SECOND INTERIM REMEDIAL MEASURES WORK PLAN
FORMER SIGNORE FACILITY
ELLICOTTVILLE, NEW YORK
BROWNFIELD CLEANUP PROGRAM
SITE NO. C905034

Prepared For:
New York State Department of Environmental Conservation
Region 9
Buffalo, New York

Prepared By:
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Buffalo, New York

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APPENDICES

1.0 INTRODUCTION

1.1 PURPOSE AND OBJECTIVE

This Second[1] Interim Remedial Measures (IRM) Work Plan has been developed by GZA GeoEnvironmental of New York (GZA), on behalf of Iskalo Ellicottville Holdings, LLC (Iskalo), for IRM activities associated with the Former Signore Facility Brownfield Cleanup Program (BCP) Site No. C905034 located at 55-57 Jefferson Street, Ellicottville, New York (Signore BCP Site, see Figures 1 and 2). Specifically, this work plan has been developed to address the remaining soil contamination associated with Area of Concern-2 (AOC-2) and AOC-3; and complete a pilot test to assess chlorinated volatile organic compound (cVOC) groundwater contamination treatment.

The work described in this IRM Work Plan is being done under a New York State Department of Environmental Conservation (NYSDEC) BCP Agreement. This IRM Work Plan presents the project scope, objectives, planned activities, sampling procedures and reporting requirements.

1.2 PROJECT BACKGROUND

The Former Signore Facility is located at 55-57 Jefferson Street in the Village of Ellicottville, Cattaraugus County, New York. Ellicottville is located approximately 60 miles south of Buffalo, New York, and is a popular ski-resort area. General adjoining land uses are residential and recreational. The entire property is approximately 55 acres of which 8.43 acres (Signore BCP Area, see Figure 2) are occupied by the concrete slab of the former Signore building (168,000 square feet), other ancillary buildings and parking areas. The remaining acreage is vacant, undeveloped land. The property consists of approximately 21 acres of "flat land" area and about 34 acres of hill side.

The property has been used for manufacturing purposes for over 50 years. It is reported that a tool and die operation occupied a garage associated with the residential dwelling that was formerly present at the property. The Signore BCP Area was primarily used for the manufacturing of metal products. The existing Signore building has undergone various expansions since 1952. The actual development date for the property is unknown, but occurred sometime between the 1940s and 1952 as the property was identified as vacant woodland between 1922 and 1939.

The property is listed on the NYSDEC State Superfund Program as Site number 905023. In 1986, the Signore facility undertook a soil and groundwater sampling program which identified low concentrations of volatile organic compounds (VOCs) at the Site. Both downgradient public and private drinking water wells were affected. The contamination was attributed to spills,

[1] The original IRM Work Plan entitled "Interim Remedial Measures Work Plan, Former Signore Facility, Ellicottville, New York, Brownfield Cleanup Program, Site No. C905034" dated July 2011, prepared by GZA, addressed the areas of AOC-1 and the majority of AOC-2.

leakage and other plant operations.

In August 1989, Signore entered into an Administrative Order on Consent #89-258-89-03 to perform a Remedial Investigation/Feasibility Study (RI/FS) at the Site and three Interim Remedial Measures (IRMs). The three IRMs included the following.

1. Installation of an interceptor well upgradient of the Town drinking water well;
2. Connection of 34 residential properties to the municipal water supply source;
3. Installation of an interceptor well on a downgradient portion of the Signore property.

The IRM activities were completed and in operation by January 1992. The contaminant of concern was identified as trichloroethene (TCE) and trichloroethane (TCA). Additional volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, or polychlorinated biphenyls (PCBs) were not identified on the Site during the previous RI.

In 1993, the Site was reclassified from a Class #2 to a Class #4 Site, as it has been properly closed. However, NYSDEC requires groundwater monitoring at on and off-site locations on a semi-annual basis, which Iskalo is continuing to perform. Long term monitoring data has shown a general decrease in site contaminants and off-site migration.

In 2002, the on-Site interceptor well and the Town Well interceptor well were shut down, as approved by NYSDEC, due to long-term sampling results at both wells indicating either non-detect concentrations or levels below State drinking water standards.

In October 2007, GZA completed a Phase II ESA at the Site as part of due diligence services for Iskalo. GZA's work included observing soil probes at 29 locations and test pit excavations at eight locations. During the Phase II activities, VOC contamination and separate phase petroleum (SPP) product were identified impacting soil and groundwater at the Site. Three areas of concern (AOC) were identified where the contaminant concentrations were greater than the NYSDEC Unrestricted Soil Cleanup Objectives (6 NYCRR Part 375[2] criteria) [Table 3 from the Phase II ESA, which summarized the results of the soil samples has been included in Appendix A for reference.]

A brief description of each AOC follows below. AOC-1 and the majority of AOC-2 were addressed under the previous original NYSDEC-approved IRM work plan. The activities associated with this work were completed between October 2011 and December 2011. AOC-3 was located beneath the existing building during the time of the first IRM which has since been demolished.

[2] 6 New York Code Rules and Regulation (6 NYCRR) Part 375 Environmental Remediation Programs, effective December 14, 2006 (Part 375).

1. AOC-1 – Petroleum underground storage tanks (UST) Area – Three 1,000-gallon USTs, located on the eastern portion of the Site, were closed in-place in December 1986. SPP product and petroleum impacted soil was identified during test pit completion. GZA contacted NYSDEC and Spill #707350 was assigned to the Site on October 3, 2007. This area was addressed as part of the IRM activities completed in 2011.

2. AOC-2 – One 1,000-gallon UST Area – The historic contents of a UST identified on the southwest side of the main building are unknown. The UST was reportedly closed in the late 1980s. The majority of this area was addressed as part of the IRM activities completed in 2011. Some contamination remains on the north wall, which was located along the building foundation and under the building at the time the work was completed. The building has since been demolished.

3. AOC-3 – Paint Kitchen Area – VOC impacted soil was identified under the main building identified as the paint kitchen and spray booth area. Additionally, a former septic system was also present in the area. "Product" was identified during the soil probe investigation. This area is located under the remaining concrete slab and is to be addressed as part of the IRM activities discussed in this IRM Work Plan.

A Supplemental Remedial Investigation (SRI) was completed between January 2012 and January 2013. The activities included the following.

- Off-site soil vapor intrusion assessment of nine homes;
- Completion of ten (10) on-site test pits;
- Completion of 21 on-site soil probes;
- Collection and analysis of four (4) on-site surface soil samples;
- Collection and analysis of 21 soil samples from the 21 soil probes; and
- Collection of 19 groundwater samples from the 14 new microwells installed as part of the SRI and five (5) existing wells.

Groundwater contamination was further defined within the Signore BCP Site boundaries, during the SRI activities completed in Fall 2012. The results indicated cVOCs are present on-site and at concentrations greater than the Class GA criteria. Figure 3 is a total cVOC isopleth map generated using data generated as part of the SRI and previous Phase II ESA.

The petroleum-based VOC impacts appear to be associated with residual petroleum source material in the soil and do not appear to be migrating from the source areas (AOCs -1, -2, and -3). The cVOCs in the groundwater do not appear to be related to former AOC-1 or AOC-3, but are likely related to other historical on-Site activities.

Therefore, the purpose of the pilot test, as discussed later in this work plan, is to assess a treatment technology to treat the cVOC contamination identified in the Signore BCP Site groundwater.

1.3 PROJECT DESCRIPTION

The IRM activities will involve the removal of impacted soils located in the vicinity of AOC-2 and AOC-3. See Figure 4 for the approximate locations of impacted soil to be addressed at AOC-2 and AOC-3 (shown in blue). The green boxed areas shown on Figure 4 represent the approximate areas where the electron donor compound (EDC) material will be injected in the cVOC impacted groundwater as part of the pilot test.

1.4 PROJECT MANAGEMENT AND ORGANIZATION

1.4.1 Personnel

The general responsibilities of key project personnel are listed below.

NYSDEC Project Manager - Chad Staniszewski will have the responsibility for regulatory oversight for the work associated with BCP Site No. C905034.

Iskalo Development Project Manager – Paul B. Iskalo will have the responsibility for implementing the project and has the authority to commit funding necessary to meet the objectives and requirements.

GZA Project Manager - Christopher Boron will be responsible for managing the implementation of the activities associated with the BCP investigation, remediation and coordinating the collection of data during the project. The Project Manager is responsible for technical quality control and project oversight.

GZA Quality Assurance (QA) Officer – Daniel Troy P.E., will report to the Project Manager and will be responsible for ensuring that QA/QC procedures are being followed. The QA Officer will be responsible for overseeing the review of field and laboratory data.

The QA Officer will monitor the performance of the laboratory to verify that the Data Quality Objectives for the project are met.

GZA Field QA Officer – Thomas Bohlen will be responsible for the overall operation of the field team and reports directly to the Project Manager.

1.4.2 Specific Tasks and Services

Subcontractor specialists will be utilized for services relating to the IRM and are as follows.

Matrix Environmental Technologies, Inc. – Soil excavation, contaminated soil removal, soil disposal.

Spectrum Analytical Services - Laboratory/analytical services

Data Validation Services – Data usability summary report of laboratory data.

2.0 DESCRIPTION OF IRM FIELD ACTIVITIES

2.1 GENERAL FIELD ACTIVITIES

General field activities include site meetings, mobilization, implementing the health and safety plan, soil excavations, analytical testing, equipment decontamination, handling of investigation wastes, and mixing and injection of EDC material.

2.1.1 Site Meeting

A Site "kick-off" meeting will be held with Iskalo, GZA and the earth work subcontractor prior to initiating field work activities. The purpose of the meeting will be to orient field team members, Iskalo staff and subcontractors with the Site, project personnel, Site background, scope of work, potential dangers, health and safety requirements, site-specific security and safety protocols, emergency contingencies and other field procedures. NYSDEC staff are welcome to attend and will be notified at least seven (7) days in advance of the meeting.

2.1.2 Mobilization

Following approval of the IRM Work Plan by NYSDEC, the Underground Facilities Protection Organization (UFPO) will be contacted at 1-800-962-7962 to clear exploration locations. Utility clearance will require three working days by UFPO. GZA and its subcontractors will then mobilize necessary materials and equipment to the Site.

2.1.3 Health and Safety

It is anticipated that the work to be completed at the Site will be done at level D personal protection. Should health and safety monitoring during field activities warrant an upgrade to level C protection, work will stop and Site conditions will be re-evaluated prior to further investigation activities. See Section 6.0 for additional information on Health and Safety.

2.2 COMMUNITY AIR MONITORING PLAN

During the IRM excavation activities, a Community Air Monitoring Plan will be implemented which will include screening for total volatile organics and particulate levels at the perimeter of the work area for health and safety concerns. Section 6.0 of this document references the Health and Safety Plan which will be used for this work [Section 5.2 and Appendix C of the Health and Safety Plan discuss the New York State Department of Health Generic Community Air Monitoring Plan that will be implemented.]

Organic vapors will be monitored with a portable organic vapor meter (OVM) equipped with a photoionization detector (PID) using a 11.7 electron volt (eV) bulb. The particulates will be monitored using equipment that is capable of measuring particle sizes greater than 10-micrometers (PM-10) and can integrate measurements over a 15-minute time frame. The equipment will also have an audible alarm indicating an exceedance of the action level.

Additional details on the total organic and particulate monitoring are presented in the Site-specific Health and Safety Plan (see Section 6.0).

2.3 SOIL EXCAVATIONS

AOC 2 - Impacted Soil Area

A concrete UST and associated impacted soil were removed as part of the IRM activities in 2011. However, due to the presence of the building at the time of the work, some impacted material was left along the building foundation and likely extend under the floor slab. The building has been demolished. Figure 4 identifies the approximate location the remaining impacted soil. It is estimated that approximately 150 cubic yards or about 250 tons of impacted soil remain.

AOC 3 - Impacted Soil Area

Petroleum-based VOC impacted soil was identified in the area under the main building identified as the paint kitchen and spray booth area. Additionally, a former septic system was also present in the area. Groundwater sample results from downgradient or sampling locations adjacent to AOC-3 did not indicate the presence of petroleum-VOCs. It appears the petroleum-based VOC groundwater contamination is isolated to this area. The estimated soil contamination area is approximately 60 feet by 115 feet (6,900 square feet), with impacts extending to the water table at approximately 12 feet bgs. Figure 4 identifies the approximate location of the remaining impacted soil. It is estimated that approximately 3,000 cubic yards or about 4,800 tons of impacted soil remain.

Septic Tank Removals

Two (2) closed-in-place septic tanks are located in the central portion of the Signore BCP Site under the concrete slab (see Figure 4). These tanks were reported cleaned and filled with concrete. The tanks will be broken up for removal and disposed of as solid waste. If impacted soil is encountered in the area of the septic tanks during removal, the impacted soil will also be removed from the subsurface for off-site disposal. Soil samples will be collected from the sidewalls of the excavation for VOC analysis.

General UST and Soil Removal Procedures

The following are the general impacted soil removal procedures that will be followed for the impacted soil areas.

- Waste characterization samples will be collected from AOC-2 and AOC-3. Based on the estimated volume of soil to be removed, five (5) confirmation soil samples (1 from AOC-2 and 4 from AOC-3) will be sent to the laboratory for analysis.

- Prior to the start of the subsurface soil work, a decontamination pad will be built to allow equipment used during the excavation activities to be decontaminated. The pad will be constructed on a stable onsite surface using a minimum of 6-mil plastic sheeting and allow water generated during the decontamination processes to be contained and transferred to 55-gallon drums for characterization and proper disposal. Upon completion of the excavation work, the decontamination pad will be disposed of with impacted soils stockpiled for off-site disposal at a permitted disposal facility.

- Overburden soil excavated to facilitate the removal of the impacted material will be field screened to determine if the soil is potentially impacted. Non-impacted soil (those that do not appear to be visually impacted and registering 10 ppm or less on an OVM during field screening) will be excavated and stockpiled, on 6-mil thick plastic sheeting and covered with 6-mil plastic sheeting, for eventual reuse onsite. Representative soil samples from the soil stockpile will be sampled for VOC analysis prior to reuse.

- Tank contents (i.e., liquids and tank sludge, if any) will be removed, containerized and characterized for proper off-site disposal. The tank contents will be properly disposed of by the contractor and disposal documentation will be provided.

- The Contractor will breakup and remove the septic tanks from the excavation. The concrete will be properly disposed of by the contractor and disposal documentation will be provided.

- Soils determined to be impacted, within AOC-2, AOC-3 and septic tank areas, based on visual observations and field screening (registering 10 ppm or greater), will be excavated and loaded for off-site disposal. The soil will be loaded into dump trucks or dump trailers, covered, and transported by a licensed hauler to a permitted solid waste landfill for proper disposal. Disposal documentation will be provided.

- Post-excavation soil samples will be collected from the side walls and bottom of each excavation in accordance with NYSDEC guidelines to confirm that the remaining soil meets, at a minimum, the Part 375 Commercial SCOs. One sidewall sample will be collected from each excavation sidewall that is less than 30 linear feet. If an excavation sidewall exceeds 30 linear feet, then one sample will be collected for every 30 linear feet. A minimum of one bottom sample will be collected from each UST excavation area. One sample will be collected for every 900 square feet of bottom excavation area.

- Confirmatory samples will be analyzed for Target Compound List (TCL) VOCs via EPA Method 8260. Detection limits of the sample analysis will be below the Part 375 Commercial SCOs. [VOCs are the compounds of concern associated with AOC-2 and AOC-3. Soil sample results from the previous IRM activities did not identify SVOCs as a concern for AOC-2. Two (2) of the waste characterization composite samples collected from AOC-3 (WC-2 and WC-3 as shown on Figure 4) were also analyzed for SVOCs (Base-Neutrals) via EPA Method 8270D and Target Analyte List (TAL) metals via EPA Methods 6010C/7471B. Waste characterization sample WC-2 was collected from impacted soil encountered from 10 to 12 feet below ground surface and WC-3 was collected from impacted soil encountered from 8 to 16 feet below ground surface. No SVOCs were detected above method detection limits and the metal analytes detected were below the Part 375 Unrestricted SCOs. Appendix B contains the laboratory report.]

- The excavation areas will be barricaded to keep personnel away from the excavation while awaiting analytical results and prior to backfilling. If post-excavation soil samples indicate that impacted soil remains, it is anticipated that additional soil will be excavated for off-Site disposal.

- If groundwater is encountered within an excavation, a sample will be collected for TCL VOC analysis.

- After the post-excavation soil samples are reviewed and evaluated to be acceptable, and prior to backfilling, PVC injection piping may be installed along the bottom of the excavation to facilitate additive injections at a later time, especially if the excavation and contamination extend down to or below the groundwater table.

- Photographic documentation of the IRM activities will be done and included in the IRM Report (see Section 4.0).

- Upon soil excavation completion, equipment will be decontaminated prior to being removed from the Site at the decontamination pad location.

- Suitable backfill material will be placed and compacted in lifts within the excavation areas. Backfill brought to the Signore BCP Site will meet the requirements outlined in Part 375-6.7(d) and DER-103 Section 5.4(e).

2.4 ELECTRON DONOR COMPOUND INJECTIONS & GROUNDWATER SAMPLING

The groundwater data indicates that the cVOC plume (greater than 200 ppb) is originating in the vicinity of the former septic tanks in the central portion of the Signore BCP Site. Prior to

3 NYSDEC, Division of Environmental Remediation (DER), DER-10 / Technical Guidance for Site Investigation and Remediation, issued May 3, 2010.

implementing a full-scale in-situ groundwater treatment program, a pilot test will be completed, as discussed below, to assess the effectiveness of the remedial alternative and collect pre-design data.

Electron Donor Compound Injections

The pilot test will consist of the injection of approximately 2,000 pounds of EDC material in the vicinity of SP-3 and the 200 ppb contour, 500 pounds of EDC in the vicinity of 100 ppb contour near SP-32, and monitoring the groundwater conditions in the areas of the injections as shown on Figure 4. The EDC material is based on food-grade vegetable oils and surfactants. A material safety data sheet (MSDS) for the material has been included in Appendix C.

The EDC material will enhance the anaerobic breakdown of the "parent" cVOCs present at the Signore BCP Site (trichloroethene (TCE), tetrachloroethene (PCE) and 1,1,1 trichloroethane (111-TCA)) via reductive dehalogenation to the "daughter" breakdown product (cis-dichloroethene (cis-DCE) and vinyl chloride (VC)), which readily degrade under aerobic conditions.

Reductive dehalogenation is defined as the biologically-mediated replacement of chlorine (as chloride) on a chlorinated organic compound such as PCE or TCE with elemental hydrogen in the presence of a suitable electron donor causing a transformation of the contaminant to a less chlorinated product. An electron donor is defined as a compound capable of supplying electrons during oxidation-reduction reactions. Microorganisms obtain energy by transferring electrons from electron donors such as organic compounds or by the reduction of inorganic compounds to a terminal electron acceptor (TEA). Electron donors are chemically-reduced materials such as fuel hydrocarbons or naturally-occurring organic carbon, which become chemically oxidized during transformation.

For example, reductive dehalogenation of chlorinated VOCs typically occurs sequentially from PCE to TCE, TCE to 1,2-DCE, 1,2-DCE to VC, and VC to ethene and chloride, and ultimately ethene to carbon dioxide and water.

Currently, about 2,500 pounds of EDC[4] material is stored at the Signore BCP Site. The material will be mixed into slurry and injected into the subsurface groundwater. The following injection methodology is proposed for the two areas identified by nearby soil probe location.

SP-3 Area

A direct push soil probe unit will be used to advance the probe of the injection equipment. Injection points will be completed in an approximate 15-foot horizontal spacing, over a 40 foot by 40 foot area, for a total of ten (10) injection points.

4 EDC is manufactures by EcoCycle of Toyama, Japn to be used as a remedial additive to drive the reductive dechlorination of cVOCs.

Injections will occur in two (2) intervals below the groundwater table at each injection location. The depth of the injection intervals will vary from 12 to 20 feet below ground surface (bgs). Injections will be completed by advancing the probe to the first depth injection interval, injecting the required quantity of EDC material, and then advancing the probe deeper to the next injection interval and injecting the required quantity of EDC material using a top-down approach.

A total of 1,950 pounds of material will be used in this injection area. The 1,950 pounds of material will be mixed with about 2,000 gallons of water to create an injectable slurry. The EDC material and water will be mixed on-site in tanks until the EDC material has dissolved into solution. Once dissolved, the slurry will be injected into the subsurface under pressure using a grout pump or equivalent. The injection rate will be limited to the rate at which the formation will accept the slurry material. The injection pressure will be regulated and monitored to avoid "blow-back" up the sides of the injection rods and up previous completed injection points.

The injection quantities are approximately 195 pounds of EDC material per injection location (97.5 pounds per injection interval) using approximately 200 gallons of water per injection location (100 gallons per injection interval).

SP-32 Area

A direct push soil probe unit will be used to advance the probe of the injection equipment. Injection points will be completed in an approximate 10-foot horizontal spacing, over a 20 foot by 20 foot area, for a total of five (5) injection points.

Injections will occur in two (2) depth intervals below the groundwater table, at each injection location, ranging from approximately 12 to 20 feet below ground surface (bgs). Injection will be completed by advancing the probe to the first depth injection interval, injecting the required quantity of EDC material, and then advancing the probe deeper to the next injection interval and injecting the required quantity of EDC material using a top-down approach.

A total of 500 pounds of material will be used in this injection area. The 500 pounds of material will be mixed with about 550 gallons of water to create an injectable slurry. The EDC material and water will be mixed on-site in tanks until the EDC material has dissolved into solution. Once dissolved, the slurry will be injected into the subsurface under pressure. The injection rate will be limited to the rate at which the formation will accept the slurry material. The injection pressure will be regulated and monitored to avoid "blow-back" up the sides of the injection rods and up previous completed injection points.

The injection quantities are approximately 100 pounds of EDC material per injection location (50 pounds per injection interval) using approximately 110 gallons of water per injection location (55 gallons per injection interval).

Groundwater Sampling

Groundwater samples will be collected from select monitoring locations within the Signore BCP Site to assess the effectiveness of the EDC injections. Two (2) sampling events will be conducted:

1) within 3 months (Fall 2013) of the pilot test injections; and
2) 9 to 12 months (late Spring 2014) after the pilot test injections.

Groundwater samples will be collected from approximately six (6) locations (EW-1.25, SP-32, SP-37, SP-38, SP-43, and SP-45) shown in red on Figure 4. The following methodologies will be used for the groundwater sample analysis.

VOC:	SW-846, 8260B
Methane:	RSK175
TOC:	EPA 9060
Chloride:	EPA 300
Nitrate:	EPA 335.2
Sulfate:	EPA 300
Ethane:	RSK-175
Ethene:	RSK-175
Dissolved Iron:	SW-846, 6010B
Dissolved Manganese:	SW-846, 6010B

A water quality meter and flow-through cell will be used to collect field measurements for pH, specific conductance, dissolved oxygen (DO), turbidity, oxygen reduction potential (ORP) and temperature. Disposable polyethylene tubing and a variable speed low-flow sampling pump will be utilized during the sampling events.

2.5 ENVIRONMENTAL ANALYTICAL TESTING PROGRAM

The estimated soil and groundwater environmental testing program is summarized in Table 1. The actual number of soil samples will vary based on the size of excavations, observations and engineering judgment. The samples collected as part of this IRM will be subject to analytical testing methodologies that follow NYSDEC Analytical Service Protocol (ASP) Category B deliverables and allow for the development of a data usability summary report (DUSR). Further information regarding sampling and testing methodologies can be found in the Quality Assurance Project Plan QAPP (see Section 5.0).

3.0 DATA DOCUMENTATION

Field notes will be recorded during the IRM work and become part of the project file. The daily field summaries will include the following daily information for the IRM activities:

- Date;
- Meteorological conditions (temperature, wind, precipitation);
- Site conditions (e.g., dry, damp, dusty, etc.);
- Identification of crew members (GZA and subcontractor present) and other personnel (e.g., agency or site owner) present;
- Description of field activities;
- Location(s) where work is performed;
- Sampled collected;
- Problems encountered and corrective actions taken;
- Records of field measurements or descriptions recorded;
- Injection locations and volumes; and
- Notice of modifications to the scope of work.

Photographic documentation of the IRM activities will be done.

4.0 IRM ACTIVITIES REPORTING

The IRM Activities will be included in the Supplemental Remedial Investigation and Alternative Analysis Report. It will summarize the work conducted as part of the impacted soil removals at AOC-2, AOC-3 and the EDC injections. The information will include the following.

- summary of the activities completed as part of the IRM Work;
- present the analytical data from the confirmatory samples collected. Tables containing the analytical results will identify laboratory qualifiers assigned to the data and will identify the detection limits for non-detected compounds (e.g., < 0.5);
- provide figures showing the size and location of IRM activities along with confirmatory sample locations and EDC injection locations;
- provide pertinent photographic documentation of the activities completed; and
- present the disposal documentation of the various material generated for disposal.

5.0 QUALITY ASSURANCE/QUALITY CONTROL

The Quality Assurance Project Plan (QAPP) to be used for the Former Signore Facility IRM activities is the "Quality Assurance Project Plan, Former Signore Facility, Ellicottville, New York, Brownfield Cleanup Program, Site No. C905034" dated May 2011. The QAPP presents the sampling procedures, analytical methods and QA/QC procedures associated with the activities planned for the BCP Site. Protocols for sample collection, sample handling and storage, Chain of Custody procedures, and laboratory and field analyses are described or specifically referenced to related investigation documents.

6.0 HEALTH AND SAFETY PROTOCOLS

The health and safety protocols to be used for the Former Signore Facility IRM activities are in the "Health and Safety Plan, Former Signore Facility, Ellicottville, New York, Brownfield Cleanup Program, Site No. C905034" dated May 2011. The Health and Safety Plan (HASP) presents the specific health and safety protocols associated with the activities planned for the BCP Site.

7.0 CITIZEN PARTICIPATION

The Citizen Participation (CP) component for the Former Signore Facility BCP Site is discussed in the "Brownfield Cleanup Program, Citizen Participation Plans, Former Signore Facility, 55 Jefferson Street, Village of Ellicottville, Cattaraugus County, New York, Site Number: C905034" dated March 2011. The CP Plan outlines how members of the affected and interested public are provided with information about how NYSDEC will inform and involve them during the investigation and remediation of the Site. Information such as project contacts, document repositories, site contact lists, and CP activities are provided in the CP Plan.

8.0 SCHEDULE

The following schedule is proposed for the IRM field activities and IRM Report preparation.

Activity:	Anticipated Date:
Perform Soil & EDC Injection Activities:	August 2013
Pilot Test Groundwater Sampling Event 1	Fall 2013
Resubmittal of SRI/AA Report with IRM Activities	Fall 2013 (after 1st event)
Pilot Test Groundwater Sampling Event 2	Late Spring 2014
Pilot Test Report/Remedial Recommendations Report	Summer 2014

TABLES

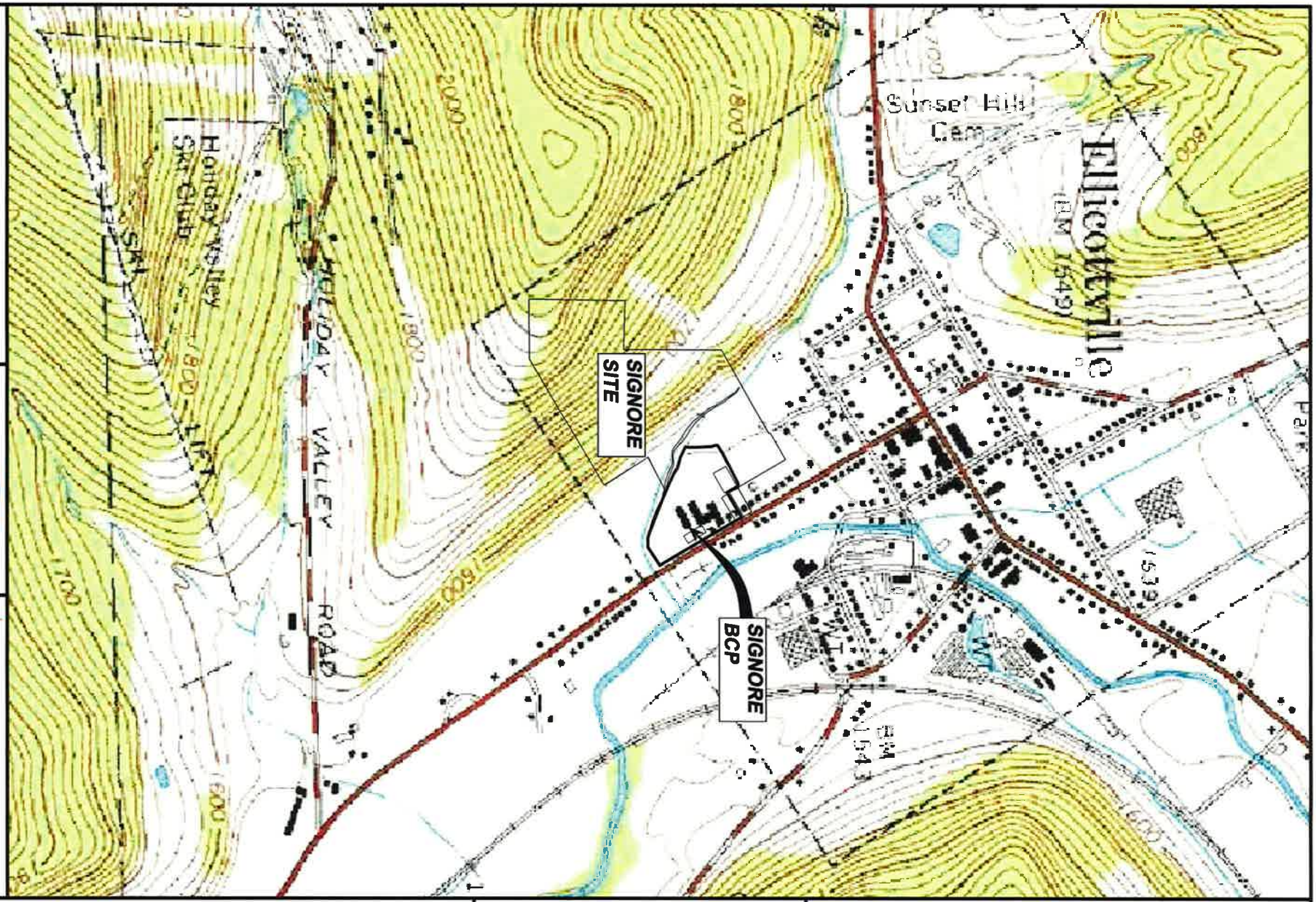
Table 1
Estimated IRM Analytical Testing Program Summary
Former Signore Facility
BCP Site No. C905034
Ellicottville, New York

Location	VOCs TCL	VOCs TCL	Waste Characterization	EDC MONITORING **
AOC-2	SOIL	WATER	Soil	Water
Confirmatory	5	1	1	0
Duplicate	1	0	0	0
MS/MSD	0	0	0	0
Rinsate	0	0	0	0
Total	6	1	1	0
AOC-3				
Confirmatory	14	1	4	0
Duplicate	1	0	0	0
MS/MSD	2	0	0	0
Rinsate	0	0	0	0
Total	17	0	4	0
EDC IINJECTION MONITORING				
Various[1]	0	12	0	12
Duplicate	0	0	0	0
MS/MSD	0	0	0	0
Rinsate	0	0	0	0
Total	0	12	0	12
	23	13	5	12

Notes:
MS/MSD - Matrix Spike/Matrix Spike Duplicate.
TCL VOCs - Target Compound List Volatile Organic Compounds.
TCL SVOCs - Target Compound List Semi-volatile Organic Compounds.
TAL Metals - Target Analyte List Metals.
TCL PCBs - Target Compound List Polychlorinated Biphenyls.
* = Waste Characterization will be based on disposal facility requirements
** = Parameters will include list provided in Section 2.4.

FIGURES

 GZA-T:\PROJECTS\56300s\56367.4 Signor Ellicottville\Second IRM WP\Figure 1 Locus Plan.dwg [Figure 1] June 17, 2013 - 3:12pm daniel.wulf



NOTE:
BASE MAP ADAPTED FROM U.S.G.S. TOPOGRAPHIC MAPS DOWNLOADED FROM TERRASERVER.MICROSOFT.COM

NORTH

NEW YORK

FIGURE No. 1

PROJECT No. 21.0056367.40

SECOND INTERIM REMEDIAL MEASURE WORK PLAN

FORMER SIGNORE FACILITY
ELLICOTTVILLE, NEW YORK
BROWNFIELD CLEANUP PROGRAM
SITE NO. C905034

LOCUS PLAN

SCALE IN FEET

0 500 1000 2000

DRAWN BY: **DEW**

DATE: **JUNE 2013**

GZA GeoEnvironmental of New York

NORTH

AREA OF CONCERN-3

SOIL CONTAMINATION REMAINING FROM AOC-2

APPROXIMATE LIMITS OF SIGNORE BCP BROWNFIELD CLEANUP AREA

APPROXIMATE LOCATION OF CLOSED-IN-PLACE SEPTIC TANKS

SIGNORE PLANT LAYOUT

FIRE PROTECTION SITE PLAN

BLACKTOP AREA

CONCRETE PAD

METAL BUILDING MAINTENANCE #2

MAINTENANCE #1

PAINT STORAGE

PROPANE SHED

PAINT SPRAY

PAINT KITCHEN

SHEAR DEPT

ASSEMBLY DEPT

PRESS DEPT

OVEN

TOOL SHOP

LOCKER WELD DEPT

TONER ASS'Y

WAREHOUSE

TO OFFICE#2

VALVE PIT

CENTER OF ROAD

Former Septic Tank Area

Former Septic Tank (Closure 2-91)

Former Septic Tank (Closure 2-91)

Former Septic Tank (Closure 2-91)

SP-30 SP-31 SP-32 SP-33 SP-34 SP-35 SP-36 SP-37 SP-38 SP-39 SP-40 SP-41 SP-42 SP-43 SP-44 SP-45 SP-46 SP-47 SP-48 SP-49 SP-50

SS-1 SS-2 SS-3 SS-4

TP-9 TP-10 TP-11 TP-12 TP-13 TP-14 TP-15 TP-16 TP-17 TP-18

LEGEND:

SP-33	APPROXIMATE LOCATION AND DESIGNATION OF SOIL PROBE
SP-32	APPROXIMATE LOCATION AND DESIGNATION OF SOIL PROBE WITH 1" MICROWELL INSTALLED
TP-14	APPROXIMATE LOCATION AND DESIGNATION OF TEST PIT
TP-13	APPROXIMATE LOCATION AND DESIGNATION OF TEST PIT WITH 1" MICROWELL INSTALLED
SS-3	APPROXIMATE LOCATION AND DESIGNATION OF SURFACE SOIL SAMPLE

NOTES:

1. BASE MAP ADAPTED FROM A 2006 AERIAL PHOTOGRAPH DOWNLOADED FROM www.cattco.org/real_property/parcel_news.asp AND FIELD OBSERVATIONS.

2. THE SIZE AND LOCATION OF EXISTING SITE FEATURES SHOULD BE CONSIDERED APPROXIMATE.

DRAWN BY: DEW

DATE: JUNE 2013

GZA GeoEnvironmental of New York

APPROXIMATE SCALE IN FEET

0 40 80 160

SECOND INTERIM REMEDIAL MEASURE WORK PLAN

FORMER SIGNORE FACILITY

ELLICOTTVILLE, NEW YORK

BROWNFIELD CLEANUP PROGRAM

SITE NO. C905034

SITE PLAN

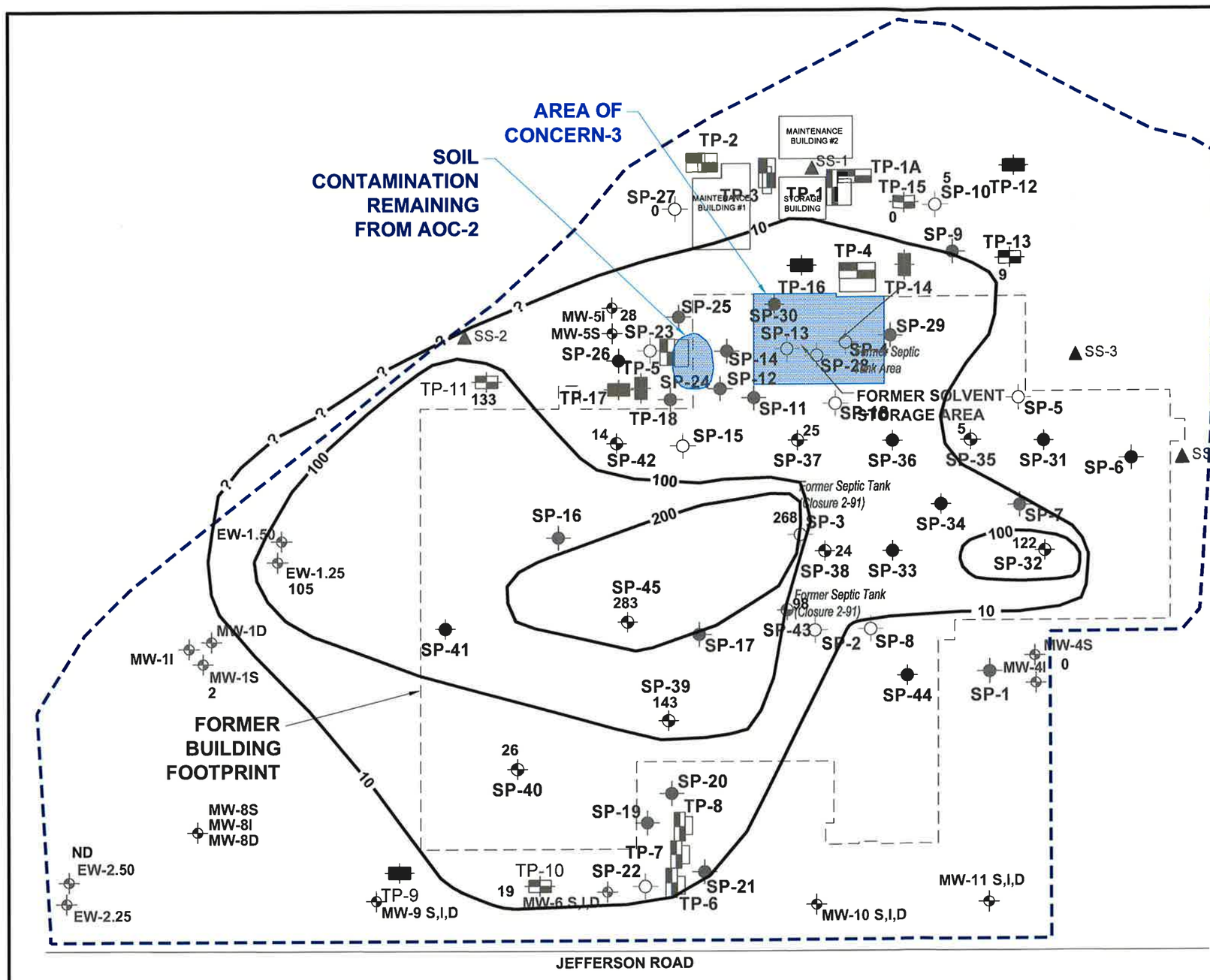
PROJECT No.

21.0056367.40

FIGURE No.

2

GZA-T:\PROJECTS\56300\56367.4 Signor Ellicottville\Second IRM WP\Figure 2 Site Plan.dwg [Figure 2] June 17, 2013 - 3:12pm daniel.wulf



NOTES:

1. BASE MAP ADAPTED FROM A 2006 AERIAL PHOTOGRAPH DOWNLOADED FROM www.cattco.org/real_property/parcel_news.asp AND FIELD OBSERVATIONS.

2. THE SIZE AND LOCATION OF EXISTING SITE FEATURES SHOULD BE CONSIDERED APPROXIMATE.

LEGEND:

- SP-33 — APPROXIMATE LOCATION AND DESIGNATION OF SOIL PROBE
- SP-32 — APPROXIMATE LOCATION AND DESIGNATION OF SOIL PROBE WITH 1" MICROWELL INSTALLED
- TP-14 — APPROXIMATE LOCATION AND DESIGNATION OF TEST PIT
- TP-13 — APPROXIMATE LOCATION AND DESIGNATION OF TEST PIT WITH 1" MICROWELL INSTALLED
- SP-20 — APPROXIMATE LOCATION AND DESIGNATION OF SOIL PROBE DONE BY MATRIX ENVIRONMENTAL TECHNOLOGIES, INC. IN OCTOBER 2007
- SP-27 — APPROXIMATE LOCATION AND DESIGNATION OF SOIL PROBES WITH TEMPORARY MICROWELL DONE BY MATRIX ENVIRONMENTAL TECHNOLOGIES, INC. IN OCTOBER 2007
- TP-8 — APPROXIMATE LOCATION AND DESIGNATION OF TEST PIT DONE BY MATRIX ENVIRONMENTAL TECHNOLOGIES, INC. IN OCTOBER 2007
- EW-1.25 — APPROXIMATE LOCATION AND DESIGNATION OF EXISTING MONITORING WELL

LEGEND (contd.):

- 100 / 122 — MEASURED CONCENTRATION (AT SAMPLING POINT) OF TOTAL CHLORINATED VOCs IN GROUNDWATER (PARTS PER BILLION, PPB)
- CONTOUR OF CONCENTRATION OF TOTAL CHLORINATED VOCs IN GROUNDWATER (PARTS PER BILLION, PPB)

APPROXIMATE SCALE IN FEET: 0, 40, 80, 160

DRAWN BY: DEW

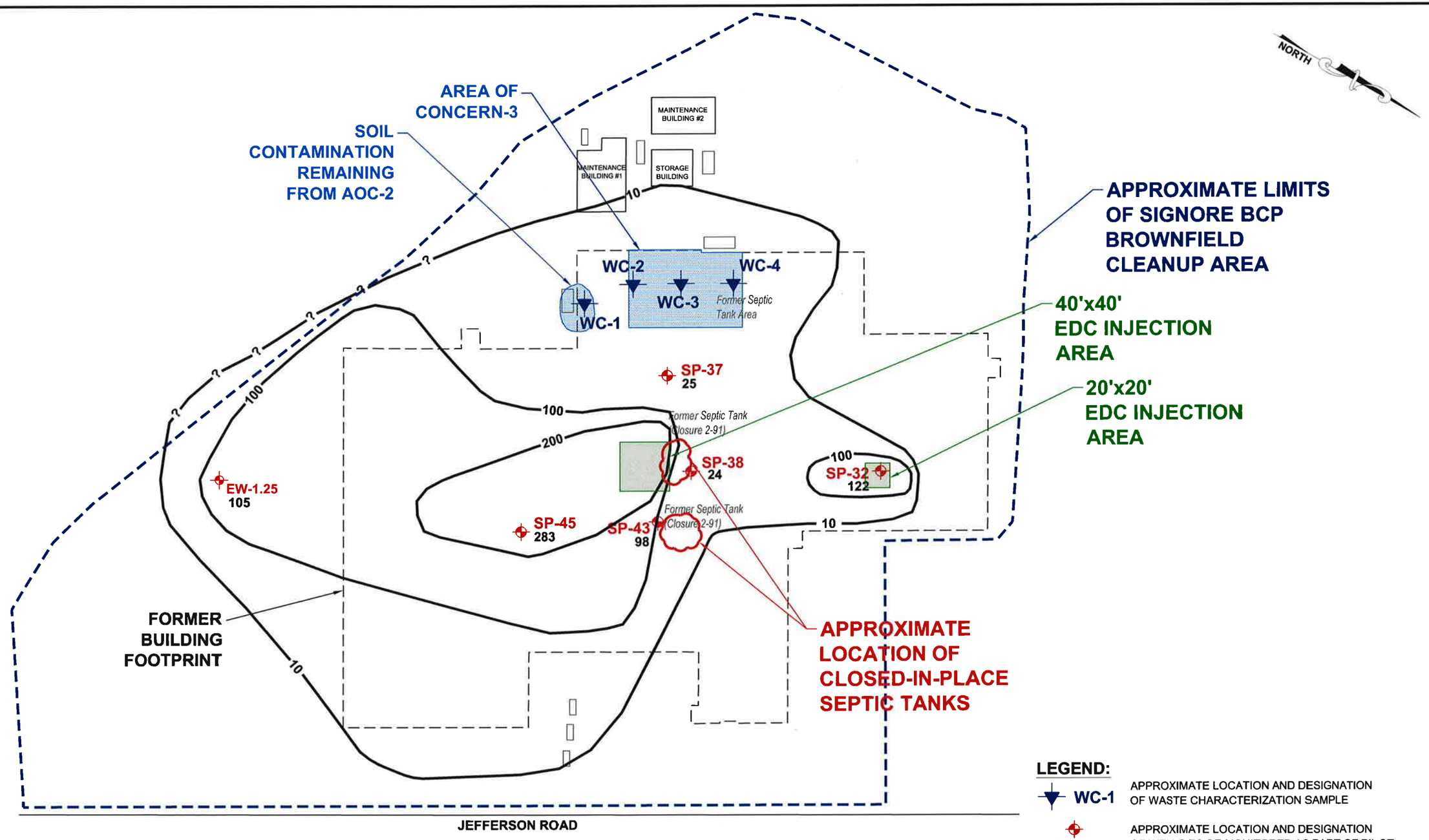
DATE: JUNE 2013

GZA GeoEnvironmental of New York

SECOND INTERIM REMEDIAL MEASURE WORK PLAN
FORMER SIGNORE FACILITY
ELLICOTTVILLE, NEW YORK
BROWNFIELD CLEANUP PROGRAM
SITE NO. C905034
CHLORINATED VOC CONCENTRATION ISOPLETH

PROJECT No.
21.0056367.40

FIGURE No.
3



LEGEND:

- WC-1 — APPROXIMATE LOCATION AND DESIGNATION OF WASTE CHARACTERIZATION SAMPLE
- SP-45 — APPROXIMATE LOCATION AND DESIGNATION OF WELLS TO BE MONITORED AS PART OF PILOT TESTING (6 LOCATIONS)
- 100 / 122 — MEASURED CONCENTRATION (AT SAMPLING POINT) OF TOTAL CHLORINATED VOCs IN GROUNDWATER (PARTS PER BILLION, PPB)
- CONTOUR OF CONCENTRATION OF TOTAL CHLORINATED VOCs IN GROUNDWATER (PARTS PER BILLION, PPB)

NOTES:

1. BASE MAP ADAPTED FROM A 2006 AERIAL PHOTOGRAPH DOWNLOADED FROM www.cattco.org/real_property/parcel_news.asp AND FIELD OBSERVATIONS.
2. THE SIZE AND LOCATION OF EXISTING SITE FEATURES SHOULD BE CONSIDERED APPROXIMATE.

DRAWN BY: DEW
DATE: JUNE 2013

GZA GeoEnvironmental of New York

APPROXIMATE SCALE IN FEET
0 40 80 160

SECOND INTERIM REMEDIAL MEASURE WORK PLAN
FORMER SIGNORE FACILITY
ELLICOTTVILLE, NEW YORK
BROWNFIELD CLEANUP PROGRAM
SITE NO. C905034
INPACTED SOIL AND EDC INJECTION AREAS

PROJECT No.
21.0056367.40

FIGURE No.
4

G:\PROJECTS\56300\56367.4 Signor Ellicottville\Second IRM\ WP\Figure 4 Impacted Soil and Inj Areas.dwg [Figure 4] July 18, 2013 - 3:49pm daniel.wulf

APPENDIX A

Table 3
Soil Analytical Testing Results Summary
Signore Facility
55-57 Jefferson
Ellicottville, New York

Parameter	Unrestricted Use Soil Cleanup Objectives	Restricted Soil Cleanup Objectives (SCO)			SP - 3 14-16ft. 10/02/2007 Result	SP - 4 10-12ft. 10/02/2007 Result	SP - 2 10-12ft. 10/02/2007 Result	SP - 1 18-20ft. 10/02/2007 Result	TP-1 9-11ft. 10/03/2007 Result	TP - 2 6-7ft. 10/03/2007 Result	TP - 4 9ft. 10/03/2007 Result	TP - 1A 9ft. 10/03/2007 Result	TP - 5 7ft. 10/03/2007 Result	TP - 5 9.5ft. 10/03/2007 Result	TP - 4 10-11ft. 10/03/2007 Result	TP - 5 12ft. 10/03/2007 Result	TP - 6 7-8ft. 10/03/2007 Result	TP - 7 8ft. 10/03/2007 Result	TP - 7 7-8ft. 10/03/2007 Result
		Restricted Residential	Restricted Commercial	Restricted Industrial															
Volatile Organic Compounds - EPA Method 8260 TCL (ug/kg)																			
1,1-Dichloroethene	330	100,000	500,000	1,000,000	<	<	<	<	<	140	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	270	26,000	240,000	480,000	<	<	<	<	<	260	<	<	<	<	<	<	<	<	<
1,1,1-Trichloroethane	680	100,000	500,000	1,000,000	<	<	<	<	<	520	<	<	<	<	<	<	<	<	<
Benzene	60	4,800	44,000	89,000	<	<	<	<	<	<	<	<	<	<	<	<	<	**800**	**2,900**
Trichloroethene	470	21,000	200,000	400,000	150	<	73	130	<	<	<	<	<	<	<	<	<	<	<
Toluene	700	100,000	500,000	1,000,000	<	<	<	<	<	<	<	<	**330,000**	**250,000**	<	**13,000**	<	390	**29,000**
Tetrachloroethene	1,300	19,000	150,000	300,000	100	<	220	64	<	<	<	<	<	<	<	<	<	<	<
Ethylbenzene	1,000	41,000	390,000	780,000	<	**78,000**	<	<	<	<	<	<	**38,000**	**32,000**	<	**1,900**	<	**4,300**	**16,000**
m&p-Xylene	260	100,000	500,000	1,000,000	<	**310,000**	<	<	<	<	<	<	**160,000**	**160,000**	<	**9,900**	69	**22,000**	**81,000**
o-Xylene	260	100,000	500,000	1,000,000	<	**130,000**	<	<	<	<	<	<	**49,000**	**56,000**	<	**1,800**	<	**4,700**	**27,000**
Isopropylbenzene	NV	NV	NV	NV	<	**34,000**	<	<	<	<	<	<	1,500	1,800	<	<	<	380	1,200
n-Propylbenzene	3,900	100,000	500,000	1,000,000	<	**250,000**	<	<	<	<	<	<	1,100	1,300	<	<	65	2,200	**6,400**
1,3,5-Trimethylbenzene	8,400	52,000	190,000	380,000	<	**550,000**	<	<	<	<	<	<	630	930	<	<	70	6,100	**20,000**
1,2,4-Trimethylbenzene	3,600	52,000	190,000	380,000	<	**1,400,000**	<	<	<	<	<	<	1,000	1,400	<	<	140	**19,000**	**53,000**
sec-Butylbenzene	11,000	100,000	500,000	1,000,000	<	**21,000**	<	<	<	<	<	<	<	<	<	<	<	240	780
p-Isopropyltoluene	NV	NV	NV	NV	<	**26,000**	<	<	<	<	<	<	<	<	<	<	<	430	1,400
n-Butylbenzene	12,000	100,000	500,000	1,000,000	<	**32,000**	<	<	<	<	<	<	<	<	<	<	<	950	2,500
Naphthalene	12,000	100,000	500,000	1,000,000	<	<	<	<	<	99	<	<	<	<	<	<	<	1,200	3,200
Total VOCs					250	2,831,000	293	194		1,019			581,230	503,430		26,600	344	62,690	244,380
Semi-Volatile Organic Compounds - EPA Method 8270 STARS (ug/kg)																			
Naphthalene	12,000	100,000	500,000	1,000,000	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<	2,000	730
2-Methylnaphthalene	NV	NV	NV	NV	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<	4,000	1,300
Phenanthrene	100,000	100,000	500,000	1,000,000	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<	450	<

Parameter	Unrestricted Use Soil Cleanup Objectives	Restricted Soil Cleanup Objectives (SCO)			TP - 8 7-8ft. 10/03/2007 Result	SP - 16 10-12 10/03/2007 Result	SP - 9 4-6ft. 10/03/2007 Result	SP - 13 10-12 10/03/2007 Result	SP - 15 14-16 10/03/2007 Result	SP-19 2-4 10/05/2007 Result	SP-20 8-10 10/05/2007 Result	SP-21 8-10 10/05/2007 Result	SP-22 8-10 10/05/2007 Result	SP-23 8-10 10/05/2007 Result	SP-24 8-10 10/05/2007 Result	SP-25 8-10 10/05/2007 Result	SP-26 8-10 10/05/2007 Result	SP-28 8-10 10/05/2007 Result	SP-29 8-10 10/05/2007 Result
		Restricted Residential	Restricted Commercial	Restricted Industrial															
Volatile Organic Compounds - EPA Method 8260 TCL (ug/kg)																			
1,1-Dichloroethene	330	100,000	500,000	1,000,000	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	270	26,000	240,000	480,000	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
1,1,1-Trichloroethane	680	100,000	500,000	1,000,000	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Benzene	60	4,800	44,000	89,000	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Trichloroethene	470	21,000	200,000	400,000	<	260	<	<	<	<	<	<	<	<	<	<	<	<	60
Toluene	700	100,000	500,000	1,000,000	<	<	<	<	<	<	86	<	<	<	<	<	<	<	<
Tetrachloroethene	1,300	19,000	150,000	300,000	<	1,200	<	<	<	<	<	<	<	<	<	<	<	<	<
Ethylbenzene	1,000	41,000	390,000	780,000	<	<	<	**2,300**	**19,000**	<	**1,000**	<	<	<	<	<	<	**34,000**	<
m&p-Xylene	260	100,000	500,000	1,000,000	<	<	<	**8,700**	**33,000**	<	**3,600**	<	<	<	<	<	<	**140,000**	<
o-Xylene	260	100,000	500,000	1,000,000	<	<	<	**2,300**	**900**	<	210	<	<	<	<	<	<	**44,000**	<
Isopropylbenzene	NV	NV	NV	NV	<	<	<	2,000	940	<	660	<	<	<	<	<	<	21,000	<
n-Propylbenzene	3,900	100,000	500,000	1,000,000	<	<	<	**17,000**	570	<	730	<	<	<	<	<	<	**150,000**	<
1,3,5-Trimethylbenzene	8,400	52,000	190,000	380,000	<	<	<	**34,000**	<	<	1,700	<	<	<	<	<	<	**350,000**	<
1,2,4-Trimethylbenzene	3,600	52,000	190,000	380,000	<	<	<	**90,000**	<	<	**4,700**	<	<	<	<	<	<	**910,000**	96
sec-Butylbenzene	11,000	100,000	500,000	1,000,000	<	<	<	1,600	<	<	110	<	<	<	<	<	<	**13,000**	<
p-Isopropyltoluene	NV	NV	NV	NV	<	<	<	2,300	<	<	220	<	<	<	<	<	<	20,000	<
n-Butylbenzene	12,000	100,000	500,000	1,000,000	<	<	<	2,300	<	<	520	<	<	<	<	<	<	**19,000**	<
Naphthalene	12,000	100,000	500,000	1,000,000	<	<	<	<	<	<	1,100	<	<	<	<	<	<	<	<
Total VOCs					0	1,460	0	162,500	54,410		14,636							1,701,000	156
Semi-Volatile Organic Compounds - EPA Method 8270 STARS (ug/kg)																			
Naphthalene	12,000	100,000	500,000	1,000,000	<	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
2-Methylnaphthalene	NV	NV	NV	NV	<	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Phenanthrene	100,000	100,000	500,000	1,000,000	<	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT

Notes:
1. Compounds detected in one or more samples are presented on this table. Refer to Attachment C for list of all compounds included in analysis.
2. Analytical testing completed by GZA GeoEnvironmental Laboratory.
3. ug/kg = part per billion and mg/kg = parts per million.
4. < indicates compound was not detected.
5. Bold indicates value exceeds the Unrestricted Use Soil Cleanup Objectives
6. Blue shading indicates value exceeds the Restricted Residential Use Soil Cleanup Objectives
7. Yellow shading indicates value exceeds the Restricted Commercial Use Soil Cleanup Objectives
8. Red shading indicates value exceeds the Restricted Industrial Use Soil Cleanup Objectives

APPENDIX B

Report Date:
12-Jul-13 13:31

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

☑ Final Report
☐ Re-Issued Report
☐ Revised Report

Laboratory Report

GZA GeoEnvironmental of NY Buffalo
535 Washington Street, 11th Floor
Buffalo, NY 14203

Work Order: M1089
Project : Former Signore Facility
Project #:

Attn: Chris Boron

Laboratory ID	Client Sample ID	Matrix	Date Sampled	Date Received
M1089-01	WC-2-061313	Soil	13-Jun-13 15:00	03-Jul-13 12:17
M1089-02	WC-3-061313	Soil	13-Jun-13 15:00	03-Jul-13 12:17

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. The results relate only to the samples(s) as received. This report may not be reproduced, except in full, without written approval from Spectrum Analytical.

All applicable NELAC or USEPA CLP requirments have been meet.

Spectrum Analytical (Rhode Island) is accredited under the National Environmental Laboratory Approval Program (NELAP) and DoD Environmental Laboratory Accreditation Program (ELAP), holds Organic and Inorganic contracts under the USEPA CLP Program and is certified under several states. The current list of our laboratory approvals and certifications is available on the Certifications page on our web site at www.spectrum-analytical.com.

Please contact the Laboratory or Technical Director at 401-732-3400 with any questions regarding the data contained in the laboratory report.

Department of Defense	N/A
Connecticut	PH-0153
Delaware	N/A
Florida	E87664
Maine	2007037
Massachusetts	M-RI907
New Hampshire	2631
New Jersey	RI001
New York	11522
North Carolina	581
Rhode Island	LAI00301
USDA	P330-08-00023
USEPA - ISM	EP-W-09-039
USEPA - SOM	EP-W-11-033

NELAP ACCREDITED TNI LABORATORY

LABORATORY ACCREDITATION BUREAU ACCREDITED
Certificate # L2247 Testing

Authorized by:

Yihai Ding
Laboratory Director

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

* Data Summary Pack *

175 Metro Center Boulevard · Warwick, RI 02886-1755 · 401-732-3400 · FAX 401-732-3499
www.spectrum-analytical.com

Spectrum Analytical Inc. - North Kingstown RI -- Rhode Island Division

New York State Department of Environmental Conservation
Sample Identification and Analytical Requirements Summary

Project Name : Former Signore Facility **SDG :** M1089

Customer Sample ID	Laboratory Sample ID	Analytical Requirements				
		MSVOA Method #	MSSEMI Method #	GC* Method #	ME	Other
WC-2-061313	M1089-01		SW8270_S		SW6010_S	
WC-2-061313	M1089-01				SW7471	
WC-3-061313	M1089-02		SW8270_S		SW6010_S	
WC-3-061313	M1089-02				SW7471	

Spectrum Analytical Inc. - North Kingstown RI -- Rhode Island Division

New York State Department of Environmental Conservation
Sample Preparation and Analysis Summary MSSEMI

Project Name : Former Signore Facility **SDG :** M1089

Laboratory Sample ID	Matrix	Date Collected	Date Received By Lab	Date Extracted	Date Analyzed
SW8270_S					
M1089-01A	SL	6/13/2013	7/3/2013	7/5/2013	7/5/2013
M1089-02A	SL	6/13/2013	7/3/2013	7/5/2013	7/5/2013

Spectrum Analytical Inc. - North Kingstown RI -- Rhode Island Division

New York State Department of Environmental Conservation
Sample Preparation and Analysis Summary MSSEMI

Project Name : Former Signore Facility **SDG :** M1089

Laboratory Sample ID	Matrix	Analytical Protocol	Extraction Method	Auxiliary Cleanup	Dil/Conc Factor
SW8270_S					
M1089-01A	SL	SW8270_S	3550B	NA	1
M1089-02A	SL	SW8270_S	3550B	NA	1

Spectrum Analytical Inc. - North Kingstown RI -- Rhode Island Division

New York State Department of Environmental Conservation
Sample Preparation and Analysis Summary ME

Project Name : Former Signore Facility **SDG :** M1089

Laboratory Sample ID	Matrix	Metals Requested	Date Received By Lab	Date Analyzed
SW6010_S				
M1089-01A	SL	SW6010_S	7/3/2013	7/9/2013
M1089-02A	SL	SW6010_S	7/3/2013	7/9/2013
SW7471				
M1089-01A	SL	SW7471	7/3/2013	7/9/2013
M1089-02A	SL	SW7471	7/3/2013	7/9/2013

Spectrum Analytical Inc. - North Kingstown RI -- Rhode Island Division

WorkOrder: M1089

Client ID: GZA_BUFFALO
Project: Former Signore Facility
WO Name: Former Signore Facility
Location: GZA_SINGNORE,

Case:
SDG:
PO: 21.0056491.00

HC Due: 07/12/13
Fax Due: 07/09/13
Fax Report: ☑

Report Level: ASP-B
Special Program:
EDD: CLF
EQUIIS_4_NYSDEC

Comments: CC pdf and EDD to John Beninati (john.beninati@gza.com). No charge for Trip Blank. FORMERLY M0976-REANLYSIS REQUESTED BY CLIENT

Lab Samp ID	Client Sample ID	Collection Date	Date Recv'd	Matrix	Test Code	Samp / Lab Test Comments	HF	HT	MS	SEL	Storage
M1089-01A	WC-2-061313	06/13/2013 15:00	07/03/2013	Soil	PMoist	USE PMOIST FROM M0976-02A /					A1
M1089-01A	WC-2-061313	06/13/2013 15:00	07/03/2013	Soil	SW6010_S	USE PMOIST FROM M0976-02A / TAL				Y	A1
M1089-01A	WC-2-061313	06/13/2013 15:00	07/03/2013	Soil	SW7471	USE PMOIST FROM M0976-02A / TAL					A1
M1089-01A	WC-2-061313	06/13/2013 15:00	07/03/2013	Soil	SW8270_S	USE PMOIST FROM M0976-02A / 8270_BN,				Y	A1
M1089-02A	WC-3-061313	06/13/2013 15:00	07/03/2013	Soil	PMoist	USE PMOIST FROM M0976-03A /					A1
M1089-02A	WC-3-061313	06/13/2013 15:00	07/03/2013	Soil	SW6010_S	USE PMOIST FROM M0976-03A / TAL				Y	A1
M1089-02A	WC-3-061313	06/13/2013 15:00	07/03/2013	Soil	SW7471	USE PMOIST FROM M0976-03A / TAL					A1
M1089-02A	WC-3-061313	06/13/2013 15:00	07/03/2013	Soil	SW8270_S	USE PMOIST FROM M0976-03A / 8270_BN,				Y	A1

HF = Fraction logged in but all tests have been placed on hold

HT = Test logged in but has been placed on hold

07/08/2013 11:56 Lab Client Rep: Veronica E Brizard

* Semivolatile Organics *

REPORT NARRATIVE

Spectrum Analytical, Inc. Featuring Hanibal Technology, RI Division.

Client : GZA GeoEnvironmental of NY Buffalo

Project: Former Signore Facility

Laboratory Workorder / SDG #: M1089

SW846 8270D, SVOA by GC-MS

I. SAMPLE RECEIPT

No exceptions or unusual conditions were encountered unless a Sample Condition Notification Form, or other record of communication is included with the Sample Receipt Documentation.

II. HOLDING TIMES

A. Sample Preparation:

All samples were prepared within the method-specified holding times with the following exceptions:

WC-2-061313 (M1089-01A) exceed by-8 Days
WC-3-061313 (M1089-02A) exceed by-8 Days

Please note these two samples were collected on 6/13. Additional tests were added on 7/3.

B. Sample Analysis:

All samples were analyzed within the method-specified holding times.

III. METHODS

Samples were analyzed following procedures in laboratory test code: SW846 8270D

IV. PREPARATION

Soil Samples were prepared following procedures in laboratory test code: SW3550B

V. INSTRUMENTATION

The following instrumentation was used

Instrument Code: S4
Instrument Type: GCMS-SEMI
Description: HP6890 / HP5973
Manufacturer: Hewlett-Packard
Model: 6890N / 5973N

VI. ANALYSIS

A. Calibration:

Calibrations met the method/SOP acceptance criteria.

B. Blanks:

All method blanks were within the acceptance criteria.

C. Surrogates:

Surrogate standard percent recoveries were within the QC limits.

D. Spikes:

1. Laboratory Control Spikes (LCS):

Percent recoveries for lab control samples were within the QC limits with the following exceptions. Please note that most test procedures allow for several compounds outside of the QC limits for the LCS, although this may indicate a bias for this specific compound.

Replicate RPDs were within the advisory QC limits with the exception of the following:

(LCSD-72594), Relative Percent Difference is greater than RPD limit for 3,3´-Dichlorobenzidine, 4-Chloroaniline.

2. Matrix Spike / Matrix Spike Duplicate (MS/MSD):

No client-requested MS/MSD analyses were included in this SDG.

E. Internal Standards:

Internal standard peak areas were within the QC limits.

F. Dilutions:

No sample in this SDG required analysis at dilution.

G. Samples:

No other unusual occurrences were noted during sample analysis.

H. Manual Integration

No manual integrations were performed on any sample or standard.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Spectrum, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Signed:_____ _____

Date:_____7/12/2013_____

Data Flag/Qualifiers:

U Not Detected. This compound was analyzed-for but not detected. For most analyses the reporting limit (lowest standard concentration) is the value listed. For Department of Defense programs, this is the Limit of Detection (LOD).

J This flag indicates an estimated value due to either
- the compound was detected below the reporting limit, or
- estimated concentration for Tentatively Identified Compound

B This flag indicates the compound was also detected in the associated Method Blank. The B flag has an alternative meaning for Inorganics analyses reported using CLP ILM-type metals forms, indicating a "trace" concentration below the reporting limit and equal to or above the detection limit.

D For Organics analysis, this flag indicates the compound concentration was obtained from a secondary dilution analysis

E This flag indicates the compound concentration exceeded the Calibration Range. The E flag has an alternative meaning for Inorganics analyses reported using CLP metals forms, indicating an estimated concentration due to the presence of interferences, as determined by the serial dilution analysis.

P This flag is used for pesticides/PCB/herbicide compound when there is a greater than 40% difference for detected concentration between the two GC columns used for primary and confirmation analyses. This difference typically indicates an interference, causing one value to be unusually high. The **lower** of the two values is generally reported on the Form 1, and both values reported on the Form 10.

A Used to flag semivolatile organic Tentatively Identified Compound library search results for compounds identified as aldol condensation byproducts.

N Used to flag results for volatile and semivolatile Organics analysis Tentatively Identified Compounds where an analyte has passed the identification criteria, and is considered to be positively identified. For Inorganics analysis the N flag indicates the matrix spike recovery falls outside of the control limit.

* For Inorganics analysis the * flag indicates Relative Percent Difference for duplicate analyses is outside of the control limit.

Sample ID Suffixes

DL Diluted analysis. The sample was diluted and reanalyzed. The DL may be followed by a digit if more than one diluted reanalysis is provided. The DL suffix is not attached to an analysis initially performed at dilution, only to reanalyses performed at dilution

RE Reanalysis. Appended to the client sample ID to indicate a reextraction and reanalysis or a reanalysis of the original sample extract.

RA Reanalysis. Appended to the laboratory sample ID indicates a reanalysis of the original sample extract.

RX Reextraction. Appended to the laboratory sample ID indicates a reextraction of the sample.

MS Matrix Spike.

MSD Matrix Spike Duplicate

DUP Duplicate analysis

SD Serial Dilution

PS Post-digestion or Post-distillation spike. For metals or inorganic analyses

1D - FORM I SV-1

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

WC-2-061313

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: M1089 Mod. Ref No.: SDG No.: SM1089

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: M1089-01A

Sample wt/vol: 15.2 (g/mL) G Lab File ID: S4F4234.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 12 Decanted: (Y/N) N Date Received: 07/03/2013

Concentrated Extract Volume: 1000 (uL) Date Extracted: 07/05/2013

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 07/05/2013

GPC Cleanup:(Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
111-44-4	Bis(2-chloroethyl)ether	370	U
541-73-1	1,3-Dichlorobenzene	370	U
106-46-7	1,4-Dichlorobenzene	370	U
95-50-1	1,2-Dichlorobenzene	370	U
108-60-1	2,2´-oxybis(1-Chloropropane)	370	U
67-72-1	Hexachloroethane	370	U
98-95-3	Nitrobenzene	370	U
78-59-1	Isophorone	370	U
120-82-1	1,2,4-Trichlorobenzene	370	U
91-20-3	Naphthalene	370	U
106-47-8	4-Chloroaniline	370	U
111-91-1	Bis(2-chloroethoxy)methane	370	U
87-68-3	Hexachlorobutadiene	370	U
91-57-6	2-Methylnaphthalene	370	U
77-47-4	Hexachlorocyclopentadiene	370	U
91-58-7	2-Chloronaphthalene	370	U
88-74-4	2-Nitroaniline	750	U
131-11-3	Dimethylphthalate	370	U
208-96-8	Acenaphthylene	370	U
606-20-2	2,6-Dinitrotoluene	370	U
99-09-2	3-Nitroaniline	750	U
83-32-9	Acenaphthene	370	U
132-64-9	Dibenzofuran	370	U
121-14-2	2,4-Dinitrotoluene	370	U
84-66-2	Diethylphthalate	370	U
7005-72-3	4-Chlorophenyl-phenylether	370	U
86-73-7	Fluorene	370	U
100-01-6	4-Nitroaniline	750	U
101-55-3	4-Bromophenyl-phenylether	370	U
118-74-1	Hexachlorobenzene	370	U
85-01-8	Phenanthrene	370	U
120-12-7	Anthracene	370	U
86-74-8	Carbazole	370	U
206-44-0	Fluoranthene	370	U
129-00-0	Pyrene	370	U
85-68-7	Butylbenzylphthalate	370	U

1E - FORM I SV-2

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

WC-2-061313

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: M1089 Mod. Ref No.: SDG No.: SM1089

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: M1089-01A

Sample wt/vol: 15.2 (g/mL) G Lab File ID: S4F4234.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 12 Decanted: (Y/N) N Date Received: 07/03/2013

Concentrated Extract Volume: 1000 (uL) Date Extracted: 07/05/2013

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 07/05/2013

GPC Cleanup:(Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-94-1	3,3´-Dichlorobenzidine	370	U
56-55-3	Benzo(a)anthracene	370	U
218-01-9	Chrysene	370	U
117-81-7	Bis(2-ethylhexyl)phthalate	370	U
205-99-2	Benzo(b)fluoranthene	370	U
207-08-9	Benzo(k)fluoranthene	370	U
50-32-8	Benzo(a)pyrene	370	U
193-39-5	Indeno(1,2,3-cd)pyrene	370	U
53-70-3	Dibenzo(a,h)anthracene	370	U
191-24-2	Benzo(g,h,i)perylene	370	U

1D - FORM I SV-1

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

WC-3-061313

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: M1089 Mod. Ref No.: SDG No.: SM1089

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: M1089-02A

Sample wt/vol: 15.3 (g/mL) G Lab File ID: S4F4235.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 8.9 Decanted: (Y/N) N Date Received: 07/03/2013

Concentrated Extract Volume: 1000 (uL) Date Extracted: 07/05/2013

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 07/05/2013

GPC Cleanup:(Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
111-44-4	Bis(2-chloroethyl)ether	360	U
541-73-1	1,3-Dichlorobenzene	360	U
106-46-7	1,4-Dichlorobenzene	360	U
95-50-1	1,2-Dichlorobenzene	360	U
108-60-1	2,2´-oxybis(1-Chloropropane)	360	U
67-72-1	Hexachloroethane	360	U
98-95-3	Nitrobenzene	360	U
78-59-1	Isophorone	360	U
120-82-1	1,2,4-Trichlorobenzene	360	U
91-20-3	Naphthalene	360	U
106-47-8	4-Chloroaniline	360	U
111-91-1	Bis(2-chloroethoxy)methane	360	U
87-68-3	Hexachlorobutadiene	360	U
91-57-6	2-Methylnaphthalene	360	U
77-47-4	Hexachlorocyclopentadiene	360	U
91-58-7	2-Chloronaphthalene	360	U
88-74-4	2-Nitroaniline	720	U
131-11-3	Dimethylphthalate	360	U
208-96-8	Acenaphthylene	360	U
606-20-2	2,6-Dinitrotoluene	360	U
99-09-2	3-Nitroaniline	720	U
83-32-9	Acenaphthene	360	U
132-64-9	Dibenzofuran	360	U
121-14-2	2,4-Dinitrotoluene	360	U
84-66-2	Diethylphthalate	360	U
7005-72-3	4-Chlorophenyl-phenylether	360	U
86-73-7	Fluorene	360	U
100-01-6	4-Nitroaniline	720	U
101-55-3	4-Bromophenyl-phenylether	360	U
118-74-1	Hexachlorobenzene	360	U
85-01-8	Phenanthrene	360	U
120-12-7	Anthracene	360	U
86-74-8	Carbazole	360	U
206-44-0	Fluoranthene	360	U
129-00-0	Pyrene	360	U
85-68-7	Butylbenzylphthalate	360	U

1E - FORM I SV-2

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

WC-3-061313

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: M1089 Mod. Ref No.: SDG No.: SM1089

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: M1089-02A

Sample wt/vol: 15.3 (g/mL) G Lab File ID: S4F4235.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 8.9 Decanted: (Y/N) N Date Received: 07/03/2013

Concentrated Extract Volume: 1000 (uL) Date Extracted: 07/05/2013

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 07/05/2013

GPC Cleanup:(Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-94-1	3,3´-Dichlorobenzidine	360	U
56-55-3	Benzo(a)anthracene	360	U
218-01-9	Chrysene	360	U
117-81-7	Bis(2-ethylhexyl)phthalate	360	U
205-99-2	Benzo(b)fluoranthene	360	U
207-08-9	Benzo(k)fluoranthene	360	U
50-32-8	Benzo(a)pyrene	360	U
193-39-5	Indeno(1,2,3-cd)pyrene	360	U
53-70-3	Dibenzo(a,h)anthracene	360	U
191-24-2	Benzo(g,h,i)perylene	360	U

1D - FORM I SV-1

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

MB-72594

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: M1089 Mod. Ref No.: SDG No.: SM1089

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: MB-72594

Sample wt/vol: 15.0 (g/mL) G Lab File ID: S4F4227.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: Decanted: (Y/N) Date Received:

Concentrated Extract Volume: 1000 (uL) Date Extracted: 07/05/2013

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 07/05/2013

GPC Cleanup:(Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
111-44-4	Bis(2-chloroethyl)ether	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
95-50-1	1,2-Dichlorobenzene	330	U
108-60-1	2,2´-oxybis(1-Chloropropane)	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
111-91-1	Bis(2-chloroethoxy)methane	330	U
87-68-3	Hexachlorobutadiene	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	670	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
99-09-2	3-Nitroaniline	670	U
83-32-9	Acenaphthene	330	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	670	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	330	U
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U

1E - FORM I SV-2

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

MB-72594

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: M1089 Mod. Ref No.: SDG No.: SM1089

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: MB-72594

Sample wt/vol: 15.0 (g/mL) G Lab File ID: S4F4227.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: Decanted: (Y/N) Date Received:

Concentrated Extract Volume: 1000 (uL) Date Extracted: 07/05/2013

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 07/05/2013

GPC Cleanup:(Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-94-1	3,3´-Dichlorobenzidine	330	U
56-55-3	Benzo(a)anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	Bis(2-ethylhexyl)phthalate	330	U
205-99-2	Benzo(b)fluoranthene	330	U
207-08-9	Benzo(k)fluoranthene	330	U
50-32-8	Benzo(a)pyrene	330	U
193-39-5	Indeno(1,2,3-cd)pyrene	330	U
53-70-3	Dibenzo(a,h)anthracene	330	U
191-24-2	Benzo(g,h,i)perylene	330	U

1D - FORM I SV-1

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

LCS-72594

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: M1089 Mod. Ref No.: SDG No.: SM1089

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: LCS-72594

Sample wt/vol: 15.0 (g/mL) G Lab File ID: S4F4228.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: Decanted: (Y/N) Date Received:

Concentrated Extract Volume: 1000 (uL) Date Extracted: 07/05/2013

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 07/05/2013

GPC Cleanup:(Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
111-44-4	Bis(2-chloroethyl)ether	3100	
541-73-1	1,3-Dichlorobenzene	2700	
106-46-7	1,4-Dichlorobenzene	2800	
95-50-1	1,2-Dichlorobenzene	2800	
108-60-1	2,2´-oxybis(1-Chloropropane)	3000	
67-72-1	Hexachloroethane	2800	
98-95-3	Nitrobenzene	3000	
78-59-1	Isophorone	2900	
120-82-1	1,2,4-Trichlorobenzene	2900	
91-20-3	Naphthalene	3000	
106-47-8	4-Chloroaniline	1900	
111-91-1	Bis(2-chloroethoxy)methane	3000	
87-68-3	Hexachlorobutadiene	3100	
91-57-6	2-Methylnaphthalene	2800	
77-47-4	Hexachlorocyclopentadiene	2600	
91-58-7	2-Chloronaphthalene	2900	
88-74-4	2-Nitroaniline	2800	
131-11-3	Dimethylphthalate	2800	
208-96-8	Acenaphthylene	2800	
606-20-2	2,6-Dinitrotoluene	2900	
99-09-2	3-Nitroaniline	2000	
83-32-9	Acenaphthene	2800	
132-64-9	Dibenzofuran	2900	
121-14-2	2,4-Dinitrotoluene	2700	
84-66-2	Diethylphthalate	2900	
7005-72-3	4-Chlorophenyl-phenylether	3000	
86-73-7	Fluorene	3000	
100-01-6	4-Nitroaniline	2100	
101-55-3	4-Bromophenyl-phenylether	3000	
118-74-1	Hexachlorobenzene	2800	
85-01-8	Phenanthrene	2900	
120-12-7	Anthracene	2800	
86-74-8	Carbazole	2800	
206-44-0	Fluoranthene	2900	
129-00-0	Pyrene	3000	
85-68-7	Butylbenzylphthalate	2900	

1E - FORM I SV-2

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

LCS-72594

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: M1089 Mod. Ref No.: SDG No.: SM1089

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: LCS-72594

Sample wt/vol: 15.0 (g/mL) G Lab File ID: S4F4228.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: Decanted: (Y/N) Date Received:

Concentrated Extract Volume: 1000 (uL) Date Extracted: 07/05/2013

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 07/05/2013

GPC Cleanup:(Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-94-1	3,3´-Dichlorobenzidine	2000	
56-55-3	Benzo(a)anthracene	2800	
218-01-9	Chrysene	3000	
117-81-7	Bis(2-ethylhexyl)phthalate	3000	
205-99-2	Benzo(b)fluoranthene	2800	
207-08-9	Benzo(k)fluoranthene	2900	
50-32-8	Benzo(a)pyrene	2700	
193-39-5	Indeno(1,2,3-cd)pyrene	2600	
53-70-3	Dibenzo(a,h)anthracene	2600	
191-24-2	Benzo(g,h,i)perylene	2500	

1D - FORM I SV-1

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

LCSD-72594

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: M1089 Mod. Ref No.: SDG No.: SM1089

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: LCSD-72594

Sample wt/vol: 15.0 (g/mL) G Lab File ID: S4F4229.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: Decanted: (Y/N) Date Received:

Concentrated Extract Volume: 1000 (uL) Date Extracted: 07/05/2013

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 07/05/2013

GPC Cleanup:(Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
111-44-4	Bis(2-chloroethyl)ether	3000	
541-73-1	1,3-Dichlorobenzene	2600	
106-46-7	1,4-Dichlorobenzene	2700	
95-50-1	1,2-Dichlorobenzene	2700	
108-60-1	2,2´-oxybis(1-Chloropropane)	2900	
67-72-1	Hexachloroethane	2800	
98-95-3	Nitrobenzene	3000	
78-59-1	Isophorone	3000	
120-82-1	1,2,4-Trichlorobenzene	2700	
91-20-3	Naphthalene	3000	
106-47-8	4-Chloroaniline	2100	
111-91-1	Bis(2-chloroethoxy)methane	3000	
87-68-3	Hexachlorobutadiene	2900	
91-57-6	2-Methylnaphthalene	2700	
77-47-4	Hexachlorocyclopentadiene	2900	
91-58-7	2-Chloronaphthalene	2800	
88-74-4	2-Nitroaniline	2800	
131-11-3	Dimethylphthalate	2800	
208-96-8	Acenaphthylene	2800	
606-20-2	2,6-Dinitrotoluene	3000	
99-09-2	3-Nitroaniline	2400	
83-32-9	Acenaphthene	2800	
132-64-9	Dibenzofuran	2900	
121-14-2	2,4-Dinitrotoluene	2900	
84-66-2	Diethylphthalate	2900	
7005-72-3	4-Chlorophenyl-phenylether	2700	
86-73-7	Fluorene	3000	
100-01-6	4-Nitroaniline	2500	
101-55-3	4-Bromophenyl-phenylether	3000	
118-74-1	Hexachlorobenzene	3100	
85-01-8	Phenanthrene	3000	
120-12-7	Anthracene	2900	
86-74-8	Carbazole	2900	
206-44-0	Fluoranthene	3000	
129-00-0	Pyrene	3100	
85-68-7	Butylbenzylphthalate	3100	

1E - FORM I SV-2

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

LCSD-72594

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: M1089 Mod. Ref No.: SDG No.: SM1089

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: LCSD-72594

Sample wt/vol: 15.0 (g/mL) G Lab File ID: S4F4229.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: Decanted: (Y/N) Date Received:

Concentrated Extract Volume: 1000 (uL) Date Extracted: 07/05/2013

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 07/05/2013

GPC Cleanup:(Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-94-1	3,3´-Dichlorobenzidine	2300	
56-55-3	Benzo(a)anthracene	2900	
218-01-9	Chrysene	3000	
117-81-7	Bis(2-ethylhexyl)phthalate	3000	
205-99-2	Benzo(b)fluoranthene	3100	
207-08-9	Benzo(k)fluoranthene	3100	
50-32-8	Benzo(a)pyrene	2900	
193-39-5	Indeno(1,2,3-cd)pyrene	2600	
53-70-3	Dibenzo(a,h)anthracene	2800	
191-24-2	Benzo(g,h,i)perylene	2700	

2K - FORM II SV-4

SOIL SEMIVOLATILE DEUTERATED MONITORING COMPOUND RECOVERY

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: M1089 Mod. Ref No.: SDG No.: SM1089

Level: (LOW/MED) LOW

	CLIENT SAMPLE NO.	SDMC1 (NBZ) #	SDMC2 (FBP) #	SDMC3 (TPH) #						TOT OUT
01	MB-72594	90	91	107						0
02	LCS-72594	90	85	96						0
03	LCSD-72594	87	83	95						0
04	WC-2-061313	76	75	93						0
05	WC-3-061313	76	80	97						0

			QC LIMITS
SDMC1	(NBZ)	= Nitrobenzene-d5	(35-100)
SDMC2	(FBP)	= 2-Fluorobiphenyl	(45-105)
SDMC3	(TPH)	= Terphenyl-d14	(30-125)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D DMC diluted out

som13.06.03.A

3 - FORM III
SOIL LABORATORY CONTROL
SAMPLE RECOVERY

CLIENT SAMPLE NO.
LCS-72594

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: M1089 Mod. Ref No.: SDG No.: SM1089

Lab Sample ID: LCS-72594 LCS Lot No.: A092773

Date Extracted: 07/05/2013 Date Analyzed (1): 07/05/2013

COMPOUND	SPIKE ADDED	SAMPLE CONCENTRATION	LCS CONCENTRATION	LCS %REC	#	QC. LIMITS REC.
Bis(2-chloroethyl)ether	3333.0000	0.0000	3077.8942	92		40 - 105
1,3-Dichlorobenzene	3333.0000	0.0000	2681.2720	80		40 - 100
1,4-Dichlorobenzene	3333.0000	0.0000	2802.5239	84		35 - 105
1,2-Dichlorobenzene	3333.0000	0.0000	2809.6290	84		45 - 95
2,2´-oxybis(1-Chloropropan	3333.0000	0.0000	2961.6692	89		20 - 115
Hexachloroethane	3333.0000	0.0000	2786.8920	84		35 - 110
Nitrobenzene	3333.0000	0.0000	3022.0847	91		40 - 115
Isophorone	3333.0000	0.0000	2926.9407	88		45 - 110
1,2,4-Trichlorobenzene	3333.0000	0.0000	2883.0564	87		45 - 110
Naphthalene	3333.0000	0.0000	3011.0077	90		40 - 105
4-Chloroaniline	3333.0000	0.0000	1872.8526	56		10 - 100
Bis(2-chloroethoxy)methane	3333.0000	0.0000	2999.6795	90		45 - 110
Hexachlorobutadiene	3333.0000	0.0000	3132.6485	94		40 - 115
2-Methylnaphthalene	3333.0000	0.0000	2779.9759	83		45 - 105
Hexachlorocyclopentadiene	3333.0000	0.0000	2576.8776	77		8 - 148
2-Chloronaphthalene	3333.0000	0.0000	2851.7218	86		45 - 105
2-Nitroaniline	3333.0000	0.0000	2798.9635	84		45 - 120
Dimethylphthalate	3333.0000	0.0000	2786.2680	84		50 - 110
Acenaphthylene	3333.0000	0.0000	2750.1146	83		45 - 105
2,6-Dinitrotoluene	3333.0000	0.0000	2882.9360	86		50 - 110
3-Nitroaniline	3333.0000	0.0000	2047.0275	61		25 - 110
Acenaphthene	3333.0000	0.0000	2792.0529	84		45 - 110
Dibenzofuran	3333.0000	0.0000	2933.9523	88		50 - 105
2,4-Dinitrotoluene	3333.0000	0.0000	2742.6559	82		50 - 115
Diethylphthalate	3333.0000	0.0000	2866.5473	86		50 - 115
4-Chlorophenyl-phenylether	3333.0000	0.0000	2950.1166	89		45 - 110
Fluorene	3333.0000	0.0000	3008.3332	90		50 - 110
4-Nitroaniline	3333.0000	0.0000	2107.9598	63		35 - 115
4-Bromophenyl-phenylether	3333.0000	0.0000	2965.2402	89		45 - 115
Hexachlorobenzene	3333.0000	0.0000	2757.9201	83		45 - 120
Phenanthrene	3333.0000	0.0000	2895.7959	87		50 - 110
Anthracene	3333.0000	0.0000	2762.6520	83		55 - 105
Carbazole	3333.0000	0.0000	2796.9315	84		45 - 115
Fluoranthene	3333.0000	0.0000	2871.5938	86		55 - 115
Pyrene	3333.0000	0.0000	2966.1324	89		45 - 125
Butylbenzylphthalate	3333.0000	0.0000	2884.0520	87		50 - 125
3,3´-Dichlorobenzidine	3333.0000	0.0000	2023.9874	61		10 - 130
Benzo(a)anthracene	3333.0000	0.0000	2782.4392	83		50 - 110
Chrysene	3333.0000	0.0000	3016.9635	91		55 - 110
Bis(2-ethylhexyl)phthalate	3333.0000	0.0000	2950.0498	89		45 - 125
Benzo(b)fluoranthene	3333.0000	0.0000	2809.4036	84		45 - 115
Benzo(k)fluoranthene	3333.0000	0.0000	2876.6565	86		45 - 125
Benzo(a)pyrene	3333.0000	0.0000	2676.9422	80		50 - 110
Indeno(1,2,3-cd)pyrene	3333.0000	0.0000	2551.9677	77		40 - 120

3 - FORM III
SOIL LABORATORY CONTROL
SAMPLE RECOVERY

CLIENT SAMPLE NO.
LCS-72594

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: M1089 Mod. Ref No.: SDG No.: SM1089

Lab Sample ID: LCS-72594 LCS Lot No.: A092773

Date Extracted: 07/05/2013 Date Analyzed (1): 07/05/2013

COMPOUND	SPIKE ADDED	SAMPLE CONCENTRATION	LCS CONCENTRATION	LCS %REC	#	QC. LIMITS REC.
Dibenzo(a,h)anthracene	3333.0000	0.0000	2553.3208	77		40 - 125
Benzo(g,h,i)perylene	3333.0000	0.0000	2535.0933	76		40 - 125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

Spike Recovery: 0 out of 46 outside limits

COMMENTS:

3 - FORM III
SOIL LABORATORY CONTROL
SAMPLE DUPLICATE RECOVERY

EPA SAMPLE NO.
LCSD-72594

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: M1089 Mod. Ref No.: SDG No.: SM1089

Lab Sample ID: LCSD-72594 LCS Lot No.: A092773

COMPOUND	SPIKE ADDED	LCSD CONCENTRATION	LCSD %REC	#	%RPD	#	QC LIMITS RPD	QC LIMITS REC.
Bis(2-chloroethyl)ether	3333.0000	2980.5890	89		3		40	40 - 105
1,3-Dichlorobenzene	3333.0000	2581.8206	77		4		40	40 - 100
1,4-Dichlorobenzene	3333.0000	2711.3063	81		4		40	35 - 105
1,2-Dichlorobenzene	3333.0000	2688.5104	81		4		40	45 - 95
2,2´-oxybis(1-Chloropropan	3333.0000	2897.9282	87		2		40	20 - 115
Hexachloroethane	3333.0000	2787.5746	84		0		40	35 - 110
Nitrobenzene	3333.0000	3049.0498	91		0		40	40 - 115
Isophorone	3333.0000	3019.3367	91		3		40	45 - 110
1,2,4-Trichlorobenzene	3333.0000	2703.6507	81		7		40	45 - 110
Naphthalene	3333.0000	3025.7828	91		1		40	40 - 105
4-Chloroaniline	3333.0000	2061.6653	62		10		40	10 - 100
Bis(2-chloroethoxy)methane	3333.0000	3036.1012	91		1		40	45 - 110
Hexachlorobutadiene	3333.0000	2881.9734	86		9		40	40 - 115
2-Methylnaphthalene	3333.0000	2705.3865	81		2		40	45 - 105
Hexachlorocyclopentadiene	3333.0000	2875.4951	86		11		40	8 - 148
2-Chloronaphthalene	3333.0000	2795.5240	84		2		40	45 - 105
2-Nitroaniline	3333.0000	2822.8185	85		1		40	45 - 120
Dimethylphthalate	3333.0000	2755.7175	83		1		40	50 - 110
Acenaphthylene	3333.0000	2787.1719	84		1		40	45 - 105
2,6-Dinitrotoluene	3333.0000	2982.2556	89		3		40	50 - 110
3-Nitroaniline	3333.0000	2442.1568	73		18		40	25 - 110
Acenaphthene	3333.0000	2839.8312	85		1		40	45 - 110
Dibenzofuran	3333.0000	2933.7094	88		0		40	50 - 105
2,4-Dinitrotoluene	3333.0000	2948.4476	88		7		40	50 - 115
Diethylphthalate	3333.0000	2934.4081	88		2		40	50 - 115
4-Chlorophenyl-phenylether	3333.0000	2748.2643	82		8		40	45 - 110
Fluorene	3333.0000	2956.1481	89		1		40	50 - 110
4-Nitroaniline	3333.0000	2504.8490	75		17		40	35 - 115
4-Bromophenyl-phenylether	3333.0000	3042.2561	91		2		40	45 - 115
Hexachlorobenzene	3333.0000	3093.2336	93		11		40	45 - 120
Phenanthrene	3333.0000	2953.7852	89		2		40	50 - 110
Anthracene	3333.0000	2870.4793	86		4		40	55 - 105
Carbazole	3333.0000	2935.6265	88		5		40	45 - 115
Fluoranthene	3333.0000	3004.9434	90		5		40	55 - 115
Pyrene	3333.0000	3084.2506	93		4		40	45 - 125
Butylbenzylphthalate	3333.0000	3072.3630	92		6		40	50 - 125
3,3´-Dichlorobenzidine	3333.0000	2288.5234	69		12		40	10 - 130
Benzo(a)anthracene	3333.0000	2921.8288	88		6		40	50 - 110
Chrysene	3333.0000	3047.8924	91		0		40	55 - 110
Bis(2-ethylhexyl)phthalate	3333.0000	3034.4535	91		2		40	45 - 125
Benzo(b)fluoranthene	3333.0000	3057.2609	92		9		40	45 - 115
Benzo(k)fluoranthene	3333.0000	3128.2197	94		9		40	45 - 125
Benzo(a)pyrene	3333.0000	2876.4204	86		7		40	50 - 110
Indeno(1,2,3-cd)pyrene	3333.0000	2581.3122	77		0		40	40 - 120
Dibenzo(a,h)anthracene	3333.0000	2775.3424	83		8		40	40 - 125
Benzo(g,h,i)perylene	3333.0000	2679.5420	80		5		40	40 - 125

3 - FORM III
SOIL LABORATORY CONTROL
SAMPLE DUPLICATE RECOVERY

EPA SAMPLE NO.
LCSD-72594

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: M1089 Mod. Ref No.: SDG No.: SM1089

Lab Sample ID: LCSD-72594 LCS Lot No.: A092773

COMPOUND	SPIKE ADDED	LCSD CONCENTRATION	LCSD %REC #	%RPD #	QC LIMITS RPD	QC LIMITS REC.

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 46 outside limits

Spike Recovery: 0 out of 46 outside limits

COMMENTS:

4C - FORM IV SV
SEMIVOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.
MB-72594

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: M1089 Mod. Ref No.: SDG No.: SM1089

Lab File ID: S4F4227.D Lab Sample ID: MB-72594

Instrument ID: S4 Date Extracted: 07/05/2013

Matrix: (SOIL/SED/WATER) SOIL Date Analyzed: 07/05/2013

Level: (LOW/MED) LOW Time Analyzed: 19:40

Extraction: (Type) SONC GPC Cleanup: (Y/N) N

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	LCS-72594	LCS-72594	S4F4228.D	07/05/2013
02	LCSD-72594	LCSD-72594	S4F4229.D	07/05/2013
03	WC-2-061313	M1089-01A	S4F4234.D	07/05/2013
04	WC-3-061313	M1089-02A	S4F4235.D	07/05/2013

COMMENTS:

8C - FORM VIII SV-1

SEMIVOLATILE INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: M1089 Mod. Ref No.: SDG No.: SM1089

GC Column: Rxi-5sil MS ID: 0.25 (mm) Init. Calib. Date(s): 07/02/2013 07/02/2013

EPA Sample No.(SSTD020##) SSTD0254C Date Analyzed: 07/05/2013

Lab File ID (Standard): S4F4211.D Time Analyzed: 12:15

Instrument ID: S4

		IS1 (DCB) AREA	#	RT	#	IS2 (NPT) AREA	#	RT	#	IS3 (ANT) AREA	#	RT	#
	12 HOUR STD	51686		5.066		204769		6.267		102514		7.974	
	UPPER LIMIT	103372		5.566		409538		6.767		205028		8.474	
	LOWER LIMIT	25843		4.566		102385		5.767		51257		7.474	
	SAMPLE NO.												
01	MB-72594	75734		5.066		252627		6.267		127604		7.964	
02	LCS-72594	63941		5.066		229536		6.267		116429		7.964	
03	LCSD-72594	73729		5.066		265456		6.267		134332		7.964	
04	WC-2-061313	71772		5.066		249244		6.266		130784		7.964	
05	WC-3-061313	72388		5.066		262214		6.267		135725		7.964	

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10
AREA UPPER LIMIT = 200% of internal standard area
AREA LOWER LIMIT = 50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside contract required QC limits with an asterisk.

8D - FORM VIII SV-2

SEMIVOLATILE INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: M1089 Mod. Ref No.: SDG No.: SM1089

EPA Sample No.(SSTD020##) SSTD0254C Date Analyzed: 07/05/2013

Lab File ID (Standard): S4F4211.D Time Analyzed: 12:15

Instrument ID: S4 GC Column: Rxi-5sil MS ID: 0.25 (mm)

		IS4 (PHN) AREA	#	RT	#	IS5 (CRY) AREA	#	RT	#	IS6 (PRY) AREA	#	RT	#
	12 HOUR STD	174197		9.423		179233		12.259		158976		14.692	
	UPPER LIMIT	348394		9.923		358466		12.759		317952		15.192	
	LOWER LIMIT	87099		8.923		89617		11.759		79488		14.192	
	SAMPLE NO.												
01	MB-72594	217039		9.423		203772		12.104		184539		14.495	
02	LCS-72594	203063		9.424		194765		12.104		180976		14.495	
03	LCSD-72594	227001		9.423		218524		12.104		187930		14.495	
04	WC-2-061313	220846		9.423		204454		12.104		187637		14.495	
05	WC-3-061313	229976		9.423		218745		12.104		213864		14.495	

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12
AREA UPPER LIMIT = 200% of internal standard area
AREA LOWER LIMIT = 50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside contract required QC limits with an asterisk.

* Metals *

REPORT NARRATIVE

Spectrum Analytical, Inc. Featuring Hanibal Technology, RI Division.

Client : GZA GeoEnvironmental of NY Buffalo

Project: Former Signore Facility

Laboratory Workorder / SDG #: M1089

SW846 6010C, SW846 7471B

I. SAMPLE RECEIPT

No exceptions or unusual conditions were encountered unless a Sample Condition Notification Form, or other record of communication is included with the Sample Receipt Documentation.

II. HOLDING TIMES

A. Sample Preparation:

All samples were prepared within the method-specified holding times.

B. Sample Analysis:

All samples were analyzed within the method-specified holding times.

III. METHODS

Samples were analyzed following procedures in laboratory test code: SW846 6010C, SW846 7471B.

IV. PREPARATION

Soil Samples were prepared following procedures in laboratory test code: SW3050B.
Soil Samples were prepared following procedures in laboratory test code: SW7471B.

V. INSTRUMENTATION

The following instrumentation was used:

Instrument Code: FIMS2
Instrument Type: CVAA
Description: FIMS
Manufacturer: Perkin-Elmer
Model: FIMS100

Instrument Code: OPTIMA3
Instrument Type: ICP
Description: Optima ICP-OES
Manufacturer: Perkin-Elmer
Model: 4300 DV

VI. ANALYSIS

A. Calibration:

Calibrations met the method/SOP acceptance criteria.

B. Blanks:

All method blanks were within the acceptance criteria.

C. Spikes:

1. Laboratory Control Spikes (LCS):

Percent recoveries for laboratory control samples were within the QC limits.

2. Matrix spike (MS):

A matrix spike was not performed on any sample in this SDG.

D. Post Digestion Spike (PDS):

A post-digestion spike was not performed on any sample in this SDG.

E. Duplicate sample:

A duplicate analysis was not performed on any sample in this SDG.

F. Serial Dilution (SD):

A serial dilution was not performed on any sample in this SDG.

G. Samples:

No other unusual occurrences were noted during sample analysis.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Spectrum, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Signed: 

Date: 07/12/13

Data Flag/Qualifiers:

U Not Detected. This compound was analyzed-for but not detected. For most analyses the reporting limit (lowest standard concentration) is the value listed. For Department of Defense programs, this is the Limit of Detection (LOD).

J This flag indicates an estimated value due to either
- the compound was detected below the reporting limit, or
- estimated concentration for Tentatively Identified Compound

B This flag indicates the compound was also detected in the associated Method Blank. The B flag has an alternative meaning for Inorganics analyses reported using CLP ILM-type metals forms, indicating a "trace" concentration below the reporting limit and equal to or above the detection limit.

D For Organics analysis, this flag indicates the compound concentration was obtained from a secondary dilution analysis

E This flag indicates the compound concentration exceeded the Calibration Range. The E flag has an alternative meaning for Inorganics analyses reported using CLP metals forms, indicating an estimated concentration due to the presence of interferences, as determined by the serial dilution analysis.

P This flag is used for pesticides/PCB/herbicide compound when there is a greater than 40% difference for detected concentration between the two GC columns used for primary and confirmation analyses. This difference typically indicates an interference, causing one value to be unusually high. The **lower** of the two values is generally reported on the Form 1, and both values reported on the Form 10.

A Used to flag semivolatile organic Tentatively Identified Compound library search results for compounds identified as aldol condensation byproducts.

N Used to flag results for volatile and semivolatile Organics analysis Tentatively Identified Compounds where an analyte has passed the identification criteria, and is considered to be positively identified. For Inorganics analysis the N flag indicates the matrix spike recovery falls outside of the control limit.

* For Inorganics analysis the * flag indicates Relative Percent Difference for duplicate analyses is outside of the control limit.

Sample ID Suffixes

DL Diluted analysis. The sample was diluted and reanalyzed. The DL may be followed by a digit if more than one diluted reanalysis is provided. The DL suffix is not attached to an analysis initially performed at dilution, only to reanalyses performed at dilution

RE Reanalysis. Appended to the client sample ID to indicate a reextraction and reanalysis or a reanalysis of the original sample extract.

RA Reanalysis. Appended to the laboratory sample ID indicates a reanalysis of the original sample extract.

RX Reextraction. Appended to the laboratory sample ID indicates a reextraction of the sample.

MS Matrix Spike.

MSD Matrix Spike Duplicate

DUP Duplicate analysis

SD Serial Dilution

PS Post-digestion or Post-distillation spike. For metals or inorganic analyses

1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

WC-2-061313

Lab Name: Spectrum Analytical, Inc. Contract: 21.0056491.

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SM1089

Matrix (soil/water): SOIL Lab Sample ID: M1089-01

Level (low/med): MED Date Received: 07/03/2013

% Solids: 88.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7100			P
7440-36-0	Antimony	0.37	U		P
7440-38-2	Arsenic	9.6			P
7440-39-3	Barium	95.5			P
7440-41-7	Beryllium	0.32			P
7440-43-9	Cadmium	0.015	U		P
7440-70-2	Calcium	3120			P
7440-47-3	Chromium	9.9			P
7440-48-4	Cobalt	6.5			P
7440-50-8	Copper	24.1			P
7439-89-6	Iron	15400			P
7439-92-1	Lead	11.9			P
7439-95-4	Magnesium	2340			P
7439-96-5	Manganese	631			P
7439-97-6	Mercury	0.012	B		CV
7440-02-0	Nickel	14.2			P
7440-09-7	Potassium	677			P
7782-49-2	Selenium	1.1	B		P
7440-22-4	Silver	0.063	U		P
7440-23-5	Sodium	53.7			P
7440-28-0	Thallium	0.22	U		P
7440-62-2	Vanadium	9.1			P
7440-66-6	Zinc	105			P

Comments:

1 EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET WC-3-061313

Lab Name: Spectrum Analytical, Inc. Contract: 21.0056491.

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SM1089

Matrix (soil/water): SOIL Lab Sample ID: M1089-02

Level (low/med): MED Date Received: 07/03/2013

% Solids: 91.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8220			P
7440-36-0	Antimony	0.39	U		P
7440-38-2	Arsenic	10.1			P
7440-39-3	Barium	102			P
7440-41-7	Beryllium	0.39			P
7440-43-9	Cadmium	0.016	U		P
7440-70-2	Calcium	3390			P
7440-47-3	Chromium	11.1			P
7440-48-4	Cobalt	8.1			P
7440-50-8	Copper	20.7			P
7439-89-6	Iron	18400			P
7439-92-1	Lead	12.9			P
7439-95-4	Magnesium	2790			P
7439-96-5	Manganese	667			P
7439-97-6	Mercury	0.013	B		CV
7440-02-0	Nickel	16.7			P
7440-09-7	Potassium	717			P
7782-49-2	Selenium	0.71	B		P
7440-22-4	Silver	0.11	B		P
7440-23-5	Sodium	51.5	B		P
7440-28-0	Thallium	0.23	U		P
7440-62-2	Vanadium	10.3			P
7440-66-6	Zinc	95.5			P

Comments:

LABORATORY CONTROL SAMPLE

Lab Name: Spectrum Analytical, Inc. Contract: 21.0056491.00

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SM1089

Solid LCS Source:

Aqueous LCS Source:

LCS(D) ID:
LCS-72597

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/Kg) True	Found	C	Limits		%R
Aluminum				455.0	441.8		364	546.0	97.1
Antimony				22.8	23.1		18.2	27.3	101.3
Arsenic				22.8	22.4		18.2	27.3	98.2
Barium				455.0	463.7		364	546.0	101.9
Beryllium				11.4	11.2		9.1	13.6	98.2
Cadmium				11.4	11.3		9.1	13.6	99.1
Calcium				1135.0	1090.6		908	1362.0	96.1
Chromium				45.5	45.3		36.4	54.6	99.6
Cobalt				113.5	112.9		90.8	136.2	99.5
Copper				56.5	56.3		45.2	67.8	99.6
Iron				227.5	236.7		182	273.0	104.0
Lead				22.8	22.4		18.2	27.3	98.2
Magnesium				1135.0	1151.0		908	1362.0	101.4
Manganese				113.5	113.8		90.8	136.2	100.3
Nickel				113.5	112.6		90.8	136.2	99.2
Potassium				1135.0	1140.4		908	1362.0	100.5
Selenium				22.8	21.6		18.2	27.3	94.7
Silver				56.5	54.8		42.4	67.8	97.0
Sodium				1135.0	1142.2		908	1362.0	100.6
Thallium				22.8	21.1		18.2	27.3	92.5
Vanadium				113.5	112.6		90.8	136.2	99.2
Zinc				113.5	110.3		90.8	136.2	97.2

U.S. EPA - CLP

7

LABORATORY CONTROL SAMPLE

Lab Name: Spectrum Analytical, Inc. Contract: 21.0056491.00

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SM1089

Solid LCS Source: LCS(D) ID:

Aqueous LCS Source: **LCS-72621**

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/Kg) True	Found	C	Limits		%R
Mercury				0.8	0.7		0.6	0.9	87.5

U.S. EPA - CLP

3

BLANKS

Lab Name: Spectrum Analytical, Inc. Contract: 21.0056491.00

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SM1089

Preparation Blank Matrix (soil/water): SOIL

Method Blank ID: **MB-72621**

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

FIMS2_130709B

	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		
Analyte		C	07/09/13 14:29	C		C		C		C	M
Mercury	0.028	U	0.028	U					0.002	U	CV

Lab Name: Spectrum Analytical, Inc. Contract: 21.0056491.00

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SM1089

Preparation Blank Matrix (soil/water): SOIL Method Blank ID: **MB-72597**

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG **OPTIMA3_130709A**

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 07/09/13 8:40	C	07/09/13 9:21	C		C	Preparation Blank	C	M
Aluminum	66.0	U	66.0	U	66.0	U			1.200	U	P
Antimony	9.3	U	9.3	U	9.3	U			0.380	U	P
Arsenic	4.5	B	4.3	U	4.3	U			0.410	U	P
Barium	1.1	U	1.1	B	1.1	U			0.043	B	P
Beryllium	0.3	U	0.3	U	0.3	U			0.002	U	P
Cadmium	0.9	U	0.9	U	0.9	U			0.015	U	P
Calcium	110.0	U	110.0	U	110.0	U			6.100	U	P
Chromium	0.6	U	0.6	U	0.6	U			0.019	U	P
Cobalt	0.7	U	0.7	U	0.7	U			0.044	U	P
Copper	3.6	U	3.6	U	3.6	U			0.110	U	P
Iron	31.0	U	31.0	U	31.0	U			1.500	U	P
Lead	4.2	U	4.2	U	4.2	U			0.170	U	P
Magnesium	76.0	U	76.0	U	76.0	U			0.669	B	P
Manganese	10.0	U	10.0	U	10.0	U			0.130	U	P
Nickel	0.9	U	0.8	U	0.8	U			0.043	U	P
Potassium	157.7	B	76.0	U	78.0	B			3.400	U	P
Selenium	12.0	U	12.0	U	12.0	U			0.640	U	P
Silver	6.9	U	6.9	U	6.9	U			0.064	U	P
Sodium	29.0	U	29.0	U	29.0	U			1.100	U	P
Thallium	6.2	U	6.2	U	6.2	U			0.220	U	P
Vanadium	1.1	U	1.1	U	1.1	U			0.060	U	P
Zinc	4.9	U	4.9	U	4.9	U			0.227	B	P

APPENDIX C

Material Safety Data Sheet

Manufacturers Name & Address

Ecocycle Corporation
694-2, Akada, Toyama 939-8064, Japan
Phone: 076-420-3122 (Monday - Friday, 09:00-17:30)
Issue Date: 29th November, 2006

Section 1: PRODUCT IDENTIFICATION

1.1. Product name: EDC-E

1.2. Product Type: Liquid Emulsion based on food-grade Vegetable Oils and Surfactants

1.3. Hazard Rating: Health: 1 Fire: 1 Reactivity: 1

1.4. Formula: Proprietary

Substances Subject to SARA 313 Reporting Are Indicated by "#"

It is our opinion that above named product does not meet the definition of "hazardous Chemical" as defined in the OSHA "Hazard Communication Standard" regulation 29 CFR 1910.1200. This material Safety Data Sheet is provided as general information for health and safety guidelines.

Section 2: INGRADIENTS/IDENTITY INFORMATION

	CAS No.	%	PEL	TWA(mg/m^3)
Vegetable Oil (food-grade)- proprietary	Trade secret	50	15	10
Surfactants (food-grade)-proprietary	Trade secret	5-10		
Water	7732-18-5	45-40		

Section 3: PHYSICAL AND CHEMICAL CHARACTERISTICS

This section completed as per formulation ingredient data unless stated

Solubility in water: dispersible

pH: 6-7

Specific Gravity: 0.94-0.96

Boiling point: 100°C for water

Melting point: NA

Vapor Pressure: NA

Vapor Density: Heavier than air

Percent Volatile by Volume: NA

Evaporation Rate: NA

Viscosity: 20-30 cps at 20°C

Product Appearance and Odor: Off-White liquid with vegetable oil odor

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Section 4: FIRE AND EXPLOSION HAZARDS

This section completed as per formulation ingredient data unless stated.

4.1 Special Fire Hazards: Product-none, does not support combustion.

4.2 Flash point: >150°C

4.3 Flammable limits; Lower Explosive Limit: ND and Upper Explosive Limit: ND

4.4 Fire Fighting Methods: Use methods appropriate for surrounding fire.

4.5 Extinguishing Media: Dry chemical, CO2 or foam

Note: water, fog, and foam may cause frothing and spattering

4.6 Special Fire Fighting Procedures: Wear self contained breathing apparatus and Chemical resistant clothing. Use water spray to cool fire exposed containers.

4.7 Unusual Fire and Explosion Hazards: Burning will cause oxides of carbon

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Section 5. HEALTH HAZARD DATA

5.1 This product is neither intended nor manufactured for human or animal consumption and should not be used for food or feed stuffs.

5.2 Effects of over exposure: NA

5.3 Routes of exposure: Exposure to vegetable oil mists can occur through inhalation, Ingestion, and eye or skin contact.

5.4 Emergency and First Aid Procedures: If inhaled, remove from contaminated atmosphere to fresh air.

Eye: immediately flush eyes with large amounts of water for 15 min. ensure rinsing entire surface of eye and under lid, if irritation persists see physician.

Lungs: move to fresh air.

Skin: wash affected areas thoroughly with soap and water.

Ingestion: Product is non-toxic, if nausea occurs, induce vomiting, and seek medical attention.

5.5 Effect on Humans: Most vegetable oil mists are biologically inert and are therefore considered to be nuisance particulates. Vegetable oil mists seem to have little adverse effect on the lungs and do not produce significant organic disease or toxic effects when exposures are kept under reasonable control (ACGIH 1991).

5.6 Carcinogenity of product-none and ingredients NTP, IARC, OSHA: No

5.7 Occupational exposure limits {8 hour time weighted average [TWA]}: mg/m3

	OSHA PEL/ACGIH TLV
Vegetable oils (Food grade)	15 (Mist)/10 (Mist)

Section 6. REACTIVITY DATA AND PHYSICAL HAZARDS

This section completed as per formulation ingredient data unless stated

6.1 Stability: Stable under normal conditions

6.2 Stability Conditions to Avoid: NA

6.3 Incompatibilities: Strong Acids and Oxidizers

6.4 Hazardous Decomposition Products: Product-none identified

Ingredients: Carbon Oxides, Biological Decomposition (Spoilage) may result in offensive odors.

6.5 Hazardous Polymerization: none known

6.6 Polymerization Conditions to Avoid: NA

6.7 Vegetable oil LD 50 and LD50 Mixture: NA

Section 7. SPILL OR LEAK PROCEDURES

This section completed as per formulation ingredient data unless stated

7.1 Spill Response: This product is water dispersible. Same as vegetable oil spills: isolate spill, prevent from entering water ways, and sewer systems. Sorb or remove spilled materials as soon as possible. Oils and specific quantities of oils may be reportable under government regulations.

7.2 Waste Disposal Method: This product is not hazardous; however, wastes must be disposed in accordance with government regulations. Consult with local sewer authority, or solid waste facility prior to disposition.

7.3 Precautions-Handling/Storage: Keep container closed and store cool and dry place

Section 8: ECOLOGICAL INFROMATION

This section completed as per formulation ingredient data unless stated

8.1 Ecology: no environmental hazards are known. Avoid pollution to soil, water in accordance with government regulations

8.2 BOD5 AND COD: NA

8.3 Toxicity of the Products of Biodegradation: The product itself and its products of degradation are not toxic

8.4 Special Remarks on the Products of Biodegradation: NA

Section 9. SPECIAL PRECAUTIONS AND PROTECTION INFORMATION

No protective equipment is necessary under normal use conditions.

Precautions to be taken in handling and storage: Do not store near excessive heat or oxidizers

9.1 Eyes: If splashing may occur, eye protection recommended.

9.2 Skin: Wear impervious gloves for prolonged or repeated exposure.

9.3 Respiratory: Avoid breathing mists of this product

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Section 10: TRANSPORTATION PRECAUSTIONS

This section completed as per formulation ingredient data unless stated

Transportation considerations: This product is not classified as dangerous in the meaning of transport regulations. Shippers and transporters may need to meet packaging and transportation requirements for certain oils and respective quantities under CFR Part 130.

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Section 11: REGULATORY INFROMATION

This section completed as per formulation ingredient data unless stated

11.1 TSCA

Not listed on the TSCA inventory
Health & Safety reporting list-none of the ingredients are on the health & safety list

11.2 Clean air act

This product does not contain any hazardous air pollutants
This material does not contain any class 1 or 2 Ozone depleters

11.3 Clean water act

None of the ingredients in this product are listed as hazardous substances, priority pollutants, or toxic pollutants under CWA

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Section 12: OTHER INFROMATION AND REFERENCES

ACGIH [1991]. Documentation of the threshold limit values and biological exposure indices, 6th Ed., Cincinnati, OH, American Conference Governmental Industrial Hygienists

The above information is believed to be correct with respect to the formula used to manufacture the product in the country of origin. As data, standards, and regulations change, and conditions of use and handling are beyond our control. However, Ecocycle Corporation makes NO WARENTY, EXPRESS OR IMPLIED, IS MADE AS TO THE COMPLETENESS OR CONTINUING ACCURACY OF THIS INFORMATION. This information and product are furnished on the condition that the person receiving them shall make his/her own determination as to the suitability of the product for his/her particular purpose.