REMEDIAL ACTION WORK PLAN

for the 90 Hopkins Street
Lime Removal and Site Restoration Project

90 Hopkins Street
City Of Buffalo, Erie County, New York

Site No. E915181

Submitted to:
Praxair Distribution, Inc.
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Submitted by:

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APTIM Project No. 141825
September 13, 2017

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List of Acronyms & Abbreviations

APTIM	Aptim Engineering & Geology New York, P.C.
BTEX	Benzene, Toluene, Ethylbenzene, Xylene
CAMP	Community Air Monitoring Plan
CB&I	CB&I E&I Engineering of New York, P.C.
DER	Division of Environmental Remediation
HASP	Health and Safety Plan
IM	Interim Measure
NYCRR	New York Codes, Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
Order	Order on Consent
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated biphenyls
PPB	Parts per Billion
PM	Project Manager
PPM	Parts Per Million
PRAP	Proposed Remedial Action Plan
Praxair	Praxair Distribution, Inc.
RAWP	Remedial Action Work Plan
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision

List of Acronyms & Abbreviations (Con't)

SS	Site Supervisor
SITE	90 Hopkins Street
SCO	Soil Cleanup Objective
SVOC	Semi-Volatile Organic Compound
SWPPP	Stormwater Pollution Prevention Plan
TAGM	Technical and Administrative Guidance Memorandum
TCLP	Toxicity Characteristic Leaching Procedure
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compounds

Certification

I, Matthew J. Sausville, P.E., certify that I am currently a NYS registered professional engineer as defined in 6 NYCRR Part 375 and that this Remedial Action 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).

Matthew J. Sausville
Printed Name of Professional Engineer

Signature of Professional Engineer

Registration Number: 091031
State: New York
Date: 04/25/18

1.0 Introduction

The purpose of this Remedial Action Work Plan (RAWP) is to provide the details necessary for the construction, operation, maintenance, and monitoring of the proposed remedial program. Green remediation principles and techniques will be implemented to the extent feasible for the implementation and site management of the remedy pursuant to New York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation (DER) Program Policy on Green Remediation (DER-31).

Aptim Engineering & Geology New York, P.C. (APTIM), formerly CB&I E&I Engineering of New York, P.C. (CB&I) under contract to Praxair Distribution, Inc. (Praxair), was retained to prepare the RAWP detailing the engineering tasks necessary for the implementation of the 90 Hopkins Street Lime Removal and Restoration Project. This RAWP is required by the Order on Consent (Order) between Praxair and the NYSDEC that was executed on March 1, 2016. That Order committed Praxair to prepare a RAWP designed to protect adjacent wetlands by removing an estimated 106,000 cubic yards of lime in conformance with pertinent sections of NYSDEC's 2015 Record of Decision (ROD).

As detailed in the Proposed Remedial Action Plan (PRAP) and Record of Decision (ROD) the City of Buffalo's goal for the Site is to allow for commercial use; the final remedy and soil cleanup objectives were established to meet commercial use criteria consistent with this anticipated future use.

2.0 Site Background and Site History

The 90 Hopkins Street Site (Site) is a vacant triangular shaped parcel that is approximately eight acres in size located on Hopkins Avenue in the City of Buffalo, Erie County, about ¼ mile south of Tifft Street (**Figure 1**). The Site is situated in an urban industrial area within a Brownfield Opportunity Area and is bordered by a steel fabricating plant to the northeast; a machine shop and auto junk yard to the east; an active railroad line and remediated Marilla St. Landfill disposal site to the south/southwest; and a rail spur and the remediated Alltift Landfill/Ramco Steel disposal sites to the north/northwest. Foundations and floor pads from several industrial buildings still exist at the Site.

Originally, the Site contained two piles of carbide lime; approximately 15 feet above adjoining grade and extending approximately 10 feet below grade. The lime piles covered roughly two thirds of the Site and were estimated to encompass approximately 123,000 cubic yards in volume. Between 2011 and 2016, approximately 27,025 cubic yards of the lime was excavated and removed from the above grade portion of the southern lime pile for use as an agricultural soil amendment at several local farms. This beneficial reuse was approved by the NYSDEC in correspondence dated October 19, 2011. The estimated current volume of carbide lime remaining at the Site is on the order of approximately 96,000 cubic yards.

2.1 Site History

Previous use of the Site included acetylene gas manufacturing from roughly 1930 to 1964. The acetylene manufacturing process resulted in the creation of a carbide lime slurry byproduct. The carbide lime slurry was dewatered in berm-rimmed piles thus creating the carbide lime piles presently at the Site. Sloan Auto Parts owned and operated the site from 1964 to 1968. The Site use between 1967 through 1987 is listed as “undisclosed industrial” or commercial use. The City of Buffalo took title to the property through tax foreclosure in 1987. Between 2002 and 2006, the City leased the property to a commercial entity (demolition and trucking), which used the Site for crushing demolition concrete and selling the crushed concrete as a recycled product. Several former structures from the acetylene gas manufacturing operations, including a gas holder, transformer house, oil house, generator building, and a purifying/compressor building, were demolished in 2002 by the lessee. Concrete pads/floors from these demolished buildings remain on the Site. Vacant areas of the Site are covered with weeds and soil mixed with residual brick, concrete, and stone construction materials from the concrete recycling operation or building demolitions. The Site has been vacant since 2006.

2.1.1 Historic Manufacturing Operations

The Union Carbide Company and its affiliates operated the Site as an acetylene gas manufacturing facility from the 1930's until approximately 1964. The reaction of calcium carbide with water in a closed vessel produces acetylene gas and calcium hydroxide slurry (~11% solids). During the period of acetylene manufacturing noted above, it was common for the lime slurry to be discharged to ponds or berm-rimmed piles similar to those at the Site.

2.1.2 Summary of Environmental Site Assessments

Environmental assessments previously conducted at the Site included:

- Characterization of "Lime Piles." Malcolm Pirnie, Inc. (for the City of Buffalo Law Department – February 2, 1998);
- Technical Assistance for the Sloan Auto/90 Hopkins Street Site, Buffalo, New York. Brownfields Technology Support Center, Completed by USEPA contractor Tetra Tech EM, Inc., March 1999;
- Soil Sampling, Sloan Auto, Buffalo, New York. Completed by Weston for USEPA ERTC, October 29, 1998;
- Petition for Determination of Beneficial Use for Calcium Carbonate Product Located at Hopkins Street, South Buffalo. Prepared by Malcolm Pirnie, Inc. for BERC, January 2000;
- Lime Pile Investigation & Limited Groundwater Quality Evaluation, 90 Hopkins Street, City of Buffalo, New York. Prepared by Clough Harbour & Associates, LLP, for Honeywell Corp., July 2006;
- Remedial Investigation Alternatives Analysis Report, 90 Hopkins Street Site, prepared by Panamerican Environmental, Inc. for The City of Buffalo Office of Strategic Planning, July, 2014

CB&I E&I Engineering of New York, P.C. (CB&I) completed a more recent (July, 2015) assessment program that is detailed in **Section 2.2** of this document.

Malcolm Pirnie conducted a sampling and analysis program to characterize the lime piles present at the Site in 1997. Nine test pits were excavated in the lime piles to native/fill material interface to depths of approximately 20 feet below top of grade. Samples collected during excavation of the test pits exhibited pH values in the range of 12.6 – 12.7 with consistent constituents throughout the depth of each pile. Acetone was present in the lime at levels below the NYSDEC Soil Cleanup Guidelines. Beryllium, chromium, iron, and zinc were detected in the lime piles at concentrations slightly exceeding the NYSDEC Soil Cleanup Guidelines; no Semi Volatile Organic Compounds (SVOCs) were detected. Calcium was found throughout the piles at concentrations ranging from 421,000 to 476,000 mg/Kg, exceeding the Eastern United States background concentration range included in the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) 4046 (130 to 35,000 mg/Kg). The analytical results were consistent with identification of composition of the piles as lime. Additionally, with the exception of the high pH, the Toxicity Characteristic Leaching Procedure (TCLP) analysis did not allow for classification of the lime as a Resource Conservation and Recovery Act (RCRA) Characteristic Hazardous Waste.

Roy Weston conducted an investigation of the lime piles, surface and subsurface soils, drums, and a pile of debris at the Site on behalf of the United States Environmental Protection Agency (USEPA) in 1998. Comparison of analytical results for surface soil samples to NYSDEC TAGM revealed levels of potential concern for the following types of contaminants: Volatile Organic Compounds (VOC); polycyclic aromatic hydrocarbons (PAH), including benzo(a)pyrene; polychlorinated biphenyl (PCB); and metals, including lead and mercury. As shown previously, the lime piles exhibited a high pH, ranging from 12.4 to 12.45. Water was found at depths of 1 foot and 3 foot in some locations.

Tetra Tech EM Inc. investigated potential beneficial uses for the carbide lime amassed at the Site and provided information on remedial technologies for the treatment and cleanup of shallow soils impacted by the lime storage. "The associated report discussed eight industries and chemical processes where the carbide lime could be used beneficially. Names of potential users in proximity to the Site were also identified. The report also discussed five technologies for treating shallow soils and the potential advantages and limitations for each. At this time, some of the carbide lime material was taken and used by the USEPA for acid pit neutralization at the nearby Bethlehem Steel property in Lackawanna, N.Y" (from Remedial Investigation Alternatives Analysis Report by Panamerican Environmental, Inc., July 2014).

Panamerican Environmental, Inc. advanced a total of sixteen test trenches across the Site ranging from 4 feet deep to 10.5 feet deep, 3 to 4 feet wide, and 10 feet to 50 feet in length, as part of a remedial investigation in 2010. The goals of the investigation were to estimate extent and volume and determine contaminants of concern present in the lime piles as well as assess the general condition of the Site and potential for beneficial reuse of the lime material. A total of five soil borings were advanced in support of these efforts in addition to installation of three groundwater wells. Analytical results of soil samples collected from the test trenches and borings and water samples collected from the monitoring wells are detailed in the Remedial Investigation Alternatives Analysis Report prepared by Panamerican Environmental, Inc. (July 2014) and summarized below as in the ROD issued by NYSDEC.

The results of these assessment activities resulted in the following conclusions by the NYSDEC, as detailed in the ROD.

Groundwater: In addition to elevated pH in groundwater, groundwater impacts at the Site consist of acetone and phenol along the north-northeast perimeter of the Site with levels up to 350 parts per billion (ppb) for acetone (50 ppb groundwater quality standard) and 44 ppb for phenol (1 ppb groundwater quality standard). Acetone was a chemical used during the period acetylene was manufactured at the Site. Groundwater is slightly impacted at the southeast end of the Site by petroleum Benzene, Toluene, Ethylbenzene and Xylene (BTEX) compounds (200 ppb total with 1 to 5 ppb water quality standards for respective compounds) and Methyl tertiary butyl ether (MTBE) (74 ppb with a 10 ppb groundwater quality standard). The petroleum contamination is attributed to offsite migration from an adjoining automobile scrap yard with documented history of petroleum spills.

Soil: Surface soils along the eastern end of the Site along a debris pile/soil berm are nominally impacted with SVOCs primarily from combustion residues. One sample location adjacent to the debris pile/soil berm and the south lime pile contained lead (1080 (parts per million) (ppm))/1000 ppm commercial use soil cleanup objective [SCO]) and PCBs (4.6 ppm/1 ppm commercial use SCO). Site-related contaminants do not appear to be contributing to off-site environmental impacts that require additional investigation or remedial action.

Carbide Lime: No contaminants of concern were detected in samples collected from the carbide lime piles. Silver was found in the carbide lime nominally above the unrestricted use SCO and appears that silver may have been a naturally occurring element in the raw material for the carbide lime. Nominal levels of acetone found above unrestricted use SCOs were contained in soils below the carbide lime pile and in the carbide lime material. The primary impact from the exposed and uncontrolled carbide lime piles are its effects on raising the pH of groundwater and surface water. The pH in groundwater has been measured as high as 13.14 and up to 11.6 in surface water runoff. High pH (alkaline) runoff from the piles was impacting local surface waters but this was addressed during implementation of the Interim Measure (IM) completed by Praxair.

Fish and Wildlife Resources Impact Analysis (FWRIA) was deemed not necessary based upon the resources and pathways identified and the toxicity of the contaminants of ecological concern at this Site.

2.2 Lime Pile Investigation

Previous environmental assessments of the Site included the collection and laboratory analysis of samples from the lime piles, surface and shallow subsurface soils, and perimeter groundwater. As previously discussed in **Section 2.0**, during the period from 2011 to 2015 and subsequent to these investigations, a quantity of the lime was excavated from the above grade portion of the southern lime pile for beneficial reuse, changing the landscape as well as the extent and volume of lime present at the Site.

Praxair determined that a subsurface investigation of the lime piles at the Site was needed to determine the quality of the native soil beneath the lime piles and approximate quantity of lime below grade.

A total of 11 soil borings were advanced using direct push technology at various locations across the Site, including eight in the north and south lime ponds, 2 along the northern perimeter of the north lime pond, and 1 between the north and south lime ponds in July 2015. The locations of the soil borings are shown in **Figure 2**. The soil borings were generally advanced 2-4 feet into the native soils. Soil samples were collected from the native soil at 10 of 11 boring locations below the lime layer. The native soil samples were screened using a photoionization detector; no VOCs or other gases were detected in any of the native soil samples.

The collected samples were packed on ice and delivered to TestAmerica Laboratories, Inc.'s Amherst, New York, laboratory for the following analyses:

- Volatile organic compounds (VOCs) using USEPA Method 8260C;
- Semivolatile organic compounds (SVOCs) using USEPA Method 8270D (low level PAHs);
- Metals using USEPA Method 6010C (Lead); and
- Polychlorinated biphenyls (PCBs) using USEPA Method 8082A

Results for laboratory analyses of the native soil samples are shown in **Table 1**. The laboratory analytical data package is included as **Appendix A**. Sample SP-1 contained the largest number of VOCs detected above the laboratory and method detection limit at 6, including 2-butanone (MEK), acetone, carbon disulfide, methylene chloride, toluene, and trichlorofluoromethane. Acetone was found in all soil samples with levels ranging from 26 ppb to 170 ppb. Methylene chloride was found in 7 out of 10 soil samples. However, it should be noted that none of the constituents were present at levels exceeding residential NYSDEC SCOs listed in 6 New York Codes, Rules and Regulations (NYCRR) Part 375.

No SVOCs or PCBs were detected in the native soil samples. Lead was detected in all 10 of the samples with levels ranging from 4.1 ppb to 20.5 ppb; none of the levels exceeded residential NYSDEC SCOs listed in 6 NYCRR Part 375.

The soil boring logs were used to construct the cross-sections (**Figures 3 and 4**) and inferred lime limits elevation map (**Figure 5**) of the north and south lime ponds on the Site. These logs are included in **Appendix B**.

3.0 Regulatory Status and Cleanup Standards

Praxair has entered into an Order with the State of New York. The Order obligates Praxair to remove the remaining carbide lime piles. The selected remedial alternative (#5) in the ROD includes the excavation and transportation off-site of all usable carbide lime material for beneficial use and disposal of on-site soils/fill which exceed Commercial Use SCOs, as defined by 6 NYCRR Part 375-6.8. The Order further clarified that Praxair was responsible only for the removal of the lime. The area to be addressed during the implementation of these remedial activities ("Lime Removal Area") is shown on Figure 5 in the ROD. Praxair is only responsible for those materials within this Lime Removal Area. Furthermore, the ROD allowed for the use and onsite management of impacted soils/fills which meet Commercial Use site cleanup objectives (CSCOs); this material can be used to backfill lime excavations and depressions, with the understanding that a site management plan (SMP) and Institutional Controls (IC's) will be required once site remedial activities have been completed. The impacted soils and debris outside the Lime Removal Area are the responsibility of others. Consequently, this RAWP focuses solely upon those work tasks needed to remove the lime consistent with the Order as shown on Figure 5 of the ROD.

3.1 Cleanup Standards / Site Contaminants of Concern

The contaminants at the Site are arranged into four categories: VOCs, SVOCs, PCBs and inorganics (metals and cyanide). All non-lime materials that will be used as backfill or remain within the Lime Removal Area will meet the Commercial Use SCOs as detailed above, which is consistent with the ROD.

Site conditions were assessed during several phases of Site investigative activities as discussed in **Section 2.1.2** and summarized in the January 2015, ROD issued by the NYSDEC. As summarized in the ROD, "the presence of several SVOCs, metals and PCBs has resulted in the contamination of soil. The carbide lime is affecting surface and groundwater quality by raising the pH of these waters. The Site contaminants identified in soil which are considered to be the primary contaminants of concern, to be addressed by the remedy selection process are the lime piles and defined non-lime covered areas containing benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, and PCBs." The selected remedy provided in the ROD is further discussed in **Section 3.4.**

As previously stated, the Order further clarified that Praxair was responsible for the removal of the lime and the management and disposition of the soil/fill material that will be excavated or moved to access subsurface lime; the remaining impacted soils are the responsibility of others.

3.2 Interim Measures

Praxair proactively implemented an IM in 2012 to control stormwater runoff from the Site. The IM involved the construction of a stormwater detention pond as detailed in the July, 2012 approved IM Work Plan. Stormwater runoff from the lime piles is intercepted via constructed swales and detained in the detention pond that allows the lime sediment to settle and normalize the pH of the water.

Praxair has also voluntarily removed approximately 19,325 cubic yards of lime between 2011 and 2016 for beneficial use as an agricultural soil amendment. An additional 7700 cubic yards of lime was removed in 2016.

3.3 Summary of Remediation Objectives

The objectives for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. The goal for the remedial program is to restore the Site to pre-disposal conditions to the extent feasible. At a minimum, the remedy " shall eliminate or mitigate all significant threats to public health and the environment presented by the contamination identified at the Site through the proper application of scientific and engineering principles."

3.4 Summary of the Selected Remedy

A summary of the remedial alternatives that were considered for this site is presented in Exhibit B of the ROD. The selected remedy is referred to as the Carbide Lime Excavation/Offsite Beneficial Use and Impacted Soil/Fill Excavation remedy.

Elements of the selected remedy are as follows:

1. Remedial Design

A remedial design program will be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and Site management of the remedy pursuant to DER-31. The major green remediation components are as follows:

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emission;
- Increasing energy efficiency and minimizing use of non-renewable energy;

- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

2. Carbide Lime Excavation for Off-Site Beneficial Use

As part of this plan, excavation and removal of approximately 96,000 cubic yards of lime will be for, but not limited to, beneficial use such as an agricultural soil amendment, or for acid neutralization of industrial process sludge or incinerator ash, as a scrubber media in solid waste incineration facilities, treatment of residential sewage sludge or other beneficial use/re-use as identified during the implementation of this remedy. A nominal amount of carbide lime may be left at the bottom interface of the lime piles.

Excavation methods and sequencing will be implemented in a manner to limit large open excavations below the groundwater table, and will result in minimal migration of groundwater into excavated zones. In the case where water encountered during excavation below the groundwater table accumulates to a point where it needs to be managed, it and any other water that is potentially impacted and requiring management will be collected for treatment and disposal.

Fill materials, including soil and material derived from any re-grading or removal of on-site soils needed to access the lime meeting Commercial Use SCOs and suitable for use as fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be used to replace the excavated lime and backfill the depressions resulting from lime pile excavation to establish minimum design grades needed to promote positive drainage and prevent ponding of water. Additional fill materials meeting Residential SCOs will be imported as necessary.

3. Impacted Soil/Fill Excavation and Disposal

Figure 5 of the ROD shows those areas of the Site where soils/fill is impacted at levels above Commercial Use SCOs. If this material must be moved to access below grade lime, it will be placed in a designated area of the Site for characterization for use as backfill of the lime excavations pursuant to the sampling methodology detailed in **Section 4.7**. Soils meeting Commercial Use SCOs may be used to backfill the excavations while soils with concentrations above Commercial Use SCOs, fill contaminated with lime and off spec lime materials that cannot be beneficially reused will be sent for disposal at an off-site disposal facility.

4. Site Cover

The ROD states that a minimum of one foot of soil, meeting the SCOs for cover material as defined in 6 NYCR Part 375-6.7 (d) for commercial use may be used as part of site closure activities. The necessity to use or import additional cover material will be evaluated as lime removal activities proceed.

The State has requested in correspondence dated August 12, 2016, (**Appendix C**) that the Lime Removal Area of the Site be covered with "soil suitable for turf establishment at a sufficient thickness, preferably up to six inches but three inches will suffice and seeded with a suitable seed mix for turf or meadow grass establishment" once lime removal activities have been completed.

5. Institutional Control and Environmental Easement

Since soil meeting Commercial Use SCOs will be used as backfill in portions of the site, this will require institutional controls and an Environmental Easement for the site. The City of Buffalo, the Site owner has agreed to place an Environmental Easement on the Site.

It is anticipated that the Environmental Easement will include:

- Submittal to the Department of a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
- Allows the use and development of the property for commercial and industrial use as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- Restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH; and
- Requires compliance with the Department approved Site Management Plan.

6. Site Management Plan

A Site Management Plan will be submitted by Praxair and implemented by the owner of the Site once the lime has been removed including the following elements:

- An Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and engineering controls remain in place and effective;
- A protocol for confirming test results are representative of conditions at the site;
- An Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination (should any exist);

- Descriptions of the provisions of the environmental easement including any land use, and groundwater use restrictions;
- Provisions for the management and inspection of necessary engineering controls;
- A provision for evaluating potential soil vapor intrusion for any buildings developed on the site including a provision for implementing actions recommended to address exposures related to soil vapor intrusion (this will be done by others);
- Maintaining site access controls and Department notification; and
- The steps necessary for periodic reviews and certification of the institutional and/or engineering controls.

A Monitoring Plan to assess the performance and effectiveness of the remedy will be prepared upon completion of this work.

The proposed RAWP is detailed in the remaining sections of this document.

4.0 Engineering Design

4.1 Project Specific Plans

APTIM will prepare or update the following work plans for Praxair to utilize prior to implementation of any Site remedial work:

- Site Specific Health and Safety Plan (HASP)
- Community Air Monitoring Plan (CAMP)
- Stormwater Pollution Prevention Plan (SWPPP)

An approved HASP already exists for this Site. It will be modified and updated to reflect the proposed field activities; this plan is consistent with all APTIM policies, and details all health and safety procedures and protocols that must be followed during any Site activities. The HASP will serve as the basis for tailgate safety meetings during Site remedial activities. All subcontractors will be required to review and sign the HASP prior to completing any activities at the Site.

As stated in the New York State Department of Health Generic Community Air Monitoring Plan, the intent of the CAMP is to provide a measure of protection for the downwind community from potential airborne contaminant releases as a direct result of investigative and remedial work activities. Praxair is under an Order to remove the remaining carbide lime piles at the site. The material in question, carbide lime, has a characteristic odor but contains no VOCs. Monitoring for VOCs is not necessary because VOCs are not present in meaningful amounts in the Lime Removal Area. Consequently any air monitoring that is completed will focus upon particulates in and around the working areas. The CAMP for this project was completed by CB&I in July 2012, later revised in October 2016 and is included in **Appendix D**.

The NYSDOH approved this recommendation in their August 31, 2016 comment letter (**Appendix E**) which confirms that the CAMP must be implemented “if visual dust is generated from activities within the boundaries of the site,...ground intrusive activities or handling of potentially contaminated fill and ground intrusive activities in areas of known or potential contamination on the site (near the junkyard),”

A SWPPP has been prepared for this project. This plan details the anticipated erosion and sedimentation control measures, construction sequencing and phasing details and stormwater/drainage management issues that may need to be addressed during this program. The SWPPP is included in **Appendix F**.

4.2 Site Preparation

4.2.1 Surveying and Field Engineering

A New York State registered professional surveyor will complete a revised survey at the Site to:

- Establish and verify survey control points indicated on the RAWP Drawings;
- Establish and stake out the Limits of Work, property lines, existing topography and any other items as directed by APTIM or Praxair;
- Verify existing conditions prior to construction activities;
- Survey limits of excavated areas as needed during excavation activities to establish vertical and horizontal excavation limits as constructed;
- Survey in all sample point locations for incorporation into final As-Built drawings (as needed);
- Complete final survey of backfilled areas;
- Provide survey data (such as volumes) as needed;
- Survey final Site conditions; and,
- Preparation of Record Drawings, stamped and signed by a NYS licensed land surveyor including Pre-Construction Conditions, As-Built Construction conditions and Final Construction Conditions, as directed by APTIM or Praxair.

4.3 Site Access/Control

Portions of the Site are bounded by a chain link fence, specifically the area adjacent to the Sloan Auto Parts property border. The remaining portions of the Site are not fenced. Ingress/egress to the Site from Hopkins Road is controlled by a locked gate. No other improvements or controls are anticipated to be necessary for implementation of the remedial elements.

4.3.1 Clearing and Grubbing

The surface vegetation along the western property line will be cleared prior to the initiation of lime removal activities in this area. The vegetation will be removed using a front end loader or similar equipment, chipped and stockpiled at the Site for re-use as mulch once the site has been backfilled, for erosion and sedimentation controls, or sent to an offsite composting facility.

4.4 Site Oversight

Praxair will retain representatives and/or contractors to oversee and complete all Site activities. The Site manager will oversee daily operations and be the on-site point of contact as detailed in **Section 4.4.2**.

4.4.1 Site Infrastructure/Support Facilities

Although not currently anticipated, a temporary office trailer and related sanitary features may be installed at the Site for use during implementation of the remedial action. The location of, and necessity for these structures will be determined as work proceeds.

4.4.2 Site Supervisor

The Praxair Site Supervisor reports to the Praxair Project Manager (PM), has authority to direct response operations, and assumes control over on-site activities. They will also:

- Conduct daily safety meetings;
- Conduct daily HSE Inspections and record their findings on the Daily HSE Site Inspection Form as needed;
- Execute the work plan and schedule and provide field reports and photographs/documentation as requested by Praxair;
- Manage the construction operations;
- In conjunction with the Praxair PM, conduct periodic field health and safety inspections to ensure compliance with the HASP as necessary;
- Enforce safety procedures;
- Enforce Site control; and
- Notify, when necessary, local public emergency officials.

4.5 Erosion and Sediment Controls/Stormwater Management

An Erosion and Sediment (E&S)/Stormwater Controls System currently exists at the Site.

As mentioned previously, this system was installed as an IM in 2012. The necessity to augment this system will be evaluated as remedial activities proceed. Erosion and sediment controls will be installed as described in the approved SWPPP (**Appendix F**) as necessary to complete the work. Any changes to this system will be noted in progress reports (**Section 6.1**) submitted to the NYSDEC.

4.6 Roads/Site Infrastructure

Site improvements are not anticipated nor need to be completed prior to initiation of Site excavation activities. The existing access road into and across the Site is topped with “crusher run” gravel suitable for current and anticipated truck and traffic usage. The road will be “top dressed” as needed to maintain the potholes or related issues as the project proceeds. Lime is currently proposed to be excavated during the spring through fall, so winter maintenance of the road or Site will not be necessary. Any changes to this proposed infrastructure will be discussed in the monthly project status report.

4.7 Construction and Demolition Debris Management

The Site currently exhibits three specified areas which we have defined as C&D Area 1, C&D Area 2 and C&D Area 3 which are covered with miscellaneous urban fill and Construction and Demolition (C&D) debris and located adjacent to the North and South Lime piles (**Figure 5**). Specific information for the three areas (based upon previous site investigative activities) are further defined as follows:

1) **C&D Area 1** – Excavate C&D soil to depths ranging from 1 to 2 feet below ground surface (bgs) or until reaching the C&D soil - lime interface. The volume of C&D soil to manage is estimated to range from 577 – 1,153 cubic yards (cy).

2) **C&D Area 2** – Excavate C&D soil to depths ranging from 1 to 2 feet below ground surface (bgs) or until reaching the C&D soil - lime interface. The volume of C&D soil to manage is estimated to range from 1,228 – 2,456 cubic yards (cy).

3) **C&D Area 3** – This area will initially require clearing and grubbing of existing vegetation as described in Section 4.3.1. Following the removal of existing vegetation C&D soils will be excavated to depths ranging from 1 to 2 feet below ground surface (bgs) or until reaching the C&D soil - lime interface. The volume of C&D soil to manage is estimated to range from 1,430 – 2,860 cubic yards (cy).

The intention is to scrape this material as needed to access the lime and construct stockpiles onsite surrounded by erosion and sediment controls.

Composite soil samples will be collected and analyzed from these areas at a frequency of 2-3 samples per every 1,000 cubic yards to determine whether soils meet the soil cleanup objective requirements of DER-10, Table 5.4(e)10 for the Protection of Public Health, Commercial Use SCOs. The materials will be analyzed for Site contaminants of concern which include SVOCs via EPA Method 8270, Metals via EPA Method 6010, and Polychlorinated Biphenyl's (PCBs) via EPA Method 8082. Materials with analytical results that do not meet Commercial Use SCOs will be disposed of at an offsite landfill facility. Materials sent for off-site disposal will be subject to the requirements of the receiving landfill. Materials meeting Commercial Use SCOs will be re-used as backfill along eastern lime limit perimeter that is to be managed by the City of Buffalo. This location is illustrated on **Figure 5**.

4.8 Truck Loading and Traffic Plan

Trucks have historically and will continue to be "direct loaded" during remedial activities. They will park next or adjacent to excavation areas such that the backhoe or excavator can reach the box of the truck. All attempts will be made for pull-through loading such that trucks do not have to back-up. Trucks or excavation equipment do not need to be decontaminated due to the inert nature of lime.

Tires of the trucks will be visually inspected prior to their departure from the Site to insure that they are not encrusted with lime. Praxair's contract with the trucking companies and the excavation contractor clearly states both entities are to ensure that no lime is tracked off site by clearing the loading areas of any lime that might come in contact with tires and inspection and removal of lime from tires if it occurs. Further, in the case any lime is spilled in transit or is tracked off site, the site coordinator is to stop loading vehicles until the hauler and/or the excavation contractor cleans the spill or tracked lime is cleaned up.

A traffic control plan is not currently needed for this project. The Site is located in an industrial/commercial portion of Buffalo; truck traffic is common in this area. The volume of material generated is, however, dependent upon the receiving facilities. Any changes necessary to complete Site work will be discussed with the NYSDEC prior to implementation.

4.9 Construction Water Management System

A construction water management system has not been necessary to complete the work to date. However, one may be needed as the excavation advances below the water table. The first step will be the implementation of an engineering control system using grading and backfilling of the excavation to control the infiltration of water. Contractors will also be instructed to halt excavation during and shortly after rainfall, and only excavate below the groundwater table during periods where inflow of water will be minimal. Prior to excavating sections of lime below the groundwater table, contractors will be required to have an adequate supply of backfill material on-site to be used promptly after removal of the lime and documenting the extent of lime/soil removal. No lime below the groundwater table will be removed unless an adequate volume of backfill material is on Site.

A Baker Tank or similar storage vessel may be employed in the event of the generation of surplus construction water. The necessity to employ such a system will be discussed with the NYSDEC prior to its deployment to the Site as will the necessary treatment and discharge options. The engineering plan will be amended as necessary to address these controls and management options. Additional provisions for construction water management are included in the SWPPP provided as **Appendix F**.

4.10 Lime Excavation

Lime will continue to be excavated as it has been for the past six years through the use of an excavator and "live loading" into dump trucks. The volume of material removed will be dictated by the volume of material required by the receiving facilities.

Lime will be excavated to the extent practicable. The plan is to advance the excavations into native/underlying soils. Post-excavation soil samples will not be collected as existing soil quality data indicates that underlying soils meet residential standards.

Lime from below grade may be stockpiled at the Site to allow water to drain from the lime and eliminate water leakage from the trucks as they leave the Site and/or to stockpile an anticipated adequate supply of material needed by the receiving facilities. The necessity to complete on-site stockpiling of the lime will be evaluated as work proceeds; a lime stockpile area may be established away from the work areas. Changes to the anticipated excavation procedures will be discussed with the NYSDEC and detailed in Site progress reports.

4.10.1 Management of Off-Spec Lime

The ROD required that any lime not suitable for re-use or lime mixed with debris be segregated and managed separately. When encountered, this material will be stockpiled in a designated area of the Site for treatment and removal at a later date. The treatment process is anticipated to include a Trommel® Screen or similar device to separate the lime and debris so that the lime portion of the material can be beneficially used. Lime that is in contact with debris will be staged for use as backfill if the material representative samples meet the Commercial Use SCOs. Lime that cannot be beneficially reused or does not meet Commercial Use SCOs will be managed for off-site disposal.

4.11 Transportation and Disposal of Lime

4.11.1 Transportation

Praxair will retain approved subcontractors to transport lime from the Site. The number of subcontractors retained will be dictated by the quantity of lime required by the end users.

The agreement between Praxair and their subcontractor details the equipment required to excavate, load and transport lime as highlighted below:

- Suitable Insurance including Workmen's Compensation, Comprehensive Commercial General Liability and Comprehensive Automobile Liability;
- Acceptance and adherence with project health and safety requirements, documents, and employee training;
- General cleanliness of all vehicles including loading in such a manner as to prevent lime from coming into contact with the tires and, most importantly, to keep lime from being tracked off-site;
- General integrity and walk around inspection of each truck to ensure that the beds are tight, tailgates are properly closed and secured, and loads are covered prior to their departure from the Site;

- Praxair's on-site representative will determine the suitability and general condition of each vehicle prior to loading or their departure from the Site;
- Contractors are contractually required to mitigate any lime that is spilled or tracked off-Site;
- Weigh tickets and invoices will be provided monthly for tons excavated and loaded. The contractor is required to keep a detailed log of all shipments noting the date of shipment, name/location where lime was shipped, vehicle identification number, driver's name and approximate tonnage.

This information will be provided to Praxair and summarized in the project progress reports provided to the NYSDEC (**Section 6.1**)

4.11.2 Lime Disposal

The lime is being utilized for beneficial re-use. The end users will be provided to the NYSDEC as they are identified and procured. This information will be included with the project progress reports (**Section 6.1**).

4.12 Decontamination

Neither trucks leaving the Site, or on-site excavation equipment will require decontamination due to the inert nature of lime. The expectations of each driver to maintain cleanliness of their vehicles as detailed above. Any trucks coming into contact with lime residue and impacted soils will have their tires brush swept prior to leaving the site.

4.13 Backfill and Grading

Lime excavations will be backfilled to the perimeter grades with clean imported material and or materials generated at the Site that meet Commercial Use SCOs. The intention is to backfill material generated at the Site that meets Commercial Use SCOs as shown on **Figure 5** adjacent to the non-lime disposal portion of the Site as requested by the NYSDEC.

4.13.1 Backfill Sources/Materials

The source and quality of material imported to the Site will meet the requirements for the identified Site use as set forth in 6 NYCRR Part 375-6.7(d). All backfill activities, including imported backfill material sampling requirements shall be in accordance with requirements included in DER-10/Technical Guidance for Site Investigation and Remediation, NYSDEC 6 NYCRR Part 375; NYSDEC CP-51/Soil Cleanup Guidance. Note that representative composite samples have been collected from potential source areas at Douglas Kohorst's Trucking, Inc. property. Certified clean soil will include overburden soil and clay soil from the Kohorst location. Pea Gravel will not be used in backfill at the Hopkins site. It is our understanding the NYSDEC has previously received certification of this soil meeting residential standard. However, we will ensure certification is received prior to use at the Hopkins site. The NYSDEC will also be notified as this material is brought to the Site for use during backfilling of the lime excavation. The intent will be to use any materials generated at the Site that meet Commercial Use SCOs as backfill along the eastern lime limit perimeter that is to be managed by the City of Buffalo as outlined in the ROD. This location is illustrated on **Figure 5**.

The material is known to be sound, durable, soil and sand, clay, or blends of these materials, free from deleterious (construction and demolition) and organic material. Finer grained soils or clays will be the primary materials used for backfilling of the perimeter of the excavation as necessary. Samples will be collected from any other potential source areas, (if needed) to certify that the materials meet required geotechnical and environmental parameters if a certification of “clean fill” cannot be provided by the vendor (Kohorst). Representative environmental samples will be collected and analyzed in accordance with the requirements of DER-10. Analytical results for any imported material will meet Residential Soil Cleanup Objectives. These results will be provided to the NYSDEC prior to use. All types of backfill used at the site will undergo geotechnical testing including Sieve test via ASTM 136 and Standard Proctor test via ASTM 698 to evaluate material properties.

4.13.2 Stockpiling and Backfilling of the Excavations

Praxair’s contractor will import the certified clean fill material and stage it in the area shown on **Figure 5** during the first phases of lime removal activities. Sufficient material will be imported and stockpiled to support the intended volume of lime to be removed; additional material will be added to the stockpile as needed.

The excavation contractor will excavate lime and stage it on existing lime areas. The excavation will proceed to native underlying soils or to the extent practicable as previously discussed. The excavation area will be defined in the field, and the Site Manager will photo document excavation and label the excavated area in accordance to the zone map noted in **Figure 5**, and the contractor will immediately backfill the documented area using the stockpiled imported material noted above. The backfill will be compacted with the backhoe/excavation equipment with the primary purpose being to expeditiously backfill the excavation to impede ground water infiltration into the excavation.

Once backfilled, these areas may be used to stockpile additional backfill (to keep it close to the working excavation) as the lime removal proceeds. Note that the contractor may also need to stockpile excavated lime atop previously backfilled areas as the excavation proceeds due to the limited areas to stockpile materials or lime given the relatively small footprint of the site. Part of the final grading of the Site will include the removal of any residual lime that may remain atop the backfill prior to the emplacement of final fill material and grading as detailed in **Section 4.14**.

Backfill will proceed as promptly as work permits. The intention is to place backfill and fill materials in layers not more than twelve inches thick in loose depth unless otherwise specified or needed. Before compaction and as needed, each layer will be moistened or aerated as necessary to facilitate compaction to the required density. Backfilling or fill material will not be emplaced on surfaces that are muddy, frozen, or covered with ice.

As mentioned previously, the primary goal of this program is to remove the lime from the site in a safe and expeditious manner to minimize complications with groundwater or surface water infiltration and address any unanticipated issues that may be encountered during these removal activities, hence the need for backfilling to be completed expeditiously and concurrently with lime removal. This process is consistent with Praxair's experience at other lime removal projects, especially given the shallow nature of groundwater, the proximity of the site to Lake Erie and adjacent wetlands, and the health and safety issues posed by site controls and management of an "open excavation" if not promptly backfilled. The health and safety issues associated with this are especially important to Praxair as it is not the site owner and are not responsible for the security of and unauthorized access to the site.

Given these technical issues, Praxair herein proposes that grading and compaction equipment be mobilized to the site upon completion of all Site work involving lime removal. The compaction would then proceed with the backfilled soil being excavated aside in sections, compacted, and tested to meet the compaction requirements specified by the NYSDEC and or verification of the 90% maximum dry density of the backfilled material. Alternatively, the efficacy of the backfilled material will be completed in the field via Standard Penetration Test (SPT) method (ASTM D 1586) using a drill rig/geoprobe. Additionally, a soil moisture content test via ASTM D 2216 will be completed to determine amount of water in the soil. Test results will be compared to ASTM Method 698 proctor test results. Testing and frequency will be determined in consultation with the NYSDEC.

4.14 Site Restoration

The Site will be returned to near existing surface grade in those areas where lime excavation occurred. Final grading will incorporate provisions of the SWPPP to maximize use of surface and stormwater control measures installed during this work. Praxair is aware that the NYSDEC would like to have the final surface grading include the "placement of soil suitable for turf establishment at a sufficient thickness, preferably up to six inches in thickness, but three inches will be sufficient, and seeded with a suitable seed mix for turf or meadow grass establishment" as detailed in their August 12, 2016 comment letter (**Appendix C**). Praxair concurs that it will meet or exceed this desired final cover. Any additional grading, seeding or other landscaping outside of this area will be the responsibility of others.

5.0 Project Schedule

The anticipated project schedule is detailed in the ROD. All lime removal is expected to be completed prior to October 2020. Progress with Site remediation and restoration activities will be detailed in the monthly progress reports.

6.0 Project Reporting

6.1 Progress Reports:

As detailed in the Order, Praxair will submit written progress reports to the NYSDEC by the 10th day of each month commencing with the month subsequent to the approval of the RAWP and ending with the Termination Date of the Order. These reports will include actions taken by Praxair during the reporting period and those anticipated for the upcoming reporting period; approved modifications to work plans and/or schedules; results of sampling and tests and other data received or generated by Praxair in connection with the Site during the 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.

6.2 Submission of Final Reports:

A final engineering report in a form consistent with 6 NYCRR 375-1.6(b) will be submitted 90 business days after all remedial efforts have been completed.

This report will include a discussion of all construction activities and include as-built drawings, photo logs, data tables and summary tables detailing the successful implementation of this remedy.

Tables

Table 1
Soil Analytical Results
Volatile Organic Compounds by Method 8260
Praxair
90 Hopkins Road
July 2015

			Site ID	SP-1		SP-2		SP-3		NP-1		NP-2		NP-3		NP-4		NP-5		NP-6		NP-7	
			Field Sample ID	SP-1 (11'-12')		SB-2 (12'-13')		SB-3 (11.5'-12.5')		NP-1 (7.9'-8.9')		NP-2 (6.5'-7.5')		NP-3 (15'-16')		NP-4 (19'-20')		NP-5 (21'-22')		NP-6 (19.8'-20.8')		NP-7 (7'-8')	
			Sample Date	7/28/2015		7/28/2015		7/28/2015		7/28/2015		7/28/2015		7/29/2015		7/29/2015		7/29/2015		7/29/2015		7/29/2015	
CONSTITUENT (ug/kg)	RSCO (Residential)	RSCO (Commercial)	RSCO (Industrial)	Primary		Primary		Primary		Primary		Primary		Primary		Primary		Primary		Primary		Primary	
1,1,1-Trichloroethane	100000[a]	500000[b]	1000000[c]	5.8	U	6.5	U	5.9	U	5.6	U	6.0	U	5.8	U	7.1	U	6.3	U	6.1	U	7.3	U
1,1,2,2-Tetrachloroethane	NVG	NVG	NVG	5.8	F1	6.5	U	5.9	U	5.6	U	6.0	U	5.8	U	7.1	U	6.3	U	6.1	F1	7.3	U
1,1,2-Trichloroethane	NVG	NVG	NVG	5.8	F1	6.5	U	5.9	U	5.6	U	6.0	U	5.8	U	7.1	U	6.3	U	6.1	F1	7.3	U
1,1,2-Trichloro-1,2,2-trifluoroethane	NVG	NVG	NVG	5.8	U	6.5	U	5.9	U	5.6	U	6.0	U	5.8	U	7.1	U	6.3	U	6.1	U	7.3	U
1,1-Dichloroethane	19000	240000	480000	5.8	U	6.5	U	5.9	U	5.6	U	6.0	U	5.8	U	7.1	U	6.3	U	6.1	U	7.3	U
1,1-Dichloroethene	100000[a]	500000[b]	480000	5.8	F1	6.5	U	5.9	U	5.6	U	6.0	U	5.8	U	7.1	U	6.3	U	6.1	F1	7.3	U
1,2,4-Trichlorobenzene	NVG	NVG	NVG	5.8	F1	6.5	U	5.9	U	5.6	U	6.0	U	5.8	U	7.1	U	6.3	U	6.1	F1	7.3	U
1,2-Dibromo-3-Chloropropane	NVG	NVG	NVG	5.8	F1	6.5	U	5.9	U	5.6	U	6.0	U	5.8	U	7.1	U	6.3	U	6.1	F1	7.3	U
1,2-Dichlorobenzene	100000[a]	500000[b]	1000000[c]	5.8	U	6.5	U	5.9	U	5.6	U	6.0	U	5.8	U	7.1	U	6.3	U	6.1	U	7.3	U
1,2-Dichloroethane	2300	30000	60000	5.8	U	6.5	U	5.9	U	5.6	U	6.0	U	5.8	U	7.1	U	6.3	U	6.1	U	7.3	U
1,2-Dichloropropane	NVG	NVG	NVG	5.8	U	6.5	U	5.9	U	5.6	U	6.0	U	5.8	U	7.1	U	6.3	U	6.1	U	7.3	U
1,3-Dichlorobenzene	17000	280000	560000	5.8	F1	6.5	U	5.9	U	5.6	U	6.0	U	5.8	U	7.1	U	6.3	U	6.1	F1	7.3	U
1,4-Dichlorobenzene	9800	130000	250000	5.8	U	6.5	U	5.9	U	5.6	U	6.0	U	5.8	U	7.1	U	6.3	U	6.1	F1	7.3	U
2-Butanone	NVG	NVG	NVG	29	U	32	U	30	U	28	U	30	U	29	U	36	U	32	U	30	*F1	37	U
2-Hexanone	NVG	NVG	NVG	12	J,F1	32	U	30	U	28	U	30	U	29	U	36	U	32	U	30	U	37	U
4-Methyl-2-pentanone	NVG	NVG	NVG	29	U	32	U	30	U	28	U	30	U	29	U	36	U	32	U	30	U	37	U
Acetone	100000[a]	500000[b]	1000000[c]	170	F1	110		88		26	J	44		61	U	120		75		67	F1	170	
Benzene	2900	44000	89000	5.8	U	6.5	U	5.9	U	5.6	U	6.0	U	5.8	U	7.1	U	6.3	U	6.1	U	7.3	U
Bromodichloromethane	NVG	NVG	NVG	5.8	U	6.5	U	5.9	U	5.6	U	6.0	U	5.8	U	7.1	U	6.3	U	6.1	F1	7.3	U
Bromoform	NVG	NVG	NVG	5.8	U	6.5	U	5.9	U	5.6	U	6.0	U	5.8	U	7.1	U	6.3	U	6.1	F1	7.3	U
Bromomethane	NVG	NVG	NVG	5.8	U	6.5	U	5.9	U	5.6	U	6.0	U	5.8	U	7.1	U	6.3	U	6.1	U	7.3	U
Carbon disulfide	NVG	NVG	NVG	3.6	J,F1,F2	6.5	U	5.9	U	5.6	U	6.0	U	3.6	U	7.1	U	6.3	U	4.1	J,F1	7.3	U
Carbon tetrachloride	1400	22000	44000	5.8	U	6.5	U	5.9	U	5.6	U	6.0	U	5.8	U	7.1	U	6.3	U	6.1	U	7.3	U
Chlorobenzene	100000[a]	500000[b]	1000000[c]	5.8	U	6.5	U	5.9	U	5.6	U	6.0	U	5.8	U	7.1	U	6.3	U	6.1	U	7.3	U
Dibromochloromethane	NVG	NVG	NVG	5.8	U	6.5	U	5.9	U	5.6	U	6.0	U	5.8	U	7.1	U	6.3	U	6.1	F1	7.3	U
Chloroethane	NVG	NVG	NVG	5.8	U	6.5	U	5.9	U	5.6	U	6.0	U	5.8	U	7.1	U	6.3	U	6.1	U	7.3	U
Chloroform	10000	350000	700000	5.8	U	6.5	U	5.9	U	5.6	U	6.0	U	5.8	U	7.1	U	6.3	U	6.1	U	7.3	U
Chloromethane	NVG	NVG	NVG	5.8	U	6.5	U	5.9	U	5.6	U	6.0	U	5.8	U	7.1	U	6.3	U	6.1	U	7.3	U
cis-1,2-Dichloroethene	59000	500000[b]	1000000[c]	5.8	U	6.5	U	5.9	U	5.6	U	6.0	U	5.8	U	7.1	U	6.3	U	6.1	U	7.3	U
cis-1,3-Dichloropropene	NVG	NVG	NVG	5.8	F1	6.5	U	5.9	U	5.6	U	6.0	U	5.8	U	7.1	U	6.3	U	6.1	U	7.3	U
Cyclohexane	NVG	NVG	NVG	5.8	U	6.5	U	5.9	U	5.6	U	6.0	U	5.8	U	7.1	U	6.3	U	6.1	U	7.3	U
Dichlorodifluoromethane	NVG	NVG	NVG	5.8	U	6.5	U	5.9	U	5.6	U	6.0	U	5.8	U	7.1	U	6.3	U	6.1	U	7.3	U
Ethylbenzene	30000	390000	780000	5.8	U	6.5	U	5.9	U	5.6	U	6.0	U	5.8	U	7.1	U	6.3	U	6.1	F1	7.3	U
1,2-Dibromoethane	NVG	NVG	NVG	5.8	U	6.5	U	5.9	U	5.6	U	6.0	U	5.8	U	7.1	U	6.3	U	6.1	F1	7.3	U
Isopropylbenzene	NVG	NVG	NVG	5.8	U	6.5	U	5.9	U	5.6	U	6.0	U	5.8	U	7.1	U	6.3	U	6.1	F1	7.3	U
Methyl Acetate	NVG	NVG	NVG	5.8	F1	6.5	U	5.9	U	5.6	U	6.0	U	5.8	U	7.1	U	6.3	U	6.1	F1	7.3	U
Methyl tert-butyl ether	62000	500000[b]	1000000[c]	5.8	U	3.2	J	3.4	J	5.6	U	6.0	U	5.8	U	7.1	U	6.3	U	6.1	U	7.3	U
Methylcyclohexane	NVG	NVG	NVG	5.8	U	6.5	U	5.9	U	5.6	U	6.0	U	5.8	U	7.1	U	6.3	U	6.1	U	7.3	U
Methylene chloride	51000	500000[b]	1000000[c]	6.7		4.9	J	3.5	J	2.9	J	4.6	J	5.5	J	7.1	U	2.9	J	6.1	U	7.3	U
Styrene	NVG	NVG	NVG	5.8	U	6.5	U	5.9	U	5.6	U	6.0	U	5.8	U	7.1	U	6.3	U	6.1	F1	7.3	U
Tetrachloroethene	5500	150000	300000	5.8	U	6.5	U	5.9	U	5.6	U	6.0	U	5.8	U	7.1	U	6.3	U	6.1	F1	7.3	U
Toluene	100000[a]	500000[b]	1000000[c]	0.94	J	6.5	U	5.9	U	5.6	U	6.0	U	5.8	U	7.1	U	6.3	U	6.1	U	7.3	U
trans-1,2-Dichloroethene	100000[a]	500000[b]	1000000[c]	5.8	U	6.5	U	5.9	U	5.6	U	6.0	U	5.8	U	7.1	U	6.3	U	6.1	U	7.3	U
trans-1,3-Dichloropropene	NVG	NVG	NVG	5.8	F1	6.5	U	5.9	U	5.6	U	6.0	U	5.8	U	7.1	U	6.3	U	6.1	F1	7.3	U
Trichloroethene	10000	200000	400000	5.8	F1	6.5	U	5.9	U	5.6	U	6.0	U	5.8	U	7.1	U	6.3	U	6.1	F1	7.3	U
Trichlorofluoromethane	NVG	NVG	NVG	0.58	J	6.5	U	5.9	U	5.6	U	6.0	U	5.8	U	7.1	U	6.3	U	6.1	U	7.3	U
Vinyl chloride	210	13000	27000	5.8	U	6.5	U	5.9	U	5.6	U	6.0	U	5.8	U	7.1	U	6.3	U	6.1	U	7.3	U
Xylenes (Total)	100000[a]	500000[c]	1000000[c]	12	U	13	U	12	U	11	U	12	U	12	U	14	U	13	U	12	F1	15	U

Notes:

All results are in micrograms per kilogram (µg/kg) or parts per billion (ppb);

New York State Department of Environmental Conservation (NYSDEC) Soil Clean-Up Objectives obtained from 6 NYCRR Part 375 December 14, 2006;

NVG - No standard value listed 6 NYCRR Part 375;

Bold - Indicates analyte detected by laboratory;

[a] - The SCOs for unrestricted use were capped at a maximum value of 100ppm, as discussed in the TSD;

[b] - The SCOs for commercial use were capped at a maximum value of 500 ppm as discussed in the TSD;

[c] - The SCOs for industrial use and the protection of groundwater were capped at a maximum value of 1000 ppm as discussed in the TSD;

F1 - MS and/or MSD recovery is outside acceptance limits;

F2 - MS/MSD RPD exceeds control limits;

U - Not detected at laboratory method detection limit;

J - Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than MDL. The concentration given is an approximate value.

Table 1
Soil Analytical Results
Semi-Volatile Organic Compounds by Method 8270
Praxair
90 Hopkins Road
July 2015

			Site ID	SP-1	SP-2	SP-3	NP-1	NP-2	NP-3	NP-4	NP-5	NP-6	NP-7
			Field Sample ID	SP-1 (11'-12')	SB-2 (12'-13')	SB-3 (11.5'-12.5')	NP-1 (7.9'-8.9')	NP-2 (6.5'-7.5')	NP-3 (15'-16')	NP-4 (19'-20')	NP-5 (21'-22')	NP-6 (19.8'-20.8')	NP-7 (7'-8')
			Sample Date	7/28/2015	7/28/2015	7/28/2015	7/28/2015	7/28/2015	7/29/2015	7/29/2015	7/29/2015	7/29/2015	7/29/2015
CONSTITUENT (ug/kg)	RSCO (Residential)	RSCO (Commercial)	RSCO (Industrial)	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary
Acenaphthene	100000[a]	500000[b]	1000000[c]	190 U	220 U	200 U	190 U	200 U	200 U	1200 U	210 U	1000 U	1200 U
Acenaphthylene	100000[a]	500000[b]	1000000[c]	190 U	220 U	200 U	190 U	200 U	200 U	1200 U	210 U	1000 U	1200 U
Anthracene	100000[a]	500000[b]	1000000[c]	190 U	220 U	200 U	190 U	200 U	200 U	1200 U	210 U	1000 U	1200 U
Benzo(a)anthracene	1000[f]	5600	11000	190 U	220 U	200 U	190 U	200 U	200 U	1200 U	210 U	1000 U	1200 U
Benzo(a)pyrene	1000[f]	1000[f]	1100	190 U	220 U	200 U	190 U	200 U	200 U	1200 U	210 U	1000 U	1200 U
Benzo(b)fluoranthene	1000[f]	5600	11000	190 U	220 U	200 U	190 U	200 U	200 U	1200 U	210 U	1000 U	1200 U
Benzo(g,h,i)perylene	100000[a]	500000[b]	1000000[c]	190 U	220 U	200 U	190 U	200 U	200 U	1200 U	210 U	1000 U	1200 U
Benzo(k)fluoranthene	1000	56000	110000	190 U	220 U	200 U	190 U	200 U	200 U	1200 U	210 U	1000 U	1200 U
Chrysene	1000[f]	56000	110000	190 U	220 U	200 U	190 U	200 U	200 U	1200 U	210 U	1000 U	1200 U
Dibenz(a,h)anthracene	330[e]	560	1100	190 U	220 U	200 U	190 U	200 U	200 U	1200 U	210 U	1000 U	1200 U
Fluoranthene	100000[a]	500000[b]	1000000[c]	190 U	220 U	200 U	190 U	200 U	200 U	1200 U	210 U	1000 U	1200 U
Fluorene	100000[a]	500000[b]	1000000[c]	190 U	220 U	200 U	190 U	200 U	200 U	1200 U	210 U	1000 U	1200 U
Indeno(1,2,3-cd)pyrene	500[f]	5600	11000	190 U	220 U	200 U	190 U	200 U	200 U	1200 U	210 U	1000 U	1200 U
Naphthalene	100000[a]	500000[b]	1000000[c]	190 U	220 U	200 U	190 U	200 U	200 U	1200 U	210 U	1000 U	1200 U
Phenanthrene	100000[a]	500000[b]	1000000[c]	190 U	220 U	200 U	190 U	200 U	200 U	1200 U	210 U	1000 U	1200 U
Pyrene	100000[a]	500000[b]	1000000[c]	190 U	220 U	200 U	190 U	200 U	200 U	1200 U	210 U	1000 U	1200 U

Notes:

All results are in micrograms per kilogram (ug/kg) or parts per billion (ppb);
New York State Department of Environmental Conservation (NYSDEC) Soil Clean-Up Objectives
obtained from 6 NYCRR Part 375 December 14, 2006;
U - Not detected at laboratory method detection limit;
[a] - The SCOs for unrestricted use were capped at a maximum value of 100ppm, as discussed in the TSD;
[b] - The SCOs for commercial use were capped at a maximum value of 500 ppm as discussed in the TSD;
[c] - The SCOs for industrial use and the protection of groundwater were capped at a maximum value of 1000 ppm as discussed in the TSD;
[e] - For constituents where the calculated SCO was lower than the contract required quantitation limit (CRQL), the CRQL is used as the SCO value.
[f] - For constituents where the calculated SCO was lower than the rural soil background concentration as determined by the Department and DOH rural soil survey, the rural soil background concentration is used as the Track 2 SCO value for this use of the site.

Table 1
Soil Anlytical Results
PolyChlorinated Biphenyls and Lead
Praxair
90 Hopkins Road
July 2015

			Site ID	SP-1	SP-2	SP-3	NP-1	NP-2	NP-3	NP-4	NP-5	NP-6	NP-7
			Field Sample ID	SP-1 (11'-12')	SB-2 (12'-13')	SB-3 (11.5'-12.5')	NP-1 (7.9'-8.9')	NP-2 (6.5'-7.5')	NP-3 (15'-16')	NP-4 (19'-20')	NP-5 (21'-22')	NP-6 (19.8'-20.8')	NP-7 (7'-8')
			Sample Date	7/28/2015	7/28/2015	7/28/2015	7/28/2015	7/28/2015	7/29/2015	7/29/2015	7/29/2015	7/29/2015	7/29/2015
CONSTITUENT (ug/kg)	RSCO (Residential)	RSCO (Commercial)	RSCO (Industrial)	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary
PCBs (ug/kg)													
Aroclor-1016	1	1	25	0.28 U	0.30 U	0.25 U	0.20 U	0.27 U	0.25 U	0.36 U	0.27 U	0.22 U	0.26 U
Aroclor-1221	1	1	25	0.28 U	0.30 U	0.25 U	0.20 U	0.27 U	0.25 U	0.36 U	0.27 U	0.22 U	0.26 U
Aroclor-1232	1	1	25	0.28 U	0.30 U	0.25 U	0.20 U	0.27 U	0.25 U	0.36 U	0.27 U	0.22 U	0.26 U
Aroclor-1242	1	1	25	0.28 U	0.30 U	0.25 U	0.20 U	0.27 U	0.25 U	0.36 U	0.27 U	0.22 U	0.26 U
Aroclor-1248	1	1	25	0.28 U	0.30 U	0.25 U	0.20 U	0.27 U	0.25 U	0.36 U	0.27 U	0.22 U	0.26 U
Aroclor-1254	1	1	25	0.28 U	0.30 U	0.25 U	0.20 U	0.27 U	0.25 U	0.36 U	0.27 U	0.22 U	0.26 U
Aroclor-1260	1	1	25	0.28 U	0.30 U	0.25 U	0.20 U	0.27 U	0.25 U	0.36 U	0.27 U	0.22 U	0.26 U
Metals (mg/kg)													
Lead	400	1000	3900	4.1	6.9	4.1	10.9	6.5	8.1	13.1	20.5	11.3	15.8

Notes:

PCB results are in milligrams per kilogram (mg/kg) or parts per million (ppm);

Lead results are in milligrams per kilogram (mg/kg) or parts per million (ppm);

New York State Department of Environmental Conservation (NYSDEC) Soil Clean-Up Objectives

NVG - No standard value listed 6 NYCRR Part 375;

Bold - Indicates analyte detected by laboratory;

U - Not detected at laboratory method detection limit;

Table 2
Clean Fill Analytical Results - VOCs
Praxair
90 Hopkins Road
May 2015

			Sample ID	KOHORST NORTHEAST PILE	KOHORST SOUTHEAST PILE	KOHORST WEST PILE
			Sample Date	5/21/2015	5/21/2015	5/21/2015
Constituent VOCs (ug/Kg)*	CAS #	Soil Cleanup Objectives (SCOs) (Residential)	Soil Cleanup Objectives (SCOs) (Commercial)	Primary	Primary	Primary
1,1,1-Trichloroethane	71-55-6	100000[a]	500000[b]	5.4 U	5.3 U	5.1 U
1,1-Dichloroethane	75-34-3	19000	240000	5.4 U	5.3 U	5.1 U
1,1-Dichloroethene	75-35-4	100000[a]	500000[b]	5.4 U	5.3 U	5.1 U
1,2,4-Trimethylbenzene	95-63-6	47000	190000	5.4 U	5.3 U	5.1 U
1,2-Dichlorobenzene	95-50-1	100000[a]	500000[b]	5.4 U	5.3 U	5.1 U
1,2-Dichloroethane	107-06-2	2300	30000	5.4 U	5.3 U	5.1 U
1,3,5-Trimethylbenzene	108-67-8	47000	190000	5.4 U	5.3 U	5.1 U
1,3-Dichlorobenzene	541-73-1	17000	280000	5.4 U	5.3 U	5.1 U
1,4-Dichlorobenzene	106-46-7	9800	130000	5.4 U	5.3 U	5.1 U
1,4-Dioxane	123-91-1	9800	130000	110 U	110 U	100 U
Methyl Ethyl Ketone	78-93-3	100000[a]	500000[b]	27 U	27 U	25 U
Acetone	67-64-1	100000[a]	500000[b]	27 U	27 U	25 U
Benzene	71-43-2	2900	44000	**0.40** J	**0.43** J	**0.44** J
Carbon tetrachloride	56-23-5	1400	22000	5.4 U	5.3 U	5.1 U
Chlorobenzene	108-90-7	100000[a]	500000[b]	5.4 U	5.3 U	5.1 U
Chloroform	67-66-3	10000	350000	5.4 U	5.3 U	5.1 U
cis -1,2-Dichloroethene	156-59-2	59000	500000[b]	5.4 U	5.3 U	5.1 U
Ethylbenzene	100-41-4	30000	390000	5.4 U	5.3 U	5.1 U
Methyl tert-butyl ether	1634-04-4	62000	500000[b]	5.4 U	5.3 U	5.1 U
Methylene Chloride	75-09-2	51000	500000[b]	5.4 U	**2.5** J	**2.5** J
Butylbenzene	104-51-8	100000[a]	500000[b]	5.4 U	5.3 U	5.1 U
n-Propylbenzene	103-65-1	100000[a]	500000[b]	5.4 U	5.3 U	5.1 U
sec -Butylbenzene	135-98-8	100000[a]	500000[b]	5.4 U	5.3 U	5.1 U
Tetrachloroethene	127-18-4	5500	150000	5.4 U	5.3 U	5.1 U
Toluene	108-88-3	100000[a]	500000[b]	5.4 U	5.3 U	5.1 U
trans -1,2-Dichloroethene	156-60-5	100000[a]	500000[b]	5.4 U	5.3 U	5.1 U
Trichloroethene	79-01-6	10000	200000	5.4 U	5.3 U	5.1 U
Vinyl chloride	75-01-4	210	13000	5.4 U	5.3 U	5.1 U
Xylene (mixed)	1330-20-7	100000[a]	500000[b]	11 U	11 U	10 U
tert- Butylbenzene	98-06-6	100000[a]	500000[b]	5.4 U	5.3 U	5.1 U

Notes:

All analytical results and Soil Cleanup Objectives (SCOs) are in micrograms per kilogram (ug/Kg) or parts per billion (ppb).

New York State Department of Environmental Conservation (NYSDEC) Soil Clean-Up Objectives for commercial use obtained from 6NYCRR Part 375 December 14, 2006.

Bold - Indicates analyte detected by laboratory.

* - Samples were not collected according to 5035-L/5035A-L low-level specifications. Reported analyte concentrations are below 200 ug/Kg and may be biased low.

J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

U - Analyte was not detected at the laboratory method detection limit.

[a] - The SCOs for residential use were capped at a maximum value of 100000 ppb (100000 ug/Kg).

[b] - The SCOs for commercial use were capped at a maximum value of 500000 ppb (500000 ug/Kg).

Table 2
Clean Fill Analytical Results - SVOCs
Praxair
90 Hopkins Road
May 2015

			Sample ID	KOHORST NORTHEAST PILE	KOHORST SOUTHEAST PILE	KOHORST WEST PILE
			Sample Date	5/21/2015	5/21/2015	5/21/2015
Constituent SVOCs (ug/Kg)	CAS #	Soil Cleanup Objectives (SCOs) (Residential)	Soil Cleanup Objectives (SCOs) (Commercial)	Primary	Primary	Primary
Acenaphthene	83-32-9	100000[a]	500000[b]	180 U	180 U	170 U
Acenaphthylene	208-96-8	100000[a]	500000[b]	180 U	180 U	170 U
Anthracene	120-12-7	100000[a]	500000[b]	180 U	180 U	170 U
Benzo(a)anthracene	56-55-3	1000[f]	5600	180 U	180 U	170 U
Benzo(a)pyrene	50-32-8	1000[f]	1000[f]	180 U	180 U	170 U
Benzo(b)fluoranthene	205-99-2	1000[f]	5600	180 U	180 U	170 U
Benzo(g,h,i)perylene	191-24-2	100000[a]	500000[b]	180 U	180 U	170 U
Benzo(k)fluoranthene	207-08-9	1000	56000	180 U	180 U	170 U
Chrysene	218-01-9	1000[f]	56000	180 U	180 U	170 U
Dibenz(a,h)anthracene	53-70-3	330[e]	560	180 U	180 U	170 U
Dibenzofuran	132-64-9	14000	350000	180 U	180 U	170 U
Fluoranthene	206-44-0	100000[a]	500000[b]	180 U	180 U	170 U
Fluorene	86-73-7	100000[a]	500000[b]	180 U	180 U	170 U
Hexachlorobenzene	118-74-1	330[e]	6000	180 U	180 U	170 U
Indeno(1,2,3-cd)pyrene	193-93-5	500[f]	5600	180 U	180 U	170 U
m-Cresol	108-39-4	100000[a]	500000[b]	360 U	360 U	340 U
Naphthalene	91-20-3	100000[a]	500000[b]	**220**	**140** J	**330**
o-Cresol	95-48-7	100000[a]	500000[b]	180 U	180 U	170 U
p-Cresol	106-44-5	34000	500000[b]	360 U	360 U	340 U
Pentachlorophenol	87-86-5	2400	6700	360 U	360 U	340 U
Phenanthrene	85-01-8	100000[a]	500000[b]	180 U	180 U	170 U
Phenol	108-95-2	100000[a]	500000[b]	180 U	180 U	170 U
Pyrene	129-00-0	100000[a]	500000[b]	180 U	180 U	170 U

Notes:

All analytical results and Soil Cleanup Objectives (SCOs) are in micrograms per kilogram (ug/Kg) or parts per billion (ppb).

New York State Department of Environmental Conservation (NYSDEC) Soil Clean-Up Objectives for commercial use obtained from 6 NYCRR Part 375 December 14, 2006.

Bold - Indicates analyte detected by laboratory.

J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

U - Analyte was not detected at the laboratory method detection limit.

[a] - The SCOs for residential use were capped at a maximum value of 100000 ppb (100000 ug/Kg).

[b] - The SCOs for commercial use were capped at a maximum value of 500000 ppb (500000 ug/Kg).

[e] - For constituents where the calculated SCO was lower than the contract required quantitation limit (CRQL), the CRQL is used as the SCO value.

[f] - For constituents where the calculated SCO was lower than the rural soil background concentration as determined by the Department and Department of Health rural soil survey, the rural soil background concentration is used as the Track 2 SCO value for use of the site.

Table 2
Clean Fill Analytical Results - Pesticides and Herbicides
Praxair
90 Hopkins Road
May 2015

			Sample ID	KOHORST NORTHEAST PILE	KOHORST SOUTHEAST PILE	KOHORST WEST PILE
			Sample Date	5/21/2015	5/21/2015	5/21/2015
Constituent	CAS #	Soil Cleanup Objectives (SCOs) (Residential)	Soil Cleanup Objectives (SCOs) (Commercial)	Primary	Primary	Primary
Pesticides (ug/Kg)						
4,4'-DDD	72-54-8	2600	92000	1.8 U	1.8 U	1.7 U
4,4'-DDE	72-55-9	1800	62000	**0.53** J	**0.57** J	**0.57** J
4,4'-DDT	50-29-3	1700	47000	1.8 U	1.8 U	1.7 U
Aldrin	309-00-2	19	680	1.8 U	1.8 U	1.7 U
alpha-BHC	319-84-6	97	3400	**0.71** J B	**0.73** J B	**0.86** J B
beta-BHC	319-85-7	720	3000	1.8 U	1.8 U	**0.35** J
Chlordane (.alpha.)	5103-71-9	910	24000	1.8 U	1.8 U	1.7 U
delta-BHC	319-86-8	100000[a]	500000[b]	1.8 U	1.8 U	**0.46** J B
Dieldrin	60-57-1	390	1400	1.8 U	1.8 U	1.7 U
Endosulfan I	959-98-8	4800[i]	200000[i]	1.8 U	1.8 U	1.7 U
Endosulfan II	33213-65-9	4800[i]	200000[i]	1.8 U	1.8 U	1.7 U
Endosulfan sulfate	1031-07-8	4800[i]	200000[i]	1.8 U	1.8 U	1.7 U
Endrin	72-20-8	2200	89000	2 U	1.8 U	1.7 U
Heptachlor	76-44-8	420	15000	1.8 U	1.8 U	1.7 U
Lindane	58-89-9	280	9200	**0.47** J	1.8 U	1.7 U
Herbicides (ug/Kg)						
2,4,5-TP (Silvex)	93-72-1	58000	500000[b]	18 U	18 U	17 U

Notes:

All analytical results and Soil Cleanup Objectives (SCOs) are in micrograms per kilogram (ug/Kg) or parts per billion (ppb).

New York State Department of Environmental Conservation (NYSDEC) Soil Clean-Up Objectives for commercial use obtained from 6 NYCRR Part 375 December 14, 2006.

Bold - Indicates analyte detected by laboratory.

B - Compound was found in the blank and the sample.

J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

U - Analyte was not detected at the laboratory method detection limit.

[a] - The SCOs for residential use were capped at a maximum value of 100000 ppb (100000 ug/Kg).

[b] - The SCOs for commercial use were capped at a maximum value of 500000 ppb (500000 ug/Kg).

[i] - The SCO is for the sum of endosulfan I, endosulfan II, and endosulfan sulfate.

Table 2
Clean Fill Analytical Results - PCBs
Praxair
90 Hopkins Road
May 2015

			Sample ID	KOHORST NORTHEAST PILE	KOHORST SOUTHEAST PILE	KOHORST WEST PILE
			Sample Date	5/21/2015	5/21/2015	5/21/2015
Constituent	CAS #	Soil Cleanup Objectives (SCOs) (Residential)	Soil Cleanup Objectives (SCOs) (Commercial)	Primary	Primary	Primary
PCBs (mg/Kg)						
PCB-1016	12674-11-2	1	1	0.23 U	0.21 U	0.24 U
PCB-1221	11104-28-2	1	1	0.23 U	0.21 U	0.24 U
PCB-1232	11141-16-5	1	1	0.23 U	0.21 U	0.24 U
PCB-1242	53469-21-9	1	1	0.23 U	0.21 U	0.24 U
PCB-1248	12672-29-6	1	1	0.23 U	0.21 U	0.24 U
PCB-1254	11097-69-1	1	1	0.23 U	0.21 U	0.24 U
PCB-1260	11096-82-5	1	1	0.23 U	0.21 U	0.24 U

Notes:

All analytical results and Soil Cleanup Objectives (SCOs) are in milligrams per kilogram (mg/Kg) or parts per million (ppm).

New York State Department of Environmental Conservation (NYSDEC) Soil Clean-Up Objectives for commercial use obtained from 6 NYCRR Part 375 December 14, 2006.

Bold - Indicates analyte detected by laboratory.

U - Analyte was not detected at the laboratory method detection limit.

Table 2
Clean Fill Analytical Results - Metals
Praxair
90 Hopkins Road
May 2015

			Sample ID	KOHORST NORTHEAST PILE	KOHORST SOUTHEAST PILE	KOHORST WEST PILE
			Sample Date	5/21/2015	5/21/2015	5/21/2015
Constituent Metals (mg/Kg)	CAS #	Soil Cleanup Objectives (SCOs) (Residential)	Soil Cleanup Objectives (SCOs) (Commercial)	Primary	Primary	Primary
Arsenic	7440-38-2	16[f]	16[f]	**6.8**	**9.5**	**12.1**
Barium	7440-39-3	350[f]	400	**35.6**	**36.2**	**32.1**
Beryllium	7440-41-7	14	590	**0.52**	**0.53**	**0.62**
Cadmium	7440-43-9	2.5[f]	9.3	**0.37**	**0.38**	**0.49**
Chromium, hexavalent[h]	18540-29-9	22	400	2.2 U	2.1 U	2.1 U
Chromium, trivalent[h]	16065-83-1	36	1500	**12.9**	**13.6**	**16.5**
Copper	7440-50-8	270	270	**27.1**	**31**	**52.6**
Cyanide, Total[h]		27	27	1.1 U	1.1 U	1.0 U
Lead	7439-92-1	400	1000	**17.9**	**21.7**	**23.5**
Manganese	7439-95-4	2000[f]	10000[d]	**539**	**479**	**258**
Mercury		0.81[j]	2.8[j]	**0.013** J	**0.027**	**0.040**
Nickel	7440-02-0	140	310	**32.8**	**33.3**	**48.8**
Selenium	7782-49-2	36	1500	4.6 U	4.1 U	**0.94** J B
Silver	7440-22-4	36	1500	0.69 U	0.62 U	0.64 U
Zinc	7440-66-6	2200	10000[d]	**88.0** B	**87.9** B	**95.1** B

Notes:

All analytical results and Soil Cleanup Objectives (SCOs) are in milligrams per kilogram (mg/Kg) or parts per million (ppm).

New York State Department of Environmental Conservation (NYSDEC) Soil Clean-Up Objectives for commercial use obtained from 6 NYCRR Part 375 December 14, 2006.

Bold - Indicates analyte detected by laboratory.

B - Compound was found in the blank and the sample.

J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

U - Analyte was not detected at the laboratory method detection limit.

[b] - The SCOs for commercial use were capped at a maximum value of 500 ppm (500 mg/Kg).

[d] - The SCOs for metals were capped at a maximum value of 10,000 ppm (TSD section 9.3).

[f] - For constituents where the calculated SCO was lower than the rural soil background concentration as determined by the Department and Department of Health rural soil survey, the rural soil background concentration is used as the Track 2 SCO value for this use of the site.

[h] - The SCO for this specific compound (or family of compounds) is considered to be met if the analysis for the total species of this contaminant is below the specific SCO.

[j] - This SCO is the lower of the values for mercury (elemental) or mercury (inorganic salts) (TSD Table 5.6-1).

Figures

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REMEDIAL ACTION WORK PLAN

FIGURE 1 - SITE LOCATION MAP
PRAXAIR DISTRIBUTION INC.
90 HOPKINS STREET
BUFFALO, NY

U:\Project\GIS\141825\141825A1R1.mxd

NOTES:

1) BORING LOCATIONS ARE APPROXIMATE.
2) EXISTING CONTOURS ARE APPROXIMATE.

LEGEND

EXISTING CONTOURS

PROPERTY LINE

MONITORING WELL (MW-02)

SOIL BORING (NP-6, IBP-1, SP-1)

APTIM ENGINEERING & GEOLOGY NEW YORK, P.C.

PRAXAIR DISTRIBUTION INC.
90 HOPKINS STREET
BUFFALO, NEW YORK

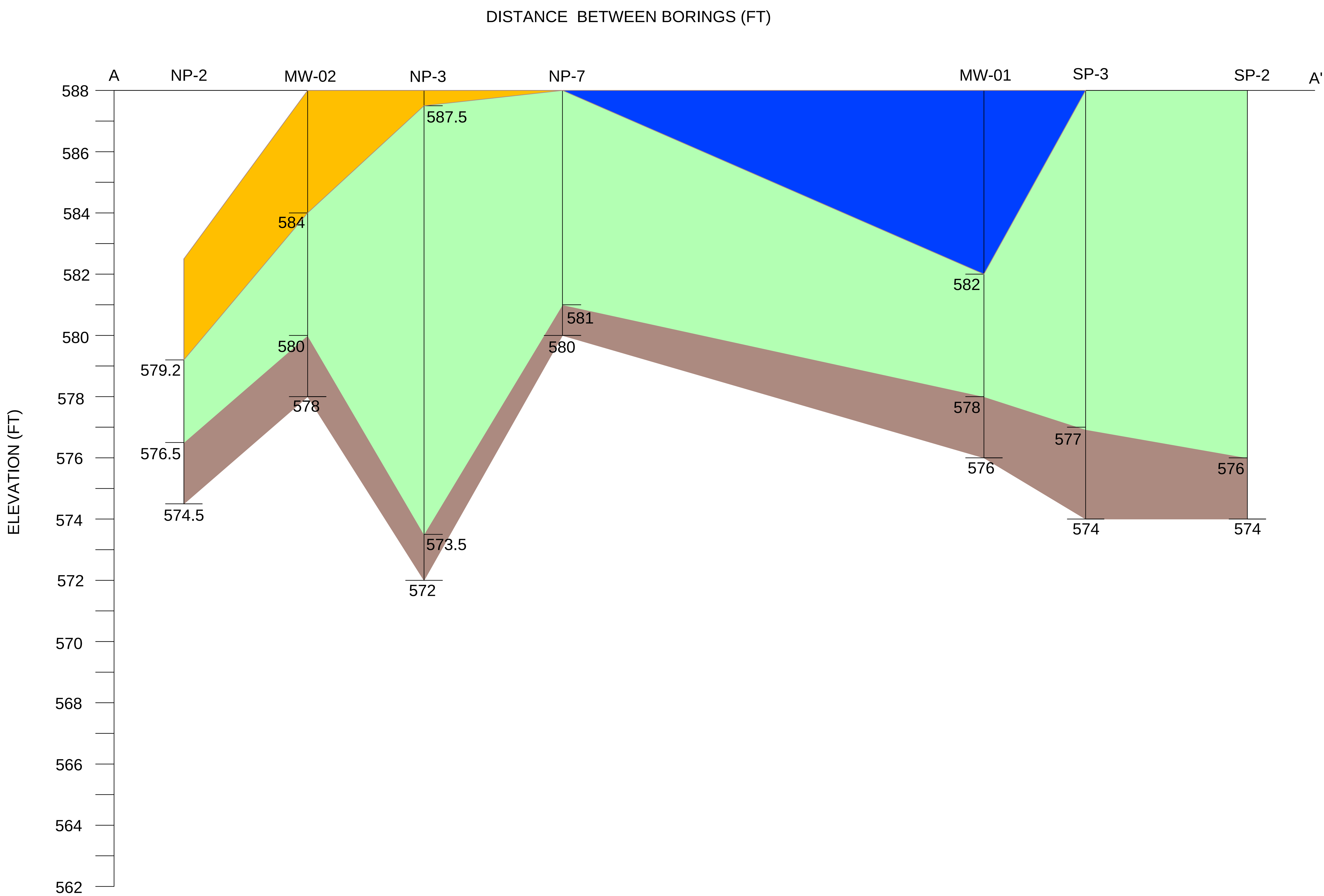
REMEDIAL ACTION WORK PLAN
EXISTING CONDITIONS PLAN

DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:	SCALE:	DRAWING NO.	FIGURE NO.
DCS	DDG	TMO	DCS	04/02/18	1"=40'	141825D6R1	2

File: U:\Project\141825\141825D6R1.dwg
Plot Date/Time: Apr 02, 2018 - 2:31pm
Plotted By: matt.sausville

DRAWING NUMBER 141825D1R1

OFFICE Latham, NY



NOTES

1) EXISTING GRADE IS AS OF JULY 2015 AND IS APPROXIMATE.

2) ELEVATIONS AND DISTANCES ARE APPROXIMATE.

3) A-A' LINE IS SHOWN ON FIGURE 5 - LIME LIMITS ELEVATION MAP.

LEGEND

- LIME
- NATIVE SOIL
- FILL
- WEATHERED LIME
- SOIL BORING

V.E. = 25X

HORIZONTAL SCALE

0 50 100 150 FEET

VERTICAL SCALE

0 2 4 6 FEET

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DESIGNED BY: TMO	PRAXAIR DISTRIBUTION INC. 90 HOPKINS STREET BUFFALO, NEW YORK
DRAWN BY: GRG	REMEDIAL ACTION WORK PLAN LIME PILE CROSS SECTION (A-A') 90 HOPKINS STREET
CHECKED BY: MJS	

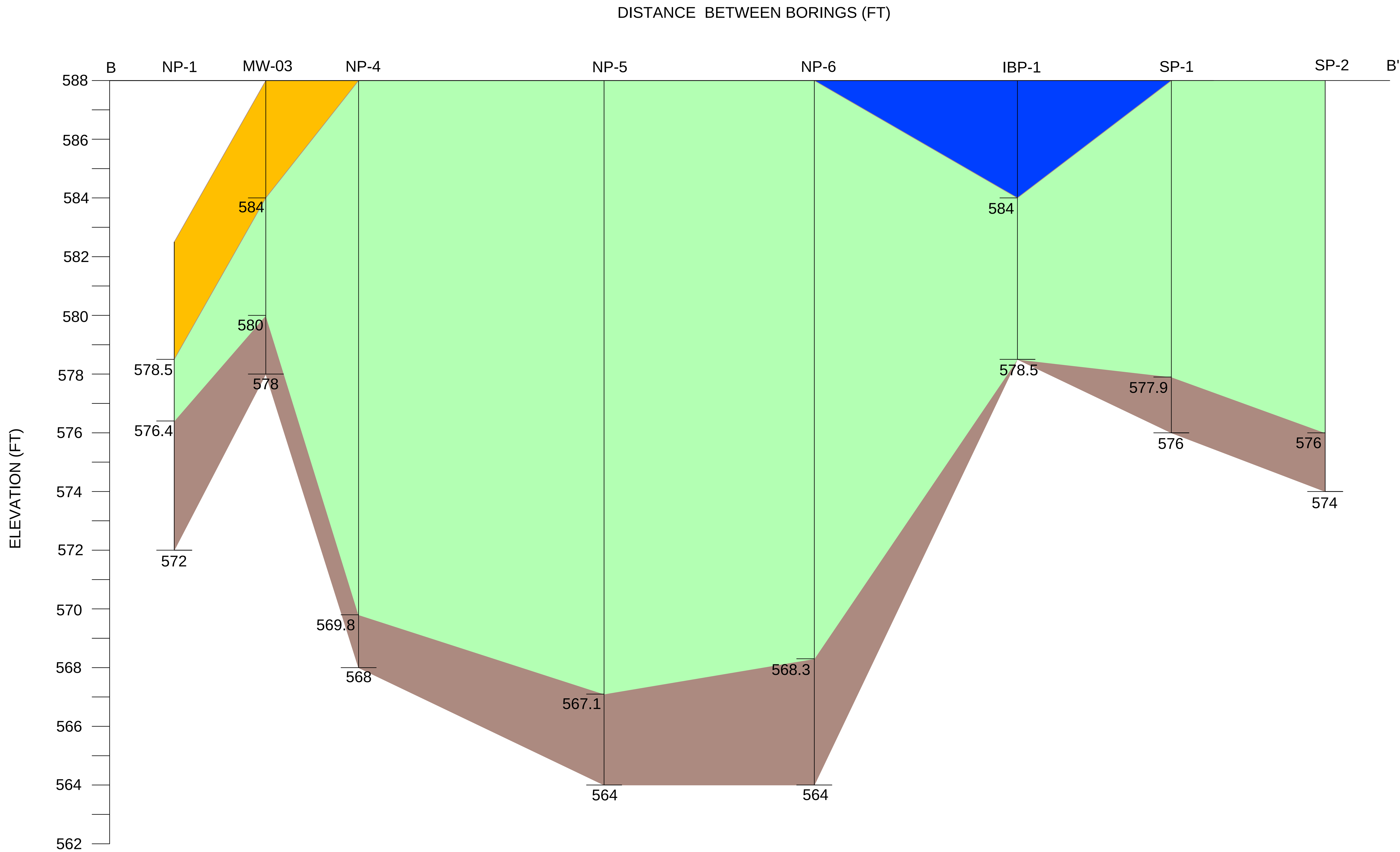
APPROVED BY:	DATE:	SCALE:	DRAWING NO.	SHEET NO.
DCS	04/02/18	AS SHOWN	141825D1R1	3

VERIFY SCALE 0 1"

File: U:\Project\141825\141825D1R1.dwg
Plot Date/Time: Apr 02, 2018 - 1:26pm
Plotted By: matt.sousville

DRAWING NUMBER 141825D1R1

OFFICE *Latham, NY*



NOTES

1) EXISTING GRADE IS AS OF JULY 2015 AND IS APPROXIMATE.

2) ELEVATIONS AND DISTANCES ARE APPROXIMATE.

3) B-B' LINE IS SHOWN ON FIGURE 5 - LIME LIMITS ELEVATION MAP.

LEGEND

- LIME
- NATIVE SOIL
- FILL
- WEATHERED LIME
- SOIL BORING

V.E. = 25X

HORIZONTAL SCALE

0 50 100 150 FEET

VERTICAL SCALE

0 2 4 6 FEET

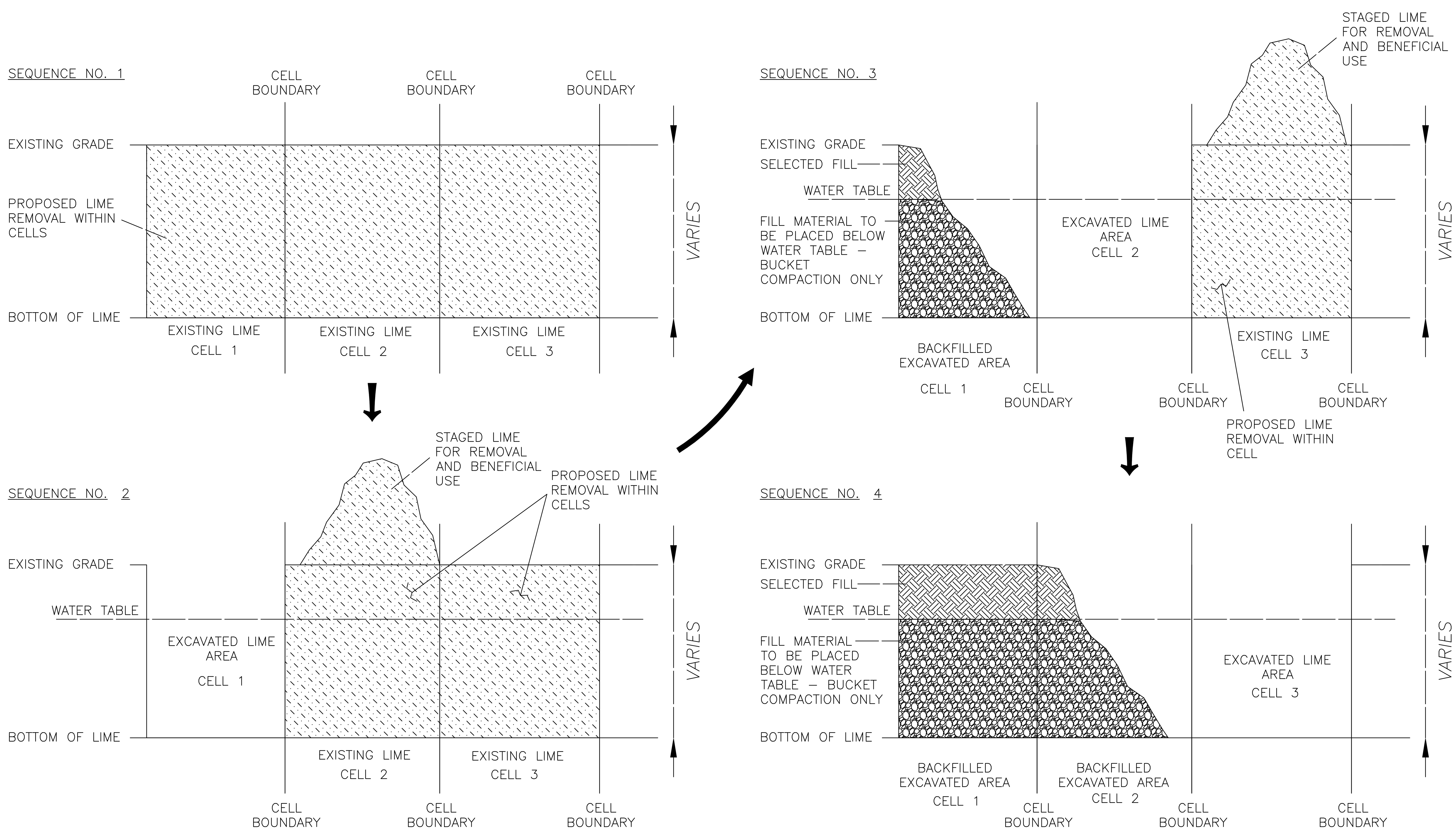
APTIM ENGINEERING & GEOLOGY NEW YORK, P.C.

DESIGNED BY: TMO	PRAXAIR DISTRIBUTION INC. 90 HOPKINS STREET BUFFALO, NEW YORK
DRAWN BY: GRG	
CHECKED BY: MJS	REMEDIAL ACTION WORK PLAN LIME PILE CROSS SECTION (B-B') 90 HOPKINS STREET

APPROVED BY:	DATE:	SCALE:	DRAWING NO.	SHEET NO.
DCS	04/02/18	AS SHOWN	141825D1R1	4

File: U:\Project\141825\141825D1R1.dwg
Plot Date/Time: Apr 02, 2018 - 1:22pm
Plotted By: matt.sousville


DRAWING NUMBER 141825D18R1
OFFICE Latham, NY
VERIFY SCALE
STABILIZED CONSTRUCTION ENTRANCE
GRAVEL LANE
N/F: SOUTH BUFFALO RAILROAD
CHAIN LINK FENCE
STONE OUTLET EL. 583
U.POLE
I.PIN 0.2' W.
I.PIN 0.2' N.
I.PIN 0.1' N.
I.PIN 0.2' N. 0.1' W.
BRUSH
MW-02
MW-03
MW-01
INV. EL. 582.5
TEMPORARY SWALE A-3
INV. EL. 584
INV. EL. 585
INV. EL. 586.5
CONCRETE
PLACE C&D DEBRIS MATERIAL MEETING CSCOs ALONG EASTERN LIMITS OF LIME BOUNDARY
SBL #133.13-1-5
N/F: MARDAN MACHINE, L.L.C.
#88 HOPKINS ST
LOT 5
LOT 4
LIME REMOVAL AREA
NON-LIME AREA
GW FLOW
N/F: BUFFALO - ROCHESTER - PITTSBURGH RAILROAD
NORTH LIME PILE-
EXCAVATE LIME TO NATIVE SOIL OR TO THE EXTENT PRACTICABLE. LIME FOR BENEFICIAL USE.
BACKFILL ALL EXCAVATION AREAS WITH CLEAN IMPORTED FILL MEETING DER-10 REQUIREMENTS TO A MINIMUM EXTENT TO PROMOTE DRAINAGE AND PREVENT PONDING.
C&D AREA 3
CLEAR BRUSH, EXCAVATE WEATHERED LIME SOIL TO UNCOVER UNWEATHERED LIME BELOW FOR REUSE. REMOVE LIME FOR BENEFICIAL REUSE.
A = 38,623 SF
ANTICIPATED BACKFILL STAGING AREA
C&D AREA 2
EXCAVATE C&D DEBRIS/SOIL TO UNCOVER LIME. EXCAVATE LIME FOR BENEFICIAL USE. REUSE FILL/SOIL AS BACKFILL IN DESIGNATED SPOILS AREA OR DISPOSE OFFSITE IF EXCEEDS COMMERCIAL SCOs.
A = 33,074 SF
PROPOSED "SPOILS" AREA FOR PLACEMENT OF ON-SITE MATERIALS MEETING COMMERCIAL CLEANUP CRITERIA. ACTUAL AREA WILL DEPEND UPON TOTAL VOLUME DETERMINED ACCEPTABLE FOR REUSE AND WILL BE SURVEYED PRIOR TO PROJECT SUBSTANTIAL COMPLETION.
C&D AREA 1
EXCAVATE DEBRIS/SOIL TO 1 TO 2 FT. DEPTH. DISPOSE IN LANDFILL. EXCAVATE LIME FOR BENEFICIAL REUSE.
A = 15,568 SF
SBL #133.13-1-6.1
N/F: MAZUREK
#42 HOPKINS ST
APPROXIMATE LIMITS OF SUBGRADE LIME (TO BE DETERMINED IN FIELD) AND LIMITS OF DISTURBANCE (LOD)
LIME EXCAVATION CELLS
SOUTH LIME PILE-
EXCAVATE LIME TO NATIVE SOIL OR TO THE EXTENT PRACTICABLE. LIME FOR BENEFICIAL REUSE.
LEGEND
EXISTING CONTOURS
EROSION AND SEDIMENT CONTROL
PROPERTY LINE
MONITORING WELL (MW-02)
C&D AREA 1
C&D AREA 2
C&D AREA 3
APPROXIMATE LIMITS OF SUBGRADE LIME
APPROXIMATE LIMITS OF ABOVE GRADE LIME
NON-LIME AREA
PROPOSED ON-SITE C&D BACKFILL AREA
SCALE
0 40 80 120 FEET
NOTES:
1) CLEAR AND GRUBBED MATERIALS TO BE CHIPPED AND STAGED ONSITE FOR REUSE
2) EXCAVATED C&D TO BE STOCKPILED AT A LOCATION DIRECTED BY THE ENGINEER AND SAMPLED IN ACCORDANCE WITH DER-10 GUIDANCE FOR POTENTIAL REUSE AS BACKFILL. IF THE SAMPLE RESULTS DO NOT MEET COMMERCIAL SCOs THE MATERIAL SHALL BE DISPOSED OF AT AN OFFSITE LOCATION.
3) INSTALL PERIMETER ESC's AROUND STOCKPILED MATERIAL IN ACCORDANCE WITH SWPPP.
4) SEE SWPPP FOR PROPOSED E&S CONTROLS AND RECOMMEDED PHASING APPROACH.
APTIM
APTIM ENGINEERING & GEOLOGY NEW YORK, P.C.
DESIGNED BY: MJS
DRAWN BY: JLG
CHECKED BY: MJS
APPROVED BY: MJS
PRAXAIR DISTRIBUTION INC.
90 HOPKINS STREET
BUFFALO, NEW YORK
REMEDIAL ACTION WORK PLAN
SITE WORK PLAN - LIMITS OF LIME
DATE: 04/02/18
SCALE: 1"=40'
DRAWING NO. 141825D18R1
FIGURE NO. 5
File: U:\Project\141825\141825D18R1.dwg
Plot Date/Time: Apr 02, 2018 - 3:38pm
Plotted By: matt.sausville



CROSS–SECTION CELLS 1 – 3 (TYP.)

NOTE:
1) ANY FILL ABOVE LIME SHALL BE MANAGED AS DESCRIBED IN THE RAWP. SEQUENCE OF WORK IS TYPICAL AND EXACT EXCAVATION DIMENSIONS ARE TO BE DETERMINED IN THE FIELD.
2) COMPACTION TESTING OF SELECTED FILL WILL BE COMPLETED AS DESCRIBED IN THE RAWP.

APTIM ENGINEERING & GEOLOGY NEW YORK, P.C.

DESIGNED BY: MJS	PRAXAIR DISTRIBUTION INC. 90 HOPKINS STREET BUFFALO, NEW YORK			
DRAWN BY: MJS	REMEDIAL ACTION WORK PLAN EXCAVATION AND BACKFILL SEQUENCE CELLS 1 - 3 (TYP)			
CHECKED BY: DCS				
APPROVED BY: MJS	DATE: 04/02/18	SCALE: NTS	DRAWING NO. 141825D18R1	FIGURE NO. 6

OFFICE Latham, NY

DRAWING NUMBER 141825D18R1

VERIFY SCALE 0 1"

File: U:\Project\141825\141825D18R1.dwg
Plot Date/Time: Apr 02, 2018 - 1:11pm
Plotted By: matt.sausville

Appendix A

Soil Quality Data

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

TestAmerica Job ID: 480-80803-1
Client Project/Site: Soil Characterization

For:
Praxair, Inc.
435 Donner Avenue
Suite 430
Monessen, Pennsylvania 15062

Attn: Maria Tetteris

Authorized for release by:
6/4/2015 3:38:28 PM
Rebecca Jones, Project Management Assistant I
rebecca.jones@testamericainc.com

Designee for

Melissa Deyo, Project Manager I
(716)504-9874
melissa.deyo@testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 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
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

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.
B	Compound was found in the blank and sample.

Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
F1	MS and/or MSD Recovery is outside acceptance limits.

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
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
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)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Job ID: 480-80803-1

Laboratory: TestAmerica Buffalo

Narrative

Job Narrative
480-80803-1

Receipt
The samples were received on 5/21/2015 2:10 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.0º C.

GC/MS VOA
Method(s) 8260C: The continuing calibration verification (CCV) associated with batch 480-244798 recovered outside acceptance criteria, low biased, for Benzene. A reporting limit (RL) standard was analyzed, and the target analyte was detected. Since the associated samples were not detected above the reporting limit for this analyte, the data have been reported. The following samples are impacted: KOHORST NORTHEAST PILE (480-80803-1), KOHORST SOUTHEAST PILE (480-80803-2) and KOHORST WEST PILE (480-80803-3).

Method(s) 8260C: Reported analyte concentrations in the following samples are below 200 ug/kg and may be biased low due to the samples not being collected according to 5035-L/5035A-L low-level specifications: KOHORST NORTHEAST PILE (480-80803-1), KOHORST SOUTHEAST PILE (480-80803-2) and KOHORST WEST PILE (480-80803-3).

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(s) 8081B: The closing continuing calibration verification (CCV) standard failed to meet acceptance limits. The associated samples were re-analyzed following a successful CCV and produced similar results, indicating that the sample matrix is adversely affecting the instrument and causing the failures: KOHORST NORTHEAST PILE (480-80803-1), KOHORST SOUTHEAST PILE (480-80803-2), KOHORST WEST PILE (480-80803-3), (480-80803-E-1-A MS) and (480-80803-E-1-B MSD).

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
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep
Method(s) 3550C: The following samples required a Florisil clean-up, via 3620C, to reduce matrix interferences: KOHORST NORTHEAST PILE (480-80803-1), KOHORST SOUTHEAST PILE (480-80803-2), KOHORST WEST PILE (480-80803-3), (480-80803-E-1 MS) and (480-80803-E-1 MSD).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Praxair, Inc. TestAmerica Job ID: 480-80803-1
Project/Site: Soil Characterization

Client Sample ID: KOHORST NORTHEAST PILE Lab Sample ID: 480-80803-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	0.40	J	5.4	0.26	ug/Kg	1	☼	8260C	Total/NA
Naphthalene	220		180	24	ug/Kg	1	☼	8270D	Total/NA
4,4'-DDE	0.53	J	1.8	0.37	ug/Kg	1	☼	8081B	Total/NA
alpha-BHC	0.71	J B	1.8	0.32	ug/Kg	1	☼	8081B	Total/NA
Lindane	0.47	J	1.8	0.32	ug/Kg	1	☼	8081B	Total/NA
Arsenic	6.8		2.3	0.46	mg/Kg	1	☼	6010C	Total/NA
Barium	35.6		0.57	0.13	mg/Kg	1	☼	6010C	Total/NA
Beryllium	0.52		0.23	0.032	mg/Kg	1	☼	6010C	Total/NA
Cadmium	0.37		0.23	0.034	mg/Kg	1	☼	6010C	Total/NA
Copper	27.1		1.1	0.24	mg/Kg	1	☼	6010C	Total/NA
Lead	17.9		1.1	0.28	mg/Kg	1	☼	6010C	Total/NA
Manganese	539		0.23	0.037	mg/Kg	1	☼	6010C	Total/NA
Nickel	32.8		5.7	0.26	mg/Kg	1	☼	6010C	Total/NA
Zinc	88.0	B	2.3	0.18	mg/Kg	1	☼	6010C	Total/NA
Mercury	0.013	J	0.021	0.0086	mg/Kg	1	☼	7471B	Total/NA
Chromium, trivalent	12.9		1.5	0.63	mg/Kg	1		SM 3500 CR D	Total/NA

Client Sample ID: KOHORST SOUTHEAST PILE Lab Sample ID: 480-80803-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	0.43	J	5.3	0.26	ug/Kg	1	☼	8260C	Total/NA
Methylene Chloride	2.5	J	5.3	2.5	ug/Kg	1	☼	8260C	Total/NA
Naphthalene	140	J	180	24	ug/Kg	1	☼	8270D	Total/NA
4,4'-DDE	0.57	J	1.8	0.38	ug/Kg	1	☼	8081B	Total/NA
alpha-BHC	0.73	J B	1.8	0.33	ug/Kg	1	☼	8081B	Total/NA
Arsenic	9.5		2.1	0.41	mg/Kg	1	☼	6010C	Total/NA
Barium	36.2		0.52	0.11	mg/Kg	1	☼	6010C	Total/NA
Beryllium	0.53		0.21	0.029	mg/Kg	1	☼	6010C	Total/NA
Cadmium	0.38		0.21	0.031	mg/Kg	1	☼	6010C	Total/NA
Copper	31.0		1.0	0.22	mg/Kg	1	☼	6010C	Total/NA
Lead	21.7		1.0	0.25	mg/Kg	1	☼	6010C	Total/NA
Manganese	479		0.21	0.033	mg/Kg	1	☼	6010C	Total/NA
Nickel	33.3		5.2	0.24	mg/Kg	1	☼	6010C	Total/NA
Zinc	87.9	B	2.1	0.16	mg/Kg	1	☼	6010C	Total/NA
Mercury	0.027		0.020	0.0083	mg/Kg	1	☼	7471B	Total/NA
Chromium, trivalent	13.6		1.5	0.63	mg/Kg	1		SM 3500 CR D	Total/NA

Client Sample ID: KOHORST WEST PILE Lab Sample ID: 480-80803-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	0.44	J	5.1	0.25	ug/Kg	1	☼	8260C	Total/NA
Methylene Chloride	2.5	J	5.1	2.3	ug/Kg	1	☼	8260C	Total/NA
Naphthalene	330		170	23	ug/Kg	1	☼	8270D	Total/NA
4,4'-DDE	0.57	J	1.7	0.36	ug/Kg	1	☼	8081B	Total/NA
alpha-BHC	0.86	J B	1.7	0.31	ug/Kg	1	☼	8081B	Total/NA
beta-BHC	0.35	J	1.7	0.31	ug/Kg	1	☼	8081B	Total/NA
delta-BHC	0.46	J B	1.7	0.32	ug/Kg	1	☼	8081B	Total/NA
Arsenic	12.1		2.1	0.42	mg/Kg	1	☼	6010C	Total/NA
Barium	32.1		0.53	0.12	mg/Kg	1	☼	6010C	Total/NA
Beryllium	0.62		0.21	0.030	mg/Kg	1	☼	6010C	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: KOHORST WEST PILE (Continued)

Lab Sample ID: 480-80803-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cadmium	0.49		0.21	0.032	mg/Kg	1	☼	6010C	Total/NA
Copper	52.6		1.1	0.22	mg/Kg	1	☼	6010C	Total/NA
Lead	23.5		1.1	0.25	mg/Kg	1	☼	6010C	Total/NA
Manganese	258		0.21	0.034	mg/Kg	1	☼	6010C	Total/NA
Nickel	48.8		5.3	0.24	mg/Kg	1	☼	6010C	Total/NA
Selenium	0.94	J B	4.2	0.42	mg/Kg	1	☼	6010C	Total/NA
Zinc	95.1	B	2.1	0.16	mg/Kg	1	☼	6010C	Total/NA
Mercury	0.040	F1	0.020	0.0082	mg/Kg	1	☼	7471B	Total/NA
Chromium, trivalent	16.5		1.5	0.63	mg/Kg	1		SM 3500 CR D	Total/NA

This Detection Summary does not include radiochemical test results.

Client: Praxair, Inc.
Project/Site: Soil Characterization

TestAmerica Job ID: 480-80803-1

Client Sample ID: KOHORST NORTHEAST PILE
Date Collected: 05/21/15 11:00
Date Received: 05/21/15 14:10

Lab Sample ID: 480-80803-1
Matrix: Solid
Percent Solids: 92.4

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5.4	0.39	ug/Kg	☼	05/27/15 10:24	05/28/15 01:34	1
1,1-Dichloroethane	ND		5.4	0.66	ug/Kg	☼	05/27/15 10:24	05/28/15 01:34	1
1,1-Dichloroethene	ND		5.4	0.66	ug/Kg	☼	05/27/15 10:24	05/28/15 01:34	1
Trimethylbenzene, 1,2,4-	ND		5.4	1.0	ug/Kg	☼	05/27/15 10:24	05/28/15 01:34	1
1,2-Dichlorobenzene	ND		5.4	0.42	ug/Kg	☼	05/27/15 10:24	05/28/15 01:34	1
1,2-Dichloroethane	ND		5.4	0.27	ug/Kg	☼	05/27/15 10:24	05/28/15 01:34	1
Trimethylbenzene, 1,3,5-	ND		5.4	0.35	ug/Kg	☼	05/27/15 10:24	05/28/15 01:34	1
1,3-Dichlorobenzene	ND		5.4	0.28	ug/Kg	☼	05/27/15 10:24	05/28/15 01:34	1
1,4-Dichlorobenzene	ND		5.4	0.75	ug/Kg	☼	05/27/15 10:24	05/28/15 01:34	1
1,4-Dioxane	ND		110	24	ug/Kg	☼	05/27/15 10:24	05/28/15 01:34	1
Methyl Ethyl Ketone	ND		27	2.0	ug/Kg	☼	05/27/15 10:24	05/28/15 01:34	1
Acetone	ND		27	4.5	ug/Kg	☼	05/27/15 10:24	05/28/15 01:34	1
Benzene	**0.40**	**J**	5.4	0.26	ug/Kg	☼	05/27/15 10:24	05/28/15 01:34	1
Carbon tetrachloride	ND		5.4	0.52	ug/Kg	☼	05/27/15 10:24	05/28/15 01:34	1
Chlorobenzene	ND		5.4	0.71	ug/Kg	☼	05/27/15 10:24	05/28/15 01:34	1
Chloroform	ND		5.4	0.33	ug/Kg	☼	05/27/15 10:24	05/28/15 01:34	1
1,2-Dichloroethene, cis-	ND		5.4	0.69	ug/Kg	☼	05/27/15 10:24	05/28/15 01:34	1
Ethylbenzene	ND		5.4	0.37	ug/Kg	☼	05/27/15 10:24	05/28/15 01:34	1
Methyl tert-butyl ether	ND		5.4	0.53	ug/Kg	☼	05/27/15 10:24	05/28/15 01:34	1
Methylene Chloride	ND		5.4	2.5	ug/Kg	☼	05/27/15 10:24	05/28/15 01:34	1
Butylbenzene	ND		5.4	0.47	ug/Kg	☼	05/27/15 10:24	05/28/15 01:34	1
Propylbenzene, n-	ND		5.4	0.43	ug/Kg	☼	05/27/15 10:24	05/28/15 01:34	1
sec-Butylbenzene	ND		5.4	0.47	ug/Kg	☼	05/27/15 10:24	05/28/15 01:34	1
Tetrachloroethene	ND		5.4	0.72	ug/Kg	☼	05/27/15 10:24	05/28/15 01:34	1
Toluene	ND		5.4	0.41	ug/Kg	☼	05/27/15 10:24	05/28/15 01:34	1
1,2-Dichloroethene, trans-	ND		5.4	0.56	ug/Kg	☼	05/27/15 10:24	05/28/15 01:34	1
Trichloroethene	ND		5.4	1.2	ug/Kg	☼	05/27/15 10:24	05/28/15 01:34	1
Vinyl chloride	ND		5.4	0.66	ug/Kg	☼	05/27/15 10:24	05/28/15 01:34	1
Xylene (mixed)	ND		11	0.91	ug/Kg	☼	05/27/15 10:24	05/28/15 01:34	1
tert-Butylbenzene	ND		5.4	0.56	ug/Kg	☼	05/27/15 10:24	05/28/15 01:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*64 - 126*	*05/27/15 10:24*	*05/28/15 01:34*	*1*
4-Bromofluorobenzene (Surr)	*98*		*72 - 126*	*05/27/15 10:24*	*05/28/15 01:34*	*1*
Toluene-d8 (Surr)	*105*		*71 - 125*	*05/27/15 10:24*	*05/28/15 01:34*	*1*
Dibromofluoromethane (Surr)	*98*		*60 - 140*	*05/27/15 10:24*	*05/28/15 01:34*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		180	27	ug/Kg	☼	05/22/15 08:07	05/27/15 01:44	1
Acenaphthylene	ND		180	24	ug/Kg	☼	05/22/15 08:07	05/27/15 01:44	1
Anthracene	ND		180	45	ug/Kg	☼	05/22/15 08:07	05/27/15 01:44	1
Benzo(a)anthracene	ND		180	18	ug/Kg	☼	05/22/15 08:07	05/27/15 01:44	1
Benzo(a)pyrene	ND		180	27	ug/Kg	☼	05/22/15 08:07	05/27/15 01:44	1
Benzo(b)fluoranthene	ND		180	29	ug/Kg	☼	05/22/15 08:07	05/27/15 01:44	1
Benzo(g,h,i)perylene	ND		180	19	ug/Kg	☼	05/22/15 08:07	05/27/15 01:44	1
Benzo(k)fluoranthene	ND		180	24	ug/Kg	☼	05/22/15 08:07	05/27/15 01:44	1
Chrysene	ND		180	41	ug/Kg	☼	05/22/15 08:07	05/27/15 01:44	1
Dibenz(a,h)anthracene	ND		180	32	ug/Kg	☼	05/22/15 08:07	05/27/15 01:44	1
Dibenzofuran	ND		180	22	ug/Kg	☼	05/22/15 08:07	05/27/15 01:44	1

Client Sample ID: KOHORST NORTHEAST PILE

Lab Sample ID: 480-80803-1

Date Collected: 05/21/15 11:00

Matrix: Solid

Date Received: 05/21/15 14:10

Percent Solids: 92.4

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoranthene	ND		180	19	ug/Kg	☼	05/22/15 08:07	05/27/15 01:44	1
Fluorene	ND		180	22	ug/Kg	☼	05/22/15 08:07	05/27/15 01:44	1
Hexachlorobenzene	ND		180	25	ug/Kg	☼	05/22/15 08:07	05/27/15 01:44	1
Indeno(1,2,3-cd)pyrene	ND		180	23	ug/Kg	☼	05/22/15 08:07	05/27/15 01:44	1
m-Cresol	ND		360	28	ug/Kg	☼	05/22/15 08:07	05/27/15 01:44	1
Naphthalene	**220**		180	24	ug/Kg	☼	05/22/15 08:07	05/27/15 01:44	1
o-Cresol	ND		180	22	ug/Kg	☼	05/22/15 08:07	05/27/15 01:44	1
p-Cresol	ND		360	22	ug/Kg	☼	05/22/15 08:07	05/27/15 01:44	1
Pentachlorophenol	ND		360	180	ug/Kg	☼	05/22/15 08:07	05/27/15 01:44	1
Phenanthrene	ND		180	27	ug/Kg	☼	05/22/15 08:07	05/27/15 01:44	1
Phenol	ND		180	28	ug/Kg	☼	05/22/15 08:07	05/27/15 01:44	1
Pyrene	ND		180	22	ug/Kg	☼	05/22/15 08:07	05/27/15 01:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*69*		*39 - 146*	*05/22/15 08:07*	*05/27/15 01:44*	*1*
2-Fluorobiphenyl	*76*		*37 - 120*	*05/22/15 08:07*	*05/27/15 01:44*	*1*
2-Fluorophenol	*66*		*18 - 120*	*05/22/15 08:07*	*05/27/15 01:44*	*1*
Nitrobenzene-d5	*64*		*34 - 132*	*05/22/15 08:07*	*05/27/15 01:44*	*1*
Phenol-d5	*66*		*11 - 120*	*05/22/15 08:07*	*05/27/15 01:44*	*1*
p-Terphenyl-d14	*97*		*65 - 153*	*05/22/15 08:07*	*05/27/15 01:44*	*1*

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	ND		1.8	0.34	ug/Kg	☼	05/22/15 07:52	05/29/15 12:11	1
4,4'-DDE	**0.53**	**J**	1.8	0.37	ug/Kg	☼	05/22/15 07:52	05/29/15 12:11	1
4,4'-DDT	ND		1.8	0.41	ug/Kg	☼	05/22/15 07:52	05/29/15 12:11	1
Aldrin	ND		1.8	0.43	ug/Kg	☼	05/22/15 07:52	05/29/15 12:11	1
alpha-BHC	**0.71**	**J B**	1.8	0.32	ug/Kg	☼	05/22/15 07:52	05/29/15 12:11	1
beta-BHC	ND		1.8	0.32	ug/Kg	☼	05/22/15 07:52	05/29/15 12:11	1
Chlordane (.alpha.)	ND		1.8	0.88	ug/Kg	☼	05/22/15 07:52	05/29/15 12:11	1
delta-BHC	ND		1.8	0.33	ug/Kg	☼	05/22/15 07:52	05/29/15 12:11	1
Dieldrin	ND		1.8	0.42	ug/Kg	☼	05/22/15 07:52	05/29/15 12:11	1
Endosulfan I	ND		1.8	0.34	ug/Kg	☼	05/22/15 07:52	05/29/15 12:11	1
Endosulfan II	ND		1.8	0.32	ug/Kg	☼	05/22/15 07:52	05/29/15 12:11	1
Endosulfan sulfate	ND		1.8	0.33	ug/Kg	☼	05/22/15 07:52	05/29/15 12:11	1
Endrin	ND		1.8	0.35	ug/Kg	☼	05/22/15 07:52	05/29/15 12:11	1
Heptachlor	ND		1.8	0.38	ug/Kg	☼	05/22/15 07:52	05/29/15 12:11	1
Lindane	**0.47**	**J**	1.8	0.32	ug/Kg	☼	05/22/15 07:52	05/29/15 12:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*83*		*32 - 136*	*05/22/15 07:52*	*05/29/15 12:11*	*1*
Tetrachloro-m-xylene	*65*		*30 - 124*	*05/22/15 07:52*	*05/29/15 12:11*	*1*

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		0.23	0.044	mg/Kg	☼	05/22/15 08:31	05/26/15 12:24	1
PCB-1221	ND		0.23	0.044	mg/Kg	☼	05/22/15 08:31	05/26/15 12:24	1
PCB-1232	ND		0.23	0.044	mg/Kg	☼	05/22/15 08:31	05/26/15 12:24	1
PCB-1242	ND		0.23	0.044	mg/Kg	☼	05/22/15 08:31	05/26/15 12:24	1
PCB-1248	ND		0.23	0.044	mg/Kg	☼	05/22/15 08:31	05/26/15 12:24	1

Client Sample ID: KOHORST NORTHEAST PILE — Lab Sample ID: 480-80803-1

Date Collected: 05/21/15 11:00 — **Matrix: Solid**
Date Received: 05/21/15 14:10 — **Percent Solids: 92.4**

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1254	ND		0.23	0.11	mg/Kg	☼	05/22/15 08:31	05/26/15 12:24	1
PCB-1260	ND		0.23	0.11	mg/Kg	☼	05/22/15 08:31	05/26/15 12:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*100*		*60 - 154*	*05/22/15 08:31*	*05/26/15 12:24*	*1*
DCB Decachlorobiphenyl	*96*		*65 - 174*	*05/22/15 08:31*	*05/26/15 12:24*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-TP (Silvex)	ND		18	6.4	ug/Kg	☼	05/26/15 09:54	05/29/15 23:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*89*		*28 - 129*	*05/26/15 09:54*	*05/29/15 23:09*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**6.8**		2.3	0.46	mg/Kg	☼	05/26/15 15:17	05/28/15 00:44	1
Barium	**35.6**		0.57	0.13	mg/Kg	☼	05/26/15 15:17	05/28/15 00:44	1
Beryllium	**0.52**		0.23	0.032	mg/Kg	☼	05/26/15 15:17	05/28/15 00:44	1
Cadmium	**0.37**		0.23	0.034	mg/Kg	☼	05/26/15 15:17	05/28/15 00:44	1
Copper	**27.1**		1.1	0.24	mg/Kg	☼	05/26/15 15:17	05/28/15 00:44	1
Lead	**17.9**		1.1	0.28	mg/Kg	☼	05/26/15 15:17	05/28/15 00:44	1
Manganese	**539**		0.23	0.037	mg/Kg	☼	05/26/15 15:17	05/28/15 00:44	1
Nickel	**32.8**		5.7	0.26	mg/Kg	☼	05/26/15 15:17	05/28/15 00:44	1
Selenium	ND		4.6	0.46	mg/Kg	☼	05/26/15 15:17	05/28/15 00:44	1
Silver	ND		0.69	0.23	mg/Kg	☼	05/26/15 15:17	05/28/15 00:44	1
Zinc	**88.0**	**B**	2.3	0.18	mg/Kg	☼	05/26/15 15:17	05/28/15 00:44	1

Method: 7471B - Mercury in Solid or Semisolid Waste (Manual Cold Vapor Technique)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.013**	**J**	0.021	0.0086	mg/Kg	☼	06/02/15 14:00	06/02/15 15:40	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	ND		2.2	0.90	mg/Kg	☼	05/26/15 22:30	05/27/15 04:51	1
Cyanide, Total	ND		1.1	0.52	mg/Kg	☼	06/01/15 05:55	06/01/15 14:50	1
Chromium, trivalent	**12.9**		1.5	0.63	mg/Kg			06/01/15 13:14	1

Client Sample ID: KOHORST SOUTHEAST PILE — Lab Sample ID: 480-80803-2

Date Collected: 05/21/15 11:20 — **Matrix: Solid**
Date Received: 05/21/15 14:10 — **Percent Solids: 91.7**

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5.3	0.39	ug/Kg	☼	05/27/15 10:24	05/28/15 01:59	1
1,1-Dichloroethane	ND		5.3	0.65	ug/Kg	☼	05/27/15 10:24	05/28/15 01:59	1
1,1-Dichloroethene	ND		5.3	0.65	ug/Kg	☼	05/27/15 10:24	05/28/15 01:59	1
Trimethylbenzene, 1,2,4-	ND		5.3	1.0	ug/Kg	☼	05/27/15 10:24	05/28/15 01:59	1
1,2-Dichlorobenzene	ND		5.3	0.42	ug/Kg	☼	05/27/15 10:24	05/28/15 01:59	1
1,2-Dichloroethane	ND		5.3	0.27	ug/Kg	☼	05/27/15 10:24	05/28/15 01:59	1
Trimethylbenzene, 1,3,5-	ND		5.3	0.34	ug/Kg	☼	05/27/15 10:24	05/28/15 01:59	1

Client Sample ID: KOHORST SOUTHEAST PILE
Date Collected: 05/21/15 11:20
Date Received: 05/21/15 14:10

Lab Sample ID: 480-80803-2
Matrix: Solid
Percent Solids: 91.7

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	ND		5.3	0.27	ug/Kg	☼	05/27/15 10:24	05/28/15 01:59	1
1,4-Dichlorobenzene	ND		5.3	0.75	ug/Kg	☼	05/27/15 10:24	05/28/15 01:59	1
1,4-Dioxane	ND		110	23	ug/Kg	☼	05/27/15 10:24	05/28/15 01:59	1
Methyl Ethyl Ketone	ND		27	2.0	ug/Kg	☼	05/27/15 10:24	05/28/15 01:59	1
Acetone	ND		27	4.5	ug/Kg	☼	05/27/15 10:24	05/28/15 01:59	1
Benzene	**0.43**	**J**	5.3	0.26	ug/Kg	☼	05/27/15 10:24	05/28/15 01:59	1
Carbon tetrachloride	ND		5.3	0.52	ug/Kg	☼	05/27/15 10:24	05/28/15 01:59	1
Chlorobenzene	ND		5.3	0.70	ug/Kg	☼	05/27/15 10:24	05/28/15 01:59	1
Chloroform	ND		5.3	0.33	ug/Kg	☼	05/27/15 10:24	05/28/15 01:59	1
1,2-Dichloroethene, cis-	ND		5.3	0.68	ug/Kg	☼	05/27/15 10:24	05/28/15 01:59	1
Ethylbenzene	ND		5.3	0.37	ug/Kg	☼	05/27/15 10:24	05/28/15 01:59	1
Methyl tert-butyl ether	ND		5.3	0.52	ug/Kg	☼	05/27/15 10:24	05/28/15 01:59	1
Methylene Chloride	**2.5**	**J**	5.3	2.5	ug/Kg	☼	05/27/15 10:24	05/28/15 01:59	1
Butylbenzene	ND		5.3	0.46	ug/Kg	☼	05/27/15 10:24	05/28/15 01:59	1
Propylbenzene, n-	ND		5.3	0.43	ug/Kg	☼	05/27/15 10:24	05/28/15 01:59	1
sec-Butylbenzene	ND		5.3	0.46	ug/Kg	☼	05/27/15 10:24	05/28/15 01:59	1
Tetrachloroethene	ND		5.3	0.72	ug/Kg	☼	05/27/15 10:24	05/28/15 01:59	1
Toluene	ND		5.3	0.40	ug/Kg	☼	05/27/15 10:24	05/28/15 01:59	1
1,2-Dichloroethene, trans-	ND		5.3	0.55	ug/Kg	☼	05/27/15 10:24	05/28/15 01:59	1
Trichloroethene	ND		5.3	1.2	ug/Kg	☼	05/27/15 10:24	05/28/15 01:59	1
Vinyl chloride	ND		5.3	0.65	ug/Kg	☼	05/27/15 10:24	05/28/15 01:59	1
Xylene (mixed)	ND		11	0.90	ug/Kg	☼	05/27/15 10:24	05/28/15 01:59	1
tert-Butylbenzene	ND		5.3	0.56	ug/Kg	☼	05/27/15 10:24	05/28/15 01:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*64 - 126*	*05/27/15 10:24*	*05/28/15 01:59*	*1*
4-Bromofluorobenzene (Surr)	*98*		*72 - 126*	*05/27/15 10:24*	*05/28/15 01:59*	*1*
Toluene-d8 (Surr)	*104*		*71 - 125*	*05/27/15 10:24*	*05/28/15 01:59*	*1*
Dibromofluoromethane (Surr)	*98*		*60 - 140*	*05/27/15 10:24*	*05/28/15 01:59*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		180	27	ug/Kg	☼	05/22/15 08:07	05/27/15 01:18	1
Acenaphthylene	ND		180	24	ug/Kg	☼	05/22/15 08:07	05/27/15 01:18	1
Anthracene	ND		180	45	ug/Kg	☼	05/22/15 08:07	05/27/15 01:18	1
Benzo(a)anthracene	ND		180	18	ug/Kg	☼	05/22/15 08:07	05/27/15 01:18	1
Benzo(a)pyrene	ND		180	27	ug/Kg	☼	05/22/15 08:07	05/27/15 01:18	1
Benzo(b)fluoranthene	ND		180	29	ug/Kg	☼	05/22/15 08:07	05/27/15 01:18	1
Benzo(g,h,i)perylene	ND		180	19	ug/Kg	☼	05/22/15 08:07	05/27/15 01:18	1
Benzo(k)fluoranthene	ND		180	24	ug/Kg	☼	05/22/15 08:07	05/27/15 01:18	1
Chrysene	ND		180	41	ug/Kg	☼	05/22/15 08:07	05/27/15 01:18	1
Dibenz(a,h)anthracene	ND		180	32	ug/Kg	☼	05/22/15 08:07	05/27/15 01:18	1
Dibenzofuran	ND		180	22	ug/Kg	☼	05/22/15 08:07	05/27/15 01:18	1
Fluoranthene	ND		180	19	ug/Kg	☼	05/22/15 08:07	05/27/15 01:18	1
Fluorene	ND		180	22	ug/Kg	☼	05/22/15 08:07	05/27/15 01:18	1
Hexachlorobenzene	ND		180	25	ug/Kg	☼	05/22/15 08:07	05/27/15 01:18	1
Indeno(1,2,3-cd)pyrene	ND		180	23	ug/Kg	☼	05/22/15 08:07	05/27/15 01:18	1
m-Cresol	ND		360	28	ug/Kg	☼	05/22/15 08:07	05/27/15 01:18	1
Naphthalene	**140**	**J**	180	24	ug/Kg	☼	05/22/15 08:07	05/27/15 01:18	1
o-Cresol	ND		180	22	ug/Kg	☼	05/22/15 08:07	05/27/15 01:18	1

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Client Sample ID: KOHORST SOUTHEAST PILE
Date Collected: 05/21/15 11:20
Date Received: 05/21/15 14:10

Lab Sample ID: 480-80803-2
Matrix: Solid
Percent Solids: 91.7

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
p-Cresol	ND		360	22	ug/Kg	☼	05/22/15 08:07	05/27/15 01:18	1
Pentachlorophenol	ND		360	180	ug/Kg	☼	05/22/15 08:07	05/27/15 01:18	1
Phenanthrene	ND		180	27	ug/Kg	☼	05/22/15 08:07	05/27/15 01:18	1
Phenol	ND		180	28	ug/Kg	☼	05/22/15 08:07	05/27/15 01:18	1
Pyrene	ND		180	22	ug/Kg	☼	05/22/15 08:07	05/27/15 01:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*79*		*39 - 146*	*05/22/15 08:07*	*05/27/15 01:18*	*1*
2-Fluorobiphenyl	*80*		*37 - 120*	*05/22/15 08:07*	*05/27/15 01:18*	*1*
2-Fluorophenol	*65*		*18 - 120*	*05/22/15 08:07*	*05/27/15 01:18*	*1*
Nitrobenzene-d5	*66*		*34 - 132*	*05/22/15 08:07*	*05/27/15 01:18*	*1*
Phenol-d5	*66*		*11 - 120*	*05/22/15 08:07*	*05/27/15 01:18*	*1*
p-Terphenyl-d14	*100*		*65 - 153*	*05/22/15 08:07*	*05/27/15 01:18*	*1*

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	ND		1.8	0.35	ug/Kg	☼	05/22/15 07:52	05/29/15 12:29	1
4,4'-DDE	**0.57**	**J**	1.8	0.38	ug/Kg	☼	05/22/15 07:52	05/29/15 12:29	1
4,4'-DDT	ND		1.8	0.42	ug/Kg	☼	05/22/15 07:52	05/29/15 12:29	1
Aldrin	ND		1.8	0.45	ug/Kg	☼	05/22/15 07:52	05/29/15 12:29	1
alpha-BHC	**0.73**	**J B**	1.8	0.33	ug/Kg	☼	05/22/15 07:52	05/29/15 12:29	1
beta-BHC	ND		1.8	0.33	ug/Kg	☼	05/22/15 07:52	05/29/15 12:29	1
Chlordane (.alpha.)	ND		1.8	0.90	ug/Kg	☼	05/22/15 07:52	05/29/15 12:29	1
delta-BHC	ND		1.8	0.34	ug/Kg	☼	05/22/15 07:52	05/29/15 12:29	1
Dieldrin	ND		1.8	0.43	ug/Kg	☼	05/22/15 07:52	05/29/15 12:29	1
Endosulfan I	ND		1.8	0.35	ug/Kg	☼	05/22/15 07:52	05/29/15 12:29	1
Endosulfan II	ND		1.8	0.33	ug/Kg	☼	05/22/15 07:52	05/29/15 12:29	1
Endosulfan sulfate	ND		1.8	0.34	ug/Kg	☼	05/22/15 07:52	05/29/15 12:29	1
Endrin	ND		1.8	0.36	ug/Kg	☼	05/22/15 07:52	05/29/15 12:29	1
Heptachlor	ND		1.8	0.39	ug/Kg	☼	05/22/15 07:52	05/29/15 12:29	1
Lindane	ND		1.8	0.33	ug/Kg	☼	05/22/15 07:52	05/29/15 12:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*91*		*32 - 136*	*05/22/15 07:52*	*05/29/15 12:29*	*1*
Tetrachloro-m-xylene	*73*		*30 - 124*	*05/22/15 07:52*	*05/29/15 12:29*	*1*

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		0.21	0.041	mg/Kg	☼	05/22/15 08:31	05/26/15 13:11	1
PCB-1221	ND		0.21	0.041	mg/Kg	☼	05/22/15 08:31	05/26/15 13:11	1
PCB-1232	ND		0.21	0.041	mg/Kg	☼	05/22/15 08:31	05/26/15 13:11	1
PCB-1242	ND		0.21	0.041	mg/Kg	☼	05/22/15 08:31	05/26/15 13:11	1
PCB-1248	ND		0.21	0.041	mg/Kg	☼	05/22/15 08:31	05/26/15 13:11	1
PCB-1254	ND		0.21	0.097	mg/Kg	☼	05/22/15 08:31	05/26/15 13:11	1
PCB-1260	ND		0.21	0.097	mg/Kg	☼	05/22/15 08:31	05/26/15 13:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*97*		*60 - 154*	*05/22/15 08:31*	*05/26/15 13:11*	*1*
DCB Decachlorobiphenyl	*105*		*65 - 174*	*05/22/15 08:31*	*05/26/15 13:11*	*1*

Client Sample ID: KOHORST SOUTHEAST PILE

Lab Sample ID: 480-80803-2

Date Collected: 05/21/15 11:20
Date Received: 05/21/15 14:10

Matrix: Solid
Percent Solids: 91.7

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-TP (Silvex)	ND		18	6.6	ug/Kg	☼	05/26/15 09:54	05/29/15 23:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*80*		*28 - 129*	*05/26/15 09:54*	*05/29/15 23:38*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**9.5**		2.1	0.41	mg/Kg	☼	05/26/15 15:17	05/28/15 12:20	1
Barium	**36.2**		0.52	0.11	mg/Kg	☼	05/26/15 15:17	05/28/15 12:20	1
Beryllium	**0.53**		0.21	0.029	mg/Kg	☼	05/26/15 15:17	05/28/15 12:20	1
Cadmium	**0.38**		0.21	0.031	mg/Kg	☼	05/26/15 15:17	05/28/15 12:20	1
Copper	**31.0**		1.0	0.22	mg/Kg	☼	05/26/15 15:17	05/28/15 12:20	1
Lead	**21.7**		1.0	0.25	mg/Kg	☼	05/26/15 15:17	05/28/15 12:20	1
Manganese	**479**		0.21	0.033	mg/Kg	☼	05/26/15 15:17	05/28/15 12:20	1
Nickel	**33.3**		5.2	0.24	mg/Kg	☼	05/26/15 15:17	05/28/15 12:20	1
Selenium	ND		4.1	0.41	mg/Kg	☼	05/26/15 15:17	05/28/15 12:20	1
Silver	ND		0.62	0.21	mg/Kg	☼	05/26/15 15:17	05/28/15 12:20	1
Zinc	**87.9**	**B**	2.1	0.16	mg/Kg	☼	05/26/15 15:17	05/28/15 12:20	1

Method: 7471B - Mercury in Solid or Semisolid Waste (Manual Cold Vapor Technique)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.027**		0.020	0.0083	mg/Kg	☼	06/02/15 14:00	06/02/15 15:42	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	ND		2.1	0.87	mg/Kg	☼	05/26/15 22:30	05/27/15 04:55	1
Cyanide, Total	ND		1.1	0.52	mg/Kg	☼	06/01/15 05:55	06/01/15 14:52	1
Chromium, trivalent	**13.6**		1.5	0.63	mg/Kg			06/01/15 13:14	1

Client Sample ID: KOHORST WEST PILE

Lab Sample ID: 480-80803-3

Date Collected: 05/21/15 11:35
Date Received: 05/21/15 14:10

Matrix: Solid
Percent Solids: 96.0

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5.1	0.37	ug/Kg	☼	05/27/15 10:24	05/28/15 02:25	1
1,1-Dichloroethane	ND		5.1	0.62	ug/Kg	☼	05/27/15 10:24	05/28/15 02:25	1
1,1-Dichloroethene	ND		5.1	0.62	ug/Kg	☼	05/27/15 10:24	05/28/15 02:25	1
Trimethylbenzene, 1,2,4-	ND		5.1	0.97	ug/Kg	☼	05/27/15 10:24	05/28/15 02:25	1
1,2-Dichlorobenzene	ND		5.1	0.40	ug/Kg	☼	05/27/15 10:24	05/28/15 02:25	1
1,2-Dichloroethane	ND		5.1	0.25	ug/Kg	☼	05/27/15 10:24	05/28/15 02:25	1
Trimethylbenzene, 1,3,5-	ND		5.1	0.33	ug/Kg	☼	05/27/15 10:24	05/28/15 02:25	1
1,3-Dichlorobenzene	ND		5.1	0.26	ug/Kg	☼	05/27/15 10:24	05/28/15 02:25	1
1,4-Dichlorobenzene	ND		5.1	0.71	ug/Kg	☼	05/27/15 10:24	05/28/15 02:25	1
1,4-Dioxane	ND		100	22	ug/Kg	☼	05/27/15 10:24	05/28/15 02:25	1
Methyl Ethyl Ketone	ND		25	1.9	ug/Kg	☼	05/27/15 10:24	05/28/15 02:25	1
Acetone	ND		25	4.3	ug/Kg	☼	05/27/15 10:24	05/28/15 02:25	1
Benzene	**0.44**	**J**	5.1	0.25	ug/Kg	☼	05/27/15 10:24	05/28/15 02:25	1
Carbon tetrachloride	ND		5.1	0.49	ug/Kg	☼	05/27/15 10:24	05/28/15 02:25	1
Chlorobenzene	ND		5.1	0.67	ug/Kg	☼	05/27/15 10:24	05/28/15 02:25	1
Chloroform	ND		5.1	0.31	ug/Kg	☼	05/27/15 10:24	05/28/15 02:25	1

Client: Praxair, Inc.　　TestAmerica Job ID: 480-80803-1
Project/Site: Soil Characterization

Client Sample ID: KOHORST WEST PILE　　**Lab Sample ID: 480-80803-3**
Date Collected: 05/21/15 11:35　　**Matrix: Solid**
Date Received: 05/21/15 14:10　　**Percent Solids: 96.0**

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichloroethene, cis-	ND		5.1	0.65	ug/Kg	☼	05/27/15 10:24	05/28/15 02:25	1
Ethylbenzene	ND		5.1	0.35	ug/Kg	☼	05/27/15 10:24	05/28/15 02:25	1
Methyl tert-butyl ether	ND		5.1	0.50	ug/Kg	☼	05/27/15 10:24	05/28/15 02:25	1
Methylene Chloride	**2.5**	**J**	5.1	2.3	ug/Kg	☼	05/27/15 10:24	05/28/15 02:25	1
Butylbenzene	ND		5.1	0.44	ug/Kg	☼	05/27/15 10:24	05/28/15 02:25	1
Propylbenzene, n-	ND		5.1	0.41	ug/Kg	☼	05/27/15 10:24	05/28/15 02:25	1
sec-Butylbenzene	ND		5.1	0.44	ug/Kg	☼	05/27/15 10:24	05/28/15 02:25	1
Tetrachloroethene	ND		5.1	0.68	ug/Kg	☼	05/27/15 10:24	05/28/15 02:25	1
Toluene	ND		5.1	0.38	ug/Kg	☼	05/27/15 10:24	05/28/15 02:25	1
1,2-Dichloroethene, trans-	ND		5.1	0.52	ug/Kg	☼	05/27/15 10:24	05/28/15 02:25	1
Trichloroethene	ND		5.1	1.1	ug/Kg	☼	05/27/15 10:24	05/28/15 02:25	1
Vinyl chloride	ND		5.1	0.62	ug/Kg	☼	05/27/15 10:24	05/28/15 02:25	1
Xylene (mixed)	ND		10	0.85	ug/Kg	☼	05/27/15 10:24	05/28/15 02:25	1
tert-Butylbenzene	ND		5.1	0.53	ug/Kg	☼	05/27/15 10:24	05/28/15 02:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*64 - 126*	*05/27/15 10:24*	*05/28/15 02:25*	*1*
4-Bromofluorobenzene (Surr)	*95*		*72 - 126*	*05/27/15 10:24*	*05/28/15 02:25*	*1*
Toluene-d8 (Surr)	*105*		*71 - 125*	*05/27/15 10:24*	*05/28/15 02:25*	*1*
Dibromofluoromethane (Surr)	*97*		*60 - 140*	*05/27/15 10:24*	*05/28/15 02:25*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		170	26	ug/Kg	☼	05/22/15 08:07	05/27/15 02:11	1
Acenaphthylene	ND		170	23	ug/Kg	☼	05/22/15 08:07	05/27/15 02:11	1
Anthracene	ND		170	43	ug/Kg	☼	05/22/15 08:07	05/27/15 02:11	1
Benzo(a)anthracene	ND		170	17	ug/Kg	☼	05/22/15 08:07	05/27/15 02:11	1
Benzo(a)pyrene	ND		170	26	ug/Kg	☼	05/22/15 08:07	05/27/15 02:11	1
Benzo(b)fluoranthene	ND		170	28	ug/Kg	☼	05/22/15 08:07	05/27/15 02:11	1
Benzo(g,h,i)perylene	ND		170	18	ug/Kg	☼	05/22/15 08:07	05/27/15 02:11	1
Benzo(k)fluoranthene	ND		170	23	ug/Kg	☼	05/22/15 08:07	05/27/15 02:11	1
Chrysene	ND		170	39	ug/Kg	☼	05/22/15 08:07	05/27/15 02:11	1
Dibenz(a,h)anthracene	ND		170	31	ug/Kg	☼	05/22/15 08:07	05/27/15 02:11	1
Dibenzofuran	ND		170	20	ug/Kg	☼	05/22/15 08:07	05/27/15 02:11	1
Fluoranthene	ND		170	18	ug/Kg	☼	05/22/15 08:07	05/27/15 02:11	1
Fluorene	ND		170	20	ug/Kg	☼	05/22/15 08:07	05/27/15 02:11	1
Hexachlorobenzene	ND		170	24	ug/Kg	☼	05/22/15 08:07	05/27/15 02:11	1
Indeno(1,2,3-cd)pyrene	ND		170	21	ug/Kg	☼	05/22/15 08:07	05/27/15 02:11	1
m-Cresol	ND		340	27	ug/Kg	☼	05/22/15 08:07	05/27/15 02:11	1
Naphthalene	**330**		170	23	ug/Kg	☼	05/22/15 08:07	05/27/15 02:11	1
o-Cresol	ND		170	20	ug/Kg	☼	05/22/15 08:07	05/27/15 02:11	1
p-Cresol	ND		340	20	ug/Kg	☼	05/22/15 08:07	05/27/15 02:11	1
Pentachlorophenol	ND		340	170	ug/Kg	☼	05/22/15 08:07	05/27/15 02:11	1
Phenanthrene	ND		170	26	ug/Kg	☼	05/22/15 08:07	05/27/15 02:11	1
Phenol	ND		170	27	ug/Kg	☼	05/22/15 08:07	05/27/15 02:11	1
Pyrene	ND		170	20	ug/Kg	☼	05/22/15 08:07	05/27/15 02:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol	*75*		*39 - 146*	*05/22/15 08:07*	*05/27/15 02:11*	*1*
2-Fluorobiphenyl	*81*		*37 - 120*	*05/22/15 08:07*	*05/27/15 02:11*	*1*

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Client: Praxair, Inc.
Project/Site: Soil Characterization

TestAmerica Job ID: 480-80803-1

Client Sample ID: KOHORST WEST PILE
Date Collected: 05/21/15 11:35
Date Received: 05/21/15 14:10

Lab Sample ID: 480-80803-3
Matrix: Solid
Percent Solids: 96.0

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol	75		18 - 120	05/22/15 08:07	05/27/15 02:11	1
Nitrobenzene-d5	68		34 - 132	05/22/15 08:07	05/27/15 02:11	1
Phenol-d5	78		11 - 120	05/22/15 08:07	05/27/15 02:11	1
p-Terphenyl-d14	95		65 - 153	05/22/15 08:07	05/27/15 02:11	1

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	ND		1.7	0.33	ug/Kg	☼	05/22/15 07:52	05/29/15 12:48	1
4,4'-DDE	**0.57**	**J**	1.7	0.36	ug/Kg	☼	05/22/15 07:52	05/29/15 12:48	1
4,4'-DDT	ND		1.7	0.40	ug/Kg	☼	05/22/15 07:52	05/29/15 12:48	1
Aldrin	ND		1.7	0.42	ug/Kg	☼	05/22/15 07:52	05/29/15 12:48	1
alpha-BHC	**0.86**	**J B**	1.7	0.31	ug/Kg	☼	05/22/15 07:52	05/29/15 12:48	1
beta-BHC	**0.35**	**J**	1.7	0.31	ug/Kg	☼	05/22/15 07:52	05/29/15 12:48	1
Chlordane (.alpha.)	ND		1.7	0.86	ug/Kg	☼	05/22/15 07:52	05/29/15 12:48	1
delta-BHC	**0.46**	**J B**	1.7	0.32	ug/Kg	☼	05/22/15 07:52	05/29/15 12:48	1
Dieldrin	ND		1.7	0.41	ug/Kg	☼	05/22/15 07:52	05/29/15 12:48	1
Endosulfan I	ND		1.7	0.33	ug/Kg	☼	05/22/15 07:52	05/29/15 12:48	1
Endosulfan II	ND		1.7	0.31	ug/Kg	☼	05/22/15 07:52	05/29/15 12:48	1
Endosulfan sulfate	ND		1.7	0.32	ug/Kg	☼	05/22/15 07:52	05/29/15 12:48	1
Endrin	ND		1.7	0.34	ug/Kg	☼	05/22/15 07:52	05/29/15 12:48	1
Heptachlor	ND		1.7	0.37	ug/Kg	☼	05/22/15 07:52	05/29/15 12:48	1
Lindane	ND		1.7	0.32	ug/Kg	☼	05/22/15 07:52	05/29/15 12:48	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	81		32 - 136	05/22/15 07:52	05/29/15 12:48	1
Tetrachloro-m-xylene	63		30 - 124	05/22/15 07:52	05/29/15 12:48	1

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		0.24	0.047	mg/Kg	☼	05/22/15 08:31	05/26/15 13:27	1
PCB-1221	ND		0.24	0.047	mg/Kg	☼	05/22/15 08:31	05/26/15 13:27	1
PCB-1232	ND		0.24	0.047	mg/Kg	☼	05/22/15 08:31	05/26/15 13:27	1
PCB-1242	ND		0.24	0.047	mg/Kg	☼	05/22/15 08:31	05/26/15 13:27	1
PCB-1248	ND		0.24	0.047	mg/Kg	☼	05/22/15 08:31	05/26/15 13:27	1
PCB-1254	ND		0.24	0.11	mg/Kg	☼	05/22/15 08:31	05/26/15 13:27	1
PCB-1260	ND		0.24	0.11	mg/Kg	☼	05/22/15 08:31	05/26/15 13:27	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	105		60 - 154	05/22/15 08:31	05/26/15 13:27	1
DCB Decachlorobiphenyl	111		65 - 174	05/22/15 08:31	05/26/15 13:27	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-TP (Silvex)	ND		17	6.2	ug/Kg	☼	05/26/15 09:54	05/30/15 00:08	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	83		28 - 129	05/26/15 09:54	05/30/15 00:08	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**12.1**		2.1	0.42	mg/Kg	☼	05/26/15 15:17	05/28/15 00:49	1

Client Sample ID: KOHORST WEST PILE

Lab Sample ID: 480-80803-3

Date Collected: 05/21/15 11:35
Date Received: 05/21/15 14:10

Matrix: Solid
Percent Solids: 96.0

Method: 6010C - Metals (ICP) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	32.1		0.53	0.12	mg/Kg	☼	05/26/15 15:17	05/28/15 00:49	1
Beryllium	0.62		0.21	0.030	mg/Kg	☼	05/26/15 15:17	05/28/15 00:49	1
Cadmium	0.49		0.21	0.032	mg/Kg	☼	05/26/15 15:17	05/28/15 00:49	1
Copper	52.6		1.1	0.22	mg/Kg	☼	05/26/15 15:17	05/28/15 00:49	1
Lead	23.5		1.1	0.25	mg/Kg	☼	05/26/15 15:17	05/28/15 00:49	1
Manganese	258		0.21	0.034	mg/Kg	☼	05/26/15 15:17	05/28/15 00:49	1
Nickel	48.8		5.3	0.24	mg/Kg	☼	05/26/15 15:17	05/28/15 00:49	1
Selenium	0.94	J B	4.2	0.42	mg/Kg	☼	05/26/15 15:17	05/28/15 00:49	1
Silver	ND		0.64	0.21	mg/Kg	☼	05/26/15 15:17	05/28/15 00:49	1
Zinc	95.1	B	2.1	0.16	mg/Kg	☼	05/26/15 15:17	05/28/15 00:49	1

Method: 7471B - Mercury in Solid or Semisolid Waste (Manual Cold Vapor Technique)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.040	F1	0.020	0.0082	mg/Kg	☼	06/02/15 14:00	06/02/15 15:43	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	ND		2.1	0.87	mg/Kg	☼	05/26/15 22:30	05/27/15 04:55	1
Cyanide, Total	ND		1.0	0.50	mg/Kg	☼	06/01/15 05:55	06/01/15 14:53	1
Chromium, trivalent	16.5		1.5	0.63	mg/Kg			06/01/15 13:14	1

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		12DCE	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(64-126)	(72-126)	(71-125)	(60-140)
480-80803-1	KOHORST NORTHEAST PILE	99	98	105	98
480-80803-2	KOHORST SOUTHEAST PILE	100	98	104	98
480-80803-3	KOHORST WEST PILE	98	95	105	97
LCS 480-244676/1-A	Lab Control Sample	97	106	104	98
MB 480-244676/2-A	Method Blank	93	96	103	92

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (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	PHL	TPH
Lab Sample ID	Client Sample ID	(39-146)	(37-120)	(18-120)	(34-132)	(11-120)	(65-153)
480-80803-1	KOHORST NORTHEAST PILE	69	76	66	64	66	97
480-80803-2	KOHORST SOUTHEAST PILE	79	80	65	66	66	100
480-80803-2 MS	KOHORST SOUTHEAST PILE	85	77	67	68	66	87
480-80803-2 MSD	KOHORST SOUTHEAST PILE	79	77	69	68	73	93
480-80803-3	KOHORST WEST PILE	75	81	75	68	78	95
LCS 480-244027/2-A	Lab Control Sample	78	72	62	65	68	87
MB 480-244027/1-A	Method Blank	77	80	67	66	69	101

Surrogate Legend

TBP = 2,4,6-Tribromophenol
FBP = 2-Fluorobiphenyl
2FP = 2-Fluorophenol
NBZ = Nitrobenzene-d5
PHL = Phenol-d5
TPH = p-Terphenyl-d14

Method: 8081B - Organochlorine Pesticides (GC)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
		DCB2	TCX2
Lab Sample ID	Client Sample ID	(32-136)	(30-124)
480-80803-1	KOHORST NORTHEAST PILE	83	65
480-80803-1 MS	KOHORST NORTHEAST PILE	89	69
480-80803-1 MSD	KOHORST NORTHEAST PILE	84	68
480-80803-2	KOHORST SOUTHEAST PILE	91	73
480-80803-3	KOHORST WEST PILE	81	63
LCS 480-244021/2-A	Lab Control Sample	87	69
MB 480-244021/1-A	Method Blank	84	68

Surrogate Legend

DCB = DCB Decachlorobiphenyl

TCX = Tetrachloro-m-xylene

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Matrix: Solid **Prep Type: Total/NA**

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCX2 (60-154)	DCB2 (65-174)
480-80803-1	KOHORST NORTHEAST PILE	100	96
480-80803-2	KOHORST SOUTHEAST PILE	97	105
480-80803-3	KOHORST WEST PILE	105	111
LCS 480-244045/2-A	Lab Control Sample	111	126
MB 480-244045/1-A	Method Blank	96	108

Surrogate Legend

TCX = Tetrachloro-m-xylene
DCB = DCB Decachlorobiphenyl

Method: 8151A - Herbicides (GC)

Matrix: Solid **Prep Type: Total/NA**

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCPA1 (28-129)
480-80803-1	KOHORST NORTHEAST PILE	89
480-80803-1 MS	KOHORST NORTHEAST PILE	86
480-80803-1 MSD	KOHORST NORTHEAST PILE	83
480-80803-2	KOHORST SOUTHEAST PILE	80
480-80803-3	KOHORST WEST PILE	83
LCS 480-244437/2-A	Lab Control Sample	78
MB 480-244437/1-A	Method Blank	76

Surrogate Legend

DCPA = 2,4-Dichlorophenylacetic acid

Client: Praxair, Inc.
Project/Site: Soil Characterization

TestAmerica Job ID: 480-80803-1

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 480-244676/2-A
Matrix: Solid
Analysis Batch: 244798

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 244676

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5.0	0.36	ug/Kg		05/27/15 10:24	05/28/15 00:02	1
1,1-Dichloroethane	ND		5.0	0.61	ug/Kg		05/27/15 10:24	05/28/15 00:02	1
1,1-Dichloroethene	ND		5.0	0.61	ug/Kg		05/27/15 10:24	05/28/15 00:02	1
Trimethylbenzene, 1,2,4-	ND		5.0	0.95	ug/Kg		05/27/15 10:24	05/28/15 00:02	1
1,2-Dichlorobenzene	ND		5.0	0.39	ug/Kg		05/27/15 10:24	05/28/15 00:02	1
1,2-Dichloroethane	ND		5.0	0.25	ug/Kg		05/27/15 10:24	05/28/15 00:02	1
Trimethylbenzene, 1,3,5-	ND		5.0	0.32	ug/Kg		05/27/15 10:24	05/28/15 00:02	1
1,3-Dichlorobenzene	ND		5.0	0.26	ug/Kg		05/27/15 10:24	05/28/15 00:02	1
1,4-Dichlorobenzene	ND		5.0	0.70	ug/Kg		05/27/15 10:24	05/28/15 00:02	1
1,4-Dioxane	ND		99	22	ug/Kg		05/27/15 10:24	05/28/15 00:02	1
Methyl Ethyl Ketone	ND		25	1.8	ug/Kg		05/27/15 10:24	05/28/15 00:02	1
Acetone	ND		25	4.2	ug/Kg		05/27/15 10:24	05/28/15 00:02	1
Benzene	ND		5.0	0.24	ug/Kg		05/27/15 10:24	05/28/15 00:02	1
Carbon tetrachloride	ND		5.0	0.48	ug/Kg		05/27/15 10:24	05/28/15 00:02	1
Chlorobenzene	ND		5.0	0.66	ug/Kg		05/27/15 10:24	05/28/15 00:02	1
Chloroform	ND		5.0	0.31	ug/Kg		05/27/15 10:24	05/28/15 00:02	1
1,2-Dichloroethene, cis-	ND		5.0	0.64	ug/Kg		05/27/15 10:24	05/28/15 00:02	1
Ethylbenzene	ND		5.0	0.34	ug/Kg		05/27/15 10:24	05/28/15 00:02	1
Methyl tert-butyl ether	ND		5.0	0.49	ug/Kg		05/27/15 10:24	05/28/15 00:02	1
Methylene Chloride	ND		5.0	2.3	ug/Kg		05/27/15 10:24	05/28/15 00:02	1
Butylbenzene	ND		5.0	0.43	ug/Kg		05/27/15 10:24	05/28/15 00:02	1
Propylbenzene, n-	ND		5.0	0.40	ug/Kg		05/27/15 10:24	05/28/15 00:02	1
sec-Butylbenzene	ND		5.0	0.43	ug/Kg		05/27/15 10:24	05/28/15 00:02	1
Tetrachloroethene	ND		5.0	0.67	ug/Kg		05/27/15 10:24	05/28/15 00:02	1
Toluene	ND		5.0	0.38	ug/Kg		05/27/15 10:24	05/28/15 00:02	1
1,2-Dichloroethene, trans-	ND		5.0	0.51	ug/Kg		05/27/15 10:24	05/28/15 00:02	1
Trichloroethene	ND		5.0	1.1	ug/Kg		05/27/15 10:24	05/28/15 00:02	1
Vinyl chloride	ND		5.0	0.61	ug/Kg		05/27/15 10:24	05/28/15 00:02	1
Xylene (mixed)	ND		9.9	0.83	ug/Kg		05/27/15 10:24	05/28/15 00:02	1
tert-Butylbenzene	ND		5.0	0.52	ug/Kg		05/27/15 10:24	05/28/15 00:02	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*64 - 126*	*05/27/15 10:24*	*05/28/15 00:02*	*1*
4-Bromofluorobenzene (Surr)	*96*		*72 - 126*	*05/27/15 10:24*	*05/28/15 00:02*	*1*
Toluene-d8 (Surr)	*103*		*71 - 125*	*05/27/15 10:24*	*05/28/15 00:02*	*1*
Dibromofluoromethane (Surr)	*92*		*60 - 140*	*05/27/15 10:24*	*05/28/15 00:02*	*1*

Lab Sample ID: LCS 480-244676/1-A
Matrix: Solid
Analysis Batch: 244798

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 244676

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethane	49.8	45.6		ug/Kg		92	73 - 126
1,1-Dichloroethene	49.8	46.0		ug/Kg		92	59 - 125
Trimethylbenzene, 1,2,4-	49.8	50.5		ug/Kg		101	74 - 120
1,2-Dichlorobenzene	49.8	48.9		ug/Kg		98	75 - 120
1,2-Dichloroethane	49.8	46.7		ug/Kg		94	77 - 122
Benzene	49.8	39.4		ug/Kg		79	79 - 127

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 480-244676/1-A
Matrix: Solid
Analysis Batch: 244798

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 244676

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chlorobenzene	49.8	49.9		ug/Kg		100	76 - 124
1,2-Dichloroethene, cis-	49.8	46.7		ug/Kg		94	81 - 117
Ethylbenzene	49.8	49.1		ug/Kg		99	80 - 120
Methyl tert-butyl ether	49.8	45.4		ug/Kg		91	63 - 125
Tetrachloroethene	49.8	50.0		ug/Kg		100	74 - 122
Toluene	49.8	46.2		ug/Kg		93	74 - 128
1,2-Dichloroethene, trans-	49.8	46.2		ug/Kg		93	78 - 126
Trichloroethene	49.8	45.4		ug/Kg		91	77 - 129

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*64 - 126*
4-Bromofluorobenzene (Surr)	*106*		*72 - 126*
Toluene-d8 (Surr)	*104*		*71 - 125*
Dibromofluoromethane (Surr)	*98*		*60 - 140*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 480-244027/1-A
Matrix: Solid
Analysis Batch: 244552

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 244027

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		170	25	ug/Kg		05/22/15 08:07	05/26/15 23:34	1
Acenaphthylene	ND		170	22	ug/Kg		05/22/15 08:07	05/26/15 23:34	1
Anthracene	ND		170	42	ug/Kg		05/22/15 08:07	05/26/15 23:34	1
Benzo(a)anthracene	ND		170	17	ug/Kg		05/22/15 08:07	05/26/15 23:34	1
Benzo(a)pyrene	ND		170	25	ug/Kg		05/22/15 08:07	05/26/15 23:34	1
Benzo(b)fluoranthene	ND		170	27	ug/Kg		05/22/15 08:07	05/26/15 23:34	1
Benzo(g,h,i)perylene	ND		170	18	ug/Kg		05/22/15 08:07	05/26/15 23:34	1
Benzo(k)fluoranthene	ND		170	22	ug/Kg		05/22/15 08:07	05/26/15 23:34	1
Chrysene	ND		170	38	ug/Kg		05/22/15 08:07	05/26/15 23:34	1
Dibenz(a,h)anthracene	ND		170	30	ug/Kg		05/22/15 08:07	05/26/15 23:34	1
Dibenzofuran	ND		170	20	ug/Kg		05/22/15 08:07	05/26/15 23:34	1
Fluoranthene	ND		170	18	ug/Kg		05/22/15 08:07	05/26/15 23:34	1
Fluorene	ND		170	20	ug/Kg		05/22/15 08:07	05/26/15 23:34	1
Hexachlorobenzene	ND		170	23	ug/Kg		05/22/15 08:07	05/26/15 23:34	1
Indeno(1,2,3-cd)pyrene	ND		170	21	ug/Kg		05/22/15 08:07	05/26/15 23:34	1
m-Cresol	ND		330	26	ug/Kg		05/22/15 08:07	05/26/15 23:34	1
Naphthalene	ND		170	22	ug/Kg		05/22/15 08:07	05/26/15 23:34	1
o-Cresol	ND		170	20	ug/Kg		05/22/15 08:07	05/26/15 23:34	1
p-Cresol	ND		330	20	ug/Kg		05/22/15 08:07	05/26/15 23:34	1
Pentachlorophenol	ND		330	170	ug/Kg		05/22/15 08:07	05/26/15 23:34	1
Phenanthrene	ND		170	25	ug/Kg		05/22/15 08:07	05/26/15 23:34	1
Phenol	ND		170	26	ug/Kg		05/22/15 08:07	05/26/15 23:34	1
Pyrene	ND		170	20	ug/Kg		05/22/15 08:07	05/26/15 23:34	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 480-244027/1-A
Matrix: Solid
Analysis Batch: 244552

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 244027

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	*77*		*39 - 146*	*05/22/15 08:07*	*05/26/15 23:34*	*1*
2-Fluorobiphenyl	*80*		*37 - 120*	*05/22/15 08:07*	*05/26/15 23:34*	*1*
2-Fluorophenol	*67*		*18 - 120*	*05/22/15 08:07*	*05/26/15 23:34*	*1*
Nitrobenzene-d5	*66*		*34 - 132*	*05/22/15 08:07*	*05/26/15 23:34*	*1*
Phenol-d5	*69*		*11 - 120*	*05/22/15 08:07*	*05/26/15 23:34*	*1*
p-Terphenyl-d14	*101*		*65 - 153*	*05/22/15 08:07*	*05/26/15 23:34*	*1*

Lab Sample ID: LCS 480-244027/2-A
Matrix: Solid
Analysis Batch: 244552

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 244027

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acenaphthene	1660	1260		ug/Kg		76	53 - 120
Fluorene	1660	1270		ug/Kg		76	63 - 126
Pentachlorophenol	3320	2390		ug/Kg		72	33 - 136
Phenol	1660	1080		ug/Kg		65	36 - 120
Pyrene	1660	1470		ug/Kg		88	51 - 133

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2,4,6-Tribromophenol	*78*		*39 - 146*
2-Fluorobiphenyl	*72*		*37 - 120*
2-Fluorophenol	*62*		*18 - 120*
Nitrobenzene-d5	*65*		*34 - 132*
Phenol-d5	*68*		*11 - 120*
p-Terphenyl-d14	*87*		*65 - 153*

Lab Sample ID: 480-80803-2 MS
Matrix: Solid
Analysis Batch: 244552

Client Sample ID: KOHORST SOUTHEAST PILE
Prep Type: Total/NA
Prep Batch: 244027

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Acenaphthene	ND		1800	1400		ug/Kg	☼	78	53 - 120
Fluorene	ND		1800	1420		ug/Kg	☼	79	63 - 126
Pentachlorophenol	ND		3600	2330		ug/Kg	☼	65	33 - 136
Phenol	ND		1800	1180		ug/Kg	☼	65	36 - 120
Pyrene	ND		1800	1690		ug/Kg	☼	94	51 - 133

Surrogate	MS %Recovery	MS Qualifier	Limits
2,4,6-Tribromophenol	*85*		*39 - 146*
2-Fluorobiphenyl	*77*		*37 - 120*
2-Fluorophenol	*67*		*18 - 120*
Nitrobenzene-d5	*68*		*34 - 132*
Phenol-d5	*66*		*11 - 120*
p-Terphenyl-d14	*87*		*65 - 153*

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 480-80803-2 MSD
Matrix: Solid
Analysis Batch: 244552

Client Sample ID: KOHORST SOUTHEAST PILE
Prep Type: Total/NA
Prep Batch: 244027

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acenaphthene	ND		1800	1410		ug/Kg	☼	79	53 - 120	1	35
Fluorene	ND		1800	1390		ug/Kg	☼	78	63 - 126	2	15
Pentachlorophenol	ND		3590	2470		ug/Kg	☼	69	33 - 136	6	35
Phenol	ND		1800	1220		ug/Kg	☼	68	36 - 120	4	35
Pyrene	ND		1800	1780		ug/Kg	☼	99	51 - 133	5	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
2,4,6-Tribromophenol	*79*		*39 - 146*
2-Fluorobiphenyl	*77*		*37 - 120*
2-Fluorophenol	*69*		*18 - 120*
Nitrobenzene-d5	*68*		*34 - 132*
Phenol-d5	*73*		*11 - 120*
p-Terphenyl-d14	*93*		*65 - 153*

Method: 8081B - Organochlorine Pesticides (GC)

Lab Sample ID: MB 480-244021/1-A
Matrix: Solid
Analysis Batch: 245148

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 244021

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	0.534	J	1.7	0.32	ug/Kg		05/22/15 07:52	05/29/15 10:57	1
4,4'-DDE	ND		1.7	0.35	ug/Kg		05/22/15 07:52	05/29/15 10:57	1
4,4'-DDT	0.643	J	1.7	0.39	ug/Kg		05/22/15 07:52	05/29/15 10:57	1
Aldrin	ND		1.7	0.41	ug/Kg		05/22/15 07:52	05/29/15 10:57	1
alpha-BHC	0.622	J	1.7	0.30	ug/Kg		05/22/15 07:52	05/29/15 10:57	1
beta-BHC	ND		1.7	0.30	ug/Kg		05/22/15 07:52	05/29/15 10:57	1
Chlordane (.alpha.)	ND		1.7	0.83	ug/Kg		05/22/15 07:52	05/29/15 10:57	1
delta-BHC	0.433	J	1.7	0.31	ug/Kg		05/22/15 07:52	05/29/15 10:57	1
Dieldrin	ND		1.7	0.40	ug/Kg		05/22/15 07:52	05/29/15 10:57	1
Endosulfan I	ND		1.7	0.32	ug/Kg		05/22/15 07:52	05/29/15 10:57	1
Endosulfan II	ND		1.7	0.30	ug/Kg		05/22/15 07:52	05/29/15 10:57	1
Endosulfan sulfate	ND		1.7	0.31	ug/Kg		05/22/15 07:52	05/29/15 10:57	1
Endrin	ND		1.7	0.33	ug/Kg		05/22/15 07:52	05/29/15 10:57	1
Heptachlor	ND		1.7	0.36	ug/Kg		05/22/15 07:52	05/29/15 10:57	1
Lindane	ND		1.7	0.31	ug/Kg		05/22/15 07:52	05/29/15 10:57	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*84*		*32 - 136*	*05/22/15 07:52*	*05/29/15 10:57*	*1*
Tetrachloro-m-xylene	*68*		*30 - 124*	*05/22/15 07:52*	*05/29/15 10:57*	*1*

Lab Sample ID: LCS 480-244021/2-A
Matrix: Solid
Analysis Batch: 245148

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 244021

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
4,4'-DDD	16.6	14.6		ug/Kg		88	52 - 138

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: LCS 480-244021/2-A
Matrix: Solid
Analysis Batch: 245148

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 244021

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
4,4'-DDE	16.6	12.4		ug/Kg		75	52 - 131
4,4'-DDT	16.6	14.5		ug/Kg		88	50 - 131
Aldrin	16.6	11.2		ug/Kg		67	35 - 120
alpha-BHC	16.6	12.1		ug/Kg		73	49 - 120
beta-BHC	16.6	12.3		ug/Kg		74	52 - 127
Chlordane (.alpha.)	16.6	12.6		ug/Kg		76	40 - 133
delta-BHC	16.6	12.6		ug/Kg		76	45 - 123
Dieldrin	16.6	13.7		ug/Kg		83	50 - 131
Endosulfan I	16.6	13.2		ug/Kg		80	43 - 121
Endosulfan II	16.6	14.5		ug/Kg		88	48 - 134
Endosulfan sulfate	16.6	14.7		ug/Kg		89	46 - 144
Endrin	16.6	14.6		ug/Kg		88	46 - 134
Heptachlor	16.6	13.8		ug/Kg		83	51 - 121
Lindane	16.6	12.5		ug/Kg		75	50 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*87*		*32 - 136*
Tetrachloro-m-xylene	*69*		*30 - 124*

Lab Sample ID: 480-80803-1 MS
Matrix: Solid
Analysis Batch: 245148

Client Sample ID: KOHORST NORTHEAST PILE
Prep Type: Total/NA
Prep Batch: 244021

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
4,4'-DDD	ND		18.0	15.0		ug/Kg	☼	83	26 - 162
4,4'-DDE	0.53	J	18.0	14.2		ug/Kg	☼	76	34 - 138
4,4'-DDT	ND		18.0	15.3		ug/Kg	☼	85	43 - 131
Aldrin	ND		18.0	12.8		ug/Kg	☼	71	37 - 125
alpha-BHC	0.71	J B	18.0	13.0		ug/Kg	☼	68	39 - 117
beta-BHC	ND		18.0	13.3		ug/Kg	☼	74	36 - 139
Chlordane (.alpha.)	ND		18.0	13.5		ug/Kg	☼	75	29 - 141
delta-BHC	ND		18.0	13.9		ug/Kg	☼	77	23 - 132
Dieldrin	ND		18.0	14.7		ug/Kg	☼	81	38 - 135
Endosulfan I	ND		18.0	13.8		ug/Kg	☼	77	39 - 128
Endosulfan II	ND		18.0	15.3		ug/Kg	☼	85	24 - 134
Endosulfan sulfate	ND		18.0	15.0		ug/Kg	☼	83	19 - 137
Endrin	ND		18.0	15.7		ug/Kg	☼	87	41 - 147
Heptachlor	ND		18.0	14.4		ug/Kg	☼	80	42 - 128
Lindane	0.47	J	18.0	13.4		ug/Kg	☼	72	50 - 120

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*89*		*32 - 136*
Tetrachloro-m-xylene	*69*		*30 - 124*

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: 480-80803-1 MSD
Matrix: Solid
Analysis Batch: 245148

Client Sample ID: KOHORST NORTHEAST PILE
Prep Type: Total/NA
Prep Batch: 244021

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
4,4'-DDD	ND		17.8	14.3		ug/Kg	☼	80	26 - 162	5	21
4,4'-DDE	0.53	J	17.8	13.7		ug/Kg	☼	74	34 - 138	4	18
4,4'-DDT	ND		17.8	14.5		ug/Kg	☼	82	43 - 131	5	25
Aldrin	ND		17.8	12.2		ug/Kg	☼	69	37 - 125	5	12
alpha-BHC	0.71	J B	17.8	12.9		ug/Kg	☼	69	39 - 117	1	15
beta-BHC	ND		17.8	13.5		ug/Kg	☼	76	36 - 139	1	19
Chlordane (.alpha.)	ND		17.8	13.1		ug/Kg	☼	74	29 - 141	3	23
delta-BHC	ND		17.8	13.3		ug/Kg	☼	75	23 - 132	4	14
Dieldrin	ND		17.8	13.9		ug/Kg	☼	78	38 - 135	6	12
Endosulfan I	ND		17.8	13.2		ug/Kg	☼	74	39 - 128	4	18
Endosulfan II	ND		17.8	14.6		ug/Kg	☼	82	24 - 134	5	26
Endosulfan sulfate	ND		17.8	14.2		ug/Kg	☼	80	19 - 137	6	35
Endrin	ND		17.8	14.9		ug/Kg	☼	84	41 - 147	5	20
Heptachlor	ND		17.8	13.8		ug/Kg	☼	78	42 - 128	4	22
Lindane	0.47	J	17.8	13.4		ug/Kg	☼	73	50 - 120	0	12

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
DCB Decachlorobiphenyl	*84*		*32 - 136*
Tetrachloro-m-xylene	*68*		*30 - 124*

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Lab Sample ID: MB 480-244045/1-A
Matrix: Solid
Analysis Batch: 244424

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 244045

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		0.25	0.049	mg/Kg		05/22/15 08:31	05/26/15 10:00	1
PCB-1221	ND		0.25	0.049	mg/Kg		05/22/15 08:31	05/26/15 10:00	1
PCB-1232	ND		0.25	0.049	mg/Kg		05/22/15 08:31	05/26/15 10:00	1
PCB-1242	ND		0.25	0.049	mg/Kg		05/22/15 08:31	05/26/15 10:00	1
PCB-1248	ND		0.25	0.049	mg/Kg		05/22/15 08:31	05/26/15 10:00	1
PCB-1254	ND		0.25	0.12	mg/Kg		05/22/15 08:31	05/26/15 10:00	1
PCB-1260	ND		0.25	0.12	mg/Kg		05/22/15 08:31	05/26/15 10:00	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*96*		*60 - 154*	*05/22/15 08:31*	*05/26/15 10:00*	*1*
DCB Decachlorobiphenyl	*108*		*65 - 174*	*05/22/15 08:31*	*05/26/15 10:00*	*1*

Lab Sample ID: LCS 480-244045/2-A
Matrix: Solid
Analysis Batch: 244424

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 244045

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
PCB-1016	2.49	3.22		mg/Kg		130	51 - 185
PCB-1260	2.49	3.29		mg/Kg		132	61 - 184

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography (Continued)

Lab Sample ID: LCS 480-244045/2-A **Client Sample ID: Lab Control Sample**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 244424 **Prep Batch: 244045**

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tetrachloro-m-xylene	*111*		*60 - 154*
DCB Decachlorobiphenyl	*126*		*65 - 174*

Method: 8151A - Herbicides (GC)

Lab Sample ID: MB 480-244437/1-A **Client Sample ID: Method Blank**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 245123 **Prep Batch: 244437**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-TP (Silvex)	ND		16	5.9	ug/Kg		05/26/15 09:54	05/29/15 11:17	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*76*		*28 - 129*	*05/26/15 09:54*	*05/29/15 11:17*	*1*

Lab Sample ID: LCS 480-244437/2-A **Client Sample ID: Lab Control Sample**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 245123 **Prep Batch: 244437**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,4,5-TP (Silvex)	66.7	55.6		ug/Kg		83	26 - 168

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*78*		*28 - 129*

Lab Sample ID: 480-80803-1 MS **Client Sample ID: KOHORST NORTHEAST PILE**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 245123 **Prep Batch: 244437**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2,4,5-TP (Silvex)	ND		71.9	54.0		ug/Kg	☼	75	22 - 140

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*86*		*28 - 129*

Lab Sample ID: 480-80803-1 MSD **Client Sample ID: KOHORST NORTHEAST PILE**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 245123 **Prep Batch: 244437**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,4,5-TP (Silvex)	ND		71.4	50.3		ug/Kg	☼	70	22 - 140	7	50

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*83*		*28 - 129*

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 480-244472/1-A
Matrix: Solid
Analysis Batch: 244845

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 244472

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		2.1	0.41	mg/Kg		05/26/15 15:17	05/28/15 00:39	1
Barium	ND		0.51	0.11	mg/Kg		05/26/15 15:17	05/28/15 00:39	1
Beryllium	ND		0.21	0.029	mg/Kg		05/26/15 15:17	05/28/15 00:39	1
Cadmium	ND		0.21	0.031	mg/Kg		05/26/15 15:17	05/28/15 00:39	1
Copper	ND		1.0	0.22	mg/Kg		05/26/15 15:17	05/28/15 00:39	1
Lead	ND		1.0	0.25	mg/Kg		05/26/15 15:17	05/28/15 00:39	1
Manganese	ND		0.21	0.033	mg/Kg		05/26/15 15:17	05/28/15 00:39	1
Nickel	ND		5.1	0.24	mg/Kg		05/26/15 15:17	05/28/15 00:39	1
Selenium	0.543	J	4.1	0.41	mg/Kg		05/26/15 15:17	05/28/15 00:39	1
Silver	ND		0.62	0.21	mg/Kg		05/26/15 15:17	05/28/15 00:39	1
Zinc	0.518	J	2.1	0.16	mg/Kg		05/26/15 15:17	05/28/15 00:39	1

Lab Sample ID: LCSSRM 480-244472/2-A
Matrix: Solid
Analysis Batch: 244845

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 244472

Analyte	Spike Added	LCSSRM Result	LCSSRM Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	122	98.61		mg/Kg		80.8	70.0 - 145.1
Barium	167	137.8		mg/Kg		82.5	73.1 - 126.9
Beryllium	54.3	46.29		mg/Kg		85.2	73.1 - 127.1
Cadmium	88.0	69.08		mg/Kg		78.5	73.3 - 127.3
Copper	78.0	65.79		mg/Kg		84.3	73.7 - 132.1
Lead	94.5	87.66		mg/Kg		92.8	70.5 - 129.1
Nickel	56.3	55.25		mg/Kg		98.1	69.8 - 130.0
Selenium	157	123.1		mg/Kg		78.4	67.5 - 131.8
Silver	34.2	29.90		mg/Kg		87.4	65.5 - 134.2
Zinc	207	172.6		mg/Kg		83.4	70.0 - 130.4

Lab Sample ID: LCSSRM 480-244472/2-A
Matrix: Solid
Analysis Batch: 245058

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 244472

Analyte	Spike Added	LCSSRM Result	LCSSRM Qualifier	Unit	D	%Rec	%Rec. Limits
Manganese	401	336.3		mg/Kg		83.9	76.1 - 123.9

Method: 7471B - Mercury in Solid or Semisolid Waste (Manual Cold Vapor Technique)

Lab Sample ID: MB 480-245688/1-A
Matrix: Solid
Analysis Batch: 245852

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 245688

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.020	0.0083	mg/Kg		06/02/15 14:00	06/02/15 15:13	1

Lab Sample ID: LCDSRM 480-245688/3-A
Matrix: Solid
Analysis Batch: 245852

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 245688

Analyte			Spike Added	LCDSRM Result	LCDSRM Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury			3.98	3.46		mg/Kg		86.8	51.0 - 149.0	3	20

Lab Sample ID: LCSSRM 480-245688/2-A
Matrix: Solid
Analysis Batch: 245852

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 245688

Analyte			Spike Added	LCSSRM Result	LCSSRM Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury			3.98	3.35		mg/Kg		84.3	51.0 - 149.0

Lab Sample ID: 480-80803-3 MS
Matrix: Solid
Analysis Batch: 245852

Client Sample ID: KOHORST WEST PILE
Prep Type: Total/NA
Prep Batch: 245688

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.040	F1	0.345	0.312	F1	mg/Kg	☼	79	80 - 120

Lab Sample ID: 480-80803-3 MSD
Matrix: Solid
Analysis Batch: 245852

Client Sample ID: KOHORST WEST PILE
Prep Type: Total/NA
Prep Batch: 245688

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	0.040	F1	0.342	0.314		mg/Kg	☼	80	80 - 120	1	20

Method: 7196A - Chromium, Hexavalent

Lab Sample ID: MB 460-300951/1-A
Matrix: Solid
Analysis Batch: 300953

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 300951

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	ND		2.0	0.81	mg/Kg		05/26/15 22:30	05/27/15 03:30	1

Lab Sample ID: LCSI 460-300951/3-A
Matrix: Solid
Analysis Batch: 300953

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 300951

Analyte			Spike Added	LCSI Result	LCSI Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium, hexavalent			747	669.9		mg/Kg		90	80 - 120

Method: 7196A - Chromium, Hexavalent (Continued)

Lab Sample ID: LCSSRM 460-300951/2-A
Matrix: Solid
Analysis Batch: 300953

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 300951

Analyte	Spike Added	LCSSRM Result	LCSSRM Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium, hexavalent	14.8	15.30		mg/Kg		103.6	88.6 - 110.0

Method: 9012B - Cyanide, Total andor Amenable

Lab Sample ID: MB 480-245364/1-A
Matrix: Solid
Analysis Batch: 245536

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 245364

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		0.99	0.48	mg/Kg		06/01/15 05:55	06/01/15 14:30	1

Lab Sample ID: LCS 480-245364/2-A ^5
Matrix: Solid
Analysis Batch: 245536

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 245364

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	101	113.8		mg/Kg		113	29 - 122

Lab Sample ID: LCSD 480-245364/3-A ^5
Matrix: Solid
Analysis Batch: 245536

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 245364

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	101	108.5		mg/Kg		107	29 - 122	5	15

Lab Sample ID: 480-80803-3 DU
Matrix: Solid
Analysis Batch: 245536

Client Sample ID: KOHORST WEST PILE
Prep Type: Total/NA
Prep Batch: 245364

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Cyanide, Total	ND		ND		mg/Kg	☼	NC	15

GC/MS VOA

Prep Batch: 244676

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-80803-1	KOHORST NORTHEAST PILE	Total/NA	Solid	5035A	
480-80803-2	KOHORST SOUTHEAST PILE	Total/NA	Solid	5035A	
480-80803-3	KOHORST WEST PILE	Total/NA	Solid	5035A	
LCS 480-244676/1-A	Lab Control Sample	Total/NA	Solid	5035A	
MB 480-244676/2-A	Method Blank	Total/NA	Solid	5035A	

Analysis Batch: 244798

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-80803-1	KOHORST NORTHEAST PILE	Total/NA	Solid	8260C	244676
480-80803-2	KOHORST SOUTHEAST PILE	Total/NA	Solid	8260C	244676
480-80803-3	KOHORST WEST PILE	Total/NA	Solid	8260C	244676
LCS 480-244676/1-A	Lab Control Sample	Total/NA	Solid	8260C	244676
MB 480-244676/2-A	Method Blank	Total/NA	Solid	8260C	244676

GC/MS Semi VOA

Prep Batch: 244027

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-80803-1	KOHORST NORTHEAST PILE	Total/NA	Solid	3550C	
480-80803-2	KOHORST SOUTHEAST PILE	Total/NA	Solid	3550C	
480-80803-2 MS	KOHORST SOUTHEAST PILE	Total/NA	Solid	3550C	
480-80803-2 MSD	KOHORST SOUTHEAST PILE	Total/NA	Solid	3550C	
480-80803-3	KOHORST WEST PILE	Total/NA	Solid	3550C	
LCS 480-244027/2-A	Lab Control Sample	Total/NA	Solid	3550C	
MB 480-244027/1-A	Method Blank	Total/NA	Solid	3550C	

Analysis Batch: 244552

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-80803-1	KOHORST NORTHEAST PILE	Total/NA	Solid	8270D	244027
480-80803-2	KOHORST SOUTHEAST PILE	Total/NA	Solid	8270D	244027
480-80803-2 MS	KOHORST SOUTHEAST PILE	Total/NA	Solid	8270D	244027
480-80803-2 MSD	KOHORST SOUTHEAST PILE	Total/NA	Solid	8270D	244027
480-80803-3	KOHORST WEST PILE	Total/NA	Solid	8270D	244027
LCS 480-244027/2-A	Lab Control Sample	Total/NA	Solid	8270D	244027
MB 480-244027/1-A	Method Blank	Total/NA	Solid	8270D	244027

GC Semi VOA

Prep Batch: 244021

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-80803-1	KOHORST NORTHEAST PILE	Total/NA	Solid	3550C	
480-80803-1 MS	KOHORST NORTHEAST PILE	Total/NA	Solid	3550C	
480-80803-1 MSD	KOHORST NORTHEAST PILE	Total/NA	Solid	3550C	
480-80803-2	KOHORST SOUTHEAST PILE	Total/NA	Solid	3550C	
480-80803-3	KOHORST WEST PILE	Total/NA	Solid	3550C	
LCS 480-244021/2-A	Lab Control Sample	Total/NA	Solid	3550C	
MB 480-244021/1-A	Method Blank	Total/NA	Solid	3550C	

GC Semi VOA (Continued)

Prep Batch: 244045

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-80803-1	KOHORST NORTHEAST PILE	Total/NA	Solid	3550C	
480-80803-2	KOHORST SOUTHEAST PILE	Total/NA	Solid	3550C	
480-80803-3	KOHORST WEST PILE	Total/NA	Solid	3550C	
LCS 480-244045/2-A	Lab Control Sample	Total/NA	Solid	3550C	
MB 480-244045/1-A	Method Blank	Total/NA	Solid	3550C	

Analysis Batch: 244424

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-80803-1	KOHORST NORTHEAST PILE	Total/NA	Solid	8082A	244045
480-80803-2	KOHORST SOUTHEAST PILE	Total/NA	Solid	8082A	244045
480-80803-3	KOHORST WEST PILE	Total/NA	Solid	8082A	244045
LCS 480-244045/2-A	Lab Control Sample	Total/NA	Solid	8082A	244045
MB 480-244045/1-A	Method Blank	Total/NA	Solid	8082A	244045

Prep Batch: 244437

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-80803-1	KOHORST NORTHEAST PILE	Total/NA	Solid	8151A	
480-80803-1 MS	KOHORST NORTHEAST PILE	Total/NA	Solid	8151A	
480-80803-1 MSD	KOHORST NORTHEAST PILE	Total/NA	Solid	8151A	
480-80803-2	KOHORST SOUTHEAST PILE	Total/NA	Solid	8151A	
480-80803-3	KOHORST WEST PILE	Total/NA	Solid	8151A	
LCS 480-244437/2-A	Lab Control Sample	Total/NA	Solid	8151A	
MB 480-244437/1-A	Method Blank	Total/NA	Solid	8151A	

Analysis Batch: 245123

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-80803-1	KOHORST NORTHEAST PILE	Total/NA	Solid	8151A	244437
480-80803-1 MS	KOHORST NORTHEAST PILE	Total/NA	Solid	8151A	244437
480-80803-1 MSD	KOHORST NORTHEAST PILE	Total/NA	Solid	8151A	244437
480-80803-2	KOHORST SOUTHEAST PILE	Total/NA	Solid	8151A	244437
480-80803-3	KOHORST WEST PILE	Total/NA	Solid	8151A	244437
LCS 480-244437/2-A	Lab Control Sample	Total/NA	Solid	8151A	244437
MB 480-244437/1-A	Method Blank	Total/NA	Solid	8151A	244437

Analysis Batch: 245148

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-80803-1	KOHORST NORTHEAST PILE	Total/NA	Solid	8081B	244021
480-80803-1 MS	KOHORST NORTHEAST PILE	Total/NA	Solid	8081B	244021
480-80803-1 MSD	KOHORST NORTHEAST PILE	Total/NA	Solid	8081B	244021
480-80803-2	KOHORST SOUTHEAST PILE	Total/NA	Solid	8081B	244021
480-80803-3	KOHORST WEST PILE	Total/NA	Solid	8081B	244021
LCS 480-244021/2-A	Lab Control Sample	Total/NA	Solid	8081B	244021
MB 480-244021/1-A	Method Blank	Total/NA	Solid	8081B	244021

Metals

Prep Batch: 244472

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-80803-1	KOHORST NORTHEAST PILE	Total/NA	Solid	3050B	
480-80803-2	KOHORST SOUTHEAST PILE	Total/NA	Solid	3050B	

Metals (Continued)

Prep Batch: 244472 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-80803-3	KOHORST WEST PILE	Total/NA	Solid	3050B	
LCSSRM 480-244472/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 480-244472/1-A	Method Blank	Total/NA	Solid	3050B	

Analysis Batch: 244845

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-80803-1	KOHORST NORTHEAST PILE	Total/NA	Solid	6010C	244472
480-80803-3	KOHORST WEST PILE	Total/NA	Solid	6010C	244472
LCSSRM 480-244472/2-A	Lab Control Sample	Total/NA	Solid	6010C	244472
MB 480-244472/1-A	Method Blank	Total/NA	Solid	6010C	244472

Analysis Batch: 245058

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-80803-2	KOHORST SOUTHEAST PILE	Total/NA	Solid	6010C	244472
LCSSRM 480-244472/2-A	Lab Control Sample	Total/NA	Solid	6010C	244472

Prep Batch: 245688

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-80803-1	KOHORST NORTHEAST PILE	Total/NA	Solid	7471B	
480-80803-2	KOHORST SOUTHEAST PILE	Total/NA	Solid	7471B	
480-80803-3	KOHORST WEST PILE	Total/NA	Solid	7471B	
480-80803-3 MS	KOHORST WEST PILE	Total/NA	Solid	7471B	
480-80803-3 MSD	KOHORST WEST PILE	Total/NA	Solid	7471B	
LCDSRM 480-245688/3-A	Lab Control Sample Dup	Total/NA	Solid	7471B	
LCSSRM 480-245688/2-A	Lab Control Sample	Total/NA	Solid	7471B	
MB 480-245688/1-A	Method Blank	Total/NA	Solid	7471B	

Analysis Batch: 245852

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-80803-1	KOHORST NORTHEAST PILE	Total/NA	Solid	7471B	245688
480-80803-2	KOHORST SOUTHEAST PILE	Total/NA	Solid	7471B	245688
480-80803-3	KOHORST WEST PILE	Total/NA	Solid	7471B	245688
480-80803-3 MS	KOHORST WEST PILE	Total/NA	Solid	7471B	245688
480-80803-3 MSD	KOHORST WEST PILE	Total/NA	Solid	7471B	245688
LCDSRM 480-245688/3-A	Lab Control Sample Dup	Total/NA	Solid	7471B	245688
LCSSRM 480-245688/2-A	Lab Control Sample	Total/NA	Solid	7471B	245688
MB 480-245688/1-A	Method Blank	Total/NA	Solid	7471B	245688

General Chemistry

Analysis Batch: 244057

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-80803-1	KOHORST NORTHEAST PILE	Total/NA	Solid	Moisture	
480-80803-2	KOHORST SOUTHEAST PILE	Total/NA	Solid	Moisture	
480-80803-3	KOHORST WEST PILE	Total/NA	Solid	Moisture	

Prep Batch: 245364

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-80803-1	KOHORST NORTHEAST PILE	Total/NA	Solid	9012B	
480-80803-2	KOHORST SOUTHEAST PILE	Total/NA	Solid	9012B	

General Chemistry (Continued)

Prep Batch: 245364 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-80803-3	KOHORST WEST PILE	Total/NA	Solid	9012B	
480-80803-3 DU	KOHORST WEST PILE	Total/NA	Solid	9012B	
LCS 480-245364/2-A ^5	Lab Control Sample	Total/NA	Solid	9012B	
LCSD 480-245364/3-A ^5	Lab Control Sample Dup	Total/NA	Solid	9012B	
MB 480-245364/1-A	Method Blank	Total/NA	Solid	9012B	

Analysis Batch: 245481

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-80803-1	KOHORST NORTHEAST PILE	Total/NA	Solid	SM 3500 CR D	
480-80803-2	KOHORST SOUTHEAST PILE	Total/NA	Solid	SM 3500 CR D	
480-80803-3	KOHORST WEST PILE	Total/NA	Solid	SM 3500 CR D	

Analysis Batch: 245536

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-80803-1	KOHORST NORTHEAST PILE	Total/NA	Solid	9012B	245364
480-80803-2	KOHORST SOUTHEAST PILE	Total/NA	Solid	9012B	245364
480-80803-3	KOHORST WEST PILE	Total/NA	Solid	9012B	245364
480-80803-3 DU	KOHORST WEST PILE	Total/NA	Solid	9012B	245364
LCS 480-245364/2-A ^5	Lab Control Sample	Total/NA	Solid	9012B	245364
LCSD 480-245364/3-A ^5	Lab Control Sample Dup	Total/NA	Solid	9012B	245364
MB 480-245364/1-A	Method Blank	Total/NA	Solid	9012B	245364

Prep Batch: 300951

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-80803-1	KOHORST NORTHEAST PILE	Total/NA	Solid	3060A	
480-80803-2	KOHORST SOUTHEAST PILE	Total/NA	Solid	3060A	
480-80803-3	KOHORST WEST PILE	Total/NA	Solid	3060A	
LCSI 460-300951/3-A	Lab Control Sample	Total/NA	Solid	3060A	
LCSSRM 460-300951/2-A	Lab Control Sample	Total/NA	Solid	3060A	
MB 460-300951/1-A	Method Blank	Total/NA	Solid	3060A	

Analysis Batch: 300953

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-80803-1	KOHORST NORTHEAST PILE	Total/NA	Solid	7196A	300951
480-80803-2	KOHORST SOUTHEAST PILE	Total/NA	Solid	7196A	300951
480-80803-3	KOHORST WEST PILE	Total/NA	Solid	7196A	300951
LCSI 460-300951/3-A	Lab Control Sample	Total/NA	Solid	7196A	300951
LCSSRM 460-300951/2-A	Lab Control Sample	Total/NA	Solid	7196A	300951
MB 460-300951/1-A	Method Blank	Total/NA	Solid	7196A	300951

Client Sample ID: KOHORST NORTHEAST PILE
Lab Sample ID: 480-80803-1

Date Collected: 05/21/15 11:00
Matrix: Solid
Date Received: 05/21/15 14:10
Percent Solids: 92.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035A			244676	05/27/15 10:24	RAS	TAL BUF
Total/NA	Analysis	8260C		1	244798	05/28/15 01:34	RAS	TAL BUF
Total/NA	Prep	3550C			244027	05/22/15 08:07	RMZ	TAL BUF
Total/NA	Analysis	8270D		1	244552	05/27/15 01:44	DMR	TAL BUF
Total/NA	Prep	3550C			244021	05/22/15 07:52	CAM	TAL BUF
Total/NA	Analysis	8081B		1	245148	05/29/15 12:11	MAN	TAL BUF
Total/NA	Prep	3550C			244045	05/22/15 08:31	TRG	TAL BUF
Total/NA	Analysis	8082A		1	244424	05/26/15 12:24	KS	TAL BUF
Total/NA	Prep	8151A			244437	05/26/15 09:54	CAM	TAL BUF
Total/NA	Analysis	8151A		1	245123	05/29/15 23:09	JRL	TAL BUF
Total/NA	Prep	3050B			244472	05/26/15 15:17	TAS	TAL BUF
Total/NA	Analysis	6010C		1	244845	05/28/15 00:44	TRB	TAL BUF
Total/NA	Prep	7471B			245688	06/02/15 14:00	LRK	TAL BUF
Total/NA	Analysis	7471B		1	245852	06/02/15 15:40	LRK	TAL BUF
Total/NA	Prep	3060A			300951	05/26/15 22:30	PXP	TAL EDI
Total/NA	Analysis	7196A		1	300953	05/27/15 04:51	PXP	TAL EDI
Total/NA	Prep	9012B			245364	06/01/15 05:55	MGH	TAL BUF
Total/NA	Analysis	9012B		1	245536	06/01/15 14:50	KMF	TAL BUF
Total/NA	Analysis	Moisture		1	244057	05/22/15 08:40	CSW	TAL BUF
Total/NA	Analysis	SM 3500 CR D		1	245481	06/01/15 13:14	TRB	TAL BUF

Client Sample ID: KOHORST SOUTHEAST PILE
Lab Sample ID: 480-80803-2

Date Collected: 05/21/15 11:20
Matrix: Solid
Date Received: 05/21/15 14:10
Percent Solids: 91.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035A			244676	05/27/15 10:24	RAS	TAL BUF
Total/NA	Analysis	8260C		1	244798	05/28/15 01:59	RAS	TAL BUF
Total/NA	Prep	3550C			244027	05/22/15 08:07	RMZ	TAL BUF
Total/NA	Analysis	8270D		1	244552	05/27/15 01:18	DMR	TAL BUF
Total/NA	Prep	3550C			244021	05/22/15 07:52	CAM	TAL BUF
Total/NA	Analysis	8081B		1	245148	05/29/15 12:29	MAN	TAL BUF
Total/NA	Prep	3550C			244045	05/22/15 08:31	TRG	TAL BUF
Total/NA	Analysis	8082A		1	244424	05/26/15 13:11	KS	TAL BUF
Total/NA	Prep	8151A			244437	05/26/15 09:54	CAM	TAL BUF
Total/NA	Analysis	8151A		1	245123	05/29/15 23:38	JRL	TAL BUF
Total/NA	Prep	3050B			244472	05/26/15 15:17	TAS	TAL BUF
Total/NA	Analysis	6010C		1	245058	05/28/15 12:20	TRB	TAL BUF
Total/NA	Prep	7471B			245688	06/02/15 14:00	LRK	TAL BUF
Total/NA	Analysis	7471B		1	245852	06/02/15 15:42	LRK	TAL BUF
Total/NA	Prep	3060A			300951	05/26/15 22:30	PXP	TAL EDI
Total/NA	Analysis	7196A		1	300953	05/27/15 04:55	PXP	TAL EDI
Total/NA	Prep	9012B			245364	06/01/15 05:55	MGH	TAL BUF

Client Sample ID: KOHORST SOUTHEAST PILE Lab Sample ID: 480-80803-2

Date Collected: 05/21/15 11:20 Matrix: Solid
Date Received: 05/21/15 14:10 Percent Solids: 91.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9012B		1	245536	06/01/15 14:52	KMF	TAL BUF
Total/NA	Analysis	Moisture		1	244057	05/22/15 08:40	CSW	TAL BUF
Total/NA	Analysis	SM 3500 CR D		1	245481	06/01/15 13:14	TRB	TAL BUF

Client Sample ID: KOHORST WEST PILE Lab Sample ID: 480-80803-3

Date Collected: 05/21/15 11:35 Matrix: Solid
Date Received: 05/21/15 14:10 Percent Solids: 96.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035A			244676	05/27/15 10:24	RAS	TAL BUF
Total/NA	Analysis	8260C		1	244798	05/28/15 02:25	RAS	TAL BUF
Total/NA	Prep	3550C			244027	05/22/15 08:07	RMZ	TAL BUF
Total/NA	Analysis	8270D		1	244552	05/27/15 02:11	DMR	TAL BUF
Total/NA	Prep	3550C			244021	05/22/15 07:52	CAM	TAL BUF
Total/NA	Analysis	8081B		1	245148	05/29/15 12:48	MAN	TAL BUF
Total/NA	Prep	3550C			244045	05/22/15 08:31	TRG	TAL BUF
Total/NA	Analysis	8082A		1	244424	05/26/15 13:27	KS	TAL BUF
Total/NA	Prep	8151A			244437	05/26/15 09:54	CAM	TAL BUF
Total/NA	Analysis	8151A		1	245123	05/30/15 00:08	JRL	TAL BUF
Total/NA	Prep	3050B			244472	05/26/15 15:17	TAS	TAL BUF
Total/NA	Analysis	6010C		1	244845	05/28/15 00:49	TRB	TAL BUF
Total/NA	Prep	7471B			245688	06/02/15 14:00	LRK	TAL BUF
Total/NA	Analysis	7471B		1	245852	06/02/15 15:43	LRK	TAL BUF
Total/NA	Prep	3060A			300951	05/26/15 22:30	PXP	TAL EDI
Total/NA	Analysis	7196A		1	300953	05/27/15 04:55	PXP	TAL EDI
Total/NA	Prep	9012B			245364	06/01/15 05:55	MGH	TAL BUF
Total/NA	Analysis	9012B		1	245536	06/01/15 14:53	KMF	TAL BUF
Total/NA	Analysis	Moisture		1	244057	05/22/15 08:40	CSW	TAL BUF
Total/NA	Analysis	SM 3500 CR D		1	245481	06/01/15 13:14	TRB	TAL BUF

Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600
TAL EDI = TestAmerica Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Certification Summary

Client: Praxair, Inc.
Project/Site: Soil Characterization

TestAmerica Job ID: 480-80803-1

Laboratory: TestAmerica Buffalo

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
New York	NELAP	2	10026	03-31-16

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
Moisture		Solid	Percent Moisture
Moisture		Solid	Percent Solids
SM 3500 CR D		Solid	Chromium, trivalent

Laboratory: TestAmerica Edison

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Connecticut	State Program	1	PH-0200	09-30-16
DE Haz. Subst. Cleanup Act (HSCA)	State Program	3	N/A	12-31-15
New Jersey	NELAP	2	12028	06-30-15
New York	NELAP	2	11452	03-31-16
Pennsylvania	NELAP	3	68-00522	02-28-16
Rhode Island	State Program	1	LAO00132	12-30-15
USDA	Federal		NJCA-003-08	04-04-17

Method Summary

Client: Praxair, Inc.
Project/Site: Soil Characterization

TestAmerica Job ID: 480-80803-1

Method	Method Description	Protocol	Laboratory
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
8151A	Herbicides (GC)	SW846	TAL BUF
6010C	Metals (ICP)	SW846	TAL BUF
7471B	Mercury in Solid or Semisolid Waste (Manual Cold Vapor Technique)	SW846	TAL BUF
7196A	Chromium, Hexavalent	SW846	TAL EDI
9012B	Cyanide, Total andor Amenable	SW846	TAL BUF
Moisture	Percent Moisture	EPA	TAL BUF
SM 3500 CR D	Chromium, Trivalent	SM	TAL BUF

Protocol References:

EPA = US Environmental Protection Agency

SM = "Standard Methods For The Examination Of Water And Wastewater",

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

TAL EDI = TestAmerica Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Sample Summary

Client: Praxair, Inc.
Project/Site: Soil Characterization

TestAmerica Job ID: 480-80803-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-80803-1	KOHORST NORTHEAST PILE	Solid	05/21/15 11:00	05/21/15 14:10
480-80803-2	KOHORST SOUTHEAST PILE	Solid	05/21/15 11:20	05/21/15 14:10
480-80803-3	KOHORST WEST PILE	Solid	05/21/15 11:35	05/21/15 14:10

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

480-80803 Chain of Custody

Client Information	Sampler: KEVIN CRONIN	Lab PM: Deyo, Melissa L	Carrier Tracking No(s):
Client Contact: Kevin Cronin	Phone: 716 472-0434	E-Mail: melissa.deyo@testamericainc.com	Page 1 of 1
Company: Shaw Environmental &Infrastructure CB&I		Analysis Requested	Job #:
Address: 175 East Park Drive	Due Date Requested:		Preservation Codes:
City: Tonawanda	TAT Requested (days): STANDARD		
State, Zip: NY, 14150			
Phone: (716) 472-0434	PO #: Purchase Order not required		
Email: KEVIN.CRONIN@CBI.COM	WO #:		
Project Name: Soil Characterization	Project #: 48011926		
Site: ATTICA SAND & GRAVEL	SSOW#:		Other:

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 - Na2S2SO3
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)

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)	7196A - Chromium, hexavalent	9012B - Cyanide, Total	3500_CR3_D, 6010C, 7471B	8081B, 8082A, 8151A, 8270D	8260C - DER-10 Volatiles	Total Number of containers	Special Instructions/Note:
				Preservation Code:			N	N	N	N	N		
KOHORST NORTHEAST PILE	5/21/15	1100	G	Solid	N	N	X	X	X	X	X		
KOHORST SOUTHEAST PILE	↓	1120	↓	Solid	N	N	↓	↓	↓	↓	↓		
KOHORST WEST PILE	↓	1135	↓	Solid	N	N	↓	↓	↓	↓	↓		

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)

Special Instructions/QC Requirements: RESULTS TO DAVE.STOLL@CBI.COM & LISA.SCHMORHORN@CBI.COM

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Kevin Cronin	5/21/15 1410		Cameron Wallace	5-21-15 1410	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:

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Deyo, Melissa L	Carrier Tracking No(s):	COC No: 480-24262.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: melissa.deyo@testamericainc.com		Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		**Analysis Requested**		Job #: 480-80803-1
Address: 777 New Durham Road, ,	Due Date Requested: 6/3/2015			Preservation Codes:
City: Edison	TAT Requested (days):			
State, Zip: NJ, 08817				
Phone: 732-549-3900(Tel) 732-549-3679(Fax)	PO #:			
Email:	WO #:			
Project Name: Soil Characterization	Project #: 48011926			
Site:	SSOW#:			Other:

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 - Na2S2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)

Sample Identification - Client ID (Lab ID)	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)	7196A/3060A Hexavalent Chromium	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
KOHORST NORTHEAST PILE (480-80803-1)	5/21/15	11:00 Eastern		Solid			X	1	
KOHORST SOUTHEAST PILE (480-80803-2)	5/21/15	11:20 Eastern		Solid			X	1	
KOHORST WEST PILE (480-80803-3)	5/21/15	11:35 Eastern		Solid			X	1	

Possible Hazard Identification
Unconfirmed

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)
Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Cameron Wallace	5-21-15 1900	TAB	FED EX		
FED EX			[illegible]	5/22/15 / 930am	TestAm

Custody Seals Intact:	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:
Δ Yes Δ No	455399	1.2/ 3.2 IR#5

Login Sample Receipt Checklist

Client: Praxair, Inc. Job Number: 480-80803-1

Login Number: 80803 **List Source: TestAmerica Buffalo**
List Number: 1
Creator: Wallace, Cameron

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.	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	
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	N/A	

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Login Sample Receipt Checklist

Client: Praxair, Inc. Job Number: 480-80803-1

Login Number: 80803
List Number: 2
Creator: Villadarez, Gerson Timothy S

List Source: TestAmerica Edison
List Creation: 05/22/15 08:41 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	455399
Sample custody seals, if present, are 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	3.2°C IR #5
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 containers received and the COC.	True	
Samples are received within Holding Time.	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	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	N/A	
Residual Chlorine Checked.	N/A	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

TestAmerica Job ID: 480-84758-1
Client Project/Site: 90 Hopkins St

For:
Praxair, Inc.
435 Donner Avenue
Suite 430
Monessen, Pennsylvania 15062

Attn: Maria Tetteris

Authorized for release by:
8/12/2015 1:20:34 PM
Rebecca Jones, Project Management Assistant I
rebecca.jones@testamericainc.com

Designee for

Melissa Deyo, Project Manager I
(716)504-9874
melissa.deyo@testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 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
F1	MS and/or MSD Recovery is outside acceptance limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
F2	MS/MSD RPD exceeds control limits
*	LCS or LCSD is outside acceptance limits.

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
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
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)

Job ID: 480-84758-1

Laboratory: TestAmerica Buffalo

Narrative

Job Narrative
480-84758-1

Receipt
The samples were received on 7/29/2015 4:15 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 14.6º C.

Receipt Exceptions

The samples were received at the laboratory outside the required temperature criteria. The client was contacted regarding this issue, and the laboratory was instructed to proceed with analysis.

GC/MS VOA
Method(s) 8260C: Reported analyte concentrations in the following samples are below 200 ug/kg and may be biased low due to the samples not being collected according to 5035-L/5035A-L low-level specifications: SP-1 (11'-12') (480-84758-1), SP-2 (12'-13') (480-84758-2), SP-3 (11.5'-12.5') (480-84758-3), NP-1 (7.9'-8.9') (480-84758-4), NP-2 (6.5'-7.5') (480-84758-5), NP-3 (15'-16') (480-84758-6), NP-5 (21'-22') (480-84758-8), NP-7 (7'-8') (480-84758-10), (480-84758-A-1-B MS) and (480-84758-A-1-C MSD).

Method(s) 8260C: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for 480-256263 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) 8260C: 1,1,2,2-Tetrachloroethane and Methyl acetate are not detected in (480-84758-A-1-B MS) and (480-84758-A-1-C MSD). This could be due to sample matrix causing the degradations of those analytes.

Method(s) 8260C: The continuing calibration verification (CCV) associated with batch 480-256413 recovered above the upper control limit for Carbon disulfide, Carbon tetrachloride and Chlorodibromomethane. The samples associated with this CCV were not detected above the reporting limits for the affected analytes; therefore, the data have been reported. The following samples are impacted: SP-1 (11'-12') (480-84758-1), SP-2 (12'-13') (480-84758-2), SP-3 (11.5'-12.5') (480-84758-3), NP-1 (7.9'-8.9') (480-84758-4), NP-2 (6.5'-7.5') (480-84758-5), NP-3 (15'-16') (480-84758-6), NP-5 (21'-22') (480-84758-8) and NP-7 (7'-8') (480-84758-10).

Method(s) 8260C: Due to the co-elution of Ethyl Acetate with 2-Butanone and Methyl Methacrylate in the full spike solution, 2-Butanone exceeded control limits in the laboratory control sample (LCS) associated with batch 480-256689 . The following samples are impacted: NP-4 (19'-20') (480-84758-7) and NP-6 (19.8'-20.8') (480-84758-9)

Method(s) 8260C: Reported analyte concentrations in the following samples are below 200 ug/kg and may be biased low due to the samples not being collected according to 5035-L/5035A-L low-level specifications: NP-4 (19'-20') (480-84758-7), NP-6 (19.8'-20.8') (480-84758-9), (480-84758-A-9-C MS) and (480-84758-A-9-D MSD).

Method(s) 8260C: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for 480-256689 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) 8260C: 1,1,2,2-Tetrachloroethane and Methyl acetate are not detected in matrix spike and matrix spike duplicate for batch 480-256689. This could be due to sample matrix causing the degradations of those analytes.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC/MS Semi VOA
Method(s) 8270D_LL_PAH: The following samples were diluted due to appearance and viscosity: NP-4 (19'-20') (480-84758-7), NP-6 (19.8'-20.8') (480-84758-9) and NP-7 (7'-8') (480-84758-10). 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

Job ID: 480-84758-1 (Continued)

Laboratory: TestAmerica Buffalo (Continued)

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Client Sample ID: SP-1 (11'-12') — Lab Sample ID: 480-84758-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
2-Butanone (MEK)	12	J F1	29	2.1	ug/Kg	1	☼	8260C	Total/NA
Acetone	170	F1	29	4.9	ug/Kg	1	☼	8260C	Total/NA
Carbon disulfide	3.6	J F2 F1	5.8	2.9	ug/Kg	1	☼	8260C	Total/NA
Methylene Chloride	6.7		5.8	2.7	ug/Kg	1	☼	8260C	Total/NA
Toluene	0.94	J	5.8	0.44	ug/Kg	1	☼	8260C	Total/NA
Trichlorofluoromethane	0.58	J	5.8	0.55	ug/Kg	1	☼	8260C	Total/NA
Lead	4.1		1.2	0.29	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: SP-2 (12'-13') — Lab Sample ID: 480-84758-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	110		32	5.5	ug/Kg	1	☼	8260C	Total/NA
Methyl tert-butyl ether	3.2	J	6.5	0.64	ug/Kg	1	☼	8260C	Total/NA
Methylene Chloride	4.9	J	6.5	3.0	ug/Kg	1	☼	8260C	Total/NA
Lead	6.9		1.3	0.31	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: SP-3 (11.5'-12.5') — Lab Sample ID: 480-84758-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	88		30	5.0	ug/Kg	1	☼	8260C	Total/NA
Methyl tert-butyl ether	3.4	J	5.9	0.58	ug/Kg	1	☼	8260C	Total/NA
Methylene Chloride	3.5	J	5.9	2.7	ug/Kg	1	☼	8260C	Total/NA
Lead	4.1		1.2	0.28	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: NP-1 (7.9'-8.9') — Lab Sample ID: 480-84758-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	26	J	28	4.7	ug/Kg	1	☼	8260C	Total/NA
Methylene Chloride	2.9	J	5.6	2.6	ug/Kg	1	☼	8260C	Total/NA
Lead	10.9		1.3	0.30	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: NP-2 (6.5'-7.5') — Lab Sample ID: 480-84758-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	44		30	5.1	ug/Kg	1	☼	8260C	Total/NA
Methylene Chloride	4.6	J	6.0	2.8	ug/Kg	1	☼	8260C	Total/NA
Lead	6.5		1.1	0.28	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: NP-3 (15'-16') — Lab Sample ID: 480-84758-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	61		29	4.9	ug/Kg	1	☼	8260C	Total/NA
Methylene Chloride	5.5	J	5.8	2.7	ug/Kg	1	☼	8260C	Total/NA
Lead	8.1		1.2	0.29	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: NP-4 (19'-20') — Lab Sample ID: 480-84758-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	120		36	6.0	ug/Kg	1	☼	8260C	Total/NA
Lead	13.1		1.5	0.36	mg/Kg	1	☼	6010C	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Praxair, Inc.
Project/Site: 90 Hopkins St

TestAmerica Job ID: 480-84758-1

Client Sample ID: NP-5 (21'-22')

Lab Sample ID: 480-84758-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	75		32	5.3	ug/Kg	1	☼	8260C	Total/NA
Methylene Chloride	2.9	J	6.3	2.9	ug/Kg	1	☼	8260C	Total/NA
Lead	20.5		1.3	0.31	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: NP-6 (19.8'-20.8')

Lab Sample ID: 480-84758-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	67	F1	30	5.1	ug/Kg	1	☼	8260C	Total/NA
Carbon disulfide	4.1	J F1	6.1	3.0	ug/Kg	1	☼	8260C	Total/NA
Lead	11.3		1.2	0.28	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: NP-7 (7'-8')

Lab Sample ID: 480-84758-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	170		37	6.2	ug/Kg	1	☼	8260C	Total/NA
Lead	15.8		1.4	0.34	mg/Kg	1	☼	6010C	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: SP-1 (11'-12')

Date Collected: 07/28/15 12:35
Date Received: 07/29/15 16:15

Lab Sample ID: 480-84758-1

Matrix: Solid
Percent Solids: 85.0

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5.8	0.42	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
1,1,2,2-Tetrachloroethane	ND	F1	5.8	0.94	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
1,1,2-Trichloroethane	ND	F1	5.8	0.75	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		5.8	1.3	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
1,1-Dichloroethane	ND		5.8	0.70	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
1,1-Dichloroethene	ND	F1	5.8	0.71	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
1,2,4-Trichlorobenzene	ND	F1	5.8	0.35	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
1,2-Dibromo-3-Chloropropane	ND	F1	5.8	2.9	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
1,2-Dichlorobenzene	ND		5.8	0.45	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
1,2-Dichloroethane	ND		5.8	0.29	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
1,2-Dichloropropane	ND		5.8	2.9	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
1,3-Dichlorobenzene	ND	F1	5.8	0.30	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
1,4-Dichlorobenzene	ND		5.8	0.81	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
2-Butanone (MEK)	**12**	**J F1**	29	2.1	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
2-Hexanone	ND		29	2.9	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
4-Methyl-2-pentanone (MIBK)	ND		29	1.9	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
Acetone	**170**	**F1**	29	4.9	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
Benzene	ND		5.8	0.28	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
Bromodichloromethane	ND		5.8	0.77	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
Bromoform	ND		5.8	2.9	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
Bromomethane	ND		5.8	0.52	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
Carbon disulfide	**3.6**	**J F2 F1**	5.8	2.9	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
Carbon tetrachloride	ND		5.8	0.56	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
Chlorobenzene	ND		5.8	0.76	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
Dibromochloromethane	ND		5.8	0.74	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
Chloroethane	ND		5.8	1.3	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
Chloroform	ND		5.8	0.36	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
Chloromethane	ND		5.8	0.35	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
cis-1,2-Dichloroethene	ND		5.8	0.74	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
cis-1,3-Dichloropropene	ND	F1	5.8	0.83	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
Cyclohexane	ND		5.8	0.81	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
Dichlorodifluoromethane	ND		5.8	0.48	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
Ethylbenzene	ND		5.8	0.40	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
1,2-Dibromoethane	ND		5.8	0.74	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
Isopropylbenzene	ND		5.8	0.87	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
Methyl acetate	ND	F1	5.8	3.5	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
Methyl tert-butyl ether	ND		5.8	0.57	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
Methylcyclohexane	ND		5.8	0.88	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
Methylene Chloride	**6.7**		5.8	2.7	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
Styrene	ND		5.8	0.29	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
Tetrachloroethene	ND		5.8	0.77	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
Toluene	**0.94**	**J**	5.8	0.44	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
trans-1,2-Dichloroethene	ND		5.8	0.60	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
trans-1,3-Dichloropropene	ND	F1	5.8	2.5	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
Trichloroethene	ND	F1	5.8	1.3	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
Trichlorofluoromethane	**0.58**	**J**	5.8	0.55	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
Vinyl chloride	ND		5.8	0.70	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1
Xylenes, Total	ND		12	0.97	ug/Kg	☼	07/30/15 14:20	07/31/15 13:48	1

Client Sample ID: SP-1 (11'-12')
Date Collected: 07/28/15 12:35
Date Received: 07/29/15 16:15

Lab Sample ID: 480-84758-1
Matrix: Solid
Percent Solids: 85.0

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*71 - 125*	*07/30/15 14:20*	*07/31/15 13:48*	*1*
1,2-Dichloroethane-d4 (Surr)	*117*		*64 - 126*	*07/30/15 14:20*	*07/31/15 13:48*	*1*
4-Bromofluorobenzene (Surr)	*96*		*72 - 126*	*07/30/15 14:20*	*07/31/15 13:48*	*1*
Dibromofluoromethane (Surr)	*60*		*60 - 140*	*07/30/15 14:20*	*07/31/15 13:48*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		190	29	ug/Kg	☼	07/31/15 08:06	08/07/15 15:13	1
Acenaphthylene	ND		190	25	ug/Kg	☼	07/31/15 08:06	08/07/15 15:13	1
Anthracene	ND		190	48	ug/Kg	☼	07/31/15 08:06	08/07/15 15:13	1
Benzo[a]anthracene	ND		190	19	ug/Kg	☼	07/31/15 08:06	08/07/15 15:13	1
Benzo[a]pyrene	ND		190	29	ug/Kg	☼	07/31/15 08:06	08/07/15 15:13	1
Benzo[b]fluoranthene	ND		190	31	ug/Kg	☼	07/31/15 08:06	08/07/15 15:13	1
Benzo[g,h,i]perylene	ND		190	21	ug/Kg	☼	07/31/15 08:06	08/07/15 15:13	1
Benzo[k]fluoranthene	ND		190	25	ug/Kg	☼	07/31/15 08:06	08/07/15 15:13	1
Chrysene	ND		190	43	ug/Kg	☼	07/31/15 08:06	08/07/15 15:13	1
Dibenz(a,h)anthracene	ND		190	34	ug/Kg	☼	07/31/15 08:06	08/07/15 15:13	1
Fluoranthene	ND		190	21	ug/Kg	☼	07/31/15 08:06	08/07/15 15:13	1
Fluorene	ND		190	23	ug/Kg	☼	07/31/15 08:06	08/07/15 15:13	1
Indeno[1,2,3-cd]pyrene	ND		190	24	ug/Kg	☼	07/31/15 08:06	08/07/15 15:13	1
Naphthalene	ND		190	25	ug/Kg	☼	07/31/15 08:06	08/07/15 15:13	1
Phenanthrene	ND		190	29	ug/Kg	☼	07/31/15 08:06	08/07/15 15:13	1
Pyrene	ND		190	23	ug/Kg	☼	07/31/15 08:06	08/07/15 15:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*80*		*37 - 120*	*07/31/15 08:06*	*08/07/15 15:13*	*1*
Nitrobenzene-d5	*84*		*34 - 132*	*07/31/15 08:06*	*08/07/15 15:13*	*1*
p-Terphenyl-d14	*88*		*65 - 153*	*07/31/15 08:06*	*08/07/15 15:13*	*1*

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		0.28	0.055	mg/Kg	☼	07/30/15 09:22	07/30/15 21:59	1
PCB-1221	ND		0.28	0.055	mg/Kg	☼	07/30/15 09:22	07/30/15 21:59	1
PCB-1232	ND		0.28	0.055	mg/Kg	☼	07/30/15 09:22	07/30/15 21:59	1
PCB-1242	ND		0.28	0.055	mg/Kg	☼	07/30/15 09:22	07/30/15 21:59	1
PCB-1248	ND		0.28	0.055	mg/Kg	☼	07/30/15 09:22	07/30/15 21:59	1
PCB-1254	ND		0.28	0.13	mg/Kg	☼	07/30/15 09:22	07/30/15 21:59	1
PCB-1260	ND		0.28	0.13	mg/Kg	☼	07/30/15 09:22	07/30/15 21:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*104*		*60 - 154*	*07/30/15 09:22*	*07/30/15 21:59*	*1*
DCB Decachlorobiphenyl	*99*		*65 - 174*	*07/30/15 09:22*	*07/30/15 21:59*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**4.1**		1.2	0.29	mg/Kg	☼	08/06/15 12:30	08/07/15 14:31	1

Client Sample Results

Client Sample ID: SP-2 (12'-13')
Date Collected: 07/28/15 13:00
Date Received: 07/29/15 16:15

Lab Sample ID: 480-84758-2
Matrix: Solid
Percent Solids: 75.5

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		6.5	0.47	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
1,1,2,2-Tetrachloroethane	ND		6.5	1.1	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
1,1,2-Trichloroethane	ND		6.5	0.84	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		6.5	1.5	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
1,1-Dichloroethane	ND		6.5	0.79	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
1,1-Dichloroethene	ND		6.5	0.79	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
1,2,4-Trichlorobenzene	ND		6.5	0.39	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
1,2-Dibromo-3-Chloropropane	ND		6.5	3.2	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
1,2-Dichlorobenzene	ND		6.5	0.51	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
1,2-Dichloroethane	ND		6.5	0.33	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
1,2-Dichloropropane	ND		6.5	3.2	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
1,3-Dichlorobenzene	ND		6.5	0.33	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
1,4-Dichlorobenzene	ND		6.5	0.91	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
2-Butanone (MEK)	ND		32	2.4	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
2-Hexanone	ND		32	3.2	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
4-Methyl-2-pentanone (MIBK)	ND		32	2.1	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
Acetone	**110**		32	5.5	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
Benzene	ND		6.5	0.32	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
Bromodichloromethane	ND		6.5	0.87	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
Bromoform	ND		6.5	3.2	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
Bromomethane	ND		6.5	0.58	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
Carbon disulfide	ND		6.5	3.2	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
Carbon tetrachloride	ND		6.5	0.63	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
Chlorobenzene	ND		6.5	0.86	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
Dibromochloromethane	ND		6.5	0.83	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
Chloroethane	ND		6.5	1.5	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
Chloroform	ND		6.5	0.40	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
Chloromethane	ND		6.5	0.39	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
cis-1,2-Dichloroethene	ND		6.5	0.83	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
cis-1,3-Dichloropropene	ND		6.5	0.94	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
Cyclohexane	ND		6.5	0.91	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
Dichlorodifluoromethane	ND		6.5	0.54	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
Ethylbenzene	ND		6.5	0.45	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
1,2-Dibromoethane	ND		6.5	0.83	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
Isopropylbenzene	ND		6.5	0.98	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
Methyl acetate	ND		6.5	3.9	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
Methyl tert-butyl ether	**3.2**	**J**	6.5	0.64	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
Methylcyclohexane	ND		6.5	0.99	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
Methylene Chloride	**4.9**	**J**	6.5	3.0	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
Styrene	ND		6.5	0.32	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
Tetrachloroethene	ND		6.5	0.87	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
Toluene	ND		6.5	0.49	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
trans-1,2-Dichloroethene	ND		6.5	0.67	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
trans-1,3-Dichloropropene	ND		6.5	2.9	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
Trichloroethene	ND		6.5	1.4	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
Trichlorofluoromethane	ND		6.5	0.61	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
Vinyl chloride	ND		6.5	0.79	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1
Xylenes, Total	ND		13	1.1	ug/Kg	☼	07/30/15 14:20	07/31/15 14:14	1

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Client Sample ID: SP-2 (12'-13')

Date Collected: 07/28/15 13:00
Date Received: 07/29/15 16:15

Lab Sample ID: 480-84758-2

Matrix: Solid
Percent Solids: 75.5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*71 - 125*	*07/30/15 14:20*	*07/31/15 14:14*	*1*
1,2-Dichloroethane-d4 (Surr)	*118*		*64 - 126*	*07/30/15 14:20*	*07/31/15 14:14*	*1*
4-Bromofluorobenzene (Surr)	*93*		*72 - 126*	*07/30/15 14:20*	*07/31/15 14:14*	*1*
Dibromofluoromethane (Surr)	*116*		*60 - 140*	*07/30/15 14:20*	*07/31/15 14:14*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		220	33	ug/Kg	☼	07/31/15 08:06	08/07/15 15:39	1
Acenaphthylene	ND		220	29	ug/Kg	☼	07/31/15 08:06	08/07/15 15:39	1
Anthracene	ND		220	55	ug/Kg	☼	07/31/15 08:06	08/07/15 15:39	1
Benzo[a]anthracene	ND		220	22	ug/Kg	☼	07/31/15 08:06	08/07/15 15:39	1
Benzo[a]pyrene	ND		220	33	ug/Kg	☼	07/31/15 08:06	08/07/15 15:39	1
Benzo[b]fluoranthene	ND		220	36	ug/Kg	☼	07/31/15 08:06	08/07/15 15:39	1
Benzo[g,h,i]perylene	ND		220	24	ug/Kg	☼	07/31/15 08:06	08/07/15 15:39	1
Benzo[k]fluoranthene	ND		220	29	ug/Kg	☼	07/31/15 08:06	08/07/15 15:39	1
Chrysene	ND		220	50	ug/Kg	☼	07/31/15 08:06	08/07/15 15:39	1
Dibenz(a,h)anthracene	ND		220	40	ug/Kg	☼	07/31/15 08:06	08/07/15 15:39	1
Fluoranthene	ND		220	24	ug/Kg	☼	07/31/15 08:06	08/07/15 15:39	1
Fluorene	ND		220	26	ug/Kg	☼	07/31/15 08:06	08/07/15 15:39	1
Indeno[1,2,3-cd]pyrene	ND		220	28	ug/Kg	☼	07/31/15 08:06	08/07/15 15:39	1
Naphthalene	ND		220	29	ug/Kg	☼	07/31/15 08:06	08/07/15 15:39	1
Phenanthrene	ND		220	33	ug/Kg	☼	07/31/15 08:06	08/07/15 15:39	1
Pyrene	ND		220	26	ug/Kg	☼	07/31/15 08:06	08/07/15 15:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*72*		*37 - 120*	*07/31/15 08:06*	*08/07/15 15:39*	*1*
Nitrobenzene-d5	*73*		*34 - 132*	*07/31/15 08:06*	*08/07/15 15:39*	*1*
p-Terphenyl-d14	*81*		*65 - 153*	*07/31/15 08:06*	*08/07/15 15:39*	*1*

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		0.30	0.059	mg/Kg	☼	07/30/15 09:22	07/30/15 22:15	1
PCB-1221	ND		0.30	0.059	mg/Kg	☼	07/30/15 09:22	07/30/15 22:15	1
PCB-1232	ND		0.30	0.059	mg/Kg	☼	07/30/15 09:22	07/30/15 22:15	1
PCB-1242	ND		0.30	0.059	mg/Kg	☼	07/30/15 09:22	07/30/15 22:15	1
PCB-1248	ND		0.30	0.059	mg/Kg	☼	07/30/15 09:22	07/30/15 22:15	1
PCB-1254	ND		0.30	0.14	mg/Kg	☼	07/30/15 09:22	07/30/15 22:15	1
PCB-1260	ND		0.30	0.14	mg/Kg	☼	07/30/15 09:22	07/30/15 22:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*104*		*60 - 154*	*07/30/15 09:22*	*07/30/15 22:15*	*1*
DCB Decachlorobiphenyl	*98*		*65 - 174*	*07/30/15 09:22*	*07/30/15 22:15*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**6.9**		1.3	0.31	mg/Kg	☼	08/06/15 12:30	08/07/15 14:53	1

Client Sample Results

Client: Praxair, Inc.
Project/Site: 90 Hopkins St

TestAmerica Job ID: 480-84758-1

Client Sample ID: SP-3 (11.5'-12.5')
Date Collected: 07/28/15 13:20
Date Received: 07/29/15 16:15

Lab Sample ID: 480-84758-3
Matrix: Solid
Percent Solids: 82.4

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5.9	0.43	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
1,1,2,2-Tetrachloroethane	ND		5.9	0.96	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
1,1,2-Trichloroethane	ND		5.9	0.77	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		5.9	1.4	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
1,1-Dichloroethane	ND		5.9	0.72	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
1,1-Dichloroethene	ND		5.9	0.73	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
1,2,4-Trichlorobenzene	ND		5.9	0.36	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
1,2-Dibromo-3-Chloropropane	ND		5.9	3.0	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
1,2-Dichlorobenzene	ND		5.9	0.46	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
1,2-Dichloroethane	ND		5.9	0.30	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
1,2-Dichloropropane	ND		5.9	3.0	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
1,3-Dichlorobenzene	ND		5.9	0.31	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
1,4-Dichlorobenzene	ND		5.9	0.83	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
2-Butanone (MEK)	ND		30	2.2	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
2-Hexanone	ND		30	3.0	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
4-Methyl-2-pentanone (MIBK)	ND		30	1.9	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
Acetone	**88**		30	5.0	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
Benzene	ND		5.9	0.29	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
Bromodichloromethane	ND		5.9	0.80	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
Bromoform	ND		5.9	3.0	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
Bromomethane	ND		5.9	0.53	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
Carbon disulfide	ND		5.9	3.0	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
Carbon tetrachloride	ND		5.9	0.57	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
Chlorobenzene	ND		5.9	0.78	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
Dibromochloromethane	ND		5.9	0.76	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
Chloroethane	ND		5.9	1.3	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
Chloroform	ND		5.9	0.37	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
Chloromethane	ND		5.9	0.36	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
cis-1,2-Dichloroethene	ND		5.9	0.76	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
cis-1,3-Dichloropropene	ND		5.9	0.85	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
Cyclohexane	ND		5.9	0.83	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
Dichlorodifluoromethane	ND		5.9	0.49	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
Ethylbenzene	ND		5.9	0.41	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
1,2-Dibromoethane	ND		5.9	0.76	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
Isopropylbenzene	ND		5.9	0.90	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
Methyl acetate	ND		5.9	3.6	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
Methyl tert-butyl ether	**3.4**	**J**	5.9	0.58	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
Methylcyclohexane	ND		5.9	0.90	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
Methylene Chloride	**3.5**	**J**	5.9	2.7	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
Styrene	ND		5.9	0.30	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
Tetrachloroethene	ND		5.9	0.80	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
Toluene	ND		5.9	0.45	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
trans-1,2-Dichloroethene	ND		5.9	0.61	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
trans-1,3-Dichloropropene	ND		5.9	2.6	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
Trichloroethene	ND		5.9	1.3	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
Trichlorofluoromethane	ND		5.9	0.56	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
Vinyl chloride	ND		5.9	0.72	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1
Xylenes, Total	ND		12	1.0	ug/Kg	☼	07/30/15 14:20	07/31/15 14:40	1

Client Sample ID: SP-3 (11.5'-12.5')
Date Collected: 07/28/15 13:20
Date Received: 07/29/15 16:15

Lab Sample ID: 480-84758-3
Matrix: Solid
Percent Solids: 82.4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	100		71 - 125	07/30/15 14:20	07/31/15 14:40	1
1,2-Dichloroethane-d4 (Surr)	115		64 - 126	07/30/15 14:20	07/31/15 14:40	1
4-Bromofluorobenzene (Surr)	92		72 - 126	07/30/15 14:20	07/31/15 14:40	1
Dibromofluoromethane (Surr)	117		60 - 140	07/30/15 14:20	07/31/15 14:40	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		200	30	ug/Kg	☼	07/31/15 08:06	08/07/15 16:06	1
Acenaphthylene	ND		200	26	ug/Kg	☼	07/31/15 08:06	08/07/15 16:06	1
Anthracene	ND		200	50	ug/Kg	☼	07/31/15 08:06	08/07/15 16:06	1
Benzo[a]anthracene	ND		200	20	ug/Kg	☼	07/31/15 08:06	08/07/15 16:06	1
Benzo[a]pyrene	ND		200	30	ug/Kg	☼	07/31/15 08:06	08/07/15 16:06	1
Benzo[b]fluoranthene	ND		200	32	ug/Kg	☼	07/31/15 08:06	08/07/15 16:06	1
Benzo[g,h,i]perylene	ND		200	22	ug/Kg	☼	07/31/15 08:06	08/07/15 16:06	1
Benzo[k]fluoranthene	ND		200	26	ug/Kg	☼	07/31/15 08:06	08/07/15 16:06	1
Chrysene	ND		200	46	ug/Kg	☼	07/31/15 08:06	08/07/15 16:06	1
Dibenz(a,h)anthracene	ND		200	36	ug/Kg	☼	07/31/15 08:06	08/07/15 16:06	1
Fluoranthene	ND		200	22	ug/Kg	☼	07/31/15 08:06	08/07/15 16:06	1
Fluorene	ND		200	24	ug/Kg	☼	07/31/15 08:06	08/07/15 16:06	1
Indeno[1,2,3-cd]pyrene	ND		200	25	ug/Kg	☼	07/31/15 08:06	08/07/15 16:06	1
Naphthalene	ND		200	26	ug/Kg	☼	07/31/15 08:06	08/07/15 16:06	1
Phenanthrene	ND		200	30	ug/Kg	☼	07/31/15 08:06	08/07/15 16:06	1
Pyrene	ND		200	24	ug/Kg	☼	07/31/15 08:06	08/07/15 16:06	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	83		37 - 120	07/31/15 08:06	08/07/15 16:06	1
Nitrobenzene-d5	82		34 - 132	07/31/15 08:06	08/07/15 16:06	1
p-Terphenyl-d14	86		65 - 153	07/31/15 08:06	08/07/15 16:06	1

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		0.25	0.050	mg/Kg	☼	07/30/15 09:22	07/30/15 22:31	1
PCB-1221	ND		0.25	0.050	mg/Kg	☼	07/30/15 09:22	07/30/15 22:31	1
PCB-1232	ND		0.25	0.050	mg/Kg	☼	07/30/15 09:22	07/30/15 22:31	1
PCB-1242	ND		0.25	0.050	mg/Kg	☼	07/30/15 09:22	07/30/15 22:31	1
PCB-1248	ND		0.25	0.050	mg/Kg	☼	07/30/15 09:22	07/30/15 22:31	1
PCB-1254	ND		0.25	0.12	mg/Kg	☼	07/30/15 09:22	07/30/15 22:31	1
PCB-1260	ND		0.25	0.12	mg/Kg	☼	07/30/15 09:22	07/30/15 22:31	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	104		60 - 154	07/30/15 09:22	07/30/15 22:31	1
DCB Decachlorobiphenyl	98		65 - 174	07/30/15 09:22	07/30/15 22:31	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**4.1**		1.2	0.28	mg/Kg	☼	08/06/15 12:30	08/07/15 14:56	1

Client Sample Results

Client: Praxair, Inc.
Project/Site: 90 Hopkins St

TestAmerica Job ID: 480-84758-1

Client Sample ID: NP-1 (7.9'-8.9')
Date Collected: 07/28/15 15:20
Date Received: 07/29/15 16:15

Lab Sample ID: 480-84758-4
Matrix: Solid
Percent Solids: 87.6

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5.6	0.41	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
1,1,2,2-Tetrachloroethane	ND		5.6	0.91	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
1,1,2-Trichloroethane	ND		5.6	0.73	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		5.6	1.3	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
1,1-Dichloroethane	ND		5.6	0.69	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
1,1-Dichloroethene	ND		5.6	0.69	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
1,2,4-Trichlorobenzene	ND		5.6	0.34	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
1,2-Dibromo-3-Chloropropane	ND		5.6	2.8	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
1,2-Dichlorobenzene	ND		5.6	0.44	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
1,2-Dichloroethane	ND		5.6	0.28	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
1,2-Dichloropropane	ND		5.6	2.8	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
1,3-Dichlorobenzene	ND		5.6	0.29	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
1,4-Dichlorobenzene	ND		5.6	0.79	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
2-Butanone (MEK)	ND		28	2.1	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
2-Hexanone	ND		28	2.8	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
4-Methyl-2-pentanone (MIBK)	ND		28	1.8	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
Acetone	**26**	**J**	28	4.7	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
Benzene	ND		5.6	0.28	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
Bromodichloromethane	ND		5.6	0.76	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
Bromoform	ND		5.6	2.8	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
Bromomethane	ND		5.6	0.51	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
Carbon disulfide	ND		5.6	2.8	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
Carbon tetrachloride	ND		5.6	0.55	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
Chlorobenzene	ND		5.6	0.74	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
Dibromochloromethane	ND		5.6	0.72	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
Chloroethane	ND		5.6	1.3	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
Chloroform	ND		5.6	0.35	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
Chloromethane	ND		5.6	0.34	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
cis-1,2-Dichloroethene	ND		5.6	0.72	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
cis-1,3-Dichloropropene	ND		5.6	0.81	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
Cyclohexane	ND		5.6	0.79	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
Dichlorodifluoromethane	ND		5.6	0.47	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
Ethylbenzene	ND		5.6	0.39	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
1,2-Dibromoethane	ND		5.6	0.72	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
Isopropylbenzene	ND		5.6	0.85	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
Methyl acetate	ND		5.6	3.4	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
Methyl tert-butyl ether	ND		5.6	0.55	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
Methylcyclohexane	ND		5.6	0.86	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
Methylene Chloride	**2.9**	**J**	5.6	2.6	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
Styrene	ND		5.6	0.28	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
Tetrachloroethene	ND		5.6	0.76	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
Toluene	ND		5.6	0.43	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
trans-1,2-Dichloroethene	ND		5.6	0.58	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
trans-1,3-Dichloropropene	ND		5.6	2.5	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
Trichloroethene	ND		5.6	1.2	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
Trichlorofluoromethane	ND		5.6	0.53	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
Vinyl chloride	ND		5.6	0.69	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1
Xylenes, Total	ND		11	0.95	ug/Kg	☼	07/30/15 14:20	07/31/15 15:07	1

Client: Praxair, Inc.
Project/Site: 90 Hopkins St

TestAmerica Job ID: 480-84758-1

Client Sample ID: NP-1 (7.9'-8.9')
Date Collected: 07/28/15 15:20
Date Received: 07/29/15 16:15

Lab Sample ID: 480-84758-4
Matrix: Solid
Percent Solids: 87.6

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	98		71 - 125	07/30/15 14:20	07/31/15 15:07	1
1,2-Dichloroethane-d4 (Surr)	115		64 - 126	07/30/15 14:20	07/31/15 15:07	1
4-Bromofluorobenzene (Surr)	90		72 - 126	07/30/15 14:20	07/31/15 15:07	1
Dibromofluoromethane (Surr)	117		60 - 140	07/30/15 14:20	07/31/15 15:07	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		190	28	ug/Kg	☼	07/31/15 08:06	08/07/15 16:32	1
Acenaphthylene	ND		190	25	ug/Kg	☼	07/31/15 08:06	08/07/15 16:32	1
Anthracene	ND		190	47	ug/Kg	☼	07/31/15 08:06	08/07/15 16:32	1
Benzo[a]anthracene	ND		190	19	ug/Kg	☼	07/31/15 08:06	08/07/15 16:32	1
Benzo[a]pyrene	ND		190	28	ug/Kg	☼	07/31/15 08:06	08/07/15 16:32	1
Benzo[b]fluoranthene	ND		190	30	ug/Kg	☼	07/31/15 08:06	08/07/15 16:32	1
Benzo[g,h,i]perylene	ND		190	20	ug/Kg	☼	07/31/15 08:06	08/07/15 16:32	1
Benzo[k]fluoranthene	ND		190	25	ug/Kg	☼	07/31/15 08:06	08/07/15 16:32	1
Chrysene	ND		190	43	ug/Kg	☼	07/31/15 08:06	08/07/15 16:32	1
Dibenz(a,h)anthracene	ND		190	34	ug/Kg	☼	07/31/15 08:06	08/07/15 16:32	1
Fluoranthene	ND		190	20	ug/Kg	☼	07/31/15 08:06	08/07/15 16:32	1
Fluorene	ND		190	23	ug/Kg	☼	07/31/15 08:06	08/07/15 16:32	1
Indeno[1,2,3-cd]pyrene	ND		190	24	ug/Kg	☼	07/31/15 08:06	08/07/15 16:32	1
Naphthalene	ND		190	25	ug/Kg	☼	07/31/15 08:06	08/07/15 16:32	1
Phenanthrene	ND		190	28	ug/Kg	☼	07/31/15 08:06	08/07/15 16:32	1
Pyrene	ND		190	23	ug/Kg	☼	07/31/15 08:06	08/07/15 16:32	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	75		37 - 120	07/31/15 08:06	08/07/15 16:32	1
Nitrobenzene-d5	77		34 - 132	07/31/15 08:06	08/07/15 16:32	1
p-Terphenyl-d14	85		65 - 153	07/31/15 08:06	08/07/15 16:32	1

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		0.20	0.039	mg/Kg	☼	07/30/15 09:22	07/30/15 22:46	1
PCB-1221	ND		0.20	0.039	mg/Kg	☼	07/30/15 09:22	07/30/15 22:46	1
PCB-1232	ND		0.20	0.039	mg/Kg	☼	07/30/15 09:22	07/30/15 22:46	1
PCB-1242	ND		0.20	0.039	mg/Kg	☼	07/30/15 09:22	07/30/15 22:46	1
PCB-1248	ND		0.20	0.039	mg/Kg	☼	07/30/15 09:22	07/30/15 22:46	1
PCB-1254	ND		0.20	0.092	mg/Kg	☼	07/30/15 09:22	07/30/15 22:46	1
PCB-1260	ND		0.20	0.092	mg/Kg	☼	07/30/15 09:22	07/30/15 22:46	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	105		60 - 154	07/30/15 09:22	07/30/15 22:46	1
DCB Decachlorobiphenyl	99		65 - 174	07/30/15 09:22	07/30/15 22:46	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**10.9**		1.3	0.30	mg/Kg	☼	08/06/15 12:30	08/07/15 14:59	1

Client Sample Results

Client: Praxair, Inc.
Project/Site: 90 Hopkins St

TestAmerica Job ID: 480-84758-1

Client Sample ID: NP-2 (6.5'-7.5')

Date Collected: 07/28/15 15:30
Date Received: 07/29/15 16:15

Lab Sample ID: 480-84758-5
Matrix: Solid
Percent Solids: 81.7

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		6.0	0.44	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
1,1,2,2-Tetrachloroethane	ND		6.0	0.98	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
1,1,2-Trichloroethane	ND		6.0	0.78	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		6.0	1.4	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
1,1-Dichloroethane	ND		6.0	0.73	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
1,1-Dichloroethene	ND		6.0	0.74	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
1,2,4-Trichlorobenzene	ND		6.0	0.37	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
1,2-Dibromo-3-Chloropropane	ND		6.0	3.0	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
1,2-Dichlorobenzene	ND		6.0	0.47	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
1,2-Dichloroethane	ND		6.0	0.30	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
1,2-Dichloropropane	ND		6.0	3.0	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
1,3-Dichlorobenzene	ND		6.0	0.31	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
1,4-Dichlorobenzene	ND		6.0	0.84	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
2-Butanone (MEK)	ND		30	2.2	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
2-Hexanone	ND		30	3.0	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
4-Methyl-2-pentanone (MIBK)	ND		30	2.0	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
Acetone	**44**		30	5.1	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
Benzene	ND		6.0	0.30	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
Bromodichloromethane	ND		6.0	0.81	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
Bromoform	ND		6.0	3.0	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
Bromomethane	ND		6.0	0.54	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
Carbon disulfide	ND		6.0	3.0	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
Carbon tetrachloride	ND		6.0	0.58	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
Chlorobenzene	ND		6.0	0.79	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
Dibromochloromethane	ND		6.0	0.77	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
Chloroethane	ND		6.0	1.4	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
Chloroform	ND		6.0	0.37	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
Chloromethane	ND		6.0	0.36	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
cis-1,2-Dichloroethene	ND		6.0	0.77	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
cis-1,3-Dichloropropene	ND		6.0	0.87	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
Cyclohexane	ND		6.0	0.84	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
Dichlorodifluoromethane	ND		6.0	0.50	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
Ethylbenzene	ND		6.0	0.42	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
1,2-Dibromoethane	ND		6.0	0.77	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
Isopropylbenzene	ND		6.0	0.91	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
Methyl acetate	ND		6.0	3.6	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
Methyl tert-butyl ether	ND		6.0	0.59	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
Methylcyclohexane	ND		6.0	0.92	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
Methylene Chloride	**4.6**	**J**	6.0	2.8	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
Styrene	ND		6.0	0.30	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
Tetrachloroethene	ND		6.0	0.81	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
Toluene	ND		6.0	0.46	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
trans-1,2-Dichloroethene	ND		6.0	0.62	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
trans-1,3-Dichloropropene	ND		6.0	2.6	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
Trichloroethene	ND		6.0	1.3	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
Trichlorofluoromethane	ND		6.0	0.57	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
Vinyl chloride	ND		6.0	0.73	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1
Xylenes, Total	ND		12	1.0	ug/Kg	☼	07/30/15 14:20	07/31/15 15:32	1

Client Sample ID: NP-2 (6.5'-7.5')
Date Collected: 07/28/15 15:30
Date Received: 07/29/15 16:15

Lab Sample ID: 480-84758-5
Matrix: Solid
Percent Solids: 81.7

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	99		71 - 125	07/30/15 14:20	07/31/15 15:32	1
1,2-Dichloroethane-d4 (Surr)	120		64 - 126	07/30/15 14:20	07/31/15 15:32	1
4-Bromofluorobenzene (Surr)	100		72 - 126	07/30/15 14:20	07/31/15 15:32	1
Dibromofluoromethane (Surr)	106		60 - 140	07/30/15 14:20	07/31/15 15:32	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		200	30	ug/Kg	☼	07/31/15 08:06	08/07/15 16:58	1
Acenaphthylene	ND		200	26	ug/Kg	☼	07/31/15 08:06	08/07/15 16:58	1
Anthracene	ND		200	50	ug/Kg	☼	07/31/15 08:06	08/07/15 16:58	1
Benzo[a]anthracene	ND		200	20	ug/Kg	☼	07/31/15 08:06	08/07/15 16:58	1
Benzo[a]pyrene	ND		200	30	ug/Kg	☼	07/31/15 08:06	08/07/15 16:58	1
Benzo[b]fluoranthene	ND		200	32	ug/Kg	☼	07/31/15 08:06	08/07/15 16:58	1
Benzo[g,h,i]perylene	ND		200	22	ug/Kg	☼	07/31/15 08:06	08/07/15 16:58	1
Benzo[k]fluoranthene	ND		200	26	ug/Kg	☼	07/31/15 08:06	08/07/15 16:58	1
Chrysene	ND		200	46	ug/Kg	☼	07/31/15 08:06	08/07/15 16:58	1
Dibenz(a,h)anthracene	ND		200	36	ug/Kg	☼	07/31/15 08:06	08/07/15 16:58	1
Fluoranthene	ND		200	22	ug/Kg	☼	07/31/15 08:06	08/07/15 16:58	1
Fluorene	ND		200	24	ug/Kg	☼	07/31/15 08:06	08/07/15 16:58	1
Indeno[1,2,3-cd]pyrene	ND		200	25	ug/Kg	☼	07/31/15 08:06	08/07/15 16:58	1
Naphthalene	ND		200	26	ug/Kg	☼	07/31/15 08:06	08/07/15 16:58	1
Phenanthrene	ND		200	30	ug/Kg	☼	07/31/15 08:06	08/07/15 16:58	1
Pyrene	ND		200	24	ug/Kg	☼	07/31/15 08:06	08/07/15 16:58	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	77		37 - 120	07/31/15 08:06	08/07/15 16:58	1
Nitrobenzene-d5	80		34 - 132	07/31/15 08:06	08/07/15 16:58	1
p-Terphenyl-d14	87		65 - 153	07/31/15 08:06	08/07/15 16:58	1

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		0.27	0.053	mg/Kg	☼	07/30/15 09:22	07/30/15 23:02	1
PCB-1221	ND		0.27	0.053	mg/Kg	☼	07/30/15 09:22	07/30/15 23:02	1
PCB-1232	ND		0.27	0.053	mg/Kg	☼	07/30/15 09:22	07/30/15 23:02	1
PCB-1242	ND		0.27	0.053	mg/Kg	☼	07/30/15 09:22	07/30/15 23:02	1
PCB-1248	ND		0.27	0.053	mg/Kg	☼	07/30/15 09:22	07/30/15 23:02	1
PCB-1254	ND		0.27	0.13	mg/Kg	☼	07/30/15 09:22	07/30/15 23:02	1
PCB-1260	ND		0.27	0.13	mg/Kg	☼	07/30/15 09:22	07/30/15 23:02	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	98		60 - 154	07/30/15 09:22	07/30/15 23:02	1
DCB Decachlorobiphenyl	98		65 - 174	07/30/15 09:22	07/30/15 23:02	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**6.5**		1.1	0.28	mg/Kg	☼	08/06/15 12:30	08/07/15 15:02	1

Client Sample ID: NP-3 (15'-16')
Lab Sample ID: 480-84758-6

Date Collected: 07/29/15 08:55
Matrix: Solid
Date Received: 07/29/15 16:15
Percent Solids: 83.4

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5.8	0.42	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
1,1,2,2-Tetrachloroethane	ND		5.8	0.94	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
1,1,2-Trichloroethane	ND		5.8	0.75	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		5.8	1.3	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
1,1-Dichloroethane	ND		5.8	0.71	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
1,1-Dichloroethene	ND		5.8	0.71	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
1,2,4-Trichlorobenzene	ND		5.8	0.35	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
1,2-Dibromo-3-Chloropropane	ND		5.8	2.9	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
1,2-Dichlorobenzene	ND		5.8	0.45	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
1,2-Dichloroethane	ND		5.8	0.29	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
1,2-Dichloropropane	ND		5.8	2.9	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
1,3-Dichlorobenzene	ND		5.8	0.30	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
1,4-Dichlorobenzene	ND		5.8	0.81	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
2-Butanone (MEK)	ND		29	2.1	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
2-Hexanone	ND		29	2.9	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
4-Methyl-2-pentanone (MIBK)	ND		29	1.9	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
Acetone	**61**		29	4.9	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
Benzene	ND		5.8	0.28	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
Bromodichloromethane	ND		5.8	0.78	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
Bromoform	ND		5.8	2.9	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
Bromomethane	ND		5.8	0.52	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
Carbon disulfide	ND		5.8	2.9	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
Carbon tetrachloride	ND		5.8	0.56	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
Chlorobenzene	ND		5.8	0.77	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
Dibromochloromethane	ND		5.8	0.74	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
Chloroethane	ND		5.8	1.3	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
Chloroform	ND		5.8	0.36	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
Chloromethane	ND		5.8	0.35	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
cis-1,2-Dichloroethene	ND		5.8	0.74	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
cis-1,3-Dichloropropene	ND		5.8	0.84	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
Cyclohexane	ND		5.8	0.81	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
Dichlorodifluoromethane	ND		5.8	0.48	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
Ethylbenzene	ND		5.8	0.40	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
1,2-Dibromoethane	ND		5.8	0.74	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
Isopropylbenzene	ND		5.8	0.87	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
Methyl acetate	ND		5.8	3.5	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
Methyl tert-butyl ether	ND		5.8	0.57	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
Methylcyclohexane	ND		5.8	0.88	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
Methylene Chloride	**5.5**	**J**	5.8	2.7	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
Styrene	ND		5.8	0.29	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
Tetrachloroethene	ND		5.8	0.78	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
Toluene	ND		5.8	0.44	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
trans-1,2-Dichloroethene	ND		5.8	0.60	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
trans-1,3-Dichloropropene	ND		5.8	2.6	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
Trichloroethene	ND		5.8	1.3	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
Trichlorofluoromethane	ND		5.8	0.55	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
Vinyl chloride	ND		5.8	0.71	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1
Xylenes, Total	ND		12	0.97	ug/Kg	☼	07/30/15 14:20	07/31/15 15:59	1

Client: Praxair, Inc.
Project/Site: 90 Hopkins St

TestAmerica Job ID: 480-84758-1

Client Sample ID: NP-3 (15'-16')
Date Collected: 07/29/15 08:55
Date Received: 07/29/15 16:15

Lab Sample ID: 480-84758-6
Matrix: Solid
Percent Solids: 83.4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	100		71 - 125	07/30/15 14:20	07/31/15 15:59	1
1,2-Dichloroethane-d4 (Surr)	118		64 - 126	07/30/15 14:20	07/31/15 15:59	1
4-Bromofluorobenzene (Surr)	92		72 - 126	07/30/15 14:20	07/31/15 15:59	1
Dibromofluoromethane (Surr)	119		60 - 140	07/30/15 14:20	07/31/15 15:59	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		200	29	ug/Kg	☼	07/31/15 08:06	08/07/15 17:24	1
Acenaphthylene	ND		200	26	ug/Kg	☼	07/31/15 08:06	08/07/15 17:24	1
Anthracene	ND		200	49	ug/Kg	☼	07/31/15 08:06	08/07/15 17:24	1
Benzo[a]anthracene	ND		200	20	ug/Kg	☼	07/31/15 08:06	08/07/15 17:24	1
Benzo[a]pyrene	ND		200	29	ug/Kg	☼	07/31/15 08:06	08/07/15 17:24	1
Benzo[b]fluoranthene	ND		200	32	ug/Kg	☼	07/31/15 08:06	08/07/15 17:24	1
Benzo[g,h,i]perylene	ND		200	21	ug/Kg	☼	07/31/15 08:06	08/07/15 17:24	1
Benzo[k]fluoranthene	ND		200	26	ug/Kg	☼	07/31/15 08:06	08/07/15 17:24	1
Chrysene	ND		200	45	ug/Kg	☼	07/31/15 08:06	08/07/15 17:24	1
Dibenz(a,h)anthracene	ND		200	35	ug/Kg	☼	07/31/15 08:06	08/07/15 17:24	1
Fluoranthene	ND		200	21	ug/Kg	☼	07/31/15 08:06	08/07/15 17:24	1
Fluorene	ND		200	24	ug/Kg	☼	07/31/15 08:06	08/07/15 17:24	1
Indeno[1,2,3-cd]pyrene	ND		200	25	ug/Kg	☼	07/31/15 08:06	08/07/15 17:24	1
Naphthalene	ND		200	26	ug/Kg	☼	07/31/15 08:06	08/07/15 17:24	1
Phenanthrene	ND		200	29	ug/Kg	☼	07/31/15 08:06	08/07/15 17:24	1
Pyrene	ND		200	24	ug/Kg	☼	07/31/15 08:06	08/07/15 17:24	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	79		37 - 120	07/31/15 08:06	08/07/15 17:24	1
Nitrobenzene-d5	81		34 - 132	07/31/15 08:06	08/07/15 17:24	1
p-Terphenyl-d14	90		65 - 153	07/31/15 08:06	08/07/15 17:24	1

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		0.25	0.049	mg/Kg	☼	07/30/15 09:22	07/30/15 23:18	1
PCB-1221	ND		0.25	0.049	mg/Kg	☼	07/30/15 09:22	07/30/15 23:18	1
PCB-1232	ND		0.25	0.049	mg/Kg	☼	07/30/15 09:22	07/30/15 23:18	1
PCB-1242	ND		0.25	0.049	mg/Kg	☼	07/30/15 09:22	07/30/15 23:18	1
PCB-1248	ND		0.25	0.049	mg/Kg	☼	07/30/15 09:22	07/30/15 23:18	1
PCB-1254	ND		0.25	0.12	mg/Kg	☼	07/30/15 09:22	07/30/15 23:18	1
PCB-1260	ND		0.25	0.12	mg/Kg	☼	07/30/15 09:22	07/30/15 23:18	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	105		60 - 154	07/30/15 09:22	07/30/15 23:18	1
DCB Decachlorobiphenyl	98		65 - 174	07/30/15 09:22	07/30/15 23:18	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**8.1**		1.2	0.29	mg/Kg	☼	08/06/15 12:30	08/07/15 15:05	1

Client Sample ID: NP-4 (19'-20')
Date Collected: 07/29/15 09:40
Date Received: 07/29/15 16:15

Lab Sample ID: 480-84758-7
Matrix: Solid
Percent Solids: 68.0

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		7.1	0.52	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
1,1,2,2-Tetrachloroethane	ND		7.1	1.2	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
1,1,2-Trichloroethane	ND		7.1	0.93	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		7.1	1.6	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
1,1-Dichloroethane	ND		7.1	0.87	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
1,1-Dichloroethene	ND		7.1	0.87	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
1,2,4-Trichlorobenzene	ND		7.1	0.43	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
1,2-Dibromo-3-Chloropropane	ND		7.1	3.6	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
1,2-Dichlorobenzene	ND		7.1	0.56	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
1,2-Dichloroethane	ND		7.1	0.36	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
1,2-Dichloropropane	ND		7.1	3.6	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
1,3-Dichlorobenzene	ND		7.1	0.37	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
1,4-Dichlorobenzene	ND		7.1	1.0	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
2-Butanone (MEK)	ND	*	36	2.6	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
2-Hexanone	ND		36	3.6	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
4-Methyl-2-pentanone (MIBK)	ND		36	2.3	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
Acetone	**120**		36	6.0	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
Benzene	ND		7.1	0.35	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
Bromodichloromethane	ND		7.1	0.95	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
Bromoform	ND		7.1	3.6	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
Bromomethane	ND		7.1	0.64	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
Carbon disulfide	ND		7.1	3.6	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
Carbon tetrachloride	ND		7.1	0.69	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
Chlorobenzene	ND		7.1	0.94	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
Dibromochloromethane	ND		7.1	0.91	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
Chloroethane	ND		7.1	1.6	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
Chloroform	ND		7.1	0.44	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
Chloromethane	ND		7.1	0.43	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
cis-1,2-Dichloroethene	ND		7.1	0.91	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
cis-1,3-Dichloropropene	ND		7.1	1.0	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
Cyclohexane	ND		7.1	1.0	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
Dichlorodifluoromethane	ND		7.1	0.59	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
Ethylbenzene	ND		7.1	0.49	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
1,2-Dibromoethane	ND		7.1	0.91	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
Isopropylbenzene	ND		7.1	1.1	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
Methyl acetate	ND		7.1	4.3	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
Methyl tert-butyl ether	ND		7.1	0.70	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
Methylcyclohexane	ND		7.1	1.1	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
Methylene Chloride	ND		7.1	3.3	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
Styrene	ND		7.1	0.36	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
Tetrachloroethene	ND		7.1	0.96	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
Toluene	ND		7.1	0.54	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
trans-1,2-Dichloroethene	ND		7.1	0.74	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
trans-1,3-Dichloropropene	ND		7.1	3.1	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
Trichloroethene	ND		7.1	1.6	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
Trichlorofluoromethane	ND		7.1	0.67	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
Vinyl chloride	ND		7.1	0.87	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1
Xylenes, Total	ND		14	1.2	ug/Kg	☼	08/03/15 09:33	08/03/15 18:10	1

Client Sample ID: NP-4 (19'-20')
Date Collected: 07/29/15 09:40
Date Received: 07/29/15 16:15

Lab Sample ID: 480-84758-7
Matrix: Solid
Percent Solids: 68.0

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	97		71 - 125	08/03/15 09:33	08/03/15 18:10	1
1,2-Dichloroethane-d4 (Surr)	114		64 - 126	08/03/15 09:33	08/03/15 18:10	1
4-Bromofluorobenzene (Surr)	87		72 - 126	08/03/15 09:33	08/03/15 18:10	1
Dibromofluoromethane (Surr)	61		60 - 140	08/03/15 09:33	08/03/15 18:10	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		1200	180	ug/Kg	☼	07/31/15 08:06	08/07/15 17:51	5
Acenaphthylene	ND		1200	160	ug/Kg	☼	07/31/15 08:06	08/07/15 17:51	5
Anthracene	ND		1200	310	ug/Kg	☼	07/31/15 08:06	08/07/15 17:51	5
Benzo[a]anthracene	ND		1200	120	ug/Kg	☼	07/31/15 08:06	08/07/15 17:51	5
Benzo[a]pyrene	ND		1200	180	ug/Kg	☼	07/31/15 08:06	08/07/15 17:51	5
Benzo[b]fluoranthene	ND		1200	200	ug/Kg	☼	07/31/15 08:06	08/07/15 17:51	5
Benzo[g,h,i]perylene	ND		1200	130	ug/Kg	☼	07/31/15 08:06	08/07/15 17:51	5
Benzo[k]fluoranthene	ND		1200	160	ug/Kg	☼	07/31/15 08:06	08/07/15 17:51	5
Chrysene	ND		1200	280	ug/Kg	☼	07/31/15 08:06	08/07/15 17:51	5
Dibenz(a,h)anthracene	ND		1200	220	ug/Kg	☼	07/31/15 08:06	08/07/15 17:51	5
Fluoranthene	ND		1200	130	ug/Kg	☼	07/31/15 08:06	08/07/15 17:51	5
Fluorene	ND		1200	150	ug/Kg	☼	07/31/15 08:06	08/07/15 17:51	5
Indeno[1,2,3-cd]pyrene	ND		1200	150	ug/Kg	☼	07/31/15 08:06	08/07/15 17:51	5
Naphthalene	ND		1200	160	ug/Kg	☼	07/31/15 08:06	08/07/15 17:51	5
Phenanthrene	ND		1200	180	ug/Kg	☼	07/31/15 08:06	08/07/15 17:51	5
Pyrene	ND		1200	150	ug/Kg	☼	07/31/15 08:06	08/07/15 17:51	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	75		37 - 120	07/31/15 08:06	08/07/15 17:51	5
Nitrobenzene-d5	70		34 - 132	07/31/15 08:06	08/07/15 17:51	5
p-Terphenyl-d14	79		65 - 153	07/31/15 08:06	08/07/15 17:51	5

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		0.36	0.070	mg/Kg	☼	07/30/15 09:22	07/31/15 00:06	1
PCB-1221	ND		0.36	0.070	mg/Kg	☼	07/30/15 09:22	07/31/15 00:06	1
PCB-1232	ND		0.36	0.070	mg/Kg	☼	07/30/15 09:22	07/31/15 00:06	1
PCB-1242	ND		0.36	0.070	mg/Kg	☼	07/30/15 09:22	07/31/15 00:06	1
PCB-1248	ND		0.36	0.070	mg/Kg	☼	07/30/15 09:22	07/31/15 00:06	1
PCB-1254	ND		0.36	0.17	mg/Kg	☼	07/30/15 09:22	07/31/15 00:06	1
PCB-1260	ND		0.36	0.17	mg/Kg	☼	07/30/15 09:22	07/31/15 00:06	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	105		60 - 154	07/30/15 09:22	07/31/15 00:06	1
DCB Decachlorobiphenyl	102		65 - 174	07/30/15 09:22	07/31/15 00:06	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**13.1**		1.5	0.36	mg/Kg	☼	08/06/15 12:30	08/07/15 15:08	1

Client Sample ID: NP-5 (21'-22')

Date Collected: 07/29/15 10:30
Date Received: 07/29/15 16:15

Lab Sample ID: 480-84758-8

Matrix: Solid
Percent Solids: 78.3

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		6.3	0.46	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
1,1,2,2-Tetrachloroethane	ND		6.3	1.0	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
1,1,2-Trichloroethane	ND		6.3	0.83	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		6.3	1.4	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
1,1-Dichloroethane	ND		6.3	0.77	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
1,1-Dichloroethene	ND		6.3	0.78	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
1,2,4-Trichlorobenzene	ND		6.3	0.39	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
1,2-Dibromo-3-Chloropropane	ND		6.3	3.2	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
1,2-Dichlorobenzene	ND		6.3	0.50	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
1,2-Dichloroethane	ND		6.3	0.32	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
1,2-Dichloropropane	ND		6.3	3.2	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
1,3-Dichlorobenzene	ND		6.3	0.33	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
1,4-Dichlorobenzene	ND		6.3	0.89	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
2-Butanone (MEK)	ND		32	2.3	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
2-Hexanone	ND		32	3.2	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
4-Methyl-2-pentanone (MIBK)	ND		32	2.1	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
Acetone	**75**		32	5.3	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
Benzene	ND		6.3	0.31	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
Bromodichloromethane	ND		6.3	0.85	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
Bromoform	ND		6.3	3.2	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
Bromomethane	ND		6.3	0.57	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
Carbon disulfide	ND		6.3	3.2	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
Carbon tetrachloride	ND		6.3	0.61	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
Chlorobenzene	ND		6.3	0.84	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
Dibromochloromethane	ND		6.3	0.81	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
Chloroethane	ND		6.3	1.4	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
Chloroform	ND		6.3	0.39	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
Chloromethane	ND		6.3	0.38	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
cis-1,2-Dichloroethene	ND		6.3	0.81	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
cis-1,3-Dichloropropene	ND		6.3	0.91	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
Cyclohexane	ND		6.3	0.89	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
Dichlorodifluoromethane	ND		6.3	0.52	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
Ethylbenzene	ND		6.3	0.44	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
1,2-Dibromoethane	ND		6.3	0.81	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
Isopropylbenzene	ND		6.3	0.96	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
Methyl acetate	ND		6.3	3.8	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
Methyl tert-butyl ether	ND		6.3	0.62	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
Methylcyclohexane	ND		6.3	0.96	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
Methylene Chloride	**2.9**	**J**	6.3	2.9	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
Styrene	ND		6.3	0.32	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
Tetrachloroethene	ND		6.3	0.85	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
Toluene	ND		6.3	0.48	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
trans-1,2-Dichloroethene	ND		6.3	0.66	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
trans-1,3-Dichloropropene	ND		6.3	2.8	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
Trichloroethene	ND		6.3	1.4	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
Trichlorofluoromethane	ND		6.3	0.60	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
Vinyl chloride	ND		6.3	0.77	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1
Xylenes, Total	ND		13	1.1	ug/Kg	☼	07/30/15 14:20	07/31/15 16:50	1

Client Sample ID: NP-5 (21'-22')
Date Collected: 07/29/15 10:30
Date Received: 07/29/15 16:15

Lab Sample ID: 480-84758-8
Matrix: Solid
Percent Solids: 78.3

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	*105*		*71 - 125*	*07/30/15 14:20*	*07/31/15 16:50*	*1*
1,2-Dichloroethane-d4 (Surr)	*113*		*64 - 126*	*07/30/15 14:20*	*07/31/15 16:50*	*1*
4-Bromofluorobenzene (Surr)	*94*		*72 - 126*	*07/30/15 14:20*	*07/31/15 16:50*	*1*
Dibromofluoromethane (Surr)	*76*		*60 - 140*	*07/30/15 14:20*	*07/31/15 16:50*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		210	31	ug/Kg	☼	07/31/15 08:06	08/07/15 18:17	1
Acenaphthylene	ND		210	28	ug/Kg	☼	07/31/15 08:06	08/07/15 18:17	1
Anthracene	ND		210	53	ug/Kg	☼	07/31/15 08:06	08/07/15 18:17	1
Benzo[a]anthracene	ND		210	21	ug/Kg	☼	07/31/15 08:06	08/07/15 18:17	1
Benzo[a]pyrene	ND		210	31	ug/Kg	☼	07/31/15 08:06	08/07/15 18:17	1
Benzo[b]fluoranthene	ND		210	34	ug/Kg	☼	07/31/15 08:06	08/07/15 18:17	1
Benzo[g,h,i]perylene	ND		210	23	ug/Kg	☼	07/31/15 08:06	08/07/15 18:17	1
Benzo[k]fluoranthene	ND		210	28	ug/Kg	☼	07/31/15 08:06	08/07/15 18:17	1
Chrysene	ND		210	48	ug/Kg	☼	07/31/15 08:06	08/07/15 18:17	1
Dibenz(a,h)anthracene	ND		210	38	ug/Kg	☼	07/31/15 08:06	08/07/15 18:17	1
Fluoranthene	ND		210	23	ug/Kg	☼	07/31/15 08:06	08/07/15 18:17	1
Fluorene	ND		210	25	ug/Kg	☼	07/31/15 08:06	08/07/15 18:17	1
Indeno[1,2,3-cd]pyrene	ND		210	26	ug/Kg	☼	07/31/15 08:06	08/07/15 18:17	1
Naphthalene	ND		210	28	ug/Kg	☼	07/31/15 08:06	08/07/15 18:17	1
Phenanthrene	ND		210	31	ug/Kg	☼	07/31/15 08:06	08/07/15 18:17	1
Pyrene	ND		210	25	ug/Kg	☼	07/31/15 08:06	08/07/15 18:17	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	*83*		*37 - 120*	*07/31/15 08:06*	*08/07/15 18:17*	*1*
Nitrobenzene-d5	*85*		*34 - 132*	*07/31/15 08:06*	*08/07/15 18:17*	*1*
p-Terphenyl-d14	*89*		*65 - 153*	*07/31/15 08:06*	*08/07/15 18:17*	*1*

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		0.27	0.053	mg/Kg	☼	07/30/15 09:22	07/31/15 00:22	1
PCB-1221	ND		0.27	0.053	mg/Kg	☼	07/30/15 09:22	07/31/15 00:22	1
PCB-1232	ND		0.27	0.053	mg/Kg	☼	07/30/15 09:22	07/31/15 00:22	1
PCB-1242	ND		0.27	0.053	mg/Kg	☼	07/30/15 09:22	07/31/15 00:22	1
PCB-1248	ND		0.27	0.053	mg/Kg	☼	07/30/15 09:22	07/31/15 00:22	1
PCB-1254	ND		0.27	0.13	mg/Kg	☼	07/30/15 09:22	07/31/15 00:22	1
PCB-1260	ND		0.27	0.13	mg/Kg	☼	07/30/15 09:22	07/31/15 00:22	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	*100*		*60 - 154*	*07/30/15 09:22*	*07/31/15 00:22*	*1*
DCB Decachlorobiphenyl	*97*		*65 - 174*	*07/30/15 09:22*	*07/31/15 00:22*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**20.5**		1.3	0.31	mg/Kg	☼	08/06/15 12:30	08/07/15 15:10	1

Client: Praxair, Inc. TestAmerica Job ID: 480-84758-1
Project/Site: 90 Hopkins St

Client Sample ID: NP-6 (19.8'-20.8') **Lab Sample ID: 480-84758-9**
Date Collected: 07/29/15 11:35 **Matrix: Solid**
Date Received: 07/29/15 16:15 **Percent Solids: 82.3**

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		6.1	0.44	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
1,1,2,2-Tetrachloroethane	ND	F1	6.1	0.98	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
1,1,2-Trichloroethane	ND	F1	6.1	0.79	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		6.1	1.4	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
1,1-Dichloroethane	ND		6.1	0.74	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
1,1-Dichloroethene	ND		6.1	0.74	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
1,2,4-Trichlorobenzene	ND	F1	6.1	0.37	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
1,2-Dibromo-3-Chloropropane	ND	F1	6.1	3.0	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
1,2-Dichlorobenzene	ND	F1	6.1	0.47	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
1,2-Dichloroethane	ND		6.1	0.30	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
1,2-Dichloropropane	ND		6.1	3.0	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
1,3-Dichlorobenzene	ND	F1	6.1	0.31	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
1,4-Dichlorobenzene	ND	F1	6.1	0.85	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
2-Butanone (MEK)	ND	* F1	30	2.2	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
2-Hexanone	ND		30	3.0	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
4-Methyl-2-pentanone (MIBK)	ND		30	2.0	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
Acetone	**67**	**F1**	30	5.1	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
Benzene	ND		6.1	0.30	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
Bromodichloromethane	ND	F1	6.1	0.81	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
Bromoform	ND	F1	6.1	3.0	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
Bromomethane	ND		6.1	0.54	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
Carbon disulfide	**4.1**	**J F1**	6.1	3.0	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
Carbon tetrachloride	ND		6.1	0.59	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
Chlorobenzene	ND		6.1	0.80	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
Dibromochloromethane	ND	F1	6.1	0.77	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
Chloroethane	ND		6.1	1.4	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
Chloroform	ND		6.1	0.37	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
Chloromethane	ND		6.1	0.37	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
cis-1,2-Dichloroethene	ND		6.1	0.77	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
cis-1,3-Dichloropropene	ND	F1	6.1	0.87	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
Cyclohexane	ND		6.1	0.85	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
Dichlorodifluoromethane	ND		6.1	0.50	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
Ethylbenzene	ND	F1	6.1	0.42	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
1,2-Dibromoethane	ND	F1	6.1	0.78	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
Isopropylbenzene	ND	F1	6.1	0.91	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
Methyl acetate	ND	F1	6.1	3.7	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
Methyl tert-butyl ether	ND		6.1	0.59	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
Methylcyclohexane	ND		6.1	0.92	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
Methylene Chloride	ND		6.1	2.8	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
Styrene	ND	F1	6.1	0.30	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
Tetrachloroethene	ND	F1	6.1	0.81	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
Toluene	ND		6.1	0.46	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
trans-1,2-Dichloroethene	ND		6.1	0.62	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
trans-1,3-Dichloropropene	ND	F1	6.1	2.7	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
Trichloroethene	ND	F1	6.1	1.3	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
Trichlorofluoromethane	ND		6.1	0.57	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
Vinyl chloride	ND		6.1	0.74	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1
Xylenes, Total	ND	F1	12	1.0	ug/Kg	☼	08/03/15 09:33	08/03/15 18:36	1

Client Sample ID: NP-6 (19.8'-20.8')

Date Collected: 07/29/15 11:35
Date Received: 07/29/15 16:15

Lab Sample ID: 480-84758-9
Matrix: Solid
Percent Solids: 82.3

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	95		71 - 125	08/03/15 09:33	08/03/15 18:36	1
1,2-Dichloroethane-d4 (Surr)	115		64 - 126	08/03/15 09:33	08/03/15 18:36	1
4-Bromofluorobenzene (Surr)	88		72 - 126	08/03/15 09:33	08/03/15 18:36	1
Dibromofluoromethane (Surr)	72		60 - 140	08/03/15 09:33	08/03/15 18:36	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		1000	150	ug/Kg	☼	07/31/15 08:06	08/07/15 18:43	5
Acenaphthylene	ND		1000	130	ug/Kg	☼	07/31/15 08:06	08/07/15 18:43	5
Anthracene	ND		1000	250	ug/Kg	☼	07/31/15 08:06	08/07/15 18:43	5
Benzo[a]anthracene	ND		1000	100	ug/Kg	☼	07/31/15 08:06	08/07/15 18:43	5
Benzo[a]pyrene	ND		1000	150	ug/Kg	☼	07/31/15 08:06	08/07/15 18:43	5
Benzo[b]fluoranthene	ND		1000	160	ug/Kg	☼	07/31/15 08:06	08/07/15 18:43	5
Benzo[g,h,i]perylene	ND		1000	110	ug/Kg	☼	07/31/15 08:06	08/07/15 18:43	5
Benzo[k]fluoranthene	ND		1000	130	ug/Kg	☼	07/31/15 08:06	08/07/15 18:43	5
Chrysene	ND		1000	220	ug/Kg	☼	07/31/15 08:06	08/07/15 18:43	5
Dibenz(a,h)anthracene	ND		1000	180	ug/Kg	☼	07/31/15 08:06	08/07/15 18:43	5
Fluoranthene	ND		1000	110	ug/Kg	☼	07/31/15 08:06	08/07/15 18:43	5
Fluorene	ND		1000	120	ug/Kg	☼	07/31/15 08:06	08/07/15 18:43	5
Indeno[1,2,3-cd]pyrene	ND		1000	120	ug/Kg	☼	07/31/15 08:06	08/07/15 18:43	5
Naphthalene	ND		1000	130	ug/Kg	☼	07/31/15 08:06	08/07/15 18:43	5
Phenanthrene	ND		1000	150	ug/Kg	☼	07/31/15 08:06	08/07/15 18:43	5
Pyrene	ND		1000	120	ug/Kg	☼	07/31/15 08:06	08/07/15 18:43	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	76		37 - 120	07/31/15 08:06	08/07/15 18:43	5
Nitrobenzene-d5	72		34 - 132	07/31/15 08:06	08/07/15 18:43	5
p-Terphenyl-d14	85		65 - 153	07/31/15 08:06	08/07/15 18:43	5

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		0.22	0.044	mg/Kg	☼	07/30/15 09:22	07/31/15 00:38	1
PCB-1221	ND		0.22	0.044	mg/Kg	☼	07/30/15 09:22	07/31/15 00:38	1
PCB-1232	ND		0.22	0.044	mg/Kg	☼	07/30/15 09:22	07/31/15 00:38	1
PCB-1242	ND		0.22	0.044	mg/Kg	☼	07/30/15 09:22	07/31/15 00:38	1
PCB-1248	ND		0.22	0.044	mg/Kg	☼	07/30/15 09:22	07/31/15 00:38	1
PCB-1254	ND		0.22	0.10	mg/Kg	☼	07/30/15 09:22	07/31/15 00:38	1
PCB-1260	ND		0.22	0.10	mg/Kg	☼	07/30/15 09:22	07/31/15 00:38	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	102		60 - 154	07/30/15 09:22	07/31/15 00:38	1
DCB Decachlorobiphenyl	98		65 - 174	07/30/15 09:22	07/31/15 00:38	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**11.3**		1.2	0.28	mg/Kg	☼	08/06/15 12:30	08/07/15 15:22	1

Client Sample ID: NP-7 (7'-8')
Date Collected: 07/29/15 12:45
Date Received: 07/29/15 16:15

Lab Sample ID: 480-84758-10
Matrix: Solid
Percent Solids: 68.2

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		7.3	0.53	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
1,1,2,2-Tetrachloroethane	ND		7.3	1.2	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
1,1,2-Trichloroethane	ND		7.3	0.95	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		7.3	1.7	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
1,1-Dichloroethane	ND		7.3	0.89	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
1,1-Dichloroethene	ND		7.3	0.89	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
1,2,4-Trichlorobenzene	ND		7.3	0.44	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
1,2-Dibromo-3-Chloropropane	ND		7.3	3.7	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
1,2-Dichlorobenzene	ND		7.3	0.57	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
1,2-Dichloroethane	ND		7.3	0.37	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
1,2-Dichloropropane	ND		7.3	3.7	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
1,3-Dichlorobenzene	ND		7.3	0.38	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
1,4-Dichlorobenzene	ND		7.3	1.0	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
2-Butanone (MEK)	ND		37	2.7	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
2-Hexanone	ND		37	3.7	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
4-Methyl-2-pentanone (MIBK)	ND		37	2.4	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
Acetone	**170**		37	6.2	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
Benzene	ND		7.3	0.36	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
Bromodichloromethane	ND		7.3	0.98	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
Bromoform	ND		7.3	3.7	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
Bromomethane	ND		7.3	0.66	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
Carbon disulfide	ND		7.3	3.7	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
Carbon tetrachloride	ND		7.3	0.71	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
Chlorobenzene	ND		7.3	0.96	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
Dibromochloromethane	ND		7.3	0.94	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
Chloroethane	ND		7.3	1.7	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
Chloroform	ND		7.3	0.45	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
Chloromethane	ND		7.3	0.44	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
cis-1,2-Dichloroethene	ND		7.3	0.94	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
cis-1,3-Dichloropropene	ND		7.3	1.1	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
Cyclohexane	ND		7.3	1.0	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
Dichlorodifluoromethane	ND		7.3	0.60	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
Ethylbenzene	ND		7.3	0.50	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
1,2-Dibromoethane	ND		7.3	0.94	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
Isopropylbenzene	ND		7.3	1.1	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
Methyl acetate	ND		7.3	4.4	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
Methyl tert-butyl ether	ND		7.3	0.72	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
Methylcyclohexane	ND		7.3	1.1	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
Methylene Chloride	ND		7.3	3.4	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
Styrene	ND		7.3	0.37	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
Tetrachloroethene	ND		7.3	0.98	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
Toluene	ND		7.3	0.55	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
trans-1,2-Dichloroethene	ND		7.3	0.75	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
trans-1,3-Dichloropropene	ND		7.3	3.2	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
Trichloroethene	ND		7.3	1.6	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
Trichlorofluoromethane	ND		7.3	0.69	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
Vinyl chloride	ND		7.3	0.89	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1
Xylenes, Total	ND		15	1.2	ug/Kg	☼	07/30/15 14:20	07/31/15 17:43	1

Client Sample ID: NP-7 (7'-8')

Lab Sample ID: 480-84758-10

Date Collected: 07/29/15 12:45
Date Received: 07/29/15 16:15

Matrix: Solid
Percent Solids: 68.2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*71 - 125*	*07/30/15 14:20*	*07/31/15 17:43*	*1*
1,2-Dichloroethane-d4 (Surr)	*124*		*64 - 126*	*07/30/15 14:20*	*07/31/15 17:43*	*1*
4-Bromofluorobenzene (Surr)	*97*		*72 - 126*	*07/30/15 14:20*	*07/31/15 17:43*	*1*
Dibromofluoromethane (Surr)	*70*		*60 - 140*	*07/30/15 14:20*	*07/31/15 17:43*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		1200	180	ug/Kg	☼	07/31/15 08:06	08/07/15 19:09	5
Acenaphthylene	ND		1200	160	ug/Kg	☼	07/31/15 08:06	08/07/15 19:09	5
Anthracene	ND		1200	300	ug/Kg	☼	07/31/15 08:06	08/07/15 19:09	5
Benzo[a]anthracene	ND		1200	120	ug/Kg	☼	07/31/15 08:06	08/07/15 19:09	5
Benzo[a]pyrene	ND		1200	180	ug/Kg	☼	07/31/15 08:06	08/07/15 19:09	5
Benzo[b]fluoranthene	ND		1200	200	ug/Kg	☼	07/31/15 08:06	08/07/15 19:09	5
Benzo[g,h,i]perylene	ND		1200	130	ug/Kg	☼	07/31/15 08:06	08/07/15 19:09	5
Benzo[k]fluoranthene	ND		1200	160	ug/Kg	☼	07/31/15 08:06	08/07/15 19:09	5
Chrysene	ND		1200	270	ug/Kg	☼	07/31/15 08:06	08/07/15 19:09	5
Dibenz(a,h)anthracene	ND		1200	220	ug/Kg	☼	07/31/15 08:06	08/07/15 19:09	5
Fluoranthene	ND		1200	130	ug/Kg	☼	07/31/15 08:06	08/07/15 19:09	5
Fluorene	ND		1200	140	ug/Kg	☼	07/31/15 08:06	08/07/15 19:09	5
Indeno[1,2,3-cd]pyrene	ND		1200	150	ug/Kg	☼	07/31/15 08:06	08/07/15 19:09	5
Naphthalene	ND		1200	160	ug/Kg	☼	07/31/15 08:06	08/07/15 19:09	5
Phenanthrene	ND		1200	180	ug/Kg	☼	07/31/15 08:06	08/07/15 19:09	5
Pyrene	ND		1200	140	ug/Kg	☼	07/31/15 08:06	08/07/15 19:09	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*69*		*37 - 120*	*07/31/15 08:06*	*08/07/15 19:09*	*5*
Nitrobenzene-d5	*65*		*34 - 132*	*07/31/15 08:06*	*08/07/15 19:09*	*5*
p-Terphenyl-d14	*78*		*65 - 153*	*07/31/15 08:06*	*08/07/15 19:09*	*5*

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		0.26	0.050	mg/Kg	☼	07/30/15 09:22	07/31/15 00:53	1
PCB-1221	ND		0.26	0.050	mg/Kg	☼	07/30/15 09:22	07/31/15 00:53	1
PCB-1232	ND		0.26	0.050	mg/Kg	☼	07/30/15 09:22	07/31/15 00:53	1
PCB-1242	ND		0.26	0.050	mg/Kg	☼	07/30/15 09:22	07/31/15 00:53	1
PCB-1248	ND		0.26	0.050	mg/Kg	☼	07/30/15 09:22	07/31/15 00:53	1
PCB-1254	ND		0.26	0.12	mg/Kg	☼	07/30/15 09:22	07/31/15 00:53	1
PCB-1260	ND		0.26	0.12	mg/Kg	☼	07/30/15 09:22	07/31/15 00:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*103*		*60 - 154*	*07/30/15 09:22*	*07/31/15 00:53*	*1*
DCB Decachlorobiphenyl	*99*		*65 - 174*	*07/30/15 09:22*	*07/31/15 00:53*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**15.8**		1.4	0.34	mg/Kg	☼	08/06/15 12:30	08/07/15 15:25	1

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

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)	12DCE (64-126)	BFB (72-126)	DBFM (60-140)
480-84758-1	SP-1 (11'-12')	100	117	96	60
480-84758-1 MS	SP-1 (11'-12')	102	103	100	67
480-84758-1 MSD	SP-1 (11'-12')	102	106	99	73
480-84758-2	SP-2 (12'-13')	100	118	93	116
480-84758-3	SP-3 (11.5'-12.5')	100	115	92	117
480-84758-4	NP-1 (7.9'-8.9')	98	115	90	117
480-84758-5	NP-2 (6.5'-7.5')	99	120	100	106
480-84758-6	NP-3 (15'-16')	100	118	92	119
480-84758-7	NP-4 (19'-20')	97	114	87	61
480-84758-8	NP-5 (21'-22')	105	113	94	76
480-84758-9	NP-6 (19.8'-20.8')	95	115	88	72
480-84758-9 MS	NP-6 (19.8'-20.8')	99	99	95	75
480-84758-9 MSD	NP-6 (19.8'-20.8')	99	99	96	72
480-84758-10	NP-7 (7'-8')	99	124	97	70
LCS 480-256263/1-A	Lab Control Sample	103	113	104	116
LCS 480-256689/1-A	Lab Control Sample	94	121	96	107
MB 480-256263/2-A	Method Blank	98	114	95	115
MB 480-256689/3-A	Method Blank	94	107	91	109

Surrogate Legend

TOL = Toluene-d8 (Surr)
12DCE = 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	FBP (37-120)	NBZ (34-132)	TPH (65-153)
480-84758-1	SP-1 (11'-12')	80	84	88
480-84758-1 MS	SP-1 (11'-12')	83	83	87
480-84758-1 MSD	SP-1 (11'-12')	85	88	94
480-84758-2	SP-2 (12'-13')	72	73	81
480-84758-3	SP-3 (11.5'-12.5')	83	82	86
480-84758-4	NP-1 (7.9'-8.9')	75	77	85
480-84758-5	NP-2 (6.5'-7.5')	77	80	87
480-84758-6	NP-3 (15'-16')	79	81	90
480-84758-7	NP-4 (19'-20')	75	70	79
480-84758-8	NP-5 (21'-22')	83	85	89
480-84758-9	NP-6 (19.8'-20.8')	76	72	85
480-84758-10	NP-7 (7'-8')	69	65	78
LCS 480-256368/2-A	Lab Control Sample	81	79	85
MB 480-256368/1-A	Method Blank	82	82	88

Surrogate Legend

FBP = 2-Fluorobiphenyl
NBZ = Nitrobenzene-d5
TPH = p-Terphenyl-d14

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
		TCX1	DCB1
Lab Sample ID	Client Sample ID	(60-154)	(65-174)
480-84758-1	SP-1 (11'-12')	104	99
480-84758-1 MS	SP-1 (11'-12')	115	107
480-84758-1 MSD	SP-1 (11'-12')	117	107
480-84758-2	SP-2 (12'-13')	104	98
480-84758-3	SP-3 (11.5'-12.5')	104	98
480-84758-4	NP-1 (7.9'-8.9')	105	99
480-84758-5	NP-2 (6.5'-7.5')	98	98
480-84758-6	NP-3 (15'-16')	105	98
480-84758-7	NP-4 (19'-20')	105	102
480-84758-8	NP-5 (21'-22')	100	97
480-84758-9	NP-6 (19.8'-20.8')	102	98
480-84758-10	NP-7 (7'-8')	103	99
LCS 480-256173/2-A	Lab Control Sample	117	109
MB 480-256173/1-A	Method Blank	106	100

Surrogate Legend

TCX = Tetrachloro-m-xylene

DCB = DCB Decachlorobiphenyl

Client: Praxair, Inc.
Project/Site: 90 Hopkins St

TestAmerica Job ID: 480-84758-1

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 480-256263/2-A
Matrix: Solid
Analysis Batch: 256413

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 256263

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		4.9	0.35	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
1,1,2,2-Tetrachloroethane	ND		4.9	0.79	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
1,1,2-Trichloroethane	ND		4.9	0.63	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		4.9	1.1	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
1,1-Dichloroethane	ND		4.9	0.59	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
1,1-Dichloroethene	ND		4.9	0.60	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
1,2,4-Trichlorobenzene	ND		4.9	0.30	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
1,2-Dibromo-3-Chloropropane	ND		4.9	2.4	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
1,2-Dichlorobenzene	ND		4.9	0.38	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
1,2-Dichloroethane	ND		4.9	0.24	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
1,2-Dichloropropane	ND		4.9	2.4	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
1,3-Dichlorobenzene	ND		4.9	0.25	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
1,4-Dichlorobenzene	ND		4.9	0.68	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
2-Butanone (MEK)	ND		24	1.8	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
2-Hexanone	ND		24	2.4	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
4-Methyl-2-pentanone (MIBK)	ND		24	1.6	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
Acetone	ND		24	4.1	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
Benzene	ND		4.9	0.24	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
Bromodichloromethane	ND		4.9	0.65	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
Bromoform	ND		4.9	2.4	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
Bromomethane	ND		4.9	0.44	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
Carbon disulfide	ND		4.9	2.4	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
Carbon tetrachloride	ND		4.9	0.47	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
Chlorobenzene	ND		4.9	0.64	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
Dibromochloromethane	ND		4.9	0.62	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
Chloroethane	ND		4.9	1.1	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
Chloroform	ND		4.9	0.30	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
Chloromethane	ND		4.9	0.29	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
cis-1,2-Dichloroethene	ND		4.9	0.62	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
cis-1,3-Dichloropropene	ND		4.9	0.70	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
Cyclohexane	ND		4.9	0.68	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
Dichlorodifluoromethane	ND		4.9	0.40	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
Ethylbenzene	ND		4.9	0.34	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
1,2-Dibromoethane	ND		4.9	0.63	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
Isopropylbenzene	ND		4.9	0.73	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
Methyl acetate	ND		4.9	2.9	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
Methyl tert-butyl ether	ND		4.9	0.48	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
Methylcyclohexane	ND		4.9	0.74	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
Methylene Chloride	ND		4.9	2.2	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
Styrene	ND		4.9	0.24	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
Tetrachloroethene	ND		4.9	0.65	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
Toluene	ND		4.9	0.37	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
trans-1,2-Dichloroethene	ND		4.9	0.50	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
trans-1,3-Dichloropropene	ND		4.9	2.1	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
Trichloroethene	ND		4.9	1.1	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
Trichlorofluoromethane	ND		4.9	0.46	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
Vinyl chloride	ND		4.9	0.59	ug/Kg		07/30/15 14:20	07/31/15 12:21	1
Xylenes, Total	ND		9.7	0.82	ug/Kg		07/30/15 14:20	07/31/15 12:21	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	*98*		*71 - 125*	*07/30/15 14:20*	*07/31/15 12:21*	*1*
1,2-Dichloroethane-d4 (Surr)	*114*		*64 - 126*	*07/30/15 14:20*	*07/31/15 12:21*	*1*
4-Bromofluorobenzene (Surr)	*95*		*72 - 126*	*07/30/15 14:20*	*07/31/15 12:21*	*1*
Dibromofluoromethane (Surr)	*115*		*60 - 140*	*07/30/15 14:20*	*07/31/15 12:21*	*1*

Lab Sample ID: LCS 480-256263/1-A
Matrix: Solid
Analysis Batch: 256413

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 256263

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	49.5	57.1		ug/Kg		115	77 - 121
1,1,2,2-Tetrachloroethane	49.5	49.2		ug/Kg		99	80 - 120
1,1,2-Trichloroethane	49.5	52.5		ug/Kg		106	78 - 122
1,1,2-Trichloro-1,2,2-trifluoroethane	49.5	53.2		ug/Kg		108	60 - 140
1,1-Dichloroethane	49.5	55.5		ug/Kg		112	73 - 126
1,1-Dichloroethene	49.5	54.8		ug/Kg		111	59 - 125
1,2,4-Trichlorobenzene	49.5	53.4		ug/Kg		108	64 - 120
1,2-Dibromo-3-Chloropropane	49.5	47.2		ug/Kg		95	63 - 124
1,2-Dichlorobenzene	49.5	50.8		ug/Kg		103	75 - 120
1,2-Dichloroethane	49.5	53.8		ug/Kg		109	77 - 122
1,2-Dichloropropane	49.5	52.5		ug/Kg		106	75 - 124
1,3-Dichlorobenzene	49.5	49.9		ug/Kg		101	74 - 120
1,4-Dichlorobenzene	49.5	49.0		ug/Kg		99	73 - 120
2-Butanone (MEK)	248	237		ug/Kg		96	70 - 134
2-Hexanone	248	258		ug/Kg		104	59 - 130
4-Methyl-2-pentanone (MIBK)	248	266		ug/Kg		107	65 - 133
Acetone	248	266		ug/Kg		108	61 - 137
Benzene	49.5	51.9		ug/Kg		105	79 - 127
Bromodichloromethane	49.5	56.3		ug/Kg		114	80 - 122
Bromoform	49.5	52.0		ug/Kg		105	68 - 126
Bromomethane	49.5	43.7		ug/Kg		88	37 - 149
Carbon disulfide	49.5	56.3		ug/Kg		114	64 - 131
Carbon tetrachloride	49.5	60.8		ug/Kg		123	75 - 135
Chlorobenzene	49.5	50.9		ug/Kg		103	76 - 124
Dibromochloromethane	49.5	60.2		ug/Kg		122	76 - 125
Chloroethane	49.5	48.3		ug/Kg		97	69 - 135
Chloroform	49.5	55.3		ug/Kg		112	80 - 118
Chloromethane	49.5	50.4		ug/Kg		102	63 - 127
cis-1,2-Dichloroethene	49.5	55.3		ug/Kg		112	81 - 117
cis-1,3-Dichloropropene	49.5	52.9		ug/Kg		107	82 - 120
Cyclohexane	49.5	49.8		ug/Kg		101	65 - 106
Dichlorodifluoromethane	49.5	49.0		ug/Kg		99	57 - 142
Ethylbenzene	49.5	50.6		ug/Kg		102	80 - 120
1,2-Dibromoethane	49.5	52.6		ug/Kg		106	78 - 120
Isopropylbenzene	49.5	46.4		ug/Kg		94	72 - 120
Methyl acetate	248	269		ug/Kg		108	55 - 136
Methyl tert-butyl ether	49.5	56.1		ug/Kg		113	63 - 125
Methylcyclohexane	49.5	49.7		ug/Kg		100	60 - 140
Methylene Chloride	49.5	58.4		ug/Kg		118	61 - 127
Styrene	49.5	53.1		ug/Kg		107	80 - 120
Tetrachloroethene	49.5	51.0		ug/Kg		103	74 - 122
Toluene	49.5	50.3		ug/Kg		102	74 - 128
trans-1,2-Dichloroethene	49.5	55.4		ug/Kg		112	78 - 126

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 480-256263/1-A
Matrix: Solid
Analysis Batch: 256413

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 256263

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Trichloroethene	49.5	50.3		ug/Kg		102	77 - 129
Trichlorofluoromethane	49.5	52.2		ug/Kg		105	65 - 146
Vinyl chloride	49.5	50.5		ug/Kg		102	61 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*103*		*71 - 125*
1,2-Dichloroethane-d4 (Surr)	*113*		*64 - 126*
4-Bromofluorobenzene (Surr)	*104*		*72 - 126*
Dibromofluoromethane (Surr)	*116*		*60 - 140*

Lab Sample ID: 480-84758-1 MS
Matrix: Solid
Analysis Batch: 256413

Client Sample ID: SP-1 (11'-12')
Prep Type: Total/NA
Prep Batch: 256263

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	ND		57.6	61.5		ug/Kg	☼	107	77 - 121
1,1,2,2-Tetrachloroethane	ND	F1	57.6	ND	F1	ug/Kg	☼	0	80 - 120
1,1,2-Trichloroethane	ND	F1	57.6	28.9	F1	ug/Kg	☼	50	78 - 122
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		57.6	55.4		ug/Kg	☼	96	60 - 140
1,1-Dichloroethane	ND		57.6	61.9		ug/Kg	☼	108	73 - 126
1,1-Dichloroethene	ND	F1	57.6	84.3	F1	ug/Kg	☼	146	59 - 125
1,2,4-Trichlorobenzene	ND	F1	57.6	35.3	F1	ug/Kg	☼	61	64 - 120
1,2-Dibromo-3-Chloropropane	ND	F1	57.6	20.4	F1	ug/Kg	☼	35	63 - 124
1,2-Dichlorobenzene	ND		57.6	43.0		ug/Kg	☼	75	75 - 120
1,2-Dichloroethane	ND		57.6	57.6		ug/Kg	☼	100	77 - 122
1,2-Dichloropropane	ND		57.6	59.5		ug/Kg	☼	103	75 - 124
1,3-Dichlorobenzene	ND	F1	57.6	42.7		ug/Kg	☼	74	74 - 120
1,4-Dichlorobenzene	ND		57.6	42.8		ug/Kg	☼	74	73 - 120
2-Butanone (MEK)	12	J F1	288	188	F1	ug/Kg	☼	61	70 - 134
2-Hexanone	ND		288	206		ug/Kg	☼	72	59 - 130
4-Methyl-2-pentanone (MIBK)	ND		288	224		ug/Kg	☼	78	65 - 133
Acetone	170	F1	288	285	F1	ug/Kg	☼	40	61 - 137
Benzene	ND		57.6	59.3		ug/Kg	☼	103	79 - 127
Bromodichloromethane	ND		57.6	49.8		ug/Kg	☼	86	80 - 122
Bromoform	ND		57.6	42.5		ug/Kg	☼	74	68 - 126
Bromomethane	ND		57.6	39.8		ug/Kg	☼	69	37 - 149
Carbon disulfide	3.6	J F2 F1	57.6	25.9	F1	ug/Kg	☼	39	64 - 131
Carbon tetrachloride	ND		57.6	56.7		ug/Kg	☼	99	75 - 135
Chlorobenzene	ND		57.6	52.3		ug/Kg	☼	91	76 - 124
Dibromochloromethane	ND		57.6	50.0		ug/Kg	☼	87	76 - 125
Chloroethane	ND		57.6	58.5		ug/Kg	☼	102	69 - 135
Chloroform	ND		57.6	64.5		ug/Kg	☼	112	80 - 118
Chloromethane	ND		57.6	53.2		ug/Kg	☼	92	63 - 127
cis-1,2-Dichloroethene	ND		57.6	61.7		ug/Kg	☼	107	81 - 117
cis-1,3-Dichloropropene	ND	F1	57.6	38.7	F1	ug/Kg	☼	67	82 - 120
Cyclohexane	ND		57.6	46.0		ug/Kg	☼	80	65 - 106
Dichlorodifluoromethane	ND		57.6	49.5		ug/Kg	☼	86	57 - 142

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 480-84758-1 MS
Matrix: Solid
Analysis Batch: 256413

Client Sample ID: SP-1 (11'-12')
Prep Type: Total/NA
Prep Batch: 256263

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Ethylbenzene	ND		57.6	50.8		ug/Kg	☼	88	80 - 120
1,2-Dibromoethane	ND		57.6	48.3		ug/Kg	☼	84	78 - 120
Isopropylbenzene	ND		57.6	41.9		ug/Kg	☼	73	72 - 120
Methyl acetate	ND	F1	288	ND	F1	ug/Kg	☼	0	55 - 136
Methyl tert-butyl ether	ND		57.6	55.2		ug/Kg	☼	96	63 - 125
Methylcyclohexane	ND		57.6	41.3		ug/Kg	☼	72	60 - 140
Methylene Chloride	6.7		57.6	69.6		ug/Kg	☼	109	61 - 127
Styrene	ND		57.6	53.0		ug/Kg	☼	92	80 - 120
Tetrachloroethene	ND		57.6	49.1		ug/Kg	☼	85	74 - 122
Toluene	0.94	J	57.6	54.4		ug/Kg	☼	93	74 - 128
trans-1,2-Dichloroethene	ND		57.6	62.4		ug/Kg	☼	108	78 - 126
Trichloroethene	ND	F1	57.6	101	F1	ug/Kg	☼	176	77 - 129
Trichlorofluoromethane	0.58	J	57.6	56.1		ug/Kg	☼	96	65 - 146
Vinyl chloride	ND		57.6	52.7		ug/Kg	☼	92	61 - 133

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Toluene-d8 (Surr)	*102*		*71 - 125*
1,2-Dichloroethane-d4 (Surr)	*103*		*64 - 126*
4-Bromofluorobenzene (Surr)	*100*		*72 - 126*
Dibromofluoromethane (Surr)	*67*		*60 - 140*

Lab Sample ID: 480-84758-1 MSD
Matrix: Solid
Analysis Batch: 256413

Client Sample ID: SP-1 (11'-12')
Prep Type: Total/NA
Prep Batch: 256263

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane	ND		57.7	60.2		ug/Kg	☼	104	77 - 121	2	30
1,1,2,2-Tetrachloroethane	ND	F1	57.7	ND	F1	ug/Kg	☼	0	80 - 120	NC	30
1,1,2-Trichloroethane	ND	F1	57.7	32.5	F1	ug/Kg	☼	56	78 - 122	12	30
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		57.7	54.1		ug/Kg	☼	94	60 - 140	2	30
1,1-Dichloroethane	ND		57.7	59.9		ug/Kg	☼	104	73 - 126	3	30
1,1-Dichloroethene	ND	F1	57.7	77.9	F1	ug/Kg	☼	135	59 - 125	8	30
1,2,4-Trichlorobenzene	ND	F1	57.7	35.8	F1	ug/Kg	☼	62	64 - 120	1	30
1,2-Dibromo-3-Chloropropane	ND	F1	57.7	24.2	F1	ug/Kg	☼	42	63 - 124	17	30
1,2-Dichlorobenzene	ND		57.7	43.2		ug/Kg	☼	75	75 - 120	1	30
1,2-Dichloroethane	ND		57.7	55.7		ug/Kg	☼	97	77 - 122	3	30
1,2-Dichloropropane	ND		57.7	56.7		ug/Kg	☼	98	75 - 124	5	30
1,3-Dichlorobenzene	ND	F1	57.7	42.3	F1	ug/Kg	☼	73	74 - 120	1	30
1,4-Dichlorobenzene	ND		57.7	42.8		ug/Kg	☼	74	73 - 120	0	30
2-Butanone (MEK)	12	J F1	288	196	F1	ug/Kg	☼	64	70 - 134	5	30
2-Hexanone	ND		288	215		ug/Kg	☼	74	59 - 130	4	30
4-Methyl-2-pentanone (MIBK)	ND		288	234		ug/Kg	☼	81	65 - 133	4	30
Acetone	170	F1	288	287	F1	ug/Kg	☼	41	61 - 137	1	30
Benzene	ND		57.7	56.9		ug/Kg	☼	99	79 - 127	4	30
Bromodichloromethane	ND		57.7	52.5		ug/Kg	☼	91	80 - 122	5	30
Bromoform	ND		57.7	46.8		ug/Kg	☼	81	68 - 126	10	30
Bromomethane	ND		57.7	40.6		ug/Kg	☼	70	37 - 149	2	30

Client: Praxair, Inc.
Project/Site: 90 Hopkins St

TestAmerica Job ID: 480-84758-1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 480-84758-1 MSD
Matrix: Solid
Analysis Batch: 256413

Client Sample ID: SP-1 (11'-12')
Prep Type: Total/NA
Prep Batch: 256263

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Carbon disulfide	3.6	J F2 F1	57.7	40.6	F2	ug/Kg	☼	64	64 - 131	44	30
Carbon tetrachloride	ND		57.7	59.6		ug/Kg	☼	103	75 - 135	5	30
Chlorobenzene	ND		57.7	50.8		ug/Kg	☼	88	76 - 124	3	30
Dibromochloromethane	ND		57.7	53.9		ug/Kg	☼	93	76 - 125	8	30
Chloroethane	ND		57.7	56.7		ug/Kg	☼	98	69 - 135	3	30
Chloroform	ND		57.7	60.5		ug/Kg	☼	105	80 - 118	6	30
Chloromethane	ND		57.7	52.5		ug/Kg	☼	91	63 - 127	1	30
cis-1,2-Dichloroethene	ND		57.7	59.2		ug/Kg	☼	103	81 - 117	4	30
cis-1,3-Dichloropropene	ND	F1	57.7	40.4	F1	ug/Kg	☼	70	82 - 120	4	30
Cyclohexane	ND		57.7	46.8		ug/Kg	☼	81	65 - 106	2	30
Dichlorodifluoromethane	ND		57.7	46.7		ug/Kg	☼	81	57 - 142	6	30
Ethylbenzene	ND		57.7	49.7		ug/Kg	☼	86	80 - 120	2	30
1,2-Dibromoethane	ND		57.7	48.6		ug/Kg	☼	84	78 - 120	1	30
Isopropylbenzene	ND		57.7	42.1		ug/Kg	☼	73	72 - 120	0	30
Methyl acetate	ND	F1	288	ND	F1	ug/Kg	☼	0	55 - 136	NC	30
Methyl tert-butyl ether	ND		57.7	56.7		ug/Kg	☼	98	63 - 125	3	30
Methylcyclohexane	ND		57.7	41.8		ug/Kg	☼	72	60 - 140	1	30
Methylene Chloride	6.7		57.7	66.6		ug/Kg	☼	104	61 - 127	4	30
Styrene	ND		57.7	50.9		ug/Kg	☼	88	80 - 120	4	30
Tetrachloroethene	ND		57.7	47.9		ug/Kg	☼	83	74 - 122	2	30
Toluene	0.94	J	57.7	52.2		ug/Kg	☼	89	74 - 128	4	30
trans-1,2-Dichloroethene	ND		57.7	60.1		ug/Kg	☼	104	78 - 126	4	30
Trichloroethene	ND	F1	57.7	97.3	F1	ug/Kg	☼	169	77 - 129	4	30
Trichlorofluoromethane	0.58	J	57.7	53.0		ug/Kg	☼	91	65 - 146	6	30
Vinyl chloride	ND		57.7	52.6		ug/Kg	☼	91	61 - 133	0	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*102*		*71 - 125*
1,2-Dichloroethane-d4 (Surr)	*106*		*64 - 126*
4-Bromofluorobenzene (Surr)	*99*		*72 - 126*
Dibromofluoromethane (Surr)	*73*		*60 - 140*

Lab Sample ID: MB 480-256689/3-A
Matrix: Solid
Analysis Batch: 256688

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 256689

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5.0	0.36	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
1,1,2,2-Tetrachloroethane	ND		5.0	0.80	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
1,1,2-Trichloroethane	ND		5.0	0.64	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		5.0	1.1	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
1,1-Dichloroethane	ND		5.0	0.60	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
1,1-Dichloroethene	ND		5.0	0.61	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
1,2,4-Trichlorobenzene	ND		5.0	0.30	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
1,2-Dibromo-3-Chloropropane	ND		5.0	2.5	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
1,2-Dichlorobenzene	ND		5.0	0.39	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
1,2-Dichloroethane	ND		5.0	0.25	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
1,2-Dichloropropane	ND		5.0	2.5	ug/Kg		08/03/15 09:33	08/03/15 13:15	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 480-256689/3-A
Matrix: Solid
Analysis Batch: 256688

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 256689

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	ND		5.0	0.25	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
1,4-Dichlorobenzene	ND		5.0	0.69	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
2-Butanone (MEK)	ND		25	1.8	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
2-Hexanone	ND		25	2.5	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
4-Methyl-2-pentanone (MIBK)	ND		25	1.6	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
Acetone	ND		25	4.2	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
Benzene	ND		5.0	0.24	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
Bromodichloromethane	ND		5.0	0.66	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
Bromoform	ND		5.0	2.5	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
Bromomethane	ND		5.0	0.45	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
Carbon disulfide	ND		5.0	2.5	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
Carbon tetrachloride	ND		5.0	0.48	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
Chlorobenzene	ND		5.0	0.65	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
Dibromochloromethane	ND		5.0	0.63	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
Chloroethane	ND		5.0	1.1	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
Chloroform	ND		5.0	0.31	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
Chloromethane	ND		5.0	0.30	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
cis-1,2-Dichloroethene	ND		5.0	0.63	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
cis-1,3-Dichloropropene	ND		5.0	0.71	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
Cyclohexane	ND		5.0	0.69	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
Dichlorodifluoromethane	ND		5.0	0.41	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
Ethylbenzene	ND		5.0	0.34	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
1,2-Dibromoethane	ND		5.0	0.64	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
Isopropylbenzene	ND		5.0	0.75	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
Methyl acetate	ND		5.0	3.0	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
Methyl tert-butyl ether	ND		5.0	0.49	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
Methylcyclohexane	ND		5.0	0.75	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
Methylene Chloride	ND		5.0	2.3	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
Styrene	ND		5.0	0.25	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
Tetrachloroethene	ND		5.0	0.66	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
Toluene	ND		5.0	0.37	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
trans-1,2-Dichloroethene	ND		5.0	0.51	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
trans-1,3-Dichloropropene	ND		5.0	2.2	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
Trichloroethene	ND		5.0	1.1	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
Trichlorofluoromethane	ND		5.0	0.47	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
Vinyl chloride	ND		5.0	0.60	ug/Kg		08/03/15 09:33	08/03/15 13:15	1
Xylenes, Total	ND		9.9	0.83	ug/Kg		08/03/15 09:33	08/03/15 13:15	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*94*		*71 - 125*	*08/03/15 09:33*	*08/03/15 13:15*	*1*
1,2-Dichloroethane-d4 (Surr)	*107*		*64 - 126*	*08/03/15 09:33*	*08/03/15 13:15*	*1*
4-Bromofluorobenzene (Surr)	*91*		*72 - 126*	*08/03/15 09:33*	*08/03/15 13:15*	*1*
Dibromofluoromethane (Surr)	*109*		*60 - 140*	*08/03/15 09:33*	*08/03/15 13:15*	*1*

Client: Praxair, Inc.
Project/Site: 90 Hopkins St

TestAmerica Job ID: 480-84758-1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 480-256689/1-A
Matrix: Solid
Analysis Batch: 256688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 256689

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	49.0	51.9		ug/Kg		106	77 - 121
1,1,2,2-Tetrachloroethane	49.0	45.9		ug/Kg		94	80 - 120
1,1,2-Trichloroethane	49.0	46.1		ug/Kg		94	78 - 122
1,1,2-Trichloro-1,2,2-trifluoroethane	49.0	52.5		ug/Kg		107	60 - 140
1,1-Dichloroethane	49.0	51.6		ug/Kg		105	73 - 126
1,1-Dichloroethene	49.0	52.0		ug/Kg		106	59 - 125
1,2,4-Trichlorobenzene	49.0	49.6		ug/Kg		101	64 - 120
1,2-Dibromo-3-Chloropropane	49.0	45.7		ug/Kg		93	63 - 124
1,2-Dichlorobenzene	49.0	46.4		ug/Kg		95	75 - 120
1,2-Dichloroethane	49.0	48.9		ug/Kg		100	77 - 122
1,2-Dichloropropane	49.0	48.5		ug/Kg		99	75 - 124
1,3-Dichlorobenzene	49.0	45.3		ug/Kg		92	74 - 120
1,4-Dichlorobenzene	49.0	45.5		ug/Kg		93	73 - 120
2-Butanone (MEK)	245	384	*	ug/Kg		157	70 - 134
2-Hexanone	245	219		ug/Kg		89	59 - 130
4-Methyl-2-pentanone (MIBK)	245	234		ug/Kg		95	65 - 133
Acetone	245	230		ug/Kg		94	61 - 137
Benzene	49.0	48.0		ug/Kg		98	79 - 127
Bromodichloromethane	49.0	51.2		ug/Kg		104	80 - 122
Bromoform	49.0	45.8		ug/Kg		93	68 - 126
Bromomethane	49.0	44.4		ug/Kg		91	37 - 149
Carbon disulfide	49.0	54.1		ug/Kg		110	64 - 131
Carbon tetrachloride	49.0	55.9		ug/Kg		114	75 - 135
Chlorobenzene	49.0	45.1		ug/Kg		92	76 - 124
Dibromochloromethane	49.0	52.3		ug/Kg		107	76 - 125
Chloroethane	49.0	48.9		ug/Kg		100	69 - 135
Chloroform	49.0	50.8		ug/Kg		104	80 - 118
Chloromethane	49.0	52.1		ug/Kg		106	63 - 127
cis-1,2-Dichloroethene	49.0	50.8		ug/Kg		104	81 - 117
cis-1,3-Dichloropropene	49.0	50.5		ug/Kg		103	82 - 120
Cyclohexane	49.0	47.9		ug/Kg		98	65 - 106
Dichlorodifluoromethane	49.0	49.0		ug/Kg		100	57 - 142
Ethylbenzene	49.0	44.6		ug/Kg		91	80 - 120
1,2-Dibromoethane	49.0	45.4		ug/Kg		93	78 - 120
Isopropylbenzene	49.0	42.8		ug/Kg		87	72 - 120
Methyl acetate	245	247		ug/Kg		101	55 - 136
Methyl tert-butyl ether	49.0	50.8		ug/Kg		104	63 - 125
Methylcyclohexane	49.0	47.0		ug/Kg		96	60 - 140
Methylene Chloride	49.0	53.4		ug/Kg		109	61 - 127
Styrene	49.0	45.9		ug/Kg		94	80 - 120
Tetrachloroethene	49.0	45.9		ug/Kg		94	74 - 122
Toluene	49.0	44.3		ug/Kg		90	74 - 128
trans-1,2-Dichloroethene	49.0	51.4		ug/Kg		105	78 - 126
Trichloroethene	49.0	46.8		ug/Kg		96	77 - 129
Trichlorofluoromethane	49.0	53.1		ug/Kg		108	65 - 146
Vinyl chloride	49.0	52.6		ug/Kg		107	61 - 133

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 480-256689/1-A
Matrix: Solid
Analysis Batch: 256688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 256689

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*94*		*71 - 125*
1,2-Dichloroethane-d4 (Surr)	*121*		*64 - 126*
4-Bromofluorobenzene (Surr)	*96*		*72 - 126*
Dibromofluoromethane (Surr)	*107*		*60 - 140*

Lab Sample ID: 480-84758-9 MS
Matrix: Solid
Analysis Batch: 256688

Client Sample ID: NP-6 (19.8'-20.8')
Prep Type: Total/NA
Prep Batch: 256689

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	ND		60.3	55.9		ug/Kg	☼	93	77 - 121
1,1,2,2-Tetrachloroethane	ND	F1	60.3	ND	F1	ug/Kg	☼	0	80 - 120
1,1,2-Trichloroethane	ND	F1	60.3	30.9	F1	ug/Kg	☼	51	78 - 122
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		60.3	53.0		ug/Kg	☼	88	60 - 140
1,1-Dichloroethane	ND		60.3	55.0		ug/Kg	☼	91	73 - 126
1,1-Dichloroethene	ND		60.3	68.9		ug/Kg	☼	114	59 - 125
1,2,4-Trichlorobenzene	ND	F1	60.3	33.2	F1	ug/Kg	☼	55	64 - 120
1,2-Dibromo-3-Chloropropane	ND	F1	60.3	24.0	F1	ug/Kg	☼	40	63 - 124
1,2-Dichlorobenzene	ND	F1	60.3	41.7	F1	ug/Kg	☼	69	75 - 120
1,2-Dichloroethane	ND		60.3	49.9		ug/Kg	☼	83	77 - 122
1,2-Dichloropropane	ND		60.3	52.8		ug/Kg	☼	88	75 - 124
1,3-Dichlorobenzene	ND	F1	60.3	40.4	F1	ug/Kg	☼	67	74 - 120
1,4-Dichlorobenzene	ND	F1	60.3	40.3	F1	ug/Kg	☼	67	73 - 120
2-Butanone (MEK)	ND	* F1	301	169	F1	ug/Kg	☼	56	70 - 134
2-Hexanone	ND		301	188		ug/Kg	☼	62	59 - 130
4-Methyl-2-pentanone (MIBK)	ND		301	205		ug/Kg	☼	68	65 - 133
Acetone	67	F1	301	219	F1	ug/Kg	☼	50	61 - 137
Benzene	ND		60.3	52.3		ug/Kg	☼	87	79 - 127
Bromodichloromethane	ND	F1	60.3	46.5	F1	ug/Kg	☼	77	80 - 122
Bromoform	ND	F1	60.3	38.8	F1	ug/Kg	☼	64	68 - 126
Bromomethane	ND		60.3	44.1		ug/Kg	☼	73	37 - 149
Carbon disulfide	4.1	J F1	60.3	38.0	F1	ug/Kg	☼	56	64 - 131
Carbon tetrachloride	ND		60.3	51.0		ug/Kg	☼	85	75 - 135
Chlorobenzene	ND		60.3	47.6		ug/Kg	☼	79	76 - 124
Dibromochloromethane	ND	F1	60.3	47.1		ug/Kg	☼	78	76 - 125
Chloroethane	ND		60.3	61.3		ug/Kg	☼	102	69 - 135
Chloroform	ND		60.3	56.1		ug/Kg	☼	93	80 - 118
Chloromethane	ND		60.3	52.2		ug/Kg	☼	87	63 - 127
cis-1,2-Dichloroethene	ND		60.3	53.2		ug/Kg	☼	88	81 - 117
cis-1,3-Dichloropropene	ND	F1	60.3	35.0	F1	ug/Kg	☼	58	82 - 120
Cyclohexane	ND		60.3	47.0		ug/Kg	☼	78	65 - 106
Dichlorodifluoromethane	ND		60.3	48.8		ug/Kg	☼	81	57 - 142
Ethylbenzene	ND	F1	60.3	47.0	F1	ug/Kg	☼	78	80 - 120
1,2-Dibromoethane	ND	F1	60.3	43.7	F1	ug/Kg	☼	72	78 - 120
Isopropylbenzene	ND	F1	60.3	41.4	F1	ug/Kg	☼	69	72 - 120
Methyl acetate	ND	F1	301	ND	F1	ug/Kg	☼	0	55 - 136
Methyl tert-butyl ether	ND		60.3	53.0		ug/Kg	☼	88	63 - 125

Client: Praxair, Inc. TestAmerica Job ID: 480-84758-1
Project/Site: 90 Hopkins St

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 480-84758-9 MS **Client Sample ID: NP-6 (19.8'-20.8')**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 256688 **Prep Batch: 256689**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylcyclohexane	ND		60.3	42.1		ug/Kg	☼	70	60 - 140
Methylene Chloride	ND		60.3	58.0		ug/Kg	☼	96	61 - 127
Styrene	ND	F1	60.3	47.6	F1	ug/Kg	☼	79	80 - 120
Tetrachloroethene	ND	F1	60.3	46.2		ug/Kg	☼	77	74 - 122
Toluene	ND		60.3	49.0		ug/Kg	☼	81	74 - 128
trans-1,2-Dichloroethene	ND		60.3	52.6		ug/Kg	☼	87	78 - 126
Trichloroethene	ND	F1	60.3	89.1	F1	ug/Kg	☼	148	77 - 129
Trichlorofluoromethane	ND		60.3	53.2		ug/Kg	☼	88	65 - 146
Vinyl chloride	ND		60.3	52.2		ug/Kg	☼	87	61 - 133

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Toluene-d8 (Surr)	*99*		*71 - 125*
1,2-Dichloroethane-d4 (Surr)	*99*		*64 - 126*
4-Bromofluorobenzene (Surr)	*95*		*72 - 126*
Dibromofluoromethane (Surr)	*75*		*60 - 140*

Lab Sample ID: 480-84758-9 MSD **Client Sample ID: NP-6 (19.8'-20.8')**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 256688 **Prep Batch: 256689**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane	ND		59.6	54.0		ug/Kg	☼	91	77 - 121	4	30
1,1,2,2-Tetrachloroethane	ND	F1	59.6	ND	F1	ug/Kg	☼	0	80 - 120	NC	30
1,1,2-Trichloroethane	ND	F1	59.6	28.2	F1	ug/Kg	☼	47	78 - 122	9	30
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		59.6	50.5		ug/Kg	☼	85	60 - 140	5	30
1,1-Dichloroethane	ND		59.6	52.9		ug/Kg	☼	89	73 - 126	4	30
1,1-Dichloroethene	ND		59.6	68.8		ug/Kg	☼	116	59 - 125	0	30
1,2,4-Trichlorobenzene	ND	F1	59.6	32.0	F1	ug/Kg	☼	54	64 - 120	4	30
1,2-Dibromo-3-Chloropropane	ND	F1	59.6	21.9	F1	ug/Kg	☼	37	63 - 124	9	30
1,2-Dichlorobenzene	ND	F1	59.6	40.3	F1	ug/Kg	☼	68	75 - 120	4	30
1,2-Dichloroethane	ND		59.6	49.1		ug/Kg	☼	82	77 - 122	2	30
1,2-Dichloropropane	ND		59.6	50.9		ug/Kg	☼	85	75 - 124	4	30
1,3-Dichlorobenzene	ND	F1	59.6	39.0	F1	ug/Kg	☼	65	74 - 120	3	30
1,4-Dichlorobenzene	ND	F1	59.6	38.8	F1	ug/Kg	☼	65	73 - 120	4	30
2-Butanone (MEK)	ND	* F1	298	168	F1	ug/Kg	☼	56	70 - 134	1	30
2-Hexanone	ND		298	186		ug/Kg	☼	62	59 - 130	1	30
4-Methyl-2-pentanone (MIBK)	ND		298	202		ug/Kg	☼	68	65 - 133	2	30
Acetone	67	F1	298	215	F1	ug/Kg	☼	50	61 - 137	1	30
Benzene	ND		59.6	50.2		ug/Kg	☼	84	79 - 127	4	30
Bromodichloromethane	ND	F1	59.6	42.7	F1	ug/Kg	☼	72	80 - 122	8	30
Bromoform	ND	F1	59.6	37.5	F1	ug/Kg	☼	63	68 - 126	3	30
Bromomethane	ND		59.6	40.7		ug/Kg	☼	68	37 - 149	8	30
Carbon disulfide	4.1	J F1	59.6	35.2	F1	ug/Kg	☼	52	64 - 131	8	30
Carbon tetrachloride	ND		59.6	47.8		ug/Kg	☼	80	75 - 135	6	30
Chlorobenzene	ND		59.6	45.2		ug/Kg	☼	76	76 - 124	5	30
Dibromochloromethane	ND	F1	59.6	43.5	F1	ug/Kg	☼	73	76 - 125	8	30
Chloroethane	ND		59.6	58.0		ug/Kg	☼	97	69 - 135	6	30

Client: Praxair, Inc.
Project/Site: 90 Hopkins St

TestAmerica Job ID: 480-84758-1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 480-84758-9 MSD
Matrix: Solid
Analysis Batch: 256688

Client Sample ID: NP-6 (19.8'-20.8')
Prep Type: Total/NA
Prep Batch: 256689

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloroform	ND		59.6	54.8		ug/Kg	☼	92	80 - 118	2	30
Chloromethane	ND		59.6	49.4		ug/Kg	☼	83	63 - 127	6	30
cis-1,2-Dichloroethene	ND		59.6	51.8		ug/Kg	☼	87	81 - 117	3	30
cis-1,3-Dichloropropene	ND	F1	59.6	33.3	F1	ug/Kg	☼	56	82 - 120	5	30
Cyclohexane	ND		59.6	44.3		ug/Kg	☼	74	65 - 106	6	30
Dichlorodifluoromethane	ND		59.6	46.2		ug/Kg	☼	77	57 - 142	6	30
Ethylbenzene	ND	F1	59.6	44.4	F1	ug/Kg	☼	75	80 - 120	6	30
1,2-Dibromoethane	ND	F1	59.6	42.9	F1	ug/Kg	☼	72	78 - 120	2	30
Isopropylbenzene	ND	F1	59.6	39.4	F1	ug/Kg	☼	66	72 - 120	5	30
Methyl acetate	ND	F1	298	ND	F1	ug/Kg	☼	0	55 - 136	NC	30
Methyl tert-butyl ether	ND		59.6	52.4		ug/Kg	☼	88	63 - 125	1	30
Methylcyclohexane	ND		59.6	39.2		ug/Kg	☼	66	60 - 140	7	30
Methylene Chloride	ND		59.6	56.4		ug/Kg	☼	95	61 - 127	3	30
Styrene	ND	F1	59.6	45.5	F1	ug/Kg	☼	76	80 - 120	4	30
Tetrachloroethene	ND	F1	59.6	43.7	F1	ug/Kg	☼	73	74 - 122	6	30
Toluene	ND		59.6	46.5		ug/Kg	☼	78	74 - 128	5	30
trans-1,2-Dichloroethene	ND		59.6	50.8		ug/Kg	☼	85	78 - 126	4	30
Trichloroethene	ND	F1	59.6	86.5	F1	ug/Kg	☼	145	77 - 129	3	30
Trichlorofluoromethane	ND		59.6	50.4		ug/Kg	☼	85	65 - 146	6	30
Vinyl chloride	ND		59.6	50.3		ug/Kg	☼	84	61 - 133	4	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*99*		*71 - 125*
1,2-Dichloroethane-d4 (Surr)	*99*		*64 - 126*
4-Bromofluorobenzene (Surr)	*96*		*72 - 126*
Dibromofluoromethane (Surr)	*72*		*60 - 140*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 480-256368/1-A
Matrix: Solid
Analysis Batch: 257579

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 256368

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		170	25	ug/Kg		07/31/15 08:06	08/07/15 13:28	1
Acenaphthylene	ND		170	22	ug/Kg		07/31/15 08:06	08/07/15 13:28	1
Anthracene	ND		170	41	ug/Kg		07/31/15 08:06	08/07/15 13:28	1
Benzo[a]anthracene	ND		170	17	ug/Kg		07/31/15 08:06	08/07/15 13:28	1
Benzo[a]pyrene	ND		170	25	ug/Kg		07/31/15 08:06	08/07/15 13:28	1
Benzo[b]fluoranthene	ND		170	26	ug/Kg		07/31/15 08:06	08/07/15 13:28	1
Benzo[g,h,i]perylene	ND		170	18	ug/Kg		07/31/15 08:06	08/07/15 13:28	1
Benzo[k]fluoranthene	ND		170	22	ug/Kg		07/31/15 08:06	08/07/15 13:28	1
Chrysene	ND		170	37	ug/Kg		07/31/15 08:06	08/07/15 13:28	1
Dibenz(a,h)anthracene	ND		170	29	ug/Kg		07/31/15 08:06	08/07/15 13:28	1
Fluoranthene	ND		170	18	ug/Kg		07/31/15 08:06	08/07/15 13:28	1
Fluorene	ND		170	20	ug/Kg		07/31/15 08:06	08/07/15 13:28	1
Indeno[1,2,3-cd]pyrene	ND		170	21	ug/Kg		07/31/15 08:06	08/07/15 13:28	1
Naphthalene	ND		170	22	ug/Kg		07/31/15 08:06	08/07/15 13:28	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 480-256368/1-A **Client Sample ID: Method Blank**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 257579 **Prep Batch: 256368**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenanthrene	ND		170	25	ug/Kg		07/31/15 08:06	08/07/15 13:28	1
Pyrene	ND		170	20	ug/Kg		07/31/15 08:06	08/07/15 13:28	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*82*		*37 - 120*	*07/31/15 08:06*	*08/07/15 13:28*	*1*
Nitrobenzene-d5	*82*		*34 - 132*	*07/31/15 08:06*	*08/07/15 13:28*	*1*
p-Terphenyl-d14	*88*		*65 - 153*	*07/31/15 08:06*	*08/07/15 13:28*	*1*

Lab Sample ID: LCS 480-256368/2-A **Client Sample ID: Lab Control Sample**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 257579 **Prep Batch: 256368**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acenaphthene	1630	1370		ug/Kg		84	53 - 120
Acenaphthylene	1630	1390		ug/Kg		85	58 - 121
Anthracene	1630	1480		ug/Kg		91	62 - 129
Benzo[a]anthracene	1630	1450		ug/Kg		89	65 - 133
Benzo[a]pyrene	1630	1460		ug/Kg		89	64 - 127
Benzo[b]fluoranthene	1630	1470		ug/Kg		90	64 - 135
Benzo[g,h,i]perylene	1630	1410		ug/Kg		86	50 - 152
Benzo[k]fluoranthene	1630	1400		ug/Kg		86	58 - 138
Chrysene	1630	1460		ug/Kg		89	64 - 131
Dibenz(a,h)anthracene	1630	1400		ug/Kg		86	54 - 148
Fluoranthene	1630	1460		ug/Kg		89	62 - 131
Fluorene	1630	1410		ug/Kg		86	63 - 126
Indeno[1,2,3-cd]pyrene	1630	1390		ug/Kg		85	56 - 149
Naphthalene	1630	1260		ug/Kg		77	46 - 120
Phenanthrene	1630	1420		ug/Kg		87	60 - 130
Pyrene	1630	1450		ug/Kg		89	51 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2-Fluorobiphenyl	*81*		*37 - 120*
Nitrobenzene-d5	*79*		*34 - 132*
p-Terphenyl-d14	*85*		*65 - 153*

Lab Sample ID: 480-84758-1 MS **Client Sample ID: SP-1 (11'-12')**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 257579 **Prep Batch: 256368**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Acenaphthene	ND		1940	1700		ug/Kg	☼	88	53 - 120
Acenaphthylene	ND		1940	1670		ug/Kg	☼	86	58 - 121
Anthracene	ND		1940	1770		ug/Kg	☼	91	62 - 129
Benzo[a]anthracene	ND		1940	1760		ug/Kg	☼	91	65 - 133
Benzo[a]pyrene	ND		1940	1760		ug/Kg	☼	91	64 - 127
Benzo[b]fluoranthene	ND		1940	1710		ug/Kg	☼	88	64 - 135
Benzo[g,h,i]perylene	ND		1940	1700		ug/Kg	☼	88	50 - 152
Benzo[k]fluoranthene	ND		1940	1820		ug/Kg	☼	94	58 - 138

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: 480-84758-1 MS
Matrix: Solid
Analysis Batch: 257579

Client Sample ID: SP-1 (11'-12')
Prep Type: Total/NA
Prep Batch: 256368

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chrysene	ND		1940	1750		ug/Kg	☼	90	64 - 131
Dibenz(a,h)anthracene	ND		1940	1730		ug/Kg	☼	89	54 - 148
Fluoranthene	ND		1940	1760		ug/Kg	☼	91	62 - 131
Fluorene	ND		1940	1700		ug/Kg	☼	88	63 - 126
Indeno[1,2,3-cd]pyrene	ND		1940	1720		ug/Kg	☼	89	56 - 149
Naphthalene	ND		1940	1540		ug/Kg	☼	80	46 - 120
Phenanthrene	ND		1940	1730		ug/Kg	☼	89	60 - 130
Pyrene	ND		1940	1750		ug/Kg	☼	90	51 - 133

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
2-Fluorobiphenyl	*83*		*37 - 120*
Nitrobenzene-d5	*83*		*34 - 132*
p-Terphenyl-d14	*87*		*65 - 153*

Lab Sample ID: 480-84758-1 MSD
Matrix: Solid
Analysis Batch: 257579

Client Sample ID: SP-1 (11'-12')
Prep Type: Total/NA
Prep Batch: 256368

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acenaphthene	ND		1920	1720		ug/Kg	☼	90	53 - 120	1	35
Acenaphthylene	ND		1920	1700		ug/Kg	☼	89	58 - 121	2	18
Anthracene	ND		1920	1840		ug/Kg	☼	96	62 - 129	4	15
Benzo[a]anthracene	ND		1920	1810		ug/Kg	☼	94	65 - 133	3	15
Benzo[a]pyrene	ND		1920	1850		ug/Kg	☼	96	64 - 127	5	15
Benzo[b]fluoranthene	ND		1920	1760		ug/Kg	☼	92	64 - 135	3	15
Benzo[g,h,i]perylene	ND		1920	1830		ug/Kg	☼	95	50 - 152	7	15
Benzo[k]fluoranthene	ND		1920	1860		ug/Kg	☼	97	58 - 138	2	22
Chrysene	ND		1920	1860		ug/Kg	☼	97	64 - 131	6	15
Dibenz(a,h)anthracene	ND		1920	1790		ug/Kg	☼	93	54 - 148	3	15
Fluoranthene	ND		1920	1880		ug/Kg	☼	98	62 - 131	6	15
Fluorene	ND		1920	1750		ug/Kg	☼	91	63 - 126	3	15
Indeno[1,2,3-cd]pyrene	ND		1920	1810		ug/Kg	☼	94	56 - 149	5	15
Naphthalene	ND		1920	1550		ug/Kg	☼	81	46 - 120	1	29
Phenanthrene	ND		1920	1830		ug/Kg	☼	95	60 - 130	6	15
Pyrene	ND		1920	1830		ug/Kg	☼	95	51 - 133	4	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
2-Fluorobiphenyl	*85*		*37 - 120*
Nitrobenzene-d5	*88*		*34 - 132*
p-Terphenyl-d14	*94*		*65 - 153*

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Lab Sample ID: MB 480-256173/1-A
Matrix: Solid
Analysis Batch: 256270

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 256173

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		0.21	0.040	mg/Kg		07/30/15 09:22	07/30/15 20:55	1
PCB-1221	ND		0.21	0.040	mg/Kg		07/30/15 09:22	07/30/15 20:55	1
PCB-1232	ND		0.21	0.040	mg/Kg		07/30/15 09:22	07/30/15 20:55	1
PCB-1242	ND		0.21	0.040	mg/Kg		07/30/15 09:22	07/30/15 20:55	1
PCB-1248	ND		0.21	0.040	mg/Kg		07/30/15 09:22	07/30/15 20:55	1
PCB-1254	ND		0.21	0.097	mg/Kg		07/30/15 09:22	07/30/15 20:55	1
PCB-1260	ND		0.21	0.097	mg/Kg		07/30/15 09:22	07/30/15 20:55	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*106*		*60 - 154*	*07/30/15 09:22*	*07/30/15 20:55*	*1*
DCB Decachlorobiphenyl	*100*		*65 - 174*	*07/30/15 09:22*	*07/30/15 20:55*	*1*

Lab Sample ID: LCS 480-256173/2-A
Matrix: Solid
Analysis Batch: 256270

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 256173

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
PCB-1016	2.34	2.76		mg/Kg		118	51 - 185
PCB-1260	2.34	2.56		mg/Kg		109	61 - 184

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tetrachloro-m-xylene	*117*		*60 - 154*
DCB Decachlorobiphenyl	*109*		*65 - 174*

Lab Sample ID: 480-84758-1 MS
Matrix: Solid
Analysis Batch: 256270

Client Sample ID: SP-1 (11'-12')
Prep Type: Total/NA
Prep Batch: 256173

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
PCB-1016	ND		2.41	2.70		mg/Kg	☼	112	50 - 177
PCB-1260	ND		2.41	2.55		mg/Kg	☼	106	33 - 200

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Tetrachloro-m-xylene	*115*		*60 - 154*
DCB Decachlorobiphenyl	*107*		*65 - 174*

Lab Sample ID: 480-84758-1 MSD
Matrix: Solid
Analysis Batch: 256270

Client Sample ID: SP-1 (11'-12')
Prep Type: Total/NA
Prep Batch: 256173

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
PCB-1016	ND		2.53	2.88		mg/Kg	☼	114	50 - 177	6	50
PCB-1260	ND		2.53	2.70		mg/Kg	☼	107	33 - 200	6	50

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Tetrachloro-m-xylene	*117*		*60 - 154*
DCB Decachlorobiphenyl	*107*		*65 - 174*

Client: Praxair, Inc.
Project/Site: 90 Hopkins St

TestAmerica Job ID: 480-84758-1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 480-257312/1-A
Matrix: Solid
Analysis Batch: 257801

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 257312

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		1.0	0.24	mg/Kg		08/06/15 12:30	08/07/15 14:25	1

Lab Sample ID: LCSSRM 480-257312/2-A
Matrix: Solid
Analysis Batch: 257801

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 257312

Analyte	Spike Added	LCSSRM Result	LCSSRM Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	90.1	91.79		mg/Kg		101.9	70.1 - 129.9

Lab Sample ID: 480-84758-1 MS
Matrix: Solid
Analysis Batch: 257801

Client Sample ID: SP-1 (11'-12')
Prep Type: Total/NA
Prep Batch: 257312

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	4.1		47.3	51.61		mg/Kg	☼	100	75 - 125

Lab Sample ID: 480-84758-1 MSD
Matrix: Solid
Analysis Batch: 257801

Client Sample ID: SP-1 (11'-12')
Prep Type: Total/NA
Prep Batch: 257312

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Lead	4.1		45.2	49.20		mg/Kg	☼	100	75 - 125	5	20

Client: Praxair, Inc.
Project/Site: 90 Hopkins St

TestAmerica Job ID: 480-84758-1

GC/MS VOA

Prep Batch: 256263

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-84758-1	SP-1 (11'-12')	Total/NA	Solid	5035A	
480-84758-1 MS	SP-1 (11'-12')	Total/NA	Solid	5035A	
480-84758-1 MSD	SP-1 (11'-12')	Total/NA	Solid	5035A	
480-84758-2	SP-2 (12'-13')	Total/NA	Solid	5035A	
480-84758-3	SP-3 (11.5'-12.5')	Total/NA	Solid	5035A	
480-84758-4	NP-1 (7.9'-8.9')	Total/NA	Solid	5035A	
480-84758-5	NP-2 (6.5'-7.5')	Total/NA	Solid	5035A	
480-84758-6	NP-3 (15'-16')	Total/NA	Solid	5035A	
480-84758-8	NP-5 (21'-22')	Total/NA	Solid	5035A	
480-84758-10	NP-7 (7'-8')	Total/NA	Solid	5035A	
LCS 480-256263/1-A	Lab Control Sample	Total/NA	Solid	5035A	
MB 480-256263/2-A	Method Blank	Total/NA	Solid	5035A	

Analysis Batch: 256413

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-84758-1	SP-1 (11'-12')	Total/NA	Solid	8260C	256263
480-84758-1 MS	SP-1 (11'-12')	Total/NA	Solid	8260C	256263
480-84758-1 MSD	SP-1 (11'-12')	Total/NA	Solid	8260C	256263
480-84758-2	SP-2 (12'-13')	Total/NA	Solid	8260C	256263
480-84758-3	SP-3 (11.5'-12.5')	Total/NA	Solid	8260C	256263
480-84758-4	NP-1 (7.9'-8.9')	Total/NA	Solid	8260C	256263
480-84758-5	NP-2 (6.5'-7.5')	Total/NA	Solid	8260C	256263
480-84758-6	NP-3 (15'-16')	Total/NA	Solid	8260C	256263
480-84758-8	NP-5 (21'-22')	Total/NA	Solid	8260C	256263
480-84758-10	NP-7 (7'-8')	Total/NA	Solid	8260C	256263
LCS 480-256263/1-A	Lab Control Sample	Total/NA	Solid	8260C	256263
MB 480-256263/2-A	Method Blank	Total/NA	Solid	8260C	256263

Analysis Batch: 256688

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-84758-7	NP-4 (19'-20')	Total/NA	Solid	8260C	256689
480-84758-9	NP-6 (19.8'-20.8')	Total/NA	Solid	8260C	256689
480-84758-9 MS	NP-6 (19.8'-20.8')	Total/NA	Solid	8260C	256689
480-84758-9 MSD	NP-6 (19.8'-20.8')	Total/NA	Solid	8260C	256689
LCS 480-256689/1-A	Lab Control Sample	Total/NA	Solid	8260C	256689
MB 480-256689/3-A	Method Blank	Total/NA	Solid	8260C	256689

Prep Batch: 256689

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-84758-7	NP-4 (19'-20')	Total/NA	Solid	5035A	
480-84758-9	NP-6 (19.8'-20.8')	Total/NA	Solid	5035A	
480-84758-9 MS	NP-6 (19.8'-20.8')	Total/NA	Solid	5035A	
480-84758-9 MSD	NP-6 (19.8'-20.8')	Total/NA	Solid	5035A	
LCS 480-256689/1-A	Lab Control Sample	Total/NA	Solid	5035A	
MB 480-256689/3-A	Method Blank	Total/NA	Solid	5035A	

GC/MS Semi VOA

Prep Batch: 256368

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-84758-1	SP-1 (11'-12')	Total/NA	Solid	3550C	
480-84758-1 MS	SP-1 (11'-12')	Total/NA	Solid	3550C	
480-84758-1 MSD	SP-1 (11'-12')	Total/NA	Solid	3550C	
480-84758-2	SP-2 (12'-13')	Total/NA	Solid	3550C	
480-84758-3	SP-3 (11.5'-12.5')	Total/NA	Solid	3550C	
480-84758-4	NP-1 (7.9'-8.9')	Total/NA	Solid	3550C	
480-84758-5	NP-2 (6.5'-7.5')	Total/NA	Solid	3550C	
480-84758-6	NP-3 (15'-16')	Total/NA	Solid	3550C	
480-84758-7	NP-4 (19'-20')	Total/NA	Solid	3550C	
480-84758-8	NP-5 (21'-22')	Total/NA	Solid	3550C	
480-84758-9	NP-6 (19.8'-20.8')	Total/NA	Solid	3550C	
480-84758-10	NP-7 (7'-8')	Total/NA	Solid	3550C	
LCS 480-256368/2-A	Lab Control Sample	Total/NA	Solid	3550C	
MB 480-256368/1-A	Method Blank	Total/NA	Solid	3550C	

Analysis Batch: 257579

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-84758-1	SP-1 (11'-12')	Total/NA	Solid	8270D	256368
480-84758-1 MS	SP-1 (11'-12')	Total/NA	Solid	8270D	256368
480-84758-1 MSD	SP-1 (11'-12')	Total/NA	Solid	8270D	256368
480-84758-2	SP-2 (12'-13')	Total/NA	Solid	8270D	256368
480-84758-3	SP-3 (11.5'-12.5')	Total/NA	Solid	8270D	256368
480-84758-4	NP-1 (7.9'-8.9')	Total/NA	Solid	8270D	256368
480-84758-5	NP-2 (6.5'-7.5')	Total/NA	Solid	8270D	256368
480-84758-6	NP-3 (15'-16')	Total/NA	Solid	8270D	256368
480-84758-7	NP-4 (19'-20')	Total/NA	Solid	8270D	256368
480-84758-8	NP-5 (21'-22')	Total/NA	Solid	8270D	256368
480-84758-9	NP-6 (19.8'-20.8')	Total/NA	Solid	8270D	256368
480-84758-10	NP-7 (7'-8')	Total/NA	Solid	8270D	256368
LCS 480-256368/2-A	Lab Control Sample	Total/NA	Solid	8270D	256368
MB 480-256368/1-A	Method Blank	Total/NA	Solid	8270D	256368

GC Semi VOA

Prep Batch: 256173

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-84758-1	SP-1 (11'-12')	Total/NA	Solid	3550C	
480-84758-1 MS	SP-1 (11'-12')	Total/NA	Solid	3550C	
480-84758-1 MSD	SP-1 (11'-12')	Total/NA	Solid	3550C	
480-84758-2	SP-2 (12'-13')	Total/NA	Solid	3550C	
480-84758-3	SP-3 (11.5'-12.5')	Total/NA	Solid	3550C	
480-84758-4	NP-1 (7.9'-8.9')	Total/NA	Solid	3550C	
480-84758-5	NP-2 (6.5'-7.5')	Total/NA	Solid	3550C	
480-84758-6	NP-3 (15'-16')	Total/NA	Solid	3550C	
480-84758-7	NP-4 (19'-20')	Total/NA	Solid	3550C	
480-84758-8	NP-5 (21'-22')	Total/NA	Solid	3550C	
480-84758-9	NP-6 (19.8'-20.8')	Total/NA	Solid	3550C	
480-84758-10	NP-7 (7'-8')	Total/NA	Solid	3550C	
LCS 480-256173/2-A	Lab Control Sample	Total/NA	Solid	3550C	
MB 480-256173/1-A	Method Blank	Total/NA	Solid	3550C	

GC Semi VOA (Continued)

Analysis Batch: 256270

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-84758-1	SP-1 (11'-12')	Total/NA	Solid	8082A	256173
480-84758-1 MS	SP-1 (11'-12')	Total/NA	Solid	8082A	256173
480-84758-1 MSD	SP-1 (11'-12')	Total/NA	Solid	8082A	256173
480-84758-2	SP-2 (12'-13')	Total/NA	Solid	8082A	256173
480-84758-3	SP-3 (11.5'-12.5')	Total/NA	Solid	8082A	256173
480-84758-4	NP-1 (7.9'-8.9')	Total/NA	Solid	8082A	256173
480-84758-5	NP-2 (6.5'-7.5')	Total/NA	Solid	8082A	256173
480-84758-6	NP-3 (15'-16')	Total/NA	Solid	8082A	256173
480-84758-7	NP-4 (19'-20')	Total/NA	Solid	8082A	256173
480-84758-8	NP-5 (21'-22')	Total/NA	Solid	8082A	256173
480-84758-9	NP-6 (19.8'-20.8')	Total/NA	Solid	8082A	256173
480-84758-10	NP-7 (7'-8')	Total/NA	Solid	8082A	256173
LCS 480-256173/2-A	Lab Control Sample	Total/NA	Solid	8082A	256173
MB 480-256173/1-A	Method Blank	Total/NA	Solid	8082A	256173

Metals

Prep Batch: 257312

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-84758-1	SP-1 (11'-12')	Total/NA	Solid	3050B	
480-84758-1 MS	SP-1 (11'-12')	Total/NA	Solid	3050B	
480-84758-1 MSD	SP-1 (11'-12')	Total/NA	Solid	3050B	
480-84758-2	SP-2 (12'-13')	Total/NA	Solid	3050B	
480-84758-3	SP-3 (11.5'-12.5')	Total/NA	Solid	3050B	
480-84758-4	NP-1 (7.9'-8.9')	Total/NA	Solid	3050B	
480-84758-5	NP-2 (6.5'-7.5')	Total/NA	Solid	3050B	
480-84758-6	NP-3 (15'-16')	Total/NA	Solid	3050B	
480-84758-7	NP-4 (19'-20')	Total/NA	Solid	3050B	
480-84758-8	NP-5 (21'-22')	Total/NA	Solid	3050B	
480-84758-9	NP-6 (19.8'-20.8')	Total/NA	Solid	3050B	
480-84758-10	NP-7 (7'-8')	Total/NA	Solid	3050B	
LCSSRM 480-257312/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 480-257312/1-A	Method Blank	Total/NA	Solid	3050B	

Analysis Batch: 257801

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-84758-1	SP-1 (11'-12')	Total/NA	Solid	6010C	257312
480-84758-1 MS	SP-1 (11'-12')	Total/NA	Solid	6010C	257312
480-84758-1 MSD	SP-1 (11'-12')	Total/NA	Solid	6010C	257312
480-84758-2	SP-2 (12'-13')	Total/NA	Solid	6010C	257312
480-84758-3	SP-3 (11.5'-12.5')	Total/NA	Solid	6010C	257312
480-84758-4	NP-1 (7.9'-8.9')	Total/NA	Solid	6010C	257312
480-84758-5	NP-2 (6.5'-7.5')	Total/NA	Solid	6010C	257312
480-84758-6	NP-3 (15'-16')	Total/NA	Solid	6010C	257312
480-84758-7	NP-4 (19'-20')	Total/NA	Solid	6010C	257312
480-84758-8	NP-5 (21'-22')	Total/NA	Solid	6010C	257312
480-84758-9	NP-6 (19.8'-20.8')	Total/NA	Solid	6010C	257312
480-84758-10	NP-7 (7'-8')	Total/NA	Solid	6010C	257312
LCSSRM 480-257312/2-A	Lab Control Sample	Total/NA	Solid	6010C	257312
MB 480-257312/1-A	Method Blank	Total/NA	Solid	6010C	257312

General Chemistry

Analysis Batch: 256095

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-84758-1	SP-1 (11'-12')	Total/NA	Solid	Moisture	
480-84758-2	SP-2 (12'-13')	Total/NA	Solid	Moisture	
480-84758-3	SP-3 (11.5'-12.5')	Total/NA	Solid	Moisture	
480-84758-4	NP-1 (7.9'-8.9')	Total/NA	Solid	Moisture	
480-84758-5	NP-2 (6.5'-7.5')	Total/NA	Solid	Moisture	
480-84758-6	NP-3 (15'-16')	Total/NA	Solid	Moisture	
480-84758-7	NP-4 (19'-20')	Total/NA	Solid	Moisture	
480-84758-8	NP-5 (21'-22')	Total/NA	Solid	Moisture	
480-84758-9	NP-6 (19.8'-20.8')	Total/NA	Solid	Moisture	
480-84758-10	NP-7 (7'-8')	Total/NA	Solid	Moisture	

Client Sample ID: SP-1 (11'-12')
Lab Sample ID: 480-84758-1
Date Collected: 07/28/15 12:35
Matrix: Solid
Date Received: 07/29/15 16:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	256095	07/29/15 20:19	CMK	TAL BUF

Client Sample ID: SP-1 (11'-12')
Lab Sample ID: 480-84758-1
Date Collected: 07/28/15 12:35
Matrix: Solid
Date Received: 07/29/15 16:15
Percent Solids: 85.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035A			256263	07/30/15 14:20	NQN	TAL BUF
Total/NA	Analysis	8260C		1	256413	07/31/15 13:48	NQN	TAL BUF
Total/NA	Prep	3550C			256368	07/31/15 08:06	JLS	TAL BUF
Total/NA	Analysis	8270D		1	257579	08/07/15 15:13	LMW	TAL BUF
Total/NA	Prep	3550C			256173	07/30/15 09:22	JLS	TAL BUF
Total/NA	Analysis	8082A		1	256270	07/30/15 21:59	AJM	TAL BUF
Total/NA	Prep	3050B			257312	08/06/15 12:30	CMM	TAL BUF
Total/NA	Analysis	6010C		1	257801	08/07/15 14:31	AMH	TAL BUF

Client Sample ID: SP-2 (12'-13')
Lab Sample ID: 480-84758-2
Date Collected: 07/28/15 13:00
Matrix: Solid
Date Received: 07/29/15 16:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	256095	07/29/15 20:19	CMK	TAL BUF

Client Sample ID: SP-2 (12'-13')
Lab Sample ID: 480-84758-2
Date Collected: 07/28/15 13:00
Matrix: Solid
Date Received: 07/29/15 16:15
Percent Solids: 75.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035A			256263	07/30/15 14:20	NQN	TAL BUF
Total/NA	Analysis	8260C		1	256413	07/31/15 14:14	NQN	TAL BUF
Total/NA	Prep	3550C			256368	07/31/15 08:06	JLS	TAL BUF
Total/NA	Analysis	8270D		1	257579	08/07/15 15:39	LMW	TAL BUF
Total/NA	Prep	3550C			256173	07/30/15 09:22	JLS	TAL BUF
Total/NA	Analysis	8082A		1	256270	07/30/15 22:15	AJM	TAL BUF
Total/NA	Prep	3050B			257312	08/06/15 12:30	CMM	TAL BUF
Total/NA	Analysis	6010C		1	257801	08/07/15 14:53	AMH	TAL BUF

Client: Praxair, Inc.
Project/Site: 90 Hopkins St

TestAmerica Job ID: 480-84758-1

Client Sample ID: SP-3 (11.5'-12.5')

Lab Sample ID: 480-84758-3

Date Collected: 07/28/15 13:20
Date Received: 07/29/15 16:15
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	256095	07/29/15 20:19	CMK	TAL BUF

Client Sample ID: SP-3 (11.5'-12.5')

Lab Sample ID: 480-84758-3

Date Collected: 07/28/15 13:20
Date Received: 07/29/15 16:15
Matrix: Solid
Percent Solids: 82.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035A			256263	07/30/15 14:20	NQN	TAL BUF
Total/NA	Analysis	8260C		1	256413	07/31/15 14:40	NQN	TAL BUF
Total/NA	Prep	3550C			256368	07/31/15 08:06	JLS	TAL BUF
Total/NA	Analysis	8270D		1	257579	08/07/15 16:06	LMW	TAL BUF
Total/NA	Prep	3550C			256173	07/30/15 09:22	JLS	TAL BUF
Total/NA	Analysis	8082A		1	256270	07/30/15 22:31	AJM	TAL BUF
Total/NA	Prep	3050B			257312	08/06/15 12:30	CMM	TAL BUF
Total/NA	Analysis	6010C		1	257801	08/07/15 14:56	AMH	TAL BUF

Client Sample ID: NP-1 (7.9'-8.9')

Lab Sample ID: 480-84758-4

Date Collected: 07/28/15 15:20
Date Received: 07/29/15 16:15
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	256095	07/29/15 20:19	CMK	TAL BUF

Client Sample ID: NP-1 (7.9'-8.9')

Lab Sample ID: 480-84758-4

Date Collected: 07/28/15 15:20
Date Received: 07/29/15 16:15
Matrix: Solid
Percent Solids: 87.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035A			256263	07/30/15 14:20	NQN	TAL BUF
Total/NA	Analysis	8260C		1	256413	07/31/15 15:07	NQN	TAL BUF
Total/NA	Prep	3550C			256368	07/31/15 08:06	JLS	TAL BUF
Total/NA	Analysis	8270D		1	257579	08/07/15 16:32	LMW	TAL BUF
Total/NA	Prep	3550C			256173	07/30/15 09:22	JLS	TAL BUF
Total/NA	Analysis	8082A		1	256270	07/30/15 22:46	AJM	TAL BUF
Total/NA	Prep	3050B			257312	08/06/15 12:30	CMM	TAL BUF
Total/NA	Analysis	6010C		1	257801	08/07/15 14:59	AMH	TAL BUF

Client Sample ID: NP-2 (6.5'-7.5')

Lab Sample ID: 480-84758-5

Date Collected: 07/28/15 15:30
Date Received: 07/29/15 16:15
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	256095	07/29/15 20:19	CMK	TAL BUF

Client Sample ID: NP-2 (6.5'-7.5')
Lab Sample ID: 480-84758-5

Date Collected: 07/28/15 15:30
Matrix: Solid
Date Received: 07/29/15 16:15
Percent Solids: 81.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035A			256263	07/30/15 14:20	NQN	TAL BUF
Total/NA	Analysis	8260C		1	256413	07/31/15 15:32	NQN	TAL BUF
Total/NA	Prep	3550C			256368	07/31/15 08:06	JLS	TAL BUF
Total/NA	Analysis	8270D		1	257579	08/07/15 16:58	LMW	TAL BUF
Total/NA	Prep	3550C			256173	07/30/15 09:22	JLS	TAL BUF
Total/NA	Analysis	8082A		1	256270	07/30/15 23:02	AJM	TAL BUF
Total/NA	Prep	3050B			257312	08/06/15 12:30	CMM	TAL BUF
Total/NA	Analysis	6010C		1	257801	08/07/15 15:02	AMH	TAL BUF

Client Sample ID: NP-3 (15'-16')
Lab Sample ID: 480-84758-6

Date Collected: 07/29/15 08:55
Matrix: Solid
Date Received: 07/29/15 16:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	256095	07/29/15 20:19	CMK	TAL BUF

Client Sample ID: NP-3 (15'-16')
Lab Sample ID: 480-84758-6

Date Collected: 07/29/15 08:55
Matrix: Solid
Date Received: 07/29/15 16:15
Percent Solids: 83.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035A			256263	07/30/15 14:20	NQN	TAL BUF
Total/NA	Analysis	8260C		1	256413	07/31/15 15:59	NQN	TAL BUF
Total/NA	Prep	3550C			256368	07/31/15 08:06	JLS	TAL BUF
Total/NA	Analysis	8270D		1	257579	08/07/15 17:24	LMW	TAL BUF
Total/NA	Prep	3550C			256173	07/30/15 09:22	JLS	TAL BUF
Total/NA	Analysis	8082A		1	256270	07/30/15 23:18	AJM	TAL BUF
Total/NA	Prep	3050B			257312	08/06/15 12:30	CMM	TAL BUF
Total/NA	Analysis	6010C		1	257801	08/07/15 15:05	AMH	TAL BUF

Client Sample ID: NP-4 (19'-20')
Lab Sample ID: 480-84758-7

Date Collected: 07/29/15 09:40
Matrix: Solid
Date Received: 07/29/15 16:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	256095	07/29/15 20:19	CMK	TAL BUF

Client Sample ID: NP-4 (19'-20')

Lab Sample ID: 480-84758-7

Date Collected: 07/29/15 09:40
Matrix: Solid
Date Received: 07/29/15 16:15
Percent Solids: 68.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035A			256689	08/03/15 09:33	NQN	TAL BUF
Total/NA	Analysis	8260C		1	256688	08/03/15 18:10	NQN	TAL BUF
Total/NA	Prep	3550C			256368	07/31/15 08:06	JLS	TAL BUF
Total/NA	Analysis	8270D		5	257579	08/07/15 17:51	LMW	TAL BUF
Total/NA	Prep	3550C			256173	07/30/15 09:22	JLS	TAL BUF
Total/NA	Analysis	8082A		1	256270	07/31/15 00:06	AJM	TAL BUF
Total/NA	Prep	3050B			257312	08/06/15 12:30	CMM	TAL BUF
Total/NA	Analysis	6010C		1	257801	08/07/15 15:08	AMH	TAL BUF

Client Sample ID: NP-5 (21'-22')

Lab Sample ID: 480-84758-8

Date Collected: 07/29/15 10:30
Matrix: Solid
Date Received: 07/29/15 16:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	256095	07/29/15 20:19	CMK	TAL BUF

Client Sample ID: NP-5 (21'-22')

Lab Sample ID: 480-84758-8

Date Collected: 07/29/15 10:30
Matrix: Solid
Date Received: 07/29/15 16:15
Percent Solids: 78.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035A			256263	07/30/15 14:20	NQN	TAL BUF
Total/NA	Analysis	8260C		1	256413	07/31/15 16:50	NQN	TAL BUF
Total/NA	Prep	3550C			256368	07/31/15 08:06	JLS	TAL BUF
Total/NA	Analysis	8270D		1	257579	08/07/15 18:17	LMW	TAL BUF
Total/NA	Prep	3550C			256173	07/30/15 09:22	JLS	TAL BUF
Total/NA	Analysis	8082A		1	256270	07/31/15 00:22	AJM	TAL BUF
Total/NA	Prep	3050B			257312	08/06/15 12:30	CMM	TAL BUF
Total/NA	Analysis	6010C		1	257801	08/07/15 15:10	AMH	TAL BUF

Client Sample ID: NP-6 (19.8'-20.8')

Lab Sample ID: 480-84758-9

Date Collected: 07/29/15 11:35
Matrix: Solid
Date Received: 07/29/15 16:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	256095	07/29/15 20:19	CMK	TAL BUF

Client Sample ID: NP-6 (19.8'-20.8')

Lab Sample ID: 480-84758-9

Date Collected: 07/29/15 11:35
Matrix: Solid
Date Received: 07/29/15 16:15
Percent Solids: 82.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035A			256689	08/03/15 09:33	NQN	TAL BUF

Client Sample ID: NP-6 (19.8'-20.8')
Lab Sample ID: 480-84758-9

Date Collected: 07/29/15 11:35
Matrix: Solid

Date Received: 07/29/15 16:15
Percent Solids: 82.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	256688	08/03/15 18:36	NQN	TAL BUF
Total/NA	Prep	3550C			256368	07/31/15 08:06	JLS	TAL BUF
Total/NA	Analysis	8270D		5	257579	08/07/15 18:43	LMW	TAL BUF
Total/NA	Prep	3550C			256173	07/30/15 09:22	JLS	TAL BUF
Total/NA	Analysis	8082A		1	256270	07/31/15 00:38	AJM	TAL BUF
Total/NA	Prep	3050B			257312	08/06/15 12:30	CMM	TAL BUF
Total/NA	Analysis	6010C		1	257801	08/07/15 15:22	AMH	TAL BUF

Client Sample ID: NP-7 (7'-8')
Lab Sample ID: 480-84758-10

Date Collected: 07/29/15 12:45
Matrix: Solid

Date Received: 07/29/15 16:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	256095	07/29/15 20:19	CMK	TAL BUF

Client Sample ID: NP-7 (7'-8')
Lab Sample ID: 480-84758-10

Date Collected: 07/29/15 12:45
Matrix: Solid

Date Received: 07/29/15 16:15
Percent Solids: 68.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035A			256263	07/30/15 14:20	NQN	TAL BUF
Total/NA	Analysis	8260C		1	256413	07/31/15 17:43	NQN	TAL BUF
Total/NA	Prep	3550C			256368	07/31/15 08:06	JLS	TAL BUF
Total/NA	Analysis	8270D		5	257579	08/07/15 19:09	LMW	TAL BUF
Total/NA	Prep	3550C			256173	07/30/15 09:22	JLS	TAL BUF
Total/NA	Analysis	8082A		1	256270	07/31/15 00:53	AJM	TAL BUF
Total/NA	Prep	3050B			257312	08/06/15 12:30	CMM	TAL BUF
Total/NA	Analysis	6010C		1	257801	08/07/15 15:25	AMH	TAL BUF

Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Certification Summary

Client: Praxair, Inc.
Project/Site: 90 Hopkins St

TestAmerica Job ID: 480-84758-1

Laboratory: TestAmerica Buffalo

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
New York	NELAP	2	10026	03-31-16

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
Moisture		Solid	Percent Moisture
Moisture		Solid	Percent Solids

Method Summary

Client: Praxair, Inc.
Project/Site: 90 Hopkins St

TestAmerica Job ID: 480-84758-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL BUF
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL BUF
8082A	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	SW846	TAL BUF
6010C	Metals (ICP)	SW846	TAL BUF
Moisture	Percent Moisture	EPA	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 = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-84758-1	SP-1 (11'-12')	Solid	07/28/15 12:35	07/29/15 16:15
480-84758-2	SP-2 (12'-13')	Solid	07/28/15 13:00	07/29/15 16:15
480-84758-3	SP-3 (11.5'-12.5')	Solid	07/28/15 13:20	07/29/15 16:15
480-84758-4	NP-1 (7.9'-8.9')	Solid	07/28/15 15:20	07/29/15 16:15
480-84758-5	NP-2 (6.5'-7.5')	Solid	07/28/15 15:30	07/29/15 16:15
480-84758-6	NP-3 (15'-16')	Solid	07/29/15 08:55	07/29/15 16:15
480-84758-7	NP-4 (19'-20')	Solid	07/29/15 09:40	07/29/15 16:15
480-84758-8	NP-5 (21'-22')	Solid	07/29/15 10:30	07/29/15 16:15
480-84758-9	NP-6 (19.8'-20.8')	Solid	07/29/15 11:35	07/29/15 16:15
480-84758-10	NP-7 (7'-8')	Solid	07/29/15 12:45	07/29/15 16:15

Chain of Custody Record

Temperature on Receipt ______

Drinking Water? Yes ☐ No ☒

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124 (1007)

Client: CB&I	Project Manager: DAVE STOLL	Date: 7/27,28/15	Chain of Custody Number: 287385
Address: 13 BRITISH AMERICAN BLVD	Telephone Number (Area Code)/Fax Number: 518-785-2362	Lab Number	Page 1 of 1
City: LATHAM; State: NY; Zip Code: 12220	Site Contact: K. CROWN; Lab Contact: M. DEYO	Analysis (Attach list if more space is needed)	
Project Name and Location (State): 90 HOPKINS ST (NY) - PRAXAIR	Carrier/Waybill Number		Special Instructions/ Conditions of Receipt
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	8082A-PCBs	6010C-Pb	8270 LL PAHs	8260C TCL
SP-1 (11'-12')	7/28/15	1235				X	X						X	X	X	X
SP-2 (12'-13')		1300														
SP-3 (11.5'-12.5')		1320														
NP-1 (7.9'-8.9')		1520														
NP-2 (6.5'-7.5')		1530														
NP-3 (15'-16')	7/29/15	0855														
NP-4 (19'-20')		0940														
NP-5 (21'-22')		1030														
NP-6 (19.8'-20.8')		1135														
NP-7 (7'-8')		1245														

480-84758 Chain of Custody

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☒ Disposal By Lab ☐ Archive For ____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☒ Other STD 10 DAY

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: Ken Crown	7/29/15	1615	1. Received By: [signature]	7/29/15	1615
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments: 14.1 #1 ICE

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

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8/12/2015

Login Sample Receipt Checklist

Client: Praxair, Inc. Job Number: 480-84758-1

Login Number: 84758 **List Source: TestAmerica Buffalo**
List Number: 1
Creator: Kolb, Chris M

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.	False	Refer to job narrative for details
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.	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	cb&i
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	N/A	

Appendix B

Drill Logs – July 2015 Assessment

Drilling Log
Chicago Bridge & Iron (CB&I)

Monitoring Well

See Site Map For Boring Location: SP-1

Project: LIME PILE DRILLING Owner: PRAXAIR
Location: 90 HOPKINS ST. Project No. 141825 Date drilled 7/28/15
Surface Elev. ____ Total Hole Depth ~12' Diameter ~2"
Top of Casing ____ Water Level Initial ____ Static ____
Screen: Dia — Length — Type/Size —
Casing: Dia — Length — Type —
Filter Pack Material — Rig/Core Type GEOPROBE
Drilling Company NATURE'S WAY Method GEOPROBE Permit # ____
Driller NATE GINGRICH Log By KEVIN CRONIN
Checked By ____ License No. ____

COMMENTS: 11'-12' INTERVAL SUBMITTED FOR LAB ANALYSIS (PCBs, Pb, PAHs, VOA TCL)

Depth (ft.)	Well Completion	PID (ppm)	Sample ID Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2						
0						
2		0.0	S-1 REC ~2.9'			LT GRAY, MOIST, SOFT LIME. LAST INCH IS BLACK
4						
6		0.0	S-2 REC ~2.8'			LT GRAY MOIST TO VERY MOIST, SOFT LIME
8						
10		0.0	S-3 REC ~3.9'			~2.1' OF AA, VERY MOIST TO WET OVER ~1.8' OF DARK BROWN, WET, LOOSE FINE SAND
12			S-4			
14						
16			S-5			
18						
20			S-6			
22						
24						

03/12/1983 lithlog-mar92

Drilling Log
Chicago Bridge & Iron (CB&I)

Monitoring Well

Project LIME PILE DRILLING Owner PRAXAIR

Location 90 HOPKINS ST. Project No. 141825 Date drilled 7/28/15

Surface Elev. ______ Total Hole Depth ~14' Diameter ~2"

Top of Casing ______ Water Level Initial ______ Static ______

Screen: Dia — Length — Type/Size —

Casing: Dia — Length — Type —

Filter Pack Material — Rig/Core Type GEOPROBE

Drilling Company NATURE'S WAY Method GEOPROBE Permit # ______

Driller NATE GINERICH Log By KEVIN CRONIN

Checked By ______ License No. ______

See Site Map For Boring Location: SP-2

COMMENTS: 12'-13' INTERVAL SUBMITTED FOR LAB ANALYSIS (PCBs, Pb, PAHs, VOATCL)

Depth (ft.)	Well Completion	PID (ppm)	Sample ID Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2						
0–4		0.0	S-1 REC: ~4.0'			LT. GRAY, MOIST TO VERY MOIST, SOFT LIME
4–8		0.0	S-2 REC: ~4.0'			AS ABOVE
8–12		0.0	S-3 REC: ~4.0'			~3.9' AS ABOVE OVER BLACK, VERY MOIST, SOFT "CARBIDE"
12–14		0.0	S-4 REC: ~4.0'			~3.0' OF WET LT GRAY LIME AA (SLOUGH) OVER ~1' OF DK BROWNISH GRAY, WET TO MOIST, SOFT TO FIRM SANDY SILT-SILTY SAND (SSi-SiS)
16			S-5			
18						
20			S-6			
22						
24						

Drilling Log
Chicago Bridge & Iron (CB&I)

Monitoring Well

Project LIME PILE DRILLING Owner PRAXAIR
Location 90 HOPKINS ST. Project No. 141825 Date drilled 2/28/15
Surface Elev. ____ Total Hole Depth ~14' Diameter ~2"
Top of Casing ____ Water Level Initial ____ Static ____
Screen: Dia — Length — Type/Size —
Casing: Dia — Length — Type —
Filter Pack Material — Rig/Core Type GEOPROBE
Drilling Company NATURE'S WAY Method GEOPROBE Permit # ____
Driller NATE GINGRICH Log By KEVIN CRONIN
Checked By ____ License No. ____

See Site Map For Boring Location SP-3

COMMENTS: 11.5' - 12.5' INTERVAL SUBMITTED FOR LAB ANALYSIS (PCBs, Pb, PAHs, VOATCLS)

Depth (ft.)	Well Completion	PID (ppm)	Sample ID Blow Count/ 6in Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2						
0						
2		0.0	S-1 REC: ~4.0'			LT. GRAY, MOIST, SOFT LIME
4						
6		0.0	S-2 REC: ~3.6'			AS ABOVE
8						
10		0.0	S-3 REC: ~3.8'			~3' AS ABOVE OVER DARK-GRAYISH BROWN TO OLIVE GRAY VERY MOIST TO MOIST, SOFT TO FIRM SSi - SiS W/ SULFIDE ODOR
12		0.0	S-4 REC: ~4.0'			~2' OF UPHOLE LIME OVER DARK GRAYISH BROWN, MOIST, FIRM SSi - SiS W/ SULFIDE ODOR
14						
16			S-5			
18						
20			S-6			
22						
24						

Drilling Log
Chicago Bridge & Iron (CB&I)

Monitoring Well

Project LIME PILE DRILLING Owner PRAXAIR
Location 90 HOPKINS ST. Project No. 141825 Date drilled 7/28/15
Surface Elev. ______ Total Hole Depth ~10.5' Diameter ~7"
Top of Casing ______ Water Level Initial ______ Static ______
Screen: Dia — Length — Type/Size —
Casing: Dia — Length — Type —
Filter Pack Material — Rig/Core Type GEOPROBE
Drilling Company NATURE'S WAY Method GEOPROBE Permit # ______
Driller NATE GINGERICH Log By KEVIN CRONIN
Checked By ______ License No. ______

See Site Map For Boring Location NP-1

COMMENTS: 7.9 - 8.9' INTERVAL SUBMITTED FOR LAB ANALYSIS (PCBs, Pb, PAHs, VOA TCL)

Depth (ft.)	Well Completion	PID (ppm)	Sample ID Blow Count/ Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2						HIT REFUSAL IN SLAG @ ~8" & 1' TBGL, MOVE LOCATION
0		0.0	S-1 REC: ~1.9'			BROWN, WET, LOOSE SiS - CLAYEY SILT (CSi) LAST INCH HAS MEDIUM GRAY, WET, SOFT LIME
4		0.0	S-2 REC: ~2.7			~2.1' THICK MEDIUM TO LT. GRAY LIME, WET, SOFT OVER OLIVE BROWN, MOIST, FIRM SiC-CSi, MOTTLED
8		0.0	S-3 REC: ~2.0'			UPHOLE SLOUGH OVER SiC-CSi AS ABOVE. LAST INCH IS FINE WEATHERED GRAVEL (REFUSAL)
12			S-4			
16			S-5			
20			S-6			
24						

Drilling Log
Chicago Bridge & Iron (CB&I)

Monitoring Well

Project LIME PILE DRILLING Owner PRAXAIR
Location 50 HOPKINS ST. Project No. 141825 Date drilled 2/28/15
Surface Elev. ____ Total Hole Depth ~8' Diameter ~2"
Top of Casing ____ Water Level Initial ____ Static ____
Screen: Dia — Length — Type/Size —
Casing: Dia — Length — Type —
Filter Pack Material — Rig/Core Type GEOPROBE
Drilling Company NATURE'S WAY Method GEOPROBE Permit # ____
Driller NATE GINERICH Log By KEVIN CRONIN
Checked By ____ License No. ____

See Site Map For Boring Location NP-2

COMMENTS: 6.5'-7.5' INTERVAL SUBMITTED FOR LAB ANALYSIS (PCBs, Pb, PAHs, VOA TCL-S

Depth (ft)	Well Completion	PID (ppm)	Sample ID Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2						
0 – 4		0.0	S-1 REC. ~1.6'			BROWN, WET, LOOSE, SiS, Si, FINE GRAVEL (FG) OVER ~9" OF LT TO MEDIUM GRAY LIME, WET LOOSE, W/ SULFIDE ODOR
4 – 8		0.0	S-2 REC. ~4.0'			~2' OF LT GRAY LIME, WET, SOFT OVER ~2' OF OLIVE BROWN Si C-CS, MOIST, FIRM W/ MOTTLING, TRACE FINE SUBANGULAR GRAVEL, OCC. ROOTS
8 – 12			S-3			
12 – 16			S-4			
16 – 20			S-5			
20 – 24			S-6			

Drilling Log
Chicago Bridge & Iron (CB&I)

Monitoring Well

Project LIME PILE DRILLING Owner PRAXAIR
Location 90 HOPKINS ST. Project No. 141825 Date drilled 7/29/15
Surface Elev. ______ Total Hole Depth ~16 Diameter ~2"
Top of Casing ______ Water Level Initial ______ Static ______
Screen: Dia — Length — Type/Size —
Casing: Dia — Length — Type —
Filter Pack Material —
Rig/Core Type GEOPROBE
Drilling Company NATURE'S WAY Method GEOPROBE Permit # ______
Driller NATE GINGERICH Log By KEVIN CRONIN
Checked By ______ License No. ______

See Site Map For Boring Location NP-3

COMMENTS: 15'-16' INTERVAL SUBMITTED FOR LAB ANALYSIS (PCBs, Pb, PAHs, VOA TCL)

Depth (ft)	Well Completion	PID (ppm)	Sample ID / Blow Count / Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
0–4		0.0	S-1 REC: ~3.8'			LT. GRAY, DRY, LOOSE, S, Si, FG (~6") OVER LT. GRAY, DAMP TO MOIST, SOFT LIME. VERY SLIGHT SULFIDE ODOR.
4–8		0.0	S-2 REC: ~4.0'			LT. GRAY, MOIST, SOFT LIME WITH SLIGHT SULFIDE ODOR
8–12		0.0	S-3 REC. ~4.0'			AS ABOVE, BECOMING VERY MOIST. TRACE BLACK CARBIDE GRIT
12–16		0.0	S-4 REC. ~4.0'			~2.5' AS ABOVE OVER BLACK TO OLIVE BROWN SSi-SiS, MOIST, FIRM W/ LITTLE CLAY W/ SLIGHT SULFIDE ODOR.
16–20			S-5			
20–24			S-6			

Drilling Log
Chicago Bridge & Iron (CB&I)
Monitoring Well

See Site Map For Boring Location: NP-4

Project: LIME PILE DRILLING Owner: PRAXAIR
Location: 90 HOPKINS ST. Project No. 141825 Date drilled 7/29/15
Surface Elev. ____ Total Hole Depth ~20' Diameter ~2"
Top of Casing ____ Water Level Initial ____ Static ____
Screen: Dia — Length — Type/Size —
Casing: Dia — Length — Type —
Filter Pack Material — Rig/Core Type GEOPROBE
Drilling Company NATURE'S WAY Method GEOPROBE Permit # ____
Driller NATE GINGRICH Log By KEVIN CRONIN
Checked By ____ License No. ____

COMMENTS: 19'-20' INTERVAL SUBMITTED FOR LAB ANALYSIS (PCBs, Pb, PAHs, VOA TCL)

Depth (ft)	Well Completion	PID (ppm)	Sample ID Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2						
0–4		0.0	S-1 REC: ~4.1'			DAMP TO MOIST, SOFT LT GRAY LIME W/ SLIGHT SULFIDE ODOR
4–8		0.0	S-2 REC: ~4.0'			AS ABOVE
8–12		0.0	S-3 REC: ~4.0'			AS ABOVE
12–16		0.0	S-4 REC: ~4.0'			AS ABOVE W/ TRACE BLACK CARBIDE GRIT IN GEOPROBE SHOE.
16–20			S-5 REC: ~4.0'			~2.2' AS ABOVE OVER MOIST TO WET, FIRM TO SOFT DARK TO OLIVE GRAY Si S-SSi W/ LITTLE CLAY. REFUSAL IN WEATHERED FINE GRAVEL
20–24			S-6			

Drilling Log
Chicago Bridge & Iron (CB&I)

Monitoring Well

Project LIME PILE DRILLING Owner PRAXAIR
Location 50 HOPKINS ST. Project No. 141825 Date drilled 7/29/15
Surface Elev. ____ Total Hole Depth ~24' Diameter ~2"
Top of Casing ____ Water Level Initial ____ Static ____
Screen: Dia — Length — Type/Size —
Casing: Dia — Length — Type —
Filter Pack Material — Rig/Core Type GEOPROBE
Drilling Company NATURE'S WAY Method GEOPROBE Permit # ____
Driller NATE GINGERICH Log By KEVIN CRONIN
Checked By ____ License No. ____

See Site Map For Boring Location NP-5

COMMENTS: 21'-22' INTERVAL SUBMITTED FOR LAB ANALYSIS (PCBs Pb, PAHs, VOA TCL)

Depth (ft.)	Well Completion	PID (ppm)	Sample ID Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2						
0–4		0.0	S-1 REC: ~4.0'			~2" DARK GRAYISH BROWN S, Si, FG, BRICK FRAGMENTS OVER DAMP TO MOIST, SOFT LT. GRAY LIME
4–8		0.0	S-2 REC: ~4.0			MOIST, SOFT LT GRAY LIME
8–12		0.0	S-3 REC: ~4.0'			AS ABOVE
12–16		0.0	S-4 REC: ~4.0'			AS ABOVE LAST 0.5" HAS TRACE BLACK CARBIDE GRIT IN GEOPROBE SHOE
16–20		0.0	S-5 REC: ~3.4'			MOIST TO VERY MOIST SOFT LT. GRAY LIME
20–24		0.0	S-6 REC: ~4.2'			~0.9' WET SOFT AS ABOVE OVER DARK BROWNISH GRAY TO OLIVE GRAY SiS GRADES TO SiC
24						

Drilling Log
Chicago Bridge & Iron (CB&I)

Monitoring Well

Project LIME PILE DRILLING Owner PRAXAIR
Location 90 HOPKINS ST. Project No. 141825 Date drilled 2/24/15
Surface Elev. ______ Total Hole Depth ~24' Diameter ~2"
Top of Casing ______ Water Level Initial ______ Static ______
Screen: Dia — Length — Type/Size —
Casing: Dia — Length — Type —
Filter Pack Material — Rig/Core Type GEOPROBE
Drilling Company NATURE'S WAY Method GEOPROBE Permit # ______
Driller NATE GINGERICH Log By KEVIN CRONIN
Checked By ______ License No. ______

See Site Map For Boring Location NP-6

COMMENTS: 19.8'-20.8' INTERVAL SUBMITTED FOR LAB ANALYSIS (PCBs, Pb, PAHs, VOA TCL)

Depth (ft.)	Well Completion	PID (ppm)	Sample ID Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2						
0–4		0.0	S-1 REC: ~4.0			MOIST, SOFT LT GRAY LIME
4–8		0.0	S-2 REC: ~4.1'			AS ABOVE
8–12		0.0	S-3 REC: ~4.0'			AS ABOVE W/ TRACE BLACK CARBIDE GRIT IN GEOPROBE SHOE
12–16		0.0	S-4 REC: ~4.0'			AS ABOVE
16–20		0.0	S-5 REC: ~4.0'			~3.7' AS ABOVE OVER MOIST, FIRM DARK BROWN SSi-SiS
20–24		0.0	S-6 REC: ~4.0'			~0.7' OF UPHOLE SLOUGH OVER WET TO MOIST SOFT TO FIRM OLIVE BROWN TO BROWN SiS-SSi W/ TRACE TO LITTLE CLAY.

03/12/1993 lithlog-mar92

Drilling Log
Chicago Bridge & Iron (CB&I)

Monitoring Well

Project LIME PILE DRILLING Owner PRAXAIR
Location 90 HOPKINS ST. Project No. 141825 Date drilled 7/28/15
Surface Elev. ______ Total Hole Depth ~8' Diameter ~2"
Top of Casing ______ Water Level Initial ______ Static ______
Screen: Dia — Length — Type/Size —
Casing: Dia — Length — Type —
Filter Pack Material — Rig/Core Type GEOPROBE
Drilling Company NATURE'S WAY Method GEOPROBE Permit # ______
Driller NATE GINGRICH Log By KEVIN CRONIN
Checked By ______ License No. ______

See Site Map For Boring Location NP-7

COMMENTS:, 7'-8' INTERVAL SUBMITTED FOR LAB ANALYSIS (PCBs, Pb, PAHs, VOA TCL)

Depth (ft.)	Well Completion	PID (ppm)	Sample ID Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2						
0						
2		0.0	S-1 REC: ~4.0'			MOIST, SOFT LT. GRAY LIME
4						
6		0.0	S-2 REC: ~4.0'			~3' AS ABOVE OVER WET, SOFT TO MOIST, FIRM DARK TO OLIVE BROWN SiS-SSi TRACE CLAY
8			S-3			
10						
12			S-4			
14						
16			S-5			
18						
20			S-6			
22						
24						

Drilling Log

Chicago Bridge & Iron (CB&I)

Monitoring Well

Project LIME PILE DRILLING Owner PRAXAIR
Location 90 HOPKINS ST. Project No. 141825 Date drilled 7/29/15
Surface Elev. ____ Total Hole Depth ~9.5' Diameter ~2"
Top of Casing ____ Water Level Initial ____ Static ____
Screen: Dia — Length — Type/Size —
Casing: Dia — Length — Type —
Filter Pack Material — Rig/Core Type GEOPROBE
Drilling Company NATURE'S WAY Method GEOPROBE Permit # ____
Driller NATE GINGERICH Log By KEVIN CRONIN
Checked By ____ License No. ____

See Site Map For Boring Location IBP-1

COMMENTS:
PRAXAIR REP. (KARL) REQUESTED THIS ADDITIONAL BORING TO BE ADVANCED IN-BETWEEN THE NORTH & SOUTH LIME PILES.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2						
0						
2		0.0	S-1 REC: ~3.0'			DRY TO DAMP, LOOSE TO STIFF GRAYISH BROWN SiS, S, BRICK FRAGMENTS, GRAVEL (FILL). LAST 0.5" IS MEDIUM GRAY LIME
4						
6		0.0	S-2 REC: ~4.0'			~6" OF UPHOLE FILL OVER MOIST, SOFT LT GRAY LIME
8		0.0	S-3 REC: ~2.0'			WET TO SATURATED GRAYISH BROWN LIME, SiS-SSi AND FG OVER MOIST, FIRM OLIVE BRN SiS-SSi REFUSAL @ ~9.5' BGL
10						
12			S-4			
14						
16			S-5			
18						
20			S-6			
22						
24						

Appendix C

August 12, 2016 NYSDEC Comment Letter

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Remediation, Region 9
270 Michigan Avenue, Buffalo, NY 14203-2915
P: (716) 851-7220 | F: (716) 851-7226
www.dec.ny.gov

August 12, 2016

Mr. David Stoll
CBI Environmental, Inc.
13 British American Blvd.
Latham, New York 12110-1405

Dear Mr. Stoll:

90 Hopkins Street Site, Buffalo, New York
Site No. E915181
Lime Removal Remedial Action Work Plan
Comments

The New York State Department of Environmental Conservation (NYSDEC) and NYS Department of Health (NYSDOH) have completed its review of the Draft Remedial Action Work Plan (RAWP) for the subject site dated May 2016 as prepared by CB&I E&I Engineering. The review comments are as followed.

1. Section 2.1.2 Summary of Environmental Assessments: The July 2014 Remedial Investigation/ Alternative Analysis report prepared by Panamerican Environmental Inc. should be added to the list of previous environmental assessments to the site. A summary of the assessment is provided on the following page of the report.

2. Section 3.4 Summary of the Selected Remedy, Item 2 Carbide Lime Removal for Off-Site Beneficial Use: The selected remedy does allow the use of on-site soil meeting commercial use site cleanup objectives (CSCOs) for soil for regrading and as backfill for excavation depressions resulting from lime removal. However, if soils used for backfill or regrading exceed residential SCOs for backfilling lime excavation depressions, an environmental easement and site management plan for the former lime pile areas will be required. If it is Praxair's goal to not be burdened with institutional controls in the former lime pile areas, all imported soil for backfill and cover must meet residential SCOs. Also, no on-site soils or fill exceeding the residential SCOs can be used if a no institutional control goal is desired.

3. Section 3.4 Summary of the Selected Remedy, Item 3 Impacted Soil/Fill Excavation and Disposal: The work plan indicates that the management of impacted soil/fill above CSCOs requiring removal to access lime will be the responsibilities of others. If impacted soil/fill above CSCOs required removal to access lime, this material will become the management responsibility of Praxair, which may include offsite disposal. Any impacted fill and soil outside the limits of

the lime pile excavation areas is the responsibility of others.

4. Section 4.1 Project Specific Plans – Community Air Monitoring Plan: Air monitoring for VOCs along the area adjacent to the active “junkyard” will be required to assess if the lime is impacted with residual petroleum likely migrating from the junkyard. This will also serve as a means to isolate lime potentially impacted by petroleum for further management.

   The discussion on the particulate monitoring differs from the CAMP contained in Appendix C. There is a statement that states that due to the non-friable nature of the lime, no dust monitoring will be required. However, the CAMP in Appendix C indicates that dust monitoring will be performed during routine excavation activities. This needs to be clarified. Also, in areas where potentially impacted fill must be removed to access lime below grade will require active dust monitoring at a minimum. Additionally, dust monitoring will be required in the area adjoining the junkyard to remove the top two foot layer covering the lime that requires offsite disposal at a permitted landfill.

5. Section 4.3.1 Clearing and Grubbing: Clearing and grubbing is required along perimeter areas to access lime covered by vegetation. Lime was discovered beneath the vegetated perimeter areas during the course of the remedial investigation completed by Panamerican. The estimated extent is presented in Figures 3, 4 and 5 in the Remedial Investigation/Alternative Analysis Report (Panamerican, July 2014) and similar figures in the Record of Decision (NYSDEC January 2015).

6. Section 4.5 Erosion and Sediment Controls/Stormwater Management: A Stormwater Pollution Prevention Plan (SWPPP) is required as the lime pile removal and area restoration will disturb more than one acre. Though the site may already contain a previously construction retention pond as part of an interim measure, the SWPPP will contain prescriptive erosion and sediment control measures, any necessary changes to drainage patterns and features, and corresponding stormflow analysis is required as part of the SWPPP. Additionally, the SWPPP should address modification of existing drainage patterns possibly including the addition of a drainage swale adjacent to the railroad embankment to direct stormwater to the existing retention pond as necessary.

7. Section 4.7 Truck Loading and Traffic Plan: This section should also include provisions to prevent tracking of lime residue and soil from the site onto roads from trucks exiting the site. Any trucks coming into contact with potentially contaminated fill should be have tires properly cleaned before leaving the site.

8. Section 4.9.1 Management of Off-Spec Lime: Praxair responsibility is to remove all lime at the site to the practical extent possible. Praxair will also be responsible for management and offsite disposal of any off-spec lime including

co-mingle lime containing debris. Remove the statement that off-spec lime will be the responsibility of others. Additionally, if at-depth lime adjacent to the junkyard is impacted with residual petroleum, measures to isolate lime potentially impacted by petroleum for further management must be provided in the work plan.

9. Section 4.9.2 Management of Demolition Debris: Praxair will be responsible for management and offsite disposal for any soil and debris that is encountered and requires removal to access lime. Remove the statement that this material will be the responsibility of others. Provide measures to contain and isolate any of the stockpiled debris if stockpiling is required prior to offsite disposal.

10. Section 4.13 Backfilling and Grading: The placement and compaction of imported backfill needs to be clarified including means and methods placement and compaction, and how will the compaction be verified. One of the goals of the backfill placement is to ensure that the area will be suitably be compacted for future re-use and development.

11. Section 4.14 Site Restoration: Praxair shall be responsible for the placement of soil suitable for turf establishment at a sufficient thickness, preferably up to six inches in thickness, but three inches will be sufficient, and seeded with a suitable seed mix for turf or meadow grass establishment. This task would also be a requirement of an approved SWPPP.

12. Section 6.1 Progress Reports: Submittal of progress reports should have begun following the execution of the Order with the Department. An initial progress report shall include an anticipated project schedule and task, and a complete summary of lime excavated to date from the inception of lime excavation activities. Any subsequent progress reports will include an update on the quantity of lime removed over the reporting period. The lime removal report will include the date of excavation, estimated quantities removed per day, lime transporter, the destination of the lime and quantity of lime received. Praxair is to provide contact information and addresses of the receiving facilities where all excavated lime has been transported to.

13. Figure 5 Lime Limits Excavation Plan: The site plan drawing should include the revised lime limits as determined by the Panamerican site investigation. Excavation of lime within the perimeter areas will likely require clearing and grubbing of vegetation to access the lime. Praxair will be responsible for the proper disposal of all clearing debris and removal of lime covered by the perimeter brush.

14. Figure – General Comment: A figure depicting the final grading and another figure with pertinent details should be added to the work. The City of Buffalo should be able to provide input on the final grading details. The SWPPP would

contain a final site grading figure or plan and pertinent stormwater and sediment control details.

Please provide a revised work plan addressing the above comments within 30 days of this letter.

If you have any questions regarding the above, please feel free to contact me at 716-851-7220 or by email at eugene.melnyk@dec.ny.gov.

Sincerely,

Eugene W. Melnyk, PE
Project Manager
Division of Environmental Remediation

ec: Dennis Sutton, City of Buffalo
James Casey, Praxair Distribution, Inc.
George Bagget, Praxair Distribution, Inc.
Chad Staniszewski, NYSDEC
Sara Bogardus, NYSDOH
Charlotte Bethoney, NYSDOH

Appendix D

Community Air Monitoring Plan (CAMP)

COMMUNITY AIR MONITORING PLAN (CAMP)

90 Hopkins Street
Buffalo, New York
Lime Removal and Site Restoration Project

Site No: E915181

CB&I Project No.: 141825

July 2012
Revised: October, 2016

Prepared for:

George Baggett
Praxair Consultant
820 West 35th Street
Kansas City, MO 64111-3614

Submitted by:

CB&I Environmental & Infrastructure Engineering of New York, P.C.
13 British American Boulevard
Latham, New York, 12110

Table of Contents

List of Appendices

1.0 Introduction

CB&I Environmental & Infrastructure Engineering of New York, P.C. (CBI) has prepared this Community Air Monitoring Plan (CAMP) for the 90 Hopkins Street Site located in Buffalo, New York. The City of Buffalo owns the site. It is of a parcel of land measuring approximately 7.8 acres, located in a heavily industrial area of Hopkins Street. The property is currently vacant. There are two lime piles/former ponds and several ancillary areas measuring approximately 4.8 acres. There is also a soil/debris pile located along the eastern boundary of the site. The remainder of the property contains concrete pads/floors of former buildings and open space.

This CAMP will be implemented during portions of site activities associated with the removal of lime for beneficial reuse at this site. As discussed in the New York State Department of Health (NYSDOH) Generic CAMP (**Appendix A**), a CAMP requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. Praxair maintains that the impacts to air quality are negligible during the movement of lime; consequently, any air monitoring that is completed should focus upon particulates in and around the specific areas of the site. New York Department of Environmental Conservation (NYSDEC), in its August 12, 2016 comment letter, agreed with this conclusion and required Praxair to monitor for "…VOCs along the area adjacent to the active "junkyard" …to assess if the lime is impacted with residual petroleum likely migrating from the junkyard. This will also serve as a means to isolate lime potentially impacted by petroleum for further management as well as during any "ground intrusive activities or handling of potentially contaminated fill…and if visual dust (is) generated from activities within the boundaries of the Site or VOC monitoring in the work area shows exceedances of 5 ppm"

The CAMP is not intended for use in establishing action levels for worker respiratory protection (which is addressed in CB&I's Health & Safety Plan (HASP)). Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne particulate releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread lime material off-site through the air. This CAMP is generally consistent with the NYSDOH Generic Community Air Monitoring Plan (**Appendix A**).

2.0 Lime Excavation Scope of Work

This project includes excavation of lime and miscellaneous debris for off-site removal and beneficial reuse as detailed in the Remedial Action Work Plan (RAWP) for this Site.

3.0 Air Monitoring Procedures for Intrusive Activities

It is anticipated that very little dust will be generated and/or observed during these site activities. Dust may be generated from the disturbance of dry soil or from lime drying on the roadway, becoming calcium carbonate. In general, the excavated lime has a 45% moisture content and consistency of "wet sand" or mud cake; consequently, dust is not expected. The following sections describe the specific CAMP monitoring procedures for particulates.

3.1 Monitoring

3.1.1 Particulate Monitoring

Continuous monitoring will be conducted for all ground intrusive activities that are completed along the junkyard, within areas of VOC impacted soils and if visual dust is generated during excavation activities as detailed in the NYSDOH August 31, 2016 comment letter. Ground intrusive activities include, but are not limited to lime/debris excavation and handling, trenching, grading, placement of clean fill and loading of lime.

Three fixed air monitoring stations may be set up at the Site The location of these stations will be determined in the field prior to starting excavation. Additionally, the site representatives or operators will perform visual observations for dust.

Monitoring equipment capable of measuring particulate matter smaller than 10 microns (PM-10) and capable of integrating (averaging) over periods of 15 minutes or less, at a minimum, will be set at the locations described above, at heights approximately 4 feet to 5 feet above land surface (i.e., the breathing zone). This equipment will log the 15-minute average concentrations for subsequent downloading and reporting. An audible alarm on particulate monitoring devices will be set at 90 micrograms per cubic meter ($\mu g/m^3$) above the background level. The background level (i.e. upwind location) will be measured at the start of each workday and periodically throughout the day thereafter to establish background conditions. The CAMP coordinator will record the wind direction and speed. The particulate monitoring equipment will be calibrated at the start of each day.

The monitoring results will be compared to the following:

1. If the PM-10 particulate level on the devices is 100 $\mu g/m^3$ greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques shall be employed. Work may continue with

dust suppression techniques, provided that downwind PM-10 particulate levels do not exceed 150 μg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques (i.e. spreading of gravel or light water spray), downwind PM-10 particulate levels are greater than 150 μg/m^3 above the upwind level, work shall be reevaluated and changes initiated to reduce particulate levels to less than 150 μg/m^3 above background conditions and to prevent visible dust migration, including work stoppage if necessary.

Meteorological data consisting of wind speed, wind direction, temperature, and barometric pressure will be recorded at the beginning of each day. There may be situations where visible dust is generated by excavation activities and migrates to downwind locations but is not detected by the monitoring equipment at or above the action levels. Therefore, if visible dust is observed leaving the working area, dust suppression techniques such as those described in **Section 3.3** or the HASP will be employed. If dust suppression techniques do not lower particulates to below 150 μg/m^3 or visible dust persists, additional measures, including work suspension if necessary, will be implemented to remedy the situation.

3.1.2 VOC Monitoring

VOCs will be monitored along the area adjacent to the active "junkyard". Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background conditions. A fixed monitoring device (e.g. PID or ppb Rae) will be located between the excavation and active "junk yard". The equipment will be calibrated at least daily and noted in daily field notes.

- If the ambient air concentration of total organic vapors along the area adjacent to the active "junkyard" exceeds 5 ppm above background for the 15-minute average, work activities will be temporarily stopped and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities will resume with continued monitoring.
- If total organic vapor levels a along the area adjacent to the active "junkyard" persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities will be stopped, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities will resume.
- If the organic vapor level is above 25 ppm along the area adjacent to the active "junkyard", activities will be shutdown.

3.2 Documentation

All air monitoring data, meteorological data, and the locations of monitoring equipment will be recorded in the onsite files and will be available for NYSDEC and NYSDOH review.

3.3 Dust Suppression Techniques

Reasonable dust-suppression techniques will be used during all work that may generate dust. Small piles of gravel will be stored near the loading areas to clean up small lime spills during loading. Water will not be used to suppress lime on the roadway because it will then be tracked off-site. The following techniques will be employed to control the generation and migration of dust during these activities:

- Spreading of small gravel to clean up lime spills,
- Hauling materials in properly covered containers; and,
- Restricting vehicle speeds to 10 miles per hour (mph).

Appendix A

NYSDOH Generic Community Air Monitoring Plan

Appendix 1A
New York State Department of Health
Generic Community Air Monitoring Plan

Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

Appendix 1B
Fugitive Dust and Particulate Monitoring

A program for suppressing fugitive dust and particulate matter monitoring at hazardous waste sites is a responsibility on the remedial party performing the work. These procedures must be incorporated into appropriate intrusive work plans. The following fugitive dust suppression and particulate monitoring program should be employed at sites during construction and other intrusive activities which warrant its use:

1. Reasonable fugitive dust suppression techniques must be employed during all site activities which may generate fugitive dust.

2. Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Remedial activities may also include the excavation, grading, or placement of clean fill. These control measures should not be considered necessary for these activities.

3. Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM10) with the following minimum performance standards:

(a) Objects to be measured: Dust, mists or aerosols;

(b) Measurement Ranges: 0.001 to 400 mg/m3 (1 to 400,000 :ug/m3);

(c) Precision (2-sigma) at constant temperature: +/- 10 :g/m3 for one second averaging; and +/- 1.5 g/m3 for sixty second averaging;

(d) Accuracy: +/- 5% of reading +/- precision (Referred to gravimetric calibration with SAE fine test dust (mmd= 2 to 3 :m, g= 2.5, as aerosolized);

(e) Resolution: 0.1% of reading or 1g/m3, whichever is larger;

(f) Particle Size Range of Maximum Response: 0.1-10;

(g) Total Number of Data Points in Memory: 10,000;

(h) Logged Data: Each data point with average concentration, time/date and data point number

(i) Run Summary: overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number;

(j) Alarm Averaging Time (user selectable): real-time (1-60 seconds) or STEL (15 minutes), alarms required;

(k) Operating Time: 48 hours (fully charged NiCd battery); continuously with charger;

(l) Operating Temperature: -10 to 50° C (14 to 122° F);

(m) Particulate levels will be monitored upwind and immediately downwind at the working site and integrated over a period not to exceed 15 minutes.

4. In order to ensure the validity of the fugitive dust measurements performed, there must be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the remedial party to adequately supplement QA/QC Plans to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.

5. The action level will be established at 150 ug/m3 (15 minutes average). While conservative,

this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m3, the upwind background level must be confirmed immediately. If the working site particulate measurement is greater than 100 ug/m3 above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see paragraph 7). Should the action level of 150 ug/m3 continue to be exceeded work must stop and DER must be notified as provided in the site design or remedial work plan. The notification shall include a description of the control measures implemented to prevent further exceedances.

6. It must be recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. There may be situations when dust is being generated and leaving the site and the monitoring equipment does not measure PM10 at or above the action level. Since this situation has the potential to allow for the migration of contaminants off-site, it is unacceptable. While it is not practical to quantify total suspended particulates on a real-time basis, it is appropriate to rely on visual observation. If dust is observed leaving the working site, additional dust suppression techniques must be employed. Activities that have a high dusting potential--such as solidification and treatment involving materials like kiln dust and lime--will require the need for special measures to be considered.

7. The following techniques have been shown to be effective for the controlling of the generation and migration of dust during construction activities:

(a) Applying water on haul roads;
(b) Wetting equipment and excavation faces;
(c) Spraying water on buckets during excavation and dumping;
(d) Hauling materials in properly tarped or watertight containers;
(e) Restricting vehicle speeds to 10 mph;
(f) Covering excavated areas and material after excavation activity ceases; and
(g) Reducing the excavation size and/or number of excavations.

Experience has shown that the chance of exceeding the 150ug/m3 action level is remote when the above-mentioned techniques are used. When techniques involving water application are used, care must be taken not to use excess water, which can result in unacceptably wet conditions. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

8. The evaluation of weather conditions is necessary for proper fugitive dust control. When extreme wind conditions make dust control ineffective, as a last resort remedial actions may need to be suspended. There may be situations that require fugitive dust suppression and particulate monitoring requirements with action levels more stringent than those provided above. Under some circumstances, the contaminant concentration and/or toxicity may require additional monitoring to protect site personnel and the public. Additional integrated sampling and chemical analysis of the dust may also be in order. This must be evaluated when a health and safety plan is developed and when appropriate suppression and monitoring requirements are established for protection of health and the environment.

Appendix E

August 31, 2016 Remedial Action Work Plan CAMP Approval Letter,

New York State Department of Health (NYSDOH)

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

August 31, 2016

Eugene Melnyk
NYS Department of Environmental Conservation
Division of Environmental Remediation
NYSDEC Region 9
270 Michigan Avenue
Buffalo, New York 14203-2999

Re: Remedial Action Work Plan
90 Hopkins Street
Site # E915181
Buffalo, Erie County

Dear Mr. Melnyk,

I have reviewed the June 2016 Remedial Action Work Plan for the referenced site. All of my previous comments have been addressed, except for the one documented below. Given the acceptance and addition of this comment, I find this document to be acceptable.

- All aspects of the approved Community Air Monitoring Plan (CAMP) for the site should be implemented should the following activities occur on-site: (1) ground intrusive activities or handling of potentially contaminated fill; and (2) ground intrusive activities in areas of known or potential contamination on the site (near the junkyard.) Additionally, due to the reported physical properties of the on-site lime, it is not anticipated that particulates will become airborne and migrate off-site during ground intrusive activities or handling of the lime. However, if visual dust is generated from activities within the boundaries of the site, or VOC monitoring in the work area shows exceedances of 5 ppm, work must stop until the approved CAMP is in place.

Thank you for the opportunity to review this document. If you have any questions regarding the above, please feel free to contact me at (518)402-7860.

Sincerely,

S. Bogardus

Sara Bogardus
Public Health Specialist
Bureau of Environmental Exposure Investigation

ec: C. Bethoney / e-File
A. Bonamici – NYSDOH WRO ,
D. Funke / M. Kowalski – ECDOH

M. Cruden – NYSDEC Central Office
C. Staniszewski- NYSDEC Region 9

Appendix F

Stormwater Pollution Prevention Plan (SWPPP)

Stormwater Pollution Prevention Plan

for the 90 Hopkins Street
Lime Removal and Site Restoration Project

Submitted to:
Praxair Distribution, Inc.
Jim Casey
Praxair Distribution, Inc.
145 Shimersville Road
Bethlehem, PA 18015

Submitted by:
APTIM Engineering Geology New York, P.C.
13 British American Boulevard
Latham, NY 12110-1405

September 2017

Stormwater Pollution Prevention Plan for the 90 Hopkins Street Site

Approval for Use

Matthew Sausville P.E.
Project Engineer

Date

STATE OF NEW YORK
MATTHEW J. SAUSVILLE
091031
LICENSED PROFESSIONAL ENGINEER

Owner

Date

Regulatory Manager

Date

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Appendices

Acronyms

ASM	Anchored Stabilization Matting
APTIM	Aptim Engineering & Geology New York, P.C.
BMP	Best Management Practice
C&D	Construction and Demolition
CY	Cubic Yards
ESC	Erosion and Sediment Control
IM	Interim Measures
NYSSSESC	New York State Standards & Specification for Erosion & Sediment Control
NOI	Notice of Intent
NOT	Notice of Termination
NWI	National Wetlands Inventory
NYSDEC	New York State Department of Environmental Conservation
Order	Order on Consent
Praxair	Praxair Distribution, Inc.
SPDES	State Pollutant Discharge Elimination System
SWPPP	Stormwater Pollution Prevention Plan
USDA	United States Department of Agriculture
USGS	U.S. Geological Survey

1.0 Stormwater Pollution Prevention Plan

1.1 Regulatory Information

This Stormwater Pollution Prevention Plan (SWPPP) is prepared to instruct personnel on mitigation measures to prevent pollutants in stormwater runoff from entering the waters of the United States. The following sections discuss and describe actions to be taken as part of the New York State Department of Environmental Conservation (NYSDEC) State Pollutant Discharge Elimination System (SPDES) requirements of the General Permit for Stormwater Discharges from Construction Activity - GP-0-15-002.

A draft Notice of Intent (NOI) for the General Permit for this project is included for reference as **Appendix A**. This form, and others referenced in this SWPPP are included as Appendices, will be signed and submitted for review in accordance with the requirements specified in the General Permit.

1.2 SWPPP Development, Review, and Update

In addition to State requirements, this SWPPP was developed in accordance with accepted engineering practices and includes the following:

- Describes the implementation of practices that will be used to reduce pollutant loadings from stormwater runoff during construction activities.
- Offers protective measures to minimize sediment transport.
- Identifies potential sources of pollution that may affect the quality of stormwater discharges.
- Complies with the General Permit conditions.
- Aptim Engineering & Geology New York, P.C. (APTIM) has prepared this SWPPP on behalf of Praxair Distribution, Inc. (Praxair) in support of its proposed project to remove carbide lime at 90 Hopkins Street in Buffalo, New York (Site) and to relocate on-site or remove and dispose of existing Construction and Demolition (C&D) debris to an offsite disposal facility.

1.2.1 SWPPP Review

Applicable federal, state, and local regulatory agencies, which have regulatory jurisdiction over the Site, may elect to review this SWPPP and, if necessary, notify Praxair that the SWPPP does not meet the requirements of GP-0-15-002 and identify those required provisions that have not been met. Should the SWPPP require revisions to meet the requirements, Praxair and APTIM will make the necessary changes within seven (7) days of notification from the regulatory authority. The SWPPP will be resubmitted with a certification that the changes have been made and will be implemented. This SWPPP will be kept available at the project site for review by regulatory agencies, engineers, and subcontractors.

1.2.2 SWPPP Update

Praxair and APTIM may amend this SWPPP when there is a significant change in one or more of the following project components, which affects the potential for discharge of pollutants from stormwater runoff associated with the construction activities:

- Design
- Construction
- Operation
- Maintenance

The SWPPP shall also be updated or amended by Praxair or APTIM under the following conditions:

- Control measures are determined to be ineffective in minimizing pollutants and/or achieving the objectives for controlling pollutants from stormwater discharges.
- To identify a new Subcontractor that will implement any control measure of the SWPPP.
- The superseded SWPPP will be marked as such and revision dates placed on the updated SWPPP, which will be distributed to the appropriate parties.

1.3 Site Owner and Site Contact

The site is owned by the City of Buffalo. Praxair Distribution Inc. is the site contact and is obligated under an Order on Consent (Order) to implement a Remedial Action for the Lime Removal Area as outlined in the January 16, 2015, NYSDEC Record of Decision (ROD) . The Owner address and site contact information is listed below:

Owner	Site Contact
City of Buffalo 65 Niagara Square Buffalo, Erie County, New York 14202	Jim Casey Praxair Distribution, Inc. 145 Shimersville Road Bethlehem, PA 18015

1.4 Site Description

1.4.1 Project Description

The 90 Hopkins Street Site (Site) is a vacant triangular shaped parcel that is approximately eight acres in size located on Hopkins Avenue in the City of Buffalo, Erie County, about ¼ mile south of Tifft Street (**Figure 1**). The Site is situated in an urban industrial area within a Brownfield Opportunity Area and is bordered by a steel fabricating plant to the northeast; a machine shop and auto junk yard to the east; active railroad line and remediated Marilla Street landfill disposal site to the south/southwest; and a rail spur and the remediated Alltift Landfill/Ramco Steel disposal sites (Site No's 915054 and 915046B) to the north/northwest. Foundations and floor slabs from several industrial buildings still exist at the Site.

Originally the Site contained two piles of carbide lime; approximately 15 feet above adjoining grade and extending approximately 10 feet below grade. The lime piles covered roughly two thirds of the Site and were estimated to encompass approximately 123,000 cubic yards in volume. Between 2011 and 2016 approximately 27,025 cubic yards of the lime was excavated and removed from the above grade portion of the southern lime pile for use as an agricultural soil amendment at several local farms in Western NY. This beneficial reuse was approved by the NYSDEC in correspondence dated October 19, 2011.

Praxair has entered into the Order with the NYSDEC. The Order obligates Praxair to remove the remaining carbide lime piles. This includes excavation of above and below grade carbide lime to the extent practicable followed by backfilling to bring the Site to grade. Additionally, in accordance with the Order, Praxair is required to manage C&D material located around the perimeter of the existing lime piles. The depths of C&D ranges from one to two feet below grade.

1.4.2 Site Location

The Site property is owned by and is located in the City of Buffalo in Erie County, New York. The Site is located in the Erie-Ontario lake plain province, which has minimal topographic change. The area generally slopes north and west towards the Buffalo River and Lake Erie. The area of disturbance is bordered by a steel fabricating plant to the northeast; a machine shop and auto junk yard to the east; and active railroad line and remediated Marilla Street landfill site to the south/southwest; and a rail spur and the remediated Alltift Landfill/Ramco Steel disposal sites to the north/northwest (**Figure 1 –** Site Location Map).

1.4.3 Wetlands

According to the NYSDEC Environmental Resource Mapper, there are no state mapped wetlands located on the site. However, the Buffalo River and Lake Area, located west of the project area and including the Erie Canal and Lake Erie, are identified as both state and federally regulated freshwater wetland sites. The Buffalo River is classified by the NYSDEC as Class "C" with a standard of (C). Per the NYSDEC's "*Chapter X, Division of Water, Part 837: Lake Erie (East End) – Niagara River Drainage Basin*" (http://www.dec.ny.gov/regs/2485.html).

The best usage of Class C waters is fishing. By definition, these waters are suitable for fish, shellfish, and wildlife propagation and survival. The water quality is suitable for primary and secondary contact recreation, although other factors may limit the use for these purposes.

The Buffalo River was designated as an Area of Concern in 1989 under the 1987 Great Lakes Water Quality Agreement. Several Remedial Actions have been completed since the River was first listed. In 2014/2015, in-water and upland habitat restoration began after the removal of 488,000 cubic yards of contaminated sediment (i.e., Legacy Act dredging). The restoration work was scheduled to be completed by 2016.

According to the U.S. Fish and Wildlife Service National Wetlands Inventory (NWI), there is one federally registered wetland within the limits of the project area. The Freshwater Emergent Wetland, PEM5A, is approximately 3.39 acres in size and is located as the north lime pile. The mapping directly correlates to the shape of the northern lime pile. This NWI classification was determined using high altitude imagery and appears to be a misinterpretation of the existing condition (i.e., lime pile). According to the inventory, there is also a 6.5 acre PUBHx classified federal wetland located approximately 75 feet north of the project area and property boundary. No work is proposed near this location. It is not anticipated that there will be any impacts to surrounding state/federally registered wetlands, ponds, or rivers surrounding the site. Site perimeter inspections will be conducted during inspections of erosion and sediment controls. State and Federal Wetland maps for the site are provided in **Appendix B**.

1.4.4 Soils

The area surrounding the Site is generally flat with the exception of the carbide lime piles, local railroad grades and other remediated off-site landfills. The Site generally contains several feet of fill in the non-lime pile areas and up to 25 feet in thickness of carbide lime in the pile (up to 15 feet above grade and greater than 10 feet below grade). Native soil below the fill and lime piles consists of silty/clayey soil deposits ranging in thickness from 15 to 20 feet. Below the native soil is limestone bedrock. Groundwater is shallow at the site, occurring approximately 1.5 to 4 feet below ground surface. The groundwater gradient is very flat, trending to the northwest towards the Buffalo River/Lake Erie. The western half of the northern site perimeter contains a stormwater detention pond that was installed to intercept lime sediment in stormwater runoff and normalize the pH of the water before exiting the site. A topographic map is provided on **Figure 2**.

According to the United States Department of Agriculture (USDA) Natural Resources Conservation Service's Web Soil Survey, the predominant soil in the general site area is classified as Urban Land, reflecting previous industrial and urban residential land uses. According to the Remedial Investigation Report, the bedrock underlying the area is composed of three formations roughly dividing the area into three segments north to south: Morehouse Limestone in the Onondaga Formation (~120-feet in depth), the Marcellus Formation consisting of Oatka Creek Shale (~30-55 feet in depth) and the Levanna Shale and Strafford Limestone (~60-90 feet in depth). The surface geology of the area consists of Lacustrine silt and clay. The USDA's Web Soil Survey is located in **Appendix C.**

1.4.5 Site Work

Construction activities for the Site will be implemented as described herein. The proposed construction activities (Site Work Plan) are provided on **Figure 3** and discussed in this section. These activities include mobilization, storm water management, installation of erosion and sediment controls, excavation, management of C&D debris, backfilling, grading, site restoration and demobilization. Storm water management will be conducted throughout the sequence of construction. Construction began in the summer, 2017. Snow removal is not anticipated to be required.

1.4.6 Erosion and Sediment Controls

The proposed erosion and sediment controls will be installed and maintained prior to the start of intrusive construction activities. These controls may include but are not limited to silt fence, straw bale dikes, fiber rolls/compost filter socks, riparian buffers, construction entrance, dewatering sump pits, construction ditches, sediment trap, topsoiling, temporary construction area seeding, permanent construction area planting, mulching, anchored stabilization matting, and turbidity curtains. Erosion and sediment controls will be installed based on the Contractors means and methods to complete the work. All erosion and sediment controls will be installed in accordance with New York State Standards and Specifications for Erosion and Sediment Control, November 2016 (NYSSSESC, November 2016). See **Figure 3, Figure 5, and Appendix D** for further details**.**

1.4.7 Site Access and Temporary Facilities

Access to the Site will be provided by the existing construction entrance off of Hopkins Street. Temporary facilities may be installed at the discretion of the Contractor as approved by the Site Contact/Owner. The location of the existing construction entrance is provided on **Figure 3 –** Site Work Plan. Location of temporary facilities will be determined and approved by the Site Contact/Owner.

1.4.8 Site Grading Excavation and Backfilling

Stormwater from the Site's drainage area collects into a sedimentation trap at the north end of the site via sheet flow and open channel flow through a temporary vegetated swale/construction ditch that was previously installed. The sedimentation trap outlets at the northwest portion of the site where it continues to flow into a nearby pond and ultimately forms a confluence with the Buffalo River. The total construction work area comprises approximately eight (8) acres and is the area proposed for excavation, backfilling, grading and C&D management. The area will be disturbed and restored in increments, not exceeding a disturbed area of 5 acres at one time. Site grading, excavation and backfill operations will involve the excavation of approximately 93,000 cubic yards (CY) of carbide lime. The volume of carbide lime consists of two piles that extend both above grade and below grade. The estimated quantity of fill required to bring the remaining deficits to grade is approximately 44,000 CY. C&D management will include the characterization, excavation, regrading, removal or relocation of approximately 6,700 CY of C&D material. Material characterized as being above NYSDEC Commercial use Soil Cleanup Objectives (Commercial SCOs) may be disposed of at an offsite disposal facility. The area will be graded to promote positive drainage towards the west/north west part of the site as shown on **Figure 4.**

1.5 Pollution Prevention Measures

Potential pollutant sources are limited to those associated with the construction project. The potential impacts are identified as siltation of the existing wetland adjacent area, erosion of disturbed soil horizons within the construction area, and discharge of pollutants to the Buffalo River. Listed below is a description of controls and measures that shall be implemented at the site to minimize pollutant transport. Pollution prevention measures are additionally discussed on **Figure 5**. They include but are not limited to the following:

1. Debris and litter shall be removed on a weekly basis or more frequently if necessary.
2. Excavation equipment, materials, soil and debris on the Site shall be properly stored and/or contained and fueling of equipment shall be completed offsite.
3. Proper precautions shall be taken so that materials do not spill onto public thoroughfares. If materials are dropped onto these areas, they shall be removed as soon as practicable so that they do not enter surface drainage systems.
4. Dust control measures will be employed before dust migrates off-site. Measures include the application of uncontaminated water, (i.e., potable, non-potable), and collected water that meets the General Permit discharge limits.
5. Areas at the Site will be dedicated for construction vehicle transit or equipment staging. These areas shall be monitored and located in an area where runoff can be controlled.

6. Decontamination water for construction vehicles/equipment and decontamination activities shall occur in the designated area within the disturbed area should it be necessary. Run-off shall be managed in the same manner as stormwater as described herein. Chemicals, soaps, and detergents shall not be used for decontamination. Stormwater management on this site has been designed in accordance with the *New York State Standards and Specification for Erosion and Sediment Controls (November 2016).*

7. Minimization of open excavation work and staging of large amount of materials above grade.

1.6 Construction and Waste Material Storage

The materials or substances listed below are expected to be present onsite during construction activities:

- Stockpiled soil and debris
- Erosion and sediment control devices as discussed in Section 1.4.6.
- Traffic control and warning devices such as orange construction fence, posts, cones, and jersey barriers
- Construction debris and trash.

1.6.1 Spill Prevention

Perform all work in accordance with provisions included herein. In addition, the following are the material management practices that shall be used to reduce the risk of spills or other accidental exposure of materials and substances to stormwater runoff. The following good housekeeping practices shall be followed onsite during the construction project.

1. Products shall be kept in their original containers with the original manufacturer's label.

2. Whenever possible, products shall be used up or packages resealed before proper disposal of the contents and containers off-site.

3. Manufacturers' recommendations for proper use and disposal shall be followed.

4. Onsite vehicles shall be monitored and inspected for leaks and receive regular preventive maintenance to reduce the chance of leakage of petroleum products. Vehicle maintenance will be performed off-site to the extent practicable to minimize potential spills. Heavy equipment such as excavators operating in the construction area will undergo routine maintenance to minimize potential for fuel and hydraulic

spills. Portable revetments or plastic sheeting shall be used as necessary in vehicle storage areas to contain potential spills.

5. Materials shall be brought onsite in minimum quantities required to limit onsite storage.

1.6.2 Spill Control Practices

In addition to the good housekeeping and material management practices discussed in the previous section, the following practices shall be adhered to by the Contractor for spill prevention and cleanup:

1. Spills of petroleum, toxic, or hazardous materials shall be reported to Owner/Site Contact or Owners Representative immediately regardless of size.
2. Manufacturers' recommended methods for spill cleanup shall be clearly posted and site personnel shall be made aware of the procedures and the location of the cleanup supplies.
3. Materials and equipment necessary for spill cleanup shall be kept in an onsite material storage area that is identified by Contractor and approved by the Owner/Site Contact or Owners Representative. Equipment and materials shall include but not be limited to shovels, rags, gloves, goggles, spill control materials, absorbents, and trash containers specifically for this purpose.
4. Spills shall be cleaned up immediately after discovery.
5. If a spill occurs, the spill area shall be kept well ventilated and personnel shall wear appropriate protective clothing for the hazard to prevent injury.
6. A spill report shall be completed and filed in this SWPPP and shall include a description of the spill, its cause, and the corrective measures taken to mitigate the spread of contamination. The Contractor will also investigate spills to identify the cause and implement corrective action to prevent future spills to the extent feasible.

1.7 Stormwater Controls

1.7.1 Temporary and Permanent Erosion and Sediment Controls

Listed below is a description of temporary and permanent control measures that shall be implemented at the Site. Specific methods and materials employed in the installation and maintenance of erosion control measures conform to the NYSSSESC, November 2016. The standards and specifications for control measures described in this SWPPP are included in **Appendix D**.

1.7.1.1 Temporary Erosion and Sediment Controls

Measures to be implemented at the Site are shown on **Figure 3, Figure 5** and **Appendix D** include:

1. Straw bale dikes (or equivalent material), silt fence barriers, fiber rolls, compost filter socks or equivalent will be installed at the downgradient limits of construction area(s). The excavation perimeters or clearing limits of each phase of excavation will have silt fence installed to prevent run-on and run-off. These will be the primary sediment and erosion control measures. Perimeter Erosion and Sediment Control (ESC) measures material shall be securely anchored in place by stakes or rebar driven through the bales in accordance with the standards and specifications. Perimeter ESC's shall be placed on slope contours to maximize ponding efficiency. ESC's will be removed when they have served their purpose so as not to block or impede stormwater flow or drainage. In addition to as described herein, temporary erosion and sediment controls will be installed in accordance with the manufacturer's recommendations. The locations of the proposed temporary erosion and sediment controls are provided on **Figure 3**.

2. A construction entrance currently exists at the site and will be maintained in a condition that will prevent tracking or flowing of sediment onto public-right-of-ways. This may require top dressing, repair and/or cleanout of any measures used to trap sediment on an as needed basis. When necessary, wheels shall be cleaned prior to entrance onto public right-of-way. In general, dry measures (i.e., brooming, scraping) will be performed to minimize use of water.

3. Area(s) chosen for stockpiling operations shall be dry and stable. The stockpile staging areas may be underlain with geotextile or poly plastic as needed. Stockpiles shall be established with a maximum slope of 2:1. Prior to commencement of soil stockpiling, each stockpile area shall be surrounded on three sides by perimeter ESC's as necessary and as described above.

4. A temporary construction ditch (grass swale) and sediment trap was installed as part of an Interim Measure (IM). These controls will be maintained throughout the sequence of construction on an as needed basis. The ditch and sediment trap will remain until the entire site property has established final vegetation. Orientation of the ditch may be modified to accommodate the sequence of construction. A turbidity curtain may be emplaced across the entire width of plunge pool to minimize sediment migration to nearby wetlands or the Buffalo River if discharged water from the sediment basin causes an increase in turbidity by means of visual inspection.

5. Temporary Construction Area Seeding will be installed along areas backfilled as necessary to meet the requirements as described herein. Areas seeded will be mulched as necessary to help stabilize the backfilled areas. Anchored Stabilization Matting (ASM) may be placed on sloped areas as needed to prevent erosion of soil. Following final grading, ASM may be installed along the east and west embankments if seeded and mulched areas exhibit characteristics of erosion (i.e., sedimentation at the slope, rills, etc). The ASM will be a biodegradable product used to establish vegetation and installed in accordance with the manufacturer's recommendations.

6. Construction dewatering sump pits will be installed as necessary to complete the excavation and backfill work below the water table. Construction dewatering sump pits shall be installed as described in **Appendix D.**

1.7.1.2 Permanent Erosion and Sediment Controls

No permanent ESC's are proposed for the site. The site is to be graded to promote drainage to the north end of the property as sheet flow and revegetated with a seed and mulch mix. Final vegetation will include:

1. Following completion of final grading, Topsoiling and Permanent Construction Area Planting will be completed using a seed mix consistent with local vegetation to the area and approved by the Owner/Site Contact or Owners Representative. Final vegetation will be accepted based on obtaining 90% grass coverage over the seeded area. Seed shall be applied at an application rate as recommended per the Permanent Construction Area Planting specification provided in **Appendix D** or as recommended by the vendor per the approved selected seed for the Site. All graded areas are to maintain sheet and shallow concentrated flow only. Topsoil placed at the site shall be in accordance with Topsoiling Specifications provided in **Appendix D** and or will have a minimum depth of four inches and may have the following characteristics:

    a. Original loam topsoil, well drained homogeneous texture and of uniform grade, without the admixture of subsoil material and entirely free of dense material, hardpan, sod, or any other objectionable foreign material.

    b. Containing not less than 4 percent but not more than 20 percent organic matter in that portion of a sample passing a 1/4 inch sieve when determined by the wet combustion method on a sample dried at 105 degrees C.

    c. Containing a pH value within the range of 4.5 to 7 on that portion of the sample that passes a 1/4 inch sieve.

SIEVE DESIGNATION	PERCENT PASSING
1 inch	100
1/4 inch	97 - 100
No. 200	20 - 65 (of the 1/4 inch sieve)

1.7.2 Stabilization Practices

The following stabilization practices shall be employed for the Site:

1. **Temporary Stabilization.** Stabilization either by covering with gravel, plastic or geotextile fabric, ASMs or seeding and/or mulching (straw or wood) shall occur on portions of the project area where construction activity is temporarily ceased and earth-disturbing activities will not resume within 14 days. Seeding will not occur in areas that are awaiting backfill. It is recommended that seeding not occur after October 15 and before April 15 of any year.

2. **Permanent and Final Stabilization.** Disturbed portions of the Site where construction activities permanently cease shall be stabilized with topsoil and permanent seed or sod no later than 14 days after the last construction activity. Prior to seeding, areas are to be graded to promote drainage towards established erosion and sediment controls. Seeded areas will be protected with straw or wood mulch and/or ACMs.

1.7.3 Details of Erosion and Sediment Control Measures

Storm Water Area monitoring and maintenance will be completed throughout the proposed operations. As a minimum, the following is recommended for maintenance:

Debris and Litter Control: Removal of debris and litter should be undertaken at least once weekly during construction.

Erosion Control: Eroding soil on the temporary swale, slope, staged soil piles or other contributory areas noted during inspections should be stabilized immediately with topsoil replacement, seeding and mulching. Additionally, damaged straw bale dikes and torn or dislodged silt fence will be replaced; sediment buildup along silt fence will be removed and stockpiled with excavated materials.

1.7.4 Implementation Schedule

Prior to the disturbance of any areas, the stormwater control measures described in this SWPPP and all other requirements described herein will be implemented, inspected, and fully functional. Upon certification that the stormwater control measures have been satisfactorily installed, field operations will be conducted as described below. Field operations and inspection and maintenance of erosion and sediment controls are anticipated to be ongoing for 1 month.

Best Management Practices (BMPs) will be installed at the Site according to the following implementation schedule:

1. Submit NOI to NYSDEC Water Division.
2. Clear and Grub south and west areas of the site. Wood chips may be utilized for erosion controls in conjunction with perimeter and onsite ESC’s.
3. Install perimeter ESC’s as described and illustrated herein.
4. Install turbidity curtain as determined necessary.
5. Install soil staging area with silt fence as needed on three sides of each stockpile.
6. Post construction; remove temporary construction ditch and silt fence immediately following establishment of final vegetation.

7. Post construction; remove temporary sediment trap following establishment of final vegetation.
8. Remove any additional temporary erosion and sediment controls upon completion the project and establishment of final vegetation.
9. Submit Notice of Termination (NOT) to NYSDEC Water Division.

1.8 Construction Period Maintenance Schedule

This SWPPP provides a description of procedures that may be utilized to maintain the effectiveness of the erosion and sediment control measures.

The procedures include:

1. Inspection of the facilities at least every 7 days and within 24 hours of the end of a storm event of 0.5 in or greater that occurs within a 24-hour period.
2. Cleaning, repairing, or replacement of temporary measures as necessary.
3. Cleaning and/or sweeping roadways as necessary.
4. Maintain stabilized construction entrance as necessary.
5. Maintain the sediment trap and associated perimeter run-on/run-off controls as necessary.
6. Visually inspect discharged water to the plunge pool for increases in turbidity after storm events or as directed.

1.9 Receiving Water

The project site is located in the Buffalo-Eighteen mile Watershed (USGS Cataloguing Unit: HUC 04120103). This watershed has an area of 732 square miles. The entire site is located within the Rush Creek-Frontal Lake Erie sub-watershed (USGS Cataloguing Unit: 041201030402), which has an area of 21,918± acres. Surface water from the site drains to a nearby pond north of the site, which drains northwest and joins the east branch of the Buffalo River, eventually flowing into Lake Erie. The NYSDEC Division of Water classifies the Buffalo River and its tributaries as a Class C stream. The site is located approximately 6,300 feet south of the Buffalo River and approximately 6,000 feet east of Lake Erie. Both surface water and ground water contribute to the low water table at the site, however, surface inundation is considered to be the primary hydrologic input.

1.10 Implementation Responsibilities

Praxair has overall responsibility for the Site stormwater program during lime removal activities and is responsible for the implementation of the project specific SWPPP at the Site.

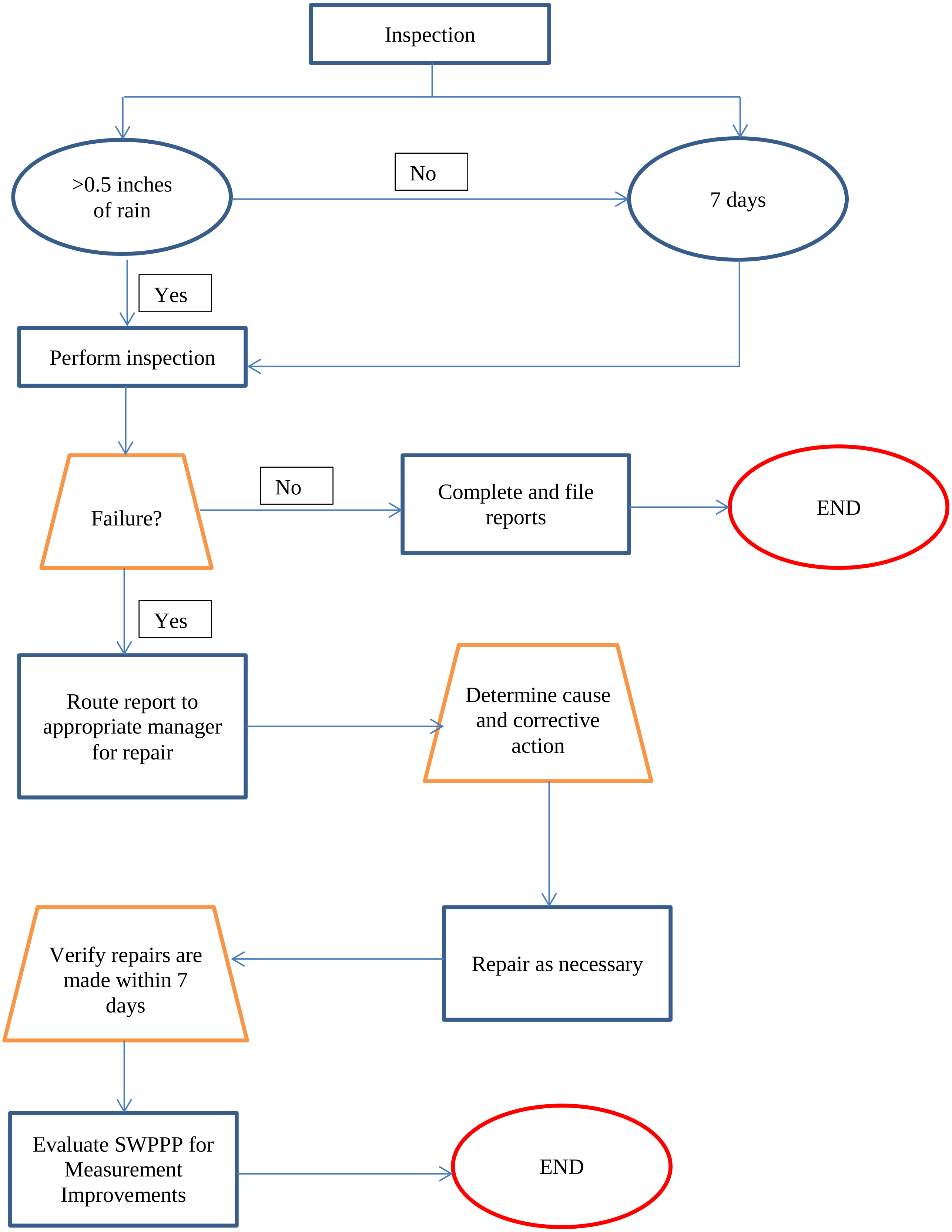
1.10.1 Inspection Responsibilities

Praxair has overall responsibility for the site stormwater program during lime removal activities. The Praxair Onsite Manager or Site Contact has primary responsibility for the implementation of the project-specific SWPPP at the Site. Praxair shall provide a qualified personnel[1] to inspect disturbed areas of the construction site for compliance with the control measures. This qualified professional shall assess the site prior to construction beginning and certify in an inspection report that the appropriate erosion and sediment control devices have been properly installed. Once construction commences, an inspection shall be completed at least every 7 days (weekly) and within 24 hours of the end of a storm event of 0.5 in. or greater that occurs within a 24-hour period. The 24-hour period will be from 6:00 a.m. to 6 a.m. A storm event inspection shall not count as the mandatory weekly inspection. Inspection requirements and forms are included in the Construction Stormwater Inspection Manual as **Appendix E**.

The inspection report shall include the inspector's name, dates of inspections, findings of the inspections, notes, and actions taken to repair/replace defective control measures. A site map indicating locations of areas of concern and drainage pathways shall be included. Deficiencies noted during any inspection that are not in compliance with this SWPPP shall be repaired or replaced as soon as practicable, and in no case beyond the next scheduled inspection (maximum of 7 days). Maintenance items noted during any inspection shall be corrected by the Contractor within 7 days or as soon as practicable. Further mitigation measures shall be taken by the Contractor if warranted. Each inspection report will remain on file at the project site as part of this SWPPP. An inspection flow change is presented below.

1. Qualified personnel include persons knowledgeable in the principles and practices of erosion and sediment controls such as a licensed professional engineer, Certified Professional in Erosion and Sediment Control, or a soil scientist.

Inspection Flowchart



1.11 Structural Practices to Limit Run-Off

The design basis of the SWPPP is to first divert run-on away from the open excavation areas, divert run-off to appropriate stormwater control measures, store flows that have come in contact with exposed soils, and limit run-off from the construction areas to minimize or prevent discharge of pollutants into the existing stormwater system. In all cases, stormwater control measures will be installed with minimal disturbance of vegetated areas that are not planned to be disturbed as part of the construction project.

In addition to the perimeter ESCs that line the downgradient perimeter of the project areas, stormwater sheet flow and shallow concentrated flow from the west, south, and east hillsides will be diverted away from exposed excavations as shown on **Figure 3.** The ESCs will divert water away from the excavations and to the existing temporary swale which will ultimately discharge to the sediment basin at the northwest end of the Site.

1.12 Existing Stormwater Data

Stormwater run-off from the project area currently discharges into a pond to the north of the site, which continues to discharge into the Buffalo River. This discharge location receives stormwater run-off from primarily grass and brush areas with minimal asphalt and small residential building roofs lawns within the contributing drainage area.

There are no designated outfalls or SPDES Permits for this Site.

1.13 Post Stormwater Control Practices

No post-construction storm water control practices are proposed for the Site.

Excavated areas that are backfilled with clean fill shall be graded and revegetated as shown on **Figure 4**.

1.14 Stormwater Analysis

1.14.1 Hydrologic and Hydraulic Analysis of Structural Components

Stormwater analyses were not conducted to evaluate potential stormwater impacts associated with the proposed project. Hydraulic infiltration conditions are anticipated to be improved so that no ponds, basins, or similar stormwater control practices are expected to be required post-construction.

1.14.2 Comparison of Post-Development Run-Off with Pre-Development Conditions

The Site will exhibit improved hydraulic conditions and reduced flow rates versus the current existing site layout. The site will include a significant increase in vegetated surface which will increase infiltration and evapotranspiration rates. Stormwater runoff is expected to decrease in the post-construction phase.

1.14.3 Post-Construction Maintenance Schedule

Following completion of Site stabilization, Operator/Site Contact will be responsible for monitoring until the establishment of final vegetation is reached at which time the site Owner will assume this responsibility.

2.0 Outstanding Violations

To Praxair’s knowledge, there are no outstanding violations for the site at this time.

3.0 Certification

The Operator and each responsible contracted personnel shall understand and sign the certification statement provided in **Appendix F**. Additionally, the Operator and all contracted subcontractors are required to read and understand the requirements of this SWPPP as it relates to their work and sign an acknowledgment form.

4.0 Notice of Termination

Following final stabilization of the project site as defined in *GP-0-15-002*, Praxair or a designated representative will file a NOT. A blank copy of the NOT form is included as **Appendix G**.

5.0 Penalties for Falsification of Reports

Section 309(c)(4) of the U.S. Clean Water Act of 1977 provides that any person who knowingly makes any false material statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including reports of compliance or noncompliance, shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than two (2) years, or by both.

The Clean Water Act also provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or measure required to be maintained under this permit shall, upon conviction, be punished by fines and imprisonment.

6.0 Stormwater Pollution Prevention Plan Certification

The SWPPP Certification of Satisfactory Completion form will be completed as required by the NYSDEC. The certification will be executed by Praxair's designated representative.

7.0 Retention of Records

The following will be retained by the Contractor at the Site or an approved location by the NYSDEC for a period of 5 years from the date the project Site is finally stabilized:

- NOI, **Appendix A**
- SWPPP
- All related documents including maps, drawings, and technical specifications
- Stormwater inspections and maintenance reports
- Certification(s)
- NOT, **Appendix G**
- Correspondence regarding stormwater practices.

8.0 References

NYSDEC, 2016, *SPDES General Permit for Stormwater Discharges from Construction Activity Permit No. GP-0-15-002,* New York State Department of Environmental Conservation, November 23, 2016.

NYSDEC, 2016, *New York State Standard and Specifications for Erosion and Sediment Control (Blue Book),* New York State Department of Environmental Conservation, November 2016.

NYSDEC, 2015, *New York State Stormwater Management Design Manual*, New York State Department of Environmental Conservation, January 2015.

9.0 Conclusions

This SWPPP for the Site has been prudently designed to manage storm water runoff from both qualitative and quantitative standpoints. BMPs designed in accordance with NYSDEC regulations in conjunction with a properly implemented maintenance program will effectively mitigate any potential adverse impacts as a result of runoff from this project.

Figures

APTIM ENGINEERING & GEOLOGY NEW YORK, P.C.

STORMWATER POLLUTION PREVENTION PLAN

FIGURE 1 - SITE LOCATION MAP
PRAXAIR DISTRIBUTION INC.
90 HOPKINS STREET
BUFFALO, NY

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NOTES:

1) EXISTING CONTOURS ARE APPROXIMATE.

LEGEND

EXISTING CONTOURS

PROPERTY LINE

MONITORING WELL (MW-02)

APTIM ENGINEERING & GEOLOGY NEW YORK, P.C.

DESIGNED BY: MJS	PRAXAIR DISTRIBUTION INC. 90 HOPKINS STREET BUFFALO, NEW YORK
DRAWN BY: JLG	STORMWATER POLLUTION PREVENTION PLAN EXISTING CONDITIONS TOPOGRAPHIC MAP
CHECKED BY: MJS	

APPROVED BY:	DATE:	SCALE:	DRAWING NO.	FIGURE NO.
MJS	04/02/18	1"=40'	141825D17R1	2

File: U:\Project\141825\141825D17.dwg
Plot Date/Time: Apr 02, 2018 - 2:02pm
Plotted By: matt.sausville

NOTES:

1) CLEAR AND GRUBBED MATERIALS TO BE CHIPPED AND STAGED ONSITE FOR REUSE
2) EXCAVATED C&D TO BE STOCKPILED AT A LOCATION DIRECTED BY THE ENGINEER AND SAMPLED IN ACCORDANCE WITH DER-10 GUIDANCE FOR POTENTIAL REUSE AS BACKFILL. IF THE SAMPLE RESULTS DO NOT MEET COMMERCIAL SCOs THE MATERIAL SHALL BE DISPOSED OF AT AN OFFSITE LOCATION.

EROSION AND SEDIMENT CONTROL NOTES:

1) INSTALL NECESSARY TEMPORARY EROSION AND SEDIMENT CONTROLS PRIOR TO COMPLETING THE WORK. INSTALLATION OF THESE MEASURES SHALL BE AS DESCRIBED IN THE SWPPP AND BE INSTALLED IN ACCORDANCE WITH THE SPECIFICATIONS PROVIDED IN APPENDIX F.
2) THE PHASING PLAN INCLUDES PROVISIONS WITH 5 ACRE THRESHOLD LIMITS AS PHASE 1 AND PHASE 2. IT IS RECOMMENDED TO COMPLETE EXCAVATION AND BACKFILLING WORK THAT IS BELOW THE WATER TABLE BEGINNING AT SOUTHEAST CORNER OF PHASE I AND COMPLETING THE WORK AT THE NORTHWEST CORNER OF PHASE 2 TO AVOID IMPACTING GROUNDWATER QUALITY OF CLEAN BACKFILL.
3) LIME AREAS HAVE BEEN DIVIDED INTO "CELLS" AND ARE PROPOSED TO BE EXCAVATED AND BACKFILLED AS NEEDED TO ACCOMMODATE DEMAND FOR THE BENEFICIAL REUSE OF THE CARBIDE LIME MATERIAL. SPECIFIC SEQUENCE OF OPERATION FOR EACH PHASE WILL BE DETERMINED IN THE FIELD BASED UPON DEMAND.
4) EROSION AND SEDIMENT CONTROLS ARE TO BE INSPECTED AS DESCRIBED IN THE SWPPP.
5) SITE POLLUTION AND CONSTRUCTION WASTE MANAGEMENT PRACTICES WILL BE IMPLEMENTED AS DESCRIBED IN THE SWPPP.
6) CONSTRUCTION DEWATERING SUMP PITS MAY BE INSTALLED IN EXCAVATION AND BACKFILL AREAS (CELLS) AS NECESSARY TO COMPLETE THE WORK DESCRIBED IN APPENDIX F OF THE SWPPP. IT IS RECOMMENDED TO EXCAVATE AREAS LOCATED DOWNGRADIENT OF THE CURRENT CELL EXCAVATION TO THE WATER TABLE FOR USE AS STORAGE AND CONTAINMENT AND TO ELIMINATE THE POTENTIAL FOR DISCHARGE. THE EXISTING SEDIMENT TRAP MAY BE UTILIZED AS AN ALTERNATE MEASURE FOR STORAGE OF WATER GENERATED DURING EXCAVATION ACTIVITIES.
7) STORAGE AREAS SHALL BE SECURED AND DEMARCATED WITH CONSTRUCTION FENCE AROUND THE PERIMETER OF THE SELECTED AREA.
8) SEE FIGURE 5 FOR APPLICABLE EROSION & SEDIMENT CONTROL DETAILS.

OFFICE: Latham, NY

DRAWING NUMBER: 141825D16R1

APTIM ENGINEERING & GEOLOGY NEW YORK, P.C.

PRAXAIR DISTRIBUTION INC.
90 HOPKINS STREET
BUFFALO, NEW YORK

STORMWATER POLLUTION PREVENTION PLAN
SITE WORK PLAN WITH EROSION AND SEDIMENT CONTROLS

DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:	SCALE:	DRAWING NO.	FIGURE NO.
MJS	JLG	MJS	MJS	04/02/18	1"=40'	141825D16R1	3

File: U:\Project\141825\141825D16R1.dwg
Plot Date/Time: Apr 03, 2018 - 10:48am
Plotted By: matt.sousville

NOTES:

1. BOUNDARY SURVEY IS BASED ON SURVEY CONDUCTED BY RAZAK ASSOCIATES, #90 HOPKINS STREET, SCALE 1"=60', AUGUST 25, 2011.
2. BOUNDARY INFORMATION SHOWN FROM BOUNDARY SURVEY OF COLGATE AVENUE. LANDS OF THE CITY OF BUFFALO PART OF LOTS 44 AND 45 T-10 R-8 BCR AND LOT 18 IN THE OGDEN GORE TRACT, CITY OF BUFFALO, ERIE COUNTY, NEW YORK PREPARED BY CLEAR CREEK LAND SURVEYING LLC. DATED FEBRUARY 8, 2005 AND KNOWN AS PROJECT NO. 1204-149-OL.
3. VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM 1988 (NAD 88).
4. SOURCE VERTICAL CONTROL: NATIONAL GEODETIC SURVEY BENCH MARK Q 410 P.I.D. NC0701 ELEVATION: 598.03 (NAVD 88 FEET).

File: U:\Project\141825\141825D14R1.dwg
Plot Date/Time: Apr 02, 2018 - 4:12pm
Plotted By: matt.sousville

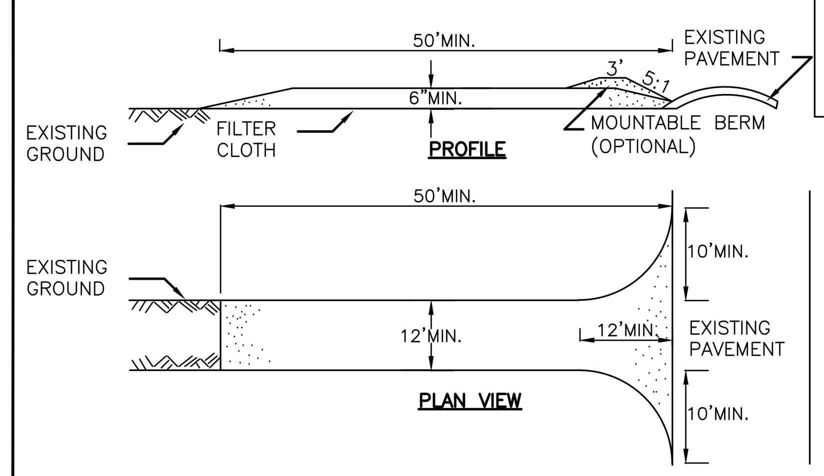
APTIM ENGINEERING & GEOLOGY NEW YORK, P.C.

DESIGNED BY: MJS	PRAXAIR DISTRIBUTION INC. 90 HOPKINS STREET BUFFALO, NEW YORK
DRAWN BY: JLG	STORMWATER POLLUTION PREVENTION PLAN FINAL GRADING PLAN
CHECKED BY: MJS	

APPROVED BY:	DATE:	SCALE:	DRAWING NO.	FIGURE NO.
MJS	04/02/18	AS SHOWN	141825D14R1	4

OFFICE Latham, NY

DRAWING NUMBER 141825D15



SYMBOL

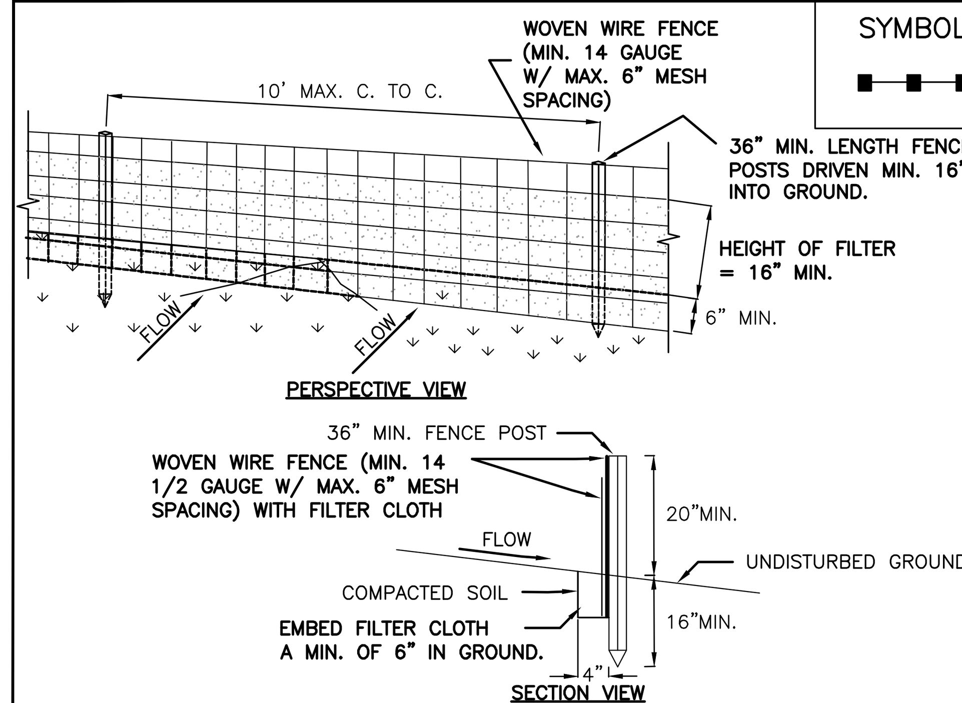
CONSTRUCTION SPECIFICATIONS

1. STONE SIZE – USE 1–4 INCH STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH – NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS – NOT LESS THAN SIX (6) INCHES.
4. WIDTH – TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY–FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. GEOTEXTILE – WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER – ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CON–STRUCTION ACCESS SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE – THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS–OF–WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON A AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

ADAPTED FROM DETAILS PROVIDED BY: USDA – NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE | STABILIZED CONSTRUCTION ACCESS

DETAIL STONE CONSTRUCTION ENTRANCE

SCALE: N.T.S.



SYMBOL

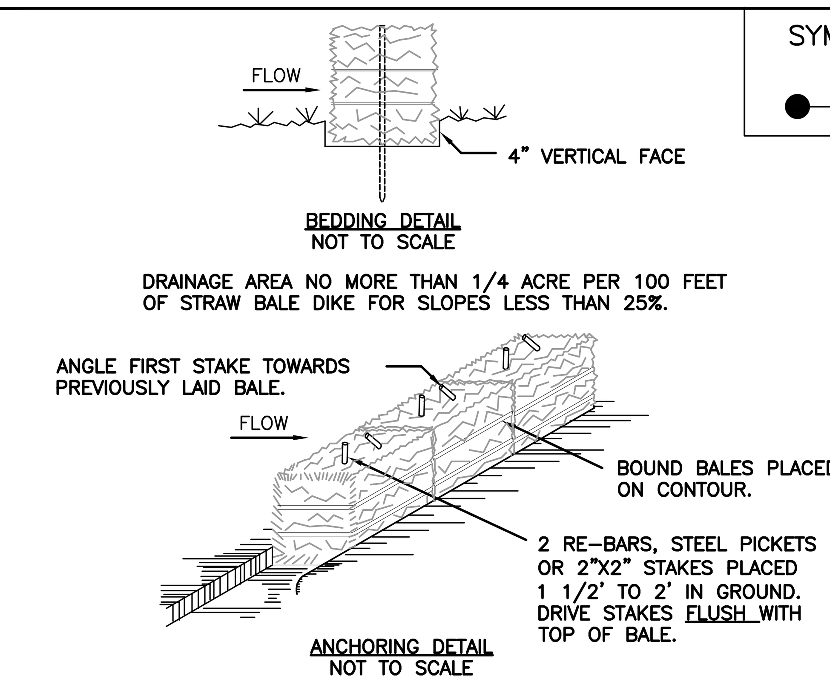
CONSTRUCTION SPECIFICATIONS

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.
2. FILTER CLOTH TO BE TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION. FENCE SHALL BE WOVEN WIRE, 6" MAXIMUM MESH OPENING.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER–LAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.
4. PREFABRICATED UNITS SHALL BE GEOFAB, ENVIROFENCE, OR APPROVED EQUIVALENT.
5. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

ADAPTED FROM DETAILS PROVIDED BY: USDA – NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE | SILT FENCE

DETAIL SILT FENCE INSTALLATION

SCALE: N.T.S.



SYMBOL

DRAINAGE AREA NO MORE THAN 1/4 ACRE PER 100 FEET OF STRAW BALE DIKE FOR SLOPES LESS THAN 25%.

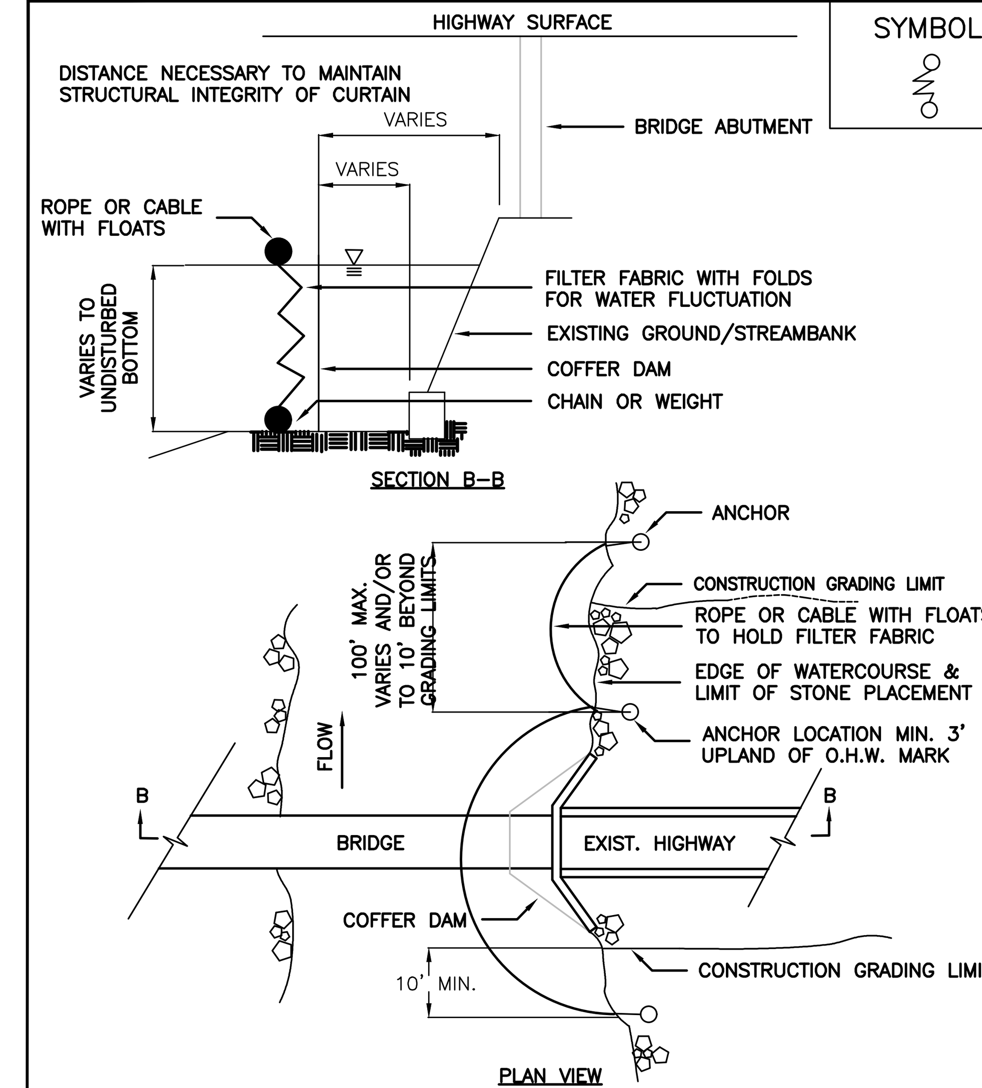
CONSTRUCTION SPECIFICATIONS

1. BALES SHALL BE PLACED AT THE TOE OF A SLOPE OR ON THE CONTOUR AND IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF (4) INCHES, AND PLACED SO THE BINDINGS ARE HORIZONTAL.
3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY EITHER TWO STAKES OR RE–BARS DRIVEN THROUGH THE BALE. THE FIRST STAKE IN EACH BALE SHALL BE DRIVEN TOWARD THE PREVIOUSLY LAID BALE AT AN ANGLE TO FORCE THE BALES TOGETHER. STAKES SHALL BE DRIVEN FLUSH WITH THE BALE.
4. INSPECTION SHALL BE FREQUENT AND REPAIR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
5. BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULLNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

ADAPTED FROM DETAILS PROVIDED BY: USDA – NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE | STRAW BALE DIKE

DETAIL STRAW BALE DIKE

SCALE: N.T.S.

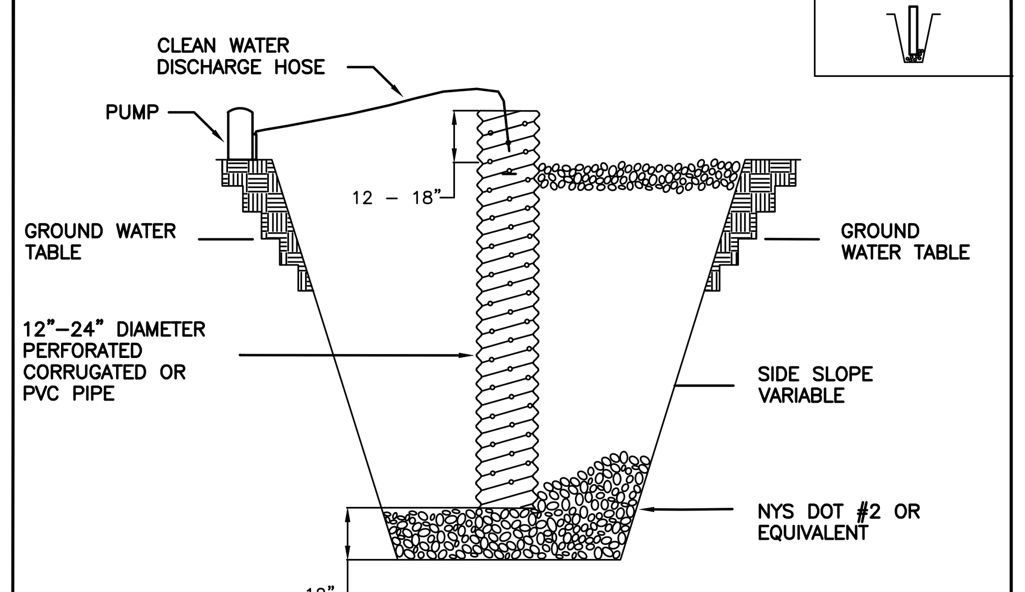


SYMBOL

ADAPTED FROM DETAILS PROVIDED BY: USDA – NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE | TURBIDITY CURTAIN

DETAIL TURBIDITY CURTAIN

SCALE: N.T.S.



SYMBOL

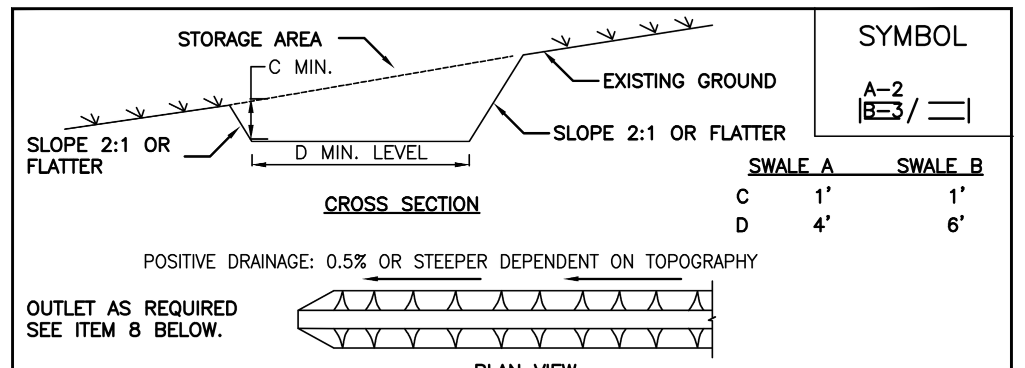
CONSTRUCTION SPECIFICATIONS

1. PIT DIMENSIONS ARE VARIABLE.
2. THE STANDPIPE SHOULD BE CONSTRUCTED BY PERFORATING A 12–24" DIAMETER CORRUGATED OR PVC PIPE.
3. A BASE OF NYS DOT #2 OR EQUIVALENT AGGREGATE SHOULD BE PLACED IN THE PIT TO A DEPTH OF 12". AFTER INSTALLING THE STANDPIPE, THE PIT SURROUNDING THE STANDPIPE SHOULD BE BACKFILLED WITH NYS DOT #2 OR EQUIVALENT AGGREGATE.
4. THE STANDPIPE SHOULD EXTEND 12–18" ABOVE THE LIP OF THE PIT.
5. IF DISCHARGE WILL BE PUMPED DIRECTLY TO A STORM DRAINAGE SYSTEM, THE STANDPIPE SHOULD BE WRAPPED WITH FILTERCLOTH BEFORE INSTALLATION. IT IS RECOMMENDED THAT 1/4"–1/2" HARDWARE CLOTH MAY BE PLACED AROUND THE STANDPIPE, PRIOR TO ATTACHING THE FILTERCLOTH.

ADAPTED FROM DETAILS PROVIDED BY: USDA – NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE | DEWATERING SUMP PIT

DETAIL DEWATERING SUMP PIT

SCALE: N.T.S.



SYMBOL A–2

CONSTRUCTION SPECIFICATIONS

1. ALL CONSTRUCTION DITCHES SHALL HAVE UNINTERRUPTED POSITIVE GRADE TO AN OUTLET.
2. DIVERTED RUNOFF FROM A DISTURBED AREA SHALL BE CONVEYED TO A SEDIMENT TRAPPING DEVICE.
3. DIVERTED RUNOFF FROM AN UNDISTURBED AREA SHALL OUTLET DIRECTLY INTO AN UNDISTURBED STABILIZED AREA AT NON–EROSIVE VELOCITY.
4. ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED AND DISPOSED OF SO AS NOT TO INTERFERE WITH THE PROPER FUNCTIONING OF THE SWALE.
5. THE DITCH SHALL BE EXCAVATED OR SHAPED TO LINE, GRADE, AND CROSS SECTION AS REQUIRED TO MEET THE CRITERIA SPECIFIED HEREIN AND BE FREE OF BANK PROJECTIONS OR OTHER IRREGULARITIES WHICH WILL IMPEDE NORMAL FLOW.
6. FILLS SHALL BE COMPACTED BY EARTH MOVING EQUIPMENT.
7. ALL EARTH REMOVED AND NOT NEEDED FOR CONSTRUCTION SHALL BE PLACED SO THAT IT WILL NOT INTERFERE WITH THE FUNCTIONING OF THE DITCH.
8. STABILIZATION SHALL BE AS PER THE FLOW CHANNEL STABILIZATION CHART BELOW:

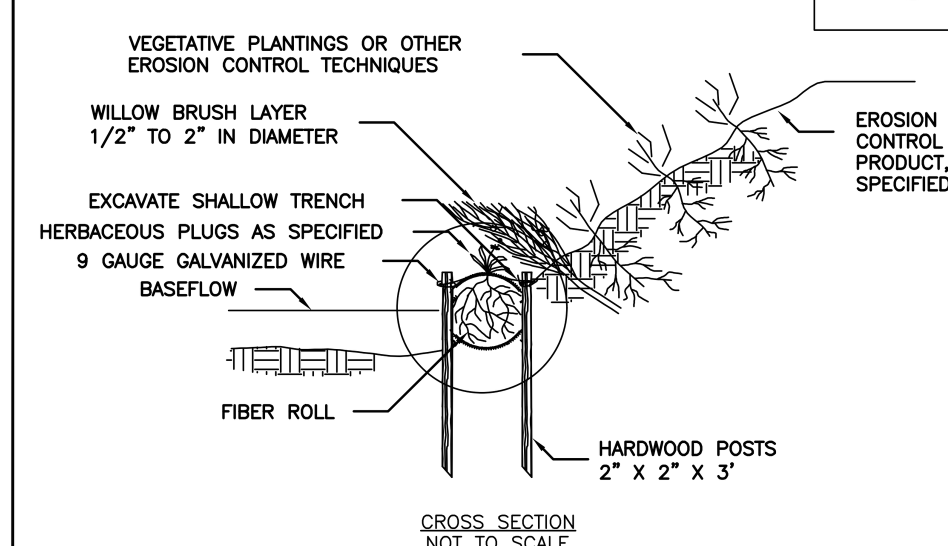
TYPE OF TREATMENT	CHANNEL GRADE	A(5 AC. OR LESS)	B(5 AC –10AC)
1	0.5–3.0%	SEED AND STRAW MULCH	SEED AND STRAW MULCH
2	3.1–5.0%	SEED AND STRAW MULCH	SEED AND COVER USING RECP
3	5.1–8.0%	SEED AND COVER WITH RECP	LINED WITH 4–8" RIP–RAP OR GEOTEXTILE
4	8.1–10.%	LINED WITH 4–8" RIP–RAP OR GEOTEXTILE	SITE SPECIFIC DESIGN

9. PERIODIC INSPECTION AND REQUIRED MAINTENANCE MUST BE PROVIDED AFTER EACH RAIN EVENT.

ADAPTED FROM DETAILS PROVIDED BY: USDA – NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE | CONSTRUCTION DITCH

DETAIL CONSTRUCTION DITCH

SCALE: N.T.S.



SYMBOL FR

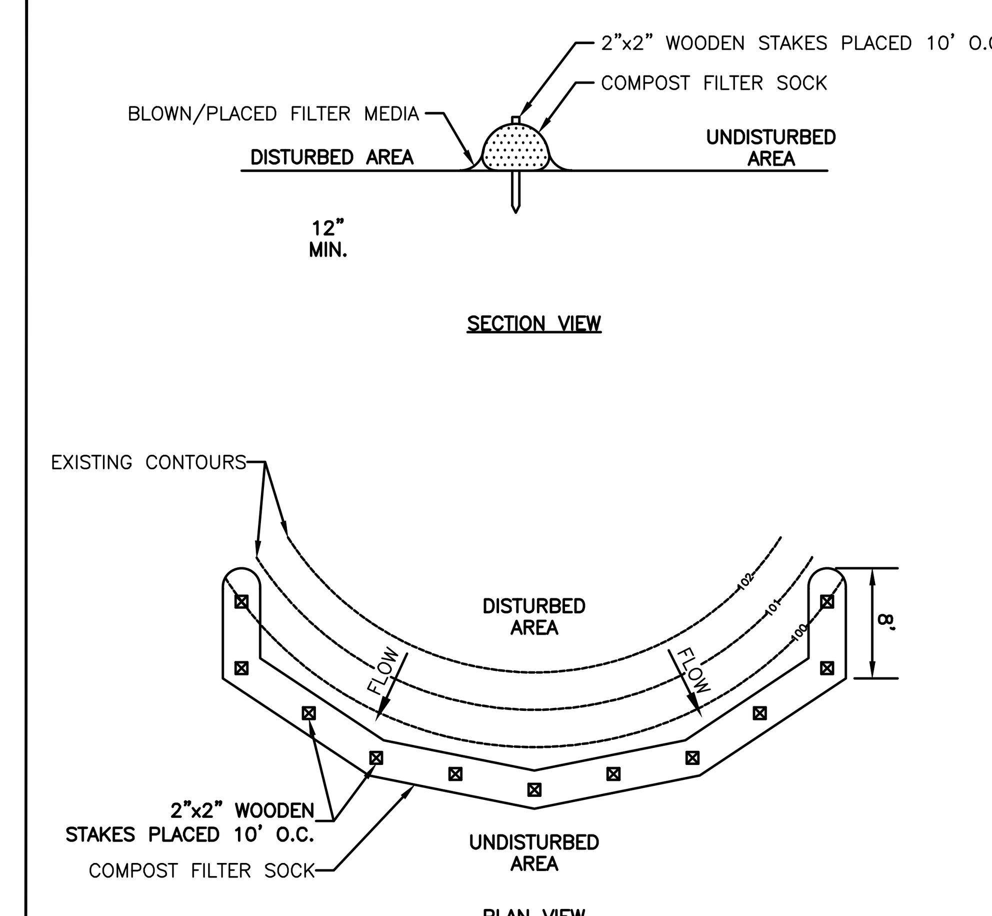
CONSTRUCTION SPECIFICATIONS

1. EXCAVATE A SHALLOW TRENCH SLIGHTLY BELOW BASEFLOW OR A 4" TRENCH ON SLOPE CONTOURS.
2. PLACE THE ROLL IN THE TRENCH AND ANCHOR WITH 2" x 2" POSTS PLACED ON BOTH SIDES OF THE ROLL AND SPACED LATERALLY ON 2' TO 4' CENTERS. TRIM THE TOP OF THE POSTS EVEN WITH THE EDGE OF THE ROLL, IF NECESSARY.
3. NOTCH THE POSTS AND TIE TOGETHER, ACROSS THE ROLL, WITH 9 GAUGE GALVANIZED WIRE OR 1/8" DIAMETER BRAIDED NYLON ROPE..
4. PLACE SOIL EXCAVATED FROM THE TRENCH BEHIND THE ROLL AND HAND TAMP. PLANT WITH SUITABLE HERBACEOUS OR WOODY VEGETATION AS SPECIFIED ELSEWHERE IN THE CONTRACT DOCUMENTS. VEGETATION SHALL BE PLACED IMMEDIATELY ADJACENT TO THE ROLL TO PROMOTE ROOT GROWTH INTO THE FIBER. HERBACEOUS VEGETATION, IF SPECIFIED, SHALL BE PLANTED INTO THE FIBER ROLL.

ADAPTED FROM DETAILS PROVIDED BY: USDA – NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE | FIBER ROLL

DETAIL FIBER ROLL

SCALE: N.T.S.



ADAPTED FROM DETAILS PROVIDED BY: FILTREXX | COMPOST FILTER SOCK

DETAIL COMPOST FILTER SOCK

SCALE: N.T.S.

NOTES:
1) SEE FIGURE 4 FOR SITE WORK PLAN.
2) DETAIL REFERENCE: NYSDEC STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL NOVEMBER 2016.
3) NOT ALL EROSION AND SEDIMENT CONTROLS ARE SHOWN ON THE DRAWINGS. LOCATIONS ARE TO BE DETERMINED BASED ON THE CONTRACTORS MEANS AND METHODS TO COMPLETED THE WORK.

POLLUTION PREVENTION MEASURES:

1) DEBRIS AND LITTER SHALL BE REMOVED ON A WEEKLY BASIS OR MORE FREQUENTLY IF NECESSARY.
2) EXCAVATION EQUIPMENT, MATERIALS, AND CONTAMINATED SOIL AND DEBRIS ON THE SITE SHALL BE PROPERLY STORED AND/OR CONTAINED.
3) PROPER PRECAUTIONS SHALL BE TAKEN SO MATERIALS DO NOT SPILL ONTO PUBLIC THOROUGHFARES. IF MATERIALS ARE DROPPED ONTO THESE AREAS, THEY SHALL BE REMOVED IMMEDIATELY SO THAT THEY DO NOT ENTER SURFACE OR SUBSURFACE DRAINAGE SYSTEMS.
4) FUEL AND/OR CHEMICALS WITH SPILL POTENTIAL SHALL HAVE APPROPRIATE SECONDARY CONTAINMENT. DIESEL FUEL FOR ONSITE EQUIPMENT IS THE ONLY MATERIAL WITH SPILL POTENTIAL THAT IS ANTICIPATED. DIESEL FUEL WILL BE STORED IN A POTABLE DOUBLE WALL FUEL TANK WITH SPILL BUCKET, LEVEL GAUGE, TWO EMERGENCY VENTS (ONE FOR INNER AND ONE FOR OUTER TANK), MAIN DRAIN, AND INNER TANK LEAK INDICATOR.
5) THE CONTRACTOR SHALL PROVIDE DUST CONTROL MEASURES BEFORE DUST MIGRATES OFF–SITE. MEASURES INCLUDE THE APPLICATION OF UNCONTAMINATED POTABLE WATER.
6) THE CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING AREAS AT THE SITE DEDICATED FOR CONSTRUCTION VEHICLE TRANSIT OR EQUIPMENT STAGING. THESE AREAS SHALL BE MONITORED AND LOCATED IN AN AREA WHERE RUNOFF CAN BE CONTROLLED. PORTABLE REVETMENT OR PLASTIC SHEETING SHALL BE USED IN THESE AREAS TO CONTAIN POTENTIAL SPILLS. TO THE EXTENT PASSABLE, VEHICLES WILL BE PARKED ON IMPERVIOUS SURFACES.
7) DECONTAMINATION WATER FOR CONSTRUCTION VEHICLES/EQUIPMENT AND DECONTAMINATION ACTIVITIES SHALL OCCUR AT A DECONTAMINATION PAD WITHIN THE DISTURBED AREA. ALL RUN–OFF AND DECONTAMINATION WATER SHALL BE MANAGED AND TREATED AS DESCRIBED IN THE RD. STORMWATER MANAGEMENT ON THIS SITE HAS BEEN DESIGNED IN ACCORDANCE WITH THE NEW YORK STATE STANDARDS AND SPECIFICATION FOR EROSION AND SEDIMENT CONTROLS (NOVEMBER 2016) AND THE NEW YORK STATE STORMWATER MANAGEMENT DESIGN MANUAL PREPARED BY THE CENTER FOR WATERSHED PROTECTION FOR THE NYSDEC (JANUARY 2015).

APTIM ENGINEERING & GEOLOGY NEW YORK, P.C.

DESIGNED BY: MJS	PRAXAIR DISTRIBUTION INC. 90 HOPKINS STREET BUFFALO, NEW YORK
DRAWN BY: JLG	STORMWATER POLLUTION PREVENTION PLAN E&S DETAILS
CHECKED BY: MJS	

APPROVED BY:	DATE:	SCALE:	DRAWING NO.	FIGURE NO.
MJS	04/02/18	AS SHOWN	141825D15	5

VERIFY SCALE 0 1"

Appendix A

Notice of Intent

0644089821

NOTICE OF INTENT

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

NYR

(for DEC use only)

Stormwater Discharges Associated with Construction Activity Under State Pollutant Discharge Elimination System (SPDES) General Permit # GP-0-15-002

All sections must be completed unless otherwise noted. Failure to complete all items may result in this form being returned to you, thereby delaying your coverage under this General Permit. Applicants must read and understand the conditions of the permit and prepare a Stormwater Pollution Prevention Plan prior to submitting this NOI. Applicants are responsible for identifying and obtaining other DEC permits that may be required.

-IMPORTANT-

RETURN THIS FORM TO THE ADDRESS ABOVE

OWNER/OPERATOR MUST SIGN FORM

Owner/Operator Information

Owner/Operator (Company Name/Private Owner Name/Municipality Name)

PRAXAIR DISTRIBUTION, INC

Owner/Operator Contact Person Last Name (NOT CONSULTANT)

BAGGETT

Owner/Operator Contact Person First Name

GEORGE

Owner/Operator Mailing Address

820 WEST 35TH STREET

City

KANSAS CITY

State

MO

Zip

64111 3 6144

Phone (Owner/Operator)

816 3 304 8 7363

Fax (Owner/Operator)

- -

Email (Owner/Operator)

GEORGEBAGGETT@GMAIL.COM

FED TAX ID

- (not required for individuals)

Project Site Information

Project/Site Name
90 HOPKINS STREET

Street Address (NOT P.O. BOX)
90 HOPKINS STREET

Side of Street
○ North ○ South ○ East ● West

City/Town/Village (THAT ISSUES BUILDING PERMIT)
BUFFALO

State: NY
Zip: 14220 -
County: ERIE
DEC Region: 9

Name of Nearest Cross Street
TIFFT STREET

Distance to Nearest Cross Street (Feet)
2500

Project In Relation to Cross Street
○ North ● South ○ East ○ West

Tax Map Numbers
Section-Block-Parcel

Tax Map Numbers

1. Provide the Geographic Coordinates for the project site in NYTM Units. To do this you **must** go to the NYSDEC Stormwater Interactive Map on the DEC website at:

www.dec.ny.gov/imsmaps/stormwater/viewer.htm

Zoom into your Project Location such that you can accurately click on the centroid of your site. Once you have located your project site, go to the tool boxes on the top and choose "i"(identify). Then click on the center of your site and a new window containing the X, Y coordinates in UTM will pop up. Transcribe these coordinates into the boxes below. For problems with the interactive map use the help function.

X Coordinates (Easting)	Y Coordinates (Northing)
186534	4750139

2. What is the nature of this construction project?

○ **New Construction**

○ **Redevelopment with increase in impervious area**

● **Redevelopment with no increase in impervious area**

3. Select the predominant land use for both pre and post development conditions.
SELECT ONLY ONE CHOICE FOR EACH

Pre-Development Existing Land Use

- ○ FOREST
- ○ PASTURE/OPEN LAND
- ○ CULTIVATED LAND
- ○ SINGLE FAMILY HOME
- ○ SINGLE FAMILY SUBDIVISION
- ○ TOWN HOME RESIDENTIAL
- ○ MULTIFAMILY RESIDENTIAL
- ○ INSTITUTIONAL/SCHOOL
- ○ INDUSTRIAL
- ○ COMMERCIAL
- ○ ROAD/HIGHWAY
- ○ RECREATIONAL/SPORTS FIELD
- ○ BIKE PATH/TRAIL
- ○ LINEAR UTILITY
- ○ PARKING LOT
- ● OTHER

LIME STORAGE

Post-Development Future Land Use

- ○ SINGLE FAMILY HOME
- ○ SINGLE FAMILY SUBDIVISION
- ○ TOWN HOME RESIDENTIAL
- ○ MULTIFAMILY RESIDENTIAL
- ○ INSTITUTIONAL/SCHOOL
- ○ INDUSTRIAL
- ○ COMMERCIAL
- ○ MUNICIPAL
- ○ ROAD/HIGHWAY
- ○ RECREATIONAL/SPORTS FIELD
- ○ BIKE PATH/TRAIL
- ○ LINEAR UTILITY (water, sewer, gas, etc.)
- ○ PARKING LOT
- ○ CLEARING/GRADING ONLY
- ○ DEMOLITION, NO REDEVELOPMENT
- ○ WELL DRILLING ACTIVITY *(Oil, Gas, etc.)
- ● OTHER

VACANT LOT

Number of Lots:

***Note**: for gas well drilling, non-high volume hydraulic fractured wells only

4. In accordance with the larger common plan of development or sale, enter the total project site area; the total area to be disturbed; existing impervious area to be disturbed (for redevelopment activities); and the future impervious area constructed within the disturbed area. (Round to the nearest tenth of an acre.)

Total Site Area	**Total Area To Be Disturbed**	**Existing Impervious Area To Be Disturbed**	**Future Impervious Area Within Disturbed Area**
8.08.0	4.44.4	4.44.4	0.00.0

5. Do you plan to disturb more than 5 acres of soil at any one time? ○ **Yes** ● **No**

6. Indicate the percentage of each Hydrologic Soil Group(HSG) at the site.

A	**B**	**C**	**D**
0 %	34 %	25 %	41 %

7. Is this a phased project? ○ **Yes** ● **No**

8. Enter the planned start and end dates of the disturbance activities.

Start Date __/__/____ - **End Date** __/__/____

9. Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.

Name

BUFFALO RIVER

LAKE ERIE

9a. Type of waterbody identified in Question 9?

- ○ Wetland / State Jurisdiction On Site (Answer 9b)
- ○ Wetland / State Jurisdiction Off Site
- ○ Wetland / Federal Jurisdiction On Site (Answer 9b)
- ○ Wetland / Federal Jurisdiction Off Site
- ○ Stream / Creek On Site
- ○ Stream / Creek Off Site
- ○ River On Site
- ● River Off Site
- ○ Lake On Site
- ● Lake Off Site
- ○ Other Type On Site
- ○ Other Type Off Site

9b. How was the wetland identified?

- ● Regulatory Map
- ○ Delineated by Consultant
- ○ Delineated by Army Corps of Engineers
- ○ Other (identify)

10. Has the surface waterbody(ies) in question 9 been identified as a 303(d) segment in Appendix E of GP-0-15-002? ○ **Yes** ● **No**

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-15-002? ○ **Yes** ● **No**

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters?
If no, skip question 13. ○ **Yes** ● **No**

13. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey? ○ **Yes** ● **No**
If Yes, what is the acreage to be disturbed?

____ . _

14. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area? ○ **Yes** ● **No**

15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)? ○ **Yes** ● **No** ○ **Unknown**

16. What is the name of the municipality/entity that owns the separate storm sewer system?

CITY OF BUFFALO

17. Does any runoff from the site enter a sewer classified as a Combined Sewer? ○ **Yes** ● **No** ○ **Unknown**

18. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law? ● **Yes** ○ **No**

19. Is this property owned by a state authority, state agency, federal government or local government? ○ **Yes** ● **No**

20. Is this a remediation project being done under a Department approved work plan? (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.) ● **Yes** ○ **No**

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)? ● **Yes** ○ **No**

22. Does this construction activity require the development of a SWPPP that includes the post-construction stormwater management practice component (i.e. Runoff Reduction, Water Quality and Quantity Control practices/techniques)? ○ **Yes** ● **No**
If No, skip questions 23 and 27-39.

23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the current NYS Stormwater Management Design Manual? ○ **Yes** ● **No**

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:

- ● **Professional Engineer (P.E.)**
- ○ **Soil and Water Conservation District (SWCD)**
- ○ **Registered Landscape Architect (R.L.A)**
- ○ **Certified Professional in Erosion and Sediment Control (CPESC)**
- ○ **Owner/Operator**
- ○ **Other**

SWPPP Preparer
CB&I

Contact Name (Last, Space, First)
SAUSVILLE, MATTHEW

Mailing Address
13 BRITISH AMERICAN BLVD.

City
LATHAM

State: NY Zip: 12110 -

Phone: 518-852-2355

Fax: 518-783-9797

Email
MATT.SAUSVILLE@CBI.COM

SWPPP Preparer Certification

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-15-002. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

First Name
MATTHEW

MI
J

Last Name
SAUSVILLE

Signature

Date
03/22/2017

25. Has a construction sequence schedule for the planned management practices been prepared? ● Yes ○ No

26. Select **all** of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural

- ○ Check Dams
- ○ Construction Road Stabilization
- ○ Dust Control
- ○ Earth Dike
- ○ Level Spreader
- ○ Perimeter Dike/Swale
- ○ Pipe Slope Drain
- ○ Portable Sediment Tank
- ○ Rock Dam
- ● Sediment Basin
- ○ Sediment Traps
- ● Silt Fence
- ○ Stabilized Construction Entrance
- ○ Storm Drain Inlet Protection
- ○ Straw/Hay Bale Dike
- ○ Temporary Access Waterway Crossing
- ○ Temporary Stormdrain Diversion
- ● Temporary Swale
- ○ Turbidity Curtain
- ○ Water bars

Biotechnical

- ○ Brush Matting
- ○ Wattling

Vegetative Measures

- ○ Brush Matting
- ○ Dune Stabilization
- ○ Grassed Waterway
- ● Mulching
- ○ Protecting Vegetation
- ○ Recreation Area Improvement
- ● Seeding
- ○ Sodding
- ○ Straw/Hay Bale Dike
- ○ Streambank Protection
- ● Temporary Swale
- ● Topsoiling
- ○ Vegetating Waterways

Permanent Structural

- ○ Debris Basin
- ○ Diversion
- ○ Grade Stabilization Structure
- ○ Land Grading
- ○ Lined Waterway (Rock)
- ○ Paved Channel (Concrete)
- ○ Paved Flume
- ○ Retaining Wall
- ○ Riprap Slope Protection
- ○ Rock Outlet Protection
- ○ Streambank Protection

Other

Post-construction Stormwater Management Practice (SMP) Requirements

Important: Completion of Questions 27-39 is not required if response to Question 22 is No.

27. Identify all site planning practices that were used to prepare the final site plan/layout for the project.

- ○ **Preservation of Undisturbed Areas**
- ○ **Preservation of Buffers**
- ○ **Reduction of Clearing and Grading**
- ○ **Locating Development in Less Sensitive Areas**
- ○ **Roadway Reduction**
- ○ **Sidewalk Reduction**
- ○ **Driveway Reduction**
- ○ **Cul-de-sac Reduction**
- ○ **Building Footprint Reduction**
- ○ **Parking Reduction**

27a. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6("Soil Restoration") of the Design Manual (2010 version).

- ● All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual (see page 5-22).

- ○ Compacted areas were considered as impervious cover when calculating the **WQv Required**, and the compacted areas were assigned a post-construction Hydrologic Soil Group (HSG) designation that is one level less permeable than existing conditions for the hydrology analysis.

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout).

Total WQv Required

[| |] . [| |] **acre-feet**

29. Identify the RR techniques (Area Reduction), RR techniques(Volume Reduction) and Standard SMPs with RRv Capacity in Table 1 (See Page 9) that were used to reduce the Total WQv Required(#28).

Also, provide in Table 1 the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

Note: Redevelopment projects shall use Tables 1 and 2 to identify the SMPs used to treat and/or reduce the WQv required. If runoff reduction techniques will not be used to reduce the required WQv, skip to question 33a after identifying the SMPs.

Table 1 - Runoff Reduction (RR) Techniques and Standard Stormwater Management Practices (SMPs)

	Total Contributing Area (acres)		Total Contributing Impervious Area(acres)
RR Techniques (Area Reduction)			
○ Conservation of Natural Areas (RR-1) ...	.	and/or	.
○ Sheetflow to Riparian Buffers/Filters Strips (RR-2)	.	and/or	.
○ Tree Planting/Tree Pit (RR-3)	.	and/or	.
○ Disconnection of Rooftop Runoff (RR-4)..	.	and/or	.
RR Techniques (Volume Reduction)			
○ Vegetated Swale (RR-5)			.
○ Rain Garden (RR-6)			.
○ Stormwater Planter (RR-7)			.
○ Rain Barrel/Cistern (RR-8)			.
○ Porous Pavement (RR-9)			.
○ Green Roof (RR-10)			.
Standard SMPs with RRv Capacity			
○ Infiltration Trench (I-1)			.
○ Infiltration Basin (I-2)			.
○ Dry Well (I-3)			.
○ Underground Infiltration System (I-4)			.
○ Bioretention (F-5)			.
○ Dry Swale (O-1)			.
Standard SMPs			
○ Micropool Extended Detention (P-1)			.
○ Wet Pond (P-2)			.
○ Wet Extended Detention (P-3)			.
○ Multiple Pond System (P-4)			.
○ Pocket Pond (P-5)			.
○ Surface Sand Filter (F-1)			.
○ Underground Sand Filter (F-2)			.
○ Perimeter Sand Filter (F-3)			.
○ Organic Filter (F-4)			.
○ Shallow Wetland (W-1)			.
○ Extended Detention Wetland (W-2)			.
○ Pond/Wetland System (W-3)			.
○ Pocket Wetland (W-4)			.
○ Wet Swale (O-2)			.

Table 2 - Alternative SMPs (DO NOT INCLUDE PRACTICES BEING USED FOR PRETREATMENT ONLY)

Alternative SMP	Total Contributing Impervious Area(acres)
○ Hydrodynamic	.
○ Wet Vault	.
○ Media Filter	.
○ Other	.

Provide the name and manufacturer of the Alternative SMPs (i.e. proprietary practice(s)) being used for WQv treatment.

Name

Manufacturer

Note: Redevelopment projects which do not use RR techniques, shall use questions 28, 29, 33 and 33a to provide SMPs used, total WQv required and total WQv provided for the project.

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29.

Total RRv provided

. **acre-feet**

31. Is the Total RRv provided (#30) greater than or equal to the total WQv required (#28).

○ **Yes** ○ **No**

If Yes, go to question 36.
If No, go to question 32.

32. Provide the Minimum RRv required based on HSG.
[Minimum RRv Required = (P)(0.95)(Ai)/12, Ai=(S)(Aic)]

Minimum RRv Required

. **acre-feet**

32a. Is the Total RRv provided (#30) greater than or equal to the Minimum RRv Required (#32)?

○ **Yes** ○ **No**

If Yes, go to question 33.
Note: Use the space provided in question #39 to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). A detailed evaluation of the specific site limitations and justification for not reducing 100% of the WQv required (#28) must also be included in the SWPPP.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

33. Identify the Standard SMPs in Table 1 and, if applicable, the Alternative SMPs in Table 2 that were used to treat the remaining total WQv(=Total WQv Required in 28 - Total RRv Provided in 30).

Also, provide in Table 1 and 2 the total impervious area that contributes runoff to each practice selected.

Note: Use Tables 1 and 2 to identify the SMPs used on Redevelopment projects.

33a. Indicate the Total WQv provided (i.e. WQv treated) by the SMPs identified in question #33 and Standard SMPs with RRv Capacity identified in question 29.

WQv Provided

☐☐☐.☐☐☐ **acre-feet**

Note: For the standard SMPs with RRv capacity, the WQv provided by each practice = the WQv calculated using the contributing drainage area to the practice - RRv provided by the practice. (See Table 3.5 in Design Manual)

34. Provide the sum of the Total RRv provided (#30) and the WQv provided (#33a). ☐☐☐.☐☐☐

35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)? ○ **Yes** ○ **No**

If Yes, go to question 36.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

36. Provide the total Channel Protection Storage Volume (CPv) required and provided or select waiver (36a), if applicable.

CPv Required ☐☐☐.☐☐☐ **acre-feet**

CPv Provided ☐☐☐.☐☐☐ **acre-feet**

36a. The need to provide channel protection has been waived because:

○ Site discharges directly to tidal waters or a fifth order or larger stream.

○ Reduction of the total CPv is achieved on site through runoff reduction techniques or infiltration systems.

37. Provide the Overbank Flood (Qp) and Extreme Flood (Qf) control criteria or select waiver (37a), if applicable.

Total Overbank Flood Control Criteria (Qp)

Pre-Development ☐☐☐.☐☐☐ **CFS**

Post-development ☐☐☐.☐☐☐ **CFS**

Total Extreme Flood Control Criteria (Qf)

Pre-Development ☐☐☐.☐☐☐ **CFS**

Post-development ☐☐☐.☐☐☐ **CFS**

37a. The need to meet the Qp and Qf criteria has been waived because:

- ○ Site discharges directly to tidal waters or a fifth order or larger stream.
- ○ Downstream analysis reveals that the Qp and Qf controls are not required

38. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed? ○ Yes ○ No

If Yes, Identify the entity responsible for the long term Operation and Maintenance

39. Use this space to summarize the specific site limitations and justification for not reducing 100% of WQv required(#28). (See question 32a) This space can also be used for other pertinent project information.

40. Identify other DEC permits, existing and new, that are required for this project/facility.

- ○ Air Pollution Control
- ○ Coastal Erosion
- ○ Hazardous Waste
- ○ Long Island Wells
- ○ Mined Land Reclamation
- ○ Solid Waste
- ○ Navigable Waters Protection / Article 15
- ○ Water Quality Certificate
- ○ Dam Safety
- ○ Water Supply
- ○ Freshwater Wetlands/Article 24
- ○ Tidal Wetlands
- ○ Wild, Scenic and Recreational Rivers
- ○ Stream Bed or Bank Protection / Article 15
- ○ Endangered or Threatened Species(Incidental Take Permit)
- ○ Individual SPDES
- ○ SPDES Multi-Sector GP N Y R
- ○ Other
- ○ None

41. Does this project require a US Army Corps of Engineers Wetland Permit? ○ Yes ● No
If Yes, Indicate Size of Impact. .

42. Is this project subject to the requirements of a regulated, traditional land use control MS4? ○ Yes ● No
(If No, skip question 43)

43. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI? ○ Yes ○ No

44. If this NOI is being submitted for the purpose of continuing or transferring coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned. N Y R

Owner/Operator Certification

I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.

Print First Name **MI**

Print Last Name

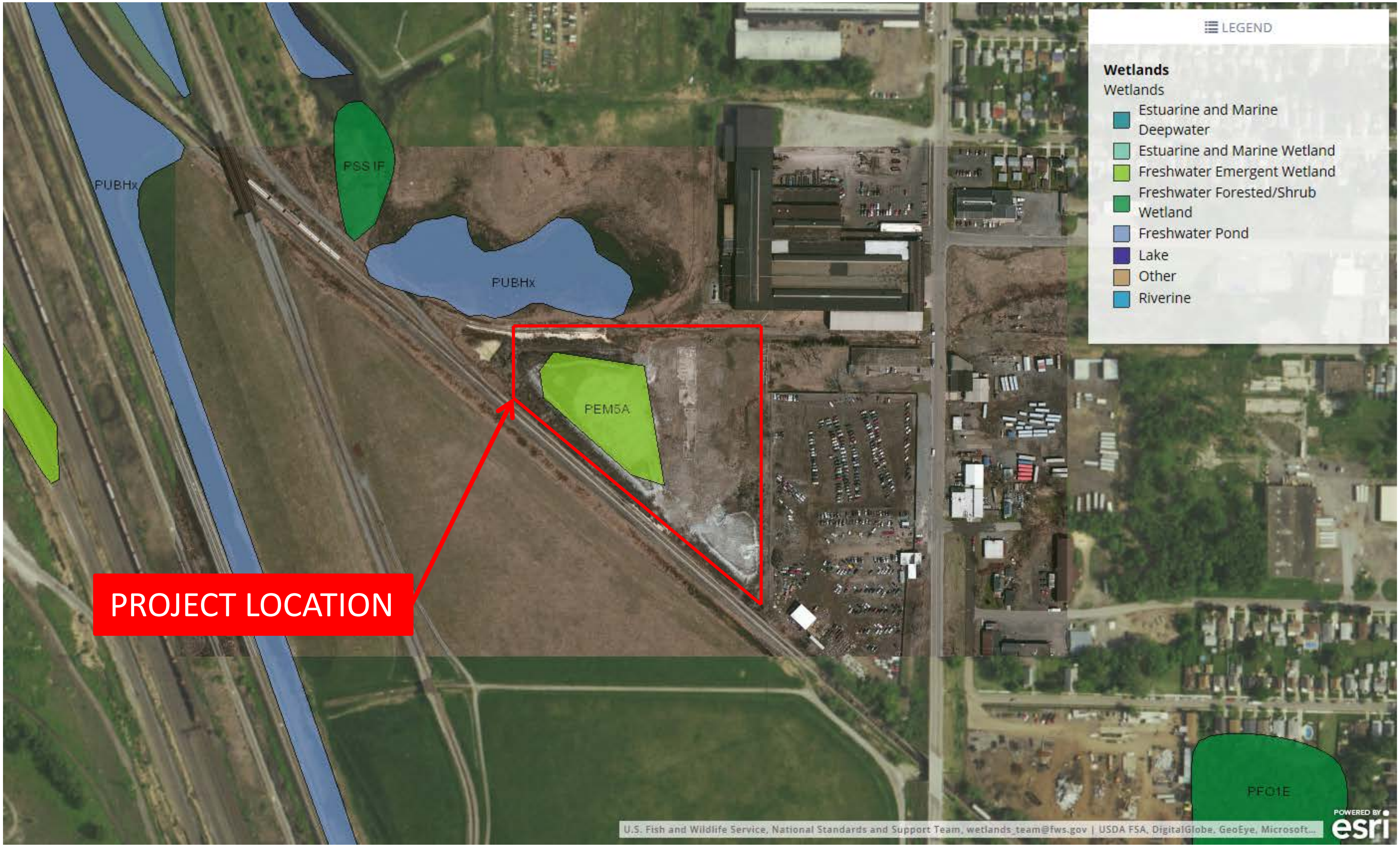
Owner/Operator Signature

Date

/ /

Appendix B

State and Federal Wetland Maps



APTIM

Aptim Engineering & Geology New York, P.C.

National Wetlands Inventory

PRAXAIR

90 Hopkins Street, Buffalo, NY

APTIM

Aptim Engineering & Geology New York, P.C.

State Regulated Freshwater Wetlands

PRAXAIR

90 Hopkins Street, Buffalo, NY

Appendix C

Custom Soil Resource Report for Delaware County, New York

United States Department of Agriculture

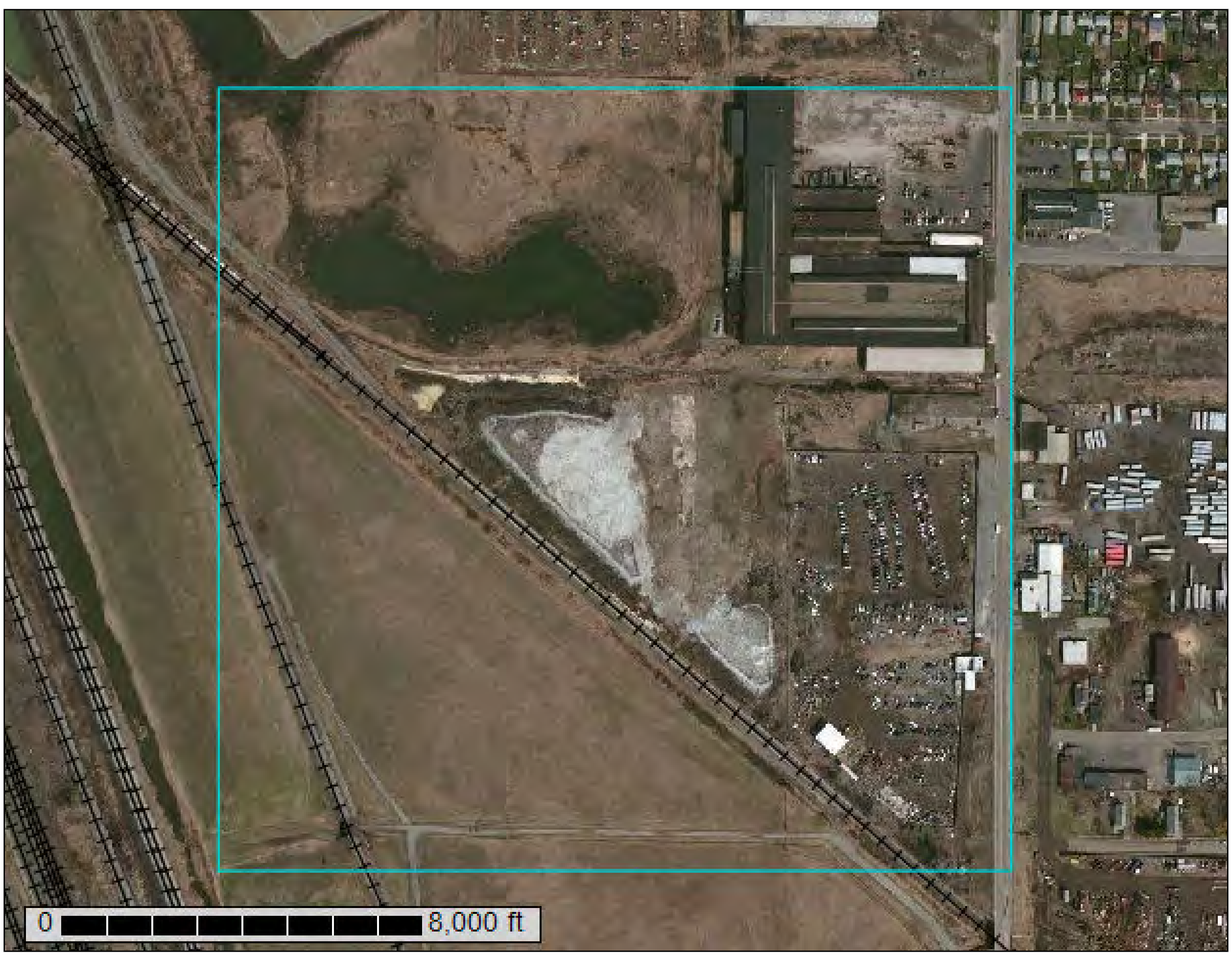
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for

Erie County, New York



October 17, 2016

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Soil Map

Map Scale: 1:4,540 if printed on A landscape (11" x 8.5") sheet.

Meters: 0, 50, 100, 200, 300

Feet: 0, 200, 400, 800, 1200

N

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Erie County, New York
Survey Area Data: Version 14, Sep 23, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Data not available.

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Erie County, New York (NY029)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
Hn	Haplaquolls, ponded	1.1	1.6%
NfA	Niagara silt loam, 0 to 3 percent slopes	5.0	6.9%
Uc	Udorthents, smoothed	28.5	39.3%
Ud	Urban land	30.1	41.5%
Us	Urban land-Niagara complex	1.4	2.0%
W	Water	6.3	8.8%
Totals for Area of Interest		**72.5**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Erie County, New York

Hn—Haplaquolls, ponded

Map Unit Setting

National map unit symbol: 9rm8
Mean annual precipitation: 36 to 48 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 115 to 195 days
Farmland classification: Not prime farmland

Map Unit Composition

Haplaquolls, ponded, and similar soils: 70 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Haplaquolls, Ponded

Setting

Landform: Depressions
Landform position (two-dimensional): Toeslope
Down-slope shape: Concave
Across-slope shape: Concave

Typical profile

H1 - 0 to 12 inches: fine sandy loam
H2 - 12 to 80 inches: stratified silty clay to silty clay loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: Moderate (about 8.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: C/D
Hydric soil rating: Yes

Minor Components

Canandaigua

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Edwards

Percent of map unit: 5 percent
Landform: Marshes, swamps

Hydric soil rating: Yes

Halsey

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Lamson

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Lyons

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Wayland

Percent of map unit: 5 percent
Landform: Flood plains
Hydric soil rating: Yes

NfA—Niagara silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 9rnq
Mean annual precipitation: 36 to 48 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 115 to 195 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Niagara and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Niagara

Setting

Landform: Lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Silty and clayey glaciolacustrine deposits

Typical profile

H1 - 0 to 11 inches: silt loam
H2 - 11 to 27 inches: silt loam
H3 - 27 to 72 inches: silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: High (about 10.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Hydric soil rating: No

Minor Components

Canandaigua

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Cosad

Percent of map unit: 5 percent
Hydric soil rating: No

Collamer

Percent of map unit: 5 percent
Hydric soil rating: No

Raynham

Percent of map unit: 5 percent
Hydric soil rating: No

Swormville

Percent of map unit: 5 percent
Hydric soil rating: No

Uc—Udorthents, smoothed

Map Unit Setting

National map unit symbol: 9rq3
Mean annual precipitation: 36 to 48 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 115 to 195 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Properties and qualities

Slope: 0 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Depth to water table: About 36 to 72 inches
Frequency of flooding: None
Frequency of ponding: None

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydric soil rating: No

Minor Components

Appleton

Percent of map unit: 5 percent
Hydric soil rating: No

Chippewa

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Hudson

Percent of map unit: 5 percent
Hydric soil rating: No

Langford

Percent of map unit: 5 percent
Hydric soil rating: No

Odessa

Percent of map unit: 5 percent
Hydric soil rating: No

Ud—Urban land

Map Unit Setting

National map unit symbol: 9rq4
Mean annual precipitation: 36 to 48 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 115 to 195 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Minor Components

Getzville

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Mardin

Percent of map unit: 5 percent
Hydric soil rating: No

Odessa

Percent of map unit: 5 percent
Hydric soil rating: No

Udorthents

Percent of map unit: 5 percent
Hydric soil rating: No

Us—Urban land-Niagara complex

Map Unit Setting

National map unit symbol: 9rqh
Mean annual precipitation: 36 to 48 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 115 to 195 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban: 60 percent
Niagara and similar soils: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: Unranked

Description of Niagara

Setting

Landform: Lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread

Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Silty and clayey glaciolacustrine deposits

Typical profile

H1 - 0 to 11 inches: silt loam
H2 - 11 to 27 inches: silt loam
H3 - 27 to 72 inches: silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: High (about 10.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Hydric soil rating: No

Minor Components

Raynham

Percent of map unit: 3 percent
Hydric soil rating: No

Udorthents

Percent of map unit: 3 percent
Hydric soil rating: No

Canandaigua

Percent of map unit: 2 percent
Landform: Depressions
Hydric soil rating: Yes

Swormville

Percent of map unit: 2 percent
Hydric soil rating: No

W—Water

Map Unit Setting

National map unit symbol: 9rr2
Mean annual precipitation: 36 to 48 inches

Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 115 to 195 days
Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

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Appendix D

Standards and Specifications for Erosion and Sediment Control Measures

STANDARD AND SPECIFICATIONS FOR ANCHORED STABILIZATION MATTING

Definition and Scope

A **temporary** or **permanent** protective covering placed on a prepared, seeded planting area that is anchored in place by staples or other means to aid in controlling erosion by absorbing rain splash energy and withstand overland flow as well as provide a microclimate to protect and promote seed establishment.

Conditions Where Practice Applies

Anchored stabilization mats are required for seeded earthen slopes steeper than 3 horizontal to 1 vertical; in vegetated channels where the velocity of the design flow exceeds the allowable velocity for vegetation alone (usually greater than 5 feet per second); on streambanks and shorelines where moving water is likely to erode newly seeded or planted areas; and in areas where wind prevents standard mulching with straw. This standard does not apply to slopes stabilized with sod, rock riprap or hard armor material.

Design Criteria

<u>Slope Applications</u> - Anchored stabilization mats for use on slopes are primarily used as mulch blankets where the mesh material is within the blanket or as a netting over previously placed mulch. These stabilization mats are NOT effective in preventing slope failures.

1. Required on all slopes steeper than 3:1
2. Matting will be designed for proper longevity need and strength based on intended use.
3. All installation details and directions will be included on the site erosion and sediment control plan and will follow manufactures specifications.

<u>Channel Applications</u> - Anchored stabilization mats, for use in supporting vegetation in flow channels, are generally a non-degradable, three dimensional plastic structure which can be filled with soil prior to planting. This structure provides a medium for root growth where the matting and roots become intertwined forming a continuous anchor for the vegetated lining.

1. Channel stabilization shall be based on the tractive force method.
2. For maximum design shear stresses less than 2 pounds per square foot, a temporary or bio-degradable mat may be used.
3. The design of the final matting shall be based on the mats ability to resist the tractive shear stress at bank full flow.
4. The installation details and procedures shall be included on the site erosion and sediment control plan and will follow manufacturers specifications.

Construction Specifications

1. Prepare soil before installing matting by smoothing the surface, removing debris and large stone, and applying lime, fertilizer and seed. Refer to manufacturers installation details.
2. Begin at the top of the slope by anchoring the mat in a 6” deep x 6” wide trench. Backfill and compact the trench after stapling.
3. In channels or swales, begin at the downslope end, anchoring the mat at the bottom and top ends of the blanket. When another roll is needed, the upslope roll

should overlay the lower layer, shingle style, so that channel flows do not peel back the material.

4. Roll the mats down a slope with a minimum 4" overlap. Roll center mat in a channel in direction of water flow on bottom of the channel. Do not stretch blankets. Blankets shall have good continuous contact with the underlying soil throughout its entire length.

5. Place mats end over end (shingle style) with a 6" overlap, use a double row of staggered staples 4" apart to secure mats.

6. Full length edge of mats at top of side slopes must be anchored in 6" deep x 6" wide trench; backfill and compact the trench after stapling.

7. Mats on side slopes of a channel must be overlapped 4" over the center mat and stapled.

8. In high flow channel applications, a staple check slot is recommended at 30 to 40 foot intervals. Use a row of staples 4" apart over entire width of the channel. Place a second row 4" below the first row in a staggered pattern.

9. The terminal end of the mats must be anchored in a 6"x6" wide trench. Backfill and compact the trench after stapling.

10. Stapling and anchoring of blanket shall be done in accordance with the manufactures recommendations.

Maintenance

Blanketed areas shall be inspected weekly and after each runoff event until perennial vegetation is established to a minimum uniform 80% coverage throughout the blanketed area. Damaged or displaced blankets shall be restored or replaced within 2 calendar days.

STANDARD AND SPECIFICATIONS FOR COMPOST FILTER SOCK

Definition & Scope

A **temporary** sediment control practice composed of a degradable geotextile mesh tube filled with compost filter media to filter sediment and other pollutants associated with construction activity to prevent their migration offsite.

Condition Where Practice Applies

Compost filter socks can be used in many construction site applications where erosion will occur in the form of sheet erosion and there is no concentration of water flowing to the sock. In areas with steep slopes and/or rocky terrain, soil conditions must be such that good continuous contact between the sock and the soil is maintained throughout its length. For use on impervious surfaces such as road pavement or parking areas, proper anchorage must be provided to prevent shifting of the sock or separation of the contact between the sock and the pavement. Compost filter socks are utilized both at the site perimeter as well as within the construction areas. These socks may be filled after placement by blowing compost into the tube pneumatically, or filled at a staging location and moved into its designed location.

Design Criteria

1. Compost filter socks will be placed on the contour with both terminal ends of the sock extended 8 feet upslope at a 45 degree angle to prevent bypass flow.
2. Diameters designed for use shall be 12” – 32” except that 8” diameter socks may be used for residential lots to control areas less than 0.25 acres.
3. The flat dimension of the sock shall be at least 1.5 times the nominal diameter.
4. The **Maximum Slope Length** (in feet) above a compost filter sock shall not exceed the following limits:

Dia. (in.)	Slope %						
	2	5	10	20	25	33	50
8	225*	200	100	50	20	—	—
12	250	225	125	65	50	40	25
18	275	250	150	70	55	45	30
24	350	275	200	130	100	60	35
32	450	325	275	150	120	75	50

* Length in feet

5. The compost infill shall be well decomposed (matured at least 3 months), weed-free, organic matter. It shall be aerobically composted, possess no objectionable odors, and contain less than 1%, by dry weight, of man-made foreign matter. The physical parameters of the compost shall meet the standards listed in Table 5.2 - Compost Standards Table. **Note: All biosolids compost produced in New York State (or approved for importation) must meet NYS DEC’s 6 NYCRR Part 360 (Solid Waste Management Facilities) requirements. The Part 360 requirements are equal to or more stringent than 40 CFR Part 503 which ensure safe standards for pathogen reduction and heavy metals content. When using compost filter socks adjacent to surface water, the compost should have a low nutrient value.**
6. The compost filter sock fabric material shall meet the

7. Compost filter socks shall be anchored in earth with 2" x 2" wooden stakes driven 12" into the soil on 10 foot centers on the centerline of the sock. On uneven terrain, effective ground contact can be enhanced by the placement of a fillet of filter media on the disturbed area side of the compost sock.

8. All specific construction details and material specifications shall appear on the erosion and sediment control constructions drawings when compost filter socks are included in the plan.

Maintenance

1. Traffic shall not be permitted to cross filter socks.

2. Accumulated sediment shall be removed when it reaches half the above ground height of the sock and disposed of in accordance with the plan.

3. Socks shall be inspected weekly and after each runoff event. Damaged socks shall be repaired in the manner required by the manufacturer or replaced within 24 hours of inspection notification.

4. Biodegradable filter socks shall be replaced after 6 months; photodegradable filter socks after 1 year. Polypropylene socks shall be replaced according to the manufacturer's recommendations.

5. Upon stabilization of the area contributory to the sock, stakes shall be removed. The sock may be left in place and vegetated or removed in accordance with the stabilization plan. For removal the mesh can be cut and the compost spread as an additional mulch to act as a soil supplement.

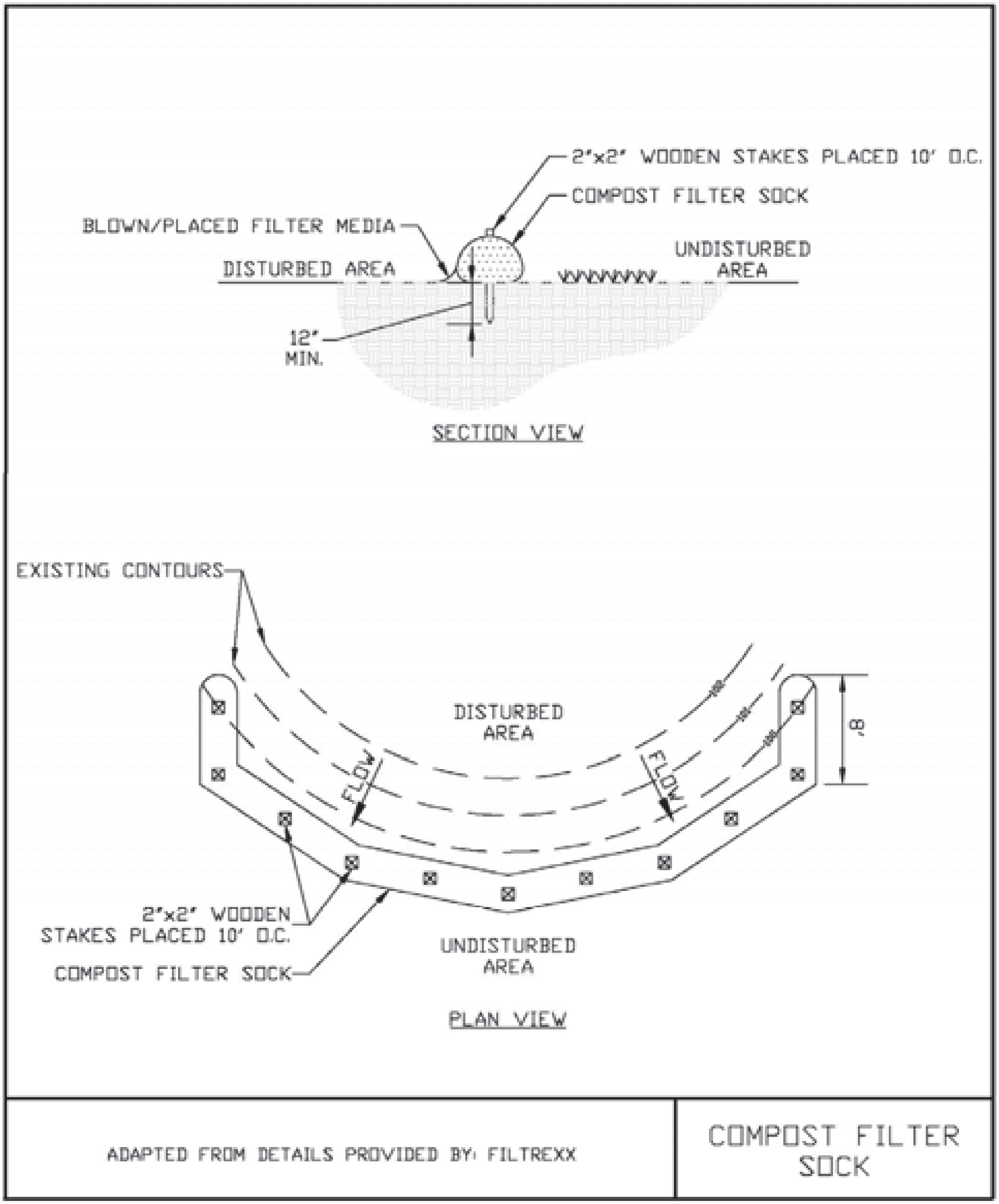
Table 5.1 - Compost Sock Fabric Minimum Specifications Table

Material Type	3 mil HDPE	5 mil HDPE	5 mil HDPE	Multi-Filament Polypropylene (MFPP)	Heavy Duty Multi-Filament Polypropylene (HDMFPP)
Material Characteristics	Photodegradable	Photodegradable	Biodegradable	Photodegradable	Photodegradable
Sock Diameters	12" 18"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"
Mesh Opening	3/8"	3/8"	3/8"	3/8"	1/8"
Tensile Strength		26 psi	26 psi	44 psi	202 psi
Ultraviolet Stability % Original Strength (ASTM G-155)	23% at 1000 hr.	23% at 1000 hr.		100% at 1000 hr.	100% at 1000 hr.
Minimum Functional Longevity	6 months	9 months	6 months	1 year	2 years

Table 5.2 - Compost Standards Table

Organic matter content	25% - 100% (dry weight)
Organic portion	Fibrous and elongated
pH	6.0 – 8.0
Moisture content	30% - 60%
Particle size	100% passing a 1" screen and 10 - 50% passing a 3/8" screen
Soluble salt concentration	5.0 dS/m (mmhos/cm) maximum

Figure 5.2
Compost Filter Sock



STANDARD AND SPECIFICATIONS FOR CONSTRUCTION DITCH

Definition & Scope

A **temporary** excavated drainage way to intercept sediment laden water and divert it to a sediment trapping device or to prevent runoff from entering disturbed areas by intercepting and diverting it to a stabilized outlet.

Conditions Where Practice Applies

Construction ditches are constructed:

1. to divert flows from entering a disturbed area.
2. intermittently across disturbed areas to shorten overland flow distances.
3. to direct sediment laden water along the base of slopes to a trapping device.
4. to transport offsite flows across disturbed areas such as rights-of-way.

Ditches collecting runoff from disturbed areas shall remain in place until the disturbed areas are permanently stabilized.

Design Criteria

See Figure 3.2 on page 3.6 for details.

General

	Ditch A	Ditch B
Drainage Area	<5 Ac	5-10 Ac
Bottom Width of Flow Channel	4 ft.	6 ft.
Depth of Flow Channel	1 ft.	1 ft.
Side Slopes	2:1 or flatter	2:1 or flatter
Grade	0.5% Min. 10% Max.	0.5% Min. 10% Max.

For drainage areas larger than 10 acres, refer to the Standard and Specification for Grassed Waterways on page 3.23 and 3.24.

Stabilization

Stabilization of the ditch shall be completed within 2 days of installation in accordance with the appropriate standard and specifications for vegetative stabilization or stabilization with mulch as determined by the time of year. The flow channel shall be stabilized as per the following criteria:

The seeding for vegetative stabilization shall be in accordance with the standard on Page 4.78. The seeded area will be mulched in accordance with the standard on Page 4.39.

Type of Treatment	Channel Grade[1]	Flow Channel	
		A (<5 Ac.)	B (5-10 Ac.)
1	0.5-3.0%	Seed & Straw Mulch	Seed & Straw Mulch
2	3.1-5.0%	Seed & Straw Mulch	Seed and cover with RECP[2], Sod, or lined with plastic or 2" stone
3	5.1-8.0%	Seed and cover with RECP[2], Sod, or line with plastic or 2 in. stone	Line with 4-8 in. rip-rap or, geotextile
4	8.1-10%	Line with 4-8 in. rip-rap or geotextile	Site Specific Design

1 In highly erodible soils, as defined by the local approving agency, refer to the next higher slope grade for type of stabilization.
2 Rolled Erosion Control Product.

Outlet

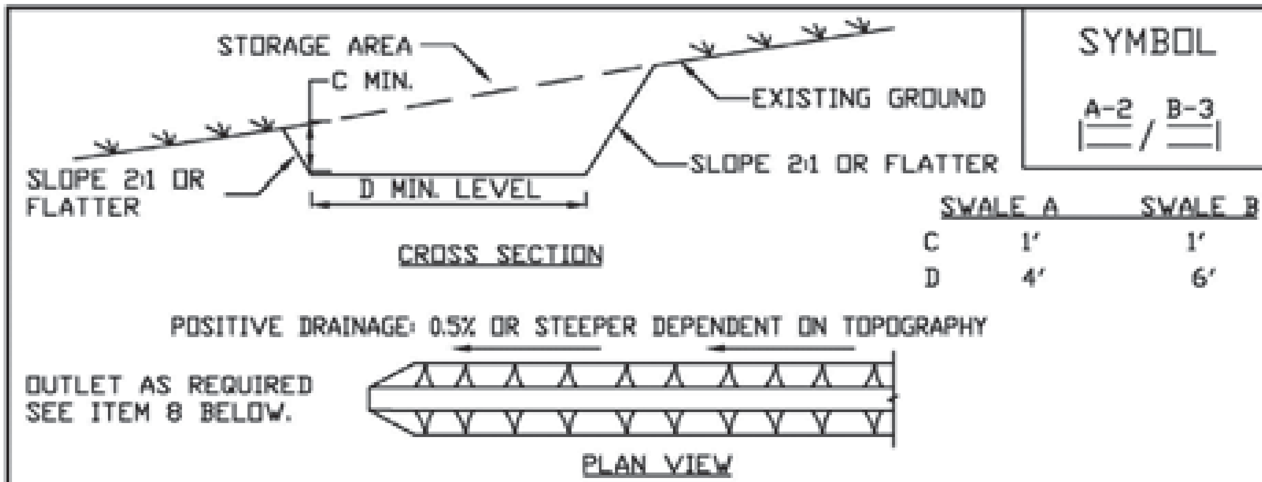
Ditch shall have an outlet that functions with a minimum of erosion, and dissipates runoff velocity prior to discharge off the site.

Runoff shall be conveyed to a sediment trapping device such as a sediment trap or sediment basin until the drainage area above the ditch is adequately stabilized.

The on-site location may need to be adusted to meet field conditions in order to utilize the most suitable outlet condition.

If a ditch is used to divert clean water flows from entering a disturbed area, a sediment trapping device may not be needed.

Figure 3.2
Construction Ditch Detail



CONSTRUCTION SPECIFICATIONS

1. ALL CONSTRUCTION DITCHES SHALL HAVE UNINTERUPTED POSITIVE GRADE TO AN OUTLET.
2. DIVERTED RUNOFF FROM A DISTURBED AREA SHALL BE CONVEYED TO A SEDIMENT TRAPPING DEVICE.
3. DIVERTED RUNOFF FROM AN UNDISTURBED AREA SHALL OUTLET DIRECTLY INTO AN UNDISTURBED STABILIZED AREA AT NON-EROSIVE VELOCITY.
4. ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED AND DISPOSED OF SO AS NOT TO INTERFERE WITH THE PROPER FUNCTIONING OF THE SWALE.
5. THE DITCH SHALL BE EXCAVATED OR SHAPED TO LINE, GRADE, AND CROSS SECTION AS REQUIRED TO MEET THE CRITERIA SPECIFIED HEREIN AND BE FREE OF BANK PROJECTIONS OR OTHER IRREGULARITIES WHICH WILL IMPEDE NORMAL FLOW.
6. FILLS SHALL BE COMPACTED BY EARTH MOVING EQUIPMENT.
7. ALL EARTH REMOVED AND NOT NEEDED FOR CONSTRUCTION SHALL BE PLACED SO THAT IT WILL NOT INTERFERE WITH THE FUNCTIONING OF THE DITCH.
8. STABILIZATION SHALL BE AS PER THE FLOW CHANNEL STABILIZATION CHART BELOW:

TYPE OF TREATMENT	CHANNEL GRADE	A(5 AC. OR LESS)	B(5 AC. -10AC)
1	0.5-3.0%	SEED AND STRAW MULCH	SEED AND STRAW MULCH
2	3.1-5.0%	SEED AND STRAW MULCH	SEED AND COVER USING RECP
3	5.1-8.0%	SEED AND COVER WITH RECP	LINED WITH 4-8" RIP-RAP OR GEOTEXTILE
4	8.1-10.%	LINED WITH 4-8" RIP-RAP OR GEOTEXTILE	SITE SPECIFIC DESIGN

9. PERIODIC INSPECTION AND REQUIRED MAINTENANCE MUST BE PROVIDED AFTER EACH RAIN EVENT.

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

CONSTRUCTION DITCH

STANDARD AND SPECIFICATIONS FOR DEWATERING SUMP PIT

Discharge of turbid water pumped from the standpipe should be to a sediment trap, sediment basin, filter bag or stabilized area, such as a filter strip. If water from the sump pit will be pumped directly to a storm drain system, filter cloth with an equivalent sieve size between 40-80 should be wrapped around the standpipe to ensure clean water discharge. It is recommended that ¼ to ½ inch hardware cloth be wrapped around and secured to the standpipe prior to attaching the filter cloth. This will increase the rate of water seepage into the standpipe.

Definition & Scope

A **temporary** pit which is constructed using pipe and stone for pumping excessive water from excavations to a suitable discharge area.

Conditions Where Practice Applies

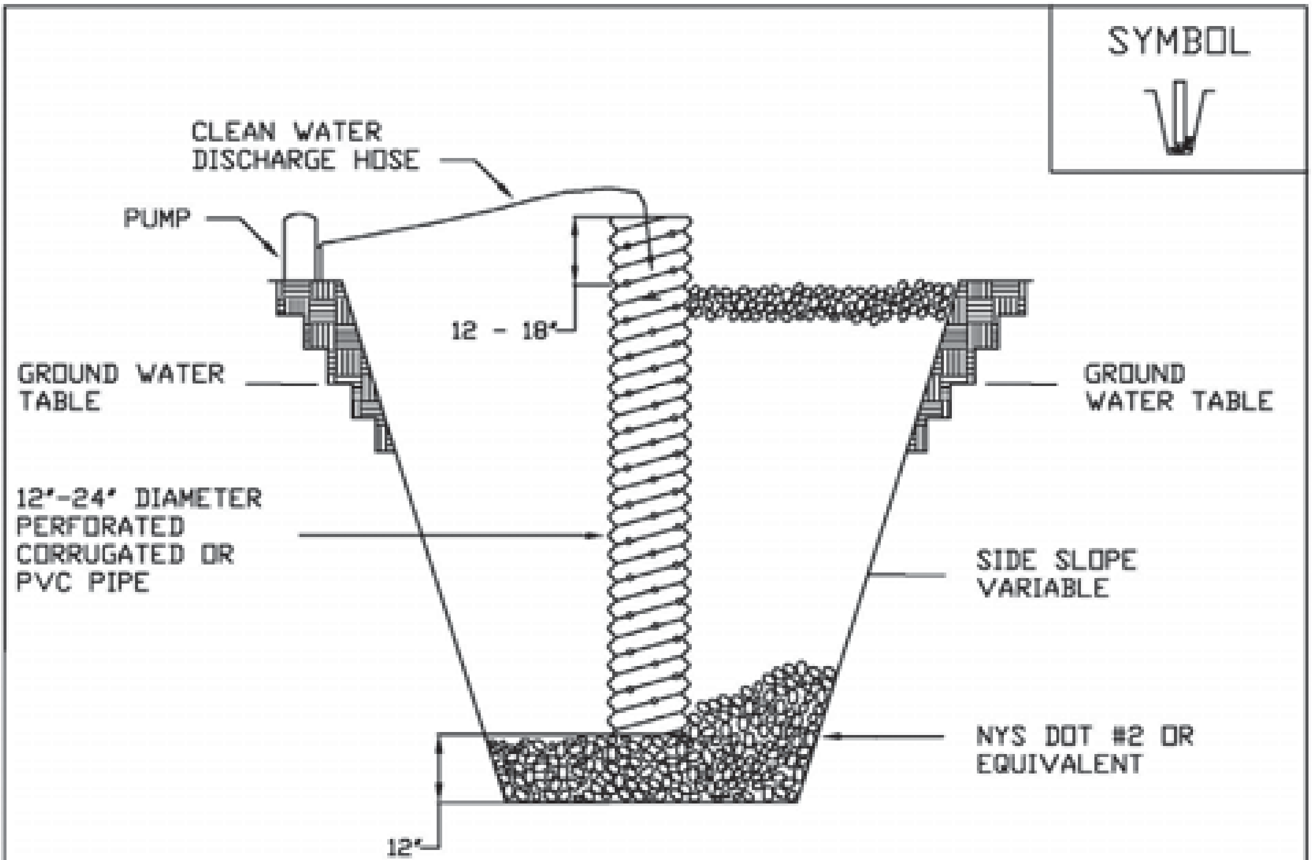
Sump pits are constructed when water collects during the excavation phase of construction. This practice is particularly useful in urban areas during excavation for building foundations. It may also be necessary during construction activities that encounter high ground water tables in floodplain locations.

Design Criteria

The number of sump pits and their locations shall be determined by the contractor/engineer. A design is not required, but construction should conform to the general criteria outlined on Figure 3.3 on page 3.8.

A perforated vertical standpipe is placed in the center of the pit and surrounded with a stone screening material to collect filtered water. Water is then pumped from the center of the pipe to a suitable discharge area.

Figure 3.3
Dewatering Sump Pit Detail



CONSTRUCTION SPECIFICATIONS

1. PIT DIMENSIONS ARE VARIABLE.
2. THE STANDPIPE SHOULD BE CONSTRUCTED BY PERFORATING A 12-24" DIAMETER CORRUGATED OR PVC PIPE.
3. A BASE OF NYS DOT #2 OR EQUIVALENT AGGREGATE SHOULD BE PLACED IN THE PIT TO A DEPTH OF 12". AFTER INSTALLING THE STANDPIPE, THE PIT SURROUNDING THE STANDPIPE SHOULD BE BACKFILLED WITH NYS DOT #2 OR EQUIVALENT AGGREGATE.
4. THE STANDPIPE SHOULD EXTEND 12-18" ABOVE THE LIP OF THE PIT.
5. IF DISCHARGE WILL BE PUMPED DIRECTLY TO A STORM DRAINAGE SYSTEM, THE STANDPIPE SHOULD BE WRAPPED WITH FILTERCLOTH BEFORE INSTALLATION. IT IS RECOMMENDED THAT 1/4"-1/2" HARDWARE CLOTH MAY BE PLACED AROUND THE STANDPIPE, PRIOR TO ATTACHING THE FILTERCLOTH.

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE	DEWATERING SUMP PIT

STANDARD AND SPECIFICATIONS FOR FIBER ROLL

Definition & Scope

A fiber roll is a coir (coconut fiber), straw, or excelsior roll encased in netting of jute, nylon, or burlap to dissipate energy along streambanks, channels, and bodies of water and to reduce sheet flow on slopes.

Conditions Where Practice Applies

Fiber rolls are used where the water surface levels are relatively constant. Artificially controlled streams for hydropower are not good candidates for this technique. The rolls provide a good medium for the introduction of herbaceous vegetation. Planting in the fiber roll is appropriate where the roll will remain continuously wet.

Design Criteria

1. The roll is placed in a shallow trench dug below baseflow or in a 4 inch trench on the slope contour and anchored by 2" x 2", 3-foot long posts driven on each side of the roll (see Figure 4.8).

2. The roll is contained by a 9-gauge non-galvanized wire placed over the roll from post to post. Braided nylon rope (1/8" thick) may be used.

3. The anchor posts shall be spaced laterally 4 feet on center on both sides of the roll and driven down to the top of the roll.

4. Soil is placed behind the roll and planted with suitable herbaceous or woody vegetation. If the roll will be continuously saturated, wetland plants may be planted into voids created in the upper surface of the roll.

5. Where water levels may fall below the bottom edge of the roll, a brush layer of willow should be installed so as to lay across the top edge of the roll.

6. Where fiber rolls are used to reduce sheet flow on slopes they should be at least 12" in diameter and spaced according to the straw bale dike standard for sediment control.

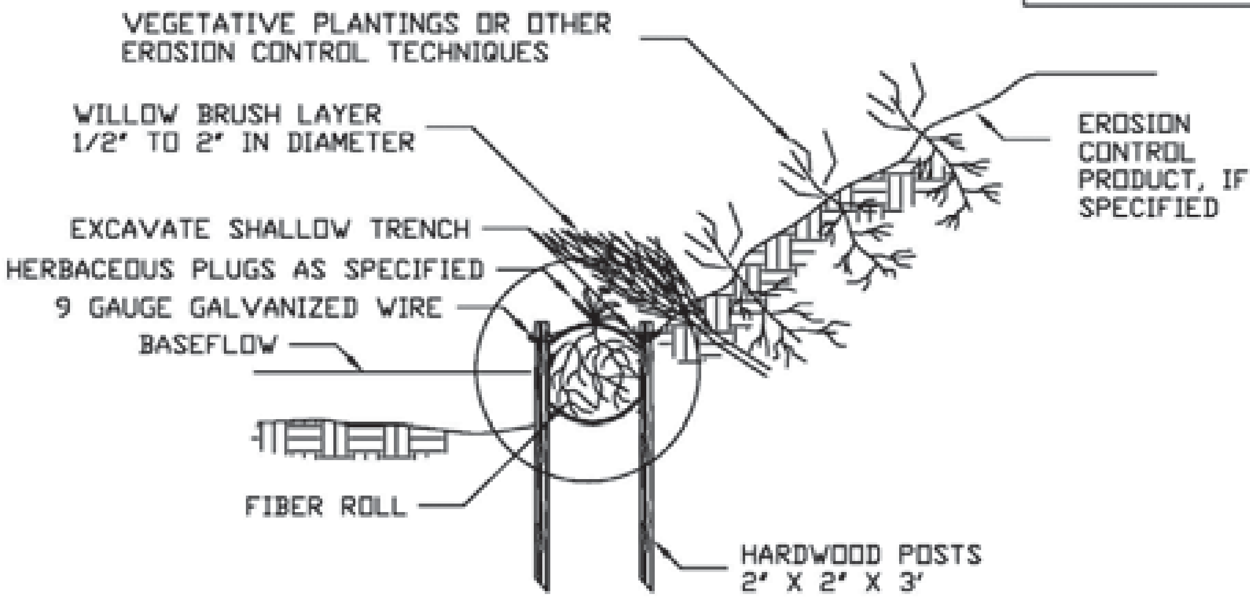
Maintenance

Due to the susceptibility of plant materials to the physical constraints of the site, climate conditions, and animal populations, it is necessary to inspect installations frequently. This is especially important during the first year or two of establishment. Plant materials missing or damaged should be replaced as soon as possible. Sloughs or breaks in drainage pattern should be reestablished for the site as quickly as possible to maintain stability.

Figure 4.8
Fiber Roll

SYMBOL

FR



CROSS SECTION
NOT TO SCALE

CONSTRUCTION SPECIFICATIONS

1. EXCAVATE A SHALLOW TRENCH SLIGHTLY BELOW BASEFLOW OR A 4" TRENCH ON SLOPE CONTOURS.
2. PLACE THE ROLL IN THE TRENCH AND ANCHOR WITH 2" x 2" POSTS PLACED ON BOTH SIDES OF THE ROLL AND SPACED LATERALLY ON 2' TO 4' CENTERS. TRIM THE TOP OF THE POSTS EVEN WITH THE EDGE OF THE ROLL, IF NECESSARY.
3. NOTCH THE POSTS AND TIE TOGETHER, ACROSS THE ROLL, WITH 9 GAUGE GALVANIZED WIRE OR 1/8" DIAMETER BRAIDED NYLON ROPE..
4. PLACE SOIL EXCAVATED FROM THE TRENCH BEHIND THE ROLL AND HAND TAMP. PLANT WITH SUITABLE HERBACEOUS OR WOODY VEGETATION AS SPECIFIED ELSEWHERE IN THE CONTRACT DOCUMENTS. VEGETATION SHALL BE PLACED IMMEDIATELY ADJACENT TO THE ROLL TO PROMOTE ROOT GROWTH INTO THE FIBER. HERBACEOUS VEGETATION, IF SPECIFIED, SHALL BE PLANTED INTO THE FIBER ROLL.

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE	FIBER ROLL

STANDARD AND SPECIFICATIONS FOR MULCHING

Definition and Scope

Applying coarse plant residue or chips, or other suitable materials, to cover the soil surface to provide initial erosion control while a seeding or shrub planting is establishing. Mulch will conserve moisture and modify the surface soil temperature and reduce fluctuation of both. Mulch will prevent soil surface crusting and aid in weed control. Mulch can also be used alone for temporary stabilization in non-growing months. Use of stone as a mulch could be more permanent and should not be limited to non-growing months.

Conditions Where Practice Applies

On soils subject to erosion and on new seedings and shrub plantings. Mulch is useful on soils with low infiltration rates by retarding runoff.

Criteria

Site preparation prior to mulching requires the installation of necessary erosion control or water management practices and drainage systems.

Slope, grade and smooth the site to fit needs of selected mulch products.

Remove all undesirable stones and other debris to meet the needs of the anticipated land use and maintenance required.

Apply mulch after soil amendments and planting is accomplished or simultaneously if hydroseeding is used.

Select appropriate mulch material and application rate or material needs. Hay mulch shall not be used in wetlands or in areas of permanent seeding. Clean straw mulch is preferred alternative in wetland application. Determine local availability.

Select appropriate mulch anchoring material.

NOTE: The best combination for grass/legume establishment is straw (cereal grain) mulch applied at 2 ton/acre (90 lbs./1000sq.ft.) and anchored with wood fiber mulch (hydromulch) at 500 – 750 lbs./acre (11 – 17 lbs./1000 sq. ft.). The wood fiber mulch must be applied through a hydroseeder immediately after mulching.

Table 4.2
Guide to Mulch Materials, Rates, and Uses

Mulch Material	Quality Standards	per 1000 Sq. Ft.	per Acre	Depth of Application	Remarks
Wood chips or shavings	Air-dried. Free of objectionable coarse material	500-900 lbs.	10-20 tons	2-7”	Used primarily around shrub and tree plantings and recreation trails to inhibit weed competition. Resistant to wind blowing. Decomposes slowly.
Wood fiber cellulose (partly digested wood fibers)	Made from natural wood usually with green dye and dispersing agent	50 lbs.	2,000 lbs.	—	Apply with hydromulcher. No tie down required. Less erosion control provided than 2 tons of hay or straw.
Gravel, Crushed Stone or Slag	Washed; Size 2B or 3A—1 1/2”	9 cu. yds.	405 cu. yds.	3”	Excellent mulch for short slopes and around plants and ornamentals. Use 2B where subject to traffic. (Approximately 2,000 lbs./cu. yd.). Frequently used over filter fabric for better weed control.
Hay or Straw	Air-dried; free of undesirable seeds & coarse materials	90-100 lbs. 2-3 bales	2 tons (100-120 bales)	cover about 90% surface	Use small grain straw where mulch is maintained for more than three months. Subject to wind blowing unless anchored. Most commonly used mulching material. Provides the best micro-environment for germinating seeds.
Jute twisted yarn	Undyed, unbleached plain weave. Warp 78 ends/yd., Weft 41 ends/yd. 60-90 lbs./roll	48” x 50 yds. or 48” x 75 yds.	—	—	Use without additional mulch. Tie down as per manufacturers specifications. Good for center line of concentrated water flow.
Excelsior wood fiber mats	Interlocking web of excelsior fibers with photodegradable plastic netting	4’ x 112.5’ or 8’ x 112.5’.	—	—	Use without additional mulch. Excellent for seeding establishment. Anchor as per manufacturers specifications. Approximately 72 lbs./roll for excelsior with plastic on both sides. Use two sided plastic for centerline of waterways.
Straw or coconut fiber, or combination	Photodegradable plastic net on one or two sides	Most are 6.5 ft. x 3.5 ft.	81 rolls	—	Designed to tolerate higher velocity water flow, centerlines of waterways, 60 sq. yds. per roll.

Table 4.3
Mulch Anchoring Guide

Anchoring Method or Material	Kind of Mulch to be Anchored	How to Apply
1. Peg and Twine	Hay or straw	After mulching, divide areas into blocks approximately 1 sq. yd. in size. Drive 4-6 pegs per block to within 2" to 3" of soil surface. Secure mulch to surface by stretching twine between pegs in criss-cross pattern on each block. Secure twine around each peg with 2 or more tight turns. Drive pegs flush with soil. Driving stakes into ground tightens the twine.
2. Mulch netting	Hay or straw	Staple the light-weight paper, jute, wood fiber, or plastic nettings to soil surface according to manufacturer's recommendations. Should be biodegradable. Most products are not suitable for foot traffic.
3. Wood cellulose fiber	Hay or straw	Apply with hydroseeder immediately after mulching. Use 500 lbs. wood fiber per acre. Some products contain an adhesive material ("tackifier"), possibly advantageous.
4. Mulch anchoring tool	Hay or straw	Apply mulch and pull a mulch anchoring tool (blunt, straight discs) over mulch as near to the contour as possible. Mulch material should be "tucked" into soil surface about 3".
5. Tackifier	Hay or straw	Mix and apply polymeric and gum tackifiers according to manufacturer's instructions. Avoid application during rain. A 24-hour curing period and a soil temperature higher than 45^0 Fahrenheit are required.

STANDARD AND SPECIFICATIONS FOR PERMANENT CONSTRUCTION AREA PLANTING

Definition & Scope

Establishing **permanent** grasses with other forbs and/or shrubs to provide a minimum 80% perennial vegetative cover on areas disturbed by construction and critical areas to reduce erosion and sediment transport. Critical areas may include but are not limited to steep excavated cut or fill slopes as well as eroding or denuded natural slopes and areas subject to erosion.

Conditions Where Practice Applies

This practice applies to all disturbed areas void of, or having insufficient, cover to prevent erosion and sediment transport. See additional standards for special situations such as sand dunes and sand and gravel pits.

Criteria

All water control measures will be installed as needed prior to final grading and seedbed preparation. Any severely compacted sections will require chiseling or disking to provide an adequate rooting zone, to a minimum depth of 12", see Soil Restoration Standard. The seedbed must be prepared to allow good soil to seed contact, with the soil not too soft and not too compact. Adequate soil moisture must be present to accomplish this. If surface is powder dry or sticky wet, postpone operations until moisture changes to a favorable condition. If seeding is accomplished within 24 hours of final grading, additional scarification is generally not needed, especially on ditch or stream banks. Remove all stones and other debris from the surface that are greater than 4 inches, or that will interfere with future mowing or maintenance.

Soil amendments should be incorporated into the upper 2 inches of soil when feasible. **The soil should be tested to determine the amounts of amendments needed.** Apply ground agricultural limestone to attain a pH of 6.0 in the upper 2 inches of soil. If soil must be fertilized before results of a soil test can be obtained to determine fertilizer needs, apply commercial fertilizer at 600 lbs. per acre of 5-5-10 or equivalent. If manure is used, apply a quantity to meet the nutrients of the above fertilizer. This requires an appropriate manure analysis prior to applying to the site. Do not use manure on sites to be planted with birdsfoot trefoil or in the path of concentrated water flow.

Seed mixtures may vary depending on location within the state and time of seeding. Generally, warm season grasses should only be seeded during early spring, April to May. These grasses are primarily used for vegetating excessively drained sands and gravels. See Standard and Specification for Sand and Gravel Mine Reclamation. Other grasses may be seeded any time of the year when the soil is not frozen and is workable. When legumes such as birdsfoot trefoil are included, spring seeding is preferred. See Table 4.4, "Permanent Construction Area Planting Mixture Recommendations" for additional seed mixtures.

General Seed Mix:	Variety	lbs./ acre	lbs/1000 sq. ft.
Red Clover[1] OR	Acclaim, Rally, Red Head II, Renegade	8[2]	0.20
Common white clover[1]	Common	8	0.20
PLUS			
Creeping Red Fescue	Common	20	0.45
PLUS			
Smooth Bromegrass OR	Common	2	0.05
Ryegrass (perennial)	Pennfine/Linn	5	0.10
[1] add inoculant immediately prior to seeding [2] Mix 4 lbs each of Empire and Pardee OR 4 lbs of Birdsfoot and 4 lbs white clover per acre. All seeding rates are given for Pure Live Seed (PLS)			

Pure Live Seed, or (PLS) refers to the amount of live seed in a lot of bulk seed. Information on the seed bag label includes the type of seed, supplier, test date, source of seed, purity, and germination. Purity is the percentage of pure seed. Germination is the percentage of pure seed that will produce normal plants when planted under favorable conditions.

To compute Pure Live Seed multiply the "germination percent" times the "purity" and divide that by 100 to get Pure Live Seed.

$$\text{Pure Live Seed (PLS)} = \frac{\text{\% Germination} \times \text{\% Purity}}{100}$$

For example, the PLS for a lot of Kentucky Blue grass with 75% purity and 96% germination would be calculated as follows:

$$\frac{(96) \times (75)}{100} = 72\% \text{ Pure Live Seed}$$

For 10lbs of PLS from this lot =

$$\frac{10}{0.72} = 13.9 \text{ lbs}$$

Therefore, 13.9 lbs of seed is the actual weight needed to meet 10lbs PSL from this specific seed lot.

<u>Time of Seeding:</u> The optimum timing for the general seed mixture is early spring. Permanent seedings may be made any time of year if properly mulched and adequate moisture is provided. Late June through early August is not a good time to seed, but may facilitate covering the land without additional disturbance if construction is completed. Portions of the seeding may fail due to drought and heat. These areas may need reseeding in late summer/fall or the following spring.

<u>Method of seeding:</u> Broadcasting, drilling, cultipack type seeding, or hydroseeding are acceptable methods. Proper soil to seed contact is key to successful seedings.

<u>Mulching:</u> Mulching is essential to obtain a uniform stand of seeded plants. Optimum benefits of mulching new seedings are obtained with the use of small grain straw applied at a rate of 2 tons per acre, and anchored with a netting or tackifier. See the Standard and Specifications for Mulching for choices and requirements.

<u>Irrigation:</u> Watering may be essential to establish a new seeding when a drought condition occurs shortly after a new seeding emerges. Irrigation is a specialized practice and care must be taken not to exceed the application rate for the soil or subsoil. When disconnecting irrigation pipe, be sure pipes are drained in a safe manor, not creating an erosion concern.

<u>80% Perennial Vegetative Cover</u>

<u>50% Perennial Vegetative Cover</u>

Table 4.4
Permanent Construction Area Planting Mixture Recommendations

Seed Mixture	Variety	Rate in lbs./acre (PLS)	Rate in lbs./ 1, 000 ft^2
Mix #1			
Creeping red fescue	Ensylva, Pennlawn, Boreal	10	.25
Perennial ryegrass	Pennfine, Linn	10	.25
*This mix is used extensively for shaded areas.			
Mix #2			
Switchgrass	Shelter, Pathfinder, Trailblazer, or Blackwell	20	.50
*This rate is in pure live seed, this would be an excellent choice along the upland edge of a wetland to filter runoff and provide wildlife benefits. In areas where erosion may be a problem, a companion seeding of sand lovegrass should be added to provide quick cover at a rate of 2 lbs. per acre (0.05 lbs. per 1000 sq. ft.).			
Mix #3			
Switchgrass	Shelter, Pathfinder, Trailblazer, or Blackwell	4	.10
Big bluestem	Niagara	4	.10
Little bluestem	Aldous or Camper	2	.05
Indiangrass	Rumsey	4	.10
Coastal panicgrass	Atlantic	2	.05
Sideoats grama	El Reno or Trailway	2	.05
Wildflower mix		.50	.01
*This mix has been successful on sand and gravel plantings. It is very difficult to seed without a warm season grass seeder such as a Truax seed drill. Broadcasting this seed is very difficult due to the fluffy nature of some of the seed, such as bluestems and indiangrass.			
Mix #4			
Switchgrass	Shelter, Pathfinder, Trailblazer, or Blackwell	10	.25
Coastal panicgrass	Atlantic	10	.25
*This mix is salt tolerant, a good choice along the upland edge of tidal areas and roadsides.			
Mix #5			
Saltmeadow cordgrass (Spartina patens)—This grass is used for tidal shoreline protection and tidal marsh restoration. It is planted by vegetative stem divisions. 'Cape' American beachgrass can be planted for sand dune stabilization above the saltmeadow cordgrass zone.			
Mix #6			
Creeping red fescue	Ensylva, Pennlawn, Boreal	20	.45
Chewings Fescue	Common	20	.45
Perennial ryegrass	Pennfine, Linn	5	.10
Red Clover	Common	10	.45
*General purpose erosion control mix. Not to be used for a turf planting or play grounds.			

STANDARD AND SPECIFICATIONS FOR SEDIMENT TRAP

Definition & Scope

A **temporary** sediment control device formed by excavation and/or embankment to intercept sediment-laden runoff and trap the sediment in order to protect drainageways, properties, and rights-of-way below the sediment trap from sedimentation.

Conditions Where Practice Applies

A sediment trap is usually installed in a drainageway, at a storm drain inlet, or other points of collection from a disturbed area for one construction season.

Sediment traps should be used to artificially break up the natural drainage area into smaller sections where a larger device (sediment basin) would be less effective.

Design Criteria

If the drainage area to the proposed trap location exceeds 5 acres, or the trap is in place beyond one construction season, or any of the additional design criteria presented here cannot be met, a full Sediment Basin must be used. See Standard and Specification for Sediment Basin on page 5.19.

Drainage Area

The maximum drainage area for all sediment traps shall be 5 acres.

Location

Sediment traps shall be located so that they can be installed prior to grading or filling in the drainage area they are to protect. Traps must **not be located any closer than 20 feet** from a proposed building foundation if the trap is to function during building construction. Locate traps to obtain maximum storage benefit from the terrain and for ease of cleanout and disposal of the trapped sediment.

Trap Size

The volume of a sediment trap as measured at the elevation of the crest of the outlet shall be at least 3,600 cubic feet per acre of drainage area. A minimum length to width ratio of 2:1 should be provided. The volume of a constructed trap shall be calculated using standard mathematical procedures. The volume of a natural sediment trap may be approximated by the equation: Volume (cu.ft.) = 0.4 x surface area (sq.ft.) x maximum depth (ft.).

Trap Cleanout

Sediment shall be removed and the trap restored to the original dimensions when the sediment has accumulated to ½ of the design depth of traps I-II, and 1/3 the depth for trap III. Sediment removed from the trap shall be deposited in a protected area and in such a manner that it will not erode.

Embankment

All earth embankments for sediment traps shall not exceed five (5) feet in height as measured at the low point of the original ground along the centerline of the embankment. Embankments shall have a minimum four (4) foot wide top and side slopes of 2:1 or flatter. The embankment shall be compacted by traversing with equipment while it is being constructed. The embankment shall be stabilized with seed and mulch as soon as it is completed

The elevation of the top of any dike directing water to any sediment trap will equal or exceed the maximum height of the outlet structure along the entire length of the trap.

Excavation

All excavation operations shall be carried out in such a manner that erosion and water pollution shall be minimal. Excavated portions of sediment traps shall have 1:1 or flatter slopes.

Outlet

The outlet shall be designed, constructed, and maintained in such a manner that sediment does not leave the trap and that erosion at or below the outlet does not occur.

Sediment traps must outlet onto stabilized (preferable undisturbed) ground, into a watercourse, stabilized channel, or into a storm drain system. Distance between inlet and outlet should be maximized to the longest length practicable.

All traps must be seeded and mulched immediately after construction.

Trap Details Needed on Erosion and Sediment Control Plans

Each trap shall be delineated on the plans in such a manner that it will not be confused with any other features. Each trap on a plan shall indicate all the information necessary to properly construct and maintain the structure. If the drawings are such that this information cannot be delineated on the drawings, then a table shall be developed. If a table is developed, then each trap on a plan shall have a number and the numbers shall be consecutive.

The following information shall be shown for each trap in a summary table format on the plans.

1. Trap number
2. Type of trap
3. Drainage area
4. Storage required
5. Storage provided (if applicable)
6. Outlet length or pipe sizes
7. Storage depth below outlet or cleanout elevation
8. Embankment height and elevation (if applicable)

Type of Sediment Traps

There are three (3) specific types of sediment traps which vary according to their function, location, or drainage area.

I. Pipe Outlet Sediment Trap
II. Stone Outlet Sediment Trap
III. Compost Filter Sock Sediment Trap

I. Pipe Outlet Sediment Trap

A Pipe Outlet Sediment Trap consists of a trap formed by embankment or excavation. The outlet for the trap is through a perforated riser and a pipe through the embankment. The outlet pipe and riser shall be made of steel, corrugated metal or other suitable material. The top of the embankment shall be at least 1 ½ feet above the crest of the riser. The preferred method of dewatering the sediment trap is by surface skimmer. See Dewatering Device Standard, page 5.10. If the riser alone is used for dewatering, the top 2/3 of the riser shall be perforated with one (1) inch nominal diameter holes or slits spaced six (6) inches vertically and horizontally placed in the concave portion of the corrugated pipe.

No holes or slits will be allowed within six (6) inches of the top of the horizontal barrel. All pipe connections shall be watertight. The riser shall be wrapped with ½ to ¼ inch hardware cloth wire then wrapped with filter cloth with a sieve size between #40-80 and secured with strapping or connecting band at the top and bottom of the cloth. The cloth shall cover an area at least six (6) inches above the highest hole and six (6) inches below the lowest hole. The top of the riser pipe shall not be covered with filter cloth. The riser shall have a base with sufficient weight to prevent flotation of the riser. Two approved bases are:

1. A concrete base 12 in. thick with the riser embedded 9 in. into the concrete base, or

2. One quarter inch, minimum, thick steel plate attached to the riser by a continuous weld around the circumference of the riser to form a watertight connection. The plate shall have 2.5 feet of stone, gravel, or earth placed on it to prevent flotation. In either case, each side of the square base measurement shall be the riser diameter plus 24 inches.

Pipe outlet sediment traps shall be limited to a five (5) acre maximum drainage area. Pipe outlet sediment trap is interchangeable in the field with stone outlet provided that these sediment traps are constructed in accordance with the detail and specifications for that trap.

Select pipe diameter from the following table:
See details for Pipe Outlet Sediment Trap ST-I in Figure 5.25 and 5.26 on pages 5.49 and 5.50.

Optional sediment trap dewatering devices are shown on Figure 5.29 on Page 5.53.

Minimum Sizes

Barrel Diameter[1] (in.)	Riser Diameter[1] (in.)	Maximum Drainage Area (ac.)
12	15	1
15	18	2
18	21	3
21	24	4
21	27	5
[1] Barrel diameter may be same size as riser diameter		

II. Stone Outlet Sediment Trap

A Stone Outlet Sediment Trap consists of a trap formed by an embankment or excavation. The outlet of this trap is over a stone section placed on level ground. The minimum length (feet) of the outlet shall be equal to four (4) times the drainage area (acres).

Required storage shall be 3,600 cubic feet per acre of drainage area.

The outlet crest (top of stone in weir section) shall be level, at least one (1) foot below top of embankment and no more than one (1) foot above ground beneath the outlet. Stone used in the outlet shall be small riprap (4 in. x 8 in.). To provide more efficient trapping effect, a layer of filter cloth should be embedded one (1) foot back into the upstream face of the outlet stone or a one (1) foot thick layer of two (2) inch or finer aggregate shall be placed on the upstream face of the outlet.

Stone Outlet Sediment Traps may be interchangeable in the field with pipe outlet sediment traps provided they are constructed in accordance with the detail and specifications for those traps. Stone outlet sediment traps shall be limited to a five (5) acre maximum drainage area.

See details for Stone Outlet Sediment Trap ST-II in Figure 5.27 on page 5.51

III. Compost Sock Sediment Trap

A compost sock sediment trap consists of a trap formed by creating an enclosure of geotextile mesh tubes filled with a compost filter media. These traps are used in locations where there is no opportunity to direct runoff into larger traps or well vegetated areas. This could occur at site entrances and access points or in tight areas due to construction boundary limits.

Surface runoff can be directed to the trap with standard conveyance practices. Groundwater or surface ponding in low areas can be pumped into the compost sock sediment trap with appropriate energy dissipation at the pump outlet to prevent scour.
Design criteria for Compost Sock Sediment Trap

1. The maximum drainage area tributary to the trap shall be 5 acres.

2. The minimum settled height above ground shall be 2.0 feet formed by staking 3 compost filter socks in a pyramid as shown in Figure 5.28 on page 5.52.

3. The storage volume provided in the compost sock sediment trap shall be 3,600 cubic feet per tributary drainage acre.

4. If necessary, additional storage area can be created by excavating a sump 1 foot deep beginning at least 5 feet away from the inside sock.

5. All compost filter sock materials, mesh, and compost, will meet the material specifications listed in the Compost Filter Sock standard. No spillway is required.

6. Compost filter sock sediment traps shall be inspected weekly and after every rainfall event. Sediment shall be removed when it reaches one third, 1/3, the height of the trap.

7. The maximum limit of use for a compost sock sediment trap is one (1) year. The existing trap shall be replaced if there is a need for a trap beyond that time limit.

8. Upon completion of the work, the compost sock sediment trap shall be removed. The compost within the socks may be used during cleanup as a vegetative growth medium in accordance with the site stabilization plan.

Figure 5.25
Pipe Outlet Sediment Trap: ST-I

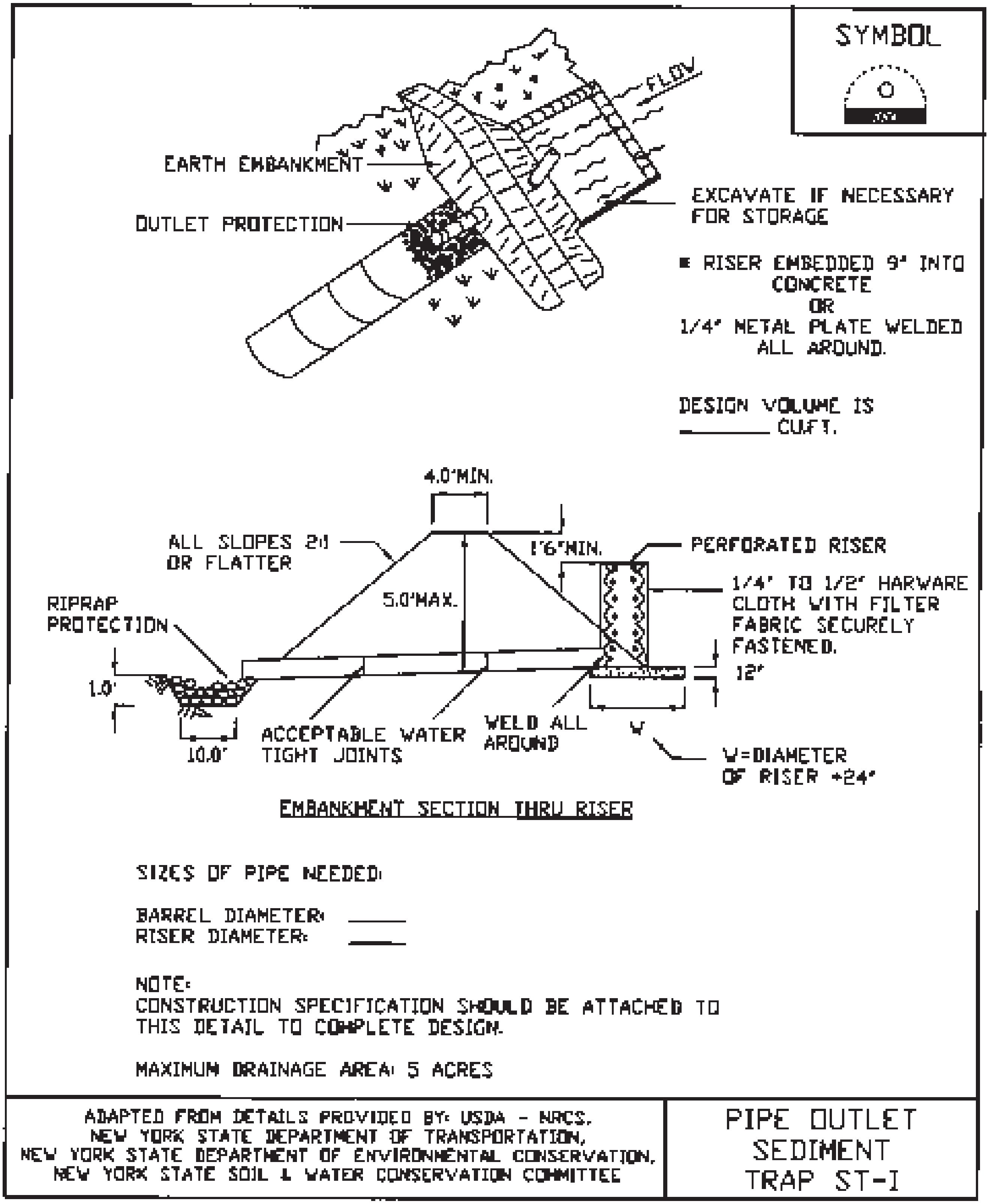
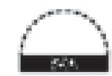


Figure 5.26
Pipe Outlet Sediment Trap: ST-I - Construction Specifications

SYMBOL

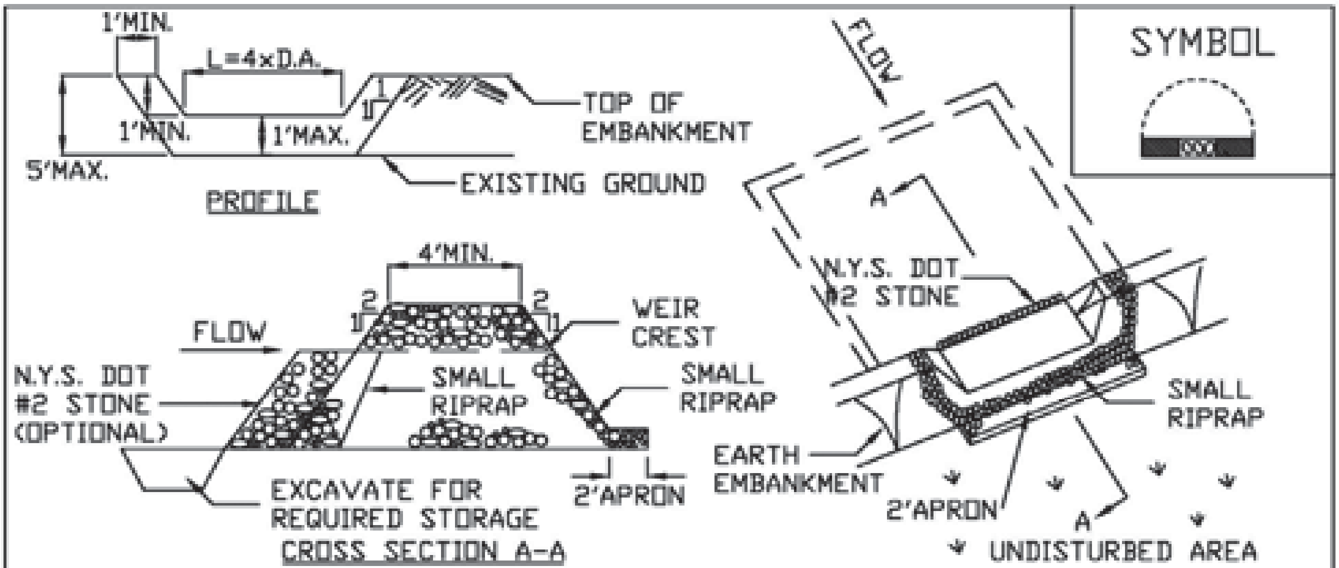


CONSTRUCTION SPECIFICATIONS

1. AREA UNDER EMBANKMENT SHALL BE CLEARED, GRUBBED AND STRIPPED OF ANY VEGETATION AND ROOT MAT. THE POOL AREA SHALL BE CLEARED.
2. THE FILL MATERIAL FOR THE EMBANKMENT SHALL BE FREE OF ROOTS OR OTHER WOODY VEGETATION AS WELL AS OVER-SIZED STONES, ROCKS, ORGANIC MATERIAL, OR OTHER OBJECTIONABLE MATERIAL. THE EMBANKMENT SHALL BE COMPACTED BY TRAVERSING WITH EQUIPMENT WHILE IT IS BEING CONSTRUCTED.
3. VOLUME OF SEDIMENT STORAGE SHALL BE 3600 CUBIC FEET PER ACRE OF CONTRIBUTORY DRAINAGE.
4. SEDIMENT SHALL BE REMOVED AND TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN DEPTH OF THE TRAP. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND STABILIZED.
5. THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRS MADE AS NEEDED.
6. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND SEDIMENT ARE CONTROLLED.
7. THE STRUCTURE SHALL BE REMOVED AND AREA STABILIZED WHEN THE DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.
8. ALL FILL SLOPES SHALL BE 2:1 OR FLATTER; CUT SLOPES 1:1 OR FLATTER.
9. ALL PIPE CONNECTIONS SHALL BE WATERTIGHT.
10. THE TOP 2/3 OF THE RISER SHALL BE PERFORATED WITH ONE (1) INCH DIAMETER HOLES OR SLITS SPACED SIX (6) INCHES VERTICALLY AND HORIZONTALLY AND PLACED IN THE CONCAVE PORTION OF PIPE. NO HOLES WILL BE ALLOWED WITHIN SIX (6) INCHES OF THE HORIZONTAL BARREL.
11. THE RISER SHALL BE WRAPPED WITH 1/4 TO 1/2 INCH HARDWARE CLOTH WIRE THEN WRAPPED WITH FILTER CLOTH (HAVING AN EQUIVALENT SIEVE SIZE OF 40-80). THE FILTER CLOTH SHALL EXTEND SIX (6) INCHES ABOVE THE HIGHEST HOLE AND SIX (6) INCHES BELOW THE LOWEST HOLE. WHERE ENDS OF THE FILTER CLOTH COME TOGETHER, THEY SHALL BE OVER-LAPPED, FOLDED AND STAPLED TO PREVENT BYPASS.
12. STRAPS OR CONNECTING BANDS SHALL BE USED TO HOLD THE FILTER CLOTH AND WIRE FABRIC IN PLACE. THEY SHALL BE PLACED AT THE TOP AND BOTTOM OF THE CLOTH.
13. FILL MATERIAL AROUND THE PIPE SPILLWAY SHALL BE HAND COMPACTED IN FOUR (4) INCH LAYERS. A MINIMUM OF TWO (2) FEET OF HAND COMPACTED BACKFILL SHALL BE PLACED OVER THE PIPE SPILLWAY BEFORE CROSSING IT WITH CONSTRUCTION EQUIPMENT.
14. THE RISER SHALL BE ANCHORED WITH EITHER A CONCRETE BASE OR STEEL PLATE BASE TO PREVENT FLOTATION. FOR CONCRETE BASE THE DEPTH SHALL BE TWELVE (12) INCHES WITH THE RISER EMBEDDED NINE (9) INCHES. A 1/4 INCH MINIMUM THICKNESS STEEL PLATE SHALL BE ATTACHED TO THE RISER BY A CONTINUOUS WELD AROUND THE BOTTOM TO FORM A WATERTIGHT CONNECTION AND THEN PLACE TWO (2) FEET OF STONE, GRAVEL, OR TAMPED EARTH ON THE PLATE.

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE	PIPE OUTLET SEDIMENT TRAP ST-I

Figure 5.27
Stone Outlet Sediment Trap: ST-II



OPTION: A ONE FOOT LAYER OF N.Y.S. DOT #2 STONE MAY BE PLACED ON THE UPSTREAM SIDE OF THE RIPRAP INPLACE OF THE EMBEDDED FILTER CLOTH.

CONSTRUCTION SPECIFICATIONS

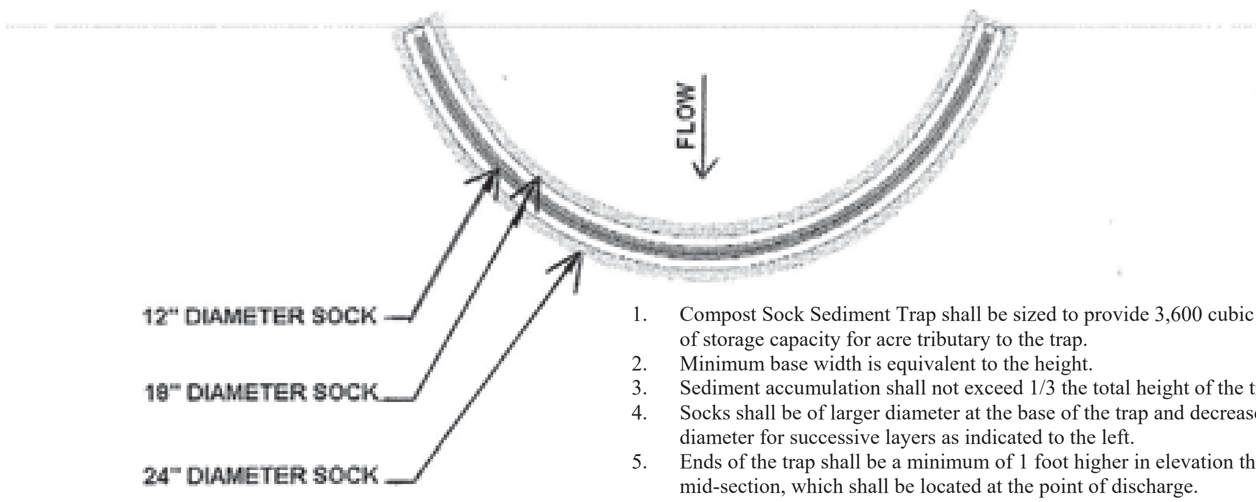
1. AREA UNDER EMBANKMENT SHALL BE CLEARED, GRUBBED AND STRIPPED OF ANY VEGETATION AND ROOT MAT. THE POOL AREA SHALL BE CLEARED.
2. THE FILL MATERIAL FOR THE EMBANKMENT SHALL BE FREE OF ROOTS AND OTHER WOODY VEGETATION AS WELL AS OVER-SIZED STONES, ROCKS, ORGANIC MATERIAL OR OTHER OBJECTIONABLE MATERIAL. THE EMBANKMENT SHALL BE COMPACTED BY TRAVERSING WITH EQUIPMENT WHILE IT IS BEING CONSTRUCTED.
3. ALL CUT AND FILL SLOPES SHALL BE 2:1 OR FLATTER.
4. THE STONE USED IN THE OUTLET SHALL BE SMALL RIPRAP 4"-8" ALONG WITH A 1' THICKNESS OF 2" AGGREGATE PLACED ON THE UP-GRADE SIDE ON THE SMALL RIPRAP OR EMBEDDED FILTER CLOTH IN THE RIPRAP.
5. SEDIMENT SHALL BE REMOVED AND TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN DEPTH OF THE TRAP. IT SHALL BE PLACED ON SITE AND STABILIZED.
6. THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRS MADE AS NEEDED.
7. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND SEDIMENT ARE CONTROLLED.
8. THE STRUCTURE SHALL BE REMOVED AND THE AREA STABILIZED WHEN THE DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

MAXIMUM DRAINAGE AREA 5 ACRES

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE	STONE OUTLET SEDIMENT TRAP ST-II

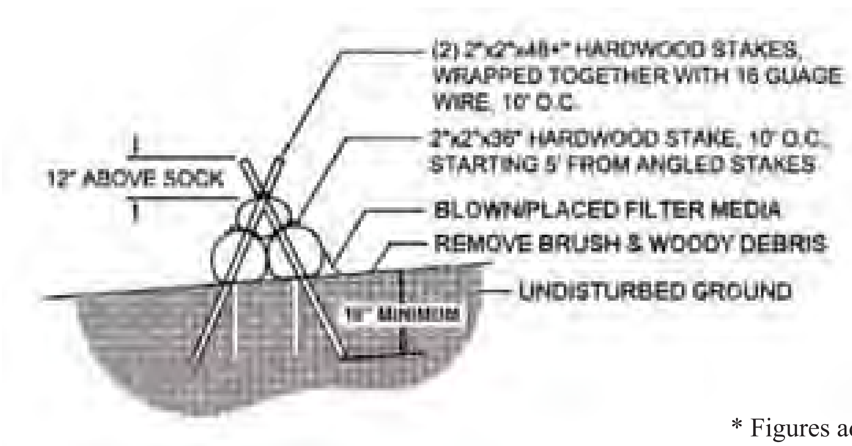
Figure 5.28
Compost Filter Sock Sediment Trap: ST-III

Plan View



1. Compost Sock Sediment Trap shall be sized to provide 3,600 cubic feet of storage capacity for acre tributary to the trap.
2. Minimum base width is equivalent to the height.
3. Sediment accumulation shall not exceed 1/3 the total height of the trap.
4. Socks shall be of larger diameter at the base of the trap and decrease in diameter for successive layers as indicated to the left.
5. Ends of the trap shall be a minimum of 1 foot higher in elevation that the mid-section, which shall be located at the point of discharge.

Staking Detail



* Figures adapted from Filtrexx

Specifications:

1. Sock infill and filter media material shall meet the standards of Table 5.1 on page 5.8 . Compost shall meet the compost filter sock standard of Table 5.2 on page 5.8.

2. Compost sock sediment traps shall not exceed three socks in height and shall be stacked in pyramidal form as shown above. Minimum trap height is one 24 inch diameter sock. Additional storage may be provided by means of an excavated sump 12 inches deep extending 1 to 3 feet upslope of the socks along the lower side of the trap.

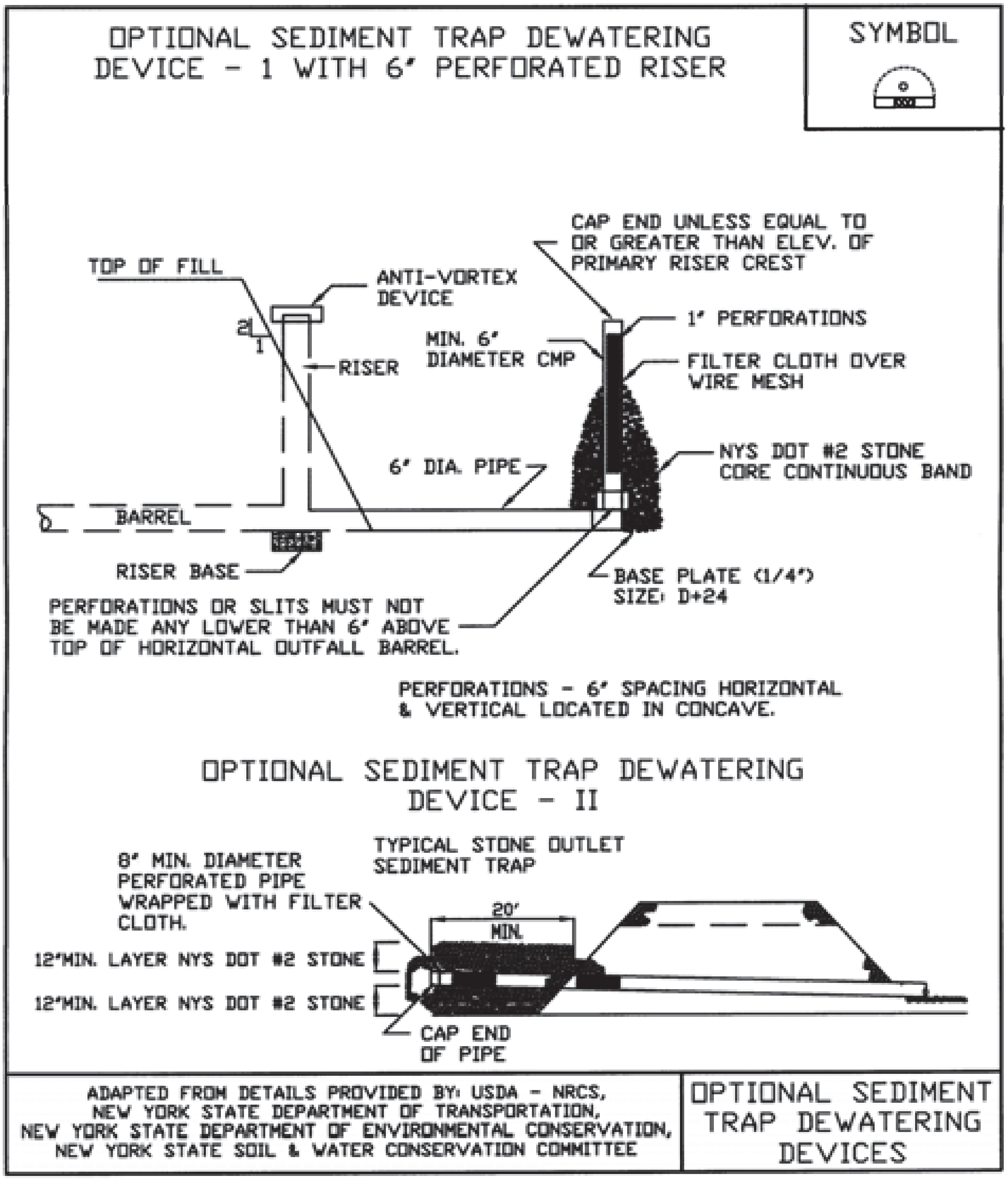
3. Compost sock sediment traps shall provide 3,600 cubic feet storage capacity with 12 inches of freeboard for each tributary drainage acreage. (See manufacturer for anticipated settlement.)

4. The maximum tributary drainage area is 5.0 acres. Since compost socks are "flow-through," no spillway is required.

5. Compost sock sediment traps shall be inspected weekly and after each runoff event. Sediment shall be removed when it reaches 1/3 the height of the socks.

6. Photodegradable and biodegradable socks shall not be used for more than 1 year.

Figure 5.29
Optional Sediment Trap Dewatering Devices for Traps with <5 Acres Drainage Area



STANDARD AND SPECIFICATIONS FOR SILT FENCE

Definition & Scope

A **temporary** barrier of geotextile fabric installed on the contours across a slope used to intercept sediment laden runoff from small drainage areas of disturbed soil by temporarily ponding the sediment laden runoff allowing settling to occur. The maximum period of use is limited by the ultraviolet stability of the fabric (approximately one year).

Conditions Where Practice Applies

A silt fence may be used subject to the following conditions:

1. Maximum allowable slope length and fence length will not exceed the limits shown in the Design Criteria for the specific type of silt fence used ; and
2. Maximum ponding depth of 1.5 feet behind the fence; and
3. Erosion would occur in the form of sheet erosion; and
4. There is no concentration of water flowing to the barrier; and
5. Soil conditions allow for proper keying of fabric, or other anchorage, to prevent blowouts.

Design Criteria

1. Design computations are not required for installations of 1 month or less. Longer installation periods should be designed for expected runoff.
2. All silt fences shall be placed as close to the disturbed area as possible, but at least 10 feet from the toe of a slope steeper than 3H:1V, to allow for maintenance and roll down. The area beyond the fence must be undisturbed or stabilized.
3. The type of silt fence specified for each location on the plan shall not exceed the maximum slope length and maximum fence length requirements shown in the following table:

		Slope Length/Fence Length (ft.)		
Slope	Steepness	Standard	Reinforced	Super
<2%	< 50:1	300/1500	N/A	N/A
2-10%	50:1 to 10:1	125/1000	250/2000	300/2500
10-20%	10:1 to 5:1	100/750	150/1000	200/1000
20-33%	5:1 to 3:1	60/500	80/750	100/1000
33-50%	3:1 to 2:1	40/250	70/350	100/500
>50%	> 2:1	20/125	30/175	50/250

Standard Silt Fence (SF) is fabric rolls stapled to wooden stakes driven 16 inches in the ground.
Reinforced Silt Fence (RSF) is fabric placed against welded wire fabric with anchored steel posts driven 16 inches in the ground.
Super Silt Fence (SSF) is fabric placed against chain link fence as support backing with posts driven 3 feet in the ground.

4. Silt fence shall be removed as soon as the disturbed area has achieved final stabilization.

The silt fence shall be installed in accordance with the appropriate details. Where ends of filter cloth come together, they shall be overlapped, folded and stapled to prevent sediment bypass. Butt joints are not acceptable. A detail of the silt fence shall be shown on the plan. See Figure 5.30 on page 5.56 for Reinforced Silt Fence as an example of details to be provided.

Criteria for Silt Fence Materials

1. Silt Fence Fabric: The fabric shall meet the following specifications unless otherwise approved by the appropriate erosion and sediment control plan approval authority. Such approval shall not constitute statewide acceptance.

Fabric Properties	Minimum Acceptable Value	Test Method
Grab Tensile Strength (lbs)	110	ASTM D 4632
Elongation at Failure (%)	20	ASTM D 4632
Mullen Burst Strength (PSI)	300	ASTM D 3786
Puncture Strength (lbs)	60	ASTM D 4833
Minimum Trapezoidal Tear Strength (lbs)	50	ASTM D 4533
Flow Through Rate (gal/min/sf)	25	ASTM D 4491
Equivalent Opening Size	40-80	US Std Sieve ASTM D 4751
Minimum UV Residual (%)	70	ASTM D 4355

2. Fence Posts (for fabricated units): The length shall be a minimum of 36 inches long. Wood posts will be of sound quality hardwood with a minimum cross sectional area of 3.5 square inches. Steel posts will be standard T and U section weighing not less than 1.00 pound per linear foot. Posts for super silt fence shall be standard chain link fence posts.

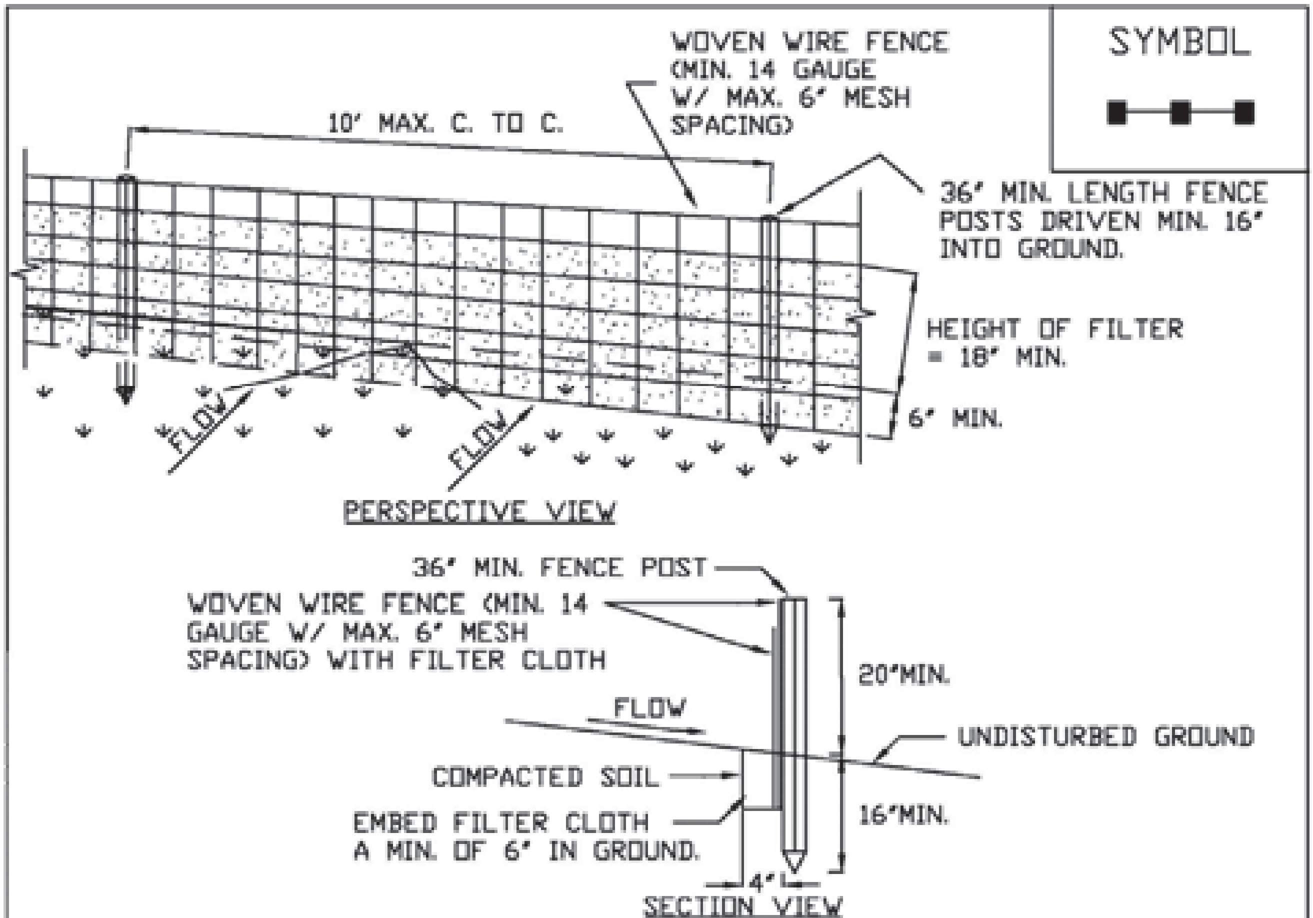
3. Wire Fence for reinforced silt fence: Wire fencing shall be a minimum 14 gage with a maximum 6 in. mesh opening, or as approved.

4. Prefabricated silt fence is acceptable as long as all material specifications are met.

Reinforced Silt Fence

Super Silt Fence

Figure 5.30
Reinforced Silt Fence



CONSTRUCTION SPECIFICATIONS

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.
2. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION. FENCE SHALL BE WOVEN WIRE, 6" MAXIMUM MESH OPENING.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.
4. PREFABRICATED UNITS SHALL MEET THE MINIMUM REQUIREMENTS SHOWN.
5. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE	REINFORCED SILT FENCE

STANDARD AND SPECIFICATIONS FOR STRAW BALE DIKE

Definition & Scope

A **temporary** barrier of straw, or similar material, used to intercept sediment laden runoff from small drainage areas of disturbed soil to reduce runoff velocity and effect deposition of the transported sediment load. Straw bale dikes have an estimated design life of three (3) months.

Condition Where Practice Applies

The straw bale dike is used where:

1. No other practice is feasible.

2. There is no concentration of water in a channel or other drainageway above the barrier.

3. Erosion would occur in the form of sheet erosion.

4. Length of slope above the straw bale dike does not exceed the following limits with the bale placed 10 feet from the toe of the slope:

Constructed Slope	Percent Slope	Slope Length (ft.)
2:1	50	25
3:1	33	50
4:1	25	75

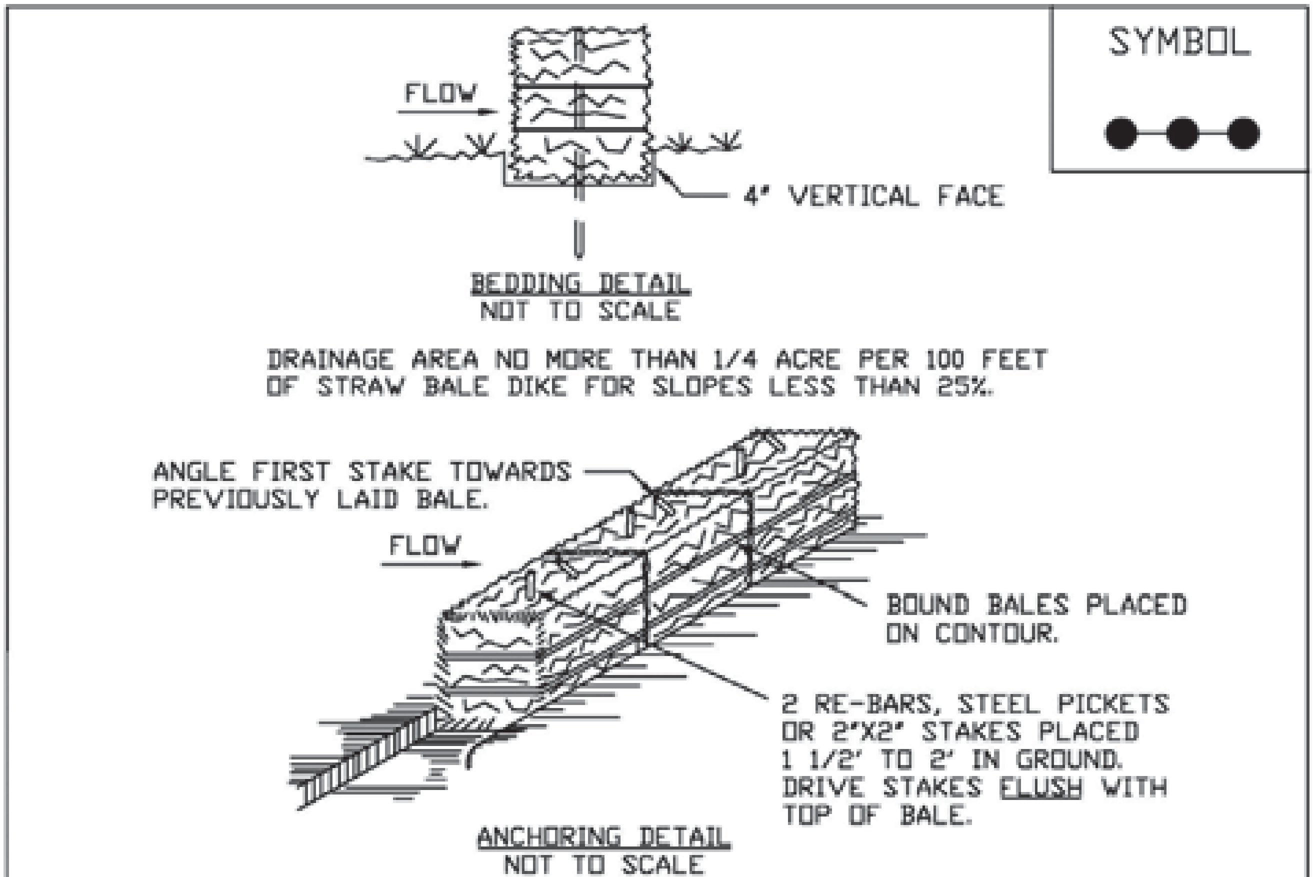
Where slope gradient changes through the drainage area, steepness refers to the steepest slope section contributing to the straw bale dike.

The practice may also be used for a single family lot if the slope is less than 15 percent. The contributing drainage areas in this instance shall be less than one quarter of an acre per 100 feet of dike and the length of slope above the dike shall be less than 100 feet.

Design Criteria

The above table is adequate, in general, for a one-inch rainfall event. Larger storms could cause failure of this practice. Use of this practice in sensitive areas for longer than one month should be specifically designed to store expected runoff. All bales shall be placed on the contour with cut edge of bale adhering to the ground. See Figure 5.34 on page 5.64 for details.

Figure 5.34
Straw Bale Dike



CONSTRUCTION SPECIFICATIONS

1. BALES SHALL BE PLACED AT THE TOE OF A SLOPE OR ON THE CONTOUR AND IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF (4) INCHES, AND PLACED SO THE BINDINGS ARE HORIZONTAL.
3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY EITHER TWO STAKES OR RE-BARS DRIVEN THROUGH THE BALE. THE FIRST STAKE IN EACH BALE SHALL BE DRIVEN TOWARD THE PREVIOUSLY LAID BALE AT AN ANGLE TO FORCE THE BALES TOGETHER. STAKES SHALL BE DRIVEN FLUSH WITH THE BALE.
4. INSPECTION SHALL BE FREQUENT AND REPAIR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
5. BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULLNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE	STRAW BALE DIKE

STANDARD AND SPECIFICATIONS FOR TEMPORARY CONSTRUCTION AREA SEEDING

Definition & Scope

Providing temporary erosion control protection to disturbed areas and/or localized critical areas for an interim period by covering all bare ground that exists as a result of construction activities or a natural event. Critical areas may include but are not limited to steep excavated cut or fill slopes and any disturbed, denuded natural slopes subject to erosion.

Conditions Where Practice Applies

Temporary seedings may be necessary on construction sites to protect an area, or section, where final grading is complete, when preparing for winter work shutdown, or to provide cover when permanent seedings are likely to fail due to mid-summer heat and drought. The intent is to provide temporary protective cover during temporary shutdown of construction and/or while waiting for optimal planting time.

Criteria

Water management practices must be installed as appropriate for site conditions. The area must be rough graded and slopes physically stable. Large debris and rocks are usually removed. Seedbed must be seeded within 24 hours of disturbance or scarification of the soil surface will be necessary prior to seeding.

Fertilizer or lime are not typically used for temporary seedings.

IF: Spring or summer or early fall, then seed the area with ryegrass (annual or perennial) at 30 lbs. per acre (Approximately 0.7 lb./1000 sq. ft. or use 1 lb./1000 sq. ft.).

IF: Late fall or early winter, then seed Certified ‘Aroostook’ winter rye (cereal rye) at 100 lbs. per acre (2.5 lbs./1000 sq. ft.).

Any seeding method may be used that will provide uniform application of seed to the area and result in relatively good soil to seed contact.

Mulch the area with hay or straw at 2 tons/acre (approx. 90 lbs./1000 sq. ft. or 2 bales). Quality of hay or straw mulch allowable will be determined based on long term use and visual concerns. Mulch anchoring will be required where wind or areas of concentrated water are of concern. Wood fiber hydromulch or other sprayable products approved for erosion control (nylon web or mesh) may be used if applied according to manufacturers’ specification. Caution is advised when using nylon or other synthetic products. They may be difficult to remove prior to final seeding and can be a hazard to young wildlife species.

STANDARD AND SPECIFICATIONS FOR TOPSOILING

Definition & Scope

Spreading a specified quality and quantity of topsoil materials on graded or constructed subsoil areas to provide acceptable plant cover growing conditions, thereby reducing erosion; to reduce irrigation water needs; and to reduce the need for nitrogen fertilizer application.

Conditions Where Practice Applies

Topsoil is applied to subsoils that are droughty (low available moisture for plants), stony, slowly permeable, salty or extremely acid. It is also used to backfill around shrub and tree transplants. This standard does not apply to wetland soils.

Design Criteria

1. Preserve existing topsoil in place where possible, thereby reducing the need for added topsoil.
2. Conserve by stockpiling topsoil and friable fine textured subsoils that must be stripped from the excavated site and applied after final grading where vegetation will be established. Topsoil stockpiles must be stabilized. Stockpile surfaces can be stabilized by vegetation, geotextile or plastic covers. This can be aided by orientating the stockpile lengthwise into prevailing winds.
3. Refer to USDA Natural Resource Conservation Service soil surveys or soil interpretation record sheets for further soil texture information for selecting appropriate design topsoil depths.

Site Preparation

1. As needed, install erosion and sediment control practices such as diversions, channels, sediment traps, and stabilizing measures, or maintain if already installed.
2. Complete rough grading and final grade, allowing for depth of topsoil to be added.
3. Scarify all compact, slowly permeable, medium and fine textured subsoil areas. Scarify at approximately right angles to the slope direction in soil areas that are steeper than 5 percent. Areas that have been overly compacted shall be decompacted in accordance with the Soil Restoration Standard.
4. Remove refuse, woody plant parts, stones over 3 inches in diameter, and other litter.

Topsoil Materials

1. Topsoil shall have at least 6 percent by weight of fine textured stable organic material, and no greater than 20 percent. Muck soil shall not be considered topsoil.
2. Topsoil shall have not less than 20 percent fine textured material (passing the NO. 200 sieve) and not more than 15 percent clay.
3. Topsoil treated with soil sterilants or herbicides shall be so identified to the purchaser.
4. Topsoil shall be relatively free of stones over 1 1/2 inches in diameter, trash, noxious weeds such as nut sedge and quackgrass, and will have less than 10 percent gravel.
5. Topsoil containing soluble salts greater than 500 parts per million shall not be used.
6. Topsoil may be manufactured as a mixture of a mineral component and organic material such as compost.

Application and Grading

1. Topsoil shall be distributed to a uniform depth over the area. It shall not be placed when it is partly frozen, muddy, or on frozen slopes or over ice, snow, or standing water puddles.
2. Topsoil placed and graded on slopes steeper than 5 percent shall be promptly fertilized, seeded, mulched, and stabilized by “tracking” with suitable equipment.
3. Apply topsoil in the amounts shown in Table 4.7 below:

Table 4.7 - Topsoil Application Depth		
Site Conditions	**Intended Use**	**Minimum Topsoil Depth**
1. Deep sand or loamy sand	Mowed lawn	6 in.
	Tall legumes, unmowed	2 in.
	Tall grass, unmowed	1 in.
2. Deep sandy loam	Mowed lawn	5 in.
	Tall legumes, unmowed	2 in.
	Tall grass, unmowed	none
3. Six inches or more: silt loam, clay loam, loam, or silt	Mowed lawn	4 in.
	Tall legumes, unmowed	1 in.
	Tall grass, unmowed	1 in.

STANDARD AND SPECIFICATIONS FOR TURBIDITY CURTAIN

Definition & Scope

A **temporary** flexible, impenetrable barrier used to trap sediment in water bodies. This curtain is weighted at the bottom to achieve closure while supported at the top through a flotation system and used to prevent the migration of silt from a work site in a water environment into the larger body of water. Top bar float has to support weight of curtain material. Bottom anchor has to be flexible so that it will lie along the contour of the water body bottom.

Condition Where Practice Applies

A turbidity curtain is generally used when construction activity occurs within a waterbody or along its shoreline and is of short duration, generally less than one month. Curtains are used in calm water surfaces and not in areas of flowing water. **Turbidity curtains are not to be used across flowing watercourses.**

Design Criteria

The turbidity curtain shall be located beyond the lateral limits of the construction site and firmly anchored in place. The alignment should be set as close to the work area as possible but not so close as to be disturbed by applicable construction equipment. The height of the curtain shall be 20 percent greater than the depth of the water to allow for water level fluctuations. The area that the turbidity curtain protects shall not contain large culverts or drainage areas that if flows occur behind the curtain would cause a breach or lost contact at the bottom surface.

If water depths at the design alignment are minimal, the toe can be anchored in place by staking.

See Figure 5.35 on page 5.66.

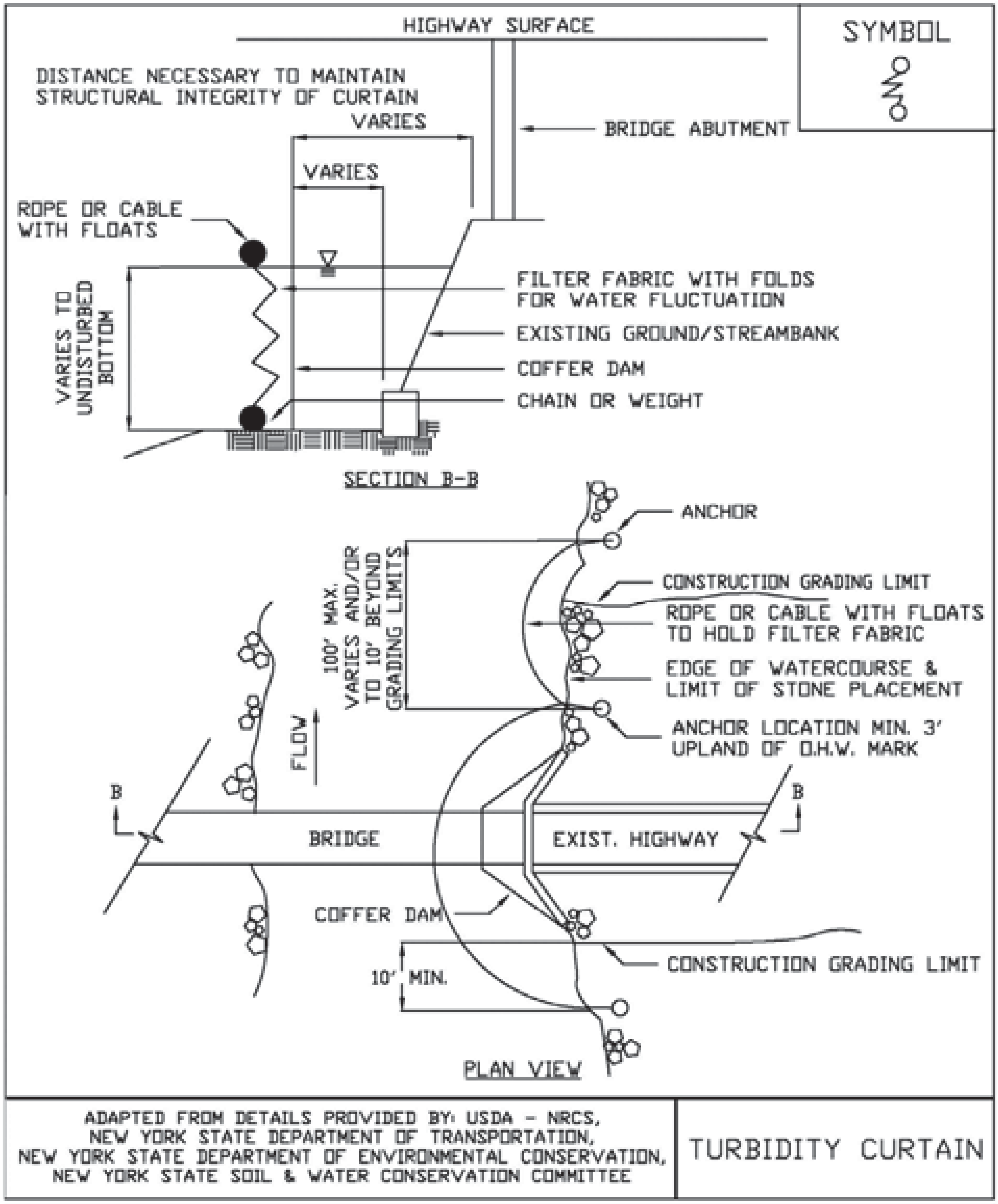
Construction Specifications

The area of proposed installation of the curtain shall be inspected for obstacles and impediments that could damage the curtain or impair its effectiveness to retain sediment. All materials shall be removed so they cannot enter the waterbody. Shallow installations can be made by securing the curtain by staking rather than using a flotation system. Supplemental anchors of the turbidity curtain toe shall be used, as needed, depending on water surface disturbances such as boats and wave action by winds.

Maintenance

The turbidity curtain shall be inspected daily and repaired or replaced immediately. It is not normally necessary to remove sediment deposited behind the curtain; but, when necessary, removal is usually done by hand prior to removal of the barrier. All removed silt is stabilized away from the waterbody. The barrier shall be removed by carefully pulling it toward the construction site to minimize the release of attached sediment. Any floating construction or natural debris shall be immediately removed to prevent damage to the curtain. If the curtain is oriented in a manner that faces the prevailing winds, frequent checks of the anchorage shall be made.

Figure 5.35
Turbidity Curtain



Appendix E

Construction Stormwater Inspection Manual

APPENDIX C

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Construction Stormwater Inspection Manual

Primarily for Government Inspectors Evaluating Compliance with Construction Stormwater Control Requirements

New York State
Department of Environmental Conservation

TABLE OF CONTENTS

Version 1.05 (8/27/07)

ATTACHMENTS

1.0 INTRODUCTION AND PURPOSE

The New York State Department of Environmental Conservation Division of Water (DOW) considers there to be two types of inspections germane to construction stormwater; compliance inspections and self-inspections.

This manual is for use by DOW and other regulatory oversight construction stormwater inspectors in performing compliance inspections, as well as for site operators in performing self inspections. The manual should be used in conjunction with the *New York State Standards and Specifications for Erosion and Sediment Control*, August 2005.

1.1 Compliance Inspections

Regulatory compliance inspections are performed by regulatory oversight authorities such as DOW staff, or representatives of DOW and local municipal construction stormwater inspectors. These inspections are intended to determine compliance with the state or local requirements for control of construction stormwater through erosion and sediment control and post construction practices. Compliance inspections focus on determinations of compliance with legal and water quality standards. Typically, compliance inspections can be further sub-categorized to include comprehensive inspections, and follow-up or reconnaissance inspections.

Compliance inspectors will focus on determining whether:

- the project is causing water quality standard violations;
- the required Stormwater Pollution Prevention Plan (SWPPP) includes appropriate erosion and sediment controls and, to some extent, post construction controls;
- the owner/operator is complying with the SWPPP;
- where required, self-inspections are being properly performed; and
- where self-inspections are required, the owner/operator responds appropriately to the self-inspector's reports.

1.1.1 Comprehensive Inspection

Comprehensive inspections are designed to verify permittee compliance with all applicable regulatory requirements, effluent controls, and compliance schedules. This inspection involves records reviews, visual observations, and evaluations of management practices, effluents, and receiving waters.

Comprehensive inspections should be conducted according to a neutral or random inspection scheme, or in accordance with established priorities. A neutral monitoring scheme provides some objective basis for scheduling inspections and sampling visits by establishing a system (whether complex factor-based, alphabetic, or geographic) for setting prioritiesto ensure that a particular facility is not unfairly selected for inspection or sampling. The selection of which facility to inspect must be made without bias to ensure that the regulatory oversight authority, if challenged for being arbitrary and capricious manner, can reasonably defend itself.

A neutral inspection scheme should set the criteria the inspector uses to choose which facilities to inspect, but the schedule for the actual inspection should remain confidential, and may be kept separate from the neutral plan.

A routine comprehensive compliance inspection is most effective when it is unannounced or conducted with very little advance warning.

1.1.2 Reconnaissance Inspection

A reconnaissance inspection is performed in lieu of, or following a comprehensive inspection to obtain a preliminary overview of an owner/operator's compliance program, to respond to a citizen complaint, or to assess a non-permitted site. The inspector performs a brief (generally about an hour) visual inspection of the site, discharges and receiving waters. A reconnaissance inspection uses the inspector's experience and judgement to summarize potential compliance problems, without conducting a full comprehensive inspection. The objective of a reconnaissance inspection is to expand inspection coverage without increasing inspection resource expenditures. The reconnaissance inspection is the shortest and least resource intensive of all inspections.

Reconnaissance inspections may be initiated in response to known or suspected violations, a public complaint, a violation of regulatory requirements, or as follow-up to verify that necessary actions were taken in response to a previous inspection.

1.2 Self-inspections

For some projects, the site owner/operator is required by their State Pollutant Discharge Elimination System (SPDES) Permit and/or local requirements to have a qualified professional[1] perform a "self-inspection" at the site. In self-inspections, the qualified professional determines whether the site is being managed in accordance with the SWPPP, and whether the SWPPP's recommended erosion and sediment controls are effective. If activities are not in accordance with the SWPPP, or if the SWPPP erosion and sediment controls are not effective, the qualified professional inspecting the site recommends corrections to the owner/operator.

[1] A "Qualified professional" is a person knowledgeable in the principles and practice of erosion and sediment controls, such as a licensed professional engineer, Certified Professional in Erosion and Sediment Control (CPESC), licensed landscape architect or soil scientist.

2.0 PRE-INSPECTION ACTIVITIES

2.1 Regulatory Oversight Authorities

This section is intended for inspectors with regulatory oversight authority such as agents of the DOW or a local municipality, or others acting on their behalf, such as county Soil and Water Conservation District staff. Examples of other regulatory oversight authorities include: the United States Environmental Protection Agency (EPA); New York City Department of Environmental Protection (DEP), Adirondack Park Agency (APA); the Lake George Park Commission (LGPC), and the Skaneateles Lake Watershed Authority (SLWA). Before arriving on-site to conduct the inspection, considerations concerning communication, documentation and equipment must be made.

Regulatory oversight authority is granted by state or local law to government agencies or, depending upon the particular law, an authorized representative of state or local government. SPDES rules 6 NYCRR 750-2.3 and Environmental Conservation Law 17-0303(6) and 17-0829(a) all allow for authorized representatives of the (NYSDEC) commissioner to perform all the duties of an inspector.

2.1.1 Communication

Coordination with Other Entities
Where appropriate, prior to selecting sites for inspection, compliance inspectors should communicate with other regulatory oversight authorities to avoid unnecessary duplication or to coordinate follow-up to inspections performed by other regulatory oversight authorities.

Announced vs. Unannounced Inspection
Inspections may be announced or unannounced. Each method has its own advantages and disadvantages. Unannounced inspections are preferred, however many job sites are not continuously manned, or not always staffed by someone who is familiar with the SWPPP, thus necessitating an announced inspection. As an alternative, when an announced inspection is necessary, inspectors should try to give as little advanced warning as possible (24 hours is suggested).

Itinerary
For obvious safety reasons, inspectors should be sure to inform someone in their office which site or sites they will be visiting prior to leaving the to perform inspections.

2.1.2 Documentation

Data Review
The inspector should review any available information such as:

- Notice of Intent
- Stormwater Pollution Prevention Plan
- Past inspection records
- Phasing plan

- Construction sequence
- Inspection and Maintenance schedules
- Site specific issues
- Consent Orders
- Access agreements

Inspection Form
The inspector should have copies of, and be familiar with, the inspection form used by their regulatory oversight authority (example in Attachment 1) before leaving the office. Static information such as name, location and permit number can be entered onto the inspection form prior to arriving at the inspection site.

Credentials
Inspectors should always carry proper identification to prove that they are employed by an entity with jurisdictional authority. Failure to display proper credentials may be legal grounds for denial of entry to a site.

2.1.3 Equipment

Personal Protective Equipment
DOW employees must conform to the DOW Health and Safety policy as it relates to personal protective equipment. Other regulatory oversight authorities should have their own safety policies or, if not, may wish to consult the OSHA health and safety tool at: www.osha.gov/dep/etools/ehasp/ to develop a health and safety plan.

The following is a list of some of the most common health and safety gear that may be needed:

- Hard hat (Class G, Type1 or better)
- Safety toe shoes
- Reflective vest
- Hearing protection (to achieve 85 dBA - 8 hr TWA)
- Safety glasses with side shields

If the construction is on an industrial site or a hazardous waste site, special training may be required prior to entering the site. The inspector should consult with OSHA or NYSDEC prior to entering such a site.

Monitoring Equipment
The following is a list of some equipment that may be helpful to document facts and verify compliance:

- Digital Camera
- Measuring tape or wheel
- Hand level or clinometer
- Turbidity meter (in limited circumstances)

2.2 Permittee's Self-inspection

This section is intended for qualified professionals who conduct site self-inspections on behalf of owner/operators. Self-inspectors are responsible for performing inspections in accordance with permit requirements and reporting to site owners and operators the results and any recommendations resulting from the inspection.

Prior to conducting inspections, qualified professionals should ensure familiarity with the Stormwater Pollution Prevention Plan and previous inspection reports.

3.0 ON-SITE INSPECTION PROCESS

3.1 Compliance Inspections

3.1.1 Professionalism

Don't Pretend to Possess Knowledge

Unless the inspector has experience with a particular management practice, do not pretend to possess knowledge. Inspectors cannot be expert in all areas; their job is to collect information, not to demonstrate superior wisdom. Site operators are often willing to talk to someone who is inquisitive and interested. Within reason, asking questions to obtain new information about a management practice, construction technique or piece of equipment is one of the inspector's main roles in an inspection.

Don't Recommend Solutions

The inspector should not recommend solutions or endorse products. The solution to a compliance problem may appear obvious based on the inspector's experience. However, the responsibility should be placed on the site owner to implement a workable solution to a compliance problem that meets NYSDEC standards. The inspector should refer the site operator to the New York Standards and Specifications for Erosion and Sediment Control (the Blue Book) or the New York State Stormwater Management Design Manual (the Design Manual).

Key advice must be offered carefully. One experienced stormwater inspector suggests saying: "I can't direct you or make recommendations, but what we've seen work in other situations is ..."

The way inspectors present themselves is important to the effectiveness of the inspection. An inspector cannot be overly familiar, but will be more effective if able to establish a minimum level of communication.

3.1.2 Safety

DOW employees must conform to Division health and safety policies when on a construction site. Other regulatory oversight authorities should have their own safety policies or, if not, may wish to consult the OSHA health and safety tool at:

www.osha.gov/dep/etools/ehasp to develop a health and safety plan.

Some general protections for construction sites are:

- Beware of heavy equipment, avoid operator blind spots and make sure of operator eye contact around heavy equipment.
- Avoid walking on rock rip-rap if possible. Loose rock presents a slip hazard.
- Stay out of confined spaces like tanks, trenches and foundation holes.
- Avoid lightning danger. Monitor weather conditions, get out of water, avoid open areas and high points, do not huddle in groups or near trees.
- Protect yourself from sun and heat exposure. Use sun screen or shading clothing. Remain hydrated by drinking water, watching for signs of heat cramps, exhaustion (fatigue, nausea, dizziness, headache, cool or moist skin), or stroke (high body temperature; red, hot and dry skin)
- Protect yourself from cold weather. Wear multiple layers of thin clothing. Wear a warm hat. Drink warm fluids or eat hot foods, and keep dry.
- Avoid scaffolding in excess of 4 feet above grade.
- Beware of ticks, stinging insects, snakes and poison ivy or sumac.

3.1.3 Legal access

DOW has general powers, set forth under ECL 17-0303, subparagraph 6, to enter premises for inspections. In addition, ECL 3-0301.2 conveys general statutory authority granting the DOW the power to access private property to fulfill DOW obligations under the law.

ECL 15-0305 gives the DOW the authority to enter at all times in or upon any property, public or private, for the purpose of inspecting or investigating conditions affecting the construction of improvements to or developments of water resources for the public health, safety or welfare.

ECL 17-0829 allows an authorized DOW representative, upon presentation of their credentials, to enter upon any premises where any effluent source is located, or in which records are required to be maintained. The representative may at reasonable times have access to, and sample discharges/pollutants to the waters or to publicly owned treatment plants where the effluent source is located. This subparagraph provides DOW representatives performing their duties authority to enter a site to pursue administrative violations. Pursuing criminal violations may require a warrant or the owner's permission to enter the site.

For sites that are permitted, DOW has authority under the permit to enter the site.

If the owner/operator's representatives onsite deny access, the inspector *should not* physically force entry. Under these circumstances the attorney representing the inspector should be immediately notified and consideration should be given to soliciting the aid of a law officer to obtain entry.

DOW staff have the right to enter at any reasonable time. If no one is available, and the site is fenced or posted, DOW staff should make all reasonable efforts to identify, contact and notify the owner that the DOW is entering the site. If the inspector has made all reasonable efforts to contact site owners, but was unable to do so, the site can then be accessed. All efforts should be taken not to cause any damage to the facility.

Other regulatory oversight authorities should seek advice on their legal authorities to enter a job site. Municipalities that have adopted Article 6 of the New York State Sample Local Law for Stormwater Management and Erosion and Sediment Control (NYSDEC, 2004, updated 2006) will have legal authority to enter sites in accordance with that chapter and any other existing municipal authority .

Agents of DOW have authority similar DOW staff authority to enter sites. However, DOW staff enjoy significant personal liability protections as state employees. That liability protection may not be the same for authorized representatives of DOW. For authorized representatives of DOW (or other regulatory oversight authorities), it is prudent to obtain permission to enter the site. If such permission is denied, the authorized representatives should inform the appropriate DOW contact, usually the regional water manager.

3.1.4 Find the Legally Responsible Party (Construction Manager, Self-inspector)

The first action a compliance inspector should take upon entering a construction site is to find the construction trailer or the construction or project manager if they are available. The inspector should present appropriate identification to the site's responsible party and state the reason for the inspection; construction stormwater complaint response or neutral construction stormwater inspection. If the inspection is initiated as a response to a complaint, frequently the responsible party will ask who made the complaint. DOW keeps private individual complainants confidential. If the complainant is another regulatory oversight authority, DOW tends to make that known to the site's responsible party.

3.1.5 On-site records review (NOI, SWPPP, Self-inspection Reports, Permit)

Generally, the compliance inspector should next review the on-site records. Verify that a copy of the construction stormwater permit and NOI are on-site. Verify that the acreage, site conditions, and receiving water listed on the NOI are accurate. Compare the on-site documentation with documentation already submitted to, or obtained by the compliance inspector.

If the SWPPP has not been reviewed in the office, verify that it exists and contains the minimum required components (16 for a basic plan and 22 for a full plan). On-site review of the SWPPP should determine if: there is an appropriate phasing plan; the acreage disturbed in each phase, construction sequence for each phase; proposed implementation of erosion and sediment control measures; and, where required, post construction controls. For each of the erosion and sediment control practices, the SWPPP must show design details in accordance with the NYS Standards for Erosion and Sediment Controls. The SWPPP must also include provisions for maintenance of practices during construction. On-site review of post construction controls is generally limited to verification that the proposed stormwater management practices are shown on the site plan.

Where self-inspections are required, self-inspection reports are a significant tool for the compliance inspector to determine the performance history of the site. The self-inspection reports should be done with the required frequency . Self-inspection reports must include all the details required by the permit. Generally, it is desirable for permit information to be shown on a site plan. The compliance inspector should become familiar with the report and use that familiarity to judge whether the self-inspections are being performed correctly and that the site operator is correcting deficiencies noted in the report.

3.1.6 Walk the Site

During wet weather conditions, it may be advantageous to observe the receiving waters prior to walking the rest of the site. At some point during the inspection, the receiving water conditions must be observed and noted. It is critical to note if there is a substantial visible contrast to natural conditions, or evidence of deposition, streambank erosion, construction debris or waste materials (e.g. concrete washdown) in the receiving stream.

Each inspector should evaluate actual implementation and maintenance of practices on-site compared to how implementation and maintenance is detailed in the SWPPP. At a minimum, the compliance inspector should observe all areas of active construction. Observing equipment or materials storage, recently stabilized areas, or stockpile areas is also appropriate to evaluate the effectiveness of management practices.

3.1.7 Taking Photographs

Evidence of poor receiving water conditions and poor or ineffective practices should be documented with digital photographs. Those photographs should be logged date stamped and stored on media that cannot be edited (e.g. write only CDs). Photos should also be appended to the site inspector’s report.

It is also beneficial to take photographs of good practices for educational and technology transfer reasons.

3.1.8 Exit Interview

Clearly communicate expectations and consequences. If it is clear from the inspection that the owner/operator must modify the SWPPP, or modify management practices within an assigned period (e.g. 24 hours, 48 hours, one week, two weeks), then that finding should be communicated at the time of the exit interview. The inspector should assign the period based on factors such as how long it would reasonably take to complete such modifications and the level of risk to water quality associated with failure to make such modifications.

The inspector should make clear that NYSDEC reserves rights to future enforcement actions. If the inspector’s supervisor or enforcement coordinator determines additional enforcement actions are necessary, the inspector *should not* reassure the owner/operator that the current situation is acceptable.

3.2 Non-permitted Site Inspections

For sites not authorized in accordance with state or local laws, the process will be abbreviated. First verify the need for authorization and observe receiving waters to detect water quality standard violations. If there is a violation, notify the owner of the violation or other compliance actions in response to their illicit activity. For DOW staff, Attachment 2 or a similar notice can be used to notify the site owner/operator that stormwater authorization is required.

3.3 Self-inspections

The role of the self-inspector is to verify that the site is complying with stormwater requirements. In particular, the self-inspector verifies that the SWPPP is being properly implemented. The self-inspector also documents SWPPP implementation so regulatory agencies can review implementation activities.

It is <u>not</u> the role of the self-inspector to report directly to regulatory authorities.

Appendix H of *The New York Standards and Specifications for Erosion and Sediment Control* - August 2005 (the Blue Book) includes a Construction Duration Inspection checklist that can be used by the owner/operators qualified professional for self-inspections. The Blue Book is available on the NYSDEC website.

3.3.1 Purpose

The self inspector should ensure that the project's SWPPP is being properly implemented. This includes ensuring that the erosion and sediment control practices are properly installed and being maintained in accordance with the SWPPP/Blue Book.

The project must be properly phased to limit the disturbance to less than five acres, and the construction sequence for each phase must be followed. The SWPPP must also be modified to address evolving circumstances. Finally, and most importantly, receiving waters must be protected.

If a soil disturbance will be greater than five acres at any given time, the site operator must obtain written permission from the DOW regional office.

3.3.2 Pre-construction Conference

The parties responsible for various aspects of stormwater compliance should be identified at the pre-construction conference. Responsible parties may include, but are not limited to, owner's engineer, owner/operator/permittee, contractors, and subcontractors.

Typical responsibilities include: installation of erosion and sediment control (E & SC) practices; maintenance of E & SC practices, inspection of E&SC practices, installation of post construction stormwater management practices (SMPs), inspection of post construction SMPs, SWPPP revisions, and contractor direction.

All parties should clearly know what is expected of them. Responsible parties should complete the Pre-construction Site Assessment Checklist provided in Appendix H of the Blue Book.

3.3.3 Inspection Preparation

The inspector should review the project's SWPPP (including the phasing plan, construction sequence and site specific issues) and the last few inspection reports (if the inspector has them available).

3.3.4 Self-inspection Components

Inspect installation, performance and maintenance of all E&SC practices

The self inspector should inspect all areas that are under active construction or disturbance and areas that are vulnerable to erosion. The self-inspector should also inspect areas that will be disturbed prior to the next inspection for measures required prior to construction (e.g. silt barriers, stabilized construction entrance, diversions). Finally, self-inspectors should inspect post-construction controls during and after installation.

Identify site deficiencies and corrective measures

The self-inspector's reports must be maintained in a log book on site and the log book must be made available to the regulatory authorities. Although the legal responsibility for filing a Notice of Termination lies with the owner/operator, the self-inspector may also be called upon to perform a final site inspection, including post construction SMPs, prior to filing the Notice of Termination.

4.0 POST-INSPECTION ACTIVITIES

4.1 Regulatory Oversight Authorities

This section is intended for inspectors with regulatory oversight authority such as agents of the DOW or a local municipality, or others acting on their behalf (such as County Soil and Water Conservation District staff.) Upon completion of an inspection, inspection results should be documented for the record.

4.1.1 Written Notification

The inspector should inform the permittee or the on-site representative of their inspection results in writing by sending the permittee a complete, signed copy of the inspection report. The inspection report should be transmitted under a cover letter which elaborates on any deficiencies noted in the inspection report. It is not a good idea to commend exceptional efforts by the owner/operator in a letter, because such letters tend to undermine enforcement efforts when compliance status at a site degrades.

The inspector should consider providing a copy of the cover letter and inspection report to other parties with including:

- Permittee
- Contractor(s)
- Other regulatory oversight authorities
- Other parties present during the inspection (e.g. SWPPP preparer, permittee's self-inspector, etc.)

For DOW staff, an example of the inspection cover letter is included as Attachment 3.

4.1.2 Inspection Tracking

DOW staff must enter their inspection results into the electronic *Water Compliance System*.

Local municipalities and other regulatory oversight authorities are encouraged to develop an electronic tracking system in which to record their inspections.

4.2 Permittee's Self-inspections

This section is intended for qualified professionals who conduct site inspections for permittees in accordance with a SPDES permit or local requirements.

4.2.1 Written Records

<u>Inspection Reports</u>
The inspector shall prepare a written report summarizing inspection results. The inspection report is then provided to the permittee, or the permittee's duly authorized representative, and to the contractor responsible for implementing stormwater controls on-site in order to correct deficiencies noted in the inspection report. Finally, the inspection report must be added to the site log book that is required to be maintained on-site, and be available to regulatory oversight authorities for review.

4.2.2 Stormwater Pollution Prevention Plan Revisions

The inspector must inform the permittee of his/her duty to amend the Stormwater Pollution Prevention Plan (SWPPP) whenever an inspection proves the SWPPP to be ineffective in:

- Eliminating or significantly minimizing pollutants from on-site sources
- Achieving the general objectives of controlling pollutants in stormwater discharges from permitted construction activity
- Eliminating discharges that cause a substantial visible contrast to natural conditions

ATTACHMENT 1

Construction Stormwater Compliance Inspection Report

Project Name and Location: Municipality: County:	Date:	Page 1 of 2
	Permit # (if any): **NYR**	
	Entry Time:	Exit Time:
On-site Representative(s) and contact information:	Weather Conditions:	
Name and Address of SPDES Permittee/Title/Phone/Fax Numbers: Contacted: Yes ☐ No ☐		

INSPECTION CHECKLIST

SPDES Authority

	Yes	No	N/A		Law, rule or permit citation
1.	☐	☐	☐	Is a copy of the NOI posted at the construction site for public viewing?	
2.	☐	☐	☐	Is an up-to-date copy of the signed SWPPP retained at the construction site?	
3.	☐	☐	☐	Is a copy of the SPDES General Permit retained at the construction site?	

SWPPP Content

	Yes	No	N/A		Law, rule or permit citation
4.	☐	☐	☐	Does the SWPPP describe and identify the erosion & sediment control measures to be employed?	
5.	☐	☐	☐	Does the SWPPP provide a maintenance schedule for the erosion & sediment control measures?	
6.	☐	☐	☐	Does the SWPPP describe and identify the post-construction SW control measures to be employed?	
7.	☐	☐	☐	Does the SWPPP identify the contractor(s) and subcontractor(s) responsible for each measure?	
8.	☐	☐	☐	Does the SWPPP include all the necessary 'CONTRACTOR CERTIFICATION' statements?	
9.	☐	☐	☐	Is the SWPPP signed/certified by the permittee?	

Recordkeeping

	Yes	No	N/A		Law, rule or permit citation
10.	☐	☐	☐	Are inspections performed as required by the permit (every 7 days and after ½" rain event)?	
11.	☐	☐	☐	Are the site inspections performed by a qualified professional?	
12.	☐	☐	☐	Are all required reports properly signed/certified?	
13.	☐	☐	☐	Does the SWPPP include copies of the monthly/quarterly written summaries of compliance status?	

Visual Observations

	Yes	No	N/A		Law, rule or permit citation
14.	☐	☐	☐	Are all erosion and sediment control measures installed/constructed?	
15.	☐	☐	☐	Are all erosion and sediment control measures maintained properly?	
16.	☐	☐	☐	Have all disturbances of 5 acres or more been approved prior to the disturbance?	
17.	☐	☐	☐	Are stabilization measures initiated in inactive areas?	
18.	☐	☐	☐	Are permanent stormwater control measures implemented?	
19.	☐	☐	☐	Was there a discharge into the receiving water on the day of inspection?	
20.	☐	☐	☐	Are receiving waters free of there evidence of turbidity, sedimentation, or oil ? (If no , complete Page 2)	

Overall Inspection Rating: ❑ Satisfactory ❑ Marginal ❑ Unsatisfactory	
Name/Agency of Lead Inspector:	**Signature of Lead Inspector:**
Names/Agencies of Other Inspectors:	

Water Quality Observations

Describe the discharge(s) [source(s), impact on receiving water(s), etc.] ____

____

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____

Describe the quality of the receiving water(s) both upstream and downstream of the discharge____

____

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Describe any other water quality standards or permit violations ____

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Additional Comments:____

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☐ Photographs attached

ATTACHMENT 2

**** NOTICE ****

On March 10, 2003, provisions of the Federal Clean Water Act went into effect that apply to many construction operations.

If your construction operations result in the disturbance of one acre or greater and stormwater runoff from your site reaches surface waters (i.e., lake, stream, road side ditch, swale, storm sewer system, etc.), the stormwater runoff from your site must be covered by a State Pollutant Discharge Elimination System (SPDES) Permit issued by the New York State Department of Environmental Conservation (NYSDEC).

To facilitate your compliance with the law, NYSDEC has issued a General Permit which may be applicable to your project. To obtain coverage under this General Permit, you need to prepare a Stormwater Pollution Prevention Plan (SWPPP) and then file a Notice of Intent (NOI) to the NYSDEC headquarters in Albany. The NOI form is available on the DEC website. You may also obtain a copy of the NOI form at the nearest NYSDEC regional offices.

When you file your NOI you are certifying that you have developed a SWPPP and that it will be implemented prior to commencing construction. When you submit the NOI you need to indicate if your SWPPP is in conformance with published NYSDEC technical standards; if it is, your SPDES permit coverage will be effective in as few as five business days. If your SWPPP does not conform to the DEC technical standards, coverage will not be available for at least 60 business days.

Failure to have the required permit can result in legal actions which include Stop Work Orders and/or monetary penalties of up to $37,500/day

If your construction operations are already in progress and you are not covered by an appropriate NYSDEC permit contact the NYSDEC Regional Water Engineer as soon as possible. If your construction field operations have not yet commenced, review the NOI and the General Permit on the DEC's website or at the DEC regional office for your area. When you are comfortable that you understand and comply with the requirements, file your NOI.

The requirement to file an NOI does not replace any local requirements. Developers/Contractors are directed to contact the Local Code Enforcement Officer or Stormwater Management Officer for local requirements.

ATTACHMENT 3

<< Date >>

Mr. John Smith
123 Main Street
Ferracane, NY 12345

Re: Stormwater Inspection
SPDES Permit Identification No. NYR10Z000 (through SPDES No. GP-02-01)
Blowing Leaves Subdivision
Gasper (T), Eaton (Co.)

Dear Mr. Smith:

On the afternoon of << date >> I conducted an inspection of the construction activities associated with the Blowing Leaves Subdivision located on County Route 1 in the town of Gasper, Eaton County. The inspection was conducted in the presence of you and Mr. Samuel Siltfence of Acme Excavating Co., Inc. The purpose of the inspection was to verify compliance with the *State Pollutant Discharge Elimination System (SPDES) General Permit for Storm Water Discharges from Construction Activity* ("the general permit").

The overall rating for the project at the time of the inspection was ***unsatisfactory***. A copy of my inspection report is attached for your information. In addition to the report, I would like to elaborate on the following:

SPDES Authority

- In accordance with subdivision 750-2.1 (a) of Title 6 of the Official Compilation of Codes, Rules, and Regulations of the State of New York (6 NYCRR), a copy of your permit must be retained at the construction site. You did not have a copy of the general permit at the site. **Your failure to retain a copy of the general permit at the construction site is a violation of 6 NYCRR Part 750-2.1 (a).** Please retain a copy of the general permit at the site from this point forward.

SWPPP Content

- In accordance with Part III.E.2. of the general permit, contractors and subcontractors must certify that they understand the terms and conditions of the general permit and the SWPPP before undertaking any construction activity at the site. Your SWPPP does not include a certification statement from Acme Excavating Co., Inc. **The failure of your contractor to sign this certification before undertaking construction activity at the site is a violation of Part III.E.2. of the general permit.** Please obtain copies of all necessary certifications and provide copies of them to each party who holds a copy of your SWPPP.

- In accordance with Part V.H.2. of the general permit, SWPPP's must be certified by the permittee. Your SWPPP was not certified by you. **Your failure to certify your SWPPP is a**

violation of Part V.H.2. of the general permit. Please certify your SWPPP.

Recordkeeping

- In accordance with Parts III.D.3.a. and III.D.3.b. of the general permit, permittees must have a qualified professional conduct site inspections within 24 hours of the end of 0.5" or greater rain events and at least once per week. A review of your records revealed that your "self-inspections" are only being conducted about two or three times per month. **Your failure to have a qualified professional conduct inspections at the required frequency is a violation of Part III.D.3.b. of the general permit.** Please immediately direct your qualified professional to conduct your site inspections at the required frequency.

- Although the frequency of self-inspections does not meet rquirements, the quality of them is very good. Your qualified professional has accurately noted the same SWPPP deficiencies and necessary maintenance activities that I also observed, and prepared thorough sketches on the self-inspection site maps.

- In accordance with Part V.H.2. of the general permit, the permittee must certify all reports required by the permit. A review of your records showed that your self-inspection reports were not certified. **Your failure to certify your self-inspection reports is a violation of Part V.H.2. of the general permit.** Please sign and certify any and all existing and future self-inspection reports.

<u>Visual Observations</u>

- In accordance with Parts III.A.2. and III.A.3. of the general permit, all erosion and sediment controls (E&SC) measures must be installed (as detailed in the SWPPP) prior to the initiation of construction. During the inspection, I noted all of your E&SC measures have been correctly installed at the right times and locations.

- In accordance with Part V.L. of the general permit, all of the E&SC measures at your site must be maintained properly. While on site I observed that, among other things, the section of silt fence in place parallel to County Route 1 is in various stages of disrepair. **The failure of your contractor to adequately maintain the E&SC measures currently in place at your site is a violation of Part V.L of the general permit.** Please direct your contractor to repair this silt fence immediately and to diligently maintain all of the other required E&SC measures as they are brought to his attention by your qualified professional.

- This inspection was conducted during a rain event which resulted in a stormwater discharge to the municipal separate storm sewer system (MS4) being operated by the Eaton County Department of Public Works. Your discharge was visibly turbid whereas upstream water MS4 was clear. As a result, the discharge from the MS4 outfall into Karimipour Creek was causing slight turbidity. Please be advised that the narrative water quality standard for turbidity in Karimipour Creek is “no increase that will cause a substantial visible contrast to natural conditions.” I attribute the lack of maintenance of your E&SC measures to be the primary cause of the turbid discharge. Please be reminded that the general permit does not authorize you cause or contribute to a condition in contravention of any water quality standards.

If you have any questions or comments, please feel free to contact me at (999) 456-5432.

Sincerely,

Hector D. Inspector, CPESC
Environmental Program Specialist 2

HDI:ms
Attachment

cc w/att.: Chester Checkdam, (T) Gasper Code Enforcement Officer
Samuel Siltfence, Acme Excavating Co., Inc.

Appendix F

Contractor SWPPP Certification Statement

Certification Statement

The *owner or operator* shall have each of the contractors and subcontractors identified above sign a copy of the following certification statement below before they commence any *construction activity*: "I hereby certify that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with the terms and conditions of requirements included in the Remedial Design and most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings. " In addition to providing the certification statement above, the certification page must also identify the specific elements of the SWPPP that each contractor and subcontractor will be responsible for and include the name and title of the person providing the signature; the name and title of the *trained contractor* responsible for SWPPP implementation; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification statement is signed. The *owner or operator* shall attach the certification statement(s) to the copy of the SWPPP that is maintained at the construction site. If new or additional contractors are hired to implement measures identified in the SWPPP after construction has commenced, they must also sign the certification statement and provide the information listed above.

Signature: ___________________________________

Sworn to before me

this ___________ day of ___________ , 20___

____

Notary Public – State of New York, County of ___________________

Appendix G

Notice of Termination Form

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505
(NOTE: Submit completed form to address above)

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity

Please indicate your permit identification number: NYR ___ ___ ___ ___ ___ ___

I. Owner or Operator Information

1. Owner/Operator Name:

2. Street Address:

3. City/State/Zip:

4. Contact Person: | 4a.Telephone:

4b. Contact Person E-Mail:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/Zip:

8. County:

III. Reason for Termination

9a. □ All disturbed areas have achieved final stabilization in accordance with the general permit and SWPPP. ***Date final stabilization completed** (month/year): ________________________________

9b. □ Permit coverage has been transferred to new owner/operator. Indicate new owner/operator's permit identification number: NYR ____ ____ ____ ____ ____ ____
(Note: Permit coverage can not be terminated by owner identified in I.1. above until new owner/operator obtains coverage under the general permit)

9c. □ Other (Explain on Page 2)

IV. Final Site Information:

10a. Did this construction activity require the development of a SWPPP that includes post-construction stormwater management practices? □ yes □ no (If no, go to question 10f.)

10b. Have all post-construction stormwater management practices included in the final SWPPP been constructed? □ yes □ no (If no, explain on Page 2)

10c. Identify the entity responsible for long-term operation and maintenance of practice(s)?

____

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued

10d. Has the entity responsible for long-term operation and maintenance been given a copy of the operation and maintenance plan required by the general permit? □ yes □ no

10e. Indicate the method used to ensure long-term operation and maintenance of the post-construction stormwater management practice(s):

□ Post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain practice(s) have been deeded to the municipality.

□ Executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s).

□ For post-construction stormwater management practices that are privately owned, a mechanism is in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the owner or operator's deed of record.

□ For post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university or hospital), government agency or authority, or public utility; policy and procedures are in place that ensures operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.

10f. Provide the total area of impervious surface (i.e. roof, pavement, concrete, gravel, etc.) constructed within the disturbance area? ______________________________ (acres)

11. Is this project subject to the requirements of a regulated, traditional land use control MS4? □ yes □ no

(If Yes, complete section VI - "MS4 Acceptance" statement

V. Additional Information/Explanation:

(Use this section to answer questions 9c. and 10b., if applicable)

VI. MS4 Acceptance - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative (Note: Not required when 9b. is checked -transfer of coverage)

I have determined that it is acceptable for the owner or operator of the construction project identified in question 5 to submit the Notice of Termination at this time.

Printed Name:

Title/Position:

Signature:	Date:

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued

VII. Qualified Inspector Certification - Final Stabilization:	
I hereby certify that all disturbed areas have achieved final stabilization as defined in the current version of the general permit, and that all temporary, structural erosion and sediment control measures have been removed. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.	
Printed Name:	
Title/Position:	
Signature:	Date:
VIII. Qualified Inspector Certification - Post-construction Stormwater Management Practice(s):	
I hereby certify that all post-construction stormwater management practices have been constructed in conformance with the SWPPP. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.	
Printed Name:	
Title/Position:	
Signature:	Date:
IX. Owner or Operator Certification	
I hereby certify that this document was prepared by me or under my direction or supervision. My determination, based upon my inquiry of the person(s) who managed the construction activity, or those persons directly responsible for gathering the information, is that the information provided in this document is true, accurate and complete. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.	
Printed Name:	
Title/Position:	
Signature:	Date:

(NYS DEC Notice of Termination - January 2015)