		04/30/21 11:16	05/03/21 14:35	1
Toxaphene	ND		0.0020	0.00012	mg/L		04/30/21 11:16	05/03/21 14:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*56*		*20 - 120*	*04/30/21 11:16*	*05/03/21 14:35*	*1*
DCB Decachlorobiphenyl	*54*	**3*	*20 - 120*	*04/30/21 11:16*	*05/03/21 14:35*	*1*
Tetrachloro-m-xylene	*66*		*44 - 120*	*04/30/21 11:16*	*05/03/21 14:35*	*1*
Tetrachloro-m-xylene	*56*	**3*	*44 - 120*	*04/30/21 11:16*	*05/03/21 14:35*	*1*

Method: 8151 - TCLP Herbicides - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND		0.0020	0.00036	mg/L		04/30/21 11:19	05/04/21 03:49	1
2,4-D	ND		0.0020	0.00040	mg/L		04/30/21 11:19	05/04/21 03:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*42*	*S1-*	*48 - 132*	*04/30/21 11:19*	*05/04/21 03:49*	*1*
2,4-Dichlorophenylacetic acid	*52*		*48 - 132*	*04/30/21 11:19*	*05/04/21 03:49*	*1*

Method: 6010C - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.015	0.0056	mg/L		04/30/21 11:30	05/01/21 01:58	1
Barium	**0.15**	**J**	1.0	0.10	mg/L		04/30/21 11:30	05/01/21 01:58	1

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183850-1

Client Sample ID: BLDG1-BIN 5-SP-031

Date Collected: 04/26/21 00:00
Date Received: 04/27/21 10:00

Lab Sample ID: 480-183850-11
Matrix: Solid
Percent Solids: 100.0

Method: 6010C - Metals (ICP) - TCLP (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		0.0020	0.00050	mg/L		04/30/21 11:30	05/01/21 01:58	1
Chromium	0.21		0.020	0.010	mg/L		04/30/21 11:30	05/01/21 01:58	1
Lead	0.023		0.020	0.0030	mg/L		04/30/21 11:30	05/01/21 01:58	1
Selenium	0.0091	J	0.025	0.0087	mg/L		04/30/21 11:30	05/01/21 01:58	1
Silver	0.0027	J	0.0060	0.0017	mg/L		04/30/21 11:30	05/01/21 01:58	1

Method: 7470A - TCLP Mercury - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		04/30/21 13:54	04/30/21 18:57	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Flashpoint	>180		50.0	50.0	Degrees F			05/03/21 18:22	1
pH	8.5	HF	0.1	0.1	SU			05/04/21 11:30	1
Temperature	22.0	HF	0.001	0.001	Degrees C			05/04/21 11:30	1

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183850-1

Method: 8260C - TCLP Volatiles

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		TOL	DCA	BFB	DBFM
Lab Sample ID	Client Sample ID	(80-120)	(77-120)	(73-120)	(75-123)
LCS 480-578858/5	Lab Control Sample	107	97	106	108
MB 480-578858/7	Method Blank	107	112	111	121

Surrogate Legend

TOL = Toluene-d8 (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260C - TCLP Volatiles

Matrix: Solid **Prep Type: TCLP**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	TOL	BFB	DBFM
Lab Sample ID	Client Sample ID	(77-120)	(80-120)	(73-120)	(75-123)
480-183850-9	BLDG1-BIN 7-SP-029	110	105	105	119
480-183850-10	BLDG1-BIN 6-SP-030	109	100	96	117
480-183850-11	BLDG1-BIN 5-SP-031	112	105	107	117
LB 480-578566/1-A	Method Blank	112	105	108	122

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		TOL	DCA	BFB	DBFM
Lab Sample ID	Client Sample ID	(71-125)	(64-126)	(72-126)	(60-140)
480-183850-9	BLDG1-BIN 7-SP-029	99	99	95	94
480-183850-10	BLDG1-BIN 6-SP-030	99	101	95	100
480-183850-11	BLDG1-BIN 5-SP-031	98	99	95	96
480-183850-11 MS	BLDG1-BIN 5-SP-031	100	86	96	95
480-183850-11 MSD	BLDG1-BIN 5-SP-031	100	89	96	95
LCS 480-578551/1-A	Lab Control Sample	98	103	96	99
MB 480-578551/2-A	Method Blank	97	100	96	97

Surrogate Legend

TOL = Toluene-d8 (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)

Client: Integral Consulting Inc — Job ID: 480-183850-1
Project/Site: Project EF1017

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Solid — **Prep Type: Total/NA**

Lab Sample ID	Client Sample ID	TBP (54-120)	FBP (60-120)	2FP (52-120)	NBZ (53-120)	TPHd14 (79-130)	PHL (54-120)
		Percent Surrogate Recovery (Acceptance Limits)					
480-183850-9	BLDG1-BIN 7-SP-029	82	83	74	80	91	79
480-183850-10	BLDG1-BIN 6-SP-030	96	89	79	82	105	82
480-183850-11	BLDG1-BIN 5-SP-031	85	91	74	85	106	84
LCS 480-578481/2-A	Lab Control Sample	71	67	62	65	74 S1-	65
MB 480-578481/1-A	Method Blank	99	93	83	91	110	88

Surrogate Legend

TBP = 2,4,6-Tribromophenol
FBP = 2-Fluorobiphenyl
2FP = 2-Fluorophenol
NBZ = Nitrobenzene-d5
TPHd14 = p-Terphenyl-d14
PHL = Phenol-d5

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Solid — **Prep Type: Total/NA**

Lab Sample ID	Client Sample ID	TBP (41-120)	FBP (48-120)	2FP (35-120)	NBZ (46-120)	TPHd14 (60-148)	PHL (22-120)
		Percent Surrogate Recovery (Acceptance Limits)					
LCS 480-578777/2-A	Lab Control Sample	100	91	45	89	89	31
LCSD 480-578777/3-A	Lab Control Sample Dup	102	84	41	81	84	27
MB 480-578777/1-A	Method Blank	89	84	44	85	97	30

Surrogate Legend

TBP = 2,4,6-Tribromophenol
FBP = 2-Fluorobiphenyl
2FP = 2-Fluorophenol
NBZ = Nitrobenzene-d5
TPHd14 = p-Terphenyl-d14
PHL = Phenol-d5

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Solid — **Prep Type: TCLP**

Lab Sample ID	Client Sample ID	TBP (41-120)	FBP (48-120)	2FP (35-120)	NBZ (46-120)	TPHd14 (60-148)	PHL (22-120)
		Percent Surrogate Recovery (Acceptance Limits)					
480-183850-9	BLDG1-BIN 7-SP-029	96	86	42	83	86	28
480-183850-10	BLDG1-BIN 6-SP-030	95	87	45	85	86	28
480-183850-11	BLDG1-BIN 5-SP-031	99	82	42	76	86	28
LB 480-578564/1-E	Method Blank	96	86	44	86	89	30

Surrogate Legend

TBP = 2,4,6-Tribromophenol
FBP = 2-Fluorobiphenyl
2FP = 2-Fluorophenol
NBZ = Nitrobenzene-d5
TPHd14 = p-Terphenyl-d14
PHL = Phenol-d5

Surrogate Summary

Client: Integral Consulting Inc — Job ID: 480-183850-1
Project/Site: Project EF1017

Method: 8081B - Organochlorine Pesticides (GC)

Matrix: Solid — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	DCBP1 (20-120)	DCBP2 (20-120)	TCX1 (44-120)	TCX2 (44-120)
LCS 480-578722/2-A	Lab Control Sample	47	44	67	56
LCSD 480-578722/3-A	Lab Control Sample Dup	45	44	60	54
MB 480-578722/1-A	Method Blank	49	43	65	54

Surrogate Legend
DCBP = DCB Decachlorobiphenyl
TCX = Tetrachloro-m-xylene

Method: 8081B - Organochlorine Pesticides (GC)

Matrix: Solid — **Prep Type: TCLP**

		Percent Surrogate Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	DCBP1 (20-120)	DCBP2 (20-120)	TCX1 (44-120)	TCX2 (44-120)
480-183850-9	BLDG1-BIN 7-SP-029	53	49	61	50
480-183850-10	BLDG1-BIN 6-SP-030	68	65	61	52
480-183850-11	BLDG1-BIN 5-SP-031	56	54 *3	66	56 *3
LB 480-578564/1-C	Method Blank	62	60	64	55

Surrogate Legend
DCBP = DCB Decachlorobiphenyl
TCX = Tetrachloro-m-xylene

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Matrix: Waste — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	TCX1 (60-154)	TCX2 (60-154)	DCBP1 (65-174)	DCBP2 (65-174)
480-183850-1	BLDG1-3RD OIL4-SP-021	169 S1+	105	212 S1+	45 S1-
480-183850-2	BLDG1-2ND OIL5-SP-022	165 S1+	112	115	87
480-183850-3	BLDG1-2ND OIL6-SP-023	93	88	120	65
480-183850-4	BLDG1-1ST OIL7-SP-024	368 S1+	80	106	65
480-183850-5	BLDG1-1ST OIL8-SP-025	96	96	106	78
480-183850-6	BLDG2-2T CRANE-SP-026	227 S1+	166 S1+	134	68
480-183850-7	BLDG4-1T CRANE-SP-027	173 S1+	108	168	56 S1-
480-183850-8	BLDG4-1T CRANE-SP-028	125	86	192 S1+	63 S1-
LCS 480-578688/2-A	Lab Control Sample	97	100	126	116
MB 480-578688/1-A	Method Blank	68	72	93	101

Surrogate Legend
TCX = Tetrachloro-m-xylene
DCBP = DCB Decachlorobiphenyl

Method: 8151 - TCLP Herbicides

Matrix: Solid — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	DCPAA1 (48-132)	DCPAA2 (48-132)
LCS 480-578724/2-A	Lab Control Sample	48	48
LCSD 480-578724/3-A	Lab Control Sample Dup	99	92
MB 480-578724/1-A	Method Blank	99	63

Surrogate Legend

DCPAA = 2,4-Dichlorophenylacetic acid

Method: 8151 - TCLP Herbicides

Matrix: Solid

Prep Type: TCLP

		Percent Surrogate Recovery (Acceptance Limits)	
		DCPAA1	DCPAA2
Lab Sample ID	Client Sample ID	(48-132)	(48-132)
480-183850-9	BLDG1-BIN 7-SP-029	48	49
480-183850-10	BLDG1-BIN 6-SP-030	38 S1-	36 S1-
480-183850-11	BLDG1-BIN 5-SP-031	42 S1-	52
LB 480-578564/1-D	Method Blank	34 S1-	40 S1-

Surrogate Legend

DCPAA = 2,4-Dichlorophenylacetic acid

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183850-1

Method: 8260C - TCLP Volatiles

Lab Sample ID: MB 480-578858/7
Matrix: Solid
Analysis Batch: 578858

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.0010	0.00029	mg/L			05/01/21 10:43	1
1,2-Dichloroethane	ND		0.0010	0.00021	mg/L			05/01/21 10:43	1
2-Butanone (MEK)	ND		0.0050	0.0013	mg/L			05/01/21 10:43	1
Benzene	ND		0.0010	0.00041	mg/L			05/01/21 10:43	1
Carbon tetrachloride	ND		0.0010	0.00027	mg/L			05/01/21 10:43	1
Chlorobenzene	ND		0.0010	0.00075	mg/L			05/01/21 10:43	1
Chloroform	ND		0.0010	0.00034	mg/L			05/01/21 10:43	1
Tetrachloroethene	ND		0.0010	0.00036	mg/L			05/01/21 10:43	1
Trichloroethene	ND		0.0010	0.00046	mg/L			05/01/21 10:43	1
Vinyl chloride	ND		0.0010	0.00090	mg/L			05/01/21 10:43	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*107*		*80 - 120*		*05/01/21 10:43*	*1*
1,2-Dichloroethane-d4 (Surr)	*112*		*77 - 120*		*05/01/21 10:43*	*1*
4-Bromofluorobenzene (Surr)	*111*		*73 - 120*		*05/01/21 10:43*	*1*
Dibromofluoromethane (Surr)	*121*		*75 - 123*		*05/01/21 10:43*	*1*

Lab Sample ID: LCS 480-578858/5
Matrix: Solid
Analysis Batch: 578858

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	0.0250	0.0266		mg/L		106	66 - 127
1,2-Dichloroethane	0.0250	0.0234		mg/L		94	75 - 120
2-Butanone (MEK)	0.125	0.103		mg/L		82	57 - 140
Benzene	0.0250	0.0259		mg/L		104	71 - 124
Carbon tetrachloride	0.0250	0.0267		mg/L		107	72 - 134
Chlorobenzene	0.0250	0.0264		mg/L		106	80 - 120
Chloroform	0.0250	0.0254		mg/L		101	73 - 127
Tetrachloroethene	0.0250	0.0271		mg/L		108	74 - 122
Trichloroethene	0.0250	0.0262		mg/L		105	74 - 123
Vinyl chloride	0.0250	0.0256		mg/L		102	65 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*107*		*80 - 120*
1,2-Dichloroethane-d4 (Surr)	*97*		*77 - 120*
4-Bromofluorobenzene (Surr)	*106*		*73 - 120*
Dibromofluoromethane (Surr)	*108*		*75 - 123*

Lab Sample ID: LB 480-578566/1-A
Matrix: Solid
Analysis Batch: 578858

Client Sample ID: Method Blank
Prep Type: TCLP

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.010	0.0029	mg/L			05/01/21 16:44	10
1,2-Dichloroethane	ND		0.010	0.0021	mg/L			05/01/21 16:44	10
2-Butanone (MEK)	ND		0.050	0.013	mg/L			05/01/21 16:44	10
Benzene	ND		0.010	0.0041	mg/L			05/01/21 16:44	10

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183850-1

Method: 8260C - TCLP Volatiles (Continued)

Lab Sample ID: LB 480-578566/1-A
Matrix: Solid
Analysis Batch: 578858

Client Sample ID: Method Blank
Prep Type: TCLP

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	ND		0.010	0.0027	mg/L			05/01/21 16:44	10
Chlorobenzene	ND		0.010	0.0075	mg/L			05/01/21 16:44	10
Chloroform	ND		0.010	0.0034	mg/L			05/01/21 16:44	10
Tetrachloroethene	ND		0.010	0.0036	mg/L			05/01/21 16:44	10
Trichloroethene	ND		0.010	0.0046	mg/L			05/01/21 16:44	10
Vinyl chloride	ND		0.010	0.0090	mg/L			05/01/21 16:44	10

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*105*		*80 - 120*		*05/01/21 16:44*	*10*
1,2-Dichloroethane-d4 (Surr)	*112*		*77 - 120*		*05/01/21 16:44*	*10*
4-Bromofluorobenzene (Surr)	*108*		*73 - 120*		*05/01/21 16:44*	*10*
Dibromofluoromethane (Surr)	*122*		*75 - 123*		*05/01/21 16:44*	*10*

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 480-578551/2-A
Matrix: Solid
Analysis Batch: 578486

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 578551

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5.0	0.36	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
1,1,2,2-Tetrachloroethane	ND		5.0	0.81	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
1,1,2-Trichloroethane	ND		5.0	0.65	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		5.0	1.1	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
1,1-Dichloroethane	ND		5.0	0.61	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
1,1-Dichloroethene	ND		5.0	0.61	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
1,2,4-Trichlorobenzene	ND		5.0	0.30	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
1,2-Dibromo-3-Chloropropane	ND		5.0	2.5	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
1,2-Dichlorobenzene	ND		5.0	0.39	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
1,2-Dichloroethane	ND		5.0	0.25	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
1,2-Dichloropropane	ND		5.0	2.5	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
1,3-Dichlorobenzene	ND		5.0	0.26	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
1,4-Dichlorobenzene	ND		5.0	0.70	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
2-Butanone (MEK)	ND		25	1.8	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
2-Hexanone	ND		25	2.5	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
4-Methyl-2-pentanone (MIBK)	ND		25	1.6	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
Acetone	ND		25	4.2	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
Benzene	ND		5.0	0.25	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
Bromodichloromethane	ND		5.0	0.67	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
Bromoform	ND		5.0	2.5	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
Bromomethane	ND		5.0	0.45	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
Carbon disulfide	ND		5.0	2.5	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
Carbon tetrachloride	ND		5.0	0.48	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
Chlorobenzene	ND		5.0	0.66	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
Dibromochloromethane	ND		5.0	0.64	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
Chloroethane	ND		5.0	1.1	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
Chloroform	ND		5.0	0.31	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
Chloromethane	ND		5.0	0.30	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
cis-1,2-Dichloroethene	ND		5.0	0.64	ug/Kg		04/29/21 10:03	04/29/21 10:55	1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 480-578551/2-A
Matrix: Solid
Analysis Batch: 578486

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 578551

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,3-Dichloropropene	ND		5.0	0.72	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
Cyclohexane	ND		5.0	0.70	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
Dichlorodifluoromethane	ND		5.0	0.41	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
Ethylbenzene	ND		5.0	0.35	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
1,2-Dibromoethane	ND		5.0	0.64	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
Isopropylbenzene	ND		5.0	0.75	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
Methyl acetate	ND		25	3.0	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
Methyl tert-butyl ether	ND		5.0	0.49	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
Methylcyclohexane	ND		5.0	0.76	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
Methylene Chloride	ND		5.0	2.3	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
Styrene	ND		5.0	0.25	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
Tetrachloroethene	ND		5.0	0.67	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
Toluene	ND		5.0	0.38	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
trans-1,2-Dichloroethene	ND		5.0	0.52	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
trans-1,3-Dichloropropene	ND		5.0	2.2	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
Trichloroethene	ND		5.0	1.1	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
Trichlorofluoromethane	ND		5.0	0.47	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
Vinyl chloride	ND		5.0	0.61	ug/Kg		04/29/21 10:03	04/29/21 10:55	1
Xylenes, Total	ND		10	0.84	ug/Kg		04/29/21 10:03	04/29/21 10:55	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*97*		*71 - 125*	*04/29/21 10:03*	*04/29/21 10:55*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*64 - 126*	*04/29/21 10:03*	*04/29/21 10:55*	*1*
4-Bromofluorobenzene (Surr)	*96*		*72 - 126*	*04/29/21 10:03*	*04/29/21 10:55*	*1*
Dibromofluoromethane (Surr)	*97*		*60 - 140*	*04/29/21 10:03*	*04/29/21 10:55*	*1*

Lab Sample ID: LCS 480-578551/1-A
Matrix: Solid
Analysis Batch: 578486

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 578551

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	50.0	46.4		ug/Kg		93	77 - 121
1,1,2,2-Tetrachloroethane	50.0	50.4		ug/Kg		101	80 - 120
1,1,2-Trichloroethane	50.0	47.0		ug/Kg		94	78 - 122
1,1,2-Trichloro-1,2,2-trifluoroethane	50.0	44.7		ug/Kg		89	60 - 140
1,1-Dichloroethane	50.0	47.7		ug/Kg		95	73 - 126
1,1-Dichloroethene	50.0	45.8		ug/Kg		92	59 - 125
1,2,4-Trichlorobenzene	50.0	46.7		ug/Kg		93	64 - 120
1,2-Dibromo-3-Chloropropane	50.0	52.1		ug/Kg		104	63 - 124
1,2-Dichlorobenzene	50.0	45.1		ug/Kg		90	75 - 120
1,2-Dichloroethane	50.0	46.2		ug/Kg		92	77 - 122
1,2-Dichloropropane	50.0	48.1		ug/Kg		96	75 - 124
1,3-Dichlorobenzene	50.0	45.2		ug/Kg		90	74 - 120
1,4-Dichlorobenzene	50.0	45.2		ug/Kg		90	73 - 120
2-Butanone (MEK)	250	282		ug/Kg		113	70 - 134
2-Hexanone	250	274		ug/Kg		110	59 - 130
4-Methyl-2-pentanone (MIBK)	250	268		ug/Kg		107	65 - 133
Acetone	250	267		ug/Kg		107	61 - 137

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 480-578551/1-A
Matrix: Solid
Analysis Batch: 578486

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 578551

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	50.0	47.4		ug/Kg		95	79 - 127
Bromodichloromethane	50.0	49.1		ug/Kg		98	80 - 122
Bromoform	50.0	45.6		ug/Kg		91	68 - 126
Bromomethane	50.0	48.5		ug/Kg		97	37 - 149
Carbon disulfide	50.0	45.0		ug/Kg		90	64 - 131
Carbon tetrachloride	50.0	46.7		ug/Kg		93	75 - 135
Chlorobenzene	50.0	44.9		ug/Kg		90	76 - 124
Dibromochloromethane	50.0	49.9		ug/Kg		100	76 - 125
Chloroethane	50.0	51.7		ug/Kg		103	69 - 135
Chloroform	50.0	46.1		ug/Kg		92	80 - 120
Chloromethane	50.0	46.2		ug/Kg		92	63 - 127
cis-1,2-Dichloroethene	50.0	46.6		ug/Kg		93	81 - 120
cis-1,3-Dichloropropene	50.0	49.4		ug/Kg		99	80 - 120
Cyclohexane	50.0	45.6		ug/Kg		91	65 - 120
Dichlorodifluoromethane	50.0	42.9		ug/Kg		86	57 - 142
Ethylbenzene	50.0	44.9		ug/Kg		90	80 - 120
1,2-Dibromoethane	50.0	46.7		ug/Kg		93	78 - 120
Isopropylbenzene	50.0	46.5		ug/Kg		93	72 - 120
Methyl acetate	100	108		ug/Kg		108	55 - 136
Methyl tert-butyl ether	50.0	47.9		ug/Kg		96	63 - 125
Methylcyclohexane	50.0	44.0		ug/Kg		88	60 - 140
Methylene Chloride	50.0	49.9		ug/Kg		100	61 - 127
Styrene	50.0	44.0		ug/Kg		88	80 - 120
Tetrachloroethene	50.0	44.1		ug/Kg		88	74 - 122
Toluene	50.0	45.2		ug/Kg		90	74 - 128
trans-1,2-Dichloroethene	50.0	47.0		ug/Kg		94	78 - 126
trans-1,3-Dichloropropene	50.0	49.3		ug/Kg		99	73 - 123
Trichloroethene	50.0	46.4		ug/Kg		93	77 - 129
Trichlorofluoromethane	50.0	46.5		ug/Kg		93	65 - 146
Vinyl chloride	50.0	50.2		ug/Kg		100	61 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*98*		*71 - 125*
1,2-Dichloroethane-d4 (Surr)	*103*		*64 - 126*
4-Bromofluorobenzene (Surr)	*96*		*72 - 126*
Dibromofluoromethane (Surr)	*99*		*60 - 140*

Lab Sample ID: 480-183850-11 MS
Matrix: Solid
Analysis Batch: 578486

Client Sample ID: BLDG1-BIN 5-SP-031
Prep Type: Total/NA
Prep Batch: 578551

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	ND	vs	417	378	vs	ug/Kg	☼	91	77 - 121
1,1,2,2-Tetrachloroethane	ND	F1 vs	417	315	F1 vs	ug/Kg	☼	76	80 - 120
1,1,2-Trichloroethane	ND	vs	417	331	vs	ug/Kg	☼	79	78 - 122
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	vs	417	364	vs	ug/Kg	☼	87	60 - 140
1,1-Dichloroethane	ND	vs	417	394	vs	ug/Kg	☼	95	73 - 126
1,1-Dichloroethene	ND	vs	417	382	vs	ug/Kg	☼	92	59 - 125

QC Sample Results

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 480-183850-11 MS
Matrix: Solid
Analysis Batch: 578486

Client Sample ID: BLDG1-BIN 5-SP-031
Prep Type: Total/NA
Prep Batch: 578551

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,4-Trichlorobenzene	ND	vs	417	269	vs	ug/Kg	☼	65	64 - 120
1,2-Dibromo-3-Chloropropane	ND	vs	417	283	vs	ug/Kg	☼	68	63 - 124
1,2-Dichlorobenzene	ND	vs	417	340	vs	ug/Kg	☼	82	75 - 120
1,2-Dichloroethane	ND	vs	417	339	vs	ug/Kg	☼	81	77 - 122
1,2-Dichloropropane	ND	vs	417	382	vs	ug/Kg	☼	92	75 - 124
1,3-Dichlorobenzene	ND	vs	417	349	vs	ug/Kg	☼	84	74 - 120
1,4-Dichlorobenzene	ND	vs	417	353	vs	ug/Kg	☼	85	73 - 120
2-Butanone (MEK)	ND	F1 vs	2080	1400	F1 vs	ug/Kg	☼	67	70 - 134
2-Hexanone	ND	vs	2080	1450	vs	ug/Kg	☼	69	59 - 130
4-Methyl-2-pentanone (MIBK)	ND	vs	2080	1430	vs	ug/Kg	☼	68	65 - 133
Acetone	ND	vs	2080	1320	vs	ug/Kg	☼	63	61 - 137
Benzene	ND	vs	417	391	vs	ug/Kg	☼	94	79 - 127
Bromodichloromethane	ND	vs	417	364	vs	ug/Kg	☼	87	80 - 122
Bromoform	ND	F1 vs	417	272	F1 vs	ug/Kg	☼	65	68 - 126
Bromomethane	ND	vs	417	396	vs	ug/Kg	☼	95	37 - 149
Carbon disulfide	ND	vs	417	352	vs	ug/Kg	☼	85	64 - 131
Carbon tetrachloride	ND	vs	417	383	vs	ug/Kg	☼	92	75 - 135
Chlorobenzene	ND	vs	417	366	vs	ug/Kg	☼	88	76 - 124
Dibromochloromethane	ND	vs	417	345	vs	ug/Kg	☼	83	76 - 125
Chloroethane	ND	vs	417	416	vs	ug/Kg	☼	100	69 - 135
Chloroform	ND	vs	417	378	vs	ug/Kg	☼	91	80 - 120
Chloromethane	ND	vs	417	370	vs	ug/Kg	☼	89	63 - 127
cis-1,2-Dichloroethene	ND	vs	417	377	vs	ug/Kg	☼	90	80 - 120
cis-1,3-Dichloropropene	ND	vs	417	362	vs	ug/Kg	☼	87	80 - 120
Cyclohexane	ND	vs	417	341	vs	ug/Kg	☼	82	65 - 120
Dichlorodifluoromethane	ND	vs	417	343	vs	ug/Kg	☼	82	57 - 142
Ethylbenzene	ND	vs	417	366	vs	ug/Kg	☼	88	80 - 120
1,2-Dibromoethane	ND	F1 vs	417	310	F1 vs	ug/Kg	☼	74	78 - 120
Isopropylbenzene	ND	vs	417	365	vs	ug/Kg	☼	88	72 - 120
Methyl acetate	ND	vs	833	561	vs	ug/Kg	☼	67	55 - 136
Methyl tert-butyl ether	ND	vs	417	329	vs	ug/Kg	☼	79	63 - 125
Methylcyclohexane	ND	vs	417	275	vs	ug/Kg	☼	66	60 - 140
Methylene Chloride	ND	vs	417	396	vs	ug/Kg	☼	95	61 - 127
Styrene	ND	vs	417	354	vs	ug/Kg	☼	85	80 - 120
Tetrachloroethene	ND	vs	417	348	vs	ug/Kg	☼	84	74 - 122
Toluene	ND	vs	417	376	vs	ug/Kg	☼	90	74 - 128
trans-1,2-Dichloroethene	ND	vs	417	383	vs	ug/Kg	☼	92	78 - 126
trans-1,3-Dichloropropene	ND	vs	417	347	vs	ug/Kg	☼	83	73 - 123
Trichloroethene	ND	vs	417	379	vs	ug/Kg	☼	91	77 - 129
Trichlorofluoromethane	ND	vs	417	383	vs	ug/Kg	☼	92	65 - 146
Vinyl chloride	ND	vs	417	384	vs	ug/Kg	☼	92	61 - 133

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Toluene-d8 (Surr)	*100*		*71 - 125*
1,2-Dichloroethane-d4 (Surr)	*86*		*64 - 126*
4-Bromofluorobenzene (Surr)	*96*		*72 - 126*
Dibromofluoromethane (Surr)	*95*		*60 - 140*

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 480-183850-11 MSD — **Client Sample ID: BLDG1-BIN 5-SP-031**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 578486 — **Prep Batch: 578551**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane	ND	vs	410	370	vs	ug/Kg	☼	90	77 - 121	2	30
1,1,2,2-Tetrachloroethane	ND	F1 vs	410	324	F1 vs	ug/Kg	☼	79	80 - 120	3	30
1,1,2-Trichloroethane	ND	vs	410	338	vs	ug/Kg	☼	82	78 - 122	2	30
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	vs	410	343	vs	ug/Kg	☼	84	60 - 140	6	30
1,1-Dichloroethane	ND	vs	410	376	vs	ug/Kg	☼	92	73 - 126	5	30
1,1-Dichloroethene	ND	vs	410	356	vs	ug/Kg	☼	87	59 - 125	7	30
1,2,4-Trichlorobenzene	ND	vs	410	285	vs	ug/Kg	☼	70	64 - 120	6	30
1,2-Dibromo-3-Chloropropane	ND	vs	410	304	vs	ug/Kg	☼	74	63 - 124	7	30
1,2-Dichlorobenzene	ND	vs	410	341	vs	ug/Kg	☼	83	75 - 120	0	30
1,2-Dichloroethane	ND	vs	410	340	vs	ug/Kg	☼	83	77 - 122	0	30
1,2-Dichloropropane	ND	vs	410	377	vs	ug/Kg	☼	92	75 - 124	1	30
1,3-Dichlorobenzene	ND	vs	410	350	vs	ug/Kg	☼	85	74 - 120	0	30
1,4-Dichlorobenzene	ND	vs	410	352	vs	ug/Kg	☼	86	73 - 120	1	30
2-Butanone (MEK)	ND	F1 vs	2050	1490	vs	ug/Kg	☼	73	70 - 134	6	30
2-Hexanone	ND	vs	2050	1540	vs	ug/Kg	☼	75	59 - 130	6	30
4-Methyl-2-pentanone (MIBK)	ND	vs	2050	1520	vs	ug/Kg	☼	74	65 - 133	6	30
Acetone	ND	vs	2050	1350	vs	ug/Kg	☼	66	61 - 137	3	30
Benzene	ND	vs	410	375	vs	ug/Kg	☼	91	79 - 127	4	30
Bromodichloromethane	ND	vs	410	372	vs	ug/Kg	☼	91	80 - 122	2	30
Bromoform	ND	F1 vs	410	295	vs	ug/Kg	☼	72	68 - 126	8	30
Bromomethane	ND	vs	410	387	vs	ug/Kg	☼	94	37 - 149	2	30
Carbon disulfide	ND	vs	410	346	vs	ug/Kg	☼	84	64 - 131	2	30
Carbon tetrachloride	ND	vs	410	368	vs	ug/Kg	☼	90	75 - 135	4	30
Chlorobenzene	ND	vs	410	361	vs	ug/Kg	☼	88	76 - 124	1	30
Dibromochloromethane	ND	vs	410	358	vs	ug/Kg	☼	87	76 - 125	4	30
Chloroethane	ND	vs	410	397	vs	ug/Kg	☼	97	69 - 135	5	30
Chloroform	ND	vs	410	366	vs	ug/Kg	☼	89	80 - 120	3	30
Chloromethane	ND	vs	410	335	vs	ug/Kg	☼	82	63 - 127	10	30
cis-1,2-Dichloroethene	ND	vs	410	367	vs	ug/Kg	☼	90	80 - 120	3	30
cis-1,3-Dichloropropene	ND	vs	410	364	vs	ug/Kg	☼	89	80 - 120	0	30
Cyclohexane	ND	vs	410	333	vs	ug/Kg	☼	81	65 - 120	2	30
Dichlorodifluoromethane	ND	vs	410	301	vs	ug/Kg	☼	73	57 - 142	13	30
Ethylbenzene	ND	vs	410	354	vs	ug/Kg	☼	86	80 - 120	3	30
1,2-Dibromoethane	ND	F1 vs	410	321	vs	ug/Kg	☼	78	78 - 120	3	30
Isopropylbenzene	ND	vs	410	355	vs	ug/Kg	☼	87	72 - 120	3	30
Methyl acetate	ND	vs	820	578	vs	ug/Kg	☼	70	55 - 136	3	30
Methyl tert-butyl ether	ND	vs	410	327	vs	ug/Kg	☼	80	63 - 125	0	30
Methylcyclohexane	ND	vs	410	275	vs	ug/Kg	☼	67	60 - 140	0	30
Methylene Chloride	ND	vs	410	379	vs	ug/Kg	☼	93	61 - 127	4	30
Styrene	ND	vs	410	349	vs	ug/Kg	☼	85	80 - 120	1	30
Tetrachloroethene	ND	vs	410	337	vs	ug/Kg	☼	82	74 - 122	3	30
Toluene	ND	vs	410	365	vs	ug/Kg	☼	89	74 - 128	3	30
trans-1,2-Dichloroethene	ND	vs	410	368	vs	ug/Kg	☼	90	78 - 126	4	30
trans-1,3-Dichloropropene	ND	vs	410	356	vs	ug/Kg	☼	87	73 - 123	3	30
Trichloroethene	ND	vs	410	359	vs	ug/Kg	☼	88	77 - 129	5	30
Trichlorofluoromethane	ND	vs	410	363	vs	ug/Kg	☼	89	65 - 146	5	30
Vinyl chloride	ND	vs	410	362	vs	ug/Kg	☼	88	61 - 133	6	30

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 480-183850-11 MSD
Matrix: Solid
Analysis Batch: 578486

Client Sample ID: BLDG1-BIN 5-SP-031
Prep Type: Total/NA
Prep Batch: 578551

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Toluene-d8 (Surr)	100		71 - 125
1,2-Dichloroethane-d4 (Surr)	89		64 - 126
4-Bromofluorobenzene (Surr)	96		72 - 126
Dibromofluoromethane (Surr)	95		60 - 140

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 480-578481/1-A
Matrix: Solid
Analysis Batch: 578805

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 578481

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biphenyl	ND		170	25	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
bis (2-chloroisopropyl) ether	ND		170	34	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
2,4-Dichlorophenol	ND		170	18	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
2,4-Dimethylphenol	ND		170	41	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
2,4-Dinitrophenol	ND		1700	780	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
2,4-Dinitrotoluene	ND		170	35	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
2,6-Dinitrotoluene	ND		170	20	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
2-Chloronaphthalene	ND		170	28	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
1,4-Dioxane	ND		100	55	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
2,4,5-Trichlorophenol	ND		170	46	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
2-Chlorophenol	ND		330	31	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
2,4,6-Trichlorophenol	ND		170	34	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
2-Methylnaphthalene	ND		170	34	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
2-Methylphenol	ND		170	20	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
2-Nitroaniline	ND		330	25	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
2-Nitrophenol	ND		170	48	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
3,3'-Dichlorobenzidine	ND		330	200	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
3-Nitroaniline	ND		330	47	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
4,6-Dinitro-2-methylphenol	ND		330	170	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
4-Bromophenyl phenyl ether	ND		170	24	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
4-Chloro-3-methylphenol	ND		170	42	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
4-Chloroaniline	ND		170	42	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
4-Chlorophenyl phenyl ether	ND		170	21	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
4-Methylphenol	ND		330	20	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
4-Nitroaniline	ND		330	89	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
4-Nitrophenol	ND		330	120	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
Acenaphthene	ND		170	25	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
Acenaphthylene	ND		170	22	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
Acetophenone	ND		170	23	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
Anthracene	ND		170	42	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
Atrazine	ND		170	59	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
Benzaldehyde	ND		170	130	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
Benzo[a]anthracene	ND		170	17	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
Benzo[a]pyrene	ND		170	25	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
Benzo[b]fluoranthene	ND		170	27	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
Benzo[g,h,i]perylene	ND		170	18	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
Benzo[k]fluoranthene	ND		170	22	ug/Kg		04/29/21 07:57	04/30/21 20:52	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 480-578481/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 578805 — **Prep Batch: 578481**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-chloroethoxy)methane	ND		170	36	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
Bis(2-chloroethyl)ether	ND		170	22	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
Bis(2-ethylhexyl) phthalate	ND		170	58	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
Butyl benzyl phthalate	ND		170	28	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
Caprolactam	ND		170	51	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
Carbazole	ND		170	20	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
Chrysene	ND		170	38	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
Di-n-butyl phthalate	ND		170	29	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
Di-n-octyl phthalate	ND		170	20	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
Dibenz(a,h)anthracene	ND		170	30	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
Dibenzofuran	ND		170	20	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
Diethyl phthalate	ND		170	22	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
Dimethyl phthalate	ND		170	20	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
Fluoranthene	ND		170	18	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
Fluorene	ND		170	20	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
Hexachlorobenzene	ND		170	23	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
Hexachlorobutadiene	ND		170	25	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
Hexachlorocyclopentadiene	ND		170	23	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
Hexachloroethane	ND		170	22	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
Indeno[1,2,3-cd]pyrene	ND		170	21	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
Isophorone	ND		170	36	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
N-Nitrosodi-n-propylamine	ND		170	29	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
N-Nitrosodiphenylamine	ND		170	140	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
Naphthalene	ND		170	22	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
Nitrobenzene	ND		170	19	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
Pentachlorophenol	ND		330	170	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
Phenanthrene	ND		170	25	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
Phenol	ND		170	26	ug/Kg		04/29/21 07:57	04/30/21 20:52	1
Pyrene	ND		170	20	ug/Kg		04/29/21 07:57	04/30/21 20:52	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*99*		*54 - 120*	*04/29/21 07:57*	*04/30/21 20:52*	*1*
2-Fluorobiphenyl	*93*		*60 - 120*	*04/29/21 07:57*	*04/30/21 20:52*	*1*
2-Fluorophenol	*83*		*52 - 120*	*04/29/21 07:57*	*04/30/21 20:52*	*1*
Nitrobenzene-d5	*91*		*53 - 120*	*04/29/21 07:57*	*04/30/21 20:52*	*1*
p-Terphenyl-d14	*110*		*79 - 130*	*04/29/21 07:57*	*04/30/21 20:52*	*1*
Phenol-d5	*88*		*54 - 120*	*04/29/21 07:57*	*04/30/21 20:52*	*1*

Lab Sample ID: LCS 480-578481/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 578805 — **Prep Batch: 578481**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Biphenyl	1660	1100		ug/Kg		67	59 - 120
bis (2-chloroisopropyl) ether	1660	1020		ug/Kg		62	44 - 120
2,4-Dichlorophenol	1660	1110		ug/Kg		67	61 - 120
2,4-Dimethylphenol	1660	1170		ug/Kg		71	59 - 120
2,4-Dinitrophenol	3310	2290		ug/Kg		69	41 - 146

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 480-578481/2-A
Client Sample ID: Lab Control Sample
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 578805
Prep Batch: 578481

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,4-Dinitrotoluene	1660	1180		ug/Kg		71	63 - 120
2,6-Dinitrotoluene	1660	1210		ug/Kg		73	66 - 120
2-Chloronaphthalene	1660	1120		ug/Kg		68	57 - 120
1,4-Dioxane	1660	561		ug/Kg		34	23 - 120
2,4,5-Trichlorophenol	1660	1180		ug/Kg		71	59 - 126
2-Chlorophenol	1660	1020		ug/Kg		62	53 - 120
2,4,6-Trichlorophenol	1660	1170		ug/Kg		71	59 - 123
2-Methylnaphthalene	1660	1070		ug/Kg		65	59 - 120
2-Methylphenol	1660	1100		ug/Kg		66	54 - 120
2-Nitroaniline	1660	1220		ug/Kg		73	61 - 120
2-Nitrophenol	1660	1030		ug/Kg		62	56 - 120
3,3'-Dichlorobenzidine	3310	2080		ug/Kg		63	54 - 120
3-Nitroaniline	1660	1170		ug/Kg		70	48 - 120
4,6-Dinitro-2-methylphenol	3310	2370		ug/Kg		71	49 - 122
4-Bromophenyl phenyl ether	1660	1150		ug/Kg		70	58 - 120
4-Chloro-3-methylphenol	1660	1210		ug/Kg		73	61 - 120
4-Chloroaniline	1660	1080		ug/Kg		65	38 - 120
4-Chlorophenyl phenyl ether	1660	1140		ug/Kg		69	63 - 124
4-Methylphenol	1660	1070		ug/Kg		64	55 - 120
4-Nitroaniline	1660	1200		ug/Kg		72	56 - 120
4-Nitrophenol	3310	2480		ug/Kg		75	43 - 147
Acenaphthene	1660	1140		ug/Kg		69	62 - 120
Acenaphthylene	1660	1130		ug/Kg		68	58 - 121
Acetophenone	1660	1080		ug/Kg		65	54 - 120
Anthracene	1660	1220		ug/Kg		74	62 - 120
Atrazine	3310	2450		ug/Kg		74	60 - 127
Benzaldehyde	3310	2050		ug/Kg		62	10 - 150
Benzo[a]anthracene	1660	1200		ug/Kg		73	65 - 120
Benzo[a]pyrene	1660	1200		ug/Kg		73	64 - 120
Benzo[b]fluoranthene	1660	1200		ug/Kg		72	64 - 120
Benzo[g,h,i]perylene	1660	1190		ug/Kg		72	45 - 145
Benzo[k]fluoranthene	1660	1270		ug/Kg		76	65 - 120
Bis(2-chloroethoxy)methane	1660	1100		ug/Kg		66	55 - 120
Bis(2-chloroethyl)ether	1660	991		ug/Kg		60	45 - 120
Bis(2-ethylhexyl) phthalate	1660	1200		ug/Kg		73	61 - 133
Butyl benzyl phthalate	1660	1220		ug/Kg		73	61 - 129
Caprolactam	3310	2360		ug/Kg		71	47 - 120
Carbazole	1660	1180		ug/Kg		71	65 - 120
Chrysene	1660	1180		ug/Kg		71	64 - 120
Di-n-butyl phthalate	1660	1260		ug/Kg		76	58 - 130
Di-n-octyl phthalate	1660	1180		ug/Kg		71	57 - 133
Dibenz(a,h)anthracene	1660	1210		ug/Kg		73	54 - 132
Dibenzofuran	1660	1150		ug/Kg		69	63 - 120
Diethyl phthalate	1660	1210		ug/Kg		73	66 - 120
Dimethyl phthalate	1660	1250		ug/Kg		75	65 - 124
Fluoranthene	1660	1200		ug/Kg		72	62 - 120
Fluorene	1660	1170		ug/Kg		71	63 - 120
Hexachlorobenzene	1660	1100		ug/Kg		66	60 - 120
Hexachlorobutadiene	1660	938		ug/Kg		57	45 - 120

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 480-578481/2-A
Matrix: Solid
Analysis Batch: 578805

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 578481

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Hexachlorocyclopentadiene	1660	972		ug/Kg		59	47 - 120
Hexachloroethane	1660	926		ug/Kg		56	41 - 120
Indeno[1,2,3-cd]pyrene	1660	1200		ug/Kg		73	56 - 134
Isophorone	1660	1160		ug/Kg		70	56 - 120
N-Nitrosodi-n-propylamine	1660	1120		ug/Kg		67	52 - 120
Naphthalene	1660	1030		ug/Kg		62	55 - 120
Nitrobenzene	1660	1080		ug/Kg		65	54 - 120
Pentachlorophenol	3310	2410		ug/Kg		73	51 - 120
Phenanthrene	1660	1170		ug/Kg		71	60 - 120
Phenol	1660	1070		ug/Kg		65	53 - 120
Pyrene	1660	1210		ug/Kg		73	61 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4,6-Tribromophenol	*71*		*54 - 120*
2-Fluorobiphenyl	*67*		*60 - 120*
2-Fluorophenol	*62*		*52 - 120*
Nitrobenzene-d5	*65*		*53 - 120*
p-Terphenyl-d14	*74*	*S1-*	*79 - 130*
Phenol-d5	*65*		*54 - 120*

Lab Sample ID: MB 480-578777/1-A
Matrix: Solid
Analysis Batch: 579197

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 578777

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.010	0.00045	mg/L		04/30/21 11:21	05/03/21 20:24	1
3-Methylphenol	ND		0.010	0.00040	mg/L		04/30/21 11:21	05/03/21 20:24	1
2,4-Dinitrotoluene	ND		0.0050	0.00043	mg/L		04/30/21 11:21	05/03/21 20:24	1
Pyridine	ND		0.025	0.00040	mg/L		04/30/21 11:21	05/03/21 20:24	1
2,4,5-Trichlorophenol	ND		0.0050	0.00048	mg/L		04/30/21 11:21	05/03/21 20:24	1
2,4,6-Trichlorophenol	ND		0.0050	0.00060	mg/L		04/30/21 11:21	05/03/21 20:24	1
2-Methylphenol	ND		0.0050	0.00040	mg/L		04/30/21 11:21	05/03/21 20:24	1
4-Methylphenol	ND		0.010	0.00035	mg/L		04/30/21 11:21	05/03/21 20:24	1
Hexachlorobenzene	ND		0.0050	0.00050	mg/L		04/30/21 11:21	05/03/21 20:24	1
Hexachlorobutadiene	ND		0.0050	0.00068	mg/L		04/30/21 11:21	05/03/21 20:24	1
Hexachloroethane	ND		0.0050	0.00058	mg/L		04/30/21 11:21	05/03/21 20:24	1
Nitrobenzene	ND		0.0050	0.00028	mg/L		04/30/21 11:21	05/03/21 20:24	1
Pentachlorophenol	ND		0.010	0.0022	mg/L		04/30/21 11:21	05/03/21 20:24	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*89*		*41 - 120*	*04/30/21 11:21*	*05/03/21 20:24*	*1*
2-Fluorobiphenyl	*84*		*48 - 120*	*04/30/21 11:21*	*05/03/21 20:24*	*1*
2-Fluorophenol	*44*		*35 - 120*	*04/30/21 11:21*	*05/03/21 20:24*	*1*
Nitrobenzene-d5	*85*		*46 - 120*	*04/30/21 11:21*	*05/03/21 20:24*	*1*
p-Terphenyl-d14	*97*		*60 - 148*	*04/30/21 11:21*	*05/03/21 20:24*	*1*
Phenol-d5	*30*		*22 - 120*	*04/30/21 11:21*	*05/03/21 20:24*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 480-578777/2-A
Matrix: Solid
Analysis Batch: 579197

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 578777

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dichlorobenzene	0.0500	0.0302		mg/L		60	51 - 120
3-Methylphenol	0.0500	0.0296		mg/L		59	39 - 120
2,4-Dinitrotoluene	0.0500	0.0498		mg/L		100	69 - 120
Pyridine	0.100	0.0389		mg/L		39	10 - 120
2,4,5-Trichlorophenol	0.0500	0.0459		mg/L		92	65 - 126
2,4,6-Trichlorophenol	0.0500	0.0468		mg/L		94	64 - 120
2-Methylphenol	0.0500	0.0324		mg/L		65	39 - 120
4-Methylphenol	0.0500	0.0296		mg/L		59	29 - 131
Hexachlorobenzene	0.0500	0.0461		mg/L		92	61 - 120
Hexachlorobutadiene	0.0500	0.0329		mg/L		66	35 - 120
Hexachloroethane	0.0500	0.0277		mg/L		55	43 - 120
Nitrobenzene	0.0500	0.0418		mg/L		84	53 - 123
Pentachlorophenol	0.100	0.105		mg/L		105	29 - 136

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4,6-Tribromophenol	*100*		*41 - 120*
2-Fluorobiphenyl	*91*		*48 - 120*
2-Fluorophenol	*45*		*35 - 120*
Nitrobenzene-d5	*89*		*46 - 120*
p-Terphenyl-d14	*89*		*60 - 148*
Phenol-d5	*31*		*22 - 120*

Lab Sample ID: LCSD 480-578777/3-A
Matrix: Solid
Analysis Batch: 579197

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 578777

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dichlorobenzene	0.0500	0.0272		mg/L		54	51 - 120	11	36
3-Methylphenol	0.0500	0.0277		mg/L		55	39 - 120	7	30
2,4-Dinitrotoluene	0.0500	0.0444		mg/L		89	69 - 120	11	20
Pyridine	0.100	0.0394		mg/L		39	10 - 120	1	49
2,4,5-Trichlorophenol	0.0500	0.0435		mg/L		87	65 - 126	5	18
2,4,6-Trichlorophenol	0.0500	0.0432		mg/L		86	64 - 120	8	19
2-Methylphenol	0.0500	0.0287		mg/L		57	39 - 120	12	27
4-Methylphenol	0.0500	0.0277		mg/L		55	29 - 131	7	24
Hexachlorobenzene	0.0500	0.0456		mg/L		91	61 - 120	1	15
Hexachlorobutadiene	0.0500	0.0306		mg/L		61	35 - 120	7	44
Hexachloroethane	0.0500	0.0234		mg/L		47	43 - 120	17	46
Nitrobenzene	0.0500	0.0397		mg/L		79	53 - 123	5	24
Pentachlorophenol	0.100	0.106		mg/L		106	29 - 136	1	37

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2,4,6-Tribromophenol	*102*		*41 - 120*
2-Fluorobiphenyl	*84*		*48 - 120*
2-Fluorophenol	*41*		*35 - 120*
Nitrobenzene-d5	*81*		*46 - 120*
p-Terphenyl-d14	*84*		*60 - 148*
Phenol-d5	*27*		*22 - 120*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: LB 480-578564/1-E
Matrix: Solid
Analysis Batch: 579197

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 578777

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.040	0.0018	mg/L		04/30/21 11:21	05/03/21 21:38	1
3-Methylphenol	ND		0.040	0.0016	mg/L		04/30/21 11:21	05/03/21 21:38	1
2,4-Dinitrotoluene	ND		0.020	0.0017	mg/L		04/30/21 11:21	05/03/21 21:38	1
Pyridine	ND		0.10	0.0016	mg/L		04/30/21 11:21	05/03/21 21:38	1
2,4,5-Trichlorophenol	ND		0.020	0.0019	mg/L		04/30/21 11:21	05/03/21 21:38	1
2,4,6-Trichlorophenol	ND		0.020	0.0024	mg/L		04/30/21 11:21	05/03/21 21:38	1
2-Methylphenol	ND		0.020	0.0016	mg/L		04/30/21 11:21	05/03/21 21:38	1
4-Methylphenol	ND		0.040	0.0014	mg/L		04/30/21 11:21	05/03/21 21:38	1
Hexachlorobenzene	ND		0.020	0.0020	mg/L		04/30/21 11:21	05/03/21 21:38	1
Hexachlorobutadiene	ND		0.020	0.0027	mg/L		04/30/21 11:21	05/03/21 21:38	1
Hexachloroethane	ND		0.020	0.0023	mg/L		04/30/21 11:21	05/03/21 21:38	1
Nitrobenzene	ND		0.020	0.0011	mg/L		04/30/21 11:21	05/03/21 21:38	1
Pentachlorophenol	ND		0.040	0.0088	mg/L		04/30/21 11:21	05/03/21 21:38	1

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*96*		*41 - 120*	*04/30/21 11:21*	*05/03/21 21:38*	*1*
2-Fluorobiphenyl	*86*		*48 - 120*	*04/30/21 11:21*	*05/03/21 21:38*	*1*
2-Fluorophenol	*44*		*35 - 120*	*04/30/21 11:21*	*05/03/21 21:38*	*1*
Nitrobenzene-d5	*86*		*46 - 120*	*04/30/21 11:21*	*05/03/21 21:38*	*1*
p-Terphenyl-d14	*89*		*60 - 148*	*04/30/21 11:21*	*05/03/21 21:38*	*1*
Phenol-d5	*30*		*22 - 120*	*04/30/21 11:21*	*05/03/21 21:38*	*1*

Method: 8081B - Organochlorine Pesticides (GC)

Lab Sample ID: MB 480-578722/1-A
Matrix: Solid
Analysis Batch: 578954

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 578722

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.000050	0.0000015	mg/L		04/30/21 08:27	05/03/21 11:19	1
Chlordane (technical)	ND		0.00050	0.0000073	mg/L		04/30/21 08:27	05/03/21 11:19	1
Endrin	ND		0.000050	0.0000035	mg/L		04/30/21 08:27	05/03/21 11:19	1
Heptachlor	ND		0.000050	0.0000021	mg/L		04/30/21 08:27	05/03/21 11:19	1
Heptachlor epoxide	ND		0.000050	0.0000013	mg/L		04/30/21 08:27	05/03/21 11:19	1
Methoxychlor	ND		0.000050	0.0000035	mg/L		04/30/21 08:27	05/03/21 11:19	1
Toxaphene	ND		0.00050	0.000030	mg/L		04/30/21 08:27	05/03/21 11:19	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*49*		*20 - 120*	*04/30/21 08:27*	*05/03/21 11:19*	*1*
DCB Decachlorobiphenyl	*43*		*20 - 120*	*04/30/21 08:27*	*05/03/21 11:19*	*1*
Tetrachloro-m-xylene	*65*		*44 - 120*	*04/30/21 08:27*	*05/03/21 11:19*	*1*
Tetrachloro-m-xylene	*54*		*44 - 120*	*04/30/21 08:27*	*05/03/21 11:19*	*1*

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: LCS 480-578722/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 578954 — **Prep Batch: 578722**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
gamma-BHC (Lindane)	0.000500	0.000368		mg/L		74	56 - 120
Endrin	0.000500	0.000392		mg/L		78	65 - 135
Heptachlor	0.000500	0.000315		mg/L		63	58 - 120
Heptachlor epoxide	0.000500	0.000368		mg/L		74	65 - 125
Methoxychlor	0.000500	0.000405		mg/L		81	50 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*47*		*20 - 120*
DCB Decachlorobiphenyl	*44*		*20 - 120*
Tetrachloro-m-xylene	*67*		*44 - 120*
Tetrachloro-m-xylene	*56*		*44 - 120*

Lab Sample ID: LCSD 480-578722/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 578954 — **Prep Batch: 578722**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
gamma-BHC (Lindane)	0.000500	0.000375		mg/L		75	56 - 120	2	24
Endrin	0.000500	0.000402		mg/L		80	65 - 135	2	24
Heptachlor	0.000500	0.000310		mg/L		62	58 - 120	2	25
Heptachlor epoxide	0.000500	0.000374		mg/L		75	65 - 125	1	23
Methoxychlor	0.000500	0.000401		mg/L		80	50 - 150	1	26

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
DCB Decachlorobiphenyl	*45*		*20 - 120*
DCB Decachlorobiphenyl	*44*		*20 - 120*
Tetrachloro-m-xylene	*60*		*44 - 120*
Tetrachloro-m-xylene	*54*		*44 - 120*

Lab Sample ID: LB 480-578564/1-C — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: TCLP**
Analysis Batch: 578954 — **Prep Batch: 578722**

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.00020	0.0000060	mg/L		04/30/21 11:16	05/03/21 12:37	1
Chlordane (technical)	ND		0.0020	0.000029	mg/L		04/30/21 11:16	05/03/21 12:37	1
Endrin	ND		0.00020	0.000014	mg/L		04/30/21 11:16	05/03/21 12:37	1
Heptachlor	ND		0.00020	0.0000085	mg/L		04/30/21 11:16	05/03/21 12:37	1
Heptachlor epoxide	ND		0.00020	0.0000053	mg/L		04/30/21 11:16	05/03/21 12:37	1
Methoxychlor	ND		0.00020	0.000014	mg/L		04/30/21 11:16	05/03/21 12:37	1
Toxaphene	ND		0.0020	0.00012	mg/L		04/30/21 11:16	05/03/21 12:37	1

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*62*		*20 - 120*	*04/30/21 11:16*	*05/03/21 12:37*	*1*
DCB Decachlorobiphenyl	*60*		*20 - 120*	*04/30/21 11:16*	*05/03/21 12:37*	*1*
Tetrachloro-m-xylene	*64*		*44 - 120*	*04/30/21 11:16*	*05/03/21 12:37*	*1*
Tetrachloro-m-xylene	*55*		*44 - 120*	*04/30/21 11:16*	*05/03/21 12:37*	*1*

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183850-1

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Lab Sample ID: MB 480-578688/1-A
Matrix: Waste
Analysis Batch: 579056

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 578688

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		4.2	0.82	mg/Kg		04/30/21 07:09	05/03/21 16:48	1
PCB-1221	ND		4.2	0.82	mg/Kg		04/30/21 07:09	05/03/21 16:48	1
PCB-1232	ND		4.2	0.82	mg/Kg		04/30/21 07:09	05/03/21 16:48	1
PCB-1242	ND		4.2	0.82	mg/Kg		04/30/21 07:09	05/03/21 16:48	1
PCB-1248	ND		4.2	0.82	mg/Kg		04/30/21 07:09	05/03/21 16:48	1
PCB-1254	ND		4.2	0.20	mg/Kg		04/30/21 07:09	05/03/21 16:48	1
PCB-1260	ND		4.2	0.20	mg/Kg		04/30/21 07:09	05/03/21 16:48	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*68*		*60 - 154*	*04/30/21 07:09*	*05/03/21 16:48*	*1*
Tetrachloro-m-xylene	*72*		*60 - 154*	*04/30/21 07:09*	*05/03/21 16:48*	*1*
DCB Decachlorobiphenyl	*93*		*65 - 174*	*04/30/21 07:09*	*05/03/21 16:48*	*1*
DCB Decachlorobiphenyl	*101*		*65 - 174*	*04/30/21 07:09*	*05/03/21 16:48*	*1*

Lab Sample ID: LCS 480-578688/2-A
Matrix: Waste
Analysis Batch: 578935

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 578688

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
PCB-1016	31.3	32.6		mg/Kg		104	51 - 185
PCB-1260	31.3	33.5		mg/Kg		107	61 - 184

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tetrachloro-m-xylene	*97*		*60 - 154*
Tetrachloro-m-xylene	*100*		*60 - 154*
DCB Decachlorobiphenyl	*126*		*65 - 174*
DCB Decachlorobiphenyl	*116*		*65 - 174*

Method: 8151 - TCLP Herbicides

Lab Sample ID: MB 480-578724/1-A
Matrix: Solid
Analysis Batch: 578975

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 578724

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND		0.00050	0.000090	mg/L		04/30/21 08:33	05/03/21 21:23	1
2,4-D	ND		0.00050	0.00010	mg/L		04/30/21 08:33	05/03/21 21:23	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*99*		*48 - 132*	*04/30/21 08:33*	*05/03/21 21:23*	*1*
2,4-Dichlorophenylacetic acid	*63*		*48 - 132*	*04/30/21 08:33*	*05/03/21 21:23*	*1*

Lab Sample ID: LCS 480-578724/2-A
Matrix: Solid
Analysis Batch: 578975

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 578724

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Silvex (2,4,5-TP)	0.00200	0.00149		mg/L		75	49 - 150

Method: 8151 - TCLP Herbicides (Continued)

Lab Sample ID: LCS 480-578724/2-A
Matrix: Solid
Analysis Batch: 578975

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 578724

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,4-D	0.00200	0.00139		mg/L		69	36 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*48*		*48 - 132*
2,4-Dichlorophenylacetic acid	*48*		*48 - 132*

Lab Sample ID: LCSD 480-578724/3-A
Matrix: Solid
Analysis Batch: 578975

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 578724

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Silvex (2,4,5-TP)	0.00200	0.00159		mg/L		80	49 - 150	6	50
2,4-D	0.00200	0.00170		mg/L		85	36 - 150	20	50

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*99*		*48 - 132*
2,4-Dichlorophenylacetic acid	*92*		*48 - 132*

Lab Sample ID: LB 480-578564/1-D
Matrix: Solid
Analysis Batch: 578975

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 578724

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND		0.0020	0.00036	mg/L		04/30/21 11:19	05/04/21 00:21	1
2,4-D	ND		0.0020	0.00040	mg/L		04/30/21 11:19	05/04/21 00:21	1

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*34*	*S1-*	*48 - 132*	*04/30/21 11:19*	*05/04/21 00:21*	*1*
2,4-Dichlorophenylacetic acid	*40*	*S1-*	*48 - 132*	*04/30/21 11:19*	*05/04/21 00:21*	*1*

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 480-578773/2-A
Matrix: Solid
Analysis Batch: 579008

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 578773

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.015	0.0056	mg/L		04/30/21 11:30	05/01/21 01:28	1
Barium	ND		1.0	0.10	mg/L		04/30/21 11:30	05/01/21 01:28	1
Cadmium	ND		0.0020	0.00050	mg/L		04/30/21 11:30	05/01/21 01:28	1
Chromium	ND		0.020	0.010	mg/L		04/30/21 11:30	05/01/21 01:28	1
Lead	ND		0.020	0.0030	mg/L		04/30/21 11:30	05/01/21 01:28	1
Selenium	ND		0.025	0.0087	mg/L		04/30/21 11:30	05/01/21 01:28	1
Silver	ND		0.0060	0.0017	mg/L		04/30/21 11:30	05/01/21 01:28	1

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: LCS 480-578773/3-A
Matrix: Solid
Analysis Batch: 579008

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 578773

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	1.00	1.11		mg/L		111	80 - 120
Barium	1.00	0.992	J	mg/L		99	80 - 120
Cadmium	1.00	1.06		mg/L		106	80 - 120
Chromium	1.00	0.990		mg/L		99	80 - 120
Lead	1.00	0.999		mg/L		100	80 - 120
Selenium	1.00	1.07		mg/L		107	80 - 120
Silver	1.00	1.06		mg/L		106	80 - 120

Lab Sample ID: LB 480-578564/1-B
Matrix: Solid
Analysis Batch: 579008

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 578773

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.015	0.0056	mg/L		04/30/21 11:30	05/01/21 01:13	1
Barium	ND		1.0	0.10	mg/L		04/30/21 11:30	05/01/21 01:13	1
Cadmium	ND		0.0020	0.00050	mg/L		04/30/21 11:30	05/01/21 01:13	1
Chromium	ND		0.020	0.010	mg/L		04/30/21 11:30	05/01/21 01:13	1
Lead	ND		0.020	0.0030	mg/L		04/30/21 11:30	05/01/21 01:13	1
Selenium	ND		0.025	0.0087	mg/L		04/30/21 11:30	05/01/21 01:13	1
Silver	ND		0.0060	0.0017	mg/L		04/30/21 11:30	05/01/21 01:13	1

Lab Sample ID: 480-183850-10 MS
Matrix: Solid
Analysis Batch: 579008

Client Sample ID: BLDG1-BIN 6-SP-030
Prep Type: TCLP
Prep Batch: 578773

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	ND		1.00	1.13		mg/L		113	75 - 125
Barium	ND		1.00	1.04		mg/L		104	75 - 125
Cadmium	ND		1.00	1.07		mg/L		107	75 - 125
Chromium	0.033		1.00	1.05		mg/L		102	75 - 125
Lead	0.0094	J	1.00	1.05		mg/L		104	75 - 125
Selenium	ND		1.00	1.09		mg/L		109	75 - 125
Silver	ND		1.00	1.08		mg/L		108	75 - 125

Lab Sample ID: 480-183850-10 MSD
Matrix: Solid
Analysis Batch: 579008

Client Sample ID: BLDG1-BIN 6-SP-030
Prep Type: TCLP
Prep Batch: 578773

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	ND		1.00	1.17		mg/L		117	75 - 125	4	20
Barium	ND		1.00	1.07		mg/L		107	75 - 125	3	20
Cadmium	ND		1.00	1.12		mg/L		112	75 - 125	4	20
Chromium	0.033		1.00	1.08		mg/L		104	75 - 125	2	20
Lead	0.0094	J	1.00	1.09		mg/L		108	75 - 125	3	20
Selenium	ND		1.00	1.14		mg/L		114	75 - 125	4	20
Silver	ND		1.00	1.11		mg/L		111	75 - 125	2	20

Client: Integral Consulting Inc
Project/Site: Project EF1017
Job ID: 480-183850-1

Method: 7470A - TCLP Mercury

Lab Sample ID: MB 480-578789/2-A
Matrix: Solid
Analysis Batch: 578851
Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 578789

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		04/30/21 13:54	04/30/21 18:47	1

Lab Sample ID: LCS 480-578789/3-A
Matrix: Solid
Analysis Batch: 578851
Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 578789

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00668	0.00643		mg/L		96	80 - 120

Lab Sample ID: LB 480-578564/1-F
Matrix: Solid
Analysis Batch: 578851
Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 578789

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		04/30/21 13:54	04/30/21 18:46	1

Lab Sample ID: 480-183850-10 MS
Matrix: Solid
Analysis Batch: 578851
Client Sample ID: BLDG1-BIN 6-SP-030
Prep Type: TCLP
Prep Batch: 578789

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND	F1	0.00668	0.00443	F1	mg/L		66	80 - 120

Lab Sample ID: 480-183850-10 MSD
Matrix: Solid
Analysis Batch: 578851
Client Sample ID: BLDG1-BIN 6-SP-030
Prep Type: TCLP
Prep Batch: 578789

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND	F1	0.00668	0.00402	F1	mg/L		60	80 - 120	10	20

Method: 1010A - Ignitability, Pensky-Martens Closed-Cup Method

Lab Sample ID: LCS 480-579110/1
Matrix: Solid
Analysis Batch: 579110
Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Flashpoint	81.0	79.00		Degrees F		98	97.5 - 102.5

Method: 9045D - pH

Lab Sample ID: LCS 480-579305/1
Matrix: Solid
Analysis Batch: 579305
Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH	7.00	7.0		SU		100	99 - 101

Method: 9045D - pH (Continued)

Lab Sample ID: 480-183850-9 DU
Matrix: Solid
Analysis Batch: 579305

Client Sample ID: BLDG1-BIN 7-SP-029
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH	7.7	HF	7.6		SU		0.8	5
Temperature	22.1	HF	22.1		Degrees C		0	10

QC Association Summary

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183850-1

GC/MS VOA

Analysis Batch: 578486

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183850-9	BLDG1-BIN 7-SP-029	Total/NA	Solid	8260C	578551
480-183850-10	BLDG1-BIN 6-SP-030	Total/NA	Solid	8260C	578551
480-183850-11	BLDG1-BIN 5-SP-031	Total/NA	Solid	8260C	578551
MB 480-578551/2-A	Method Blank	Total/NA	Solid	8260C	578551
LCS 480-578551/1-A	Lab Control Sample	Total/NA	Solid	8260C	578551
480-183850-11 MS	BLDG1-BIN 5-SP-031	Total/NA	Solid	8260C	578551
480-183850-11 MSD	BLDG1-BIN 5-SP-031	Total/NA	Solid	8260C	578551

Prep Batch: 578551

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183850-9	BLDG1-BIN 7-SP-029	Total/NA	Solid	5035A_L	
480-183850-10	BLDG1-BIN 6-SP-030	Total/NA	Solid	5035A_L	
480-183850-11	BLDG1-BIN 5-SP-031	Total/NA	Solid	5035A_L	
MB 480-578551/2-A	Method Blank	Total/NA	Solid	5035A_L	
LCS 480-578551/1-A	Lab Control Sample	Total/NA	Solid	5035A_L	
480-183850-11 MS	BLDG1-BIN 5-SP-031	Total/NA	Solid	5035A_L	
480-183850-11 MSD	BLDG1-BIN 5-SP-031	Total/NA	Solid	5035A_L	

Leach Batch: 578566

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183850-9	BLDG1-BIN 7-SP-029	TCLP	Solid	1311	
480-183850-10	BLDG1-BIN 6-SP-030	TCLP	Solid	1311	
480-183850-11	BLDG1-BIN 5-SP-031	TCLP	Solid	1311	
LB 480-578566/1-A	Method Blank	TCLP	Solid	1311	

Analysis Batch: 578858

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183850-9	BLDG1-BIN 7-SP-029	TCLP	Solid	8260C	578566
480-183850-10	BLDG1-BIN 6-SP-030	TCLP	Solid	8260C	578566
480-183850-11	BLDG1-BIN 5-SP-031	TCLP	Solid	8260C	578566
LB 480-578566/1-A	Method Blank	TCLP	Solid	8260C	578566
MB 480-578858/7	Method Blank	Total/NA	Solid	8260C	
LCS 480-578858/5	Lab Control Sample	Total/NA	Solid	8260C	

GC/MS Semi VOA

Prep Batch: 578481

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183850-9	BLDG1-BIN 7-SP-029	Total/NA	Solid	3550C	
480-183850-10	BLDG1-BIN 6-SP-030	Total/NA	Solid	3550C	
480-183850-11	BLDG1-BIN 5-SP-031	Total/NA	Solid	3550C	
MB 480-578481/1-A	Method Blank	Total/NA	Solid	3550C	
LCS 480-578481/2-A	Lab Control Sample	Total/NA	Solid	3550C	

Leach Batch: 578564

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183850-9	BLDG1-BIN 7-SP-029	TCLP	Solid	1311	
480-183850-10	BLDG1-BIN 6-SP-030	TCLP	Solid	1311	
480-183850-11	BLDG1-BIN 5-SP-031	TCLP	Solid	1311	
LB 480-578564/1-E	Method Blank	TCLP	Solid	1311	

QC Association Summary

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183850-1

GC/MS Semi VOA

Prep Batch: 578777

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183850-9	BLDG1-BIN 7-SP-029	TCLP	Solid	3510C	578564
480-183850-10	BLDG1-BIN 6-SP-030	TCLP	Solid	3510C	578564
480-183850-11	BLDG1-BIN 5-SP-031	TCLP	Solid	3510C	578564
LB 480-578564/1-E	Method Blank	TCLP	Solid	3510C	578564
MB 480-578777/1-A	Method Blank	Total/NA	Solid	3510C	
LCS 480-578777/2-A	Lab Control Sample	Total/NA	Solid	3510C	
LCSD 480-578777/3-A	Lab Control Sample Dup	Total/NA	Solid	3510C	

Analysis Batch: 578805

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183850-9	BLDG1-BIN 7-SP-029	Total/NA	Solid	8270D	578481
480-183850-10	BLDG1-BIN 6-SP-030	Total/NA	Solid	8270D	578481
480-183850-11	BLDG1-BIN 5-SP-031	Total/NA	Solid	8270D	578481
MB 480-578481/1-A	Method Blank	Total/NA	Solid	8270D	578481
LCS 480-578481/2-A	Lab Control Sample	Total/NA	Solid	8270D	578481

Analysis Batch: 579197

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183850-9	BLDG1-BIN 7-SP-029	TCLP	Solid	8270D	578777
480-183850-10	BLDG1-BIN 6-SP-030	TCLP	Solid	8270D	578777
480-183850-11	BLDG1-BIN 5-SP-031	TCLP	Solid	8270D	578777
LB 480-578564/1-E	Method Blank	TCLP	Solid	8270D	578777
MB 480-578777/1-A	Method Blank	Total/NA	Solid	8270D	578777
LCS 480-578777/2-A	Lab Control Sample	Total/NA	Solid	8270D	578777
LCSD 480-578777/3-A	Lab Control Sample Dup	Total/NA	Solid	8270D	578777

GC Semi VOA

Leach Batch: 578564

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183850-9	BLDG1-BIN 7-SP-029	TCLP	Solid	1311	
480-183850-10	BLDG1-BIN 6-SP-030	TCLP	Solid	1311	
480-183850-11	BLDG1-BIN 5-SP-031	TCLP	Solid	1311	
LB 480-578564/1-C	Method Blank	TCLP	Solid	1311	
LB 480-578564/1-D	Method Blank	TCLP	Solid	1311	

Prep Batch: 578688

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183850-1	BLDG1-3RD OIL4-SP-021	Total/NA	Waste	3580A	
480-183850-2	BLDG1-2ND OIL5-SP-022	Total/NA	Waste	3580A	
480-183850-3	BLDG1-2ND OIL6-SP-023	Total/NA	Waste	3580A	
480-183850-4	BLDG1-1ST OIL7-SP-024	Total/NA	Waste	3580A	
480-183850-5	BLDG1-1ST OIL8-SP-025	Total/NA	Waste	3580A	
480-183850-6	BLDG2-2T CRANE-SP-026	Total/NA	Waste	3580A	
480-183850-7	BLDG4-1T CRANE-SP-027	Total/NA	Waste	3580A	
480-183850-8	BLDG4-1T CRANE-SP-028	Total/NA	Waste	3580A	
MB 480-578688/1-A	Method Blank	Total/NA	Waste	3580A	
LCS 480-578688/2-A	Lab Control Sample	Total/NA	Waste	3580A	

GC Semi VOA

Prep Batch: 578722

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183850-9	BLDG1-BIN 7-SP-029	TCLP	Solid	3510C	578564
480-183850-10	BLDG1-BIN 6-SP-030	TCLP	Solid	3510C	578564
480-183850-11	BLDG1-BIN 5-SP-031	TCLP	Solid	3510C	578564
LB 480-578564/1-C	Method Blank	TCLP	Solid	3510C	578564
MB 480-578722/1-A	Method Blank	Total/NA	Solid	3510C	
LCS 480-578722/2-A	Lab Control Sample	Total/NA	Solid	3510C	
LCSD 480-578722/3-A	Lab Control Sample Dup	Total/NA	Solid	3510C	

Prep Batch: 578724

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183850-9	BLDG1-BIN 7-SP-029	TCLP	Solid	8151A	578564
480-183850-10	BLDG1-BIN 6-SP-030	TCLP	Solid	8151A	578564
480-183850-11	BLDG1-BIN 5-SP-031	TCLP	Solid	8151A	578564
LB 480-578564/1-D	Method Blank	TCLP	Solid	8151A	578564
MB 480-578724/1-A	Method Blank	Total/NA	Solid	8151A	
LCS 480-578724/2-A	Lab Control Sample	Total/NA	Solid	8151A	
LCSD 480-578724/3-A	Lab Control Sample Dup	Total/NA	Solid	8151A	

Analysis Batch: 578935

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183850-1	BLDG1-3RD OIL4-SP-021	Total/NA	Waste	8082A	578688
480-183850-2	BLDG1-2ND OIL5-SP-022	Total/NA	Waste	8082A	578688
480-183850-3	BLDG1-2ND OIL6-SP-023	Total/NA	Waste	8082A	578688
480-183850-4	BLDG1-1ST OIL7-SP-024	Total/NA	Waste	8082A	578688
480-183850-5	BLDG1-1ST OIL8-SP-025	Total/NA	Waste	8082A	578688
480-183850-6	BLDG2-2T CRANE-SP-026	Total/NA	Waste	8082A	578688
480-183850-7	BLDG4-1T CRANE-SP-027	Total/NA	Waste	8082A	578688
480-183850-8	BLDG4-1T CRANE-SP-028	Total/NA	Waste	8082A	578688
LCS 480-578688/2-A	Lab Control Sample	Total/NA	Waste	8082A	578688

Analysis Batch: 578954

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183850-9	BLDG1-BIN 7-SP-029	TCLP	Solid	8081B	578722
480-183850-10	BLDG1-BIN 6-SP-030	TCLP	Solid	8081B	578722
480-183850-11	BLDG1-BIN 5-SP-031	TCLP	Solid	8081B	578722
LB 480-578564/1-C	Method Blank	TCLP	Solid	8081B	578722
MB 480-578722/1-A	Method Blank	Total/NA	Solid	8081B	578722
LCS 480-578722/2-A	Lab Control Sample	Total/NA	Solid	8081B	578722
LCSD 480-578722/3-A	Lab Control Sample Dup	Total/NA	Solid	8081B	578722

Analysis Batch: 578975

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183850-9	BLDG1-BIN 7-SP-029	TCLP	Solid	8151	578724
480-183850-10	BLDG1-BIN 6-SP-030	TCLP	Solid	8151	578724
480-183850-11	BLDG1-BIN 5-SP-031	TCLP	Solid	8151	578724
LB 480-578564/1-D	Method Blank	TCLP	Solid	8151	578724
MB 480-578724/1-A	Method Blank	Total/NA	Solid	8151	578724
LCS 480-578724/2-A	Lab Control Sample	Total/NA	Solid	8151	578724
LCSD 480-578724/3-A	Lab Control Sample Dup	Total/NA	Solid	8151	578724

GC Semi VOA

Analysis Batch: 579056

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 480-578688/1-A	Method Blank	Total/NA	Waste	8082A	578688

Metals

Leach Batch: 578564

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183850-9	BLDG1-BIN 7-SP-029	TCLP	Solid	1311	
480-183850-10	BLDG1-BIN 6-SP-030	TCLP	Solid	1311	
480-183850-11	BLDG1-BIN 5-SP-031	TCLP	Solid	1311	
LB 480-578564/1-B	Method Blank	TCLP	Solid	1311	
LB 480-578564/1-F	Method Blank	TCLP	Solid	1311	
480-183850-10 MS	BLDG1-BIN 6-SP-030	TCLP	Solid	1311	
480-183850-10 MSD	BLDG1-BIN 6-SP-030	TCLP	Solid	1311	

Prep Batch: 578773

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183850-9	BLDG1-BIN 7-SP-029	TCLP	Solid	3010A	578564
480-183850-10	BLDG1-BIN 6-SP-030	TCLP	Solid	3010A	578564
480-183850-11	BLDG1-BIN 5-SP-031	TCLP	Solid	3010A	578564
LB 480-578564/1-B	Method Blank	TCLP	Solid	3010A	578564
MB 480-578773/2-A	Method Blank	Total/NA	Solid	3010A	
LCS 480-578773/3-A	Lab Control Sample	Total/NA	Solid	3010A	
480-183850-10 MS	BLDG1-BIN 6-SP-030	TCLP	Solid	3010A	578564
480-183850-10 MSD	BLDG1-BIN 6-SP-030	TCLP	Solid	3010A	578564

Prep Batch: 578789

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183850-9	BLDG1-BIN 7-SP-029	TCLP	Solid	7470A	578564
480-183850-10	BLDG1-BIN 6-SP-030	TCLP	Solid	7470A	578564
480-183850-11	BLDG1-BIN 5-SP-031	TCLP	Solid	7470A	578564
LB 480-578564/1-F	Method Blank	TCLP	Solid	7470A	578564
MB 480-578789/2-A	Method Blank	Total/NA	Solid	7470A	
LCS 480-578789/3-A	Lab Control Sample	Total/NA	Solid	7470A	
480-183850-10 MS	BLDG1-BIN 6-SP-030	TCLP	Solid	7470A	578564
480-183850-10 MSD	BLDG1-BIN 6-SP-030	TCLP	Solid	7470A	578564

Analysis Batch: 578851

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183850-9	BLDG1-BIN 7-SP-029	TCLP	Solid	7470A	578789
480-183850-10	BLDG1-BIN 6-SP-030	TCLP	Solid	7470A	578789
480-183850-11	BLDG1-BIN 5-SP-031	TCLP	Solid	7470A	578789
LB 480-578564/1-F	Method Blank	TCLP	Solid	7470A	578789
MB 480-578789/2-A	Method Blank	Total/NA	Solid	7470A	578789
LCS 480-578789/3-A	Lab Control Sample	Total/NA	Solid	7470A	578789
480-183850-10 MS	BLDG1-BIN 6-SP-030	TCLP	Solid	7470A	578789
480-183850-10 MSD	BLDG1-BIN 6-SP-030	TCLP	Solid	7470A	578789

Analysis Batch: 579008

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183850-9	BLDG1-BIN 7-SP-029	TCLP	Solid	6010C	578773
480-183850-10	BLDG1-BIN 6-SP-030	TCLP	Solid	6010C	578773

Metals (Continued)

Analysis Batch: 579008 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183850-11	BLDG1-BIN 5-SP-031	TCLP	Solid	6010C	578773
LB 480-578564/1-B	Method Blank	TCLP	Solid	6010C	578773
MB 480-578773/2-A	Method Blank	Total/NA	Solid	6010C	578773
LCS 480-578773/3-A	Lab Control Sample	Total/NA	Solid	6010C	578773
480-183850-10 MS	BLDG1-BIN 6-SP-030	TCLP	Solid	6010C	578773
480-183850-10 MSD	BLDG1-BIN 6-SP-030	TCLP	Solid	6010C	578773

Analysis Batch: 579193

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183850-9	BLDG1-BIN 7-SP-029	TCLP	Solid	6010C	578773

General Chemistry

Analysis Batch: 578635

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183850-9	BLDG1-BIN 7-SP-029	Total/NA	Solid	Moisture	
480-183850-10	BLDG1-BIN 6-SP-030	Total/NA	Solid	Moisture	
480-183850-11	BLDG1-BIN 5-SP-031	Total/NA	Solid	Moisture	

Analysis Batch: 579110

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183850-9	BLDG1-BIN 7-SP-029	Total/NA	Solid	1010A	
480-183850-10	BLDG1-BIN 6-SP-030	Total/NA	Solid	1010A	
480-183850-11	BLDG1-BIN 5-SP-031	Total/NA	Solid	1010A	
LCS 480-579110/1	Lab Control Sample	Total/NA	Solid	1010A	

Analysis Batch: 579305

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-183850-9	BLDG1-BIN 7-SP-029	Total/NA	Solid	9045D	
480-183850-10	BLDG1-BIN 6-SP-030	Total/NA	Solid	9045D	
480-183850-11	BLDG1-BIN 5-SP-031	Total/NA	Solid	9045D	
LCS 480-579305/1	Lab Control Sample	Total/NA	Solid	9045D	
480-183850-9 DU	BLDG1-BIN 7-SP-029	Total/NA	Solid	9045D	

Lab Chronicle

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183850-1

Client Sample ID: BLDG1-3RD OIL4-SP-021 — **Lab Sample ID: 480-183850-1**
Date Collected: 04/21/21 07:40 — **Matrix: Waste**
Date Received: 04/27/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3580A			578688	04/30/21 07:09	SMP	TAL BUF
Total/NA	Analysis	8082A		20	578935	05/03/21 00:44	W1T	TAL BUF

Client Sample ID: BLDG1-2ND OIL5-SP-022 — **Lab Sample ID: 480-183850-2**
Date Collected: 04/21/21 08:45 — **Matrix: Waste**
Date Received: 04/27/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3580A			578688	04/30/21 07:09	SMP	TAL BUF
Total/NA	Analysis	8082A		5	578935	05/03/21 01:00	W1T	TAL BUF

Client Sample ID: BLDG1-2ND OIL6-SP-023 — **Lab Sample ID: 480-183850-3**
Date Collected: 04/21/21 09:30 — **Matrix: Waste**
Date Received: 04/27/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3580A			578688	04/30/21 07:09	SMP	TAL BUF
Total/NA	Analysis	8082A		10	578935	05/03/21 01:16	W1T	TAL BUF

Client Sample ID: BLDG1-1ST OIL7-SP-024 — **Lab Sample ID: 480-183850-4**
Date Collected: 04/21/21 09:45 — **Matrix: Waste**
Date Received: 04/27/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3580A			578688	04/30/21 07:09	SMP	TAL BUF
Total/NA	Analysis	8082A		10	578935	05/03/21 01:32	W1T	TAL BUF

Client Sample ID: BLDG1-1ST OIL8-SP-025 — **Lab Sample ID: 480-183850-5**
Date Collected: 04/21/21 10:00 — **Matrix: Waste**
Date Received: 04/27/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3580A			578688	04/30/21 07:09	SMP	TAL BUF
Total/NA	Analysis	8082A		5	578935	05/03/21 01:48	W1T	TAL BUF

Client Sample ID: BLDG2-2T CRANE-SP-026 — **Lab Sample ID: 480-183850-6**
Date Collected: 04/26/21 09:15 — **Matrix: Waste**
Date Received: 04/27/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3580A			578688	04/30/21 07:09	SMP	TAL BUF
Total/NA	Analysis	8082A		10	578935	05/03/21 02:04	W1T	TAL BUF

Client Sample ID: BLDG4-1T CRANE-SP-027
Lab Sample ID: 480-183850-7

Date Collected: 04/26/21 09:45
Matrix: Waste
Date Received: 04/27/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3580A			578688	04/30/21 07:09	SMP	TAL BUF
Total/NA	Analysis	8082A		20	578935	05/03/21 02:20	W1T	TAL BUF

Client Sample ID: BLDG4-1T CRANE-SP-028
Lab Sample ID: 480-183850-8

Date Collected: 04/26/21 10:00
Matrix: Waste
Date Received: 04/27/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3580A			578688	04/30/21 07:09	SMP	TAL BUF
Total/NA	Analysis	8082A		20	578935	05/03/21 02:36	W1T	TAL BUF

Client Sample ID: BLDG1-BIN 7-SP-029
Lab Sample ID: 480-183850-9

Date Collected: 04/26/21 10:30
Matrix: Solid
Date Received: 04/27/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			578566	04/29/21 12:31	LMS	TAL BUF
TCLP	Analysis	8260C		10	578858	05/01/21 17:08	WJD	TAL BUF
TCLP	Leach	1311			578564	04/29/21 12:30	LMS	TAL BUF
TCLP	Prep	3510C			578777	04/30/21 11:21	JMP	TAL BUF
TCLP	Analysis	8270D		1	579197	05/03/21 22:28	PJQ	TAL BUF
TCLP	Leach	1311			578564	04/29/21 12:30	LMS	TAL BUF
TCLP	Prep	3510C			578722	04/30/21 11:16	JMP	TAL BUF
TCLP	Analysis	8081B		1	578954	05/03/21 13:56	JLS	TAL BUF
TCLP	Leach	1311			578564	04/29/21 12:30	LMS	TAL BUF
TCLP	Prep	8151A			578724	04/30/21 11:19	JMP	TAL BUF
TCLP	Analysis	8151		1	578975	05/04/21 02:50	MAN	TAL BUF
TCLP	Leach	1311			578564	04/29/21 12:30	LMS	TAL BUF
TCLP	Prep	3010A			578773	04/30/21 11:30	KMP	TAL BUF
TCLP	Analysis	6010C		2	579193	05/03/21 15:48	LMH	TAL BUF
TCLP	Leach	1311			578564	04/29/21 12:30	LMS	TAL BUF
TCLP	Prep	3010A			578773	04/30/21 11:30	KMP	TAL BUF
TCLP	Analysis	6010C		1	579008	05/01/21 01:36	LMH	TAL BUF
TCLP	Leach	1311			578564	04/29/21 12:30	LMS	TAL BUF
TCLP	Prep	7470A			578789	04/30/21 13:54	BMB	TAL BUF
TCLP	Analysis	7470A		1	578851	04/30/21 18:50	BMB	TAL BUF
Total/NA	Analysis	1010A		1	579110	05/03/21 18:22	KEB	TAL BUF
Total/NA	Analysis	9045D		1	579305	05/04/21 11:30	CSS	TAL BUF
Total/NA	Analysis	Moisture		1	578635	04/29/21 16:15	IMZ	TAL BUF

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Client Sample ID: BLDG1-BIN 7-SP-029

Lab Sample ID: 480-183850-9

Date Collected: 04/26/21 10:30
Matrix: Solid
Date Received: 04/27/21 10:00
Percent Solids: 98.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035A_L			578551	04/29/21 10:03	WJD	TAL BUF
Total/NA	Analysis	8260C		1	578486	04/29/21 17:53	CDC	TAL BUF
Total/NA	Prep	3550C			578481	04/29/21 09:48	VXF	TAL BUF
Total/NA	Analysis	8270D		1	578805	05/01/21 00:35	PJQ	TAL BUF

Client Sample ID: BLDG1-BIN 6-SP-030

Lab Sample ID: 480-183850-10

Date Collected: 04/26/21 10:40
Matrix: Solid
Date Received: 04/27/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			578566	04/29/21 12:31	LMS	TAL BUF
TCLP	Analysis	8260C		10	578858	05/01/21 17:30	WJD	TAL BUF
TCLP	Leach	1311			578564	04/29/21 12:30	LMS	TAL BUF
TCLP	Prep	3510C			578777	04/30/21 11:21	JMP	TAL BUF
TCLP	Analysis	8270D		1	579197	05/03/21 22:53	PJQ	TAL BUF
TCLP	Leach	1311			578564	04/29/21 12:30	LMS	TAL BUF
TCLP	Prep	3510C			578722	04/30/21 11:16	JMP	TAL BUF
TCLP	Analysis	8081B		1	578954	05/03/21 14:15	JLS	TAL BUF
TCLP	Leach	1311			578564	04/29/21 12:30	LMS	TAL BUF
TCLP	Prep	8151A			578724	04/30/21 11:19	JMP	TAL BUF
TCLP	Analysis	8151		1	578975	05/04/21 03:19	MAN	TAL BUF
TCLP	Leach	1311			578564	04/29/21 12:30	LMS	TAL BUF
TCLP	Prep	3010A			578773	04/30/21 11:30	KMP	TAL BUF
TCLP	Analysis	6010C		1	579008	05/01/21 01:40	LMH	TAL BUF
TCLP	Leach	1311			578564	04/29/21 12:30	LMS	TAL BUF
TCLP	Prep	7470A			578789	04/30/21 13:54	BMB	TAL BUF
TCLP	Analysis	7470A		1	578851	04/30/21 18:51	BMB	TAL BUF
Total/NA	Analysis	1010A		1	579110	05/03/21 18:22	KEB	TAL BUF
Total/NA	Analysis	9045D		1	579305	05/04/21 11:30	CSS	TAL BUF
Total/NA	Analysis	Moisture		1	578635	04/29/21 16:15	IMZ	TAL BUF

Client Sample ID: BLDG1-BIN 6-SP-030

Lab Sample ID: 480-183850-10

Date Collected: 04/26/21 10:40
Matrix: Solid
Date Received: 04/27/21 10:00
Percent Solids: 100.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035A_L			578551	04/29/21 10:03	WJD	TAL BUF
Total/NA	Analysis	8260C		1	578486	04/29/21 18:16	CDC	TAL BUF
Total/NA	Prep	3550C			578481	04/29/21 09:48	VXF	TAL BUF
Total/NA	Analysis	8270D		1	578805	05/01/21 01:00	PJQ	TAL BUF

Lab Chronicle

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-183850-1

Client Sample ID: BLDG1-BIN 5-SP-031

Lab Sample ID: 480-183850-11

Date Collected: 04/26/21 00:00
Date Received: 04/27/21 10:00

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			578566	04/29/21 12:31	LMS	TAL BUF
TCLP	Analysis	8260C		10	578858	05/01/21 17:52	WJD	TAL BUF
TCLP	Leach	1311			578564	04/29/21 12:30	LMS	TAL BUF
TCLP	Prep	3510C			578777	04/30/21 11:21	JMP	TAL BUF
TCLP	Analysis	8270D		1	579197	05/03/21 23:17	PJQ	TAL BUF
TCLP	Leach	1311			578564	04/29/21 12:30	LMS	TAL BUF
TCLP	Prep	3510C			578722	04/30/21 11:16	JMP	TAL BUF
TCLP	Analysis	8081B		1	578954	05/03/21 14:35	JLS	TAL BUF
TCLP	Leach	1311			578564	04/29/21 12:30	LMS	TAL BUF
TCLP	Prep	8151A			578724	04/30/21 11:19	JMP	TAL BUF
TCLP	Analysis	8151		1	578975	05/04/21 03:49	MAN	TAL BUF
TCLP	Leach	1311			578564	04/29/21 12:30	LMS	TAL BUF
TCLP	Prep	3010A			578773	04/30/21 11:30	KMP	TAL BUF
TCLP	Analysis	6010C		1	579008	05/01/21 01:58	LMH	TAL BUF
TCLP	Leach	1311			578564	04/29/21 12:30	LMS	TAL BUF
TCLP	Prep	7470A			578789	04/30/21 13:54	BMB	TAL BUF
TCLP	Analysis	7470A		1	578851	04/30/21 18:57	BMB	TAL BUF
Total/NA	Analysis	1010A		1	579110	05/03/21 18:22	KEB	TAL BUF
Total/NA	Analysis	9045D		1	579305	05/04/21 11:30	CSS	TAL BUF
Total/NA	Analysis	Moisture		1	578635	04/29/21 16:15	IMZ	TAL BUF

Client Sample ID: BLDG1-BIN 5-SP-031

Lab Sample ID: 480-183850-11

Date Collected: 04/26/21 00:00
Date Received: 04/27/21 10:00

Matrix: Solid
Percent Solids: 100.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035A_L			578551	04/29/21 10:03	WJD	TAL BUF
Total/NA	Analysis	8260C		1	578486	04/29/21 18:41	CDC	TAL BUF
Total/NA	Prep	3550C			578481	04/29/21 09:48	VXF	TAL BUF
Total/NA	Analysis	8270D		1	578805	05/01/21 01:24	PJQ	TAL BUF

Laboratory References:

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Accreditation/Certification Summary

Client: Integral Consulting Inc Job ID: 480-183850-1
Project/Site: Project EF1017

Laboratory: Eurofins TestAmerica, Buffalo

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
New York	NELAP	10026	04-01-22

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
7470A	7470A	Solid	Mercury
9045D		Solid	Temperature
Moisture		Solid	Percent Moisture
Moisture		Solid	Percent Solids

Method Summary

Method	Method Description	Protocol	Laboratory
8260C	TCLP Volatiles	SW846	TAL BUF
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL BUF
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL BUF
8081B	Organochlorine Pesticides (GC)	SW846	TAL BUF
8082A	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	SW846	TAL BUF
8151	TCLP Herbicides	SW846	TAL BUF
6010C	Metals (ICP)	SW846	TAL BUF
7470A	TCLP Mercury	SW846	TAL BUF
1010A	Ignitability, Pensky-Martens Closed-Cup Method	SW846	TAL BUF
9045D	pH	SW846	TAL BUF
Moisture	Percent Moisture	EPA	TAL BUF
1311	TCLP Extraction	SW846	TAL BUF
3010A	Preparation, Total Metals	SW846	TAL BUF
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	TAL BUF
3550C	Ultrasonic Extraction	SW846	TAL BUF
3580A	Waste Dilution	SW846	TAL BUF
5030C	Purge and Trap	SW846	TAL BUF
5035A_L	Closed System Purge and Trap	SW846	TAL BUF
7470A	Preparation, Mercury	SW846	TAL BUF
8151A	Extraction (Herbicides)	SW846	TAL BUF

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
480-183850-1	BLDG1-3RD OIL4-SP-021	Waste	04/21/21 07:40	04/27/21 10:00	
480-183850-2	BLDG1-2ND OIL5-SP-022	Waste	04/21/21 08:45	04/27/21 10:00	
480-183850-3	BLDG1-2ND OIL6-SP-023	Waste	04/21/21 09:30	04/27/21 10:00	
480-183850-4	BLDG1-1ST OIL7-SP-024	Waste	04/21/21 09:45	04/27/21 10:00	
480-183850-5	BLDG1-1ST OIL8-SP-025	Waste	04/21/21 10:00	04/27/21 10:00	
480-183850-6	BLDG2-2T CRANE-SP-026	Waste	04/26/21 09:15	04/27/21 10:00	
480-183850-7	BLDG4-1T CRANE-SP-027	Waste	04/26/21 09:45	04/27/21 10:00	
480-183850-8	BLDG4-1T CRANE-SP-028	Waste	04/26/21 10:00	04/27/21 10:00	
480-183850-9	BLDG1-BIN 7-SP-029	Solid	04/26/21 10:30	04/27/21 10:00	
480-183850-10	BLDG1-BIN 6-SP-030	Solid	04/26/21 10:40	04/27/21 10:00	
480-183850-11	BLDG1-BIN 5-SP-031	Solid	04/26/21 00:00	04/27/21 10:00	

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone: 716-691-2600 Fax: 716-691-7991

Chain of Custody Record

eurofins | Environment Testing America

Client Information	Sampler: K. ZATWARNICKI	Lab PM: Fischer, Brian J	Carrier Tracking No(s):	COC No: 480-158821-34919.3
Client Contact: Mr. Glenn Esler	Phone:	E-Mail: Brian.Fischer@Eurofinset.com	State of Origin:	Page: Page 1 of 3
Company: Integral Consulting Inc	PWSID:	**Analysis Requested**		Job #:
Address: 319 SW Washington Ave Suite 1150	**Due Date Requested:**			**Preservation Codes:** A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3
City: Portland	**TAT Requested (days):** 1 Week - 5 days			
State, Zip: OR, 97204	**Compliance Project:** Δ Yes Δ No			
Phone: 503-943-3617(Tel)	PO #: Purchase Order not required			
Email: gesler@integral-corp.com	WO #:			
Project Name: Project EF1017	Project #: 48023604			480-183850 Chain of Custody
Site:	SSOW#:			

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010C, 7470A, 8081B, 8151A, 8270D TCLP	8260C - TCLP Volatiles	1010A, ~~8270D~~, 9045D	8260C - TCL list OLM04.2	8082A - TCL PCBs - OLM04.2	8270D TCL SVOCs	Total Number	Special Instructions/Note:
			Preservation Code:				N	N	N	N	N	N		
BLDG1-3RDOIL4-SP-021	4/21/21	0740	G	~~Water~~ OIL	N						X			
BLDG1-2NDOIL5-SP-022	↓	0845	↓	~~Water~~ OIL	↓						↓			
BLDG1-2ND OIL6-SP-023	↓	0930	↓	~~Water~~ OIL	↓						↓			
BLDG1-1ST OIL7-SP-024	↓	0945	↓	~~Water~~ OIL	↓						↓			
BLDG1-1ST OIL8-SP-025	↓	1000	↓	~~Water~~ OIL	↓						↓			
BLDG2-2T CRANE-SP-026	4/26/21	0915	↓	~~Water~~ OIL	↓						↓			
BLDG4-1T CRANE-SP-027	↓	0945	↓	~~Water~~ OIL	↓						↓			
BLDG4-1T CRANE-SP-028	↓	1000	↓	~~Water~~ OIL	↓						↓			
BLDG1-BIN7-SP-029	↓	1030	↓	Solid	↓	X	X	X	X	X		X		
BLDG1-BIN6-SP-030	↓	1040	↓	Solid	↓	↓	↓	↓	↓	↓		↓		
BLDG1-BIN5-SP-031	↓		↓	Solid	↓	↓	↓	↓	↓	↓		↓		

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For ________ Months

Deliverable Requested: I, II, III, IV, Other (specify) CAT B LVL II

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:	
Relinquished by: Katelyn Zatwarnicki	Date/Time: 4/26/21 1730	Company: Integral	Received by: C Wallace	Date/Time: 4/27/21 1000	Company: TAS
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: #1 3.4		

Ver: 11/01/2020

Login Sample Receipt Checklist

Client: Integral Consulting Inc

Job Number: 480-183850-1

Login Number: 183850
List Number: 1
Creator: Wallace, Cameron

List Source: Eurofins TestAmerica, Buffalo

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	INTERGRAL
Samples received within 48 hours of sampling.	False	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	N/A	

ANALYTICAL REPORT

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

Laboratory Job ID: 480-185463-1
Client Project/Site: Project EF1017

For:
Integral Consulting Inc
319 SW Washington Ave
Suite 1150
Portland, Oregon 97204

Attn: Mr. Glenn Esler

Authorized for release by:
6/9/2021 3:44:07 PM

Rebecca Jones, Project Management Assistant I
Rebecca.Jones@Eurofinset.com

Designee for

Brian Fischer, Manager of Project Management
(716)504-9835
Brian.Fischer@Eurofinset.com

1

Table of Contents

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
*3	ISTD response or retention time outside acceptable limits.
F1	MS and/or MSD recovery exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
S1+	Surrogate recovery exceeds control limits, high biased.
vs	Reported analyte concentrations are below 200 ug/kg and may be biased low due to the sample not being collected according to 5035A-L low-level specifications.

GC/MS Semi VOA

Qualifier	Qualifier Description
*1	LCS/LCSD RPD exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
K	Benzo (b&k) fluoranthene are unresolved due to matrix, result is reported as Benzo(b)fluoranthene.
S1-	Surrogate recovery exceeds control limits, low biased.

GC Semi VOA

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
*1	LCS/LCSD RPD exceeds control limits.
S1-	Surrogate recovery exceeds control limits, low biased.
S1+	Surrogate recovery exceeds control limits, high biased.

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent

Glossary (Continued)

Abbreviation	These commonly used abbreviations may or may not be present in this report.
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-185463-1

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Job ID: 480-185463-1

Laboratory: Eurofins TestAmerica, Buffalo

Narrative

Job Narrative
480-185463-1

Comments
No additional comments.

Receipt
The samples were received on 6/2/2021 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.4º C.

GC/MS VOA
Method 8260C: The continuing calibration verification (CCVIS) associated with batch 480-584048 recovered above the upper control limit for Carbon tetrachloride and 1,2-Dichloroethane. The sample(s) associated with this CCVIS were non-detect for the affected analytes; therefore, the data have been reported. The associated samples are impacted: BLDG6-SP-032 (480-185463-1), BLDG2-SP-033 (480-185463-2), BLDG10-SP-034 (480-185463-3), RAMP-SP-035 (480-185463-4) and BLDG4-SP-036 (480-185463-5).

Method 8260C: The continuing calibration verification (CCVIS) associated with batch 480-584048 recovered outside acceptance criteria, low biased, for 1,1-Dichloroethene. A reporting limit (RL) standard was analyzed, and the target analyte was detected. Since the associated sample(s) were non-detect for this analyte, the data have been reported. The associated samples are: BLDG6-SP-032 (480-185463-1), BLDG2-SP-033 (480-185463-2), BLDG10-SP-034 (480-185463-3), RAMP-SP-035 (480-185463-4) and BLDG4-SP-036 (480-185463-5).

Method 8260C: The laboratory control sample (LCS) for batch 480-584048 recovered outside control limits for the following analytes: 1,2-Dichloroethane. This analyte was biased high in the LCS and was not detected in the associated sample(s); therefore, the data have been reported. The associated samples are: BLDG6-SP-032 (480-185463-1), BLDG2-SP-033 (480-185463-2), BLDG10-SP-034 (480-185463-3), RAMP-SP-035 (480-185463-4) and BLDG4-SP-036 (480-185463-5).

Method 8260C: The following samples were diluted due to the TCLP solid nature of the sample matrix: BLDG6-SP-032 (480-185463-1), BLDG2-SP-033 (480-185463-2), BLDG10-SP-034 (480-185463-3), RAMP-SP-035 (480-185463-4), BLDG4-SP-036 (480-185463-5) and (LB 480-583748/1-A). Elevated reporting limits (RLs) are provided.

Method 8260C: Surrogate recovery for the following sample was outside the upper control limit: BLDG2-SP-033 (480-185463-2). This sample did not contain any target analytes; therefore, re-analysis was not performed.

Method 8260C: Internal standard responses were outside of acceptance limits for the following samples: BLDG4-SP-036 (480-185463-5), (480-185463-C-5-C MS) and (480-185463-C-5-D MSD). The samples confirm responses out.

Method 8260C: The following sample was analyzed using medium level soil analysis due to the nature of the sample matrix: RAMP-SP-035 (480-185463-4). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC/MS Semi VOA
Method 8270D: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 480-584053 and analytical batch 480-584275 recovered outside control limits for the following analytes: Pyridine.

Method 8270D: The following samples were diluted due to color and appearance: BLDG10-SP-034 (480-185463-3) and BLDG4-SP-036 (480-185463-5). Elevated reporting limits (RL) are provided.

Method 8270D: The following samples required a dilution due to color and appearance: BLDG10-SP-034 (480-185463-3) and BLDG4-SP-036 (480-185463-5). Because of this dilution, and an elevated final volume, the surrogate spike concentration in the sample was reduced to a level where the recovery calculation does not provide useful information.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Job ID: 480-185463-1 (Continued)

Laboratory: Eurofins TestAmerica, Buffalo (Continued)

GC Semi VOA

Method 8081B: The laboratory control sample duplicate (LCSD) for preparation batch 480-583747 and 480-584054 and analytical batch 480-584156 recovered outside control limits for the following analytes: Heptachlor epoxide. These analytes were biased high in the LCSD and were not detected in the associated samples; therefore, the data have been reported.

Method 8081B: Surrogate recovery for the following sample was outside the upper control limit: BLDG2-SP-033 (480-185463-2). This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

Method 8081B: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 480-584054 and analytical batch 480-584156 recovered outside control limits for the following analytes: Heptachlor epoxide.

Method 8151A: Surrogate recovery for the following samples were outside control limits: BLDG6-SP-032 (480-185463-1), BLDG2-SP-033 (480-185463-2), BLDG10-SP-034 (480-185463-3), RAMP-SP-035 (480-185463-4), BLDG4-SP-036 (480-185463-5) and (LB 480-583747/1-C). This is routine for TCLP herbicides, due to the pH effects created during the leaching process, inhibiting the herbicide derivatization of the free acid components.

Method 8151A: The LCS associated with these samples has surrogate recovery that was below the quality control limit. The surrogate recovery is within acceptable limits in the Method Blank and LCSD. Spike recoveries are within acceptable limits in both the LCS and LCSD therefore the data is reported: BLDG6-SP-032 (480-185463-1), BLDG2-SP-033 (480-185463-2), BLDG10-SP-034 (480-185463-3), RAMP-SP-035 (480-185463-4) and BLDG4-SP-036 (480-185463-5).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

Method 9045D: This analysis is normally performed in the field and has a method-defined holding time of 15 minutes. The following samples has been qualified with the "HF" flag to indicate analysis was performed in the laboratory outside the 15 minute timeframe: BLDG6-SP-032 (480-185463-1), BLDG2-SP-033 (480-185463-2), BLDG10-SP-034 (480-185463-3), RAMP-SP-035 (480-185463-4) and BLDG4-SP-036 (480-185463-5).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

Method 3550C: Due to the matrix, the initial volume(s) used for the following sample deviated from the standard procedure: BLDG4-SP-036 (480-185463-5). The reporting limits (RLs) have been adjusted proportionately.

Method 3550C: Due to the matrix, the following samples could not be concentrated to the final method required volume: BLDG2-SP-033 (480-185463-2), BLDG10-SP-034 (480-185463-3), RAMP-SP-035 (480-185463-4) and BLDG4-SP-036 (480-185463-5). The reporting limits (RLs) are elevated proportionately.

Method 8151A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 480-583747 and 480-584003.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-185463-1

Client Sample ID: BLDG6-SP-032

Lab Sample ID: 480-185463-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzo[a]pyrene	41	J	220	32	ug/Kg	1	☼	8270D	Total/NA
Benzo[b]fluoranthene	59	J	220	34	ug/Kg	1	☼	8270D	Total/NA
Benzo[g,h,i]perylene	43	J	220	23	ug/Kg	1	☼	8270D	Total/NA
Benzo[k]fluoranthene	32	J	220	28	ug/Kg	1	☼	8270D	Total/NA
Bis(2-ethylhexyl) phthalate	110	J	220	74	ug/Kg	1	☼	8270D	Total/NA
Fluoranthene	89	J	220	23	ug/Kg	1	☼	8270D	Total/NA
Indeno[1,2,3-cd]pyrene	34	J	220	27	ug/Kg	1	☼	8270D	Total/NA
Pyrene	87	J	220	25	ug/Kg	1	☼	8270D	Total/NA
Arsenic	0.021		0.015	0.0056	mg/L	1		6010C	TCLP
Barium	1.1		1.0	0.10	mg/L	1		6010C	TCLP
Cadmium	0.019		0.0020	0.00050	mg/L	1		6010C	TCLP
Chromium	0.017	J	0.020	0.010	mg/L	1		6010C	TCLP
Lead	0.048		0.020	0.0030	mg/L	1		6010C	TCLP
Flashpoint	>175		50.0	50.0	Degrees F	1		1010A	Total/NA
pH	7.6	HF	0.1	0.1	SU	1		9045D	Total/NA
Temperature	22.8	HF	0.001	0.001	Degrees C	1		9045D	Total/NA

Client Sample ID: BLDG2-SP-033

Lab Sample ID: 480-185463-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzo[a]pyrene	700	J	2400	350	ug/Kg	1	☼	8270D	Total/NA
Benzo[b]fluoranthene	1400	J	2400	380	ug/Kg	1	☼	8270D	Total/NA
Benzo[g,h,i]perylene	590	J	2400	250	ug/Kg	1	☼	8270D	Total/NA
Benzo[k]fluoranthene	450	J	2400	310	ug/Kg	1	☼	8270D	Total/NA
Chrysene	1100	J	2400	530	ug/Kg	1	☼	8270D	Total/NA
Fluoranthene	1800	J	2400	250	ug/Kg	1	☼	8270D	Total/NA
Indeno[1,2,3-cd]pyrene	480	J	2400	290	ug/Kg	1	☼	8270D	Total/NA
Phenanthrene	540	J	2400	350	ug/Kg	1	☼	8270D	Total/NA
Pyrene	1500	J	2400	280	ug/Kg	1	☼	8270D	Total/NA
Barium	0.63	J	1.0	0.10	mg/L	1		6010C	TCLP
Cadmium	0.019		0.0020	0.00050	mg/L	1		6010C	TCLP
Lead	0.093		0.020	0.0030	mg/L	1		6010C	TCLP
Flashpoint	>175		50.0	50.0	Degrees F	1		1010A	Total/NA
pH	7.4	HF	0.1	0.1	SU	1		9045D	Total/NA
Temperature	22.7	HF	0.001	0.001	Degrees C	1		9045D	Total/NA

Client Sample ID: BLDG10-SP-034

Lab Sample ID: 480-185463-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichlorofluoromethane	2.9	J vs	7.7	0.73	ug/Kg	1	☼	8260C	Total/NA
Barium	2.6		1.0	0.10	mg/L	1		6010C	TCLP
Cadmium	0.018		0.0020	0.00050	mg/L	1		6010C	TCLP
Lead	44.2		0.020	0.0030	mg/L	1		6010C	TCLP
Flashpoint	>175		50.0	50.0	Degrees F	1		1010A	Total/NA
pH	7.0	HF	0.1	0.1	SU	1		9045D	Total/NA
Temperature	22.4	HF	0.001	0.001	Degrees C	1		9045D	Total/NA

Client Sample ID: RAMP-SP-035

Lab Sample ID: 480-185463-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzo[b]fluoranthene	390	J K	2200	340	ug/Kg	1	☼	8270D	Total/NA
Benzo[g,h,i]perylene	230	J	2200	230	ug/Kg	1	☼	8270D	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: RAMP-SP-035 (Continued)

Lab Sample ID: 480-185463-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Bis(2-ethylhexyl) phthalate	3100		2200	740	ug/Kg	1	☼	8270D	Total/NA
Fluoranthene	330	J	2200	230	ug/Kg	1	☼	8270D	Total/NA
Pyrene	380	J	2200	250	ug/Kg	1	☼	8270D	Total/NA
Arsenic	0.0079	J	0.015	0.0056	mg/L	1		6010C	TCLP
Barium	0.51	J	1.0	0.10	mg/L	1		6010C	TCLP
Cadmium	0.019		0.0020	0.00050	mg/L	1		6010C	TCLP
Lead	0.14		0.020	0.0030	mg/L	1		6010C	TCLP
Flashpoint	>175		50.0	50.0	Degrees F	1		1010A	Total/NA
pH	7.7	HF	0.1	0.1	SU	1		9045D	Total/NA
Temperature	22.6	HF	0.001	0.001	Degrees C	1		9045D	Total/NA

Client Sample ID: BLDG4-SP-036

Lab Sample ID: 480-185463-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	18	J F1 vs	40	6.7	ug/Kg	1	☼	8260C	Total/NA
Arsenic	0.013	J	0.015	0.0056	mg/L	1		6010C	TCLP
Barium	0.50	J	1.0	0.10	mg/L	1		6010C	TCLP
Cadmium	0.029		0.0020	0.00050	mg/L	1		6010C	TCLP
Lead	0.13		0.020	0.0030	mg/L	1		6010C	TCLP
Flashpoint	>175		50.0	50.0	Degrees F	1		1010A	Total/NA
pH	7.2	HF	0.1	0.1	SU	1		9045D	Total/NA
Temperature	23.1	HF	0.001	0.001	Degrees C	1		9045D	Total/NA

This Detection Summary does not include radiochemical test results.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Client Sample ID: BLDG6-SP-032
Lab Sample ID: 480-185463-1

Date Collected: 06/01/21 14:45
Matrix: Solid

Date Received: 06/02/21 10:00
Percent Solids: 77.2

Method: 8260C - TCLP Volatiles - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.010	0.0041	mg/L			06/05/21 00:49	10
Carbon tetrachloride	ND		0.010	0.0027	mg/L			06/05/21 00:49	10
Chlorobenzene	ND		0.010	0.0075	mg/L			06/05/21 00:49	10
Chloroform	ND		0.010	0.0034	mg/L			06/05/21 00:49	10
1,2-Dichloroethane	ND	*+	0.010	0.0021	mg/L			06/05/21 00:49	10
1,1-Dichloroethene	ND		0.010	0.0029	mg/L			06/05/21 00:49	10
2-Butanone (MEK)	ND		0.050	0.013	mg/L			06/05/21 00:49	10
Tetrachloroethene	ND		0.010	0.0036	mg/L			06/05/21 00:49	10
Trichloroethene	ND		0.010	0.0046	mg/L			06/05/21 00:49	10
Vinyl chloride	ND		0.010	0.0090	mg/L			06/05/21 00:49	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*77 - 120*		*06/05/21 00:49*	*10*
Toluene-d8 (Surr)	*89*		*80 - 120*		*06/05/21 00:49*	*10*
4-Bromofluorobenzene (Surr)	*107*		*73 - 120*		*06/05/21 00:49*	*10*
Dibromofluoromethane (Surr)	*109*		*75 - 123*		*06/05/21 00:49*	*10*

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND	vs	6.4	0.46	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
1,1,2,2-Tetrachloroethane	ND	vs	6.4	1.0	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
1,1,2-Trichloroethane	ND	vs	6.4	0.83	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	vs	6.4	1.5	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
1,1-Dichloroethane	ND	vs	6.4	0.78	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
1,1-Dichloroethene	ND	vs	6.4	0.78	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
1,2,4-Trichlorobenzene	ND	vs	6.4	0.39	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
1,2-Dibromo-3-Chloropropane	ND	vs	6.4	3.2	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
1,2-Dichlorobenzene	ND	vs	6.4	0.50	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
1,2-Dichloroethane	ND	vs	6.4	0.32	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
1,2-Dichloropropane	ND	vs	6.4	3.2	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
1,3-Dichlorobenzene	ND	vs	6.4	0.33	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
1,4-Dichlorobenzene	ND	vs	6.4	0.89	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
2-Butanone (MEK)	ND	vs	32	2.3	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
2-Hexanone	ND	vs	32	3.2	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
4-Methyl-2-pentanone (MIBK)	ND	vs	32	2.1	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
Acetone	ND	vs	32	5.4	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
Benzene	ND	vs	6.4	0.31	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
Bromodichloromethane	ND	vs	6.4	0.85	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
Bromoform	ND	vs	6.4	3.2	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
Bromomethane	ND	vs	6.4	0.57	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
Carbon disulfide	ND	vs	6.4	3.2	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
Carbon tetrachloride	ND	vs	6.4	0.62	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
Chlorobenzene	ND	vs	6.4	0.84	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
Dibromochloromethane	ND	vs	6.4	0.81	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
Chloroethane	ND	vs	6.4	1.4	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
Chloroform	ND	vs	6.4	0.39	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
Chloromethane	ND	vs	6.4	0.38	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
cis-1,2-Dichloroethene	ND	vs	6.4	0.81	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
cis-1,3-Dichloropropene	ND	vs	6.4	0.92	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
Cyclohexane	ND	vs	6.4	0.89	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1

Client Sample Results

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-185463-1

Client Sample ID: BLDG6-SP-032

Date Collected: 06/01/21 14:45
Date Received: 06/02/21 10:00

Lab Sample ID: 480-185463-1
Matrix: Solid
Percent Solids: 77.2

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND	vs	6.4	0.53	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
Ethylbenzene	ND	vs	6.4	0.44	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
1,2-Dibromoethane	ND	vs	6.4	0.82	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
Isopropylbenzene	ND	vs	6.4	0.96	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
Methyl acetate	ND	vs	32	3.8	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
Methyl tert-butyl ether	ND	vs	6.4	0.62	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
Methylcyclohexane	ND	vs	6.4	0.97	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
Methylene Chloride	ND	vs	6.4	2.9	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
Styrene	ND	vs	6.4	0.32	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
Tetrachloroethene	ND	vs	6.4	0.85	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
Toluene	ND	vs	6.4	0.48	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
trans-1,2-Dichloroethene	ND	vs	6.4	0.66	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
trans-1,3-Dichloropropene	ND	vs	6.4	2.8	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
Trichloroethene	ND	vs	6.4	1.4	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
Trichlorofluoromethane	ND	vs	6.4	0.60	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
Vinyl chloride	ND	vs	6.4	0.78	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1
Xylenes, Total	ND	vs	13	1.1	ug/Kg	☼	06/03/21 17:24	06/03/21 20:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*71 - 125*	*06/03/21 17:24*	*06/03/21 20:54*	*1*
1,2-Dichloroethane-d4 (Surr)	*97*		*64 - 126*	*06/03/21 17:24*	*06/03/21 20:54*	*1*
4-Bromofluorobenzene (Surr)	*91*		*72 - 126*	*06/03/21 17:24*	*06/03/21 20:54*	*1*
Dibromofluoromethane (Surr)	*98*		*60 - 140*	*06/03/21 17:24*	*06/03/21 20:54*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biphenyl	ND		220	32	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
bis (2-chloroisopropyl) ether	ND		220	43	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
2,4,5-Trichlorophenol	ND		220	59	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
2,4,6-Trichlorophenol	ND		220	43	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
2,4-Dichlorophenol	ND		220	23	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
2,4-Dimethylphenol	ND		220	52	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
2,4-Dinitrophenol	ND		2100	1000	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
2,4-Dinitrotoluene	ND		220	45	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
2,6-Dinitrotoluene	ND		220	25	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
2-Chloronaphthalene	ND		220	36	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
1,4-Dioxane	ND		130	70	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
2-Chlorophenol	ND		420	40	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
2-Methylnaphthalene	ND		220	43	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
2-Methylphenol	ND		220	25	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
2-Nitroaniline	ND		420	32	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
2-Nitrophenol	ND		220	61	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
3,3'-Dichlorobenzidine	ND		420	250	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
3-Nitroaniline	ND		420	60	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
4,6-Dinitro-2-methylphenol	ND		420	220	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
4-Bromophenyl phenyl ether	ND		220	31	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
4-Chloro-3-methylphenol	ND		220	54	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
4-Chloroaniline	ND		220	54	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
4-Chlorophenyl phenyl ether	ND		220	27	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
4-Methylphenol	ND		420	25	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1

Client Sample Results

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-185463-1

Client Sample ID: BLDG6-SP-032
Date Collected: 06/01/21 14:45
Date Received: 06/02/21 10:00

Lab Sample ID: 480-185463-1
Matrix: Solid
Percent Solids: 77.2

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4-Nitroaniline	ND		420	110	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
4-Nitrophenol	ND		420	150	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
Acenaphthene	ND		220	32	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
Acenaphthylene	ND		220	28	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
Acetophenone	ND		220	29	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
Anthracene	ND		220	54	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
Atrazine	ND		220	75	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
Benzaldehyde	ND		220	170	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
Benzo[a]anthracene	ND		220	22	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
Benzo[a]pyrene	**41**	**J**	220	32	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
Benzo[b]fluoranthene	**59**	**J**	220	34	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
Benzo[g,h,i]perylene	**43**	**J**	220	23	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
Benzo[k]fluoranthene	**32**	**J**	220	28	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
Bis(2-chloroethoxy)methane	ND		220	46	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
Bis(2-chloroethyl)ether	ND		220	28	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
Bis(2-ethylhexyl) phthalate	**110**	**J**	220	74	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
Butyl benzyl phthalate	ND		220	36	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
Caprolactam	ND		220	65	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
Carbazole	ND		220	25	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
Chrysene	ND		220	48	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
Di-n-butyl phthalate	ND		220	37	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
Di-n-octyl phthalate	ND		220	25	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
Dibenz(a,h)anthracene	ND		220	38	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
Dibenzofuran	ND		220	25	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
Diethyl phthalate	ND		220	28	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
Dimethyl phthalate	ND		220	25	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
Fluoranthene	**89**	**J**	220	23	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
Fluorene	ND		220	25	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
Hexachlorobenzene	ND		220	29	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
Hexachlorobutadiene	ND		220	32	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
Hexachlorocyclopentadiene	ND		220	29	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
Hexachloroethane	ND		220	28	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
Indeno[1,2,3-cd]pyrene	**34**	**J**	220	27	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
Isophorone	ND		220	46	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
N-Nitrosodi-n-propylamine	ND		220	37	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
N-Nitrosodiphenylamine	ND		220	180	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
Naphthalene	ND		220	28	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
Nitrobenzene	ND		220	24	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
Pentachlorophenol	ND		420	220	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
Phenanthrene	ND		220	32	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
Phenol	ND		220	33	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1
Pyrene	**87**	**J**	220	25	ug/Kg	☼	06/03/21 15:00	06/08/21 21:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*83*		*54 - 120*	*06/03/21 15:00*	*06/08/21 21:18*	*1*
2-Fluorobiphenyl	*100*		*60 - 120*	*06/03/21 15:00*	*06/08/21 21:18*	*1*
2-Fluorophenol	*74*		*52 - 120*	*06/03/21 15:00*	*06/08/21 21:18*	*1*
Nitrobenzene-d5	*79*		*53 - 120*	*06/03/21 15:00*	*06/08/21 21:18*	*1*
p-Terphenyl-d14	*97*		*79 - 130*	*06/03/21 15:00*	*06/08/21 21:18*	*1*
Phenol-d5	*67*		*54 - 120*	*06/03/21 15:00*	*06/08/21 21:18*	*1*

Client Sample Results

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-185463-1

Client Sample ID: BLDG6-SP-032

Date Collected: 06/01/21 14:45
Date Received: 06/02/21 10:00

Lab Sample ID: 480-185463-1
Matrix: Solid
Percent Solids: 77.2

Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.040	0.0018	mg/L		06/04/21 15:56	06/07/21 19:34	1
2,4-Dinitrotoluene	ND		0.020	0.0017	mg/L		06/04/21 15:56	06/07/21 19:34	1
Hexachlorobenzene	ND		0.020	0.0020	mg/L		06/04/21 15:56	06/07/21 19:34	1
Hexachlorobutadiene	ND		0.020	0.0027	mg/L		06/04/21 15:56	06/07/21 19:34	1
Hexachloroethane	ND		0.020	0.0023	mg/L		06/04/21 15:56	06/07/21 19:34	1
3-Methylphenol	ND		0.040	0.0016	mg/L		06/04/21 15:56	06/07/21 19:34	1
2-Methylphenol	ND		0.020	0.0016	mg/L		06/04/21 15:56	06/07/21 19:34	1
4-Methylphenol	ND		0.040	0.0014	mg/L		06/04/21 15:56	06/07/21 19:34	1
Nitrobenzene	ND		0.020	0.0011	mg/L		06/04/21 15:56	06/07/21 19:34	1
Pentachlorophenol	ND		0.040	0.0088	mg/L		06/04/21 15:56	06/07/21 19:34	1
Pyridine	ND	*1	0.10	0.0016	mg/L		06/04/21 15:56	06/07/21 19:34	1
2,4,5-Trichlorophenol	ND		0.020	0.0019	mg/L		06/04/21 15:56	06/07/21 19:34	1
2,4,6-Trichlorophenol	ND		0.020	0.0024	mg/L		06/04/21 15:56	06/07/21 19:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*94*		*41 - 120*	*06/04/21 15:56*	*06/07/21 19:34*	*1*
2-Fluorobiphenyl	*88*		*48 - 120*	*06/04/21 15:56*	*06/07/21 19:34*	*1*
2-Fluorophenol	*50*		*35 - 120*	*06/04/21 15:56*	*06/07/21 19:34*	*1*
Nitrobenzene-d5	*81*		*46 - 120*	*06/04/21 15:56*	*06/07/21 19:34*	*1*
p-Terphenyl-d14	*97*		*60 - 148*	*06/04/21 15:56*	*06/07/21 19:34*	*1*
Phenol-d5	*40*		*22 - 120*	*06/04/21 15:56*	*06/07/21 19:34*	*1*

Method: 8081B - Organochlorine Pesticides (GC) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.00020	0.0000060	mg/L		06/04/21 16:07	06/06/21 17:23	1
Chlordane (technical)	ND		0.0020	0.000029	mg/L		06/04/21 16:07	06/06/21 17:23	1
Endrin	ND		0.00020	0.000014	mg/L		06/04/21 16:07	06/06/21 17:23	1
Heptachlor	ND		0.00020	0.0000085	mg/L		06/04/21 16:07	06/06/21 17:23	1
Heptachlor epoxide	ND	*+ *1	0.00020	0.0000053	mg/L		06/04/21 16:07	06/06/21 17:23	1
Methoxychlor	ND		0.00020	0.000014	mg/L		06/04/21 16:07	06/06/21 17:23	1
Toxaphene	ND		0.0020	0.00012	mg/L		06/04/21 16:07	06/06/21 17:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*74*		*20 - 120*	*06/04/21 16:07*	*06/06/21 17:23*	*1*
DCB Decachlorobiphenyl	*71*		*20 - 120*	*06/04/21 16:07*	*06/06/21 17:23*	*1*
Tetrachloro-m-xylene	*95*		*44 - 120*	*06/04/21 16:07*	*06/06/21 17:23*	*1*
Tetrachloro-m-xylene	*78*		*44 - 120*	*06/04/21 16:07*	*06/06/21 17:23*	*1*

Method: 8151 - TCLP Herbicides - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND		0.0020	0.00036	mg/L		06/04/21 11:22	06/06/21 21:54	1
2,4-D	ND		0.0020	0.00040	mg/L		06/04/21 11:22	06/06/21 21:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*32*	*S1-*	*48 - 132*	*06/04/21 11:22*	*06/06/21 21:54*	*1*
2,4-Dichlorophenylacetic acid	*35*	*S1-*	*48 - 132*	*06/04/21 11:22*	*06/06/21 21:54*	*1*

Method: 6010C - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.021**		0.015	0.0056	mg/L		06/04/21 11:01	06/08/21 13:05	1
Barium	**1.1**		1.0	0.10	mg/L		06/04/21 11:01	06/08/21 13:05	1

Client Sample Results

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-185463-1

Client Sample ID: BLDG6-SP-032

Lab Sample ID: 480-185463-1

Date Collected: 06/01/21 14:45
Date Received: 06/02/21 10:00

Matrix: Solid
Percent Solids: 77.2

Method: 6010C - Metals (ICP) - TCLP (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	**0.019**		0.0020	0.00050	mg/L		06/04/21 11:01	06/08/21 13:05	1
Chromium	**0.017**	**J**	0.020	0.010	mg/L		06/04/21 11:01	06/08/21 13:05	1
Lead	**0.048**		0.020	0.0030	mg/L		06/04/21 11:01	06/08/21 13:05	1
Selenium	ND		0.025	0.0087	mg/L		06/04/21 11:01	06/08/21 13:05	1
Silver	ND		0.0060	0.0017	mg/L		06/04/21 11:01	06/08/21 13:05	1

Method: 7470A - TCLP Mercury - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		06/04/21 12:50	06/04/21 17:27	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Flashpoint	**>175**		50.0	50.0	Degrees F			06/07/21 17:03	1
pH	**7.6**	**HF**	0.1	0.1	SU			06/04/21 11:50	1
Temperature	**22.8**	**HF**	0.001	0.001	Degrees C			06/04/21 11:50	1

Client Sample ID: BLDG2-SP-033

Lab Sample ID: 480-185463-2

Date Collected: 06/01/21 15:00
Date Received: 06/02/21 10:00

Matrix: Solid
Percent Solids: 70.4

Method: 8260C - TCLP Volatiles - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.010	0.0041	mg/L			06/05/21 01:12	10
Carbon tetrachloride	ND		0.010	0.0027	mg/L			06/05/21 01:12	10
Chlorobenzene	ND		0.010	0.0075	mg/L			06/05/21 01:12	10
Chloroform	ND		0.010	0.0034	mg/L			06/05/21 01:12	10
1,2-Dichloroethane	ND	*+	0.010	0.0021	mg/L			06/05/21 01:12	10
1,1-Dichloroethene	ND		0.010	0.0029	mg/L			06/05/21 01:12	10
2-Butanone (MEK)	ND		0.050	0.013	mg/L			06/05/21 01:12	10
Tetrachloroethene	ND		0.010	0.0036	mg/L			06/05/21 01:12	10
Trichloroethene	ND		0.010	0.0046	mg/L			06/05/21 01:12	10
Vinyl chloride	ND		0.010	0.0090	mg/L			06/05/21 01:12	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*115*		*77 - 120*		*06/05/21 01:12*	*10*
Toluene-d8 (Surr)	*92*		*80 - 120*		*06/05/21 01:12*	*10*
4-Bromofluorobenzene (Surr)	*108*		*73 - 120*		*06/05/21 01:12*	*10*
Dibromofluoromethane (Surr)	*124*	*S1+*	*75 - 123*		*06/05/21 01:12*	*10*

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND	vs	6.9	0.50	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
1,1,2,2-Tetrachloroethane	ND	vs	6.9	1.1	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
1,1,2-Trichloroethane	ND	vs	6.9	0.90	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	vs	6.9	1.6	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
1,1-Dichloroethane	ND	vs	6.9	0.84	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
1,1-Dichloroethene	ND	vs	6.9	0.84	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
1,2,4-Trichlorobenzene	ND	vs	6.9	0.42	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
1,2-Dibromo-3-Chloropropane	ND	vs	6.9	3.4	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
1,2-Dichlorobenzene	ND	vs	6.9	0.54	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
1,2-Dichloroethane	ND	vs	6.9	0.35	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1

Client Sample ID: BLDG2-SP-033
Lab Sample ID: 480-185463-2
Date Collected: 06/01/21 15:00
Matrix: Solid
Date Received: 06/02/21 10:00
Percent Solids: 70.4

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichloropropane	ND	vs	6.9	3.4	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
1,3-Dichlorobenzene	ND	vs	6.9	0.35	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
1,4-Dichlorobenzene	ND	vs	6.9	0.97	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
2-Butanone (MEK)	ND	vs	34	2.5	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
2-Hexanone	ND	vs	34	3.4	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
4-Methyl-2-pentanone (MIBK)	ND	vs	34	2.3	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
Acetone	ND	vs	34	5.8	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
Benzene	ND	vs	6.9	0.34	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
Bromodichloromethane	ND	vs	6.9	0.92	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
Bromoform	ND	vs	6.9	3.4	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
Bromomethane	ND	vs	6.9	0.62	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
Carbon disulfide	ND	vs	6.9	3.4	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
Carbon tetrachloride	ND	vs	6.9	0.67	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
Chlorobenzene	ND	vs	6.9	0.91	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
Dibromochloromethane	ND	vs	6.9	0.88	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
Chloroethane	ND	vs	6.9	1.6	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
Chloroform	ND	vs	6.9	0.43	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
Chloromethane	ND	vs	6.9	0.42	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
cis-1,2-Dichloroethene	ND	vs	6.9	0.88	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
cis-1,3-Dichloropropene	ND	vs	6.9	0.99	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
Cyclohexane	ND	vs	6.9	0.97	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
Dichlorodifluoromethane	ND	vs	6.9	0.57	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
Ethylbenzene	ND	vs	6.9	0.48	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
1,2-Dibromoethane	ND	vs	6.9	0.89	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
Isopropylbenzene	ND	vs	6.9	1.0	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
Methyl acetate	ND	vs	34	4.2	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
Methyl tert-butyl ether	ND	vs	6.9	0.68	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
Methylcyclohexane	ND	vs	6.9	1.0	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
Methylene Chloride	ND	vs	6.9	3.2	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
Styrene	ND	vs	6.9	0.34	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
Tetrachloroethene	ND	vs	6.9	0.93	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
Toluene	ND	vs	6.9	0.52	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
trans-1,2-Dichloroethene	ND	vs	6.9	0.71	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
trans-1,3-Dichloropropene	ND	vs	6.9	3.0	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
Trichloroethene	ND	vs	6.9	1.5	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
Trichlorofluoromethane	ND	vs	6.9	0.65	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
Vinyl chloride	ND	vs	6.9	0.84	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1
Xylenes, Total	ND	vs	14	1.2	ug/Kg	☼	06/03/21 17:24	06/03/21 21:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*71 - 125*	*06/03/21 17:24*	*06/03/21 21:19*	*1*
1,2-Dichloroethane-d4 (Surr)	*96*		*64 - 126*	*06/03/21 17:24*	*06/03/21 21:19*	*1*
4-Bromofluorobenzene (Surr)	*92*		*72 - 126*	*06/03/21 17:24*	*06/03/21 21:19*	*1*
Dibromofluoromethane (Surr)	*98*		*60 - 140*	*06/03/21 17:24*	*06/03/21 21:19*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biphenyl	ND		2400	350	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
bis (2-chloroisopropyl) ether	ND		2400	470	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
2,4,5-Trichlorophenol	ND		2400	640	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1

Client Sample ID: BLDG2-SP-033
Date Collected: 06/01/21 15:00
Date Received: 06/02/21 10:00
Lab Sample ID: 480-185463-2
Matrix: Solid
Percent Solids: 70.4

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	ND		2400	470	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
2,4-Dichlorophenol	ND		2400	250	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
2,4-Dimethylphenol	ND		2400	570	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
2,4-Dinitrophenol	ND		23000	11000	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
2,4-Dinitrotoluene	ND		2400	490	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
2,6-Dinitrotoluene	ND		2400	280	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
2-Chloronaphthalene	ND		2400	390	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
1,4-Dioxane	ND		1400	760	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
2-Chlorophenol	ND		4600	430	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
2-Methylnaphthalene	ND		2400	470	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
2-Methylphenol	ND		2400	280	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
2-Nitroaniline	ND		4600	350	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
2-Nitrophenol	ND		2400	670	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
3,3'-Dichlorobenzidine	ND		4600	2800	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
3-Nitroaniline	ND		4600	650	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
4,6-Dinitro-2-methylphenol	ND		4600	2400	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
4-Bromophenyl phenyl ether	ND		2400	330	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
4-Chloro-3-methylphenol	ND		2400	580	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
4-Chloroaniline	ND		2400	580	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
4-Chlorophenyl phenyl ether	ND		2400	290	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
4-Methylphenol	ND		4600	280	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
4-Nitroaniline	ND		4600	1200	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
4-Nitrophenol	ND		4600	1700	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
Acenaphthene	ND		2400	350	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
Acenaphthylene	ND		2400	310	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
Acetophenone	ND		2400	320	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
Anthracene	ND		2400	580	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
Atrazine	ND		2400	820	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
Benzaldehyde	ND		2400	1900	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
Benzo[a]anthracene	ND		2400	240	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
Benzo[a]pyrene	**700**	**J**	2400	350	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
Benzo[b]fluoranthene	**1400**	**J**	2400	380	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
Benzo[g,h,i]perylene	**590**	**J**	2400	250	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
Benzo[k]fluoranthene	**450**	**J**	2400	310	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
Bis(2-chloroethoxy)methane	ND		2400	500	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
Bis(2-chloroethyl)ether	ND		2400	310	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
Bis(2-ethylhexyl) phthalate	ND		2400	810	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
Butyl benzyl phthalate	ND		2400	390	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
Caprolactam	ND		2400	710	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
Carbazole	ND		2400	280	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
Chrysene	**1100**	**J**	2400	530	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
Di-n-butyl phthalate	ND		2400	400	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
Di-n-octyl phthalate	ND		2400	280	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
Dibenz(a,h)anthracene	ND		2400	420	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
Dibenzofuran	ND		2400	280	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
Diethyl phthalate	ND		2400	310	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
Dimethyl phthalate	ND		2400	280	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
Fluoranthene	**1800**	**J**	2400	250	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
Fluorene	ND		2400	280	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1

Client Sample ID: BLDG2-SP-033

Date Collected: 06/01/21 15:00
Date Received: 06/02/21 10:00

Lab Sample ID: 480-185463-2
Matrix: Solid
Percent Solids: 70.4

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexachlorobenzene	ND		2400	320	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
Hexachlorobutadiene	ND		2400	350	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
Hexachlorocyclopentadiene	ND		2400	320	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
Hexachloroethane	ND		2400	310	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
Indeno[1,2,3-cd]pyrene	**480**	**J**	2400	290	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
Isophorone	ND		2400	500	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
N-Nitrosodi-n-propylamine	ND		2400	400	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
N-Nitrosodiphenylamine	ND		2400	1900	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
Naphthalene	ND		2400	310	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
Nitrobenzene	ND		2400	260	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
Pentachlorophenol	ND		4600	2400	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
Phenanthrene	**540**	**J**	2400	350	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
Phenol	ND		2400	360	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1
Pyrene	**1500**	**J**	2400	280	ug/Kg	☼	06/03/21 15:00	06/08/21 21:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*109*		*54 - 120*	*06/03/21 15:00*	*06/08/21 21:44*	*1*
2-Fluorobiphenyl	*99*		*60 - 120*	*06/03/21 15:00*	*06/08/21 21:44*	*1*
2-Fluorophenol	*77*		*52 - 120*	*06/03/21 15:00*	*06/08/21 21:44*	*1*
Nitrobenzene-d5	*105*		*53 - 120*	*06/03/21 15:00*	*06/08/21 21:44*	*1*
p-Terphenyl-d14	*100*		*79 - 130*	*06/03/21 15:00*	*06/08/21 21:44*	*1*
Phenol-d5	*73*		*54 - 120*	*06/03/21 15:00*	*06/08/21 21:44*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.040	0.0018	mg/L		06/04/21 15:56	06/07/21 19:59	1
2,4-Dinitrotoluene	ND		0.020	0.0017	mg/L		06/04/21 15:56	06/07/21 19:59	1
Hexachlorobenzene	ND		0.020	0.0020	mg/L		06/04/21 15:56	06/07/21 19:59	1
Hexachlorobutadiene	ND		0.020	0.0027	mg/L		06/04/21 15:56	06/07/21 19:59	1
Hexachloroethane	ND		0.020	0.0023	mg/L		06/04/21 15:56	06/07/21 19:59	1
3-Methylphenol	ND		0.040	0.0016	mg/L		06/04/21 15:56	06/07/21 19:59	1
2-Methylphenol	ND		0.020	0.0016	mg/L		06/04/21 15:56	06/07/21 19:59	1
4-Methylphenol	ND		0.040	0.0014	mg/L		06/04/21 15:56	06/07/21 19:59	1
Nitrobenzene	ND		0.020	0.0011	mg/L		06/04/21 15:56	06/07/21 19:59	1
Pentachlorophenol	ND		0.040	0.0088	mg/L		06/04/21 15:56	06/07/21 19:59	1
Pyridine	ND	*1	0.10	0.0016	mg/L		06/04/21 15:56	06/07/21 19:59	1
2,4,5-Trichlorophenol	ND		0.020	0.0019	mg/L		06/04/21 15:56	06/07/21 19:59	1
2,4,6-Trichlorophenol	ND		0.020	0.0024	mg/L		06/04/21 15:56	06/07/21 19:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*86*		*41 - 120*	*06/04/21 15:56*	*06/07/21 19:59*	*1*
2-Fluorobiphenyl	*80*		*48 - 120*	*06/04/21 15:56*	*06/07/21 19:59*	*1*
2-Fluorophenol	*51*		*35 - 120*	*06/04/21 15:56*	*06/07/21 19:59*	*1*
Nitrobenzene-d5	*80*		*46 - 120*	*06/04/21 15:56*	*06/07/21 19:59*	*1*
p-Terphenyl-d14	*103*		*60 - 148*	*06/04/21 15:56*	*06/07/21 19:59*	*1*
Phenol-d5	*31*		*22 - 120*	*06/04/21 15:56*	*06/07/21 19:59*	*1*

Method: 8081B - Organochlorine Pesticides (GC) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.00020	0.0000060	mg/L		06/04/21 16:07	06/06/21 17:43	1

Client Sample Results

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-185463-1

Client Sample ID: BLDG2-SP-033
Lab Sample ID: 480-185463-2
Date Collected: 06/01/21 15:00
Matrix: Solid
Date Received: 06/02/21 10:00
Percent Solids: 70.4

Method: 8081B - Organochlorine Pesticides (GC) - TCLP (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlordane (technical)	ND		0.0020	0.000029	mg/L		06/04/21 16:07	06/06/21 17:43	1
Endrin	ND		0.00020	0.000014	mg/L		06/04/21 16:07	06/06/21 17:43	1
Heptachlor	ND		0.00020	0.0000085	mg/L		06/04/21 16:07	06/06/21 17:43	1
Heptachlor epoxide	ND	*+ *1	0.00020	0.0000053	mg/L		06/04/21 16:07	06/06/21 17:43	1
Methoxychlor	ND		0.00020	0.000014	mg/L		06/04/21 16:07	06/06/21 17:43	1
Toxaphene	ND		0.0020	0.00012	mg/L		06/04/21 16:07	06/06/21 17:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*161*	*S1+*	*20 - 120*	*06/04/21 16:07*	*06/06/21 17:43*	*1*
DCB Decachlorobiphenyl	*150*	*S1+*	*20 - 120*	*06/04/21 16:07*	*06/06/21 17:43*	*1*
Tetrachloro-m-xylene	*176*	*S1+*	*44 - 120*	*06/04/21 16:07*	*06/06/21 17:43*	*1*
Tetrachloro-m-xylene	*155*	*S1+*	*44 - 120*	*06/04/21 16:07*	*06/06/21 17:43*	*1*

Method: 8151 - TCLP Herbicides - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND		0.0020	0.00036	mg/L		06/04/21 11:22	06/06/21 22:24	1
2,4-D	ND		0.0020	0.00040	mg/L		06/04/21 11:22	06/06/21 22:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*33*	*S1-*	*48 - 132*	*06/04/21 11:22*	*06/06/21 22:24*	*1*
2,4-Dichlorophenylacetic acid	*35*	*S1-*	*48 - 132*	*06/04/21 11:22*	*06/06/21 22:24*	*1*

Method: 6010C - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.015	0.0056	mg/L		06/04/21 11:01	06/08/21 16:36	1
Barium	**0.63**	**J**	1.0	0.10	mg/L		06/04/21 11:01	06/08/21 16:36	1
Cadmium	**0.019**		0.0020	0.00050	mg/L		06/04/21 11:01	06/08/21 16:36	1
Chromium	ND		0.020	0.010	mg/L		06/04/21 11:01	06/08/21 16:36	1
Lead	**0.093**		0.020	0.0030	mg/L		06/04/21 11:01	06/08/21 16:36	1
Selenium	ND		0.025	0.0087	mg/L		06/04/21 11:01	06/08/21 16:36	1
Silver	ND		0.0060	0.0017	mg/L		06/04/21 11:01	06/08/21 16:36	1

Method: 7470A - TCLP Mercury - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		06/04/21 12:50	06/04/21 17:29	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Flashpoint	**>175**		50.0	50.0	Degrees F			06/06/21 15:06	1
pH	**7.4**	**HF**	0.1	0.1	SU			06/04/21 11:50	1
Temperature	**22.7**	**HF**	0.001	0.001	Degrees C			06/04/21 11:50	1

Client Sample ID: BLDG10-SP-034
Lab Sample ID: 480-185463-3
Date Collected: 06/01/21 15:20
Matrix: Solid
Date Received: 06/02/21 10:00
Percent Solids: 64.1

Method: 8260C - TCLP Volatiles - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.010	0.0041	mg/L			06/05/21 01:35	10
Carbon tetrachloride	ND		0.010	0.0027	mg/L			06/05/21 01:35	10
Chlorobenzene	ND		0.010	0.0075	mg/L			06/05/21 01:35	10

Client Sample ID: BLDG10-SP-034
Lab Sample ID: 480-185463-3
Date Collected: 06/01/21 15:20
Matrix: Solid
Date Received: 06/02/21 10:00
Percent Solids: 64.1

Method: 8260C - TCLP Volatiles - TCLP (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroform	ND		0.010	0.0034	mg/L			06/05/21 01:35	10
1,2-Dichloroethane	ND	*+	0.010	0.0021	mg/L			06/05/21 01:35	10
1,1-Dichloroethene	ND		0.010	0.0029	mg/L			06/05/21 01:35	10
2-Butanone (MEK)	ND		0.050	0.013	mg/L			06/05/21 01:35	10
Tetrachloroethene	ND		0.010	0.0036	mg/L			06/05/21 01:35	10
Trichloroethene	ND		0.010	0.0046	mg/L			06/05/21 01:35	10
Vinyl chloride	ND		0.010	0.0090	mg/L			06/05/21 01:35	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*77 - 120*		*06/05/21 01:35*	*10*
Toluene-d8 (Surr)	*87*		*80 - 120*		*06/05/21 01:35*	*10*
4-Bromofluorobenzene (Surr)	*105*		*73 - 120*		*06/05/21 01:35*	*10*
Dibromofluoromethane (Surr)	*117*		*75 - 123*		*06/05/21 01:35*	*10*

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND	vs	7.7	0.56	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
1,1,2,2-Tetrachloroethane	ND	vs	7.7	1.3	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
1,1,2-Trichloroethane	ND	vs	7.7	1.0	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	vs	7.7	1.8	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
1,1-Dichloroethane	ND	vs	7.7	0.94	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
1,1-Dichloroethene	ND	vs	7.7	0.95	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
1,2,4-Trichlorobenzene	ND	vs	7.7	0.47	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
1,2-Dibromo-3-Chloropropane	ND	vs	7.7	3.9	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
1,2-Dichlorobenzene	ND	vs	7.7	0.61	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
1,2-Dichloroethane	ND	vs	7.7	0.39	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
1,2-Dichloropropane	ND	vs	7.7	3.9	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
1,3-Dichlorobenzene	ND	vs	7.7	0.40	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
1,4-Dichlorobenzene	ND	vs	7.7	1.1	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
2-Butanone (MEK)	ND	vs	39	2.8	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
2-Hexanone	ND	vs	39	3.9	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
4-Methyl-2-pentanone (MIBK)	ND	vs	39	2.5	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
Acetone	ND	vs	39	6.5	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
Benzene	ND	vs	7.7	0.38	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
Bromodichloromethane	ND	vs	7.7	1.0	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
Bromoform	ND	vs	7.7	3.9	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
Bromomethane	ND	vs	7.7	0.70	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
Carbon disulfide	ND	vs	7.7	3.9	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
Carbon tetrachloride	ND	vs	7.7	0.75	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
Chlorobenzene	ND	vs	7.7	1.0	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
Dibromochloromethane	ND	vs	7.7	0.99	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
Chloroethane	ND	vs	7.7	1.8	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
Chloroform	ND	vs	7.7	0.48	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
Chloromethane	ND	vs	7.7	0.47	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
cis-1,2-Dichloroethene	ND	vs	7.7	0.99	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
cis-1,3-Dichloropropene	ND	vs	7.7	1.1	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
Cyclohexane	ND	vs	7.7	1.1	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
Dichlorodifluoromethane	ND	vs	7.7	0.64	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
Ethylbenzene	ND	vs	7.7	0.53	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
1,2-Dibromoethane	ND	vs	7.7	0.99	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1

Client Sample ID: BLDG10-SP-034

Date Collected: 06/01/21 15:20
Date Received: 06/02/21 10:00

Lab Sample ID: 480-185463-3
Matrix: Solid
Percent Solids: 64.1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Isopropylbenzene	ND	vs	7.7	1.2	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
Methyl acetate	ND	vs	39	4.7	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
Methyl tert-butyl ether	ND	vs	7.7	0.76	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
Methylcyclohexane	ND	vs	7.7	1.2	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
Methylene Chloride	ND	vs	7.7	3.6	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
Styrene	ND	vs	7.7	0.39	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
Tetrachloroethene	ND	vs	7.7	1.0	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
Toluene	ND	vs	7.7	0.59	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
trans-1,2-Dichloroethene	ND	vs	7.7	0.80	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
trans-1,3-Dichloropropene	ND	vs	7.7	3.4	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
Trichloroethene	ND	vs	7.7	1.7	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
Trichlorofluoromethane	**2.9**	**J vs**	7.7	0.73	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
Vinyl chloride	ND	vs	7.7	0.94	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1
Xylenes, Total	ND	vs	15	1.3	ug/Kg	☼	06/03/21 17:24	06/03/21 21:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*71 - 125*	*06/03/21 17:24*	*06/03/21 21:44*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*64 - 126*	*06/03/21 17:24*	*06/03/21 21:44*	*1*
4-Bromofluorobenzene (Surr)	*93*		*72 - 126*	*06/03/21 17:24*	*06/03/21 21:44*	*1*
Dibromofluoromethane (Surr)	*98*		*60 - 140*	*06/03/21 17:24*	*06/03/21 21:44*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biphenyl	ND		52000	7600	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
bis (2-chloroisopropyl) ether	ND		52000	10000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
2,4,5-Trichlorophenol	ND		52000	14000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
2,4,6-Trichlorophenol	ND		52000	10000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
2,4-Dichlorophenol	ND		52000	5500	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
2,4-Dimethylphenol	ND		52000	12000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
2,4-Dinitrophenol	ND		510000	240000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
2,4-Dinitrotoluene	ND		52000	11000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
2,6-Dinitrotoluene	ND		52000	6100	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
2-Chloronaphthalene	ND		52000	8500	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
1,4-Dioxane	ND		30000	17000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
2-Chlorophenol	ND		100000	9400	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
2-Methylnaphthalene	ND		52000	10000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
2-Methylphenol	ND		52000	6100	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
2-Nitroaniline	ND		100000	7600	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
2-Nitrophenol	ND		52000	15000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
3,3'-Dichlorobenzidine	ND		100000	61000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
3-Nitroaniline	ND		100000	14000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
4,6-Dinitro-2-methylphenol	ND		100000	52000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
4-Bromophenyl phenyl ether	ND		52000	7300	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
4-Chloro-3-methylphenol	ND		52000	13000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
4-Chloroaniline	ND		52000	13000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
4-Chlorophenyl phenyl ether	ND		52000	6400	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
4-Methylphenol	ND		100000	6100	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
4-Nitroaniline	ND		100000	27000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
4-Nitrophenol	ND		100000	36000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
Acenaphthene	ND		52000	7600	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10

Client Sample ID: BLDG10-SP-034
Lab Sample ID: 480-185463-3

Date Collected: 06/01/21 15:20
Matrix: Solid
Date Received: 06/02/21 10:00
Percent Solids: 64.1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthylene	ND		52000	6700	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
Acetophenone	ND		52000	7000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
Anthracene	ND		52000	13000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
Atrazine	ND		52000	18000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
Benzaldehyde	ND		52000	41000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
Benzo[a]anthracene	ND		52000	5200	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
Benzo[a]pyrene	ND		52000	7600	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
Benzo[b]fluoranthene	ND		52000	8200	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
Benzo[g,h,i]perylene	ND		52000	5500	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
Benzo[k]fluoranthene	ND		52000	6700	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
Bis(2-chloroethoxy)methane	ND		52000	11000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
Bis(2-chloroethyl)ether	ND		52000	6700	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
Bis(2-ethylhexyl) phthalate	ND		52000	18000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
Butyl benzyl phthalate	ND		52000	8500	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
Caprolactam	ND		52000	16000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
Carbazole	ND		52000	6100	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
Chrysene	ND		52000	12000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
Di-n-butyl phthalate	ND		52000	8800	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
Di-n-octyl phthalate	ND		52000	6100	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
Dibenz(a,h)anthracene	ND		52000	9100	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
Dibenzofuran	ND		52000	6100	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
Diethyl phthalate	ND		52000	6700	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
Dimethyl phthalate	ND		52000	6100	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
Fluoranthene	ND		52000	5500	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
Fluorene	ND		52000	6100	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
Hexachlorobenzene	ND		52000	7000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
Hexachlorobutadiene	ND		52000	7600	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
Hexachlorocyclopentadiene	ND		52000	7000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
Hexachloroethane	ND		52000	6700	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
Indeno[1,2,3-cd]pyrene	ND		52000	6400	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
Isophorone	ND		52000	11000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
N-Nitrosodi-n-propylamine	ND		52000	8800	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
N-Nitrosodiphenylamine	ND		52000	42000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
Naphthalene	ND		52000	6700	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
Nitrobenzene	ND		52000	5800	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
Pentachlorophenol	ND		100000	52000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
Phenanthrene	ND		52000	7600	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
Phenol	ND		52000	7900	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10
Pyrene	ND		52000	6100	ug/Kg	☼	06/03/21 15:00	06/08/21 22:08	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*0*	*S1-*	*54 - 120*	*06/03/21 15:00*	*06/08/21 22:08*	*10*
2-Fluorobiphenyl	*0*	*S1-*	*60 - 120*	*06/03/21 15:00*	*06/08/21 22:08*	*10*
2-Fluorophenol	*0*	*S1-*	*52 - 120*	*06/03/21 15:00*	*06/08/21 22:08*	*10*
Nitrobenzene-d5	*0*	*S1-*	*53 - 120*	*06/03/21 15:00*	*06/08/21 22:08*	*10*
p-Terphenyl-d14	*0*	*S1-*	*79 - 130*	*06/03/21 15:00*	*06/08/21 22:08*	*10*
Phenol-d5	*0*	*S1-*	*54 - 120*	*06/03/21 15:00*	*06/08/21 22:08*	*10*

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-185463-1

Client Sample ID: BLDG10-SP-034
Date Collected: 06/01/21 15:20
Date Received: 06/02/21 10:00

Lab Sample ID: 480-185463-3
Matrix: Solid
Percent Solids: 64.1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.040	0.0018	mg/L		06/04/21 15:56	06/07/21 20:24	1
2,4-Dinitrotoluene	ND		0.020	0.0017	mg/L		06/04/21 15:56	06/07/21 20:24	1
Hexachlorobenzene	ND		0.020	0.0020	mg/L		06/04/21 15:56	06/07/21 20:24	1
Hexachlorobutadiene	ND		0.020	0.0027	mg/L		06/04/21 15:56	06/07/21 20:24	1
Hexachloroethane	ND		0.020	0.0023	mg/L		06/04/21 15:56	06/07/21 20:24	1
3-Methylphenol	ND		0.040	0.0016	mg/L		06/04/21 15:56	06/07/21 20:24	1
2-Methylphenol	ND		0.020	0.0016	mg/L		06/04/21 15:56	06/07/21 20:24	1
4-Methylphenol	ND		0.040	0.0014	mg/L		06/04/21 15:56	06/07/21 20:24	1
Nitrobenzene	ND		0.020	0.0011	mg/L		06/04/21 15:56	06/07/21 20:24	1
Pentachlorophenol	ND		0.040	0.0088	mg/L		06/04/21 15:56	06/07/21 20:24	1
Pyridine	ND	*1	0.10	0.0016	mg/L		06/04/21 15:56	06/07/21 20:24	1
2,4,5-Trichlorophenol	ND		0.020	0.0019	mg/L		06/04/21 15:56	06/07/21 20:24	1
2,4,6-Trichlorophenol	ND		0.020	0.0024	mg/L		06/04/21 15:56	06/07/21 20:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*101*		*41 - 120*	*06/04/21 15:56*	*06/07/21 20:24*	*1*
2-Fluorobiphenyl	*97*		*48 - 120*	*06/04/21 15:56*	*06/07/21 20:24*	*1*
2-Fluorophenol	*54*		*35 - 120*	*06/04/21 15:56*	*06/07/21 20:24*	*1*
Nitrobenzene-d5	*84*		*46 - 120*	*06/04/21 15:56*	*06/07/21 20:24*	*1*
p-Terphenyl-d14	*103*		*60 - 148*	*06/04/21 15:56*	*06/07/21 20:24*	*1*
Phenol-d5	*36*		*22 - 120*	*06/04/21 15:56*	*06/07/21 20:24*	*1*

Method: 8081B - Organochlorine Pesticides (GC) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.00020	0.0000060	mg/L		06/04/21 16:07	06/06/21 18:02	1
Chlordane (technical)	ND		0.0020	0.000029	mg/L		06/04/21 16:07	06/06/21 18:02	1
Endrin	ND		0.00020	0.000014	mg/L		06/04/21 16:07	06/06/21 18:02	1
Heptachlor	ND		0.00020	0.0000085	mg/L		06/04/21 16:07	06/06/21 18:02	1
Heptachlor epoxide	ND	*+ *1	0.00020	0.0000053	mg/L		06/04/21 16:07	06/06/21 18:02	1
Methoxychlor	ND		0.00020	0.000014	mg/L		06/04/21 16:07	06/06/21 18:02	1
Toxaphene	ND		0.0020	0.00012	mg/L		06/04/21 16:07	06/06/21 18:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*67*		*20 - 120*	*06/04/21 16:07*	*06/06/21 18:02*	*1*
DCB Decachlorobiphenyl	*66*		*20 - 120*	*06/04/21 16:07*	*06/06/21 18:02*	*1*
Tetrachloro-m-xylene	*94*		*44 - 120*	*06/04/21 16:07*	*06/06/21 18:02*	*1*
Tetrachloro-m-xylene	*72*		*44 - 120*	*06/04/21 16:07*	*06/06/21 18:02*	*1*

Method: 8151 - TCLP Herbicides - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND		0.0020	0.00036	mg/L		06/04/21 11:22	06/06/21 22:54	1
2,4-D	ND		0.0020	0.00040	mg/L		06/04/21 11:22	06/06/21 22:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*31*	*S1-*	*48 - 132*	*06/04/21 11:22*	*06/06/21 22:54*	*1*
2,4-Dichlorophenylacetic acid	*36*	*S1-*	*48 - 132*	*06/04/21 11:22*	*06/06/21 22:54*	*1*

Method: 6010C - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.015	0.0056	mg/L		06/04/21 11:01	06/08/21 13:24	1
Barium	**2.6**		1.0	0.10	mg/L		06/04/21 11:01	06/08/21 13:24	1

Client Sample ID: BLDG10-SP-034
Lab Sample ID: 480-185463-3
Date Collected: 06/01/21 15:20
Matrix: Solid
Date Received: 06/02/21 10:00
Percent Solids: 64.1

Method: 6010C - Metals (ICP) - TCLP (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	0.018		0.0020	0.00050	mg/L		06/04/21 11:01	06/08/21 13:24	1
Chromium	ND		0.020	0.010	mg/L		06/04/21 11:01	06/08/21 13:24	1
Lead	44.2		0.020	0.0030	mg/L		06/04/21 11:01	06/08/21 13:24	1
Selenium	ND		0.025	0.0087	mg/L		06/04/21 11:01	06/08/21 13:24	1
Silver	ND		0.0060	0.0017	mg/L		06/04/21 11:01	06/08/21 13:24	1

Method: 7470A - TCLP Mercury - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		06/04/21 12:50	06/04/21 17:30	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Flashpoint	>175		50.0	50.0	Degrees F			06/06/21 15:06	1
pH	7.0	HF	0.1	0.1	SU			06/04/21 11:50	1
Temperature	22.4	HF	0.001	0.001	Degrees C			06/04/21 11:50	1

Client Sample ID: RAMP-SP-035
Lab Sample ID: 480-185463-4
Date Collected: 06/01/21 15:30
Matrix: Solid
Date Received: 06/02/21 10:00
Percent Solids: 76.8

Method: 8260C - TCLP Volatiles - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.010	0.0041	mg/L			06/05/21 01:57	10
Carbon tetrachloride	ND		0.010	0.0027	mg/L			06/05/21 01:57	10
Chlorobenzene	ND		0.010	0.0075	mg/L			06/05/21 01:57	10
Chloroform	ND		0.010	0.0034	mg/L			06/05/21 01:57	10
1,2-Dichloroethane	ND	*+	0.010	0.0021	mg/L			06/05/21 01:57	10
1,1-Dichloroethene	ND		0.010	0.0029	mg/L			06/05/21 01:57	10
2-Butanone (MEK)	ND		0.050	0.013	mg/L			06/05/21 01:57	10
Tetrachloroethene	ND		0.010	0.0036	mg/L			06/05/21 01:57	10
Trichloroethene	ND		0.010	0.0046	mg/L			06/05/21 01:57	10
Vinyl chloride	ND		0.010	0.0090	mg/L			06/05/21 01:57	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*77 - 120*		*06/05/21 01:57*	*10*
Toluene-d8 (Surr)	*93*		*80 - 120*		*06/05/21 01:57*	*10*
4-Bromofluorobenzene (Surr)	*110*		*73 - 120*		*06/05/21 01:57*	*10*
Dibromofluoromethane (Surr)	*117*		*75 - 123*		*06/05/21 01:57*	*10*

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		140	39	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
1,1,2,2-Tetrachloroethane	ND		140	23	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
1,1,2-Trichloroethane	ND		140	30	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		140	71	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
1,1-Dichloroethane	ND		140	44	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
1,1-Dichloroethene	ND		140	49	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
1,2,4-Trichlorobenzene	ND		140	54	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
1,2-Dibromo-3-Chloropropane	ND		140	71	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
1,2-Dichlorobenzene	ND		140	36	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
1,2-Dichloroethane	ND		140	58	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-185463-1

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Client Sample ID: RAMP-SP-035
Date Collected: 06/01/21 15:30
Date Received: 06/02/21 10:00

Lab Sample ID: 480-185463-4
Matrix: Solid
Percent Solids: 76.8

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichloropropane	ND		140	23	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
1,3-Dichlorobenzene	ND		140	38	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
1,4-Dichlorobenzene	ND		140	20	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
2-Butanone (MEK)	ND		710	420	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
2-Hexanone	ND		710	290	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
4-Methyl-2-pentanone (MIBK)	ND		710	46	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
Acetone	ND		710	580	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
Benzene	ND		140	27	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
Bromodichloromethane	ND		140	28	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
Bromoform	ND		140	71	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
Bromomethane	ND		140	31	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
Carbon disulfide	ND		140	65	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
Carbon tetrachloride	ND		140	36	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
Chlorobenzene	ND		140	19	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
Dibromochloromethane	ND		140	69	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
Chloroethane	ND		140	30	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
Chloroform	ND		140	98	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
Chloromethane	ND		140	34	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
cis-1,2-Dichloroethene	ND		140	39	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
cis-1,3-Dichloropropene	ND		140	34	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
Cyclohexane	ND		140	32	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
Dichlorodifluoromethane	ND		140	62	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
Ethylbenzene	ND		140	41	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
1,2-Dibromoethane	ND		140	25	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
Isopropylbenzene	ND		140	21	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
Methyl acetate	ND		710	68	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
Methyl tert-butyl ether	ND		140	54	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
Methylcyclohexane	ND		140	67	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
Methylene Chloride	ND		140	28	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
Styrene	ND		140	34	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
Tetrachloroethene	ND		140	19	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
Toluene	ND		140	38	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
trans-1,2-Dichloroethene	ND		140	34	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
trans-1,3-Dichloropropene	ND		140	14	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
Trichloroethene	ND		140	40	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
Trichlorofluoromethane	ND		140	67	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
Vinyl chloride	ND		140	48	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1
Xylenes, Total	ND		280	79	ug/Kg	☼	06/06/21 11:34	06/08/21 15:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*50 - 149*	*06/06/21 11:34*	*06/08/21 15:03*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*53 - 146*	*06/06/21 11:34*	*06/08/21 15:03*	*1*
4-Bromofluorobenzene (Surr)	*101*		*49 - 148*	*06/06/21 11:34*	*06/08/21 15:03*	*1*
Dibromofluoromethane (Surr)	*95*		*60 - 140*	*06/06/21 11:34*	*06/08/21 15:03*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biphenyl	ND		2200	320	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
bis (2-chloroisopropyl) ether	ND		2200	430	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
2,4,5-Trichlorophenol	ND		2200	590	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

## Client Sample ID: RAMP-SP-035	Lab Sample ID: 480-185463-4

Date Collected: 06/01/21 15:30	**Matrix: Solid**

Date Received: 06/02/21 10:00	**Percent Solids: 76.8**

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	ND		2200	430	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
2,4-Dichlorophenol	ND		2200	230	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
2,4-Dimethylphenol	ND		2200	520	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
2,4-Dinitrophenol	ND		21000	10000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
2,4-Dinitrotoluene	ND		2200	450	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
2,6-Dinitrotoluene	ND		2200	250	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
2-Chloronaphthalene	ND		2200	360	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
1,4-Dioxane	ND		1300	700	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
2-Chlorophenol	ND		4200	390	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
2-Methylnaphthalene	ND		2200	430	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
2-Methylphenol	ND		2200	250	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
2-Nitroaniline	ND		4200	320	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
2-Nitrophenol	ND		2200	610	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
3,3'-Dichlorobenzidine	ND		4200	2500	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
3-Nitroaniline	ND		4200	600	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
4,6-Dinitro-2-methylphenol	ND		4200	2200	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
4-Bromophenyl phenyl ether	ND		2200	310	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
4-Chloro-3-methylphenol	ND		2200	530	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
4-Chloroaniline	ND		2200	530	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
4-Chlorophenyl phenyl ether	ND		2200	270	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
4-Methylphenol	ND		4200	250	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
4-Nitroaniline	ND		4200	1100	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
4-Nitrophenol	ND		4200	1500	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
Acenaphthene	ND		2200	320	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
Acenaphthylene	ND		2200	280	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
Acetophenone	ND		2200	290	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
Anthracene	ND		2200	530	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
Atrazine	ND		2200	750	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
Benzaldehyde	ND		2200	1700	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
Benzo[a]anthracene	ND		2200	220	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
Benzo[a]pyrene	ND		2200	320	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
Benzo[b]fluoranthene	**390**	**J K**	2200	340	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
Benzo[g,h,i]perylene	**230**	**J**	2200	230	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
Benzo[k]fluoranthene	ND		2200	280	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
Bis(2-chloroethoxy)methane	ND		2200	460	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
Bis(2-chloroethyl)ether	ND		2200	280	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
Bis(2-ethylhexyl) phthalate	**3100**		2200	740	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
Butyl benzyl phthalate	ND		2200	360	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
Caprolactam	ND		2200	650	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
Carbazole	ND		2200	250	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
Chrysene	ND		2200	480	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
Di-n-butyl phthalate	ND		2200	370	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
Di-n-octyl phthalate	ND		2200	250	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
Dibenz(a,h)anthracene	ND		2200	380	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
Dibenzofuran	ND		2200	250	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
Diethyl phthalate	ND		2200	280	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
Dimethyl phthalate	ND		2200	250	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
Fluoranthene	**330**	**J**	2200	230	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
Fluorene	ND		2200	250	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1

Client Sample ID: RAMP-SP-035
Date Collected: 06/01/21 15:30
Date Received: 06/02/21 10:00

Lab Sample ID: 480-185463-4
Matrix: Solid
Percent Solids: 76.8

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexachlorobenzene	ND		2200	290	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
Hexachlorobutadiene	ND		2200	320	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
Hexachlorocyclopentadiene	ND		2200	290	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
Hexachloroethane	ND		2200	280	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
Indeno[1,2,3-cd]pyrene	ND		2200	270	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
Isophorone	ND		2200	460	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
N-Nitrosodi-n-propylamine	ND		2200	370	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
N-Nitrosodiphenylamine	ND		2200	1800	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
Naphthalene	ND		2200	280	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
Nitrobenzene	ND		2200	240	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
Pentachlorophenol	ND		4200	2200	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
Phenanthrene	ND		2200	320	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
Phenol	ND		2200	330	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1
Pyrene	**380**	**J**	2200	250	ug/Kg	☼	06/03/21 15:00	06/08/21 22:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*63*		*54 - 120*	*06/03/21 15:00*	*06/08/21 22:33*	*1*
2-Fluorobiphenyl	*99*		*60 - 120*	*06/03/21 15:00*	*06/08/21 22:33*	*1*
2-Fluorophenol	*83*		*52 - 120*	*06/03/21 15:00*	*06/08/21 22:33*	*1*
Nitrobenzene-d5	*90*		*53 - 120*	*06/03/21 15:00*	*06/08/21 22:33*	*1*
p-Terphenyl-d14	*106*		*79 - 130*	*06/03/21 15:00*	*06/08/21 22:33*	*1*
Phenol-d5	*72*		*54 - 120*	*06/03/21 15:00*	*06/08/21 22:33*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.040	0.0018	mg/L		06/04/21 15:56	06/07/21 20:49	1
2,4-Dinitrotoluene	ND		0.020	0.0017	mg/L		06/04/21 15:56	06/07/21 20:49	1
Hexachlorobenzene	ND		0.020	0.0020	mg/L		06/04/21 15:56	06/07/21 20:49	1
Hexachlorobutadiene	ND		0.020	0.0027	mg/L		06/04/21 15:56	06/07/21 20:49	1
Hexachloroethane	ND		0.020	0.0023	mg/L		06/04/21 15:56	06/07/21 20:49	1
3-Methylphenol	ND		0.040	0.0016	mg/L		06/04/21 15:56	06/07/21 20:49	1
2-Methylphenol	ND		0.020	0.0016	mg/L		06/04/21 15:56	06/07/21 20:49	1
4-Methylphenol	ND		0.040	0.0014	mg/L		06/04/21 15:56	06/07/21 20:49	1
Nitrobenzene	ND		0.020	0.0011	mg/L		06/04/21 15:56	06/07/21 20:49	1
Pentachlorophenol	ND		0.040	0.0088	mg/L		06/04/21 15:56	06/07/21 20:49	1
Pyridine	ND	*1	0.10	0.0016	mg/L		06/04/21 15:56	06/07/21 20:49	1
2,4,5-Trichlorophenol	ND		0.020	0.0019	mg/L		06/04/21 15:56	06/07/21 20:49	1
2,4,6-Trichlorophenol	ND		0.020	0.0024	mg/L		06/04/21 15:56	06/07/21 20:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*100*		*41 - 120*	*06/04/21 15:56*	*06/07/21 20:49*	*1*
2-Fluorobiphenyl	*97*		*48 - 120*	*06/04/21 15:56*	*06/07/21 20:49*	*1*
2-Fluorophenol	*54*		*35 - 120*	*06/04/21 15:56*	*06/07/21 20:49*	*1*
Nitrobenzene-d5	*90*		*46 - 120*	*06/04/21 15:56*	*06/07/21 20:49*	*1*
p-Terphenyl-d14	*105*		*60 - 148*	*06/04/21 15:56*	*06/07/21 20:49*	*1*
Phenol-d5	*38*		*22 - 120*	*06/04/21 15:56*	*06/07/21 20:49*	*1*

Method: 8081B - Organochlorine Pesticides (GC) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.00020	0.0000060	mg/L		06/04/21 16:07	06/06/21 18:22	1

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-185463-1

Client Sample ID: RAMP-SP-035

Lab Sample ID: 480-185463-4
Date Collected: 06/01/21 15:30
Matrix: Solid
Date Received: 06/02/21 10:00
Percent Solids: 76.8

Method: 8081B - Organochlorine Pesticides (GC) - TCLP (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlordane (technical)	ND		0.0020	0.000029	mg/L		06/04/21 16:07	06/06/21 18:22	1
Endrin	ND		0.00020	0.000014	mg/L		06/04/21 16:07	06/06/21 18:22	1
Heptachlor	ND		0.00020	0.0000085	mg/L		06/04/21 16:07	06/06/21 18:22	1
Heptachlor epoxide	ND	*+ *1	0.00020	0.0000053	mg/L		06/04/21 16:07	06/06/21 18:22	1
Methoxychlor	ND		0.00020	0.000014	mg/L		06/04/21 16:07	06/06/21 18:22	1
Toxaphene	ND		0.0020	0.00012	mg/L		06/04/21 16:07	06/06/21 18:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*75*		*20 - 120*	*06/04/21 16:07*	*06/06/21 18:22*	*1*
DCB Decachlorobiphenyl	*67*		*20 - 120*	*06/04/21 16:07*	*06/06/21 18:22*	*1*
Tetrachloro-m-xylene	*93*		*44 - 120*	*06/04/21 16:07*	*06/06/21 18:22*	*1*
Tetrachloro-m-xylene	*69*		*44 - 120*	*06/04/21 16:07*	*06/06/21 18:22*	*1*

Method: 8151 - TCLP Herbicides - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND		0.0020	0.00036	mg/L		06/04/21 11:22	06/06/21 23:23	1
2,4-D	ND		0.0020	0.00040	mg/L		06/04/21 11:22	06/06/21 23:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*30*	*S1-*	*48 - 132*	*06/04/21 11:22*	*06/06/21 23:23*	*1*
2,4-Dichlorophenylacetic acid	*32*	*S1-*	*48 - 132*	*06/04/21 11:22*	*06/06/21 23:23*	*1*

Method: 6010C - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.0079**	**J**	0.015	0.0056	mg/L		06/04/21 11:01	06/08/21 13:28	1
Barium	**0.51**	**J**	1.0	0.10	mg/L		06/04/21 11:01	06/08/21 13:28	1
Cadmium	**0.019**		0.0020	0.00050	mg/L		06/04/21 11:01	06/08/21 13:28	1
Chromium	ND		0.020	0.010	mg/L		06/04/21 11:01	06/08/21 13:28	1
Lead	**0.14**		0.020	0.0030	mg/L		06/04/21 11:01	06/08/21 13:28	1
Selenium	ND		0.025	0.0087	mg/L		06/04/21 11:01	06/08/21 13:28	1
Silver	ND		0.0060	0.0017	mg/L		06/04/21 11:01	06/08/21 13:28	1

Method: 7470A - TCLP Mercury - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		06/04/21 12:50	06/04/21 17:31	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Flashpoint	**>175**		50.0	50.0	Degrees F			06/07/21 17:03	1
pH	**7.7**	**HF**	0.1	0.1	SU			06/04/21 11:50	1
Temperature	**22.6**	**HF**	0.001	0.001	Degrees C			06/04/21 11:50	1

Client Sample ID: BLDG4-SP-036

Lab Sample ID: 480-185463-5
Date Collected: 06/01/21 16:00
Matrix: Solid
Date Received: 06/02/21 10:00
Percent Solids: 63.2

Method: 8260C - TCLP Volatiles - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.010	0.0041	mg/L			06/05/21 02:21	10
Carbon tetrachloride	ND		0.010	0.0027	mg/L			06/05/21 02:21	10
Chlorobenzene	ND		0.010	0.0075	mg/L			06/05/21 02:21	10

Client Sample ID: BLDG4-SP-036

Date Collected: 06/01/21 16:00
Date Received: 06/02/21 10:00

Lab Sample ID: 480-185463-5

Matrix: Solid
Percent Solids: 63.2

Method: 8260C - TCLP Volatiles - TCLP (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroform	ND		0.010	0.0034	mg/L			06/05/21 02:21	10
1,2-Dichloroethane	ND	*+	0.010	0.0021	mg/L			06/05/21 02:21	10
1,1-Dichloroethene	ND		0.010	0.0029	mg/L			06/05/21 02:21	10
2-Butanone (MEK)	ND		0.050	0.013	mg/L			06/05/21 02:21	10
Tetrachloroethene	ND		0.010	0.0036	mg/L			06/05/21 02:21	10
Trichloroethene	ND		0.010	0.0046	mg/L			06/05/21 02:21	10
Vinyl chloride	ND		0.010	0.0090	mg/L			06/05/21 02:21	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*77 - 120*		*06/05/21 02:21*	*10*
Toluene-d8 (Surr)	*92*		*80 - 120*		*06/05/21 02:21*	*10*
4-Bromofluorobenzene (Surr)	*109*		*73 - 120*		*06/05/21 02:21*	*10*
Dibromofluoromethane (Surr)	*112*		*75 - 123*		*06/05/21 02:21*	*10*

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND	F1 vs	7.9	0.57	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
1,1,2,2-Tetrachloroethane	ND	*3 vs	7.9	1.3	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
1,1,2-Trichloroethane	ND	F1 vs	7.9	1.0	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	F1 vs	7.9	1.8	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
1,1-Dichloroethane	ND	vs	7.9	0.96	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
1,1-Dichloroethene	ND	vs	7.9	0.97	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
1,2,4-Trichlorobenzene	ND	F1 *3 vs	7.9	0.48	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
1,2-Dibromo-3-Chloropropane	ND	F1 *3 vs	7.9	4.0	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
1,2-Dichlorobenzene	ND	F1 *3 vs	7.9	0.62	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
1,2-Dichloroethane	ND	F1 vs	7.9	0.40	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
1,2-Dichloropropane	ND	F1 vs	7.9	4.0	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
1,3-Dichlorobenzene	ND	F1 *3 vs	7.9	0.41	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
1,4-Dichlorobenzene	ND	F1 *3 vs	7.9	1.1	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
2-Butanone (MEK)	ND	F1 vs	40	2.9	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
2-Hexanone	ND	vs	40	4.0	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
4-Methyl-2-pentanone (MIBK)	ND	vs	40	2.6	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
Acetone	**18**	**J F1 vs**	40	6.7	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
Benzene	ND	F1 vs	7.9	0.39	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
Bromodichloromethane	ND	F1 vs	7.9	1.1	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
Bromoform	ND	F1 vs	7.9	4.0	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
Bromomethane	ND	vs	7.9	0.71	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
Carbon disulfide	ND	F1 vs	7.9	4.0	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
Carbon tetrachloride	ND	F1 vs	7.9	0.77	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
Chlorobenzene	ND	F1 vs	7.9	1.0	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
Dibromochloromethane	ND	F1 vs	7.9	1.0	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
Chloroethane	ND	vs	7.9	1.8	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
Chloroform	ND	vs	7.9	0.49	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
Chloromethane	ND	vs	7.9	0.48	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
cis-1,2-Dichloroethene	ND	vs	7.9	1.0	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
cis-1,3-Dichloropropene	ND	F1 vs	7.9	1.1	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
Cyclohexane	ND	F1 vs	7.9	1.1	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
Dichlorodifluoromethane	ND	vs	7.9	0.65	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
Ethylbenzene	ND	F1 vs	7.9	0.55	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
1,2-Dibromoethane	ND	F1 vs	7.9	1.0	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1

Client: Integral Consulting Inc — Job ID: 480-185463-1
Project/Site: Project EF1017

Client Sample ID: BLDG4-SP-036 — Lab Sample ID: 480-185463-5

Date Collected: 06/01/21 16:00 — **Matrix: Solid**
Date Received: 06/02/21 10:00 — **Percent Solids: 63.2**

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Isopropylbenzene	ND	F1 *3 vs	7.9	1.2	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
Methyl acetate	ND	vs	40	4.8	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
Methyl tert-butyl ether	ND	vs	7.9	0.78	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
Methylcyclohexane	ND	F1 vs	7.9	1.2	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
Methylene Chloride	ND	vs	7.9	3.6	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
Styrene	ND	F1 vs	7.9	0.40	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
Tetrachloroethene	ND	F1 vs	7.9	1.1	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
Toluene	ND	F1 vs	7.9	0.60	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
trans-1,2-Dichloroethene	ND	vs	7.9	0.82	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
trans-1,3-Dichloropropene	ND	F1 vs	7.9	3.5	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
Trichloroethene	ND	F1 vs	7.9	1.7	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
Trichlorofluoromethane	ND	vs	7.9	0.75	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
Vinyl chloride	ND	vs	7.9	0.96	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1
Xylenes, Total	ND	F1 vs	16	1.3	ug/Kg	☼	06/07/21 10:00	06/07/21 18:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*113*		*71 - 125*	*06/07/21 10:00*	*06/07/21 18:17*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*64 - 126*	*06/07/21 10:00*	*06/07/21 18:17*	*1*
4-Bromofluorobenzene (Surr)	*74*		*72 - 126*	*06/07/21 10:00*	*06/07/21 18:17*	*1*
Dibromofluoromethane (Surr)	*105*		*60 - 140*	*06/07/21 10:00*	*06/07/21 18:17*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biphenyl	ND		40000	5800	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
bis (2-chloroisopropyl) ether	ND		40000	7900	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
2,4,5-Trichlorophenol	ND		40000	11000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
2,4,6-Trichlorophenol	ND		40000	7900	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
2,4-Dichlorophenol	ND		40000	4200	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
2,4-Dimethylphenol	ND		40000	9600	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
2,4-Dinitrophenol	ND		390000	180000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
2,4-Dinitrotoluene	ND		40000	8200	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
2,6-Dinitrotoluene	ND		40000	4700	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
2-Chloronaphthalene	ND		40000	6500	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
1,4-Dioxane	ND		23000	13000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
2-Chlorophenol	ND		77000	7200	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
2-Methylnaphthalene	ND		40000	7900	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
2-Methylphenol	ND		40000	4700	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
2-Nitroaniline	ND		77000	5800	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
2-Nitrophenol	ND		40000	11000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
3,3'-Dichlorobenzidine	ND		77000	47000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
3-Nitroaniline	ND		77000	11000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
4,6-Dinitro-2-methylphenol	ND		77000	40000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
4-Bromophenyl phenyl ether	ND		40000	5600	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
4-Chloro-3-methylphenol	ND		40000	9800	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
4-Chloroaniline	ND		40000	9800	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
4-Chlorophenyl phenyl ether	ND		40000	4900	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
4-Methylphenol	ND		77000	4700	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
4-Nitroaniline	ND		77000	21000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
4-Nitrophenol	ND		77000	28000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
Acenaphthene	ND		40000	5800	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5

Client Sample ID: BLDG4-SP-036
Date Collected: 06/01/21 16:00
Date Received: 06/02/21 10:00

Lab Sample ID: 480-185463-5
Matrix: Solid
Percent Solids: 63.2

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthylene	ND		40000	5100	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
Acetophenone	ND		40000	5400	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
Anthracene	ND		40000	9800	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
Atrazine	ND		40000	14000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
Benzaldehyde	ND		40000	31000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
Benzo[a]anthracene	ND		40000	4000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
Benzo[a]pyrene	ND		40000	5800	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
Benzo[b]fluoranthene	ND		40000	6300	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
Benzo[g,h,i]perylene	ND		40000	4200	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
Benzo[k]fluoranthene	ND		40000	5100	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
Bis(2-chloroethoxy)methane	ND		40000	8400	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
Bis(2-chloroethyl)ether	ND		40000	5100	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
Bis(2-ethylhexyl) phthalate	ND		40000	14000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
Butyl benzyl phthalate	ND		40000	6500	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
Caprolactam	ND		40000	12000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
Carbazole	ND		40000	4700	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
Chrysene	ND		40000	8900	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
Di-n-butyl phthalate	ND		40000	6800	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
Di-n-octyl phthalate	ND		40000	4700	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
Dibenz(a,h)anthracene	ND		40000	7000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
Dibenzofuran	ND		40000	4700	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
Diethyl phthalate	ND		40000	5100	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
Dimethyl phthalate	ND		40000	4700	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
Fluoranthene	ND		40000	4200	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
Fluorene	ND		40000	4700	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
Hexachlorobenzene	ND		40000	5400	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
Hexachlorobutadiene	ND		40000	5800	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
Hexachlorocyclopentadiene	ND		40000	5400	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
Hexachloroethane	ND		40000	5100	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
Indeno[1,2,3-cd]pyrene	ND		40000	4900	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
Isophorone	ND		40000	8400	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
N-Nitrosodi-n-propylamine	ND		40000	6800	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
N-Nitrosodiphenylamine	ND		40000	32000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
Naphthalene	ND		40000	5100	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
Nitrobenzene	ND		40000	4400	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
Pentachlorophenol	ND		77000	40000	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
Phenanthrene	ND		40000	5800	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
Phenol	ND		40000	6100	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5
Pyrene	ND		40000	4700	ug/Kg	☼	06/03/21 15:00	06/08/21 22:57	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*0*	*S1-*	*54 - 120*	*06/03/21 15:00*	*06/08/21 22:57*	*5*
2-Fluorobiphenyl	*0*	*S1-*	*60 - 120*	*06/03/21 15:00*	*06/08/21 22:57*	*5*
2-Fluorophenol	*0*	*S1-*	*52 - 120*	*06/03/21 15:00*	*06/08/21 22:57*	*5*
Nitrobenzene-d5	*0*	*S1-*	*53 - 120*	*06/03/21 15:00*	*06/08/21 22:57*	*5*
p-Terphenyl-d14	*91*		*79 - 130*	*06/03/21 15:00*	*06/08/21 22:57*	*5*
Phenol-d5	*0*	*S1-*	*54 - 120*	*06/03/21 15:00*	*06/08/21 22:57*	*5*

Client Sample ID: BLDG4-SP-036
Lab Sample ID: 480-185463-5

Date Collected: 06/01/21 16:00
Date Received: 06/02/21 10:00
Matrix: Solid
Percent Solids: 63.2

Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.040	0.0018	mg/L		06/04/21 15:56	06/07/21 21:15	1
2,4-Dinitrotoluene	ND		0.020	0.0017	mg/L		06/04/21 15:56	06/07/21 21:15	1
Hexachlorobenzene	ND		0.020	0.0020	mg/L		06/04/21 15:56	06/07/21 21:15	1
Hexachlorobutadiene	ND		0.020	0.0027	mg/L		06/04/21 15:56	06/07/21 21:15	1
Hexachloroethane	ND		0.020	0.0023	mg/L		06/04/21 15:56	06/07/21 21:15	1
3-Methylphenol	ND		0.040	0.0016	mg/L		06/04/21 15:56	06/07/21 21:15	1
2-Methylphenol	ND		0.020	0.0016	mg/L		06/04/21 15:56	06/07/21 21:15	1
4-Methylphenol	ND		0.040	0.0014	mg/L		06/04/21 15:56	06/07/21 21:15	1
Nitrobenzene	ND		0.020	0.0011	mg/L		06/04/21 15:56	06/07/21 21:15	1
Pentachlorophenol	ND		0.040	0.0088	mg/L		06/04/21 15:56	06/07/21 21:15	1
Pyridine	ND	*1	0.10	0.0016	mg/L		06/04/21 15:56	06/07/21 21:15	1
2,4,5-Trichlorophenol	ND		0.020	0.0019	mg/L		06/04/21 15:56	06/07/21 21:15	1
2,4,6-Trichlorophenol	ND		0.020	0.0024	mg/L		06/04/21 15:56	06/07/21 21:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*110*		*41 - 120*	*06/04/21 15:56*	*06/07/21 21:15*	*1*
2-Fluorobiphenyl	*90*		*48 - 120*	*06/04/21 15:56*	*06/07/21 21:15*	*1*
2-Fluorophenol	*56*		*35 - 120*	*06/04/21 15:56*	*06/07/21 21:15*	*1*
Nitrobenzene-d5	*84*		*46 - 120*	*06/04/21 15:56*	*06/07/21 21:15*	*1*
p-Terphenyl-d14	*109*		*60 - 148*	*06/04/21 15:56*	*06/07/21 21:15*	*1*
Phenol-d5	*40*		*22 - 120*	*06/04/21 15:56*	*06/07/21 21:15*	*1*

Method: 8081B - Organochlorine Pesticides (GC) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.00020	0.0000060	mg/L		06/04/21 16:07	06/06/21 18:41	1
Chlordane (technical)	ND		0.0020	0.000029	mg/L		06/04/21 16:07	06/06/21 18:41	1
Endrin	ND		0.00020	0.000014	mg/L		06/04/21 16:07	06/06/21 18:41	1
Heptachlor	ND		0.00020	0.0000085	mg/L		06/04/21 16:07	06/06/21 18:41	1
Heptachlor epoxide	ND	*+ *1	0.00020	0.0000053	mg/L		06/04/21 16:07	06/06/21 18:41	1
Methoxychlor	ND		0.00020	0.000014	mg/L		06/04/21 16:07	06/06/21 18:41	1
Toxaphene	ND		0.0020	0.00012	mg/L		06/04/21 16:07	06/06/21 18:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*60*		*20 - 120*	*06/04/21 16:07*	*06/06/21 18:41*	*1*
DCB Decachlorobiphenyl	*61*		*20 - 120*	*06/04/21 16:07*	*06/06/21 18:41*	*1*
Tetrachloro-m-xylene	*81*		*44 - 120*	*06/04/21 16:07*	*06/06/21 18:41*	*1*
Tetrachloro-m-xylene	*76*		*44 - 120*	*06/04/21 16:07*	*06/06/21 18:41*	*1*

Method: 8151 - TCLP Herbicides - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND		0.0020	0.00036	mg/L		06/04/21 11:22	06/06/21 23:53	1
2,4-D	ND		0.0020	0.00040	mg/L		06/04/21 11:22	06/06/21 23:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*41*	*S1-*	*48 - 132*	*06/04/21 11:22*	*06/06/21 23:53*	*1*
2,4-Dichlorophenylacetic acid	*43*	*S1-*	*48 - 132*	*06/04/21 11:22*	*06/06/21 23:53*	*1*

Method: 6010C - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.013**	**J**	0.015	0.0056	mg/L		06/04/21 11:01	06/08/21 13:32	1
Barium	**0.50**	**J**	1.0	0.10	mg/L		06/04/21 11:01	06/08/21 13:32	1

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Client Sample ID: BLDG4-SP-036

Lab Sample ID: 480-185463-5

Date Collected: 06/01/21 16:00
Matrix: Solid
Date Received: 06/02/21 10:00
Percent Solids: 63.2

Method: 6010C - Metals (ICP) - TCLP (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	**0.029**		0.0020	0.00050	mg/L		06/04/21 11:01	06/08/21 13:32	1
Chromium	ND		0.020	0.010	mg/L		06/04/21 11:01	06/08/21 13:32	1
Lead	**0.13**		0.020	0.0030	mg/L		06/04/21 11:01	06/08/21 13:32	1
Selenium	ND		0.025	0.0087	mg/L		06/04/21 11:01	06/08/21 13:32	1
Silver	ND		0.0060	0.0017	mg/L		06/04/21 11:01	06/08/21 13:32	1

Method: 7470A - TCLP Mercury - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		06/04/21 12:50	06/04/21 17:33	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Flashpoint	**>175**		50.0	50.0	Degrees F			06/07/21 17:03	1
pH	**7.2**	**HF**	0.1	0.1	SU			06/04/21 11:50	1
Temperature	**23.1**	**HF**	0.001	0.001	Degrees C			06/04/21 11:50	1

Surrogate Summary

Method: 8260C - TCLP Volatiles

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		TOL	DCA	BFB	DBFM
Lab Sample ID	Client Sample ID	(80-120)	(77-120)	(73-120)	(75-123)
LCS 480-584048/6	Lab Control Sample	92	106	112	112
MB 480-584048/8	Method Blank	90	110	105	113

Surrogate Legend

TOL = Toluene-d8 (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260C - TCLP Volatiles

Matrix: Solid **Prep Type: TCLP**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	TOL	BFB	DBFM
Lab Sample ID	Client Sample ID	(77-120)	(80-120)	(73-120)	(75-123)
480-185463-1	BLDG6-SP-032	110	89	107	109
480-185463-2	BLDG2-SP-033	115	92	108	124 S1+
480-185463-3	BLDG10-SP-034	112	87	105	117
480-185463-4	RAMP-SP-035	116	93	110	117
480-185463-5	BLDG4-SP-036	108	92	109	112
LB 480-583748/1-A	Method Blank	116	90	108	118

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		TOL	DCA	BFB	DBFM
Lab Sample ID	Client Sample ID	(71-125)	(64-126)	(72-126)	(60-140)
480-185463-1	BLDG6-SP-032	99	97	91	98
480-185463-2	BLDG2-SP-033	100	96	92	98
480-185463-3	BLDG10-SP-034	98	101	93	98
480-185463-5	BLDG4-SP-036	113	101	74	105
480-185463-5 MS	BLDG4-SP-036	109	91	80	102
480-185463-5 MSD	BLDG4-SP-036	108	91	83	101
LCS 480-583880/1-A	Lab Control Sample	97	96	97	98
LCS 480-584259/2-A	Lab Control Sample	98	98	100	98
MB 480-583880/2-A	Method Blank	96	100	94	99
MB 480-584259/3-A	Method Blank	96	102	96	102

Surrogate Legend

TOL = Toluene-d8 (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Solid | **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		TOL	DCA	BFB	DBFM
Lab Sample ID	Client Sample ID	(50-149)	(53-146)	(49-148)	(60-140)
480-185463-4	RAMP-SP-035	99	100	101	95
LCS 480-584160/1-A	Lab Control Sample	99	99	101	99
MB 480-584160/2-A	Method Blank	99	96	101	96

Surrogate Legend

TOL = Toluene-d8 (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Solid | **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)					
		TBP	FBP	2FP	NBZ	TPHd14	PHL
Lab Sample ID	Client Sample ID	(54-120)	(60-120)	(52-120)	(53-120)	(79-130)	(54-120)
480-185463-1	BLDG6-SP-032	83	100	74	79	97	67
480-185463-2	BLDG2-SP-033	109	99	77	105	100	73
480-185463-3	BLDG10-SP-034	0 S1-	0 S1-	0 S1-	0 S1-	0 S1-	0 S1-
480-185463-4	RAMP-SP-035	63	99	83	90	106	72
480-185463-5	BLDG4-SP-036	0 S1-	0 S1-	0 S1-	0 S1-	91	0 S1-
LCS 480-583845/2-A	Lab Control Sample	109	96	80	87	102	73
MB 480-583845/1-A	Method Blank	90	88	73	84	105	74

Surrogate Legend

TBP = 2,4,6-Tribromophenol
FBP = 2-Fluorobiphenyl
2FP = 2-Fluorophenol
NBZ = Nitrobenzene-d5
TPHd14 = p-Terphenyl-d14
PHL = Phenol-d5

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Solid | **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)					
		TBP	FBP	2FP	NBZ	TPHd14	PHL
Lab Sample ID	Client Sample ID	(41-120)	(48-120)	(35-120)	(46-120)	(60-148)	(22-120)
LCS 480-584053/2-A	Lab Control Sample	93	94	53	80	103	38
LCSD 480-584053/3-A	Lab Control Sample Dup	108	97	64	93	104	41
MB 480-584053/1-A	Method Blank	87	79	48	79	100	34

Surrogate Legend

TBP = 2,4,6-Tribromophenol
FBP = 2-Fluorobiphenyl
2FP = 2-Fluorophenol
NBZ = Nitrobenzene-d5
TPHd14 = p-Terphenyl-d14
PHL = Phenol-d5

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Solid **Prep Type: TCLP**

		Percent Surrogate Recovery (Acceptance Limits)					
		TBP	FBP	2FP	NBZ	TPHd14	PHL
Lab Sample ID	Client Sample ID	(41-120)	(48-120)	(35-120)	(46-120)	(60-148)	(22-120)
480-185463-1	BLDG6-SP-032	94	88	50	81	97	40
480-185463-2	BLDG2-SP-033	86	80	51	80	103	31
480-185463-3	BLDG10-SP-034	101	97	54	84	103	36
480-185463-4	RAMP-SP-035	100	97	54	90	105	38
480-185463-5	BLDG4-SP-036	110	90	56	84	109	40
LB 480-583747/1-E	Method Blank	100	89	54	87	104	34

Surrogate Legend

TBP = 2,4,6-Tribromophenol
FBP = 2-Fluorobiphenyl
2FP = 2-Fluorophenol
NBZ = Nitrobenzene-d5
TPHd14 = p-Terphenyl-d14
PHL = Phenol-d5

Method: 8081B - Organochlorine Pesticides (GC)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCBP1	DCBP2	TCX1	TCX2
Lab Sample ID	Client Sample ID	(20-120)	(20-120)	(44-120)	(44-120)
LCS 480-584054/2-A	Lab Control Sample	45	40	76	67
LCSD 480-584054/3-A	Lab Control Sample Dup	47	46	83	75
MB 480-584054/1-A	Method Blank	53	44	94	74

Surrogate Legend

DCBP = DCB Decachlorobiphenyl
TCX = Tetrachloro-m-xylene

Method: 8081B - Organochlorine Pesticides (GC)

Matrix: Solid **Prep Type: TCLP**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCBP1	DCBP2	TCX1	TCX2
Lab Sample ID	Client Sample ID	(20-120)	(20-120)	(44-120)	(44-120)
480-185463-1	BLDG6-SP-032	74	71	95	78
480-185463-2	BLDG2-SP-033	161 S1+	150 S1+	176 S1+	155 S1+
480-185463-3	BLDG10-SP-034	67	66	94	72
480-185463-4	RAMP-SP-035	75	67	93	69
480-185463-5	BLDG4-SP-036	60	61	81	76
LB 480-583747/1-F	Method Blank	61	59	95	74

Surrogate Legend

DCBP = DCB Decachlorobiphenyl
TCX = Tetrachloro-m-xylene

Method: 8151 - TCLP Herbicides

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
		DCPAA1	DCPAA2
Lab Sample ID	Client Sample ID	(48-132)	(48-132)
LCS 480-584003/2-A	Lab Control Sample	33 S1-	36 S1-

Client: Integral Consulting Inc Job ID: 480-185463-1
Project/Site: Project EF1017

Method: 8151 - TCLP Herbicides (Continued)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
		DCPAA1	DCPAA2
Lab Sample ID	Client Sample ID	(48-132)	(48-132)
LCSD 480-584003/3-A	Lab Control Sample Dup	76	80
MB 480-584003/1-A	Method Blank	60	53

Surrogate Legend
DCPAA = 2,4-Dichlorophenylacetic acid

Method: 8151 - TCLP Herbicides

Matrix: Solid **Prep Type: TCLP**

		Percent Surrogate Recovery (Acceptance Limits)	
		DCPAA1	DCPAA2
Lab Sample ID	Client Sample ID	(48-132)	(48-132)
480-185463-1	BLDG6-SP-032	32 S1-	35 S1-
480-185463-2	BLDG2-SP-033	33 S1-	35 S1-
480-185463-3	BLDG10-SP-034	31 S1-	36 S1-
480-185463-4	RAMP-SP-035	30 S1-	32 S1-
480-185463-5	BLDG4-SP-036	41 S1-	43 S1-
LB 480-583747/1-C	Method Blank	40 S1-	40 S1-

Surrogate Legend
DCPAA = 2,4-Dichlorophenylacetic acid

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-185463-1

Method: 8260C - TCLP Volatiles

Lab Sample ID: MB 480-584048/8
Matrix: Solid
Analysis Batch: 584048

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.0010	0.00029	mg/L			06/04/21 23:40	1
1,2-Dichloroethane	ND		0.0010	0.00021	mg/L			06/04/21 23:40	1
2-Butanone (MEK)	ND		0.0050	0.0013	mg/L			06/04/21 23:40	1
Benzene	ND		0.0010	0.00041	mg/L			06/04/21 23:40	1
Carbon tetrachloride	ND		0.0010	0.00027	mg/L			06/04/21 23:40	1
Chlorobenzene	ND		0.0010	0.00075	mg/L			06/04/21 23:40	1
Chloroform	ND		0.0010	0.00034	mg/L			06/04/21 23:40	1
Tetrachloroethene	ND		0.0010	0.00036	mg/L			06/04/21 23:40	1
Trichloroethene	ND		0.0010	0.00046	mg/L			06/04/21 23:40	1
Vinyl chloride	ND		0.0010	0.00090	mg/L			06/04/21 23:40	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*90*		*80 - 120*		*06/04/21 23:40*	*1*
1,2-Dichloroethane-d4 (Surr)	*110*		*77 - 120*		*06/04/21 23:40*	*1*
4-Bromofluorobenzene (Surr)	*105*		*73 - 120*		*06/04/21 23:40*	*1*
Dibromofluoromethane (Surr)	*113*		*75 - 123*		*06/04/21 23:40*	*1*

Lab Sample ID: LCS 480-584048/6
Matrix: Solid
Analysis Batch: 584048

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	0.0250	0.0176		mg/L		71	66 - 127
1,2-Dichloroethane	0.0250	0.0312	*+	mg/L		125	75 - 120
2-Butanone (MEK)	0.125	0.101		mg/L		81	57 - 140
Benzene	0.0250	0.0216		mg/L		87	71 - 124
Carbon tetrachloride	0.0250	0.0316		mg/L		126	72 - 134
Chlorobenzene	0.0250	0.0240		mg/L		96	80 - 120
Chloroform	0.0250	0.0278		mg/L		111	73 - 127
Tetrachloroethene	0.0250	0.0260		mg/L		104	74 - 122
Trichloroethene	0.0250	0.0245		mg/L		98	74 - 123
Vinyl chloride	0.0250	0.0198		mg/L		79	65 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*92*		*80 - 120*
1,2-Dichloroethane-d4 (Surr)	*106*		*77 - 120*
4-Bromofluorobenzene (Surr)	*112*		*73 - 120*
Dibromofluoromethane (Surr)	*112*		*75 - 123*

Lab Sample ID: LB 480-583748/1-A
Matrix: Solid
Analysis Batch: 584048

Client Sample ID: Method Blank
Prep Type: TCLP

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.010	0.0029	mg/L			06/05/21 00:03	10
1,2-Dichloroethane	ND		0.010	0.0021	mg/L			06/05/21 00:03	10
2-Butanone (MEK)	ND		0.050	0.013	mg/L			06/05/21 00:03	10
Benzene	ND		0.010	0.0041	mg/L			06/05/21 00:03	10

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Method: 8260C - TCLP Volatiles (Continued)

Lab Sample ID: LB 480-583748/1-A
Matrix: Solid
Analysis Batch: 584048

Client Sample ID: Method Blank
Prep Type: TCLP

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	ND		0.010	0.0027	mg/L			06/05/21 00:03	10
Chlorobenzene	ND		0.010	0.0075	mg/L			06/05/21 00:03	10
Chloroform	ND		0.010	0.0034	mg/L			06/05/21 00:03	10
Tetrachloroethene	ND		0.010	0.0036	mg/L			06/05/21 00:03	10
Trichloroethene	ND		0.010	0.0046	mg/L			06/05/21 00:03	10
Vinyl chloride	ND		0.010	0.0090	mg/L			06/05/21 00:03	10

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*90*		*80 - 120*		*06/05/21 00:03*	*10*
1,2-Dichloroethane-d4 (Surr)	*116*		*77 - 120*		*06/05/21 00:03*	*10*
4-Bromofluorobenzene (Surr)	*108*		*73 - 120*		*06/05/21 00:03*	*10*
Dibromofluoromethane (Surr)	*118*		*75 - 123*		*06/05/21 00:03*	*10*

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 480-583880/2-A
Matrix: Solid
Analysis Batch: 583883

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 583880

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5.0	0.36	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
1,1,2,2-Tetrachloroethane	ND		5.0	0.81	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
1,1,2-Trichloroethane	ND		5.0	0.65	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		5.0	1.1	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
1,1-Dichloroethane	ND		5.0	0.61	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
1,1-Dichloroethene	ND		5.0	0.61	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
1,2,4-Trichlorobenzene	ND		5.0	0.30	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
1,2-Dibromo-3-Chloropropane	ND		5.0	2.5	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
1,2-Dichlorobenzene	ND		5.0	0.39	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
1,2-Dichloroethane	ND		5.0	0.25	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
1,2-Dichloropropane	ND		5.0	2.5	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
1,3-Dichlorobenzene	ND		5.0	0.26	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
1,4-Dichlorobenzene	ND		5.0	0.70	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
2-Butanone (MEK)	ND		25	1.8	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
2-Hexanone	ND		25	2.5	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
4-Methyl-2-pentanone (MIBK)	ND		25	1.6	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
Acetone	ND		25	4.2	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
Benzene	ND		5.0	0.25	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
Bromodichloromethane	ND		5.0	0.67	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
Bromoform	ND		5.0	2.5	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
Bromomethane	ND		5.0	0.45	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
Carbon disulfide	ND		5.0	2.5	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
Carbon tetrachloride	ND		5.0	0.48	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
Chlorobenzene	ND		5.0	0.66	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
Dibromochloromethane	ND		5.0	0.64	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
Chloroethane	ND		5.0	1.1	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
Chloroform	ND		5.0	0.31	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
Chloromethane	ND		5.0	0.30	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
cis-1,2-Dichloroethene	ND		5.0	0.64	ug/Kg		06/03/21 17:24	06/03/21 20:29	1

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-185463-1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 480-583880/2-A
Matrix: Solid
Analysis Batch: 583883

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 583880

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,3-Dichloropropene	ND		5.0	0.72	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
Cyclohexane	ND		5.0	0.70	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
Dichlorodifluoromethane	ND		5.0	0.41	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
Ethylbenzene	ND		5.0	0.35	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
1,2-Dibromoethane	ND		5.0	0.64	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
Isopropylbenzene	ND		5.0	0.75	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
Methyl acetate	ND		25	3.0	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
Methyl tert-butyl ether	ND		5.0	0.49	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
Methylcyclohexane	ND		5.0	0.76	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
Methylene Chloride	ND		5.0	2.3	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
Styrene	ND		5.0	0.25	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
Tetrachloroethene	ND		5.0	0.67	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
Toluene	ND		5.0	0.38	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
trans-1,2-Dichloroethene	ND		5.0	0.52	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
trans-1,3-Dichloropropene	ND		5.0	2.2	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
Trichloroethene	ND		5.0	1.1	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
Trichlorofluoromethane	ND		5.0	0.47	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
Vinyl chloride	ND		5.0	0.61	ug/Kg		06/03/21 17:24	06/03/21 20:29	1
Xylenes, Total	ND		10	0.84	ug/Kg		06/03/21 17:24	06/03/21 20:29	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*96*		*71 - 125*	*06/03/21 17:24*	*06/03/21 20:29*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*64 - 126*	*06/03/21 17:24*	*06/03/21 20:29*	*1*
4-Bromofluorobenzene (Surr)	*94*		*72 - 126*	*06/03/21 17:24*	*06/03/21 20:29*	*1*
Dibromofluoromethane (Surr)	*99*		*60 - 140*	*06/03/21 17:24*	*06/03/21 20:29*	*1*

Lab Sample ID: LCS 480-583880/1-A
Matrix: Solid
Analysis Batch: 583883

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 583880

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	50.0	47.1		ug/Kg		94	77 - 121
1,1,2,2-Tetrachloroethane	50.0	45.1		ug/Kg		90	80 - 120
1,1,2-Trichloroethane	50.0	45.7		ug/Kg		91	78 - 122
1,1,2-Trichloro-1,2,2-trifluoroethane	50.0	45.2		ug/Kg		90	60 - 140
1,1-Dichloroethane	50.0	45.1		ug/Kg		90	73 - 126
1,1-Dichloroethene	50.0	44.3		ug/Kg		89	59 - 125
1,2,4-Trichlorobenzene	50.0	43.5		ug/Kg		87	64 - 120
1,2-Dibromo-3-Chloropropane	50.0	43.6		ug/Kg		87	63 - 124
1,2-Dichlorobenzene	50.0	43.6		ug/Kg		87	75 - 120
1,2-Dichloroethane	50.0	44.1		ug/Kg		88	77 - 122
1,2-Dichloropropane	50.0	46.0		ug/Kg		92	75 - 124
1,3-Dichlorobenzene	50.0	44.8		ug/Kg		90	74 - 120
1,4-Dichlorobenzene	50.0	44.7		ug/Kg		89	73 - 120
2-Butanone (MEK)	250	215		ug/Kg		86	70 - 134
2-Hexanone	250	219		ug/Kg		88	59 - 130
4-Methyl-2-pentanone (MIBK)	250	215		ug/Kg		86	65 - 133
Acetone	250	193		ug/Kg		77	61 - 137

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 480-583880/1-A
Matrix: Solid
Analysis Batch: 583883

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 583880

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	50.0	46.1		ug/Kg		92	79 - 127
Bromodichloromethane	50.0	48.5		ug/Kg		97	80 - 122
Bromoform	50.0	43.9		ug/Kg		88	68 - 126
Bromomethane	50.0	55.0		ug/Kg		110	37 - 149
Carbon disulfide	50.0	43.3		ug/Kg		87	64 - 131
Carbon tetrachloride	50.0	48.0		ug/Kg		96	75 - 135
Chlorobenzene	50.0	44.8		ug/Kg		90	76 - 124
Dibromochloromethane	50.0	49.2		ug/Kg		98	76 - 125
Chloroethane	50.0	58.0		ug/Kg		116	69 - 135
Chloroform	50.0	44.9		ug/Kg		90	80 - 120
Chloromethane	50.0	48.8		ug/Kg		98	63 - 127
cis-1,2-Dichloroethene	50.0	44.9		ug/Kg		90	81 - 120
cis-1,3-Dichloropropene	50.0	48.2		ug/Kg		96	80 - 120
Cyclohexane	50.0	44.6		ug/Kg		89	65 - 120
Dichlorodifluoromethane	50.0	39.3		ug/Kg		79	57 - 142
Ethylbenzene	50.0	45.9		ug/Kg		92	80 - 120
1,2-Dibromoethane	50.0	44.5		ug/Kg		89	78 - 120
Isopropylbenzene	50.0	46.4		ug/Kg		93	72 - 120
Methyl acetate	100	83.9		ug/Kg		84	55 - 136
Methyl tert-butyl ether	50.0	42.8		ug/Kg		86	63 - 125
Methylcyclohexane	50.0	44.6		ug/Kg		89	60 - 140
Methylene Chloride	50.0	48.0		ug/Kg		96	61 - 127
Styrene	50.0	44.5		ug/Kg		89	80 - 120
Tetrachloroethene	50.0	44.1		ug/Kg		88	74 - 122
Toluene	50.0	45.3		ug/Kg		91	74 - 128
trans-1,2-Dichloroethene	50.0	44.8		ug/Kg		90	78 - 126
trans-1,3-Dichloropropene	50.0	47.9		ug/Kg		96	73 - 123
Trichloroethene	50.0	46.1		ug/Kg		92	77 - 129
Trichlorofluoromethane	50.0	49.4		ug/Kg		99	65 - 146
Vinyl chloride	50.0	53.7		ug/Kg		107	61 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*97*		*71 - 125*
1,2-Dichloroethane-d4 (Surr)	*96*		*64 - 126*
4-Bromofluorobenzene (Surr)	*97*		*72 - 126*
Dibromofluoromethane (Surr)	*98*		*60 - 140*

Lab Sample ID: MB 480-584160/2-A
Matrix: Solid
Analysis Batch: 584401

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 584160

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		100	28	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
1,1,2,2-Tetrachloroethane	ND		100	16	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
1,1,2-Trichloroethane	ND		100	21	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		100	50	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
1,1-Dichloroethane	ND		100	31	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
1,1-Dichloroethene	ND		100	35	ug/Kg		06/06/21 11:34	06/08/21 12:20	1

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-185463-1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 480-584160/2-A
Matrix: Solid
Analysis Batch: 584401

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 584160

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	ND		100	38	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
1,2-Dibromo-3-Chloropropane	ND		100	50	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
1,2-Dichlorobenzene	ND		100	26	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
1,2-Dichloroethane	ND		100	41	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
1,2-Dichloropropane	ND		100	16	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
1,3-Dichlorobenzene	ND		100	27	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
1,4-Dichlorobenzene	ND		100	14	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
2-Butanone (MEK)	ND		500	300	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
2-Hexanone	ND		500	210	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
4-Methyl-2-pentanone (MIBK)	ND		500	32	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
Acetone	ND		500	410	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
Benzene	ND		100	19	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
Bromodichloromethane	ND		100	20	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
Bromoform	ND		100	50	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
Bromomethane	ND		100	22	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
Carbon disulfide	ND		100	46	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
Carbon tetrachloride	ND		100	26	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
Chlorobenzene	ND		100	13	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
Dibromochloromethane	ND		100	48	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
Chloroethane	ND		100	21	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
Chloroform	ND		100	69	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
Chloromethane	ND		100	24	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
cis-1,2-Dichloroethene	ND		100	28	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
cis-1,3-Dichloropropene	ND		100	24	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
Cyclohexane	ND		100	22	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
Dichlorodifluoromethane	ND		100	44	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
Ethylbenzene	ND		100	29	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
1,2-Dibromoethane	ND		100	18	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
Isopropylbenzene	ND		100	15	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
Methyl acetate	ND		500	48	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
Methyl tert-butyl ether	ND		100	38	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
Methylcyclohexane	ND		100	47	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
Methylene Chloride	ND		100	20	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
Styrene	ND		100	24	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
Tetrachloroethene	ND		100	13	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
Toluene	ND		100	27	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
trans-1,2-Dichloroethene	ND		100	24	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
trans-1,3-Dichloropropene	ND		100	9.8	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
Trichloroethene	ND		100	28	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
Trichlorofluoromethane	ND		100	47	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
Vinyl chloride	ND		100	34	ug/Kg		06/06/21 11:34	06/08/21 12:20	1
Xylenes, Total	ND		200	55	ug/Kg		06/06/21 11:34	06/08/21 12:20	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*50 - 149*	*06/06/21 11:34*	*06/08/21 12:20*	*1*
1,2-Dichloroethane-d4 (Surr)	*96*		*53 - 146*	*06/06/21 11:34*	*06/08/21 12:20*	*1*
4-Bromofluorobenzene (Surr)	*101*		*49 - 148*	*06/06/21 11:34*	*06/08/21 12:20*	*1*
Dibromofluoromethane (Surr)	*96*		*60 - 140*	*06/06/21 11:34*	*06/08/21 12:20*	*1*

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 480-584160/1-A
Matrix: Solid
Analysis Batch: 584401

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 584160

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	2500	2540		ug/Kg		102	68 - 130
1,1,2,2-Tetrachloroethane	2500	2490		ug/Kg		100	73 - 120
1,1,2-Trichloroethane	2500	2600		ug/Kg		104	80 - 120
1,1,2-Trichloro-1,2,2-trifluoroethane	2500	2480		ug/Kg		99	10 - 179
1,1-Dichloroethane	2500	2530		ug/Kg		101	78 - 121
1,1-Dichloroethene	2500	2230		ug/Kg		89	48 - 133
1,2,4-Trichlorobenzene	2500	2550		ug/Kg		102	70 - 140
1,2-Dibromo-3-Chloropropane	2500	2310		ug/Kg		92	56 - 122
1,2-Dichlorobenzene	2500	2580		ug/Kg		103	78 - 125
1,2-Dichloroethane	2500	2540		ug/Kg		101	74 - 127
1,2-Dichloropropane	2500	2530		ug/Kg		101	80 - 120
1,3-Dichlorobenzene	2500	2550		ug/Kg		102	80 - 120
1,4-Dichlorobenzene	2500	2500		ug/Kg		100	80 - 120
2-Butanone (MEK)	12500	12400		ug/Kg		99	54 - 149
2-Hexanone	12500	11900		ug/Kg		95	59 - 127
4-Methyl-2-pentanone (MIBK)	12500	11900		ug/Kg		95	74 - 120
Acetone	12500	10900		ug/Kg		87	47 - 141
Benzene	2500	2530		ug/Kg		101	77 - 125
Bromodichloromethane	2500	2560		ug/Kg		102	71 - 121
Bromoform	2500	2320		ug/Kg		93	48 - 125
Bromomethane	2500	2000		ug/Kg		80	39 - 149
Carbon disulfide	2500	2540		ug/Kg		102	40 - 136
Carbon tetrachloride	2500	2590		ug/Kg		103	54 - 135
Chlorobenzene	2500	2550		ug/Kg		102	76 - 126
Dibromochloromethane	2500	2490		ug/Kg		100	64 - 120
Chloroethane	2500	1930		ug/Kg		77	23 - 150
Chloroform	2500	2460		ug/Kg		98	78 - 120
Chloromethane	2500	2570		ug/Kg		103	61 - 124
cis-1,2-Dichloroethene	2500	2490		ug/Kg		99	79 - 124
cis-1,3-Dichloropropene	2500	2740		ug/Kg		109	75 - 121
Cyclohexane	2500	2760		ug/Kg		110	49 - 129
Dichlorodifluoromethane	2500	2420		ug/Kg		97	10 - 150
Ethylbenzene	2500	2580		ug/Kg		103	78 - 124
1,2-Dibromoethane	2500	2540		ug/Kg		101	80 - 120
Isopropylbenzene	2500	2700		ug/Kg		108	76 - 120
Methyl acetate	5000	4790		ug/Kg		96	71 - 123
Methyl tert-butyl ether	2500	2420		ug/Kg		97	67 - 137
Methylcyclohexane	2500	2750		ug/Kg		110	50 - 130
Methylene Chloride	2500	2670		ug/Kg		107	75 - 118
Styrene	2500	2620		ug/Kg		105	80 - 120
Tetrachloroethene	2500	2520		ug/Kg		101	73 - 133
Toluene	2500	2640		ug/Kg		106	75 - 124
trans-1,2-Dichloroethene	2500	2540		ug/Kg		102	74 - 129
trans-1,3-Dichloropropene	2500	2620		ug/Kg		105	73 - 120
Trichloroethene	2500	2620		ug/Kg		105	75 - 131
Trichlorofluoromethane	2500	2540		ug/Kg		102	29 - 158
Vinyl chloride	2500	2550		ug/Kg		102	59 - 124

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-185463-1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 480-584160/1-A
Matrix: Solid
Analysis Batch: 584401

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 584160

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	*99*		*50 - 149*
1,2-Dichloroethane-d4 (Surr)	*99*		*53 - 146*
4-Bromofluorobenzene (Surr)	*101*		*49 - 148*
Dibromofluoromethane (Surr)	*99*		*60 - 140*

Lab Sample ID: MB 480-584259/3-A
Matrix: Solid
Analysis Batch: 584183

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 584259

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5.0	0.36	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
1,1,2,2-Tetrachloroethane	ND		5.0	0.81	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
1,1,2-Trichloroethane	ND		5.0	0.65	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		5.0	1.1	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
1,1-Dichloroethane	ND		5.0	0.61	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
1,1-Dichloroethene	ND		5.0	0.61	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
1,2,4-Trichlorobenzene	ND		5.0	0.30	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
1,2-Dibromo-3-Chloropropane	ND		5.0	2.5	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
1,2-Dichlorobenzene	ND		5.0	0.39	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
1,2-Dichloroethane	ND		5.0	0.25	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
1,2-Dichloropropane	ND		5.0	2.5	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
1,3-Dichlorobenzene	ND		5.0	0.26	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
1,4-Dichlorobenzene	ND		5.0	0.70	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
2-Butanone (MEK)	ND		25	1.8	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
2-Hexanone	ND		25	2.5	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
4-Methyl-2-pentanone (MIBK)	ND		25	1.6	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
Acetone	ND		25	4.2	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
Benzene	ND		5.0	0.25	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
Bromodichloromethane	ND		5.0	0.67	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
Bromoform	ND		5.0	2.5	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
Bromomethane	ND		5.0	0.45	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
Carbon disulfide	ND		5.0	2.5	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
Carbon tetrachloride	ND		5.0	0.48	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
Chlorobenzene	ND		5.0	0.66	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
Dibromochloromethane	ND		5.0	0.64	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
Chloroethane	ND		5.0	1.1	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
Chloroform	ND		5.0	0.31	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
Chloromethane	ND		5.0	0.30	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
cis-1,2-Dichloroethene	ND		5.0	0.64	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
cis-1,3-Dichloropropene	ND		5.0	0.72	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
Cyclohexane	ND		5.0	0.70	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
Dichlorodifluoromethane	ND		5.0	0.41	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
Ethylbenzene	ND		5.0	0.35	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
1,2-Dibromoethane	ND		5.0	0.64	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
Isopropylbenzene	ND		5.0	0.75	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
Methyl acetate	ND		25	3.0	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
Methyl tert-butyl ether	ND		5.0	0.49	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
Methylcyclohexane	ND		5.0	0.76	ug/Kg		06/07/21 10:00	06/07/21 11:05	1

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-185463-1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 480-584259/3-A
Matrix: Solid
Analysis Batch: 584183

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 584259

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Chloride	ND		5.0	2.3	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
Styrene	ND		5.0	0.25	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
Tetrachloroethene	ND		5.0	0.67	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
Toluene	ND		5.0	0.38	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
trans-1,2-Dichloroethene	ND		5.0	0.52	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
trans-1,3-Dichloropropene	ND		5.0	2.2	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
Trichloroethene	ND		5.0	1.1	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
Trichlorofluoromethane	ND		5.0	0.47	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
Vinyl chloride	ND		5.0	0.61	ug/Kg		06/07/21 10:00	06/07/21 11:05	1
Xylenes, Total	ND		10	0.84	ug/Kg		06/07/21 10:00	06/07/21 11:05	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*96*		*71 - 125*	*06/07/21 10:00*	*06/07/21 11:05*	*1*
1,2-Dichloroethane-d4 (Surr)	*102*		*64 - 126*	*06/07/21 10:00*	*06/07/21 11:05*	*1*
4-Bromofluorobenzene (Surr)	*96*		*72 - 126*	*06/07/21 10:00*	*06/07/21 11:05*	*1*
Dibromofluoromethane (Surr)	*102*		*60 - 140*	*06/07/21 10:00*	*06/07/21 11:05*	*1*

Lab Sample ID: LCS 480-584259/2-A
Matrix: Solid
Analysis Batch: 584183

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 584259

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	50.0	47.0		ug/Kg		94	77 - 121
1,1,2,2-Tetrachloroethane	50.0	42.2		ug/Kg		84	80 - 120
1,1,2-Trichloroethane	50.0	44.3		ug/Kg		89	78 - 122
1,1,2-Trichloro-1,2,2-trifluoroethane	50.0	44.6		ug/Kg		89	60 - 140
1,1-Dichloroethane	50.0	45.6		ug/Kg		91	73 - 126
1,1-Dichloroethene	50.0	44.5		ug/Kg		89	59 - 125
1,2,4-Trichlorobenzene	50.0	43.3		ug/Kg		87	64 - 120
1,2-Dibromo-3-Chloropropane	50.0	40.6		ug/Kg		81	63 - 124
1,2-Dichlorobenzene	50.0	42.5		ug/Kg		85	75 - 120
1,2-Dichloroethane	50.0	43.8		ug/Kg		88	77 - 122
1,2-Dichloropropane	50.0	46.1		ug/Kg		92	75 - 124
1,3-Dichlorobenzene	50.0	44.8		ug/Kg		90	74 - 120
1,4-Dichlorobenzene	50.0	44.6		ug/Kg		89	73 - 120
2-Butanone (MEK)	250	196		ug/Kg		78	70 - 134
2-Hexanone	250	203		ug/Kg		81	59 - 130
4-Methyl-2-pentanone (MIBK)	250	196		ug/Kg		78	65 - 133
Acetone	250	185		ug/Kg		74	61 - 137
Benzene	50.0	46.4		ug/Kg		93	79 - 127
Bromodichloromethane	50.0	49.0		ug/Kg		98	80 - 122
Bromoform	50.0	42.6		ug/Kg		85	68 - 126
Bromomethane	50.0	47.7		ug/Kg		95	37 - 149
Carbon disulfide	50.0	43.4		ug/Kg		87	64 - 131
Carbon tetrachloride	50.0	48.8		ug/Kg		98	75 - 135
Chlorobenzene	50.0	44.4		ug/Kg		89	76 - 124
Dibromochloromethane	50.0	47.9		ug/Kg		96	76 - 125
Chloroethane	50.0	49.7		ug/Kg		99	69 - 135

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-185463-1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 480-584259/2-A
Matrix: Solid
Analysis Batch: 584183

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 584259

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloroform	50.0	46.1		ug/Kg		92	80 - 120
Chloromethane	50.0	46.3		ug/Kg		93	63 - 127
cis-1,2-Dichloroethene	50.0	46.0		ug/Kg		92	81 - 120
cis-1,3-Dichloropropene	50.0	47.4		ug/Kg		95	80 - 120
Cyclohexane	50.0	41.0		ug/Kg		82	65 - 120
Dichlorodifluoromethane	50.0	37.8		ug/Kg		76	57 - 142
Ethylbenzene	50.0	45.6		ug/Kg		91	80 - 120
1,2-Dibromoethane	50.0	43.1		ug/Kg		86	78 - 120
Isopropylbenzene	50.0	45.1		ug/Kg		90	72 - 120
Methyl acetate	100	76.9		ug/Kg		77	55 - 136
Methyl tert-butyl ether	50.0	42.4		ug/Kg		85	63 - 125
Methylcyclohexane	50.0	43.0		ug/Kg		86	60 - 140
Methylene Chloride	50.0	47.7		ug/Kg		95	61 - 127
Styrene	50.0	43.9		ug/Kg		88	80 - 120
Tetrachloroethene	50.0	44.1		ug/Kg		88	74 - 122
Toluene	50.0	44.8		ug/Kg		90	74 - 128
trans-1,2-Dichloroethene	50.0	46.2		ug/Kg		92	78 - 126
trans-1,3-Dichloropropene	50.0	46.6		ug/Kg		93	73 - 123
Trichloroethene	50.0	46.6		ug/Kg		93	77 - 129
Trichlorofluoromethane	50.0	48.8		ug/Kg		98	65 - 146
Vinyl chloride	50.0	51.9		ug/Kg		104	61 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*98*		*71 - 125*
1,2-Dichloroethane-d4 (Surr)	*98*		*64 - 126*
4-Bromofluorobenzene (Surr)	*100*		*72 - 126*
Dibromofluoromethane (Surr)	*98*		*60 - 140*

Lab Sample ID: 480-185463-5 MS
Matrix: Solid
Analysis Batch: 584183

Client Sample ID: BLDG4-SP-036
Prep Type: Total/NA
Prep Batch: 584259

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	ND	F1 vs	78.6	63.2	vs	ug/Kg	☼	80	77 - 121
1,1,2,2-Tetrachloroethane	ND	*3 vs	78.6	88.7	*3 vs	ug/Kg	☼	113	80 - 120
1,1,2-Trichloroethane	ND	F1 vs	78.6	65.7	vs	ug/Kg	☼	84	78 - 122
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	F1 vs	78.6	46.4	F1 vs	ug/Kg	☼	59	60 - 140
1,1-Dichloroethane	ND	vs	78.6	69.3	vs	ug/Kg	☼	88	73 - 126
1,1-Dichloroethene	ND	vs	78.6	65.4	vs	ug/Kg	☼	83	59 - 125
1,2,4-Trichlorobenzene	ND	F1 *3 vs	78.6	10.8	F1 *3 vs	ug/Kg	☼	14	64 - 120
1,2-Dibromo-3-Chloropropane	ND	F1 *3 vs	78.6	55.8	*3 vs	ug/Kg	☼	71	63 - 124
1,2-Dichlorobenzene	ND	F1 *3 vs	78.6	42.1	F1 *3 vs	ug/Kg	☼	54	75 - 120
1,2-Dichloroethane	ND	F1 vs	78.6	59.3	F1 vs	ug/Kg	☼	75	77 - 122
1,2-Dichloropropane	ND	F1 vs	78.6	62.6	vs	ug/Kg	☼	80	75 - 124
1,3-Dichlorobenzene	ND	F1 *3 vs	78.6	45.5	F1 *3 vs	ug/Kg	☼	58	74 - 120
1,4-Dichlorobenzene	ND	F1 *3 vs	78.6	46.5	F1 *3 vs	ug/Kg	☼	59	73 - 120
2-Butanone (MEK)	ND	F1 vs	393	216	F1 vs	ug/Kg	☼	55	70 - 134
2-Hexanone	ND	vs	393	264	vs	ug/Kg	☼	67	59 - 130

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-185463-1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 480-185463-5 MS
Matrix: Solid
Analysis Batch: 584183

Client Sample ID: BLDG4-SP-036
Prep Type: Total/NA
Prep Batch: 584259

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
4-Methyl-2-pentanone (MIBK)	ND	vs	393	282	vs	ug/Kg	☼	72	65 - 133
Acetone	18	J F1 vs	393	203	F1 vs	ug/Kg	☼	47	61 - 137
Benzene	ND	F1 vs	78.6	64.9	vs	ug/Kg	☼	83	79 - 127
Bromodichloromethane	ND	F1 vs	78.6	61.1	F1 vs	ug/Kg	☼	78	80 - 122
Bromoform	ND	F1 vs	78.6	44.8	F1 vs	ug/Kg	☼	57	68 - 126
Bromomethane	ND	vs	78.6	79.9	vs	ug/Kg	☼	102	37 - 149
Carbon disulfide	ND	F1 vs	78.6	48.3	F1 vs	ug/Kg	☼	61	64 - 131
Carbon tetrachloride	ND	F1 vs	78.6	54.7	F1 vs	ug/Kg	☼	70	75 - 135
Chlorobenzene	ND	F1 vs	78.6	52.6	F1 vs	ug/Kg	☼	67	76 - 124
Dibromochloromethane	ND	F1 vs	78.6	62.4	vs	ug/Kg	☼	79	76 - 125
Chloroethane	ND	vs	78.6	92.4	vs	ug/Kg	☼	118	69 - 135
Chloroform	ND	vs	78.6	67.6	vs	ug/Kg	☼	86	80 - 120
Chloromethane	ND	vs	78.6	72.2	vs	ug/Kg	☼	92	63 - 127
cis-1,2-Dichloroethene	ND	vs	78.6	67.9	vs	ug/Kg	☼	86	80 - 120
cis-1,3-Dichloropropene	ND	F1 vs	78.6	53.8	F1 vs	ug/Kg	☼	68	80 - 120
Cyclohexane	ND	F1 vs	78.6	30.7	F1 vs	ug/Kg	☼	39	65 - 120
Dichlorodifluoromethane	ND	vs	78.6	55.3	vs	ug/Kg	☼	70	57 - 142
Ethylbenzene	ND	F1 vs	78.6	46.3	F1 vs	ug/Kg	☼	59	80 - 120
1,2-Dibromoethane	ND	F1 vs	78.6	59.0	F1 vs	ug/Kg	☼	75	78 - 120
Isopropylbenzene	ND	F1 *3 vs	78.6	61.6	*3 vs	ug/Kg	☼	78	72 - 120
Methyl acetate	ND	vs	157	105	vs	ug/Kg	☼	67	55 - 136
Methyl tert-butyl ether	ND	vs	78.6	59.6	vs	ug/Kg	☼	76	63 - 125
Methylcyclohexane	ND	F1 vs	78.6	21.9	F1 vs	ug/Kg	☼	28	60 - 140
Methylene Chloride	ND	vs	78.6	71.7	vs	ug/Kg	☼	91	61 - 127
Styrene	ND	F1 vs	78.6	42.6	F1 vs	ug/Kg	☼	54	80 - 120
Tetrachloroethene	ND	F1 vs	78.6	43.3	F1 vs	ug/Kg	☼	55	74 - 122
Toluene	ND	F1 vs	78.6	63.3	vs	ug/Kg	☼	81	74 - 128
trans-1,2-Dichloroethene	ND	vs	78.6	68.3	vs	ug/Kg	☼	87	78 - 126
trans-1,3-Dichloropropene	ND	F1 vs	78.6	60.1	vs	ug/Kg	☼	76	73 - 123
Trichloroethene	ND	F1 vs	78.6	56.7	F1 vs	ug/Kg	☼	72	77 - 129
Trichlorofluoromethane	ND	vs	78.6	67.5	vs	ug/Kg	☼	86	65 - 146
Vinyl chloride	ND	vs	78.6	79.9	vs	ug/Kg	☼	102	61 - 133

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Toluene-d8 (Surr)	*109*		*71 - 125*
1,2-Dichloroethane-d4 (Surr)	*91*		*64 - 126*
4-Bromofluorobenzene (Surr)	*80*		*72 - 126*
Dibromofluoromethane (Surr)	*102*		*60 - 140*

Lab Sample ID: 480-185463-5 MSD
Matrix: Solid
Analysis Batch: 584183

Client Sample ID: BLDG4-SP-036
Prep Type: Total/NA
Prep Batch: 584259

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane	ND	F1 vs	78.9	57.9	F1 vs	ug/Kg	☼	73	77 - 121	9	30
1,1,2,2-Tetrachloroethane	ND	*3 vs	78.9	71.8	*3 vs	ug/Kg	☼	91	80 - 120	21	30
1,1,2-Trichloroethane	ND	F1 vs	78.9	60.5	F1 vs	ug/Kg	☼	77	78 - 122	8	30
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	F1 vs	78.9	43.9	F1 vs	ug/Kg	☼	56	60 - 140	5	30

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 480-185463-5 MSD
Matrix: Solid
Analysis Batch: 584183

Client Sample ID: BLDG4-SP-036
Prep Type: Total/NA
Prep Batch: 584259

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethane	ND	vs	78.9	65.7	vs	ug/Kg	☼	83	73 - 126	5	30
1,1-Dichloroethene	ND	vs	78.9	62.4	vs	ug/Kg	☼	79	59 - 125	5	30
1,2,4-Trichlorobenzene	ND	F1 *3 vs	78.9	8.80	*3 F1 vs	ug/Kg	☼	11	64 - 120	21	30
1,2-Dibromo-3-Chloropropane	ND	F1 *3 vs	78.9	47.0	*3 F1 vs	ug/Kg	☼	60	63 - 124	17	30
1,2-Dichlorobenzene	ND	F1 *3 vs	78.9	33.3	*3 F1 vs	ug/Kg	☼	42	75 - 120	23	30
1,2-Dichloroethane	ND	F1 vs	78.9	57.5	F1 vs	ug/Kg	☼	73	77 - 122	3	30
1,2-Dichloropropane	ND	F1 vs	78.9	58.8	F1 vs	ug/Kg	☼	74	75 - 124	6	30
1,3-Dichlorobenzene	ND	F1 *3 vs	78.9	37.4	*3 F1 vs	ug/Kg	☼	47	74 - 120	20	30
1,4-Dichlorobenzene	ND	F1 *3 vs	78.9	37.1	*3 F1 vs	ug/Kg	☼	47	73 - 120	22	30
2-Butanone (MEK)	ND	F1 vs	395	209	F1 vs	ug/Kg	☼	53	70 - 134	3	30
2-Hexanone	ND	vs	395	232	vs	ug/Kg	☼	59	59 - 130	13	30
4-Methyl-2-pentanone (MIBK)	ND	vs	395	257	vs	ug/Kg	☼	65	65 - 133	10	30
Acetone	18	J F1 vs	395	200	F1 vs	ug/Kg	☼	46	61 - 137	1	30
Benzene	ND	F1 vs	78.9	60.6	F1 vs	ug/Kg	☼	77	79 - 127	7	30
Bromodichloromethane	ND	F1 vs	78.9	55.8	F1 vs	ug/Kg	☼	71	80 - 122	9	30
Bromoform	ND	F1 vs	78.9	40.8	F1 vs	ug/Kg	☼	52	68 - 126	9	30
Bromomethane	ND	vs	78.9	77.0	vs	ug/Kg	☼	98	37 - 149	4	30
Carbon disulfide	ND	F1 vs	78.9	42.5	F1 vs	ug/Kg	☼	54	64 - 131	13	30
Carbon tetrachloride	ND	F1 vs	78.9	50.2	F1 vs	ug/Kg	☼	64	75 - 135	9	30
Chlorobenzene	ND	F1 vs	78.9	46.3	F1 vs	ug/Kg	☼	59	76 - 124	13	30
Dibromochloromethane	ND	F1 vs	78.9	53.8	F1 vs	ug/Kg	☼	68	76 - 125	15	30
Chloroethane	ND	vs	78.9	90.0	vs	ug/Kg	☼	114	69 - 135	3	30
Chloroform	ND	vs	78.9	63.5	vs	ug/Kg	☼	80	80 - 120	6	30
Chloromethane	ND	vs	78.9	68.7	vs	ug/Kg	☼	87	63 - 127	5	30
cis-1,2-Dichloroethene	ND	vs	78.9	63.1	vs	ug/Kg	☼	80	80 - 120	7	30
cis-1,3-Dichloropropene	ND	F1 vs	78.9	48.6	F1 vs	ug/Kg	☼	62	80 - 120	10	30
Cyclohexane	ND	F1 vs	78.9	29.1	F1 vs	ug/Kg	☼	37	65 - 120	5	30
Dichlorodifluoromethane	ND	vs	78.9	51.8	vs	ug/Kg	☼	66	57 - 142	7	30
Ethylbenzene	ND	F1 vs	78.9	40.5	F1 vs	ug/Kg	☼	51	80 - 120	13	30
1,2-Dibromoethane	ND	F1 vs	78.9	53.3	F1 vs	ug/Kg	☼	68	78 - 120	10	30
Isopropylbenzene	ND	F1 *3 vs	78.9	48.9	*3 F1 vs	ug/Kg	☼	62	72 - 120	23	30
Methyl acetate	ND	vs	158	98.3	vs	ug/Kg	☼	62	55 - 136	7	30
Methyl tert-butyl ether	ND	vs	78.9	59.8	vs	ug/Kg	☼	76	63 - 125	0	30
Methylcyclohexane	ND	F1 vs	78.9	20.4	F1 vs	ug/Kg	☼	26	60 - 140	7	30
Methylene Chloride	ND	vs	78.9	70.2	vs	ug/Kg	☼	89	61 - 127	2	30
Styrene	ND	F1 vs	78.9	37.1	F1 vs	ug/Kg	☼	47	80 - 120	14	30
Tetrachloroethene	ND	F1 vs	78.9	38.4	F1 vs	ug/Kg	☼	49	74 - 122	12	30
Toluene	ND	F1 vs	78.9	55.6	F1 vs	ug/Kg	☼	70	74 - 128	13	30
trans-1,2-Dichloroethene	ND	vs	78.9	63.4	vs	ug/Kg	☼	80	78 - 126	7	30
trans-1,3-Dichloropropene	ND	F1 vs	78.9	53.0	F1 vs	ug/Kg	☼	67	73 - 123	13	30
Trichloroethene	ND	F1 vs	78.9	50.7	F1 vs	ug/Kg	☼	64	77 - 129	11	30
Trichlorofluoromethane	ND	vs	78.9	61.4	vs	ug/Kg	☼	78	65 - 146	10	30
Vinyl chloride	ND	vs	78.9	76.8	vs	ug/Kg	☼	97	61 - 133	4	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*108*		*71 - 125*
1,2-Dichloroethane-d4 (Surr)	*91*		*64 - 126*
4-Bromofluorobenzene (Surr)	*83*		*72 - 126*

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 480-185463-5 MSD
Client Sample ID: BLDG4-SP-036
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 584183
Prep Batch: 584259

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Dibromofluoromethane (Surr)	*101*		*60 - 140*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 480-583845/1-A
Client Sample ID: Method Blank
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 584466
Prep Batch: 583845

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biphenyl	ND		170	25	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
bis (2-chloroisopropyl) ether	ND		170	34	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
2,4-Dichlorophenol	ND		170	18	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
2,4-Dimethylphenol	ND		170	41	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
2,4-Dinitrophenol	ND		1600	770	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
2,4-Dinitrotoluene	ND		170	35	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
2,6-Dinitrotoluene	ND		170	20	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
2-Chloronaphthalene	ND		170	28	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
1,4-Dioxane	ND		99	54	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
2,4,5-Trichlorophenol	ND		170	45	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
2-Chlorophenol	ND		330	31	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
2,4,6-Trichlorophenol	ND		170	34	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
2-Methylnaphthalene	ND		170	34	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
2-Methylphenol	ND		170	20	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
2-Nitroaniline	ND		330	25	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
2-Nitrophenol	ND		170	47	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
3,3'-Dichlorobenzidine	ND		330	200	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
3-Nitroaniline	ND		330	46	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
4,6-Dinitro-2-methylphenol	ND		330	170	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
4-Bromophenyl phenyl ether	ND		170	24	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
4-Chloro-3-methylphenol	ND		170	41	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
4-Chloroaniline	ND		170	41	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
4-Chlorophenyl phenyl ether	ND		170	21	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
4-Methylphenol	ND		330	20	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
4-Nitroaniline	ND		330	88	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
4-Nitrophenol	ND		330	120	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
Acenaphthene	ND		170	25	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
Acenaphthylene	ND		170	22	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
Acetophenone	ND		170	23	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
Anthracene	ND		170	41	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
Atrazine	ND		170	58	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
Benzaldehyde	ND		170	130	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
Benzo[a]anthracene	ND		170	17	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
Benzo[a]pyrene	ND		170	25	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
Benzo[b]fluoranthene	ND		170	27	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
Benzo[g,h,i]perylene	ND		170	18	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
Benzo[k]fluoranthene	ND		170	22	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
Bis(2-chloroethoxy)methane	ND		170	36	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
Bis(2-chloroethyl)ether	ND		170	22	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
Bis(2-ethylhexyl) phthalate	ND		170	57	ug/Kg		06/03/21 15:00	06/08/21 19:13	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 480-583845/1-A
Matrix: Solid
Analysis Batch: 584466

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 583845

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Butyl benzyl phthalate	ND		170	28	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
Caprolactam	ND		170	50	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
Carbazole	ND		170	20	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
Chrysene	ND		170	38	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
Di-n-butyl phthalate	ND		170	29	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
Di-n-octyl phthalate	ND		170	20	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
Dibenz(a,h)anthracene	ND		170	30	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
Dibenzofuran	ND		170	20	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
Diethyl phthalate	ND		170	22	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
Dimethyl phthalate	ND		170	20	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
Fluoranthene	ND		170	18	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
Fluorene	ND		170	20	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
Hexachlorobenzene	ND		170	23	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
Hexachlorobutadiene	ND		170	25	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
Hexachlorocyclopentadiene	ND		170	23	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
Hexachloroethane	ND		170	22	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
Indeno[1,2,3-cd]pyrene	ND		170	21	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
Isophorone	ND		170	36	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
N-Nitrosodi-n-propylamine	ND		170	29	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
N-Nitrosodiphenylamine	ND		170	140	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
Naphthalene	ND		170	22	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
Nitrobenzene	ND		170	19	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
Pentachlorophenol	ND		330	170	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
Phenanthrene	ND		170	25	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
Phenol	ND		170	26	ug/Kg		06/03/21 15:00	06/08/21 19:13	1
Pyrene	ND		170	20	ug/Kg		06/03/21 15:00	06/08/21 19:13	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*90*		*54 - 120*	*06/03/21 15:00*	*06/08/21 19:13*	*1*
2-Fluorobiphenyl	*88*		*60 - 120*	*06/03/21 15:00*	*06/08/21 19:13*	*1*
2-Fluorophenol	*73*		*52 - 120*	*06/03/21 15:00*	*06/08/21 19:13*	*1*
Nitrobenzene-d5	*84*		*53 - 120*	*06/03/21 15:00*	*06/08/21 19:13*	*1*
p-Terphenyl-d14	*105*		*79 - 130*	*06/03/21 15:00*	*06/08/21 19:13*	*1*
Phenol-d5	*74*		*54 - 120*	*06/03/21 15:00*	*06/08/21 19:13*	*1*

Lab Sample ID: LCS 480-583845/2-A
Matrix: Solid
Analysis Batch: 584466

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 583845

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Biphenyl	1640	1590		ug/Kg		97	59 - 120
bis (2-chloroisopropyl) ether	1640	1120		ug/Kg		68	44 - 120
2,4-Dichlorophenol	1640	1420		ug/Kg		86	61 - 120
2,4-Dimethylphenol	1640	1500		ug/Kg		91	59 - 120
2,4-Dinitrophenol	3290	2310		ug/Kg		70	41 - 146
2,4-Dinitrotoluene	1640	1510		ug/Kg		92	63 - 120
2,6-Dinitrotoluene	1640	1720		ug/Kg		105	66 - 120
2-Chloronaphthalene	1640	1600		ug/Kg		97	57 - 120

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 480-583845/2-A
Client Sample ID: Lab Control Sample
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 584466
Prep Batch: 583845

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	1640	866		ug/Kg		53	23 - 120
2,4,5-Trichlorophenol	1640	1670		ug/Kg		101	59 - 126
2-Chlorophenol	1640	1380		ug/Kg		84	53 - 120
2,4,6-Trichlorophenol	1640	1640		ug/Kg		100	59 - 123
2-Methylnaphthalene	1640	1420		ug/Kg		86	59 - 120
2-Methylphenol	1640	1360		ug/Kg		83	54 - 120
2-Nitroaniline	1640	1580		ug/Kg		96	61 - 120
2-Nitrophenol	1640	1370		ug/Kg		83	56 - 120
3,3'-Dichlorobenzidine	3290	3250		ug/Kg		99	54 - 120
3-Nitroaniline	1640	1490		ug/Kg		91	48 - 120
4,6-Dinitro-2-methylphenol	3290	3040		ug/Kg		93	49 - 122
4-Bromophenyl phenyl ether	1640	1760		ug/Kg		107	58 - 120
4-Chloro-3-methylphenol	1640	1400		ug/Kg		85	61 - 120
4-Chloroaniline	1640	1270		ug/Kg		77	38 - 120
4-Chlorophenyl phenyl ether	1640	1590		ug/Kg		97	63 - 124
4-Methylphenol	1640	1400		ug/Kg		85	55 - 120
4-Nitroaniline	1640	1420		ug/Kg		86	56 - 120
4-Nitrophenol	3290	3060		ug/Kg		93	43 - 147
Acenaphthene	1640	1660		ug/Kg		101	62 - 120
Acenaphthylene	1640	1620		ug/Kg		99	58 - 121
Acetophenone	1640	1170		ug/Kg		71	54 - 120
Anthracene	1640	1780		ug/Kg		108	62 - 120
Atrazine	3290	3300		ug/Kg		100	60 - 127
Benzaldehyde	3290	2700		ug/Kg		82	10 - 150
Benzo[a]anthracene	1640	1770		ug/Kg		108	65 - 120
Benzo[a]pyrene	1640	1670		ug/Kg		102	64 - 120
Benzo[b]fluoranthene	1640	1670		ug/Kg		102	64 - 120
Benzo[g,h,i]perylene	1640	2050		ug/Kg		125	45 - 145
Benzo[k]fluoranthene	1640	1640		ug/Kg		100	65 - 120
Bis(2-chloroethoxy)methane	1640	1450		ug/Kg		88	55 - 120
Bis(2-chloroethyl)ether	1640	1320		ug/Kg		80	45 - 120
Bis(2-ethylhexyl) phthalate	1640	1850		ug/Kg		112	61 - 133
Butyl benzyl phthalate	1640	1890		ug/Kg		115	61 - 129
Caprolactam	3290	3040		ug/Kg		92	47 - 120
Carbazole	1640	1680		ug/Kg		102	65 - 120
Chrysene	1640	1800		ug/Kg		110	64 - 120
Di-n-butyl phthalate	1640	1810		ug/Kg		110	58 - 130
Di-n-octyl phthalate	1640	1850		ug/Kg		113	57 - 133
Dibenz(a,h)anthracene	1640	1900		ug/Kg		115	54 - 132
Dibenzofuran	1640	1580		ug/Kg		96	63 - 120
Diethyl phthalate	1640	1650		ug/Kg		100	66 - 120
Dimethyl phthalate	1640	1790		ug/Kg		109	65 - 124
Fluoranthene	1640	1700		ug/Kg		104	62 - 120
Fluorene	1640	1610		ug/Kg		98	63 - 120
Hexachlorobenzene	1640	1790		ug/Kg		109	60 - 120
Hexachlorobutadiene	1640	1400		ug/Kg		85	45 - 120
Hexachlorocyclopentadiene	1640	1290		ug/Kg		79	47 - 120
Hexachloroethane	1640	1270		ug/Kg		77	41 - 120
Indeno[1,2,3-cd]pyrene	1640	1920		ug/Kg		117	56 - 134

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 480-583845/2-A
Matrix: Solid
Analysis Batch: 584466

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 583845

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Isophorone	1640	1480		ug/Kg		90	56 - 120
N-Nitrosodi-n-propylamine	1640	1360		ug/Kg		83	52 - 120
Naphthalene	1640	1400		ug/Kg		85	55 - 120
Nitrobenzene	1640	1400		ug/Kg		85	54 - 120
Pentachlorophenol	3290	2920		ug/Kg		89	51 - 120
Phenanthrene	1640	1700		ug/Kg		103	60 - 120
Phenol	1640	1330		ug/Kg		81	53 - 120
Pyrene	1640	1840		ug/Kg		112	61 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4,6-Tribromophenol	*109*		*54 - 120*
2-Fluorobiphenyl	*96*		*60 - 120*
2-Fluorophenol	*80*		*52 - 120*
Nitrobenzene-d5	*87*		*53 - 120*
p-Terphenyl-d14	*102*		*79 - 130*
Phenol-d5	*73*		*54 - 120*

Lab Sample ID: MB 480-584053/1-A
Matrix: Solid
Analysis Batch: 584275

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 584053

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.010	0.00045	mg/L		06/04/21 15:56	06/07/21 16:40	1
3-Methylphenol	ND		0.010	0.00040	mg/L		06/04/21 15:56	06/07/21 16:40	1
2,4-Dinitrotoluene	ND		0.0050	0.00043	mg/L		06/04/21 15:56	06/07/21 16:40	1
Pyridine	ND		0.025	0.00040	mg/L		06/04/21 15:56	06/07/21 16:40	1
2,4,5-Trichlorophenol	ND		0.0050	0.00048	mg/L		06/04/21 15:56	06/07/21 16:40	1
2,4,6-Trichlorophenol	ND		0.0050	0.00060	mg/L		06/04/21 15:56	06/07/21 16:40	1
2-Methylphenol	ND		0.0050	0.00040	mg/L		06/04/21 15:56	06/07/21 16:40	1
4-Methylphenol	ND		0.010	0.00035	mg/L		06/04/21 15:56	06/07/21 16:40	1
Hexachlorobenzene	ND		0.0050	0.00050	mg/L		06/04/21 15:56	06/07/21 16:40	1
Hexachlorobutadiene	ND		0.0050	0.00068	mg/L		06/04/21 15:56	06/07/21 16:40	1
Hexachloroethane	ND		0.0050	0.00058	mg/L		06/04/21 15:56	06/07/21 16:40	1
Nitrobenzene	ND		0.0050	0.00028	mg/L		06/04/21 15:56	06/07/21 16:40	1
Pentachlorophenol	ND		0.010	0.0022	mg/L		06/04/21 15:56	06/07/21 16:40	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*87*		*41 - 120*	*06/04/21 15:56*	*06/07/21 16:40*	*1*
2-Fluorobiphenyl	*79*		*48 - 120*	*06/04/21 15:56*	*06/07/21 16:40*	*1*
2-Fluorophenol	*48*		*35 - 120*	*06/04/21 15:56*	*06/07/21 16:40*	*1*
Nitrobenzene-d5	*79*		*46 - 120*	*06/04/21 15:56*	*06/07/21 16:40*	*1*
p-Terphenyl-d14	*100*		*60 - 148*	*06/04/21 15:56*	*06/07/21 16:40*	*1*
Phenol-d5	*34*		*22 - 120*	*06/04/21 15:56*	*06/07/21 16:40*	*1*

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-185463-1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 480-584053/2-A
Matrix: Solid
Analysis Batch: 584275

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 584053

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dichlorobenzene	0.0500	0.0351		mg/L		70	51 - 120
3-Methylphenol	0.0500	0.0398		mg/L		80	39 - 120
2,4-Dinitrotoluene	0.0500	0.0470		mg/L		94	69 - 120
Pyridine	0.100	0.0165	J	mg/L		16	10 - 120
2,4,5-Trichlorophenol	0.0500	0.0514		mg/L		103	65 - 126
2,4,6-Trichlorophenol	0.0500	0.0517		mg/L		103	64 - 120
2-Methylphenol	0.0500	0.0366		mg/L		73	39 - 120
4-Methylphenol	0.0500	0.0398		mg/L		80	29 - 131
Hexachlorobenzene	0.0500	0.0488		mg/L		98	61 - 120
Hexachlorobutadiene	0.0500	0.0383		mg/L		77	35 - 120
Hexachloroethane	0.0500	0.0323		mg/L		65	43 - 120
Nitrobenzene	0.0500	0.0403		mg/L		81	53 - 123
Pentachlorophenol	0.100	0.0861		mg/L		86	29 - 136

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4,6-Tribromophenol	*93*		*41 - 120*
2-Fluorobiphenyl	*94*		*48 - 120*
2-Fluorophenol	*53*		*35 - 120*
Nitrobenzene-d5	*80*		*46 - 120*
p-Terphenyl-d14	*103*		*60 - 148*
Phenol-d5	*38*		*22 - 120*

Lab Sample ID: LCSD 480-584053/3-A
Matrix: Solid
Analysis Batch: 584275

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 584053

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dichlorobenzene	0.0500	0.0439		mg/L		88	51 - 120	22	36
3-Methylphenol	0.0500	0.0442		mg/L		88	39 - 120	10	30
2,4-Dinitrotoluene	0.0500	0.0527		mg/L		105	69 - 120	11	20
Pyridine	0.100	0.0394	*1	mg/L		39	10 - 120	82	49
2,4,5-Trichlorophenol	0.0500	0.0548		mg/L		110	65 - 126	6	18
2,4,6-Trichlorophenol	0.0500	0.0550		mg/L		110	64 - 120	6	19
2-Methylphenol	0.0500	0.0438		mg/L		88	39 - 120	18	27
4-Methylphenol	0.0500	0.0442		mg/L		88	29 - 131	10	24
Hexachlorobenzene	0.0500	0.0537		mg/L		107	61 - 120	10	15
Hexachlorobutadiene	0.0500	0.0456		mg/L		91	35 - 120	17	44
Hexachloroethane	0.0500	0.0436		mg/L		87	43 - 120	30	46
Nitrobenzene	0.0500	0.0492		mg/L		98	53 - 123	20	24
Pentachlorophenol	0.100	0.102		mg/L		102	29 - 136	17	37

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2,4,6-Tribromophenol	*108*		*41 - 120*
2-Fluorobiphenyl	*97*		*48 - 120*
2-Fluorophenol	*64*		*35 - 120*
Nitrobenzene-d5	*93*		*46 - 120*
p-Terphenyl-d14	*104*		*60 - 148*
Phenol-d5	*41*		*22 - 120*

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-185463-1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: LB 480-583747/1-E
Matrix: Solid
Analysis Batch: 584275

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 584053

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.040	0.0018	mg/L		06/04/21 15:56	06/07/21 17:54	1
3-Methylphenol	ND		0.040	0.0016	mg/L		06/04/21 15:56	06/07/21 17:54	1
2,4-Dinitrotoluene	ND		0.020	0.0017	mg/L		06/04/21 15:56	06/07/21 17:54	1
Pyridine	ND		0.10	0.0016	mg/L		06/04/21 15:56	06/07/21 17:54	1
2,4,5-Trichlorophenol	ND		0.020	0.0019	mg/L		06/04/21 15:56	06/07/21 17:54	1
2,4,6-Trichlorophenol	ND		0.020	0.0024	mg/L		06/04/21 15:56	06/07/21 17:54	1
2-Methylphenol	ND		0.020	0.0016	mg/L		06/04/21 15:56	06/07/21 17:54	1
4-Methylphenol	ND		0.040	0.0014	mg/L		06/04/21 15:56	06/07/21 17:54	1
Hexachlorobenzene	ND		0.020	0.0020	mg/L		06/04/21 15:56	06/07/21 17:54	1
Hexachlorobutadiene	ND		0.020	0.0027	mg/L		06/04/21 15:56	06/07/21 17:54	1
Hexachloroethane	ND		0.020	0.0023	mg/L		06/04/21 15:56	06/07/21 17:54	1
Nitrobenzene	ND		0.020	0.0011	mg/L		06/04/21 15:56	06/07/21 17:54	1
Pentachlorophenol	ND		0.040	0.0088	mg/L		06/04/21 15:56	06/07/21 17:54	1

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*100*		*41 - 120*	*06/04/21 15:56*	*06/07/21 17:54*	*1*
2-Fluorobiphenyl	*89*		*48 - 120*	*06/04/21 15:56*	*06/07/21 17:54*	*1*
2-Fluorophenol	*54*		*35 - 120*	*06/04/21 15:56*	*06/07/21 17:54*	*1*
Nitrobenzene-d5	*87*		*46 - 120*	*06/04/21 15:56*	*06/07/21 17:54*	*1*
p-Terphenyl-d14	*104*		*60 - 148*	*06/04/21 15:56*	*06/07/21 17:54*	*1*
Phenol-d5	*34*		*22 - 120*	*06/04/21 15:56*	*06/07/21 17:54*	*1*

Method: 8081B - Organochlorine Pesticides (GC)

Lab Sample ID: MB 480-584054/1-A
Matrix: Solid
Analysis Batch: 584156

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 584054

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.000050	0.0000015	mg/L		06/04/21 16:07	06/06/21 15:45	1
Chlordane (technical)	ND		0.00050	0.0000073	mg/L		06/04/21 16:07	06/06/21 15:45	1
Endrin	ND		0.000050	0.0000035	mg/L		06/04/21 16:07	06/06/21 15:45	1
Heptachlor	ND		0.000050	0.0000021	mg/L		06/04/21 16:07	06/06/21 15:45	1
Heptachlor epoxide	ND		0.000050	0.0000013	mg/L		06/04/21 16:07	06/06/21 15:45	1
Methoxychlor	ND		0.000050	0.0000035	mg/L		06/04/21 16:07	06/06/21 15:45	1
Toxaphene	ND		0.00050	0.000030	mg/L		06/04/21 16:07	06/06/21 15:45	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*53*		*20 - 120*	*06/04/21 16:07*	*06/06/21 15:45*	*1*
DCB Decachlorobiphenyl	*44*		*20 - 120*	*06/04/21 16:07*	*06/06/21 15:45*	*1*
Tetrachloro-m-xylene	*94*		*44 - 120*	*06/04/21 16:07*	*06/06/21 15:45*	*1*
Tetrachloro-m-xylene	*74*		*44 - 120*	*06/04/21 16:07*	*06/06/21 15:45*	*1*

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: LCS 480-584054/2-A
Matrix: Solid
Analysis Batch: 584156

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 584054

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
gamma-BHC (Lindane)	0.000500	0.000389		mg/L		78	56 - 120
Endrin	0.000500	0.000534		mg/L		107	65 - 135
Heptachlor	0.000500	0.000412		mg/L		82	58 - 120
Heptachlor epoxide	0.000500	0.000502		mg/L		100	65 - 125
Methoxychlor	0.000500	0.000488		mg/L		98	50 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*45*		*20 - 120*
DCB Decachlorobiphenyl	*40*		*20 - 120*
Tetrachloro-m-xylene	*76*		*44 - 120*
Tetrachloro-m-xylene	*67*		*44 - 120*

Lab Sample ID: LCSD 480-584054/3-A
Matrix: Solid
Analysis Batch: 584156

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 584054

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
gamma-BHC (Lindane)	0.000500	0.000457		mg/L		91	56 - 120	16	24
Endrin	0.000500	0.000617		mg/L		123	65 - 135	14	24
Heptachlor	0.000500	0.000473		mg/L		95	58 - 120	14	25
Heptachlor epoxide	0.000500	0.000646	*+ *1	mg/L		129	65 - 125	25	23
Methoxychlor	0.000500	0.000523		mg/L		105	50 - 150	7	26

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
DCB Decachlorobiphenyl	*47*		*20 - 120*
DCB Decachlorobiphenyl	*46*		*20 - 120*
Tetrachloro-m-xylene	*83*		*44 - 120*
Tetrachloro-m-xylene	*75*		*44 - 120*

Lab Sample ID: LB 480-583747/1-F
Matrix: Solid
Analysis Batch: 584156

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 584054

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.00020	0.0000060	mg/L		06/04/21 16:07	06/06/21 16:44	1
Chlordane (technical)	ND		0.0020	0.000029	mg/L		06/04/21 16:07	06/06/21 16:44	1
Endrin	ND		0.00020	0.000014	mg/L		06/04/21 16:07	06/06/21 16:44	1
Heptachlor	ND		0.00020	0.0000085	mg/L		06/04/21 16:07	06/06/21 16:44	1
Heptachlor epoxide	ND		0.00020	0.0000053	mg/L		06/04/21 16:07	06/06/21 16:44	1
Methoxychlor	ND		0.00020	0.000014	mg/L		06/04/21 16:07	06/06/21 16:44	1
Toxaphene	ND		0.0020	0.00012	mg/L		06/04/21 16:07	06/06/21 16:44	1

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*61*		*20 - 120*	*06/04/21 16:07*	*06/06/21 16:44*	*1*
DCB Decachlorobiphenyl	*59*		*20 - 120*	*06/04/21 16:07*	*06/06/21 16:44*	*1*
Tetrachloro-m-xylene	*95*		*44 - 120*	*06/04/21 16:07*	*06/06/21 16:44*	*1*
Tetrachloro-m-xylene	*74*		*44 - 120*	*06/04/21 16:07*	*06/06/21 16:44*	*1*

Method: 8151 - TCLP Herbicides

Lab Sample ID: MB 480-584003/1-A
Matrix: Solid
Analysis Batch: 584149

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 584003

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND		0.00050	0.000090	mg/L		06/04/21 11:22	06/06/21 19:25	1
2,4-D	ND		0.00050	0.00010	mg/L		06/04/21 11:22	06/06/21 19:25	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*60*		*48 - 132*	*06/04/21 11:22*	*06/06/21 19:25*	*1*
2,4-Dichlorophenylacetic acid	*53*		*48 - 132*	*06/04/21 11:22*	*06/06/21 19:25*	*1*

Lab Sample ID: LCS 480-584003/2-A
Matrix: Solid
Analysis Batch: 584149

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 584003

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Silvex (2,4,5-TP)	0.00200	0.00132		mg/L		66	49 - 150
2,4-D	0.00200	0.00192		mg/L		96	36 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*33*	*S1-*	*48 - 132*
2,4-Dichlorophenylacetic acid	*36*	*S1-*	*48 - 132*

Lab Sample ID: LCSD 480-584003/3-A
Matrix: Solid
Analysis Batch: 584149

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 584003

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Silvex (2,4,5-TP)	0.00200	0.00171		mg/L		85	49 - 150	25	50
2,4-D	0.00200	0.00151		mg/L		76	36 - 150	24	50

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*76*		*48 - 132*
2,4-Dichlorophenylacetic acid	*80*		*48 - 132*

Lab Sample ID: LB 480-583747/1-C
Matrix: Solid
Analysis Batch: 584149

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 584003

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND		0.0020	0.00036	mg/L		06/04/21 11:22	06/06/21 20:55	1
2,4-D	ND		0.0020	0.00040	mg/L		06/04/21 11:22	06/06/21 20:55	1

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*40*	*S1-*	*48 - 132*	*06/04/21 11:22*	*06/06/21 20:55*	*1*
2,4-Dichlorophenylacetic acid	*40*	*S1-*	*48 - 132*	*06/04/21 11:22*	*06/06/21 20:55*	*1*

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-185463-1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 480-583991/2-A
Matrix: Solid
Analysis Batch: 584479

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 583991

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.015	0.0056	mg/L		06/04/21 11:01	06/08/21 12:38	1
Barium	ND		1.0	0.10	mg/L		06/04/21 11:01	06/08/21 12:38	1
Cadmium	ND		0.0020	0.00050	mg/L		06/04/21 11:01	06/08/21 12:38	1
Chromium	ND		0.020	0.010	mg/L		06/04/21 11:01	06/08/21 12:38	1
Lead	ND		0.020	0.0030	mg/L		06/04/21 11:01	06/08/21 12:38	1
Selenium	ND		0.025	0.0087	mg/L		06/04/21 11:01	06/08/21 12:38	1
Silver	ND		0.0060	0.0017	mg/L		06/04/21 11:01	06/08/21 12:38	1

Lab Sample ID: LCS 480-583991/3-A
Matrix: Solid
Analysis Batch: 584479

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 583991

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	1.00	1.09		mg/L		109	80 - 120
Barium	1.00	1.04		mg/L		104	80 - 120
Cadmium	1.00	1.04		mg/L		104	80 - 120
Chromium	1.00	1.03		mg/L		103	80 - 120
Lead	1.00	1.04		mg/L		104	80 - 120
Selenium	1.00	1.06		mg/L		106	80 - 120
Silver	1.00	1.10		mg/L		110	80 - 120

Lab Sample ID: LB 480-583747/1-B
Matrix: Solid
Analysis Batch: 584479

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 583991

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.015	0.0056	mg/L		06/04/21 11:01	06/08/21 12:34	1
Barium	ND		1.0	0.10	mg/L		06/04/21 11:01	06/08/21 12:34	1
Cadmium	ND		0.0020	0.00050	mg/L		06/04/21 11:01	06/08/21 12:34	1
Chromium	ND		0.020	0.010	mg/L		06/04/21 11:01	06/08/21 12:34	1
Lead	ND		0.020	0.0030	mg/L		06/04/21 11:01	06/08/21 12:34	1
Selenium	ND		0.025	0.0087	mg/L		06/04/21 11:01	06/08/21 12:34	1
Silver	ND		0.0060	0.0017	mg/L		06/04/21 11:01	06/08/21 12:34	1

Method: 7470A - TCLP Mercury

Lab Sample ID: MB 480-584006/2-A
Matrix: Solid
Analysis Batch: 584076

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 584006

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		06/04/21 12:50	06/04/21 17:17	1

Lab Sample ID: LCS 480-584006/3-A
Matrix: Solid
Analysis Batch: 584076

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 584006

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00668	0.00590		mg/L		88	80 - 120

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-185463-1

Method: 7470A - TCLP Mercury (Continued)

Lab Sample ID: LB 480-583747/1-D
Matrix: Solid
Analysis Batch: 584076

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 584006

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		06/04/21 12:50	06/04/21 17:16	1

Method: 1010A - Ignitability, Pensky-Martens Closed-Cup Method

Lab Sample ID: LCS 480-584169/1
Matrix: Solid
Analysis Batch: 584169

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Flashpoint	81.0	82.00		Degrees F		101	97.5 - 102.5

Lab Sample ID: LCS 480-584313/1
Matrix: Solid
Analysis Batch: 584313

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Flashpoint	81.0	80.00		Degrees F		99	97.5 - 102.5

Lab Sample ID: 480-185463-4 DU
Matrix: Solid
Analysis Batch: 584313

Client Sample ID: RAMP-SP-035
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Flashpoint	>175		>175.0		Degrees F		NC	10

Method: 9045D - pH

Lab Sample ID: LCS 480-584030/1
Matrix: Solid
Analysis Batch: 584030

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH	7.00	7.0		SU		100	99 - 101

GC/MS VOA

Leach Batch: 583748

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-185463-1	BLDG6-SP-032	TCLP	Solid	1311	
480-185463-2	BLDG2-SP-033	TCLP	Solid	1311	
480-185463-3	BLDG10-SP-034	TCLP	Solid	1311	
480-185463-4	RAMP-SP-035	TCLP	Solid	1311	
480-185463-5	BLDG4-SP-036	TCLP	Solid	1311	
LB 480-583748/1-A	Method Blank	TCLP	Solid	1311	

Prep Batch: 583880

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-185463-1	BLDG6-SP-032	Total/NA	Solid	5035A_L	
480-185463-2	BLDG2-SP-033	Total/NA	Solid	5035A_L	
480-185463-3	BLDG10-SP-034	Total/NA	Solid	5035A_L	
MB 480-583880/2-A	Method Blank	Total/NA	Solid	5035A_L	
LCS 480-583880/1-A	Lab Control Sample	Total/NA	Solid	5035A_L	

Analysis Batch: 583883

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-185463-1	BLDG6-SP-032	Total/NA	Solid	8260C	583880
480-185463-2	BLDG2-SP-033	Total/NA	Solid	8260C	583880
480-185463-3	BLDG10-SP-034	Total/NA	Solid	8260C	583880
MB 480-583880/2-A	Method Blank	Total/NA	Solid	8260C	583880
LCS 480-583880/1-A	Lab Control Sample	Total/NA	Solid	8260C	583880

Analysis Batch: 584048

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-185463-1	BLDG6-SP-032	TCLP	Solid	8260C	583748
480-185463-2	BLDG2-SP-033	TCLP	Solid	8260C	583748
480-185463-3	BLDG10-SP-034	TCLP	Solid	8260C	583748
480-185463-4	RAMP-SP-035	TCLP	Solid	8260C	583748
480-185463-5	BLDG4-SP-036	TCLP	Solid	8260C	583748
LB 480-583748/1-A	Method Blank	TCLP	Solid	8260C	583748
MB 480-584048/8	Method Blank	Total/NA	Solid	8260C	
LCS 480-584048/6	Lab Control Sample	Total/NA	Solid	8260C	

Prep Batch: 584160

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-185463-4	RAMP-SP-035	Total/NA	Solid	5035A_H	
MB 480-584160/2-A	Method Blank	Total/NA	Solid	5035A_H	
LCS 480-584160/1-A	Lab Control Sample	Total/NA	Solid	5035A_H	

Analysis Batch: 584183

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-185463-5	BLDG4-SP-036	Total/NA	Solid	8260C	584259
MB 480-584259/3-A	Method Blank	Total/NA	Solid	8260C	584259
LCS 480-584259/2-A	Lab Control Sample	Total/NA	Solid	8260C	584259
480-185463-5 MS	BLDG4-SP-036	Total/NA	Solid	8260C	584259
480-185463-5 MSD	BLDG4-SP-036	Total/NA	Solid	8260C	584259

Prep Batch: 584259

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-185463-5	BLDG4-SP-036	Total/NA	Solid	5035A_L	

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

GC/MS VOA (Continued)

Prep Batch: 584259 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 480-584259/3-A	Method Blank	Total/NA	Solid	5035A_L	
LCS 480-584259/2-A	Lab Control Sample	Total/NA	Solid	5035A_L	
480-185463-5 MS	BLDG4-SP-036	Total/NA	Solid	5035A_L	
480-185463-5 MSD	BLDG4-SP-036	Total/NA	Solid	5035A_L	

Analysis Batch: 584401

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-185463-4	RAMP-SP-035	Total/NA	Solid	8260C	584160
MB 480-584160/2-A	Method Blank	Total/NA	Solid	8260C	584160
LCS 480-584160/1-A	Lab Control Sample	Total/NA	Solid	8260C	584160

GC/MS Semi VOA

Leach Batch: 583747

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-185463-1	BLDG6-SP-032	TCLP	Solid	1311	
480-185463-2	BLDG2-SP-033	TCLP	Solid	1311	
480-185463-3	BLDG10-SP-034	TCLP	Solid	1311	
480-185463-4	RAMP-SP-035	TCLP	Solid	1311	
480-185463-5	BLDG4-SP-036	TCLP	Solid	1311	
LB 480-583747/1-E	Method Blank	TCLP	Solid	1311	

Prep Batch: 583845

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-185463-1	BLDG6-SP-032	Total/NA	Solid	3550C	
480-185463-2	BLDG2-SP-033	Total/NA	Solid	3550C	
480-185463-3	BLDG10-SP-034	Total/NA	Solid	3550C	
480-185463-4	RAMP-SP-035	Total/NA	Solid	3550C	
480-185463-5	BLDG4-SP-036	Total/NA	Solid	3550C	
MB 480-583845/1-A	Method Blank	Total/NA	Solid	3550C	
LCS 480-583845/2-A	Lab Control Sample	Total/NA	Solid	3550C	

Prep Batch: 584053

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-185463-1	BLDG6-SP-032	TCLP	Solid	3510C	583747
480-185463-2	BLDG2-SP-033	TCLP	Solid	3510C	583747
480-185463-3	BLDG10-SP-034	TCLP	Solid	3510C	583747
480-185463-4	RAMP-SP-035	TCLP	Solid	3510C	583747
480-185463-5	BLDG4-SP-036	TCLP	Solid	3510C	583747
LB 480-583747/1-E	Method Blank	TCLP	Solid	3510C	583747
MB 480-584053/1-A	Method Blank	Total/NA	Solid	3510C	
LCS 480-584053/2-A	Lab Control Sample	Total/NA	Solid	3510C	
LCSD 480-584053/3-A	Lab Control Sample Dup	Total/NA	Solid	3510C	

Analysis Batch: 584275

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-185463-1	BLDG6-SP-032	TCLP	Solid	8270D	584053
480-185463-2	BLDG2-SP-033	TCLP	Solid	8270D	584053
480-185463-3	BLDG10-SP-034	TCLP	Solid	8270D	584053
480-185463-4	RAMP-SP-035	TCLP	Solid	8270D	584053
480-185463-5	BLDG4-SP-036	TCLP	Solid	8270D	584053

GC/MS Semi VOA (Continued)

Analysis Batch: 584275 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LB 480-583747/1-E	Method Blank	TCLP	Solid	8270D	584053
MB 480-584053/1-A	Method Blank	Total/NA	Solid	8270D	584053
LCS 480-584053/2-A	Lab Control Sample	Total/NA	Solid	8270D	584053
LCSD 480-584053/3-A	Lab Control Sample Dup	Total/NA	Solid	8270D	584053

Analysis Batch: 584466

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-185463-1	BLDG6-SP-032	Total/NA	Solid	8270D	583845
480-185463-2	BLDG2-SP-033	Total/NA	Solid	8270D	583845
480-185463-3	BLDG10-SP-034	Total/NA	Solid	8270D	583845
480-185463-4	RAMP-SP-035	Total/NA	Solid	8270D	583845
480-185463-5	BLDG4-SP-036	Total/NA	Solid	8270D	583845
MB 480-583845/1-A	Method Blank	Total/NA	Solid	8270D	583845
LCS 480-583845/2-A	Lab Control Sample	Total/NA	Solid	8270D	583845

GC Semi VOA

Leach Batch: 583747

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-185463-1	BLDG6-SP-032	TCLP	Solid	1311	
480-185463-2	BLDG2-SP-033	TCLP	Solid	1311	
480-185463-3	BLDG10-SP-034	TCLP	Solid	1311	
480-185463-4	RAMP-SP-035	TCLP	Solid	1311	
480-185463-5	BLDG4-SP-036	TCLP	Solid	1311	
LB 480-583747/1-C	Method Blank	TCLP	Solid	1311	
LB 480-583747/1-F	Method Blank	TCLP	Solid	1311	

Prep Batch: 584003

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-185463-1	BLDG6-SP-032	TCLP	Solid	8151A	583747
480-185463-2	BLDG2-SP-033	TCLP	Solid	8151A	583747
480-185463-3	BLDG10-SP-034	TCLP	Solid	8151A	583747
480-185463-4	RAMP-SP-035	TCLP	Solid	8151A	583747
480-185463-5	BLDG4-SP-036	TCLP	Solid	8151A	583747
LB 480-583747/1-C	Method Blank	TCLP	Solid	8151A	583747
MB 480-584003/1-A	Method Blank	Total/NA	Solid	8151A	
LCS 480-584003/2-A	Lab Control Sample	Total/NA	Solid	8151A	
LCSD 480-584003/3-A	Lab Control Sample Dup	Total/NA	Solid	8151A	

Prep Batch: 584054

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-185463-1	BLDG6-SP-032	TCLP	Solid	3510C	583747
480-185463-2	BLDG2-SP-033	TCLP	Solid	3510C	583747
480-185463-3	BLDG10-SP-034	TCLP	Solid	3510C	583747
480-185463-4	RAMP-SP-035	TCLP	Solid	3510C	583747
480-185463-5	BLDG4-SP-036	TCLP	Solid	3510C	583747
LB 480-583747/1-F	Method Blank	TCLP	Solid	3510C	583747
MB 480-584054/1-A	Method Blank	Total/NA	Solid	3510C	
LCS 480-584054/2-A	Lab Control Sample	Total/NA	Solid	3510C	
LCSD 480-584054/3-A	Lab Control Sample Dup	Total/NA	Solid	3510C	

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-185463-1

GC Semi VOA

Analysis Batch: 584149

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-185463-1	BLDG6-SP-032	TCLP	Solid	8151	584003
480-185463-2	BLDG2-SP-033	TCLP	Solid	8151	584003
480-185463-3	BLDG10-SP-034	TCLP	Solid	8151	584003
480-185463-4	RAMP-SP-035	TCLP	Solid	8151	584003
480-185463-5	BLDG4-SP-036	TCLP	Solid	8151	584003
LB 480-583747/1-C	Method Blank	TCLP	Solid	8151	584003
MB 480-584003/1-A	Method Blank	Total/NA	Solid	8151	584003
LCS 480-584003/2-A	Lab Control Sample	Total/NA	Solid	8151	584003
LCSD 480-584003/3-A	Lab Control Sample Dup	Total/NA	Solid	8151	584003

Analysis Batch: 584156

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-185463-1	BLDG6-SP-032	TCLP	Solid	8081B	584054
480-185463-2	BLDG2-SP-033	TCLP	Solid	8081B	584054
480-185463-3	BLDG10-SP-034	TCLP	Solid	8081B	584054
480-185463-4	RAMP-SP-035	TCLP	Solid	8081B	584054
480-185463-5	BLDG4-SP-036	TCLP	Solid	8081B	584054
LB 480-583747/1-F	Method Blank	TCLP	Solid	8081B	584054
MB 480-584054/1-A	Method Blank	Total/NA	Solid	8081B	584054
LCS 480-584054/2-A	Lab Control Sample	Total/NA	Solid	8081B	584054
LCSD 480-584054/3-A	Lab Control Sample Dup	Total/NA	Solid	8081B	584054

Metals

Leach Batch: 583747

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-185463-1	BLDG6-SP-032	TCLP	Solid	1311	
480-185463-2	BLDG2-SP-033	TCLP	Solid	1311	
480-185463-3	BLDG10-SP-034	TCLP	Solid	1311	
480-185463-4	RAMP-SP-035	TCLP	Solid	1311	
480-185463-5	BLDG4-SP-036	TCLP	Solid	1311	
LB 480-583747/1-B	Method Blank	TCLP	Solid	1311	
LB 480-583747/1-D	Method Blank	TCLP	Solid	1311	

Prep Batch: 583991

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-185463-1	BLDG6-SP-032	TCLP	Solid	3010A	583747
480-185463-2	BLDG2-SP-033	TCLP	Solid	3010A	583747
480-185463-3	BLDG10-SP-034	TCLP	Solid	3010A	583747
480-185463-4	RAMP-SP-035	TCLP	Solid	3010A	583747
480-185463-5	BLDG4-SP-036	TCLP	Solid	3010A	583747
LB 480-583747/1-B	Method Blank	TCLP	Solid	3010A	583747
MB 480-583991/2-A	Method Blank	Total/NA	Solid	3010A	
LCS 480-583991/3-A	Lab Control Sample	Total/NA	Solid	3010A	

Prep Batch: 584006

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-185463-1	BLDG6-SP-032	TCLP	Solid	7470A	583747
480-185463-2	BLDG2-SP-033	TCLP	Solid	7470A	583747
480-185463-3	BLDG10-SP-034	TCLP	Solid	7470A	583747
480-185463-4	RAMP-SP-035	TCLP	Solid	7470A	583747

QC Association Summary

Metals (Continued)

Prep Batch: 584006 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-185463-5	BLDG4-SP-036	TCLP	Solid	7470A	583747
LB 480-583747/1-D	Method Blank	TCLP	Solid	7470A	583747
MB 480-584006/2-A	Method Blank	Total/NA	Solid	7470A	
LCS 480-584006/3-A	Lab Control Sample	Total/NA	Solid	7470A	

Analysis Batch: 584076

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-185463-1	BLDG6-SP-032	TCLP	Solid	7470A	584006
480-185463-2	BLDG2-SP-033	TCLP	Solid	7470A	584006
480-185463-3	BLDG10-SP-034	TCLP	Solid	7470A	584006
480-185463-4	RAMP-SP-035	TCLP	Solid	7470A	584006
480-185463-5	BLDG4-SP-036	TCLP	Solid	7470A	584006
LB 480-583747/1-D	Method Blank	TCLP	Solid	7470A	584006
MB 480-584006/2-A	Method Blank	Total/NA	Solid	7470A	584006
LCS 480-584006/3-A	Lab Control Sample	Total/NA	Solid	7470A	584006

Analysis Batch: 584479

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-185463-1	BLDG6-SP-032	TCLP	Solid	6010C	583991
480-185463-3	BLDG10-SP-034	TCLP	Solid	6010C	583991
480-185463-4	RAMP-SP-035	TCLP	Solid	6010C	583991
480-185463-5	BLDG4-SP-036	TCLP	Solid	6010C	583991
LB 480-583747/1-B	Method Blank	TCLP	Solid	6010C	583991
MB 480-583991/2-A	Method Blank	Total/NA	Solid	6010C	583991
LCS 480-583991/3-A	Lab Control Sample	Total/NA	Solid	6010C	583991

Analysis Batch: 584609

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-185463-2	BLDG2-SP-033	TCLP	Solid	6010C	583991

General Chemistry

Analysis Batch: 583677

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-185463-1	BLDG6-SP-032	Total/NA	Solid	Moisture	
480-185463-2	BLDG2-SP-033	Total/NA	Solid	Moisture	
480-185463-3	BLDG10-SP-034	Total/NA	Solid	Moisture	
480-185463-4	RAMP-SP-035	Total/NA	Solid	Moisture	
480-185463-5	BLDG4-SP-036	Total/NA	Solid	Moisture	

Analysis Batch: 584030

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-185463-1	BLDG6-SP-032	Total/NA	Solid	9045D	
480-185463-2	BLDG2-SP-033	Total/NA	Solid	9045D	
480-185463-3	BLDG10-SP-034	Total/NA	Solid	9045D	
480-185463-4	RAMP-SP-035	Total/NA	Solid	9045D	
480-185463-5	BLDG4-SP-036	Total/NA	Solid	9045D	
LCS 480-584030/1	Lab Control Sample	Total/NA	Solid	9045D	

QC Association Summary

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-185463-1

General Chemistry

Analysis Batch: 584169

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-185463-2	BLDG2-SP-033	Total/NA	Solid	1010A	
480-185463-3	BLDG10-SP-034	Total/NA	Solid	1010A	
LCS 480-584169/1	Lab Control Sample	Total/NA	Solid	1010A	

Analysis Batch: 584313

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-185463-1	BLDG6-SP-032	Total/NA	Solid	1010A	
480-185463-4	RAMP-SP-035	Total/NA	Solid	1010A	
480-185463-5	BLDG4-SP-036	Total/NA	Solid	1010A	
LCS 480-584313/1	Lab Control Sample	Total/NA	Solid	1010A	
480-185463-4 DU	RAMP-SP-035	Total/NA	Solid	1010A	

Client Sample ID: BLDG6-SP-032

Lab Sample ID: 480-185463-1
Date Collected: 06/01/21 14:45
Matrix: Solid
Date Received: 06/02/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			583748	06/03/21 08:43	LMS	TAL BUF
TCLP	Analysis	8260C		10	584048	06/05/21 00:49	WJD	TAL BUF
TCLP	Leach	1311			583747	06/03/21 08:42	LMS	TAL BUF
TCLP	Prep	3510C			584053	06/04/21 15:56	CMC	TAL BUF
TCLP	Analysis	8270D		1	584275	06/07/21 19:34	PJQ	TAL BUF
TCLP	Leach	1311			583747	06/03/21 08:42	LMS	TAL BUF
TCLP	Prep	3510C			584054	06/04/21 16:07	CMC	TAL BUF
TCLP	Analysis	8081B		1	584156	06/06/21 17:23	JLS	TAL BUF
TCLP	Leach	1311			583747	06/03/21 08:42	LMS	TAL BUF
TCLP	Prep	8151A			584003	06/04/21 11:22	JMP	TAL BUF
TCLP	Analysis	8151		1	584149	06/06/21 21:54	MAN	TAL BUF
TCLP	Leach	1311			583747	06/03/21 08:42	LMS	TAL BUF
TCLP	Prep	3010A			583991	06/04/21 11:01	ADM	TAL BUF
TCLP	Analysis	6010C		1	584479	06/08/21 13:05	AMH	TAL BUF
TCLP	Leach	1311			583747	06/03/21 08:42	LMS	TAL BUF
TCLP	Prep	7470A			584006	06/04/21 12:50	BMB	TAL BUF
TCLP	Analysis	7470A		1	584076	06/04/21 17:27	BMB	TAL BUF
Total/NA	Analysis	1010A		1	584313	06/07/21 17:03	JGO	TAL BUF
Total/NA	Analysis	9045D		1	584030	06/04/21 11:50	CSS	TAL BUF
Total/NA	Analysis	Moisture		1	583677	06/02/21 15:59	IMZ	TAL BUF

Client Sample ID: BLDG6-SP-032

Lab Sample ID: 480-185463-1
Date Collected: 06/01/21 14:45
Matrix: Solid
Date Received: 06/02/21 10:00
Percent Solids: 77.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035A_L			583880	06/03/21 17:24	CDC	TAL BUF
Total/NA	Analysis	8260C		1	583883	06/03/21 20:54	WJD	TAL BUF
Total/NA	Prep	3550C			583845	06/03/21 15:00	ATG	TAL BUF
Total/NA	Analysis	8270D		1	584466	06/08/21 21:18	PJQ	TAL BUF

Client Sample ID: BLDG2-SP-033

Lab Sample ID: 480-185463-2
Date Collected: 06/01/21 15:00
Matrix: Solid
Date Received: 06/02/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			583748	06/03/21 08:43	LMS	TAL BUF
TCLP	Analysis	8260C		10	584048	06/05/21 01:12	WJD	TAL BUF
TCLP	Leach	1311			583747	06/03/21 08:42	LMS	TAL BUF
TCLP	Prep	3510C			584053	06/04/21 15:56	CMC	TAL BUF
TCLP	Analysis	8270D		1	584275	06/07/21 19:59	PJQ	TAL BUF
TCLP	Leach	1311			583747	06/03/21 08:42	LMS	TAL BUF
TCLP	Prep	3510C			584054	06/04/21 16:07	CMC	TAL BUF
TCLP	Analysis	8081B		1	584156	06/06/21 17:43	JLS	TAL BUF

Client Sample ID: BLDG2-SP-033

Lab Sample ID: 480-185463-2

Date Collected: 06/01/21 15:00
Matrix: Solid
Date Received: 06/02/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			583747	06/03/21 08:42	LMS	TAL BUF
TCLP	Prep	8151A			584003	06/04/21 11:22	JMP	TAL BUF
TCLP	Analysis	8151		1	584149	06/06/21 22:24	MAN	TAL BUF
TCLP	Leach	1311			583747	06/03/21 08:42	LMS	TAL BUF
TCLP	Prep	3010A			583991	06/04/21 11:01	ADM	TAL BUF
TCLP	Analysis	6010C		1	584609	06/08/21 16:36	LMH	TAL BUF
TCLP	Leach	1311			583747	06/03/21 08:42	LMS	TAL BUF
TCLP	Prep	7470A			584006	06/04/21 12:50	BMB	TAL BUF
TCLP	Analysis	7470A		1	584076	06/04/21 17:29	BMB	TAL BUF
Total/NA	Analysis	1010A		1	584169	06/06/21 15:06	KEB	TAL BUF
Total/NA	Analysis	9045D		1	584030	06/04/21 11:50	CSS	TAL BUF
Total/NA	Analysis	Moisture		1	583677	06/02/21 15:59	IMZ	TAL BUF

Client Sample ID: BLDG2-SP-033

Lab Sample ID: 480-185463-2

Date Collected: 06/01/21 15:00
Matrix: Solid
Date Received: 06/02/21 10:00
Percent Solids: 70.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035A_L			583880	06/03/21 17:24	CDC	TAL BUF
Total/NA	Analysis	8260C		1	583883	06/03/21 21:19	WJD	TAL BUF
Total/NA	Prep	3550C			583845	06/03/21 15:00	ATG	TAL BUF
Total/NA	Analysis	8270D		1	584466	06/08/21 21:44	PJQ	TAL BUF

Client Sample ID: BLDG10-SP-034

Lab Sample ID: 480-185463-3

Date Collected: 06/01/21 15:20
Matrix: Solid
Date Received: 06/02/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			583748	06/03/21 08:43	LMS	TAL BUF
TCLP	Analysis	8260C		10	584048	06/05/21 01:35	WJD	TAL BUF
TCLP	Leach	1311			583747	06/03/21 08:42	LMS	TAL BUF
TCLP	Prep	3510C			584053	06/04/21 15:56	CMC	TAL BUF
TCLP	Analysis	8270D		1	584275	06/07/21 20:24	PJQ	TAL BUF
TCLP	Leach	1311			583747	06/03/21 08:42	LMS	TAL BUF
TCLP	Prep	3510C			584054	06/04/21 16:07	CMC	TAL BUF
TCLP	Analysis	8081B		1	584156	06/06/21 18:02	JLS	TAL BUF
TCLP	Leach	1311			583747	06/03/21 08:42	LMS	TAL BUF
TCLP	Prep	8151A			584003	06/04/21 11:22	JMP	TAL BUF
TCLP	Analysis	8151		1	584149	06/06/21 22:54	MAN	TAL BUF
TCLP	Leach	1311			583747	06/03/21 08:42	LMS	TAL BUF
TCLP	Prep	3010A			583991	06/04/21 11:01	ADM	TAL BUF
TCLP	Analysis	6010C		1	584479	06/08/21 13:24	AMH	TAL BUF
TCLP	Leach	1311			583747	06/03/21 08:42	LMS	TAL BUF
TCLP	Prep	7470A			584006	06/04/21 12:50	BMB	TAL BUF
TCLP	Analysis	7470A		1	584076	06/04/21 17:30	BMB	TAL BUF

Lab Chronicle

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-185463-1

Client Sample ID: BLDG10-SP-034

Lab Sample ID: 480-185463-3
Date Collected: 06/01/21 15:20
Matrix: Solid
Date Received: 06/02/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1010A		1	584169	06/06/21 15:06	KEB	TAL BUF
Total/NA	Analysis	9045D		1	584030	06/04/21 11:50	CSS	TAL BUF
Total/NA	Analysis	Moisture		1	583677	06/02/21 15:59	IMZ	TAL BUF

Client Sample ID: BLDG10-SP-034

Lab Sample ID: 480-185463-3
Date Collected: 06/01/21 15:20
Matrix: Solid
Date Received: 06/02/21 10:00
Percent Solids: 64.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035A_L			583880	06/03/21 17:24	CDC	TAL BUF
Total/NA	Analysis	8260C		1	583883	06/03/21 21:44	WJD	TAL BUF
Total/NA	Prep	3550C			583845	06/03/21 15:00	ATG	TAL BUF
Total/NA	Analysis	8270D		10	584466	06/08/21 22:08	PJQ	TAL BUF

Client Sample ID: RAMP-SP-035

Lab Sample ID: 480-185463-4
Date Collected: 06/01/21 15:30
Matrix: Solid
Date Received: 06/02/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			583748	06/03/21 08:43	LMS	TAL BUF
TCLP	Analysis	8260C		10	584048	06/05/21 01:57	WJD	TAL BUF
TCLP	Leach	1311			583747	06/03/21 08:42	LMS	TAL BUF
TCLP	Prep	3510C			584053	06/04/21 15:56	CMC	TAL BUF
TCLP	Analysis	8270D		1	584275	06/07/21 20:49	PJQ	TAL BUF
TCLP	Leach	1311			583747	06/03/21 08:42	LMS	TAL BUF
TCLP	Prep	3510C			584054	06/04/21 16:07	CMC	TAL BUF
TCLP	Analysis	8081B		1	584156	06/06/21 18:22	JLS	TAL BUF
TCLP	Leach	1311			583747	06/03/21 08:42	LMS	TAL BUF
TCLP	Prep	8151A			584003	06/04/21 11:22	JMP	TAL BUF
TCLP	Analysis	8151		1	584149	06/06/21 23:23	MAN	TAL BUF
TCLP	Leach	1311			583747	06/03/21 08:42	LMS	TAL BUF
TCLP	Prep	3010A			583991	06/04/21 11:01	ADM	TAL BUF
TCLP	Analysis	6010C		1	584479	06/08/21 13:28	AMH	TAL BUF
TCLP	Leach	1311			583747	06/03/21 08:42	LMS	TAL BUF
TCLP	Prep	7470A			584006	06/04/21 12:50	BMB	TAL BUF
TCLP	Analysis	7470A		1	584076	06/04/21 17:31	BMB	TAL BUF
Total/NA	Analysis	1010A		1	584313	06/07/21 17:03	JGO	TAL BUF
Total/NA	Analysis	9045D		1	584030	06/04/21 11:50	CSS	TAL BUF
Total/NA	Analysis	Moisture		1	583677	06/02/21 15:59	IMZ	TAL BUF

Lab Chronicle

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-185463-1

Client Sample ID: RAMP-SP-035

Lab Sample ID: 480-185463-4

Date Collected: 06/01/21 15:30
Matrix: Solid
Date Received: 06/02/21 10:00
Percent Solids: 76.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035A_H			584160	06/06/21 11:34	WJD	TAL BUF
Total/NA	Analysis	8260C		1	584401	06/08/21 15:03	LCH	TAL BUF
Total/NA	Prep	3550C			583845	06/03/21 15:00	ATG	TAL BUF
Total/NA	Analysis	8270D		1	584466	06/08/21 22:33	PJQ	TAL BUF

Client Sample ID: BLDG4-SP-036

Lab Sample ID: 480-185463-5

Date Collected: 06/01/21 16:00
Matrix: Solid
Date Received: 06/02/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			583748	06/03/21 08:43	LMS	TAL BUF
TCLP	Analysis	8260C		10	584048	06/05/21 02:21	WJD	TAL BUF
TCLP	Leach	1311			583747	06/03/21 08:42	LMS	TAL BUF
TCLP	Prep	3510C			584053	06/04/21 15:56	CMC	TAL BUF
TCLP	Analysis	8270D		1	584275	06/07/21 21:15	PJQ	TAL BUF
TCLP	Leach	1311			583747	06/03/21 08:42	LMS	TAL BUF
TCLP	Prep	3510C			584054	06/04/21 16:07	CMC	TAL BUF
TCLP	Analysis	8081B		1	584156	06/06/21 18:41	JLS	TAL BUF
TCLP	Leach	1311			583747	06/03/21 08:42	LMS	TAL BUF
TCLP	Prep	8151A			584003	06/04/21 11:22	JMP	TAL BUF
TCLP	Analysis	8151		1	584149	06/06/21 23:53	MAN	TAL BUF
TCLP	Leach	1311			583747	06/03/21 08:42	LMS	TAL BUF
TCLP	Prep	3010A			583991	06/04/21 11:01	ADM	TAL BUF
TCLP	Analysis	6010C		1	584479	06/08/21 13:32	AMH	TAL BUF
TCLP	Leach	1311			583747	06/03/21 08:42	LMS	TAL BUF
TCLP	Prep	7470A			584006	06/04/21 12:50	BMB	TAL BUF
TCLP	Analysis	7470A		1	584076	06/04/21 17:33	BMB	TAL BUF
Total/NA	Analysis	1010A		1	584313	06/07/21 17:03	JGO	TAL BUF
Total/NA	Analysis	9045D		1	584030	06/04/21 11:50	CSS	TAL BUF
Total/NA	Analysis	Moisture		1	583677	06/02/21 15:59	IMZ	TAL BUF

Client Sample ID: BLDG4-SP-036

Lab Sample ID: 480-185463-5

Date Collected: 06/01/21 16:00
Matrix: Solid
Date Received: 06/02/21 10:00
Percent Solids: 63.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035A_L			584259	06/07/21 10:00	WJD	TAL BUF
Total/NA	Analysis	8260C		1	584183	06/07/21 18:17	CDC	TAL BUF
Total/NA	Prep	3550C			583845	06/03/21 15:00	ATG	TAL BUF
Total/NA	Analysis	8270D		5	584466	06/08/21 22:57	PJQ	TAL BUF

Laboratory References:

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Accreditation/Certification Summary

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-185463-1

Laboratory: Eurofins TestAmerica, Buffalo

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
New York	NELAP	10026	04-01-22

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
7470A	7470A	Solid	Mercury
9045D		Solid	Temperature
Moisture		Solid	Percent Moisture
Moisture		Solid	Percent Solids

Method Summary

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-185463-1

Method	Method Description	Protocol	Laboratory
8260C	TCLP Volatiles	SW846	TAL BUF
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL BUF
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL BUF
8081B	Organochlorine Pesticides (GC)	SW846	TAL BUF
8151	TCLP Herbicides	SW846	TAL BUF
6010C	Metals (ICP)	SW846	TAL BUF
7470A	TCLP Mercury	SW846	TAL BUF
1010A	Ignitability, Pensky-Martens Closed-Cup Method	SW846	TAL BUF
9045D	pH	SW846	TAL BUF
Moisture	Percent Moisture	EPA	TAL BUF
1311	TCLP Extraction	SW846	TAL BUF
3010A	Preparation, Total Metals	SW846	TAL BUF
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	TAL BUF
3550C	Ultrasonic Extraction	SW846	TAL BUF
5030C	Purge and Trap	SW846	TAL BUF
5035A_H	Closed System Purge and Trap	SW846	TAL BUF
5035A_L	Closed System Purge and Trap	SW846	TAL BUF
7470A	Preparation, Mercury	SW846	TAL BUF
8151A	Extraction (Herbicides)	SW846	TAL BUF

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Sample Summary

Client: Integral Consulting Inc
Project/Site: Project EF1017

Job ID: 480-185463-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
480-185463-1	BLDG6-SP-032	Solid	06/01/21 14:45	06/02/21 10:00	
480-185463-2	BLDG2-SP-033	Solid	06/01/21 15:00	06/02/21 10:00	
480-185463-3	BLDG10-SP-034	Solid	06/01/21 15:20	06/02/21 10:00	
480-185463-4	RAMP-SP-035	Solid	06/01/21 15:30	06/02/21 10:00	
480-185463-5	BLDG4-SP-036	Solid	06/01/21 16:00	06/02/21 10:00	

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone: 716-691-2600 Fax: 716-691-7991

Chain of Custody Record

eurofins | Environment Testing America

Client Information	Sampler: K. Zatwarnicki	Lab PM: Fischer, Brian J	Carrier Tracking No(s):	COC No: 480-158821-34919.2
Client Contact: Mr. Glenn Esler	Phone:	E-Mail: Brian.Fischer@Eurofinset.com	State of Origin: NY	Page: Page 1 of 6
Company: Integral Consulting Inc	PWSID:			Job #: EF1017
Address: 319 SW Washington Ave Suite 1150	Due Date Requested:			
City: Portland	TAT Requested (days): 5-day / 1 week			
State, Zip: OR, 97204	Compliance Project: Δ Yes Δ No			
Phone: 503-943-3617(Tel)	PO #: EF1017			
Email: gesler@integral-corp.com	WO #:			
Project Name: Project EF1017	Project #: 48023604			
Site:	SSOW#:			

Analysis Requested

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010C, 7470A, 8081B, 8151A, 8270D TCLP	8260C - TCLP Volatiles	1010A, 9045D	8260C - TCL list OLM04.2	8082A - TCL PCBs - OLM04.2	8270D TCL SVOCs	Total Number of containers	Special Instructions/Note:
				Preservation Code:			N	N	N	N	N			
BLDG6-SP-032	6/1/21	1445	G	Solid	N		X	X	X	X		X		
BLDG2-SP-033	↓	1500	↓	Solid			↓	↓	↓	↓		↓		
BLDG10-SP-034	↓	1520	↓	Solid			↓	↓	↓	↓		↓		
RAMP-SP-035	↓	1530	↓	Solid			↓	↓	↓	↓		↓		
BLDG4-SP-036	↓	1600	↓	Solid			↓	↓	↓	↓		↓		
				Solid										
				Solid										
				Solid										
				Solid										
				Water										
				Water										

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

480-185463 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For ______ Months

Deliverable Requested: I, II, III, IV, Other (specify) Cat B Level II

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:		Time:	Method of Shipment:	
Relinquished by: Katelyn Zatwarnicki	Date/Time: 6/1/21 1730	Company: integral	Received by: [signature]	Date/Time: 6/2/21 1000	Company: TAS
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: #1 2.4		

Ver: 11/01/2020

Login Sample Receipt Checklist

Client: Integral Consulting Inc

Job Number: 480-185463-1

Login Number: 185463
List Number: 1
Creator: Yeager, Brian A

List Source: Eurofins TestAmerica, Buffalo

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	INTEGRAL
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	N/A	

Data Validation Report

Corning Refractories Site
Spring 2021 Sampling

Prepared for
Corning Incorporated

Prepared by

integral consulting inc.

319 SW Washington Street
Suite 1150
Portland, OR 97204

April 14, 2022

CONTENTS

LIST OF TABLES

ACRONYMS AND ABBREVIATIONS

EDD	electronic data deliverable
EPA	U.S. Environmental Protection Agency
LCS	laboratory control sample
LCSD	laboratory control sample duplicate
MS/MSD	matrix spike and matrix spike duplicate
QA/QC	quality assurance and quality control
QAPP	quality assurance project plan
RPD	relative percent difference
SDG	sample delivery group

1 INTRODUCTION

This report presents the findings of the data validation of solid samples and associated quality control samples analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pH, flash point, and full toxicity characteristic leaching procedure (TCLP) analytes. The sample delivery groups (SDGs) reviewed are summarized in Table 1-1, and the laboratory, parameters, and analytical methods are listed in Table 1-2.

The samples received a Stage 2B validation, which included a review of all laboratory summary forms of quality control and instrument performance data. The data validation was based upon criteria described in the U.S. Environmental Protection Agency's (EPA) functional guidelines for organic and inorganic data review (USEPA 2017a,b), EPA Region II guidelines for data validation (USEPA 2010a–c, 2014, 2016a,b), the quality assurance project plan (QAPP; Integral 2022), and the referenced analytical methods.

The quality assurance and quality control (QA/QC) parameters reviewed are discussed in Section 2. The electronic data deliverables (EDDs) were compared to the hard copy data packages, and 100 percent of the results were verified. Qualifiers resulting from the validation process were entered into the EDDs. A reason code indicating the reason for qualification was also entered into the EDDs. The definitions of the data qualifiers used are provided in Table 1-3, and descriptions of the reason codes used are provided in Table 1-4. For example, if a data point was estimated as the result of a matrix spike outlier, the qualifier "J" and the reason code "MS" were entered into the EDD, indicated as J, MS in the discussion of findings in Section 2.

2 FINDINGS

The data validation findings are provided in this section.

2.1 PARAMETERS REVIEWED

The QA/QC parameters reviewed for each analytical parameter are discussed below and listed in Table 2-1.

2.2 SAMPLE RECEIPT AND HOLDING TIMES

Samples were received with complete chain-of-custody forms and in good condition. Sample receipt temperatures were recorded at 3.3°C, 3.1°C, and 2.4°C.

All analyses were conducted within the holding times referenced in the methods or QAPP, with one exception. The pH analysis of all samples was conducted 3 to 6 days from sample collection. The method recommends that pH analysis be conducted immediately, and all pH results were qualified as estimated (J-HT).

2.3 BLANKS

All results from the laboratory method blanks and calibration blanks were reported as less than the laboratory method detection limit.

2.4 SURROGATE RECOVERY

Surrogates were added to all samples for organic analyses. All surrogate percent recoveries were within the laboratory control limits with the following exceptions.

Analyte Group	SDG	Sample(s)	Surrogate(s)	Qualifiers Assigned
SVOCs				
	480-183421-1	BLDG6-SP-009	2,4,6-Tribromophenol	All acid extractable compounds qualified as estimated (J-SSR).
	480-185463-1	BLDG10-SP-034	All SVOC surrogates	Because the sample was analyzed at a 10-fold dilution, no qualifiers were assigned.
	480-185463-1	BLDG4-SP-036	Three of five SVOC surrogates	Because the sample was analyzed at a 5-fold dilution, no qualifiers were assigned.
TCLP herbicides				
	480-183377-1/2	All samples	2,4-Dichlorophenylacetic acid	The TCLP herbicide results in the associated samples were qualified as estimated (UJ-SSR) because of the low bias.
		LB 480-576811/1-D, LB 480-577812/1-B, LCS 480-577918/2-A	2,4-Dichlorophenylacetic acid	Because these are quality control samples, no qualifiers were assigned.
	480-183421-1	BLDG5-SP-007-20210415, BLDG6-SP-009-20210415	2,4-Dichlorophenylacetic acid	The TCLP herbicide results in the associated samples were qualified as estimated (UJ-SSR) because of the low bias.
		LB 480-577044/1-B	2,4-Dichlorophenylacetic acid	Because this is a quality control sample, no qualifiers were assigned
	480-185463-1	All samples	2,4-Dichlorophenylacetic acid	The TCLP herbicide results in the associated samples were qualified as estimated (UJ-SSR) because of the low bias.
		LB 480-583747/1-C, LCS 480-584003/2-A	2,4-Dichlorophenylacetic acid	Because these are quality control samples, no qualifiers were assigned
TCLP pesticides				
	480-185463-1	BLDG2-SP-033	All pesticide surrogates	Because TCLP pesticides were not detected in the sample; no qualifiers were assigned because of potentially high analytical bias.
TCLP VOCs				
	480-185463-1	BLDG2-SP-033	Dibromofluoromethane	TCLP VOCs were not detected in the sample; no qualifiers were assigned because of potentially high analytical bias.

2.5 LABORATORY CONTROL SAMPLES

The percent recoveries and relative percent difference (RPD) values of all laboratory control samples and laboratory control sample duplicates (LCS/LCSD) were within the laboratory control limits, with the following exceptions.

TCLP herbicides: The RPD value for 2,4-D was greater than the laboratory control limit in the LCS/LCSD submitted with SDG 480-183377-1/2. Because this analyte was not detected in the associated samples, no qualifiers were assigned.

TCLP pesticides: The percent recovery value for heptachlor epoxide was greater than the laboratory control limits in the LCSD submitted with SDG 480-185463-1. In addition, the RPD value for heptachlor epoxide was greater than the laboratory control limits. Because this analyte was not detected in the associated samples and the analytical bias was potentially high, no qualifiers were assigned.

TCLP SVOCs: The percent recovery value for 2,4-dinitrophenol was greater than the laboratory control limits in the LCSD submitted with SDG 480-183377-1/2. Because this analyte was not detected in the associated samples and the analytical bias was potentially high, no qualifiers were assigned.

The RPD value for pyridine was greater than the laboratory control limits in the LCS/LCSD submitted with SDG 480-185463-1. Because this analyte was not detected in the associated samples, no qualifiers were assigned because of the imprecision.

TCLP VOCs: The percent recovery value for 1,2-dichloroethane was greater than the laboratory control limits in the LCS submitted with SDG 480-185463-1. Because this analyte was not detected in the associated samples and the analytical bias was potentially high, no qualifiers were assigned.

2.6 MATRIX SPIKES/MATRIX SPIKE DUPLICATES

The percent recoveries and RPDs of all matrix spikes and matrix spike duplicates (MS/MSDs) were within the laboratory control limits, with the following exceptions.

VOCs: The percent recovery values for 31 VOCs were less than the laboratory control limits in the MS/MSD submitted with SDG 480-185463-1. The results for these VOCs in Sample BLDG4-SP-036 were qualified as estimated (J-MS).

TCLP metals: The percent recovery values for mercury were less than the laboratory control limit in the MS/MSD submitted with SDG 480-183421-1. In addition, the arsenic and silver recovery values in the associated post-digestion spike were greater than the laboratory control limits.

- The mercury results for associated Samples BLDG5-SP-007 and BLDG6-SP-009 were qualified as estimated (UJ-MS).
- The detected silver results for Samples BLDG5-SP-007 and BLDG6-SP-009 were qualified as estimated (J-MS).
- Arsenic was not detected in the associated samples, and no qualifiers were assigned because of the potentially high analytical bias.

2.7 REPLICATES

The RPD values between laboratory duplicate analysis of flash point were within the laboratory-specified limits.

2.8 METHOD REPORTING LIMITS AND METHODOLOGY

The reporting limits specified in the QAPP (Integral 2022) were met for all analyses with the following exceptions.

- A number of samples for total SVOC, TCLP VOC, and TCLP metals analyses were diluted at 5-fold or 10-fold dilutions because of matrix interferences and the reporting limits were elevated accordingly.
- For total VOCs, the laboratory did not report 1,2,3-trichlorobenzene, bromochloromethane, and vinyl acetate, which were listed as target compounds in the QAPP (Integral 2022).

2.9 INSTRUMENT PERFORMANCE

The gas chromatograph/mass spectrometer instrument performance checks (“tune”) were analyzed at the start of each 12-hour analytical shift, and the method-specified acceptance criteria were met, with the one exception noted below.

SVOCs: For one tune submitted with SDG 480-183377-1/2, the 198 mass ion did not meet criteria. Because all other criteria were met, data were not qualified based on professional judgment.

2.10 INITIAL CALIBRATION

Initial calibrations were analyzed on all instruments and met the acceptance criteria stated in the associated Region II data validation standard operating procedures, with the following exceptions.

SVOCs: The percent difference for pentachlorophenol in one initial calibration verification submitted with SDG 480-183377-1/2 was greater than the acceptance criteria, biased high. Because the bias was high and pentachlorophenol was not detected in the associated samples, no qualifiers were assigned.

Pentachlorophenol exceeded criteria (biased low) in the Level 3 initial calibration standard percent error check submitted with SDG 480-185463-1. All pentachlorophenol results in this SDG were qualified as estimated (UJ-Ci).

TCLP SVOCs: Pentachlorophenol exceeded criteria (biased low) in the Level 3 initial calibration standard percent error check submitted with SDG 480-185463-1. All TCLP pentachlorophenol results in this SDG were qualified as estimated (UJ-Ci).

2.11 CONTINUING CALIBRATION

Continuing calibrations were analyzed at the appropriate frequency and met the acceptance criteria stated in the associated methods, with the following exceptions.

Analyte Group	SDG	Calibration Identification	Analyte	Qualifiers Assigned
SVOC				
	480-183377-1/2	480-577225/3	Bis(2-chloroisopropyl)ether	The non-detected results in Samples DW2-BLDG1-SP-002, DW5-BLDG8-SP-003, and BLDG-3-SP-006 were qualified as estimated (UJ-Cc).
		480-577005/3	4-Nitrophenol, Butyl benzyl phthalate, Di-n-octyl phthalate	Because the bias was high and these analytes were not detected in the associated samples, no qualifiers were assigned.
		480-577005/3	Bis(2-ethylhexyl) phthalate	The detected result in Sample DW3-OUT-SP-004 was qualified as estimated (J-Cc).
	480-183421-1	480-577594/3	4-Nitrophenol	Because the bias was high and this analyte was not detected in the associated samples, no qualifiers were assigned.

Analyte Group	SDG	Calibration Identification	Analyte	Qualifiers Assigned
VOCs				
	480-183377-1/2	480-576931/2	Bromomethane, Chloroethane, Dichlorodifluoromethane Trichlorofluoromethane	Because the bias was high and this analyte was not detected in the associated samples, no qualifiers were assigned.
	480-183421-1	480-577108/2	1,1,1-Trichloroethane, Carbon tetrachloride, 1,2-Dichloroethane, Trichlorofluoromethane	Because the bias was high and this analyte was not detected in the associated samples, no qualifiers were assigned
TCLP pesticides				
	480-183337-1/2	480-577331/5 RTX-CLPII	Heptachlor epoxide	Because criteria were met on the RTX-CLPI column and this analyte was not detected in the associated samples, no qualifiers were assigned.
	480-183421-1	480-577331/5 RTX-CLPII	Heptachlor epoxide	Because criteria were met on the RTX-CLPI column and this analyte was not detected in the associated samples, no qualifiers were assigned.
		480-577555/6 RTX-CLPI	Decachlorobiphenyl.	Because criteria were met on the RTX-CLPII column and all surrogates met criteria, no qualifiers were assigned.
	480-185463-1	480-584156/7 CLP1	Chlordane (technical) Peak 2, Chlordane (technical) Peak 5	Because the bias was high and this analyte was not detected in the associated samples, no qualifiers were assigned.
		480-584156/7 CLP2	Chlordane (technical) Peak 4	Because the bias was high and this analyte was not detected in the associated samples, no qualifiers were assigned.
		480-584156/8 CLP1	Toxaphene Peak 3, Toxaphene Peak 5	Because the bias was high and this analyte was not detected in the associated samples, no qualifiers were assigned.
		480-584156/8 CLP2	Toxaphene Peak 5	Results reported from CLP1 and no qualifiers assigned.
TCLP SVOCs				
	480-183377-1/2	480-577181/3	4-Nitrophenol	Because the bias was high and this analyte was not detected in the associated samples, no qualifiers were assigned.
TCLP VOCs				
	480-183377-1/2	480-577160/3	Vinyl chloride	Because the bias was high and this analyte was not detected in the associated samples, no qualifiers were assigned.

Analyte Group	SDG	Calibration Identification	Analyte	Qualifiers Assigned
	480-183421-1	480-577162/3	2-Butanone (MEK)	Because the bias was high and this analyte was not detected in the associated samples, no qualifiers were assigned.
	480-185463-1	480-584048/4	1,1-Dichloroethene	The results for this analyte in all samples was qualified as estimated (UJ-Cc).
			1,2-Dichloroethane, Carbon tetrachloride	Because the bias was high and this analyte was not detected in the associated samples, no qualifiers were assigned.

2.12 INTERNAL STANDARDS

Internal standards were added to all samples for SVOC, VOC, pesticides, and inductively coupled plasma metals analyses, and the areas and retention times of all internal standards were within the method-specified control limits with the following exceptions.

VOCS: The internal standard 1,4-dichlorobenzene-d4 recovery was biased low in Sample BLDG4-SP-036 submitted with SDG 480-185463-1 and in the associated MS/MSD analyses. The non-detected results for associated analytes (isopropylbenzene, 1,1,2,2-tetrachloroethane, 1,3-dichlorobenzene, 1,4-dichlorobenzene, 1,2-dichlorobenzene, and 1,2-dibromo-3-chloropropane) were qualified as estimated (UJ-IS) in Sample BLDG4-SP-036.

3 OVERALL ASSESSMENT

3.1 DATA QUALIFICATION

A total of 2,041 results were reported. A total of 104 results (5.1 percent) were qualified; the number of results qualified is summarized by reason in Table 3-1. Some data points were qualified for multiple reasons; therefore, the sum of the qualifiers assigned is greater than the total number of data points qualified. No results were rejected, and completeness was 100 percent. A summary of all qualified results is presented in Table 3-2.

3.2 DATA USABILITY

The data meet the criteria set forth in the method and referenced quality assurance documents, with the exceptions noted above. All other results are acceptable for their intended use, as qualified.

4 REFERENCES

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Tables

Table 1-1. SDGs Reviewed and Number of Samples

SDG	Number of Samples
480-183377-1	5 solids
480-183377-2	1 solid
480-183421-1	2 solids
480-185463-1	5 solids

Notes:
SDG = sample delivery group

Table 1-2. Analytical Parameters and Methods

Analytical Parameter	Analytical Method	Reference
Flash Point	EPA 1010A	USEPA (2004a)
pH	EPA 9045D	USEPA (2004b)
SVOCs	EPA 8270D	USEPA (2014)
VOCs	EPA 8260C	USEPA (2006)
TCLP Herbicides	EPA 1311/8151	USEPA (1992/1994a)
TCLP Metals	EPA 1311/6010C	USEPA (1992/2000)
TCLP Mercury	EPA 1311/7470A	USEPA (1992/1994b)
TCLP Pesticides	EPA 1311/8081B	USEPA (1992/2007)
TCLP SVOCs	EPA 1311/8270D	USEPA (1992/2014)
TCLP VOCs	EPA 1311/8260C	USEPA (1992/2006)

Notes:
EPA = U.S. Environmental Protection Agency
SVOC = semivolatile organic compound
TCLP = toxicity characteristic leaching procedure
VOC = volatile organic compound

Table 1-3. Definition of Data Qualifiers

Data Qualifier	Definition
J	The associated numerical value is an estimated quantity.
UJ	The material was analyzed for, but was not detected. The sample quantitation limit is an estimated quantity.

Table 1-4. Definition of Data Validation Reason Codes

Reason Code	Definition
Cc	Calibration (continuing)
Ci	Calibration (initial)
HT	Holding time
IS	Internal standard
MS	Matrix spike
SSR	Surrogate standard recovery

Table 2-1. QA/QC Parameters Reviewed

	Analytical Parameter							
QA/QC Parameter	VOC EPA 8260C	SVOC EPA 8270D	TCLP VOC EPA 1311/8260C	TCLP SVOC EPA 1311/8270D	TCLP Pesticides EPA 1311/8081B	TCLP Herbicides EPA 1311/8151	TCLP Metals EPA 1311/6010C/ 7470A	pH/Flash Point EPA 9045D/1010A
Sample Receipt and Holding Times	+	+	+	+	+	+	+	Q
Blanks	+	+	+	+	+	+	+	NA
Surrogate Compounds	+	Q	D	+	D	Q	NA	NA
MS/MSD	Q	+	+	+	+	+	Q	NA
LCS/LCSD	+	+	D	D	D	D	+	+
Replicates	NA	NA	NA	NA	NA	NA	NA	+
MRL and Methodology	D	D	D	+	+	+	D	NA
Instrument Performance	+	D	+	+	NA	NA	NA	NA
Initial Calibration	+	Q	+	Q	+	+	+	NA
Continuing Calibration	D	Q	Q	D	D	+	+	NA
Internal Standards	Q	+	+	+	+	+	+	NA

Notes:

+ = All QA/QC criteria met
D = Data are discussed in the report. QA/QC criteria were not met; however no data were qualified.
NA = Not applicable
Q = Data were qualified and are discussed in the report.

EPA = U.S. Environmental Protection Agency
LCS = laboratory control sample
MRL = method reporting limit
MS/MSD = matrix spike/matrix spike duplicate
QA/QC = quality assurance and quality control
SVOC = semivolatile organic compound
TCLP = toxicity characteristic leaching procedure
VOC = volatile organic compound

Table 3-1. Summary of Qualified Data

SDG	Sample	Analyte	Result	Method Reporting Limit	Lab Qualifier	DV Qualifier	Qualifier Reason	Units
480-183377-1	DW1-BLDG1-SP-001-20210414	TCLP 2,4-D (Dichlorophenoxyacetic Acid)		0.0020	UT	UJ	SSR	mg/L
480-183377-1	DW1-BLDG1-SP-001-20210414	TCLP Silvex (2,4,5-TP)		0.0020	U	UJ	SSR	mg/L
480-183377-1	DW1-BLDG1-SP-001-20210414	pH	8.7	0.1		J	HT	pH units
480-183377-1	DW2-BLDG1-SP-002-20210414	TCLP 2,4-D (Dichlorophenoxyacetic Acid)		0.0020	U	UJ	SSR	mg/L
480-183377-1	DW2-BLDG1-SP-002-20210414	TCLP Silvex (2,4,5-TP)		0.0020	U	UJ	SSR	mg/L
480-183377-1	DW2-BLDG1-SP-002-20210414	Bis(2-chloroisopropyl) Ether		1900	U	UJ	Ci	µg/kg
480-183377-1	DW2-BLDG1-SP-002-20210414	pH	8.4	0.1		J	HT	pH units
480-183377-1	DW3-OUT-SP-004-20210414	TCLP 2,4-D (Dichlorophenoxyacetic Acid)		0.0020	UT	UJ	SSR	mg/L
480-183377-1	DW3-OUT-SP-004-20210414	TCLP Silvex (2,4,5-TP)		0.0020	U	UJ	SSR	mg/L
480-183377-1	DW3-OUT-SP-004-20210414	Bis(2-Ethylhexyl) Phthalate	1000	2100	J	J	Cc	µg/kg
480-183377-1	DW3-OUT-SP-004-20210414	pH	7.7	0.1		J	HT	pH units
480-183377-1	DW4-OUT-SP-005-20210414	TCLP 2,4-D (Dichlorophenoxyacetic Acid)		0.0020	U	UJ	SSR	mg/L
480-183377-1	DW4-OUT-SP-005-20210414	TCLP Silvex (2,4,5-TP)		0.0020	U	UJ	SSR	mg/L
480-183377-1	DW4-OUT-SP-005-20210414	pH	7.5	0.1		J	HT	pH units
480-183377-1	DW5-BLDG8-SP-003-20210414	TCLP 2,4-D (Dichlorophenoxyacetic Acid)		0.0020	U	UJ	SSR	mg/L
480-183377-1	DW5-BLDG8-SP-003-20210414	TCLP Silvex (2,4,5-TP)		0.0020	U	UJ	SSR	mg/L
480-183377-1	DW5-BLDG8-SP-003-20210414	Bis(2-chloroisopropyl) Ether		860	U	UJ	Ci	µg/kg
480-183377-1	DW5-BLDG8-SP-003-20210414	pH	7.4	0.1		J	HT	pH units
480-183377-2	BLDG-3-SP-006-20210414	TCLP 2,4-D (Dichlorophenoxyacetic Acid)		0.0020	UT	UJ	SSR	mg/L
480-183377-2	BLDG-3-SP-006-20210414	TCLP Silvex (2,4,5-TP)		0.0020	U	UJ	SSR	mg/L
480-183377-2	BLDG-3-SP-006-20210414	Bis(2-chloroisopropyl) Ether		2100	U	UJ	Ci	µg/kg
480-183377-2	BLDG-3-SP-006-20210414	pH	7.5	0.1		J	HT	pH units
480-183421-1	BLDG5-SP-007-20210415	TCLP 2,4-D (Dichlorophenoxyacetic Acid)		0.0020	U	UJ	SSR	mg/L
480-183421-1	BLDG5-SP-007-20210415	TCLP Silvex (2,4,5-TP)		0.0020	U	UJ	SSR	mg/L
480-183421-1	BLDG5-SP-007-20210415	pH	8.5	0.1		J	HT	pH units
480-183421-1	BLDG6-SP-009-20210415	TCLP 2,4-D (Dichlorophenoxyacetic Acid)		0.0020	U	UJ	SSR	mg/L
480-183421-1	BLDG6-SP-009-20210415	TCLP Silvex (2,4,5-TP)		0.0020	U	UJ	SSR	mg/L
480-183421-1	BLDG6-SP-009-20210415	2,4,5-Trichlorophenol		4700	U	UJ	SSR	µg/kg
480-183421-1	BLDG6-SP-009-20210415	2,4,6-Trichlorophenol		4700	U	UJ	SSR	µg/kg
480-183421-1	BLDG6-SP-009-20210415	2,4-Dichlorophenol		4700	U	UJ	SSR	µg/kg
480-183421-1	BLDG6-SP-009-20210415	2,4-Dimethylphenol		4700	U	UJ	SSR	µg/kg
480-183421-1	BLDG6-SP-009-20210415	2,4-Dinitrophenol		46000	U	UJ	SSR	µg/kg
480-183421-1	BLDG6-SP-009-20210415	2-Chlorophenol		9100	U	UJ	SSR	µg/kg
480-183421-1	BLDG6-SP-009-20210415	2-Methylphenol (*o*-Cresol)		4700	U	UJ	SSR	µg/kg
480-183421-1	BLDG6-SP-009-20210415	2-Nitrophenol		4700	U	UJ	SSR	µg/kg
480-183421-1	BLDG6-SP-009-20210415	4,6-Dinitro-2-Methylphenol		9100	U	UJ	SSR	µg/kg
480-183421-1	BLDG6-SP-009-20210415	4-Chloro-3-Methylphenol		4700	U	UJ	SSR	µg/kg
480-183421-1	BLDG6-SP-009-20210415	4-Methylphenol (*p*-Cresol)		9100	U	UJ	SSR	µg/kg
480-183421-1	BLDG6-SP-009-20210415	4-Nitrophenol		9100	U	UJ	SSR	µg/kg
480-183421-1	BLDG6-SP-009-20210415	Pentachlorophenol		9100	U	UJ	SSR	µg/kg

Table 3-1. Summary of Qualified Data

SDG	Sample	Analyte	Result	Method Reporting Limit	Lab Qualifier	DV Qualifier	Qualifier Reason	Units
480-183421-1	BLDG6-SP-009-20210415	Phenol		4700	U	UJ	SSR	µg/kg
480-183421-1	BLDG6-SP-009-20210415	pH	8.2	0.1		J	HT	pH units
480-185463-1	BLDG10-SP-034-20210601	pH	7.0	0.1		J	HT	pH units
480-185463-1	BLDG2-SP-033-20210601	pH	7.4	0.1		J	HT	pH units
480-185463-1	BLDG4-SP-036-20210601	pH	7.2	0.1		J	HT	pH units
480-185463-1	BLDG4-SP-036-20210601	Acetone	18	40	JT	J	MS	ug/kg
480-185463-1	BLDG6-SP-032-20210601	pH	7.6	0.1		J	HT	pH units
480-185463-1	RAMP-SP-035-20210601	pH	7.7	0.1		J	HT	pH units
480-185463-1	BLDG10-SP-034-20210601	TCLP 2,4-D (Dichlorophenoxyacetic Acid)		0.002	U	UJ	SSR	mg/L
480-185463-1	BLDG10-SP-034-20210601	TCLP Silvex (2,4,5-TP)		0.002	U	UJ	SSR	mg/L
480-185463-1	BLDG10-SP-034-20210601	TCLP 1,1-Dichloroethene		0.01	U	UJ	Cc	mg/L
480-185463-1	BLDG10-SP-034-20210601	Pentachlorophenol		100000	U	UJ	Ci	µg/kg
480-185463-1	BLDG10-SP-034-20210601	TCLP Pentachlorophenol		0.04	U	UJ	Ci	mg/L
480-185463-1	BLDG2-SP-033-20210601	TCLP 2,4-D (Dichlorophenoxyacetic Acid)		0.002	U	UJ	SSR	mg/L
480-185463-1	BLDG2-SP-033-20210601	TCLP Silvex (2,4,5-TP)		0.002	U	UJ	SSR	mg/L
480-185463-1	BLDG2-SP-033-20210601	TCLP 1,1-Dichloroethene		0.01	U	UJ	Cc	mg/L
480-185463-1	BLDG2-SP-033-20210601	Pentachlorophenol		4600	U	UJ	Ci	µg/kg
480-185463-1	BLDG2-SP-033-20210601	TCLP Pentachlorophenol		0.04	U	UJ	Ci	mg/L
480-185463-1	BLDG4-SP-036-20210601	TCLP 2,4-D (Dichlorophenoxyacetic Acid)		0.002	U	UJ	SSR	mg/L
480-185463-1	BLDG4-SP-036-20210601	TCLP Silvex (2,4,5-TP)		0.002	U	UJ	SSR	mg/L
480-185463-1	BLDG4-SP-036-20210601	1,1,1-Trichloroethane		7.9	UT	UJ	MS	µg/kg
480-185463-1	BLDG4-SP-036-20210601	1,1,2,2-Tetrachloroethane		7.9	UT	UJ	IS	µg/kg
480-185463-1	BLDG4-SP-036-20210601	1,1,2-Trichloro-1,2,2-trifluoroethane		7.9	UT	UJ	MS	µg/kg
480-185463-1	BLDG4-SP-036-20210601	1,1,2-Trichloroethane		7.9	UT	UJ	MS	µg/kg
480-185463-1	BLDG4-SP-036-20210601	1,1-Dichloroethene		7.9	U	UJ	MS	µg/kg
480-185463-1	BLDG4-SP-036-20210601	1,2,4-Trichlorobenzene		7.9	UT	UJ	MS	µg/kg
480-185463-1	BLDG4-SP-036-20210601	1,2-Dibromo-3-chloropropane		7.9	UT	UJ	MS,IS	µg/kg
480-185463-1	BLDG4-SP-036-20210601	1,2-Dibromoethane (Ethylene Dibromide)		7.9	UT	UJ	MS	µg/kg
480-185463-1	BLDG4-SP-036-20210601	1,2-Dichlorobenzene		7.9	UT	UJ	MS,IS	µg/kg
480-185463-1	BLDG4-SP-036-20210601	1,2-Dichloroethane		7.9	UT	UJ	MS	µg/kg
480-185463-1	BLDG4-SP-036-20210601	1,2-Dichloropropane		7.9	UT	UJ	MS	µg/kg
480-185463-1	BLDG4-SP-036-20210601	1,3-Dichlorobenzene		7.9	UT	UJ	MS,IS	µg/kg
480-185463-1	BLDG4-SP-036-20210601	1,4-Dichlorobenzene		7.9	UT	UJ	MS,IS	µg/kg
480-185463-1	BLDG4-SP-036-20210601	Benzene		7.9	UT	UJ	MS	µg/kg
480-185463-1	BLDG4-SP-036-20210601	Bromodichloromethane		7.9	UT	UJ	MS	µg/kg
480-185463-1	BLDG4-SP-036-20210601	Bromoform		7.9	UT	UJ	MS	µg/kg
480-185463-1	BLDG4-SP-036-20210601	Carbon Disulfide		7.9	UT	UJ	MS	µg/kg
480-185463-1	BLDG4-SP-036-20210601	Carbon Tetrachloride		7.9	UT	UJ	MS	µg/kg
480-185463-1	BLDG4-SP-036-20210601	Chlorobenzene		7.9	UT	UJ	MS	µg/kg
480-185463-1	BLDG4-SP-036-20210601	*cis*-1,3-Dichloropropene		7.9	UT	UJ	MS	µg/kg

Table 3-1. Summary of Qualified Data

SDG	Sample	Analyte	Result	Method Reporting Limit	Lab Qualifier	DV Qualifier	Qualifier Reason	Units
480-185463-1	BLDG4-SP-036-20210601	Cyclohexane		7.9	UT	UJ	MS	µg/kg
480-185463-1	BLDG4-SP-036-20210601	Dibromochloromethane		7.9	UT	UJ	MS	µg/kg
480-185463-1	BLDG4-SP-036-20210601	Ethylbenzene		7.9	UT	UJ	MS	µg/kg
480-185463-1	BLDG4-SP-036-20210601	Isopropylbenzene (Cumene)		7.9	UT	UJ	MS,IS	µg/kg
480-185463-1	BLDG4-SP-036-20210601	Methyl Ethyl Ketone (2-Butanone)		40	UT	UJ	MS	µg/kg
480-185463-1	BLDG4-SP-036-20210601	Methylcyclohexane		7.9	UT	UJ	MS	µg/kg
480-185463-1	BLDG4-SP-036-20210601	Styrene		7.9	UT	UJ	MS	µg/kg
480-185463-1	BLDG4-SP-036-20210601	Tetrachloroethylene (PCE)		7.9	UT	UJ	MS	µg/kg
480-185463-1	BLDG4-SP-036-20210601	Toluene		7.9	UT	UJ	MS	µg/kg
480-185463-1	BLDG4-SP-036-20210601	*trans* -1,3-Dichloropropene		7.9	UT	UJ	MS	µg/kg
480-185463-1	BLDG4-SP-036-20210601	Trichloroethylene (TCE)		7.9	UT	UJ	MS	µg/kg
480-185463-1	BLDG4-SP-036-20210601	TCLP 1,1-Dichloroethene		0.01	U	UJ	Cc	mg/L
480-185463-1	BLDG4-SP-036-20210601	Pentachlorophenol		77000	U	UJ	Ci	µg/kg
480-185463-1	BLDG4-SP-036-20210601	TCLP Pentachlorophenol		0.04	U	UJ	Ci	mg/L
480-185463-1	BLDG6-SP-032-20210601	TCLP 2,4-D (Dichlorophenoxyacetic Acid)		0.002	U	UJ	SSR	mg/L
480-185463-1	BLDG6-SP-032-20210601	TCLP Silvex (2,4,5-TP)		0.002	U	UJ	SSR	mg/L
480-185463-1	BLDG6-SP-032-20210601	TCLP 1,1-Dichloroethene		0.01	U	UJ	Cc	mg/L
480-185463-1	BLDG6-SP-032-20210601	Pentachlorophenol		420	U	UJ	Ci	µg/kg
480-185463-1	BLDG6-SP-032-20210601	TCLP Pentachlorophenol		0.04	U	UJ	Ci	mg/L
480-185463-1	RAMP-SP-035-20210601	TCLP 2,4-D (Dichlorophenoxyacetic Acid)		0.002	U	UJ	SSR	mg/L
480-185463-1	RAMP-SP-035-20210601	TCLP Silvex (2,4,5-TP)		0.002	U	UJ	SSR	mg/L
480-185463-1	RAMP-SP-035-20210601	TCLP 1,1-Dichloroethene		0.01	U	UJ	Cc	mg/L
480-185463-1	RAMP-SP-035-20210601	Pentachlorophenol		4200	U	UJ	Ci	µg/kg
480-185463-1	RAMP-SP-035-20210601	TCLP Pentachlorophenol		0.04	U	UJ	Ci	mg/L

Notes:
Cc = calibration (continuing)
Ci = calibration (initial)
DV = data validation
HT = holding time exceedance
IS = internal standard
MS = matrix spike recovery
SSR = surrogate recovery
TCLP = toxicity characteristic leaching procedure

Qualifiers:
J = The associated numerical value is an estimated quantity.
UJ = The material was analyzed for, but was not detected. The sample quantitation limit is an estimated quantity.

WORK ORDER NO. 2101763623

DOCUMENT NO. 1484019 **STRAIGHT BILL OF LADING**

TRANSPORTER 1 Clean HARBORS Environmental Services VEHICLE ID # 4340

EPA ID # MAD 039322250 TRANS. 1 PHONE 781-792-5000

TRANSPORTER 2 VEHICLE ID #

EPA ID # TRANS. 2 PHONE

DESIGNATED FACILITY Corning Incorp	SHIPPER
FACILITY EPA ID # HP-ME-03-81	SHIPPER EPA ID #
ADDRESS 8 Museum Way	ADDRESS
CITY Corning STATE ny ZIP 14830	CITY STATE ZIP

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
25yrd	CT	Non	A. NON DOT Kiln Base Brick	~~22~~,000	~~22~~ lbs.
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS Emergency phone (800) 483-3718 CHRT 27392

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Angela Knight	[signature]	5-19-21
TRANSPORTER 1	Ahman Johnson	[signature]	5-19-21
TRANSPORTER 2			
RECEIVED BY	Jamie L. Herbert BLF	Jamie L. Herbert	5/19/21

1

CHI 107

BOL
1484019

STEUBEN COUNTY D.P.W.
BATH LANDFI

Ticket #: 1110837

DATE IN: 05/19/21 DATE OUT: 05/19/21
TIME IN: 11:03 AM TIME OUT: 11:43 AM
ID-IN: JLH ID-OUT: JLH

Vehicle#: C9071
TT= Commercial BY WEIGHT
OT= Corning

Haul Acct#: CORNINCCANI
Haul Company: CORNING INC - CANISTEO
907

Bill Acct #: CORNINCCANI
Bill Company: CORNING INC - CANISTEO
907

Gross:	60160 lb	30.08 tn
Tare:	37460 lb	18.73 tn
Net:	22700 lb	11.35 tn

Material

Industrial Waste 0

Subtotal: $499.40
Tax: $0.00

Total:
$499.40
Payment Method(s):
1 - Charge
$499.40

Change: $0.00

Driver: Ahman

1484019

WORK ORDER NO. 2101763623

DOCUMENT NO. 1484020

STRAIGHT BILL OF LADING

TRANSPORTER 1 Clean Harbors Environmental Services VEHICLE ID # 4340

EPA ID # MAD 039 322 250 TRANS. 1 PHONE 781-792-5000

TRANSPORTER 2 VEHICLE ID #

EPA ID # TRANS. 2 PHONE

DESIGNATED FACILITY			SHIPPER		
Corning Incorporated					
FACILITY EPA ID # HP-HE-03-81			SHIPPER EPA ID #		
ADDRESS 1 Museum Way			ADDRESS		
CITY Corning	STATE NY	ZIP 14831	CITY	STATE	ZIP

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
25 yd.	CT	NON	A. NON DOT Kiln Base Brick	24,000	lbs
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS
Emergency Phone (800) 483-3718 RAIN FOR RENT # 280341

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Angela Knight	[signature]	5/19/21
TRANSPORTER 1	Ahmar Johnson	[signature]	5-19-21
TRANSPORTER 2			
RECEIVED BY	Jamie L. Herbert BLF	Jamie L. Herbert	5/19/21

1

CHI 107

BoL 1484020

STEUBEN COUNTY D.P.W.
BATH LANDFI

Ticket #: 1110893

DATE IN: 05/19/21 DATE OUT: 05/19/21
TIME IN: 01:55 PM TIME OUT: 02:29 PM
ID-IN: JLH ID-OUT: JLH

Vehicle#: C9071
TT= Commercial BY WEIGHT
OT= Corning

Haul Acct#: CORNINCCANI
Haul Company: CORNING INC - CANISTEO
907

Bill Acct #: CORNINCCANI
Bill Company: CORNING INC - CANISTEO
907

Gross:	61040 lb	30.52 tn
Tare:	36960 lb	18.48 tn
Net:	24080 lb	12.04 tn

Material

Industrial Waste 0

Subtotal: $529.76
Tax: $0.00

Total:
$529.76
Payment Method(s):
1 - Charge
$529.76

Change: $0.00

Driver: Ahman

WORK ORDER NO. 21017 63623

DOCUMENT NO. 1484021 **STRAIGHT BILL OF LADING**

TRANSPORTER 1 Clean Harbor Environmental VEHICLE ID # 4340

EPA ID # MAD 039322250 TRANS. 1 PHONE

TRANSPORTER 2 VEHICLE ID #

EPA ID # TRANS. 2 PHONE

DESIGNATED FACILITY Corning Incorp.	SHIPPER
FACILITY EPA ID # HP-ME-03-81	SHIPPER EPA ID #
ADDRESS 8 Museum Way	ADDRESS
CITY Corning STATE NY ZIP 14831	CITY STATE ZIP

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
25 YRD	CT	X	A. Non-DOT Kiln Base Brick	24,000	lbs.
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS Emergency # (800) 483-3718

CHNT# 27633

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Angela Knight	[signature]	5/19/21
TRANSPORTER 1	Ahman Johnson	[signature]	5-19-21
TRANSPORTER 2			
RECEIVED BY	Jamie L. Herbert BCF	Jamie L. Herbert	5/20/21

1

CHI 107

~~BOL~~ 1484021

STEUBEN COUNTY D.P.W.
BATH LANDFI

Ticket #: 1110938

DATE IN: 05/20/21 DATE OUT: 05/20/21
TIME IN: 07:41 AM TIME OUT: 08:21 AM
ID-IN: JLH ID-OUT: JLH

Vehicle#: C9071
TT= Commercial BY WEIGHT
OT= Corning

1484020

Haul Acct#: CORNINCCANI
Haul Company: CORNING INC - CANISTEO 907

Bill Acct #: CORNINCCANI
Bill Company: CORNING INC - CANISTEO 907

Gross:	61600 lb	30.80 tn
Tare:	37300 lb	18.65 tn
Net:	24300 lb	12.15 tn

Material

Industrial Waste 0

Subtotal: $534.60
Tax: $0.00

Total:

$534.60
Payment Method(s):
1 - Charge
$534.60

Change: $0.00

Driver: Ahman

1484021

WORK ORDER NO. 210176,3623

DOCUMENT NO. 1484022

STRAIGHT BILL OF LADING

TRANSPORTER 1 Clean Harbors Environmental Corp VEHICLE ID # 4340

EPA ID # MAD 039322250 TRANS. 1 PHONE 781-792-5000

TRANSPORTER 2 VEHICLE ID #

EPA ID # TRANS. 2 PHONE

DESIGNATED FACILITY			SHIPPER		
Corning Incorp.			Corning Incorp		
FACILITY EPA ID # HP-ME-03-81			SHIPPER EPA ID # HP. ME. 03-81		
ADDRESS 1 Museum Way			ADDRESS 1 Museum Way		
CITY Corning	STATE NY	ZIP 14831	CITY Corning	STATE NY	ZIP 14831

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
25 yrd	CT	~~None~~	A. Non DOT Kiln Base Brick	24,000	lbs
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS

Emergency Phone (800)-483-3718

Rain for Rent
279644

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Angela Knight	[signature]	5-20-21
TRANSPORTER 1	Ahman Johnson	[signature]	5-20-21
TRANSPORTER 2			
RECEIVED BY	Jamie L. Herbert BLF	Jamie L. Herbert	5/20/21

CHI 107

BOL 1484022

STEUBEN COUNTY D.P.W.
BATH LANDFI

Ticket #: 1111020

DATE IN: 05/20/21 DATE OUT: 05/20/21
TIME IN: 11:03 AM TIME OUT: 11:53 AM
ID-IN: JLH ID-OUT: JLH

Vehicle#: C9071
TT= Commercial BY WEIGHT
OT= Corning

Haul Acct#: CORNINCCANI
Haul Company: CORNING INC - CANISTEO 907

Bill Acct #: CORNINCCANI
Bill Company: CORNING INC - CANISTEO 907

Gross:	63240 lb	31.62 tn
Tare:	36560 lb	18.28 tn
Net:	26680 lb	13.34 tn

Material

Industrial Waste 0

Subtotal: $586.96
Tax: $0.00

Total:

$586.96
Payment Method(s):
1 - Charge
$586.96

Change: $0.00

Driver: Ahman

1484022

CHI 107

WORK ORDER NO. 21017636?

DOCUMENT NO. 1484023 **STRAIGHT BILL OF LADING**

TRANSPORTER 1 Clean Harbors Environmental Corp VEHICLE ID # 4340

EPA ID # MAD 039322250 TRANS. 1 PHONE 781-792-5000

TRANSPORTER 2 VEHICLE ID #

EPA ID # TRANS. 2 PHONE

DESIGNATED FACILITY	SHIPPER
Corning Incorp.	Corning Incorp
FACILITY EPA ID # HP-ME-03-81	SHIPPER EPA ID # HPME 03-81
ADDRESS 1 Museum Way	ADDRESS 1 Museum Way
CITY Corning STATE NY ZIP 14831	CITY Corning STATE NY ZIP 14831

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
25 YRD	CT		A. Non DOT Kiln Base Brick	24,000	lbs
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS

Emergency Phone (800) 483-3718 Cart 27392

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Angela Knight	[signature]	5-20-21
TRANSPORTER 1	Ahman Johnson	[signature]	5-20-21
TRANSPORTER 2			
RECEIVED BY	Jamie L. Herbert BLT	Jamie L. Herbert	5/20/21

1

CHI 107

B02 1484023

STEUBEN COUNTY D.P.W.
BATH LANDFI

Ticket #: 1111098

DATE IN: 05/20/21 DATE OUT: 05/20/21
TIME IN: 02:59 PM TIME OUT: 03:28 PM
ID-IN: JLH ID-OUT: JLH

Vehicle#: C9071
TT= Commercial BY WEIGHT
OT= Corning

Haul Acct#: CORNINCCANI
Haul Company: CORNING INC - CANISTEO
907

Bill Acct #: CORNINCCANI
Bill Company: CORNING INC - CANISTEO
907

Gross:	56400 lb	28.20 tn
Tare:	37100 lb	18.55 tn
Net:	19300 lb	9.65 tn

Material

Industrial Waste 0

Subtotal: $424.60
Tax: $0.00

Total:

$424.60
Payment Method(s):
1 - Charge
$424.60

Change: $0.00

Driver: Ahman

1484023

WORK ORDER NO. 20176323

DOCUMENT NO. 1484024 **STRAIGHT BILL OF LADING**

TRANSPORTER 1 Clean Harbors Environmental Corp VEHICLE ID # 4340

EPA ID # MAD039322250 TRANS. 1 PHONE 781-792-5000

TRANSPORTER 2 VEHICLE ID #

EPA ID # TRANS. 2 PHONE

DESIGNATED FACILITY	SHIPPER
Steuben County Landfill	Corning Incorporated
FACILITY EPA ID #	SHIPPER EPA ID #
ADDRESS 5632 Turnpike Rd	ADDRESS HP-ME-03-81
CITY Bath STATE NY ZIP 14810	CITY Corning STATE NY ZIP 14831

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
25yd.	CT		A. NON DOT KILN BASE BRICK	24,000	lbs
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS

Emergency phone (800) 483-3718

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Angela Knight	[signature]	5/21/21
TRANSPORTER 1	Ahman Johnson	[signature]	5/21/21
TRANSPORTER 2			
RECEIVED BY	Jamie L Herbert BLF	Jamie L. Herbert	5/21/21

1

CHI 107

STEUBEN COUNTY D.P.W.
BATH LANDFI

Ticket #: 1111205

DATE IN: 05/21/21 DATE OUT: 05/21/21
TIME IN: 11:39 AM TIME OUT: 12:20 PM
ID-IN: JLH ID-OUT: JLH

Vehicle#: C9071
TT= Commercial BY WEIGHT
OT= Corning

Haul Acct#: CORNINCCANI
Haul Company: CORNING INC - CANISTEO
907

Bill Acct #: CORNINCCANI
Bill Company: CORNING INC - CANISTEO
907

Gross:	44120 lb	22.06 tn
Tare:	36680 lb	18.34 tn
Net:	7440 lb	3.72 tn

Material

Industrial Waste 0

Subtotal: $163.68
Tax: $0.00

Total:
$163.68
Payment Method(s):
1 - Charge
$163.68

Change: $0.00

Driver:

WORK ORDER NO. 210763623

DOCUMENT NO. 1484029

STRAIGHT BILL OF LADING

TRANSPORTER 1 Clean Harbors Environmental Corp VEHICLE ID # 4340

EPA ID # MAD039322250 TRANS. 1 PHONE 781-792-5060

TRANSPORTER 2 VEHICLE ID #

EPA ID # TRANS. 2 PHONE

DESIGNATED FACILITY	SHIPPER
Steuben County Landfill	Corning Incorporated
FACILITY EPA ID #	SHIPPER EPA ID #
ADDRESS 5632 Turnpike Rd.	ADDRESS HP-ME-03-81
CITY Bath STATE NY ZIP 14810	CITY Corning STATE NY ZIP 14831

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
25yd	CT		A. NON DOT KILN BASE BRICK	24,000	lbs
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS

Emergency phone (800) 483-3718

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Angela Knight	[signature]	5/21/21
TRANSPORTER 1	Annan Johnson	[signature]	
TRANSPORTER 2			
RECEIVED BY	Jamie L. Herbert BLF	Jamie L. Herbert	5/21/21

1

CHI 107

STEUBEN COUNTY D.P.W.
BATH LANDFI

Ticket #: 1111265

DATE IN: 05/21/21 DATE OUT: 05/21/21
TIME IN: 03:13 PM TIME OUT: 03:45 PM
ID-IN: JLH ID-OUT: JLH

Vehicle#: C9071
TT= Commercial BY WEIGHT
OT= Corning

Haul Acct#: CORNINCCANI
Haul Company: CORNING INC - CANISTEO 907

Bill Acct #: CORNINCCANI
Bill Company: CORNING INC - CANISTEO 907

Gross:	58120 lb	29.06 tn
Tare:	36800 lb	18.40 tn
Net:	21320 lb	10.66 tn

Material

Industrial Waste 0

Subtotal: $469.04
Tax: $0.00

Total:

$469.04
Payment Method(s):
1 - Charge
$469.04

Change: $0.00

Driver: Ahman

'484029

WORK ORDER NO. 210/763623

DOCUMENT NO. 1484030

STRAIGHT BILL OF LADING

TRANSPORTER 1 Clean Harbors Environmental Corp VEHICLE ID # 4340

EPA ID # MAD039322250 TRANS. 1 PHONE 781-792-5060

TRANSPORTER 2 ~~B~~ VEHICLE ID #

EPA ID # TRANS. 2 PHONE

DESIGNATED FACILITY	SHIPPER
Steuben County landfill	Corning Incorporated
FACILITY EPA ID #	SHIPPER EPA ID # ~~[illegible]~~
ADDRESS 5632 Turnpike Rd	ADDRESS Museum Way 1 ~~Riverfront Plaza~~
CITY Bath STATE NY ZIP 14810	CITY Corning STATE NY ZIP 14830

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
25yd	DT		A. NON DOT KILN Base Brick	12	T
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS

Emergency Contact # (800) 483-3718 Approval # 210506

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Katelyn Zatwarnicki As Agent for Corning Incorporated	Katelyn Zatwarnicki	5/24/21
TRANSPORTER 1	Patrick McNamara JR	Patrick Mc[illegible]	5-24-21
TRANSPORTER 2			
RECEIVED BY	Jamie L Herbert BCF	Jamie L. Herbert	5/24/21

1

CHI 107

STEUBEN COUNTY D.P.W.
BATH LANDFI

Ticket #: 1111578

DATE IN: 05/24/21 DATE OUT: 05/24/21
TIME IN: 10:27 AM TIME OUT: 11:13 AM
ID-IN: JLH ID-OUT: JLH

Vehicle#: C9071
TT= Commercial BY WEIGHT
OT= Corning

Haul Acct#: CORNINCCANI
Haul Company: CORNING INC - CANISTEO
907

Bill Acct #: CORNINCCANI
Bill Company: CORNING INC - CANISTEO
907

Gross:	58520 lb	29.26 tn
Tare:	37100 lb	18.55 tn
Net:	21420 lb	10.71 tn

Material	
Industrial Waste	0

Subtotal: $471.24
Tax: $0.00

Total:

$471.24
Payment Method(s):
1 - Charge
$471.24

Change: $0.00

Driver: Pat

1484030

WORK ORDER NO. 210|763623

DOCUMENT NO. 1484031

STRAIGHT BILL OF LADING

TRANSPORTER 1 Clean Harbors Environmental Corp. VEHICLE ID # 4340

EPA ID # MAD039322250 TRANS. 1 PHONE 781-792-5060

TRANSPORTER 2 VEHICLE ID #

EPA ID # TRANS. 2 PHONE

DESIGNATED FACILITY	SHIPPER
Steuben County landfill	Corning Incoporated
FACILITY EPA ID #	SHIPPER EPA ID #
ADDRESS 5632 Turnpike Rd	ADDRESS Museum way 1 ~~Riverfront~~ ~~Plaza~~
CITY Bath STATE NY ZIP 14810	CITY Corning STATE NY ZIP 14830

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
25 yd	DT		A. Non DOT Kiln Base Brick	12	T
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS

Emergency Contact # (800) 483-3718 Approval # 210506

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Katelyn Zatwarnicki As Agent for Corning Incorporated	Katelyn Zatwarnicki	5/24/21
TRANSPORTER 1	Patrick McNamara JR	Patrick M	5-24-21
TRANSPORTER 2			
RECEIVED BY	Jamie L. Herbert BLF	Jamie L Herbert	5/24/21

1

CHI 107

STEUBEN COUNTY D.P.W.
BATH LANDFI

Ticket #: 1111638

DATE IN: 05/24/21
TIME IN: 01:04 PM
ID-IN: JLH

DATE OUT: 05/24/21
TIME OUT: 01:35 PM
ID-OUT: JLH

Vehicle#: C9071
TT= Commercial BY WEIGHT
OT= Corning

Haul Acct#: CORNINCCANI
Haul Company: CORNING INC - CANISTEO 907

Bill Acct #: CORNINCCANI
Bill Company: CORNING INC - CANISTEO 907

Gross:	59000 lb	29.50 tn
Tare:	36740 lb	18.37 tn
Net:	22260 lb	11.13 tn

Material
0
Industrial Waste

Subtotal: $489.72
Tax: $0.00

Total:

$489.72
Payment Method(s):
1 - Charge
$489.72

Change: $0.00

Driver: Pat

1484031

WORK ORDER NO. 210763623

DOCUMENT NO. 1484032

STRAIGHT BILL OF LADING

TRANSPORTER 1	Clean Harbors Environmental Corp	VEHICLE ID #	4340
EPA ID #	MAD039322250	TRANS. 1 PHONE	781-792-5060
TRANSPORTER 2		VEHICLE ID #	
EPA ID #		TRANS. 2 PHONE	

DESIGNATED FACILITY: Steuben County Landfill	SHIPPER: Corning Incorpatated
FACILITY EPA ID #	SHIPPER EPA ID #
ADDRESS: 5632 Turnpike RD	ADDRESS: 1 museum way
CITY: Bath STATE: NY ZIP: 14810	CITY: Corning STATE: NY ZIP: 14831

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
25yd	DT		A. Non DOT Kiln Base Brick	12	T
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS

Emergency Contact # (800)483-3718 Approval # 210506

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Katelyn Zatwarnicki As Agent for Corning Incorporated	Katelyn Zatwarnicki	5/24/21
TRANSPORTER 1	Patrick McNamara JR	Patrick	5-24-21
TRANSPORTER 2			
RECEIVED BY	Jamie L. Herbert BT	Jamie L. Herbert	5/24/21

1

CHI 107

STEUBEN COUNTY D.P.W.
BATH LANDFI

Ticket #: 1111690

DATE IN: 05/24/21   DATE OUT: 05/24/21
TIME IN: 03:10 PM   TIME OUT: 03:30 PM
ID-IN: JLH   ID-OUT: JLH

Vehicle#: C9071
TT= Commercial BY WEIGHT
OT= Corning

Haul Acct#: CORNINCCANI
Haul Company: CORNING INC - CANISTEO
907

Bill Acct #: CORNINCCANI
Bill Company: CORNING INC - CANISTEO
907

Gross:	60360 lb	30.18 tn
Tare:	37140 lb	18.57 tn
Net:	23220 lb	11.61 tn

Material

Industrial Waste 0

Subtotal: $510.84
Tax: $0.00

Total:
$510.84
Payment Method(s):
1 - Charge
$510.84

Change: $0.00

Driver: Pat

1484032

WORK ORDER NO. 2101763623

DOCUMENT NO. 1484033

STRAIGHT BILL OF LADING

TRANSPORTER 1 Clean Harbors Environmental Corp. VEHICLE ID # 4340

EPA ID # MAD039322250 TRANS. 1 PHONE 781-792-5060

TRANSPORTER 2 VEHICLE ID #

EPA ID # TRANS. 2 PHONE

DESIGNATED FACILITY			SHIPPER		
Steuben County Landfill			Corning Incorporated		
FACILITY EPA ID #			SHIPPER EPA ID #		
ADDRESS 5632 Turnpike Rd			ADDRESS 1 Museum Way		
CITY Bath	STATE N.Y.	ZIP 14810	CITY Corning	STATE N.Y.	ZIP 14831

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
25yd	DT		A. NON DOT Kiln Base Brick	12	T
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS

Emergency Contact # (800) 483-3718 Approval # 210506

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Katelyn Zatwarnicki As Agent for Corning Incorporated	Katelyn Zatwarnicki	5/25/21
TRANSPORTER 1	Patrick McNamara JR	Patrick Mc	5-25-21
TRANSPORTER 2			
RECEIVED BY	Jamie L. Herbert BF	Jamie L. Herbert	5/25/21

1

CHI 107

STEUBEN COUNTY D.P.W.
BATH LANDFI

Ticket #: 1111714

DATE IN: 05/25/21
TIME IN: 07:50 AM
ID-IN: JLH

DATE OUT: 05/25/21
TIME OUT: 08:17 AM
ID-OUT: JLH

Vehicle#: C9071
TT= Commercial BY WEIGHT
OT= Corning

Haul Acct#: CORNINCCANI
Haul Company: CORNING INC - CANISTEO
907

Bill Acct #: CORNINCCANI
Bill Company: CORNING INC - CANISTEO
907

Gross:	59460 lb	29.73 tn
Tare:	36380 lb	18.19 tn
Net:	23080 lb	11.54 tn

Material
Industrial Waste 0

Subtotal: $507.76
Tax: $0.00

Total:

$507.76
Payment Method(s):
1 - Charge
$507.76

Change: $0.00

Driver: Pat

1484033

WORK ORDER NO. 2101763623

DOCUMENT NO. 1484034

STRAIGHT BILL OF LADING

TRANSPORTER 1 Clean Harbors Environmental Corp VEHICLE ID # 4340

EPA ID # MAD039322250 TRANS. 1 PHONE (781)-792-5060

TRANSPORTER 2 ______ VEHICLE ID # ______

EPA ID # ______ TRANS. 2 PHONE ______

DESIGNATED FACILITY			SHIPPER		
Steuben County Landfill			Corning Incorporated		
FACILITY EPA ID #			SHIPPER EPA ID #		
ADDRESS 5632 Turnpike Rd			ADDRESS 1 museum way		
CITY Bath	STATE N.Y.	ZIP 14810	CITY Corning	STATE NY	ZIP 14831

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
25 yd	DT		A. Non DOT Kiln Base Brick	12	T
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS

Emergency Contact # (800) 483-3718 Approval # 210506

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Katelyn Zafwarnicki - As Agent for Corning Incorporated	Katelyn Zafwarnicki	5/25/21
TRANSPORTER 1	Patrick McNamara JR	Patrick Mc	5-25-21
TRANSPORTER 2			
RECEIVED BY	Jamie L. Herbert	Jamie L. Herbert	5/25/21

BLF 1

CHI 107

STEUBEN COUNTY D.P.W.
BATH LANDFI

Ticket #: 1111783

DATE IN: 05/25/21
TIME IN: 10:42 AM
ID-IN: JLH

DATE OUT: 05/25/21
TIME OUT: 11:21 AM
ID-OUT: JLH

Vehicle#: C9071
TT= Commercial BY WEIGHT
OT= Corning

Haul Acct#: CORNINCCANI
Haul Company: CORNING INC - CANISTEO 907

Bill Acct #: CORNINCCANI
Bill Company: CORNING INC - CANISTEO 907

Gross:	59880 lb	29.94 tn
Tare:	37060 lb	18.53 tn
Net:	22820 lb	11.41 tn

Material

Industrial Waste 0

Subtotal: $502.04
Tax: $0.00

Total:

$502.04
Payment Method(s):
1 - Charge
$502.04

Change: $0.00

Driver: Pat

1484034

WORK ORDER NO. 2101763623

DOCUMENT NO. 1484035

STRAIGHT BILL OF LADING

TRANSPORTER 1 Clean Harbors Environmental Corp VEHICLE ID # 4340

EPA ID # MAD039322250 TRANS. 1 PHONE (781) 792-5060

TRANSPORTER 2 VEHICLE ID #

EPA ID # TRANS. 2 PHONE

DESIGNATED FACILITY	SHIPPER
Steuben County landfill	Corning Incorporated
FACILITY EPA ID #	SHIPPER EPA ID #
ADDRESS 5632 Turnpike Rd	ADDRESS 1 museum way
CITY Bath STATE N.Y. ZIP 14810	CITY Corning STATE N.Y. ZIP 14831

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
25yd	DT		A. Non DOT Kiln Base Brick	12	T
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS

Emergency Contact # (800) 483-3718 Approval # 210506

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Katelyn Zatwarnicki on Behalf of Corning Incorporated	Katelyn Zatwarnicki	5/25/21
TRANSPORTER 1	Patrick McNamara JR	Patrick mc	5-25-21
TRANSPORTER 2			
RECEIVED BY	Jamie L. Herbert	Jamie L. Herbert	5/25/21

BLF 1

CHI 107

STEUBEN COUNTY D.P.W.
BATH LANDFI

Ticket #: 1111855

DATE IN: 05/25/21 DATE OUT: 05/25/21
TIME IN: 01:02 PM TIME OUT: 01:36 PM
ID-IN: JLH ID-OUT: JLH

Vehicle#: C9071
TT= Commercial BY WEIGHT
OT= Corning

Haul Acct#: CORNINCCANI
Haul Company: CORNING INC - CANISTEO
907

Bill Acct #: CORNINCCANI
Bill Company: CORNING INC - CANISTEO
907

Gross:	61340 lb	30.67 tn
Tare:	37180 lb	18.59 tn
Net:	24160 lb	12.08 tn

Material

Industrial Waste 0

Subtotal: $531.52
Tax: $0.00

Total:

$531.52
Payment Method(s):
1 - Charge
$531.52

Change: $0.00

Driver: Pat

1484035

WORK ORDER NO. 2101763623

DOCUMENT NO. 1484036

STRAIGHT BILL OF LADING

TRANSPORTER 1 Clean Harbors Environmental Corp VEHICLE ID # 4340

EPA ID # MAD 039322250 TRANS. 1 PHONE (781) 792-5060

TRANSPORTER 2 VEHICLE ID #

EPA ID # TRANS. 2 PHONE

DESIGNATED FACILITY			SHIPPER		
Steuben County landfill			Corning Incorporated		
FACILITY EPA ID #			SHIPPER EPA ID #		
ADDRESS			ADDRESS		
5632 Turnpike RD			1 museum way		
CITY	STATE	ZIP	CITY	STATE	ZIP
Bath	N.Y.	14810	Corning	NY	14831

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
25yd	DT		A. Non DOT Kiln Base Brick	12	T
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS

Emergency Contact #(800) 483-3718 Approval # 210506

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Katelyn Zawarnicki on Behalf of Corning incorporated	Katelyn Zawarnicki	5/25/21
TRANSPORTER 1	Patrick McNamara JR	Patrick Mc	5-25-21
TRANSPORTER 2			
RECEIVED BY	Jamie L. Herbert	Jamie L. Herbert	5/25/21

BLF 1

CHI 107

STEUBEN COUNTY D.P.W.
BATH LANDFI

Ticket #: 1111907

DATE IN: 05/25/21 DATE OUT: 05/25/21
TIME IN: 03:10 PM TIME OUT: 03:42 PM
ID-IN: JLH ID-OUT: JLH

Vehicle#: C9071
TT= Commercial BY WEIGHT
OT= Corning

Haul Acct#: CORNINCCANI
Haul Company: CORNING INC - CANISTEO 907

Bill Acct #: CORNINCCANI
Bill Company: CORNING INC - CANISTEO 907

Gross:	60700 lb	30.35 tn
Tare:	36820 lb	18.41 tn
Net:	23880 lb	11.94 tn

Material

Industrial Waste 0

Subtotal: $525.36
Tax: $0.00

Total:
$525.36
Payment Method(s):
1 - Charge
$525.36

Change: $0.00

Driver: Pat

1484036

WORK ORDER NO. 210176 3623

DOCUMENT NO. 1484037

STRAIGHT BILL OF LADING

TRANSPORTER 1 Clean Harbors Environmental Corp VEHICLE ID # 4340

EPA ID # MAD 039322250 TRANS. 1 PHONE (781) 792-5060

TRANSPORTER 2 VEHICLE ID #

EPA ID # TRANS. 2 PHONE

DESIGNATED FACILITY	SHIPPER
Steuden County landfill	Corning Incorporated
FACILITY EPA ID #	SHIPPER EPA ID #
ADDRESS 5632 Turnpike Rd	ADDRESS 1 museum way
CITY Bath STATE N.Y. ZIP 14810	CITY Corning STATE NY ZIP 14831

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
25yd	DT		A. Non DOT Kiln Base Brick	12	T
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS

Emergency Contact # (800) 483-3718 Approval # 210506

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Katelyn Zatwarnicki As Agent for corning incorporated	Katelyn Zatwarnicki	5/26/21
TRANSPORTER 1	Patrick McNamara JR	Patrick M	5/26-21
TRANSPORTER 2			
RECEIVED BY	Jamie L. Herbert	Jamie L. Herbert	5/26/21

BF 1

CHI 107

STEUBEN COUNTY D.P.W.
BATH LANDFI

Ticket #: 1111924

DATE IN: 05/26/21 DATE OUT: 05/26/21
TIME IN: 07:40 AM TIME OUT: 08:00 AM
ID-IN: JLH ID-OUT: JLH

Vehicle#: C9071
TT= Commercial BY WEIGHT
OT= Corning

Haul Acct#: CORNINCCANI
Haul Company: CORNING INC - CANISTEO
907

Bill Acct #: CORNINCCANI
Bill Company: CORNING INC - CANISTEO
907

Gross:	58640 lb	29.32 tn
Tare:	37200 lb	18.60 tn
Net:	21440 lb	10.72 tn

Material

Industrial Waste 0

Subtotal: $471.68
Tax: $0.00

Total:
$471.68
Payment Method(s):
1 - Charge
$471.68

Change: $0.00

Driver: Pat

1484037

WORK ORDER NO. 2101763623

DOCUMENT NO. 1484038

STRAIGHT BILL OF LADING

TRANSPORTER 1 Clean Harbors Environmental Corp VEHICLE ID # 4340

EPA ID # MAD039322250 TRANS. 1 PHONE (781) 792-5060

TRANSPORTER 2 VEHICLE ID #

EPA ID # TRANS. 2 PHONE

DESIGNATED FACILITY			SHIPPER		
Steuden County landfill			Corning Incorporated		
FACILITY EPA ID #			SHIPPER EPA ID #		
ADDRESS 5632 Turnpike Rd			ADDRESS 1 Museum way		
CITY Bath	STATE NY	ZIP 14810	CITY Corning	STATE NY	ZIP 14831

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
25 yd	DT		A. Non DOT Kiln Base Brick	12	T
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS

Emergency Contact # (800) 483-3718 Approval # 210506

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Katelyn Zatwarnicki As Agent for Corning Incorporated	Katelyn Zatwarnicki	5/26/21
TRANSPORTER 1	Patrick McNamara JR	Patrick Mc	5/26/21
TRANSPORTER 2			
RECEIVED BY	Jamie L. Herbert	Jamie L. Herbert	5/26/21

BLF 1

CHI 107

STEUBEN COUNTY D.P.W.
BATH LANDFI

Ticket #: 1111975

DATE IN: 05/26/21 DATE OUT: 05/26/21
TIME IN: 09:39 AM TIME OUT: 10:03 AM
ID-IN: JLH ID-OUT: JLH

Vehicle#: C9071
TT= Commercial BY WEIGHT
OT= Corning

Haul Acct#: CORNINCCANI
Haul Company: CORNING INC - CANISTEO
907

Bill Acct #: CORNINCCANI
Bill Company: CORNING INC - CANISTEO
907

Gross:	61480 lb	30.74 tn
Tare:	36720 lb	18.36 tn
Net:	24760 lb	12.38 tn

Material

Industrial Waste 0

Subtotal:	$544.72
Tax:	$0.00

Total:
$544.72
Payment Method(s):
1 - Charge
$544.72

Change: $0.00

Driver: Pat

1484038

WORK ORDER NO. 2101763623

DOCUMENT NO. 1484039

STRAIGHT BILL OF LADING

TRANSPORTER 1 Clean Harbors Environmental Corp. VEHICLE ID # 4340

EPA ID # MAD039322250 TRANS. 1 PHONE (781) 792-5060

TRANSPORTER 2 VEHICLE ID #

EPA ID # TRANS. 2 PHONE

DESIGNATED FACILITY	SHIPPER
Steuden County landfill	Corning Incorporated
FACILITY EPA ID #	SHIPPER EPA ID #
ADDRESS 5632 Turnpike RD	ADDRESS 1 museum Way
CITY Bath STATE N.Y. ZIP 14810	CITY Corning STATE N.Y. ZIP 14831

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
25yd	DT		A. Non DOT Kiln Base Brick	12	T
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS

Emergency Contact # (800) 483-3718 Approval # 210506

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Katelyn Zatwarnicki As Agent for Corning Incorporated	Katelyn Zatwarnicki	5/26/21
TRANSPORTER 1	Patrick McNamara JR	Patrick Mc	5/26/21
TRANSPORTER 2			
RECEIVED BY	Jamie L. Herbert BLF	Jamie L. Herbert	5/26/21

1

CHI 107

STEUBEN COUNTY D.P.W.
BATH LANDFI

Ticket #: 1112031

DATE IN: 05/26/21 DATE OUT: 05/26/21
TIME IN: 11:46 AM TIME OUT: 12:18 PM
ID-IN: JLH ID-OUT: JLH

Vehicle#: C9071
TT= Commercial BY WEIGHT
OT= Corning

Haul Acct#: CORNINCCANI
Haul Company: CORNING INC - CANISTEO
907

Bill Acct #: CORNINCCANI
Bill Company: CORNING INC - CANISTEO
907

Gross:	60920 lb	30.46 tn
Tare:	37080 lb	18.54 tn
Net:	23840 lb	11.92 tn

Material

Industrial Waste 0

Subtotal: $524.48
Tax: $0.00

Total:

$524.48
Payment Method(s):
1 - Charge
$524.48

Change: $0.00

Driver: Pat

1484039

WORK ORDER NO. 2101763623

DOCUMENT NO. 1484040

STRAIGHT BILL OF LADING

TRANSPORTER 1 Clean Harbors Environmental Corp VEHICLE ID # 4340

EPA ID # MAD039322250 TRANS. 1 PHONE (781) 792-5060

TRANSPORTER 2 ____ VEHICLE ID # ____

EPA ID # ____ TRANS. 2 PHONE ____

DESIGNATED FACILITY			SHIPPER		
Steuden County landfill			Corning Incorporated		
FACILITY EPA ID #			SHIPPER EPA ID #		
ADDRESS 5632 Turnpike Rd			ADDRESS 1 museum way		
CITY Bath	STATE NY	ZIP 14810	CITY Corning	STATE N.Y.	ZIP 14831

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
25yd	DT		A. Non DOT Kiln Base Brick	12	T
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS

Emergency Contact #(800) 483-3718 Approval #210506

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Katelyn Zatwarnicki As Agent for Corning Incorporated	Katelyn Zatwarnicki	5/26/21
TRANSPORTER 1	Patrick McNamara JR	Patrick Mc	5/26/21
TRANSPORTER 2			
RECEIVED BY	Jamie L. Herbert BLF	Jamie L. Herbert	5/26/21

1

CHI 107

STEUBEN COUNTY D.P.W.
BATH LANDFI

Ticket #: 1112078

DATE IN: 05/26/21 DATE OUT: 05/26/21
TIME IN: 02:17 PM TIME OUT: 02:48 PM
ID-IN: JLH ID-OUT: JLH

Vehicle#: C9071
TT= Commercial BY WEIGHT
OT= Corning

Haul Acct#: CORNINCCANI
Haul Company: CORNING INC - CANISTEO
907

Bill Acct #: CORNINCCANI
Bill Company: CORNING INC - CANISTEO
907

Gross:	60440 lb	30.22 tn
Tare:	36560 lb	18.28 tn
Net:	23880 lb	11.94 tn

Material

Industrial Waste 0

Subtotal: $525.36
Tax: $0.00

Total:

$525.36
Payment Method(s):
1 - Charge
$525.36

Change: $0.00

Driver: Pat

1484040

WORK ORDER NO. 2101763623

DOCUMENT NO. 1484041

STRAIGHT BILL OF LADING

TRANSPORTER 1 Clean Harbors Environment Corp VEHICLE ID # 4340

EPA ID # MAD 039322250 TRANS. 1 PHONE (781) 792-5060

TRANSPORTER 2 VEHICLE ID #

EPA ID # TRANS. 2 PHONE

DESIGNATED FACILITY Steuben County landfill	SHIPPER Corning Incorporated
FACILITY EPA ID #	SHIPPER EPA ID #
ADDRESS 5632 Turnpike Rd	ADDRESS 1 museum way
CITY Bath STATE NY ZIP 14810	CITY Corning STATE NY ZIP 14831

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
25yd	DT		A. Non DOT Kiln Base Brick	12	T
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS

Emergency Contact # (800) 483-3718 Approval # 210506

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Katelyn Zatwarnicki As Agent for Corning Incorporated	Katelyn Zatwarnicki	5/26/21
TRANSPORTER 1	Patrick McNamara JR	Patrick Mc	5-27-21
TRANSPORTER 2			
RECEIVED BY	Jamie L. Herbert BLF	Jamie L. Herbert	5/27/21

1

CHI 107

STEUBEN COUNTY D.P.W.
BATH LANDFI

Ticket #: 1112107

DATE IN: 05/27/21 DATE OUT: 05/27/21
TIME IN: 07:35 AM TIME OUT: 08:04 AM
ID-IN: JLH ID-OUT: JLH

Vehicle#: C9071
TT= Commercial BY WEIGHT
OT= Corning

Haul Acct#: CORNINCCANI
Haul Company: CORNING INC - CANISTEO 907

Bill Acct #: CORNINCCANI
Bill Company: CORNING INC - CANISTEO 907

Gross:	61100 lb	30.55 tn
Tare:	37020 lb	18.51 tn
Net:	24080 lb	12.04 tn

Material

Industrial Waste 0

Subtotal: $529.76
Tax: $0.00

Total: $529.76
Payment Method(s):
1 - Charge $529.76

Change: $0.00

Driver: Pat

1484041

WORK ORDER NO. 2101763623

DOCUMENT NO. 1484042

STRAIGHT BILL OF LADING

TRANSPORTER 1 Clean Harbors Environmental Corp VEHICLE ID # 4340

EPA ID # MAD039322250 TRANS. 1 PHONE (781) 792-5060

TRANSPORTER 2 VEHICLE ID #

EPA ID # TRANS. 2 PHONE

DESIGNATED FACILITY	SHIPPER
Steuben County landfill	Corning Incorporated
FACILITY EPA ID #	SHIPPER EPA ID #
ADDRESS 5632 Turnpike Rd	ADDRESS 1 museum Way
CITY Bath STATE N.Y. ZIP 14810	CITY Corning STATE NY ZIP 14831

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
25yd	DT		A. Non DOT Kiln Base Brick	12	T
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS

Emergency Contact #(800)483-3718 Approval #210506

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Katelyn Zatwarnicki As Agent for Corning Incorporated	Katelyn Zatwarnicki	5-27-21
TRANSPORTER 1	Patrick McNamara JR	Patrick M—	5-27-21
TRANSPORTER 2			
RECEIVED BY	Jamie L Herbert	Jamie L. Herbert	5/27/21

BLF

1

CHI 107

STEUBEN COUNTY D.P.W.
BATH LANDFI

Ticket #: 1112168

DATE IN: 05/27/21 DATE OUT: 05/27/21
TIME IN: 09:41 AM TIME OUT: 10:19 AM
ID-IN: JLH ID-OUT: JLH

Vehicle#: C9071
TT= Commercial BY WEIGHT
OT= Corning

Haul Acct#: CORNINCCANI
Haul Company: CORNING INC - CANISTEO 907

Bill Acct #: CORNINCCANI
Bill Company: CORNING INC - CANISTEO 907

Gross:	60860 lb	30.43 tn
Tare:	36880 lb	18.44 tn
Net:	23980 lb	11.99 tn

Material

Industrial Waste 0

Subtotal: $527.56
Tax: $0.00

Total:
$527.56
Payment Method(s):
1 - Charge
$527.56

Change: $0.00

Driver: Pat

1484042

WORK ORDER NO. 2101763623

DOCUMENT NO. 1484043 **STRAIGHT BILL OF LADING**

TRANSPORTER 1 Clean Harbors Environmental Corp VEHICLE ID # 4340

EPA ID # MAD039322250 TRANS. 1 PHONE (781) 792-5060

TRANSPORTER 2 VEHICLE ID #

EPA ID # TRANS. 2 PHONE

DESIGNATED FACILITY	SHIPPER
Steuden County landfill	Corning Incorporated
FACILITY EPA ID #	SHIPPER EPA ID #
ADDRESS 5632 Turnpike RD	ADDRESS 1 museum way
CITY Bath STATE N.Y. ZIP 14810	CITY Corning STATE N.Y. ZIP 14831

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
25yd	DT		A. Non DOT Kiln Base Brick	12	T
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS

Emergency Contact # (800) 483-3718 Approval # 210506

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Katelyn Zatwarnicki As Agent for Corning Incorporated	Katelyn Zatwarnicki	5-27-21
TRANSPORTER 1	Patrick McNamara JR	Patrick M— J	5-27-21
TRANSPORTER 2			
RECEIVED BY	Jamie L. Herbert BLF	Jamie L. Herbert	5/27/21

1

CHI 107

STEUBEN COUNTY D.P.W.
BATH LANDFI

Ticket #: 1112229

DATE IN: 05/27/21 DATE OUT: 05/27/21
TIME IN: 12:12 PM TIME OUT: 12:45 PM
ID-IN: JLH ID-OUT: JLH

Vehicle#: C9071
TT= Commercial BY WEIGHT
OT= Corning

Haul Acct#: CORNINCCANI
Haul Company: CORNING INC - CANISTEO
907

Bill Acct #: CORNINCCANI
Bill Company: CORNING INC - CANISTEO
907

Gross:	60940 lb	30.47 tn
Tare:	37220 lb	18.61 tn
Net:	23720 lb	11.86 tn

Material

Industrial Waste 0

Subtotal: $521.84
Tax: $0.00

Total:

$521.84
Payment Method(s):
1 - Charge
$521.84

Change: $0.00

Driver: Pat

1484043

WORK ORDER NO. 210176362З

DOCUMENT NO. 1484044

STRAIGHT BILL OF LADING

TRANSPORTER 1 Clean Harbors Environmental Corp VEHICLE ID # 4340

EPA ID # MAD 039322250 TRANS. 1 PHONE (781) 792-5060

TRANSPORTER 2 VEHICLE ID #

EPA ID # TRANS. 2 PHONE

DESIGNATED FACILITY			SHIPPER		
Steuben County landfill			Corning Incorporated		
FACILITY EPA ID #			SHIPPER EPA ID #		
ADDRESS 5632 Turnpike RD			ADDRESS 1 museum way		
CITY Bath	STATE N.Y.	ZIP 14810	CITY Corning	STATE N.Y.	ZIP 14831

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
25 yd	DT		A. Non DOT Kiln Base Brick	12	T
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS

Emergency Contact # (800) 483-3718 Approval # 210506

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Katelyn Zatwarnicki As Agent for Corning Incorporated	Katelyn Zatwarnicki	5-27-21
TRANSPORTER 1	Patrick McNamara JR	Patrick Mc	5-27-21
TRANSPORTER 2			
RECEIVED BY	Jamie L. Herbert BLF	Jamie L. Herbert	5/27/21

1

CHI 107

STEUBEN COUNTY D.P.W.
BATH LANDFI

Ticket #: 1112269

DATE IN: 05/27/21 DATE OUT: 05/27/21
TIME IN: 02:26 PM TIME OUT: 02:54 PM
ID-IN: JLH ID-OUT: JLH

Vehicle#: C9071
TT= Commercial BY WEIGHT
OT= Corning

Haul Acct#: CORNINCCANI
Haul Company: CORNING INC - CANISTEO
907

Bill Acct #: CORNINCCANI
Bill Company: CORNING INC - CANISTEO
907

Gross:	60480 lb	30.24 tn
Tare:	36460 lb	18.23 tn
Net:	24020 lb	12.01 tn

Material

Industrial Waste 0

Subtotal: $528.44
Tax: $0.00

Total:

$528.44
Payment Method(s):
1 - Charge
$528.44

Change: $0.00

Driver: Pat

1484044

WORK ORDER NO. 2101763623

DOCUMENT NO. 1484045

STRAIGHT BILL OF LADING

TRANSPORTER 1 Clean Harbors Environmental Corp VEHICLE ID # 4382

EPA ID # MAD039322250 TRANS. 1 PHONE (781) 792-5060

TRANSPORTER 2 VEHICLE ID #

EPA ID # TRANS. 2 PHONE

DESIGNATED FACILITY	SHIPPER
Steuben County Landfill	Corning Incorporated
FACILITY EPA ID #	SHIPPER EPA ID #
ADDRESS: 5632 Turnpike Rd	ADDRESS: 1 Museum Way
CITY: Bath STATE: NY ZIP: 14810	CITY: Corning STATE: NY ZIP: 14831

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
25 yd	DT		A. Non DOT Kiln Base Brick	12	T
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS

Emergency Contact # (800) 483-3718 Approval # 210506

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Katelyn Zatwarnicki As Agent for Corning Incorporated	Katelyn Zatwarnicki	5-27-21
TRANSPORTER 1	Ahman Johnson	[signature]	5-27-21
TRANSPORTER 2			
RECEIVED BY	Jamie L. Herbert BLF	Jamie L. Herbert	5/27/21

1

CHI 107

STEUBEN COUNTY D.P.W.
BATH LANDFI

Ticket #: 1112108

DATE IN: 05/27/21 DATE OUT: 05/27/21
TIME IN: 07:36 AM TIME OUT: 08:06 AM
ID-IN: JLH ID-OUT: JLH

Vehicle#: C9072
TT= Commercial BY WEIGHT
OT= Corning

Haul Acct#: CORNINCCANI
Haul Company: CORNING INC - CANISTEO
907

Bill Acct #: CORNINCCANI
Bill Company: CORNING INC - CANISTEO
907

Gross:	61820 lb	30.91 tn
Tare:	37500 lb	18.75 tn
Net:	24320 lb	12.16 tn

Material

Industrial Waste 0

Subtotal: $535.04
Tax: $0.00

Total:

$535.04
Payment Method(s):
1 - Charge
$535.04

Change: $0.00

Driver: Ahman

1484045

WORK ORDER NO. 2101763623

DOCUMENT NO. 1484046

STRAIGHT BILL OF LADING

TRANSPORTER 1 Clean Harbors Environmental Corp VEHICLE ID # 4352

EPA ID # MAD039322250 TRANS. 1 PHONE (781) 792-5060

TRANSPORTER 2 VEHICLE ID #

EPA ID # TRANS. 2 PHONE

DESIGNATED FACILITY	SHIPPER
Steuben County Landfill	Corning Incorporated
FACILITY EPA ID #	SHIPPER EPA ID #
ADDRESS 5632 Turnpike Rd	ADDRESS 1 museum Way
CITY Bath STATE NY ZIP 14810	CITY Corning STATE N.Y. ZIP 14831

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
25 yd	DT		A. Non DOT Kiln Base Brick	12	T
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS

Emergency Contact # (800) 483-3718 Approval # 210506

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Katelyn Zatwarnicki As Agent for Corning Incorporated	Katelyn Zatwarnicki	5-27-21
TRANSPORTER 1	Ahman Johnsen	[signature]	5-27-21
TRANSPORTER 2			
RECEIVED BY	Jamie L. Herbert BLF	Jamie L. Herbert	5/27/21

1

CHI 107

STEUBEN COUNTY D.P.W.
BATH LANDFI

Ticket #: 1112169

DATE IN: 05/27/21 DATE OUT: 05/27/21
TIME IN: 09:41 AM TIME OUT: 10:20 AM
ID-IN: JLH ID-OUT: JLH

Vehicle#: C9072
TT= Commercial BY WEIGHT
OT= Corning

Haul Acct#: CORNINCCANI
Haul Company: CORNING INC - CANISTEO 907

Bill Acct #: CORNINCCANI
Bill Company: CORNING INC - CANISTEO 907

Gross:	61600 lb	30.80 tn
Tare:	37340 lb	18.67 tn
Net:	24260 lb	12.13 tn

Material

Industrial Waste 0

Subtotal: $533.72
Tax: $0.00

Total:
$533.72
Payment Method(s):
1 - Charge
$533.72

Change: $0.00

Driver: Ahman

1484046

WORK ORDER NO. 2101763623

DOCUMENT NO. 1484047

STRAIGHT BILL OF LADING

TRANSPORTER 1 Clean Harbors Environmental Corp. VEHICLE ID # 4352

EPA ID # MAD039322250 TRANS. 1 PHONE (781) 792-5060

TRANSPORTER 2 VEHICLE ID #

EPA ID # TRANS. 2 PHONE

DESIGNATED FACILITY			SHIPPER		
Steuben County Landfill			Corning Incorporated		
FACILITY EPA ID #			SHIPPER EPA ID #		
ADDRESS 5632 Turnpike Rd			ADDRESS 1 Museum way		
CITY Bath	STATE NY	ZIP 14810	CITY Corning	STATE N.Y.	ZIP 14831

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
25 yd	DT		A. Non DOT Kiln Base Brick	12	T
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS

Emergency Contact #(800) 483-3718 Approval # 210506

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Katelyn Zatwarnicki As Agent for Corning Incorporated	Katelyn Zatwarnicki	5-27-21
TRANSPORTER 1	Ahman Johnson	[signature]	5-27-21
TRANSPORTER 2			
RECEIVED BY	Jamie L. Herbert BLF	Jamie L. Herbert	5/27/21

1

CHI 107

STEUBEN COUNTY D.P.W.
BATH LANDFI

Ticket #: 1112230

DATE IN: 05/27/21 DATE OUT: 05/27/21
TIME IN: 12:12 PM TIME OUT: 12:46 PM
ID-IN: JLH ID-OUT: JLH

Vehicle#: C9072
TT= Commercial BY WEIGHT
OT= Corning

Haul Acct#: CORNINCCANI
Haul Company: CORNING INC - CANISTEO
907

Bill Acct #: CORNINCCANI
Bill Company: CORNING INC - CANISTEO
907

Gross:	60900 lb	30.45 tn
Tare:	36960 lb	18.48 tn
Net:	23940 lb	11.97 tn

Material

Industrial Waste 0

Subtotal: $526.68
Tax: $0.00

Total:

$526.68
Payment Method(s):
1 - Charge
$526.68

Change: $0.00

Driver: Ahman

1484047

WORK ORDER NO. 2101763623

DOCUMENT NO. 1484048

STRAIGHT BILL OF LADING

TRANSPORTER 1 Clean Harbors Environmental Corp. VEHICLE ID # 4352

EPA ID # MAD039322250 TRANS. 1 PHONE (781) 792-5060

TRANSPORTER 2 VEHICLE ID #

EPA ID # TRANS. 2 PHONE

DESIGNATED FACILITY Steuden County landfill	SHIPPER Corning Incorporated
FACILITY EPA ID #	SHIPPER EPA ID #
ADDRESS 5632 Turnpike Rd	ADDRESS 1 museum way
CITY Bath STATE N.Y. ZIP 14810	CITY Corning STATE N.Y. ZIP 14831

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
25 yd	DT		A. NON DOT Kiln Base Brick	12	T
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS

Emergency Contact # (800) 483-3718 Approval # 210506

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Katelyn Zatwarnicki As Agent for Corning Incorporated	Katelyn Zatwarnicki	5-27-21
TRANSPORTER 1	Ahman Johnson	[signature]	5-27-21
TRANSPORTER 2			
RECEIVED BY	Jamie L. Herbert BLF	Jamie L Herbert	5/27/21

1

CHI 107

STEUBEN COUNTY D.P.W.
BATH LANDFI

Ticket #: 1112270

DATE IN: 05/27/21
TIME IN: 02:27 PM
ID-IN: JLH

DATE OUT: 05/27/21
TIME OUT: 02:55 PM
ID-OUT: JLH

Vehicle#: C9072
TT= Commercial BY WEIGHT
OT= Corning

Haul Acct#: CORNINCCANI
Haul Company: CORNING INC - CANISTEO 907

Bill Acct #: CORNINCCANI
Bill Company: CORNING INC - CANISTEO 907

Gross:	61060 lb	30.53 tn
Tare:	37140 lb	18.57 tn
Net:	23920 lb	11.96 tn

Material 0

Industrial Waste

Subtotal: $526.24
Tax: $0.00

Total:

$526.24
Payment Method(s):
1 - Charge
$526.24

Change: $0.00

Driver: Ahman

1484048

WORK ORDER NO. 2101763623

DOCUMENT NO. 1484049

STRAIGHT BILL OF LADING

TRANSPORTER 1 Clean Harbors Environmental corp. VEHICLE ID # 4340

EPA ID # MAD039322250 TRANS. 1 PHONE (781) 792-5060

TRANSPORTER 2 VEHICLE ID #

EPA ID # TRANS. 2 PHONE

DESIGNATED FACILITY Steuben County landfill	SHIPPER Corning Incorporated
FACILITY EPA ID #	SHIPPER EPA ID #
ADDRESS 5632 Turnpike Rd	ADDRESS 1 Museum way
CITY Bath STATE NY ZIP 14810	CITY Corning STATE N.Y. ZIP 14831

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
25yd	DT		A. Non DOT Kiln Base Brick	12	T
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS

Emergency Contact # (800) 483-3718 Approval # 210506

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Katelyn Zatwarnicki As Agent for corning incorporated	Katelyn Zatwarnicki	
TRANSPORTER 1	Patrick McNamara SR	Patrick Mc[illegible]	5-28-21
TRANSPORTER 2			
RECEIVED BY	Jamie L. Herbert BLF	Jamie L. Herbert	5/28/21

1

CHI 107

STEUBEN COUNTY D.P.W.
BATH LANDFI

Ticket #: 1112287

DATE IN: 05/28/21 DATE OUT: 05/28/21
TIME IN: 07:33 AM TIME OUT: 07:56 AM
ID-IN: JLH ID-OUT: JLH

Vehicle#: C9071
TT= Commercial BY WEIGHT
OT= Corning

Haul Acct#: CORNINCCANI
Haul Company: CORNING INC - CANISTEO
907

Bill Acct #: CORNINCCANI
Bill Company: CORNING INC - CANISTEO
907

Gross:	60780 lb	30.39 tn
Tare:	37000 lb	18.50 tn
Net:	23780 lb	11.89 tn

Material

Industrial Waste 0

Subtotal: $523.16
Tax: $0.00

Total:

$523.16
Payment Method(s):
1 - Charge
$523.16

Change: $0.00

Driver: Pat

1484049

WORK ORDER NO. 2101763623

DOCUMENT NO. 1484050

STRAIGHT BILL OF LADING

TRANSPORTER 1 Clean Harbors Environmental Corp — VEHICLE ID # 4340

EPA ID # MAD039322250 — TRANS. 1 PHONE (781) 792-5060

TRANSPORTER 2 — VEHICLE ID #

EPA ID # — TRANS. 2 PHONE

DESIGNATED FACILITY Steuben County landfill	SHIPPER Corning Incorporated
FACILITY EPA ID #	SHIPPER EPA ID #
ADDRESS 5632 Turnpike Rd	ADDRESS 1 museum Way
CITY Bath STATE N.Y. ZIP 14810	CITY Corning STATE NY ZIP 14831

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
25 yd	DT		A. Non DOT Kiln Base Brick	12	T
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS

Emergency Contact # (800) 483-3718 Approval # 210506

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Katelyn Zatwarnicki As Agent for Corning Incorporated	Katelyn Zatwarnicki	
TRANSPORTER 1	Patrick McNamara JR	Patrick Mc	5-28-21
TRANSPORTER 2			
RECEIVED BY	Jamie L. Herbert BLF	Jamie L. Herbert	5/28/21

1

CHI 107

STEUBEN COUNTY D.P.W.
BATH LANDFI

Ticket #: 1112337

DATE IN: 05/28/21 DATE OUT: 05/28/21
TIME IN: 09:22 AM TIME OUT: 09:51 AM
ID-IN: JLH ID-OUT: JLH

Vehicle#: C9071
TT= Commercial BY WEIGHT
OT= Corning

Haul Acct#: CORNINCCANI
Haul Company: CORNING INC - CANISTEO
907

Bill Acct #: CORNINCCANI
Bill Company: CORNING INC - CANISTEO
907

Gross:	60560 lb	30.28 tn
Tare:	36900 lb	18.45 tn
Net:	23660 lb	11.83 tn

Material

Industrial Waste 0

Subtotal: $520.52
Tax: $0.00

Total:

$520.52
Payment Method(s):
1 - Charge
$520.52

Change: $0.00

Driver: Pat

1484050

WORK ORDER NO. 2101763623

DOCUMENT NO. 1484051

STRAIGHT BILL OF LADING

TRANSPORTER 1 Clean Harbors Environmental Corp VEHICLE ID # 4340

EPA ID # MAD039322250 TRANS. 1 PHONE (781) 792-5060

TRANSPORTER 2 ____ VEHICLE ID # ____

EPA ID # ____ TRANS. 2 PHONE ____

DESIGNATED FACILITY			SHIPPER		
Steuben County landfill			Corning Incorporated		
FACILITY EPA ID #			SHIPPER EPA ID #		
ADDRESS 5632 Turnpike Rd			ADDRESS 1 museum way		
CITY Bath	STATE NY	ZIP 14810	CITY Corning	STATE NY	ZIP 14831

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
25yd	DT		A. Non DOT Kiln Base Brick	12	T
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS

Emergency Contact # (800) 483-3718 Approval # 210506

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Katelyn Zatwarnicki As Agent for Corning Incorporated	Katelyn Zatwarnicki	
TRANSPORTER 1	Patrick McNamara SR	Patrick Mc——	5-28-21
TRANSPORTER 2			
RECEIVED BY	Jamie L Herbert BLF	Jamie L. Herbert	5/28/21

1

CHI 107

STEUBEN COUNTY D.P.W.
BATH LANDFI

Ticket #: 1112409

DATE IN: 05/28/21 DATE OUT: 05/28/21
TIME IN: 12:18 PM TIME OUT: 12:44 PM
ID-IN: JLH ID-OUT: JLH

Vehicle#: C9071
TT= Commercial BY WEIGHT
OT= Corning

Haul Acct#: CORNINCCANI
Haul Company: CORNING INC - CANISTEO
907

Bill Acct #: CORNINCCANI
Bill Company: CORNING INC - CANISTEO
907

Gross:	61380 lb	30.69 tn
Tare:	37340 lb	18.67 tn
Net:	24040 lb	12.02 tn

Material 0
Industrial Waste

Subtotal: $528.88
Tax: $0.00

Total:

$528.88
Payment Method(s):
1 - Charge
$528.88

Change: $0.00

Driver: Pat

1484051

WORK ORDER NO. 2101763623

DOCUMENT NO. 1484052

STRAIGHT BILL OF LADING

TRANSPORTER 1 Clean Harbors Environmental Corp. VEHICLE ID # 4340

EPA ID # MAD039322250 TRANS. 1 PHONE (781) 792-5060

TRANSPORTER 2 VEHICLE ID #

EPA ID # TRANS. 2 PHONE

DESIGNATED FACILITY			SHIPPER		
Steuben County landfill			Corning Incorporated		
FACILITY EPA ID #			SHIPPER EPA ID #		
ADDRESS 5632 Turnpike Rd			ADDRESS 1 museum way		
CITY Bath	STATE NY	ZIP 14810	CITY Corning	STATE NY	ZIP 14831

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
25 yd	DT		A. Non DOT Kiln Base Brick	12	T
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS

Emergency Contact # (800) 483-3718 Approval # 210506

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Katelyn Zatwarnicki, As Agent for Corning Incorporated	Katelyn Zatwarnicki	
TRANSPORTER 1	Ahman Johnson	[signature]	6-1-21
TRANSPORTER 2			
RECEIVED BY	Jamie L. Herbert BLF	Jamie L. Herbert	6/1/21

1

CHI 107

STEUBEN COUNTY D.P.W.
BATH LANDFI

Ticket #: 1112771

DATE IN: 06/01/21
TIME IN: 11:47 AM
ID-IN: JLH

DATE OUT: 06/01/21
TIME OUT: 12:25 PM
ID-OUT: JLH

Vehicle#: C9071
TT= Commercial BY WEIGHT
OT= Corning

Haul Acct#: CORNINCCANI
Haul Company: CORNING INC - CANISTEO
907

Bill Acct #: CORNINCCANI
Bill Company: CORNING INC - CANISTEO
907

Gross:	61380 lb	30.69 tn
Tare:	37260 lb	18.63 tn
Net:	24120 lb	12.06 tn

Material

Industrial Waste 0

Subtotal: $530.64
Tax: $0.00

Total:

$530.64
Payment Method(s):
1 - Charge
$530.64

Change: $0.00

Driver:

1484052

WORK ORDER NO. 2101763622

DOCUMENT NO. 1484053

STRAIGHT BILL OF LADING

TRANSPORTER 1 Clean Harbors Environmental Corp. VEHICLE ID # 4340

EPA ID # MAD039322250 TRANS. 1 PHONE (781) 792-5060

TRANSPORTER 2 VEHICLE ID #

EPA ID # TRANS. 2 PHONE

DESIGNATED FACILITY	SHIPPER
Steuben County landfill	Corning Incorporated
FACILITY EPA ID #	SHIPPER EPA ID #
ADDRESS 5632 Turnpike Rd	ADDRESS 1 museum Way
CITY Bath STATE NY ZIP 14810	CITY Corning STATE NY ZIP 14831

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
25 yd	DT		A. Non DOT Kiln Base Brick	12	T
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS

Emergency Contact #(800) 483-3718 Approval # 210506

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Katelyn Zatwarnicki As Agent for Corning Incorporated	Katelyn Zatwarnicki	
TRANSPORTER 1	Ahman Johnson	[signature]	6-1-21
TRANSPORTER 2			
RECEIVED BY	Jamie L. Herbert BLF	Jamie L. Herbert	6/1/21

1

CHI 107

STEUBEN COUNTY D.P.W.
BATH LANDFI

Ticket #: 1112861

DATE IN: 06/01/21 DATE OUT: 06/01/21
TIME IN: 02:29 PM TIME OUT: 03:10 PM
ID-IN: JLH ID-OUT: JLH

Vehicle#: C9071
TT= Commercial BY WEIGHT
OT= Corning

Haul Acct#: CORNINCCANI
Haul Company: CORNING INC - CANISTEO
907

Bill Acct #: CORNINCCANI
Bill Company: CORNING INC - CANISTEO
907

Gross:	61460 lb	30.73 tn
Tare:	37220 lb	18.61 tn
Net:	24240 lb	12.12 tn

Material

Industrial Waste 0

Subtotal: $533.28
Tax: $0.00

Total:
$533.28
Payment Method(s):
1 - Charge
$533.28

Change: $0.00

Driver:

1484053

WORK ORDER NO. 210176362

DOCUMENT NO. 1484054 **STRAIGHT BILL OF LADING**

TRANSPORTER 1 Clean Harbors Environmental Corp VEHICLE ID # 4340

EPA ID # MAD039322250 TRANS. 1 PHONE (781) 792-5060

TRANSPORTER 2 ______ VEHICLE ID # ______

EPA ID # ______ TRANS. 2 PHONE ______

DESIGNATED FACILITY			SHIPPER		
Steuben County landfill			Corning Incorporated		
FACILITY EPA ID #			SHIPPER EPA ID #		
ADDRESS 5632 Turnpike Rd			ADDRESS 1 Museum Way		
CITY Bath	STATE N.Y.	ZIP 14810	CITY Corning	STATE NY	ZIP 14831

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
25 yd	DT		A. Non DOT Kiln Base Brick	12	T
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS

Emergency Contact # (800) 483-3718 Approval#210506

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Katelyn Zatwarnicki As Agent for Corning Incorporated	Katelyn Zatwarnicki	
TRANSPORTER 1	Ahmar Johnson	[signature]	6-2-21
TRANSPORTER 2			
RECEIVED BY	Jamie L. Herbert BLF	Jamie L. Herbert	6/2/21

1

CHI 107

STEUBEN COUNTY D.P.W.
BATH LANDFI

Ticket #: 1112913

DATE IN: 06/02/21 DATE OUT: 06/02/21
TIME IN: 08:22 AM TIME OUT: 09:12 AM
ID-IN: JLH ID-OUT: JLH

Vehicle#: C9071
TT= Commercial BY WEIGHT
OT= Corning

Haul Acct#: CORNINCCANI
Haul Company: CORNING INC - CANISTEO
907

Bill Acct #: CORNINCCANI
Bill Company: CORNING INC - CANISTEO
907

Gross:	56560 lb	28.28 tn
Tare:	36860 lb	18.43 tn
Net:	19700 lb	9.85 tn

Material

Industrial Waste 0

Subtotal: $433.40
Tax: $0.00

Total:
$433.40
Payment Method(s):
1 - Charge
$433.40

Change: $0.00

Driver:

1484054

Site Address: SAME

SC PPW 3/1/2021

WORK ORDER NO. AW 2103454178-002

DOCUMENT NO. 1417572 **STRAIGHT BILL OF LADING**

TRANSPORTER 1 Clean Harbors Environmental Services, Inc. VEHICLE ID # 5427

EPA ID # MAD039322250 TRANS. 1 PHONE (781) 792-5000

TRANSPORTER 2 Franki Vacuum Truck Service VEHICLE ID #

EPA ID # NYD 982722814 TRANS. 2 PHONE

DESIGNATED FACILITY Spring Grove Resource Recovery Inc.	SHIPPER ATTN: Angela Knight Corning Incorporated
FACILITY EPA ID # OHD000816629	SHIPPER EPA ID # NYD000824375
ADDRESS 4879 Spring Grove Avenue	ADDRESS 1 Front Street
CITY Cincinnati STATE OH ZIP 45232	CITY Corning STATE NY ZIP 14831

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
11-55	DM		A. NON D.O.T. REGULATED, (DIRT, SILT, SAND, SEDIMENT, SLUDGE FROM INVESTIGATIONS)	6900	POUNDS
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS EMERGENCY PHONE #: (800) 483-3718 GENERATOR: Corning Incorporated
A.CH1S3377-1CC

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Katelyn Zatwarnicki on behalf of Corning Incorporated	Katelyn Zatwarnicki	7/12/21
TRANSPORTER 1	Aaron Inwood	[signature]	7-12-21
TRANSPORTER 2			
RECEIVED BY	Haley Harphant	[signature]	7/26/21

Generator acknowledges that no material change has occurred either in the characteristics or in the process generating the material.

CHI 107

Site Address: SAME

SC PPW 3/1/2021

WORK ORDER NO. CAW 2103464175-004

DOCUMENT NO. 1417575 **STRAIGHT BILL OF LADING**

TRANSPORTER 1 Clean Harbors Environmental Services, Inc. VEHICLE ID # ______

EPA ID # MAD039322250 TRANS. 1 PHONE (781) 792-5000

TRANSPORTER 2 FRANKS VACUUM TRUCK SERVICE, INC. VEHICLE ID # ______

EPA ID # NYD982792814 TRANS. 2 PHONE ______

DESIGNATED FACILITY			SHIPPER ATTN: Angela Knight		
Clean Harbors Chattanooga LLC			Corning Incorporated		
FACILITY EPA ID # TND982141392			SHIPPER EPA ID # NYD000824375		
ADDRESS 3300 Cummings Road			ADDRESS 1 Front Street		
CITY Chattanooga	STATE TN	ZIP 37419	CITY Corning	STATE NY	ZIP 14831

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
5-55	DM		A. NON D. O. T. REGULATED, (OIL MIXTURES FROM EQUIPMENT AND COLLECTION AREAS)	1800	P
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS EMERGENCY PHONE #: (800) 483-3718 GENERATOR: Corning Incorporated
A.CH122850-OIL1

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Katelyn Zatwarnicki On Behalf of Corning Incorporated	Katelyn Zatwarnicki	7/13/21
TRANSPORTER 1	Patrick McNamara SR	Patrick Mc	7/13/21
TRANSPORTER 2			
RECEIVED BY	Chris White	Christopher J White	8/3/21

Generator acknowledges that no material change has occurred either in the characteristics or in the process generating the material.

CHI 107

Site Address: SAME

SC PFW 3/1/2021

WORK ORDER NO AW 2109464175-002

DOCUMENT NO. 1417573

STRAIGHT BILL OF LADING

TRANSPORTER 1 Clean Harbors Environmental Services, Inc. VEHICLE ID #

EPA ID # MAD039322250 TRANS. 1 PHONE (781) 792-5000

TRANSPORTER 2 FRANK'S VACUUM TRUCK SERVICE, INC. VEHICLE ID #

EPA ID # NYD982792814 TRANS. 2 PHONE

DESIGNATED FACILITY Spring Grove Resource Recovery Inc.	SHIPPER ATTN:Angela Knight Corning Incorporated
FACILITY EPA ID # OHD000816629	SHIPPER EPA ID # NYD000824375
ADDRESS 4879 Spring Grove Avenue	ADDRESS 1 Front Street
CITY Cincinnati STATE OH ZIP 45232	CITY Corning STATE NY ZIP 14831

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
4-55	DM		A. NON D.O.T. REGULATED, (DIRT, SILT, SAND, SEDIMENT, SLUDGE FROM INVESTIGATIONS)	3200	P
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS EMERGENCY PHONE #: (800) 483-3718 GENERATOR: Corning Incorporated
A.CH122377-1CC

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Katelyn Zatwarnicki As Agent for Corning Incorporated	Katelyn Zatwarnicki	7/13/21
TRANSPORTER 1	Patrick McNamara JR	Patrick M. J	7/13/21
TRANSPORTER 2	Jihad Munson	Jihad Munson	7/16/21
RECEIVED BY	Haley Harphant	Haley Harphant	7/21/21

Generator acknowledges that no material change has occurred either in the characteristics or in the process generating the material.

1

CHI 107

Site Address: SAME

SC PPW 3/1/2021

WORK ORDER NO. AW 2109464178-002

DOCUMENT NO. 1417574 **STRAIGHT BILL OF LADING**

TRANSPORTER 1 Clean Harbors Environmental Services, Inc. VEHICLE ID # 5427

EPA ID # MAD039322250 TRANS. 1 PHONE (781) 792-5000

TRANSPORTER 2 FRANK'S VACUUM TRUCK SERVICE, INC. VEHICLE ID #

EPA ID # NYD982792814 TRANS. 2 PHONE

DESIGNATED FACILITY Spring Grove Resource Recovery Inc.			SHIPPER Corning Incorporated ATTN:Angela Knight		
FACILITY EPA ID # OHD000816629			SHIPPER EPA ID # NYD000824375		
ADDRESS 4879 Spring Grove Avenue			ADDRESS 1 Front Street		
CITY Cincinnati	STATE OH	ZIP 45232	CITY Corning	STATE NY	ZIP 14831

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
9-55	DM		A. NON D.O.T. REGULATED, (DIRT, SILT, SAND, SEDIMENT, SLUDGE FROM INVESTIGATIONS)	7,425	POUNDS
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS **EMERGENCY PHONE #: (800) 483-3718** **GENERATOR: Corning Incorporated**
A.CH189377-1CC

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Katelyn Zatwarnicki As Agent for Corning Incorporated	Katelyn Zatwarnicki	7/14/21
TRANSPORTER 1	ARRON INWOOD	[signature]	7-14-21
TRANSPORTER 2			
RECEIVED BY	Haley Harphant	[signature]	7/21/21

Generator acknowledges that no material change has occurred either in the characteristics or in the process generating the material.

CHI 107

1

Site Address: SAME

SC PPW 3/1/2021

WORK ORDER NO AW 2102484175-002

DOCUMENT NO. 1417580 **STRAIGHT BILL OF LADING**

TRANSPORTER 1	Clean Harbors Environmental Services, Inc.	VEHICLE ID #	5427
EPA ID #	MAD039322250	TRANS. 1 PHONE	(781) 792-5000
TRANSPORTER 2	Frank's Vacuum Truck Service	VEHICLE ID #	
EPA ID #	NYD 982792814	TRANS. 2 PHONE	

DESIGNATED FACILITY Spring Grove Resource Recovery Inc.			SHIPPER Corning Incorporated ATTN: Angela Knight		
FACILITY EPA ID # OHD000816629			SHIPPER EPA ID # NYD000824375		
ADDRESS 4879 Spring Grove Avenue			ADDRESS 1 Front Street		
CITY Cincinnati	STATE OH	ZIP 45232	CITY Corning	STATE NY	ZIP 14831

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
8-55	DM		A. NON D.O.T. REGULATED, (DIRT, SILT, SAND, SEDIMENT, SLUDGE FROM INVESTIGATIONS)	6800	POUNDS
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS EMERGENCY PHONE #: (800) 483-3718 GENERATOR: Corning Incorporated
A.CH183377-4CC

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Jeffrey E Marsh as agent for Corning Incorporated	[signature]	7/15/21
TRANSPORTER 1	Arron Inwood	[signature]	7-15-21
TRANSPORTER 2	Sergio Staffau	[signature]	7 16 2(
RECEIVED BY	Brittany Cutler	Brittany C Cutler	7/19/21

Generator acknowledges that no material change has occurred either in the characteristics or in the process generating the material.

1

CHI 107

Generator acknowledges that no material change has occurred either in the characterization or in the process generating the material.

Please print or type. Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number: NYD000824375
2. Page 1 of 1
3. Emergency Response Phone: (800) 483-3718
4. Manifest Tracking Number: 013465559 FLE

5. Generator's Name and Mailing Address:
Corning Incorporated
1 Front Street
Corning, NY 14831
Generator's Phone: (607) 974-6518 ATTN:Angela Knight

Generator's Site Address (if different than mailing address): SAME

6. Transporter 1 Company Name: Clean Harbors Environmental Services, Inc. — U.S. EPA ID Number: MAD039322250

7. Transporter 2 Company Name: Frank's Vacuum Truck Service — U.S. EPA ID Number: NYD982728814

8. Designated Facility Name and Site Address: Spring Grove Resource Recovery Inc.
4879 Spring Grove Avenue
Cincinnati, OH 45232
Facility's Phone: (513) 681-5738
U.S. EPA ID Number: OHD000816629

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
X	1. NA3077, HAZARDOUS WASTE, SOLID, N.O.S. MIXTURE, (D008, WATER, DIRT, SILT, SAND, SEDIMENT, SLUDGE WITH LEAD FROM INVESTIGATIONS), 9, PG III	004	DM	2000	P	D008
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information
1.CH183377-2CC ERG#171

Contract retained by generator confers agency authority on initial transporter to add or substitute additional transporters on generator's behalf for purposes of transportation efficiency,convenience,or safety

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: Katelyn Zatwarnicki As Agent for Corning Incorporated — Signature: Katelyn Zatwarnicki As Agent for Corning Incorporated — Month 7 Day 13 Year 21

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

17. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: Patrick McNamara SR — Signature: Patrick Mc — Month 7 Day 13 Year 21
Transporter 2 Printed/Typed Name: Sergio Staffmar — Signature: — Month 7 Day 16 Year 21

18. Discrepancy
18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
18b. Alternate Facility (or Generator) U.S. EPA ID Number
Facility's Phone:
18c. Signature of Alternate Facility (or Generator) Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)
1. H141 2. 3. 4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a
Printed/Typed Name: Brittany Cutter — Signature: Brittany Cutter — Month 7 Day 19 Year 21

EPA Form 8700-22 (Rev. 12-17) Previous editions are obsolete. Clean Harbors has the appropriate permits for and will accept the waste the generator is shipping. DESIGNATED FACILITY TO EPA's e-MANIFEST SYSTEM

CleanHarbors
ENVIRONMENTAL SERVICES®

Land Disposal Restriction Notification Form

Printed Date :Jul 8, 2021

MANIFEST INFORMATION

Generator : Corning Incorporated

Address: 1 Front Street
Corning,NY 14831

EPA ID #: NYD000824375

Manifest Tracking Info.

013465559FLE

Sales Order No: 2103484175-004

LINE ITEM INFORMATION

Line Item:	Page No:	Profile No:	Treatability Group:	LDR Disposal Category
1.	1	CH183377-2CC	NON-WASTEWATER	10 (Alternate Soil Std-does not meet std. (with characteristic hazardous waste only))

EPA Waste Code	EPA Waste SubCategory
D008	Toxicity Characteristic for Lead

LDR Chemical Data

Chemical	Underlying Hazardous Constituents	Constituents of Concern	Contaminants Subject to Treatment
ARSENIC	Y	N	Y
BENZO (B) FLUORANTHENE	Y	N	Y
BENZO (G,H,I) PERYLENE	Y	N	Y
BENZO (K) FLUORANTHENE	Y	N	Y
CADMIUM	Y	N	Y
CHRYSENE	Y	N	Y
FLUORANTHENE	Y	N	Y
INDENO(1,2,3-C,D)PYRENE	Y	N	Y
PHENANTHRENE	Y	N	Y
PYRENE	Y	N	Y

Certification	Applies to Manifest Line Items
I certify under penalty of law that I personally have examined this contaminated soil and it does not contain listed hazardous waste and does exhibit a characteristic of hazardous waste and requires treatment to meet the soil treatment standards as provided by 268.49(c).	1.

Waste analysis data, where available, is attached.

Signature : (X) [signature] Print Name (X) Jeffrey E Marsh as agent for Corning Inc.

Title : (X) Consultant Date : (X) 7/15/21

WORK ORDER NO. LAW 2101763623

DOCUMENT NO. 1484056

STRAIGHT BILL OF LADING

TRANSPORTER 1 Clean Harbors Environmental Services

VEHICLE ID # 4352

EPA ID # MAD039322250

TRANS. 1 PHONE

TRANSPORTER 2

VEHICLE ID #

TRANS. 2 PHONE

EPA ID #

DESIGNATED FACILITY	SHIPPER
Steuben County landfill	Corning Incorporated
FACILITY EPA ID #	SHIPPER EPA ID # NYD 000824375
ADDRESS 5632 Turnpike RD	ADDRESS 1 Museum Way
CITY Bath STATE N.Y. ZIP 14810	CITY Corning STATE NY ZIP 14831

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
1	DT		A. Non DOT Kiln Base Brick + Debris	12	T
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS Emergency Phone (800) 483-3718 Generator Corning Incorporated
Approval # 210506

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Jeffrey E Marsh as agent for Corning Incorporated	[signature]	7/20/21
TRANSPORTER 1	Patrick McNamara JR	Patrick Mc [signature]	7/20/21
TRANSPORTER 2			
RECEIVED BY	Jamie L. Herbert BLF	Jamie L. Herbert	7/20/21

1

CHI 107

STEUBEN COUNTY D.P.W.
BATH LANDFI

Ticket #: 1121048

DATE IN: 07/20/21 DATE OUT: 07/20/21
TIME IN: 10:32 AM TIME OUT: 10:52 AM
ID-IN: JLH ID-OUT: JLH

Vehicle#: C9071
TT= Commercial BY WEIGHT
OT= Corning

Haul Acct#: CORNINCCANI
Haul Company: CORNING INC - CANISTEO
907

Bill Acct #: CORNINCCANI
Bill Company: CORNING INC - CANISTEO
907

Gross:	59500 lb	29.75 tn
Tare:	37420 lb	18.71 tn
Net:	22080 lb	11.04 tn

Material

Industrial Waste 0

Subtotal: $485.76
Tax: $0.00

Total:

$485.76
Payment Method(s):
1 - Charge
$485.76

Change: $0.00

Driver: Paten M J

1484056

WORK ORDER NO. LAW210176362

DOCUMENT NO. 1484057 **STRAIGHT BILL OF LADING**

TRANSPORTER 1 Clean Harbors Environmental Services VEHICLE ID # 4352

EPA ID # MAD039322250 TRANS. 1 PHONE

TRANSPORTER 2 VEHICLE ID #

EPA ID # TRANS. 2 PHONE

DESIGNATED FACILITY	SHIPPER
Steuben County landfill	Corning Incorporated
FACILITY EPA ID #	SHIPPER EPA ID # NYD000824375
ADDRESS 5632 Turnpike RD	ADDRESS 1 Museum Way
CITY Bath STATE NY ZIP 14810	CITY Corning STATE N.Y. ZIP 14831

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
1	DT		A. NON DOT Kiln Base Brick + Debris	12	T
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS Emergency Phone (800) 483-3718 Generator Corning Incorporated
Approval # 210506

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Jeffrey E Marsh as agent for Corning Incorporated	[signature]	7/20/21
TRANSPORTER 1	Patrick McNamara JR	Patrick Mc——	7/20/21
TRANSPORTER 2			
RECEIVED BY	Jamie L. Herbert	Jamie L. Herbert	7/20/21

BLF 1

STEUBEN COUNTY D.P.W.
BATH LANDFI

Ticket #: 1121128

DATE IN: 07/20/21 DATE OUT: 07/20/21
TIME IN: 12:42 PM TIME OUT: 01:21 PM
ID-IN: JLH ID-OUT: JLH

Vehicle#: C9071
TT= Commercial BY WEIGHT
OT= Corning

Haul Acct#: CORNINCCANI
Haul Company: CORNING INC - CANISTEO
907

Bill Acct #: CORNINCCANI
Bill Company: CORNING INC - CANISTEO
907

Gross:	62480 lb	31.24 tn
Tare:	37480 lb	18.74 tn
Net:	25000 lb	12.50 tn

Material

Industrial Waste 0

Subtotal: $550.00
Tax: $0.00

Total:
$550.00
Payment Method(s):
1 - Charge
$550.00

Change: $0.00

Driver: Paton

Site Address : SAME

SC PPW 7/1/2021

WORK ORDER NO AW 2104189225-002

DOCUMENT NO. 1417607

STRAIGHT BILL OF LADING

TRANSPORTER 1 Clean Harbors Environmental Services, Inc. VEHICLE ID # 40225

EPA ID # MAD039322250 TRANS. 1 PHONE (781) 792-5000

TRANSPORTER 2 VEHICLE ID #

EPA ID # TRANS. 2 PHONE

DESIGNATED FACILITY Casella Waste Systems - Hyland Landfill			SHIPPER ATTN:Angela Knight Corning Incorporated		
FACILITY EPA ID # NYN008024069			SHIPPER EPA ID # NYD000824375		
ADDRESS 6653 HERDMAN RD			ADDRESS 1 Front Street		
CITY Angelica	STATE NY	ZIP 14709	CITY Corning	STATE NY	ZIP 14831

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
1 3000 G	TT		A. NON D.O.T. REGULATED, (SOIL, SEDIMENT, DIRT, SILT AND WATER MIXTURE FROM SUMP CLEANOUTS)	1200	G
			B.		
			C.		
			D.		
			E. ✓		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS EMERGENCY PHONE #: (800) 483-3718 GENERATOR: Corning Incorporated

A.23833

PO# W211443490

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Katelyn Zatwarnicki As Agent for Corning Incorporated	Katelyn Zatwarnicki	8-24-2021
TRANSPORTER 1	John Welsh	J Welsh	8-24-2021
TRANSPORTER 2			
RECEIVED BY			

3 HFH Timothy [illegible] 8/24/21

CHI 107

Site Address: SAME

40225

SC PFW 7/1/2021

WORK ORDER NO AW 2104180828-002

DOCUMENT NO. 1417608

STRAIGHT BILL OF LADING

TRANSPORTER 1 Clean Harbors Environmental Services, Inc. VEHICLE ID # 40225

EPA ID # MAD039322250 TRANS. 1 PHONE (781) 792-5000

TRANSPORTER 2 VEHICLE ID #

EPA ID # TRANS. 2 PHONE

DESIGNATED FACILITY Casella Waste Systems - Hyland Landfill	SHIPPER ATTN:Angela Knight Corning Incorporated
FACILITY EPA ID # NYN008024069	SHIPPER EPA ID # NYD000824375
ADDRESS 6653 HERDMAN RD	ADDRESS 1 Front Street
CITY Angelica STATE NY ZIP 14709	CITY Corning STATE NY ZIP 14831

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
1 3000 G	TT		A. NON D.O.T. REGULATED, (SOIL, SEDIMENT, DIRT, SILT AND WATER MIXTURE FROM SUMP CLEANOUTS)	1100	G
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS EMERGENCY PHONE #: (800) 483-3718 GENERATOR: Corning Incorporated

A.23033

PO# W211443490

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

SHIPPER	PRINT Katelyn Zatwarnicki As Agent for Corning Incorporated	SIGN Katelyn Zatwarnicki	DATE 8.25.2021
TRANSPORTER 1	PRINT John Welsh	SIGN [signature]	DATE 8.25.2021
TRANSPORTER 2	PRINT	SIGN	DATE
RECEIVED BY	PRINT HFA	SIGN [signature]	DATE 8/25/21

2

CHI 107

From:	Salotto, Samantha R (DEC) <Samantha.Salotto@dec.ny.gov>
Sent:	Thursday, April 14, 2022 9:43 AM
To:	Marcia Greenblatt
Cc:	Cruden, Michael (DEC); Doroski, Melissa A (HEALTH); Deming, Justin H (HEALTH); John F Novotny (novotnyjf@corning.com); Ryan, Alexander Thomas; Pete Zimmermann; Jeff Marsh; Katelyn Zatwarnicki
Subject:	RE: P-Site Characterization Work Plan, Corning Refractories Plant, NYSDEC Site No. 851048, Corning, New York

Hi Marcia,

I have no additional comments.

Thanks!
Sam

From: Marcia Greenblatt <mgreenblatt@integral-corp.com>
Sent: Friday, March 25, 2022 2:32 PM
To: Salotto, Samantha R (DEC) <Samantha.Salotto@dec.ny.gov>
Cc: Cruden, Michael (DEC) <michael.cruden@dec.ny.gov>; Doroski, Melissa A (HEALTH) <melissa.doroski@health.ny.gov>; Deming, Justin H (HEALTH) <justin.deming@health.ny.gov>; John F Novotny (novotnyjf@corning.com) <novotnyjf@corning.com>; Ryan, Alexander Thomas <RyanAT@corning.com>; Pete Zimmermann <pzimmermann@integral-corp.com>; Jeff Marsh <jmarsh@integral-corp.com>; Katelyn Zatwarnicki <kzatwarnicki@integral-corp.com>; Marcia Greenblatt <mgreenblatt@integral-corp.com>
Subject: P-Site Characterization Work Plan, Corning Refractories Plant, NYSDEC Site No. 851048, Corning, New York

Hi Samantha,
On behalf of Corning Incorporated, we are submitting by Hightail the Final Corning Refractories Plant P-Site Characterization Work Plan. The letter you sent to Corning Incorporated on March 11, 2022 will be attached to the final approved Work Plan. The document can be found at the following link: https://spaces.hightail.com/space/Ks6QTaNX0i

Regards,
Marcia

MARCIA GREENBLATT, PH.D., P.E. | **Principal** | **Technical Director**
Hydrology, Geoscience, and Chemistry
Tel: 720.465.3347 | Cell: 781.864.5055
285 Century Place, Suite 190 | Louisville | CO 80027
mgreenblatt@integral-corp.com | www.integral-corp.com

integral INSIGHT FOR AN EVOLVING WORLD

Exhibit C

EXHIBIT "C"

RECORDS SEARCH REPORT

1. Detail all environmental data and information within Respondent's or Respondent's agents' or consultants' possession or control regarding environmental conditions at or emanating from The Corning Refractories Plant Property.

2. A comprehensive list of all existing relevant reports with titles, authors, and subject matter, as well as a description of the results of all previous investigations of The Corning Refractories Plant Property, including all available topographic and property surveys, engineering studies, and aerial photographs.

3. A concise summary of information held by Respondent and Respondent's attorneys and consultants with respect to:

(i) a history and description of The Corning Refractories Plant Property, including the nature of operations;

(ii) the types, quantities, physical state, locations, methods, and dates of disposal or release of hazardous waste at or emanating from The Corning Refractories Plant Property;

(iii) a description of current The Corning Refractories Plant Property security (i.e. fencing, posting, etc.); and

(iii) the names and addresses of all persons responsible for disposal of hazardous waste, including the dates of such disposal and any proof linking each such person responsible with the hazardous wastes identified.

4. The Respondent shall have no obligation hereunder to provide information to the Department which it already has in its possession or which the Department was responsible for developing, or to provide privileged information to the Department. Except for information the Department was responsible for developing or privileged information, the Respondent shall identify the information which it believes the Department already has in its possession.

Exhibit D

The Corning Refractories Plant Property Citizen Participation Plan

NYSDEC Index No. R8-20220411-18

Corning, New York

April, 2022

Contents

List of Appendices

1.0 Introduction and Overview

This document presents the Citizen Participation (CP) Plan for The Corning Refractories Plant Property located in the Town of Corning, New York, Tax Map IDs: 317.08-01-057.000 and 317.08-01-053.200 (the "Real Property"). The Real Property is depicted on the map attached as Appendix "F".

In April 2022, Corning Incorporated and the New York State Department of Environmental Conservation (NYSDEC) entered into an Order on Consent and Administrative Settlement (Order) to investigate the Real Property, including conducting The P-Site Characterization Work Plan: Corning Refractories Plant (the Work Plan; Integral 2022), which is attached to, and incorporated into, the Order.

The Order also requires the development of a CP Plan for the Real Property, in accordance with New York Environmental Conservation Law (ECL) §27-1417 and Title 6 of the New York Codes Rules and Resolutions (6 NYCRR) sections 375-1.10 and 375-3.10. Corning is committed to informing and involving the public during the course of the remedial work to be conducted under the Order, and will work with the NYSDEC and the New York State Department of Health (NYSDOH) to accomplish this goal. This CP Plan describes the minimum CP activities to be conducted during the environmental study; additional community outreach may also occur based on NYSDEC requirements or community feedback.

2.0 Background and Project Description

The NYSDEC classified the Real Property as a State Superfund Program Classification P (potential) site.

2.1 The Corning Refractories Plant Property History

The Corning Refractories Plant Property is located at 1 Front Street, Corning, Steuben County, New York 14830. The Property is listed on Tax Maps as Parcels #317.08-01-057.000 and #317.08-01-053.200 and identified as comprising 3.87 acres. The Property includes a ±102,882-ft^2 slab-on-grade structure. The structure comprises 13 interconnected buildings/additions and was used by Corning for manufacture of refractory brick used at Corning glass making facilities. The Property is located on the eastern side of the City of Corning, south of Front Street and approximately 350 ft south of the Chemung River.

Refractory manufacturing occurred at this facility from the 1930s when Corning acquired the property until it was shut down in 2014. Operations consisted of mixing, forming, baking, and finishing refractory-type material (i.e., temperature-resistant material such as bricks to be used in kilns or furnaces) and using ceramic material in the production of cast items such as heater panels and drain casts. Materials used in the manufacturing include alumina, zircon, and clay. Rinse water from operations was discharged to dry wells and water from cooling operations was discharged to floor drains and/or sump pits.

NYSDEC has provided aerial photographs taken at the Property and Sanborn maps of the area depicting the Property's development over time. The photographs were reviewed and reveal that from 1942 to 1995 there was a rail track bisecting the Property. In 1995 the northern portion of the property was developed with buildings but the southeastern corner is undeveloped. By 2006, the aerial image shows the current site layout and development (concrete access for loading) of the southeastern corner of the Property.

The Sanborn maps were reviewed and reveal that the Property has undergone considerable changes in industrial use and development since the 1880s. In general, the historical use of the Property was for industrial and residential purposes. The northern portion of the Property was as a foundry (kilns, dryers, annealing room) and for more than 100 years, the NYCRR rail track bisected the Property. The southeast corner of the Property was used as a manufactured gas plant since at least 1898 when the first iron gasometer was shown on the Sanborn map. A second gasometer was installed in 1921; in 1948, both gasometers were removed and the New York Electric Corporation installed a transformer yard in the northeast corner of the Property.

2.2 Project Description

Corning Incorporated has retained an experienced expert technical consultant, Integral Engineering, PC, to implement an environmental study of the Real Property in accordance with the NYSDEC-approved Work Plan (Integral, 2022). The study will assess the nature and extent of whether hazardous substances and fill material that may be encountered within the Real Property and evaluate potential exposure pathways completing soil borings, collecting surface and subsurface soil samples for analytical testing; and installing and sampling groundwater monitoring wells. are present on the Refractories site, and, if present, to evaluate the nature and extent. The characterization activities designed to assess the presence of substances that may be encountered at the referenced property and to obtain data necessary for understanding the current conditions and associated potential exposure pathways. After the sampling is complete, Corning Incorporated will report the findings and work with the NYSDEC and NYSDOH to determine whether any further action is necessary.

3.0 Citizen Participation (CP) Activities

This section describes the CP program for the Real Property. The program meets the requirements set forth in NYSDEC Program Policy No. 23, the Citizen Participation Handbook for Remedial Programs. The program will be implemented by Corning Incorporated, with oversight and input from the NYSDEC and NYSDOH. The following paragraphs describe the required or suggested minimum CP activities for the project; additional CP activities may be considered based on community feedback.

3.1 Document Repository

A document repository is a file of documents pertaining to the Real Property and the associated citizen participation programs, which is made available for public review. The file is typically maintained in a nearby public building to provide access at times and a location convenient to the public.

For the Real Property, document repositories will be established, and will include the following documents, as available:

- Consent Order
- CP Plan
- Fact Sheets
- The Corning Refractories Plant Characterization Work Plan
- Other materials (e.g., information sheets, notices, etc.)

Two repositories will be established for the Real Property: (1) the Southeast Steuben County Library, and (2) the NYSDEC Regional Office. The addresses for these repositories are listed in Appendix B.

3.2 Mailing List

A key element of the CP Plan is a mailing list of stakeholders, the community, and interested citizens in an area. Direct mailings of information allow people to review the information provided at their convenience (i.e., rather than in a public forum). These mailings also facilitate the distribution of information to everyone who needs or wants information about the project.

Events requiring a fact sheet be sent to the mailing list include but are not limited to finalization of the Site Characterization Work Plan, completion of the Site Characterization Report, finalization of an Interim Remedial Measure Work Plan (if applicable), and completion of an Interim Remedial Measure Report (if applicable).

A mailing list has been established for the Real Property (referred to as the Project Contact List), which is composed of two components:

- The owner of the Real Property, and
- Other interested parties.

The contact information for interested parties (second bullet) is provided in Appendix D; property owner contact information is maintained confidentially in project files. Corning Incorporated will maintain and update the mailing list information regularly throughout the project.

3.3 Points of Contact

Several points of contact have been established for the project. The public is encouraged to contact any of the project staff listed below.

<u>**Technical Information:**</u>
Samantha Salotto
NYS Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, NY 12233
Phone: (518) 402-9903
Email: Samantha.Salotto@dec.ny.gov

<u>**The Corning Refractories Plant Property -Related Health Information:**</u>
Christine N. Vooris – Bureau Director
Center for Environmental Health
New York State Department of Health
Empire State Plaza, Corning Tower Room
Albany, NY 12237
Phone: (518) 402-7860
Email: Christine.Vooris@health.ny.gov

<u>**Citizen Participation:**</u>
Andrea Pedrick
Public Participation Specialist
NYS Department of Environmental Conservation
Region 8
6274 East Avon-Lima Road
Avon, NY 14414
Phone: (585) 226-5363
Fax: (585) 226-9458
Email: andrea.pedrick@dec.ny.gov

3.4 Print Media (Fact Sheets)

Printed communications materials, such as fact sheets, newsletters or brochures, are one of several citizen participation tools used to provide information to the community about a project. Fact sheets are typically two to four pages in length, and portray a specific topic of interest in community-friendly (non-technical) terms. Pictures and graphics are used as much as possible to enhance the fact sheet and more simply communicate key information.

The NYSDEC will prepare Fact Sheets at certain key milestones of the project in accordance with NYSDEC Program Policy No. 23 (the *Citizen Participation Handbook for Remedial Programs).* In addition, Corning Incorporated will prepare additional informative newsletters and/or fact sheets and periodically distribute these materials to interested individuals and organizations. For example, Corning Incorporated newsletters/fact sheets may contain articles on the status of the environmental project, listings of recently issued documents, names of individuals to contact for more information, and descriptions of study techniques or technologies or project milestones. The newsletters/fact sheets will be used to increase community awareness and knowledge of the project and its status. All fact sheets will be reviewed and approved by the NYSDEC before being distributed to entities on the Real Property contact list.

3.5 Websites

In today's society, providing information on the Internet is an effective means of communication. Most community members have some access to the Internet (at home, at work, or at a public library), and this can be an important communications vehicle for consolidated, accurate, and up-to-date information and visuals.

NYSDEC will establish a website for the project and will announce the address via a fact sheet. An existing website with information regarding environmental cleanup in Corning can be found here: https://www.dec.ny.gov/chemical/97180.html.

3.6 Summaries of Technical Reports

In addition to technical reports placed in the document repositories, a summary (in the form of a fact sheet) will be provided after each technical report has been finalized to communicate the facts about the project in simple terms to enhance understanding. It is important that technical information is articulated with a realistic and understandable view of the work being done and the potential risks or exposures involved. It is, however, also important that the community be able to understand the issues in lay terms.

3.7 Public Notices

As required by NYSDEC Program Policy*,* formal public notices will be published to inform stakeholders and community members of certain milestones or events concerning the project. These notices will be placed in a local newspaper of general circulation, and will appear in a prominent position in the paper with adequate time for the community to plan participation.

3.8 Public Comment Periods and Comment Responses

If requested by the NYSDEC, the public will be given an opportunity to comment on certain project documents and to receive comment responses from the NYSDEC. Under NYSDEC program policy, the public would typically be allowed 30 days to comment on a particular document.

Formal comment response documents would be prepared by the NYSDEC, and provided to the public. In this manner, the public will obtain direct feedback on their comments, and will understand how the comments are being incorporated into final decisions being made regarding the project.

3.9 Meetings

Public or town meetings and/or availability sessions will be held as appropriate (e.g., to announce major milestones during the project), or as requested by the NYSDEC or the community. Such meetings will include (as appropriate) posters, exhibits, and displays that give audience members graphic representations of project activities, findings, or program schedules. These materials will provide perspective to the community with respect to the study.

Public meetings will be held in a convenient and central location to the community. Meeting times and locations would be determined with input from local community leaders, and will be announced in local newspapers and/or a mailing to the community.

3.10 Media Notification

Media releases will be developed at key milestones of the program and distributed to local newspapers and other media outlets that may express interest. Media contacts are listed in Appendix D. Media briefings can also be arranged if media representatives have the need for additional background information on the project.

3.11 Elected State and Federal and Local Officials Briefings

Briefings to state and federal elected officials and local officials will be scheduled as needed or requested to communicate significant events during the project. Such briefings will keep these leaders involved and informed as to the progress of activities on the project. These briefings will also give officials the opportunity to ask questions or resolve any concerns.

3.12 Revise the CP Plan

During the course of implementing the CP Plan, Corning Incorporated and the NYSDEC may identify additional community needs, issues, or concerns regarding the Real Property that are not currently addressed in this CP Plan. As such, the CP Plan will be updated as needed, or at least every three years.

4.0 References

The Corning Refractories Plant Property Characterization Work Plan, (Integral, April 14, 2022)

Appendix A

Project Contacts

For additional information about the program, the public is encouraged to contact any of the project staff listed below.

Technical Information:

Samantha Salotto
New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, NY 12233
Phone: (518) 402-9903
Email: Samantha.Salotto@dec.ny.gov

The Van Etten Road Property -Related Health Information:

Melissa Doroski
Center for Environmental Health
New York State Department of Health
Empire State Plaza, Corning Tower Room
Albany, NY 12237
Phone: (518) 402-7860
Email: Melissa.Doroski@health.ny.gov

Citizen Participation:

Andrea Pedrick
Public Participation Specialist, Office of Communication Services
NYS Department of Environmental Conservation
Region 8
6274 East Avon-Lima Road
Avon, NY 14414
Phone: (585) 226-5366
Fax: (585) 226-9458
Email: andrea.pedrick@dec.ny.gov

Appendix B

Document Repositories

Two document repositories have been established to provide the public with convenient access to important project documents and other information. This information will include reports, data and information gathered and developed during the course of the assessment and evaluation of conditions surrounding the Real Property. These repositories can be found at the following locations:

Southeast Steuben County Library

300 Nasser Civic Center Plaza
Corning, NY, 14830
Phone: (607) 936-3713
Contact: (reference librarian) for an appointment

Hours:	Monday	9:00am-6:00 pm
	Tuesday	9:00am-8:00pm
	Wednesday	9:00am-6:00pm
	Thursday	9:00am-8:00pm
	Friday	9:00am-6:00pm

NYSDEC Region 8 Office

6274 Avon-Lima Rd. (Rtes. 5 and 20)
Avon, NY 14414-9516
Contact: Regional Public Participation Specialist
at (585) 226-5324 for an appointment
Hours: Monday through Friday 8:30am-4:45pm

Appendix C

List of Available Documents

According to the NYSDEC, the following documents are available at the document repositories listed in Appendix B of this CPP:

- Order on Consent and Settlement Agreement DEC No. R8-20220411-18, dated April 2022
- The Corning Refractories Plant Property Characterization Work Plan, (Integral, April 14, 2022)
- Citizen Participation Plan, dated April 2022

Within the initial months of the project, Corning Incorporated will also provide copies of the following documents for the document repositories:

- Fact Sheets prepared and distributed to the Project Contact List

Additional documents not listed above will be placed in the designated repositories as the program for the Real Property develops.

Appendix D

Project Contact List

The following contact list has been developed to help keep the community informed about and involved in the project activities relating to The Corning Refractories Plant Property. The list includes local, regional and state officials; local media; civic, business, and environmental organizations; and others. The Project Contact List will be reviewed periodically and updated as appropriate.

Note: The property owner is maintained confidentially in project files, not in a CP Plan or repositories.

Environmental Groups

Friends of the Chemung River Watershed
111 N. Main St.
Elmira, NY, 14901

Media

Shawn Vargo, News Editor
The Leader
34 West Pulteney St.
Corning, NY, 14830

Kevin Hogan, Executive Editor
Star-Gazette
201 Baldwin St., P.O. Box
Elmira, NY, 14902

News Director
WETM-TV
101 East Water Street
Elmira, NY, 14901

News Director
WENY-TV
474 Old Ithaca Road
Horseheads, NY, 14845

News Director
YNN
815 Erie Blvd. East
Syracuse, NY, 13210

Associated Press
Albany Bureau
P.O. Box 11010
Albany, NY, 12211

Local Officials

Town of Corning

Kimberly Feehan, Town Supervisor
Town of Corning
20 South Maple Street
Corning, NY, 14830

Mike Brenning, Deputy Supervisor Councilman
Town of Corning
20 South Maple Street
Corning, NY, 14830

Councilwoman Jennifer Mullen
Town of Corning
20 South Maple Street
Corning, NY, 14830

Councilman Stuart Sammis
Town of Corning
20 South Maple Street
Corning, NY, 14830

Councilman Lon Fiscus
Town of Corning
20 South Maple Street
Corning, NY, 14830

Susan A. Edwards, Town Clerk
Town of Corning
20 South Maple Street
Corning, NY, 14830

Wayne Bennett, Planning Board Chairman
Town of Corning
20 South Maple Street
Corning, NY, 14830

Michael Pambianchi, Zoning Board
Town of Corning
20 South Maple Street
Corning, NY, 14830

John MacMahaon, Zoning Board
Town of Corning
20 South Maple Street
Corning, NY, 14830

Phillip Zarnoch, Zoning Board
Town of Corning
20 South Maple Street
Corning, NY, 14830

Steuben County Officials
Steven Maio, Esq.
Steuben County Legislature
3 East Pulteney Square
Bath, NY, 14810

Honorable Hilda T. Lando
Steuben County Legislature
3 East Pulteney Square
Bath, NY, 14810

Scott J. Van Etten, Chairman
Steuben County Legislature
3 East Pulteney Square
Bath, NY, 14810

Robin K. Lattimer, Vice Chairman
Steuben County Legislature
3 East Pulteney Square
Bath, NY, 14810

Jack Wheeler, County Manager
Steuben County Office Building
3 East Pulteney Square
Bath, NY, 14810

Judith M. Hunter, Clerk Steuben County
County Clerk's Building
3 East Pulteney Square
Bath, NY, 14810

Matthew Sousa, Planning Director
Steuben County Planning Department
3 East Pulteney Square
Bath, NY, 14810

Todd Housel, Deputy Commissioner
Steuben Public Works Department
3 East Pulteney Square
Bath, NY, 14810

Darlene Smith, Director
Public Health and Nursing Services
3 East Pulteney Square
Bath, NY, 14810

Wendy Jordan, Director
Real Property Tax Service Agency
3 East Pulteney Square
Bath, NY, 14810

State Officials

Dudley Loew, Esq.
Regional Attorney
New York State Department of Environmental Conservation, Region 8
6274 East Avon-Lima Road
Avon, NY, 14414

Timothy Walsh
Regional Director
New York State Department of Environmental Conservation, Region 8
6274 East Avon-Lima Road
Avon, NY, 14414

David Pratt, P.E.
Remediation Engineer
New York State Department of Environmental Conservation, Region 8
Division of Environmental Remediation
6274 East Avon-Lima Road
Avon, NY, 14414

Michael Cruden
Bureau Director
New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway, 12th Floor
Albany, NY, 12233

Andrea Pedrick
Public Participation Specialist, Office of Communication Services
New York State Department of Environmental Conservation
6274 East Avon-Lima Road
Avon, NY, 14414
Phone: (585) 226-5363
Fax: (585) 226-9458
Email: andrea.pedrick@dec.ny.gov

Christine N. Vooris
Bureau Director
Center for Environmental Health
New York State Department of Health
Empire State Plaza, Corning Tower Room
Albany, NY, 12237

Justin Deming
Center for Environmental Health
New York State Department of Health
Empire State Plaza, Corning Tower
Albany, NY, 12237

Melissa Doroski
Center for Environmental Health
New York State Department of Health
Empire State Plaza, Corning Tower

Albany, NY, 12237

State Elected Officials
Senator Thomas F. O'Mara
333 East Water St., 3rd Floor, Suite 301
Elmira, NY, 14901

Assemblyman Philip A. Palmesano
105 E. Steuben St.
Bath, NY, 14810

Federal Elected Officials
Honorable Charles Schumer
United States Senate
322 Hart Senate Office Building
Washington, D.C., 20510

Honorable Kirsten Gillibrand
United States Senate
478 Russell
Washington, D.C., 20510

Congressman Tom Reed
United States House of Representatives
2263 Rayburn House Office Building
Washington, D.C., 20515

Property Owner List – To Be Maintained Confidentially

Property Owners to the East
Steuben County IDA/CPM
1 Riverfront Plaza
Corning, NY, 14830

Property Owners to the West
Wegmans Food Markets Inc
P.O. Box 24470
Rochester, NY, 14624

Property Owners to the North
Steuben County IDA/CPM
1 Riverfront Plaza
Corning, NY, 14830

Property Owners to the South
Steuben County IDA/CPM
1 Riverfront Plaza
Corning, NY, 14831-0001

Appendix E

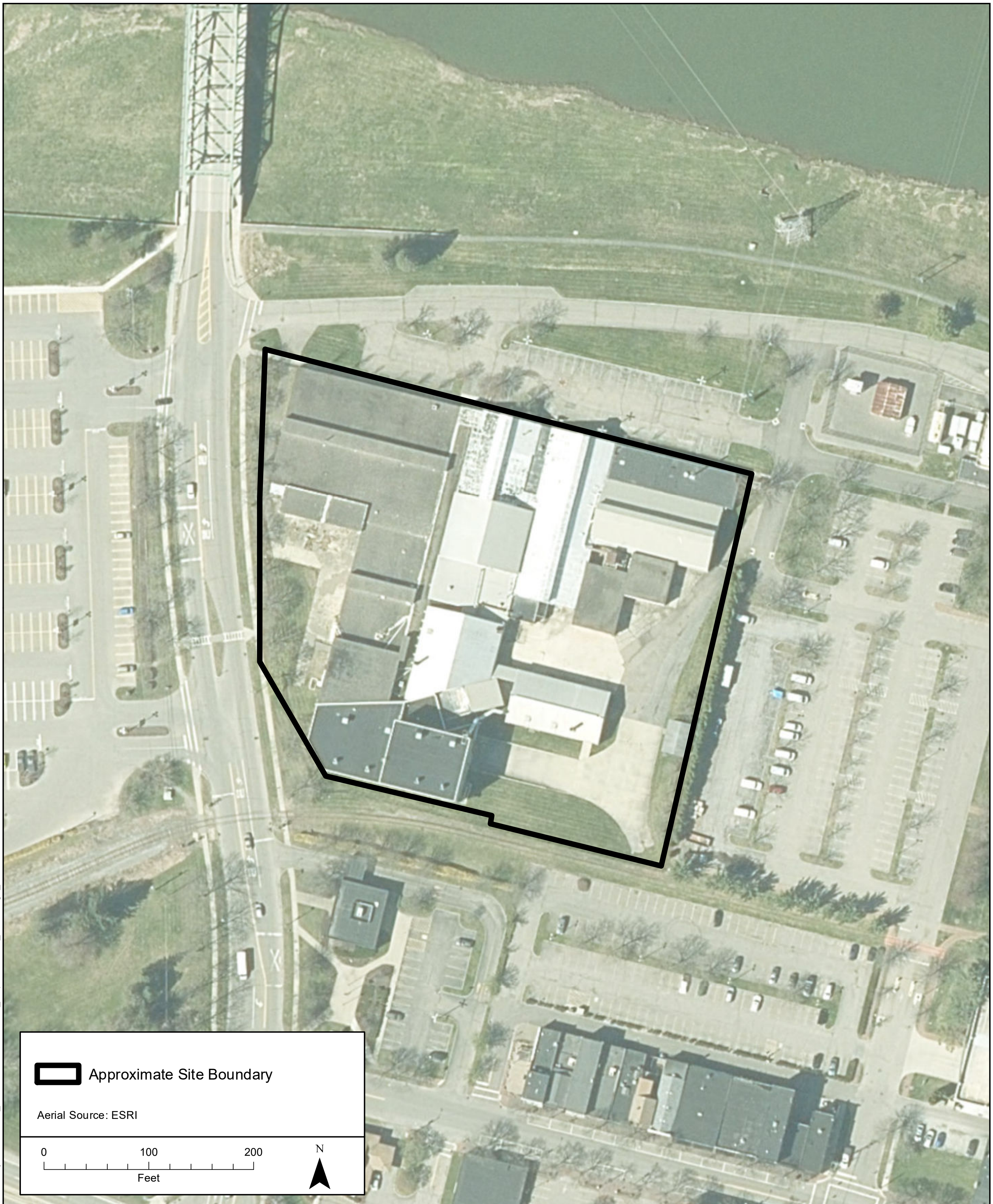
Glossary

Term	Definition
Availability Session	A scheduled gathering of project staff and members of the public in a casual setting, without a formal presentation or agenda but usually focusing on a specific aspect of an environmental study.
Citizen Participation	A program of planning and activities to encourage communication among people affected by or interested in the project and the government agencies and other parties responsible for an environmental study.
Citizen Participation Plan	A Citizen Participation Plan describes the citizen participation activities that will be conducted during a specific project's environmental study.
Comment Period	A period for the public to review and comment about various documents. For example, a 30-day comment period after submittal of remedial investigation of feasibility report is provided when NYSDEC determines it to be necessary.
Consent Order	A legal and enforceable agreement negotiated between NYSDEC and a potential responsible party. The order sets forth agreed upon terms by which the potential responsible party will undertake an environmental study and pay for the NYSDEC's costs to oversee the study. The Consent Order includes a schedule for implementing the agreed scope of the study.
Document Repository	A document repository is a file of documents pertaining to the environmental study of a study area and the associated citizen participation programs, which is made available for public review. The file is typically maintained in a nearby public building to provide access at times and a location convenient to the public.
Fact Sheet	A written discussion about part or all of an environmental project, prepared by NYSDEC or the potential responsible party and provided to the public. A fact sheet may focus on: a particular element of a project; opportunities for public involvement; availability of a report or other information, or announcement of a **public meeting** or **comment period**. A fact sheet may be mailed to all or part of a project's contact list, distributed at meetings, placed in a **document repository** and/or sent on an "as requested" basis.
New York State Department of Health	Agency within the executive branch of New York State government which: performs health-related inspections at suspected hazardous waste sites; conducts health assessments to determine potential risk from environmental exposure; reviews risk assessments ; conducts health-related community outreach around sites; and reviews remedial actions to assure that public health concerns are adequately addressed.
NYSDEC Project Manager	An NYSDEC staff member (usually an engineer, geologist or hydro geologist) responsible for the day-to-day administration of an environmental project. The Project Manager works with legal, health,

Term	Definition
	citizen participation and other staff to accomplish project-related goals and objectives.
Public Meeting	A scheduled gathering of NYSDEC staff and potential responsible party staff with the public to give and receive information, ask questions and discuss concerns about a study area. Staff from multiple NYSDEC divisions and legal NYSDOH often also attend. A public meeting, unlike an **availability session**, generally features a formal presentation and a detailed agenda.

Appendix F

The Corning Refractories Plant Property Map



N:\GIS\Projects\EF1017_Refractories\Production_Maps\Consent_Order\Fig1_SiteLoc.mxd 4/14/2022 9:18:07 AM

integral engineering p.c.
31 West 34th Street
Suite 7196
New York, NY 10001
www.integral-corp.com

Figure 1.
Site Location Map
Refractories Plant P-Site Characterization
Corning, NY