

**SELF-IMPLEMENTING PROCEDURE COMPLETION REPORT  
UNDER 40 CFR 761.61(a),  
IMMEDIATE RESPONSE ACTION COMPLETION REPORT  
AND  
PERMANENT SOLUTION STATEMENT WITH CONDITIONS  
UNDER CMR 40.0000  
(No Activity and Use Limitation Required)**

**MA DEP RELEASE TRACKING NUMBER 2-19956  
FOR  
POLYCHLORINATED BIPHENYLS  
IN SOIL AND CONCRETE  
Site: 179 Brook Street  
Clinton, Massachusetts 01510**

*For Submittal To:*

**United States Environmental Protection Agency  
5 Post Office Square, Suite 100  
Boston, Massachusetts 02109**

and

**Massachusetts Department of Environmental Protection  
Central Regional Office  
Bureau of Waste Site Cleanup  
8 New Bond Street  
Worcester, Massachusetts 01606**

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**CJW Project No. 5812D**

**February 15, 2017**

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## **1.0 INTRODUCTION**

### **1.1 Purpose**

This document has been prepared by Cushing, Jammallo & Wheeler, Inc. (CJW) on behalf of The Kelly Company, Inc. in regard to a release of polychlorinated biphenyls (PCBs) which have been identified in soil and concrete at 179 Brook Street, Clinton, Massachusetts (the “site”) (Figures 1 and 2). It is being submitted to the U.S. Environmental Protection Agency (USEPA) in accordance with the Code of Federal Regulations, Title 40 “Protection of the Environment”, Part 761, Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions, U.S. Environmental Protection Agency. More specifically, this revised document includes:

- ◆ The Self-Implementing Procedure (SIP) Completion Report [40 CFR 761.61(a)] for the cleanup and disposal of PCB remediation waste including:
  - Notification [40 CFR 761.61(a)(3)] of the nature of the contamination;
  - A summary of the procedures used to sample contaminated and adjacent areas and a figure showing pre-clean-up characterization samples; and
  - The currently known lateral and vertical extent of the contamination.

This document also constitutes an Immediate Response Action (IRA) Completion Report and a Permanent Solution Statement (PSS) with Conditions [No Activity and Use Limitation (AUL) Required] in accordance with the Massachusetts Contingency Plan (MCP) [310 CMR 40.0427,

40.1040(1), and 40.1041(2), respectively]. The document, along with an IRA Transmittal Form (BWSC-105, and PSS Transmittal Form (BWSC-104), are being submitted to the Massachusetts Department of Environmental Protection (MA DEP), via eDEP.

Since this PSS is being submitted to the MADEP more than 120 days but before one year from the release notification date of August 16, 2016. a \$1,470 PSS fee is required to be submitted to the Commonwealth of Massachusetts.

## **1.2 Regulatory Framework**

### **1.2.1 Toxic Substances Control Act**

This document is being submitted to the USEPA to satisfy the notification requirement as specified under 40 CFR 761.61(a)(3).

The Toxic Substances Control Act of 1976 (TSCA) provides the USEPA with authority to require reporting, record-keeping and testing requirements, and restrictions relating to chemical substances and/or mixtures. TSCA addresses the production, importation, use, and disposal of specific chemicals including, among others, PCBs.

TSCA applies to this matter because the oil within the former pad-mounted transformer (removed from the site as discussed in Section 12.1) at the site (Figure 4) was the most likely source of the PCBs identified in the adjacent soil and even though the highest total PCB concentration in soil was 12.9 mg/kg, the total concentration of PCBs identified in the transformer oil was 110 mg/kg which is greater than the TSCA trigger of 50 mg/kg. Specifically, per 40 CFR 761.123, “the concentration of PCBs spilled is determined by the concentration of PCBs in the material spilled as opposed to the concentration of PCBs in the material [in this case, soil] onto which the PCBs were spilled”.

Three (3) additional pole-mount type service transformers are currently active and staged on a raised wooden platform which spans between two (2) utility poles, located approximately 92 feet to the north of the PCB containing/TSCA regulated pad-mounted transformer (Figure 5). Each of the three (3) pole-mount type transformers are furnished with blue certified non-PCB containing placards, each of which states that the mineral oil dielectric fluid (MODF) contained in each transformer contains less than 50 ppm PCBs based on sampling and testing of the transformer oil and, as such, is considered to be non-PCB pursuant to 40 CFR 761.3. No other active or inactive oil filled transformers are known to be located at the site, as the only electrical service to the

building enters from the southwestern corner of the site building adjacent to the pad-mounted transformer and continues, via overhead wires, to the platform containing the three (3) pole-mounted transformers, and subsequently enters the northwestern portion of the site building thereafter.

According to The Kelly Company, Inc., one (1) vacant concrete pad (removed during the excavation activities discussed in Section 6.4) was believed to have been occupied by two (2) pad-mounted transformers prior to the installation of the PCB containing/TSCA regulated pad-mounted transformer previously discussed. This vacant concrete pad was located within the fenced enclosure maintained by National Grid – Electric (Figure 4). No records were available from the property owner or National Grid regarding the dates of installation/decommissioning or PCB content for the likely transformers that were previously located on this pad.

Under TSCA, there are options for the cleanup and disposal of PCB remediation waste (40 CFR 761.61). They include a Self-Implementing Procedure (SIP) [761(a)], a Performance-Based Procedure [761.61(b)], and a Risk-Based Procedure [761.61(c)]. Work was proposed under the Self-Implementing Procedure (SIP) [761(a)] and, as such, the information presented in this document was used for the preparation and execution of a remedial plan that meets those requirements.

### **1.2.2 Massachusetts Contingency Plan**

On May 18, 2016, CJW collected a sample of soil that abuts the pad-mounted transformer located just west of the portion of the building at the site that fronts along Brook Street. The sample was submitted to a laboratory for analysis of PCBs. The testing results identified two PCBs in the sample: Aroclor 1254 in a concentration of 1.6 milligrams per kilogram (mg/kg) and Aroclor 1260 in a concentration of 0.77 mg/kg.

The Aroclor 1254 concentration of 1.6 mg/kg and the total concentration of both Aroclors of 2.37 in soil exceeded the applicable Reportable Concentration (RC) for soil category RCS-1 of mg/kg under the MCP. This condition initially represented a release which required notification by The Kelly Company, Inc. to the MA DEP within 120 days of The Kelly Company, Inc. obtaining knowledge of the release.

However, testing of additional soil samples collected on August 9, 2016 revealed a total PCB concentration in one sample of 12.9 mg/kg (9.3 mg/kg Aroclor 1254 and 3.6 mg/kg Aroclor 1260).

This concentration constituted an Imminent Hazard (IH) condition under the MCP [310 CMR 40.0321(2)(b)] since:

- ◆ The total PCB concentration was equal to or greater than 10 mg/kg;
- ◆ The sample was collected within 12 inches of the ground surface, and
- ◆ In this case, the sample location was located within 500 feet of a residential dwelling and access to this location was not controlled or prevented at the time of sample collection.

On behalf of and with approval from The Kelly Company, Inc., Mr. Joseph Jammallo of CJW reported the IH condition to Mr. Dino Dellechiaie of the MA DEP on August 16, 2016. MA DEP assigned Release Tracking Number 2-19956 to this matter and orally approved the removal/excavation of up to 25 cubic yards of impacted soil under an IRA (310 CMR 40.0410). MA DEP further required fencing around this impacted area so that children could not access this area. CJW erected 6-foot high chain-link fencing around the transformer area such that the IH condition was negated.

### **1.2.3 Submittals and Receipts of Regulatory Documents**

The initial Notification and Self-Implementing Procedure Plan and Immediate Response Action Plan, dated October 5, 2016 was submitted to the USEPA on behalf of The Kelly Company, Inc. It was also submitted to MA DEP on October 7, 2016, via eDEP, to satisfy the submittal of an IRA Plan in accordance with 310 CMR 40.0420(7)(a).

In a letter dated October 24, 2016 (Appendix A), the USEPA issued comments and questions to CJW's October 5, 2016 report. To address USEPA's comments and questions, CJW prepared a Revised Self-Implementing Procedure Plan and Immediate Response Action Plan, dated October 26, 2016, and submitted the document, along with an associated letter (Appendix A). This revised document was also submitted to MA DEP via eDEP on November 11, 2016.

In a letter dated November 7, 2016 (Appendix A), the USEPA provided its approval for the cleanup and disposal of polychlorinated biphenyl (PCB) remediation waste (e.g. concrete pads and soil).

An Immediate Response Action Status Report #1, dated December 16, 2016, was submitted to MA DEP, via eDEP, on December 16, 2016.

### **1.3 Potentially Responsible Party Associated with Site**

Owner: The Kelly Company, Inc.

Address of  
Owner: 27 Johnson Road  
Sterling, Massachusetts 01564

Contact Person: J.J. Kelly, President

Telephone: (978) 870-4447

## **2.0 SITE DESCRIPTION**

### **2.1 Site Location**

A Locus Map of the site is included as Figure 1. Figure 2 is an aerial view depicting the site and surrounding area. Figure 3 is the MA DEP Phase I Site Assessment Map obtained from Massachusetts Geographical Information System (Mass GIS).

The attached Figure 4 – Site Plan depicts the following:

- ◆ The layout of the current site and pertinent site features;
- ◆ The approximate location of the pad-mounted transformer and the vacant concrete pad;
- ◆ The approximate location of soil samples; and
- ◆ Locations of other relevant site features.

The attached Figure 5 – Monitoring Well Location Plan depicts the location of existing monitoring wells located in the proximity of PCB project area, the location of all transformers located on the site property, and other relevant site features.

The release area is located exterior to and west of the 179 Brook Street manufacturing building, which is located within in a mixed commercial/industrial/residential area of Clinton, Massachusetts. The latitude and longitude coordinates of the site are approximately 42° 25' 25.59" north and 71° 41' 31.23" west, respectively. The Universal Transverse Mercator (UTM) coordinates of the site are Zone 19T, 4700338.26mN by 278532.92mE. The approximate surface elevation at the site is 293 feet above mean sea level.

According to the MA DEP Phase I Site Assessment Map provided in Figure 3, the site is not located within a Current or Potential Drinking Water Source Area as described in Section 4.0. No private drinking water supply wells are known to be located within 500 feet of the site. The site is located within an area designated as a high yield Non Potential Drinking Water Source Area (NPDWSA), and areas designated as high and medium yield NPDWSA are located within 500 feet of the site in all directions and within  $\frac{1}{2}$  mile of the site to the north and south, respectively. An area designated as protected open space is located within  $\frac{1}{2}$  mile of the site to the south. No areas identified as Natural Heritage and Endangered Species Program (NHESP) wetland habitat are located within  $\frac{1}{2}$  mile of the site. Areas designated as freshwater wetlands are located within  $\frac{1}{2}$  mile of the site to the southwest and northeast, respectively. The closest surface water body is unnamed stream located within 500 feet east of the site, and Mossy Pond is located approximately  $\frac{1}{2}$  mile of the site to the southwest. Areas designated as Federal Emergency Management Agency (FEMA) 100 year flood plains are located within  $\frac{1}{2}$  mile of the site to the northeast associated with the aforementioned wetland areas. No other environmental receptors are known to exist within 500 feet of the site.

The previously fenced area within which the pad-mounted transformer and impacted soil were located, and to which this SIP Plan applies, is not an area that is frequented by site employees or visitors. This area would only likely be access to perform maintenance on the transformer or appurtenances such as underground or overhead electrical lines. Therefore, this area meets the definition of a “Low Occupancy Area” as defined at 40 CFR 761.3 as it is an area where occupancy for an individual is less than 840 hours in a calendar year.

## **2.2 Site Description**

The site consists of an irregularly shaped parcel of land fronting on Brook Street, which extends to Lawrence Street to the north associated with the access-roadway, and Marshall Street to the east associated with the eastern warehouse portion of the site building (Figure 2). It is identified by the Town of Clinton Assessors’ Office as Map No. 81, Lot No. 498, containing approximately 2.27 acres of land (98881.2 square feet). It is further described in Quitclaim Deed (Book 23348, Page 103) recorded in the Worcester County Registry of Deeds. Exterior grade slopes gently toward the south on the south side of the site building, and more drastically to the south on the northern side of the site building, towards the topographic depression associated with the loading dock on the north side of the site building.

The property is improved with one (1) single story manufacturing building covering approximately 64,497 square feet, which is currently utilized by QEP, Inc. as a plastics manufacturing facility. The site building contains an office/reception area, multiple manufacturing areas, multiple warehouse areas, a waste storage area, a loading dock and a maintenance/machine shop. The majority of the site building is constructed of concrete masonry unit (CMU) block, with a warehouse portion steel siding over wood framing, and is set upon a poured concrete foundation. According to the Assessor's Cards for the property, the site building was constructed in 1949 to 1950.

A pad-mounted transformer (installed at the same location following the completion of the response actions discussed herein and following the removal of the PCB containing transformer) is currently located just west of the portion of the building at the site that fronts along Brook Street (Figure 4).

Three additional transformers (pole-mount type) are currently active and staged on a raised wooden platform which spans between two utility poles, located approximately 92 feet to the north of the PCB containing/TSCA regulated pad-mounted transformer (Figure 5). No other active or inactive oil filled transformers are known to be located at the site, as the only electrical service to the building enters from the southwestern corner of the site building adjacent to the pad-mounted transformer and continues, via overhead wires, to the platform containing the three pole-mounted transformers, and subsequently enters the northwestern portion of the site building thereafter.

## **2.2 Surrounding Area**

The site is located in a mixed commercial/industrial/residential area on the north side of Brook Street in Clinton, Massachusetts. The following properties/features surround the site (Figure 2):

- ◆ To the north: commercial properties (including R. Bates and Sons Sand and Gravel) and Lawrence Street, beyond which are multiple commercial and residential properties.
- ◆ To the south: three (3) residential properties, a retail gasoline station located at 203 Brook Street, and Brook Street, beyond which are residential properties (including a housing development), and a dry cleaners located at the intersection of Brook Street and Washington Street.
- ◆ To the east: residential and commercial properties, and Marshall Street, beyond which are commercial and residential properties, and another retail gasoline station located at 219 Brook Street (Mr. G's Gulf).

- ◆ To the west: multiple residential properties, beyond which is Greeley Street and additional residential properties.

## **3.0 USE, SOURCE AND IDENTIFICATION OF PCBs AT THE SITE**

### **3.1 Use and Source(s) of PCBs**

There is no known or documented use of PCBs at the site other than what has been described in the former exterior pad-mounted transformer and potential transformers that may have previously occupied the former vacant concrete pad located just to the south of the existing pad-mounted transformer (Figure 4). The source(s) of the PCBs identified in soil in the vicinity of the current pad-mounted transformer may likely be the former PCB containing transformer itself and/or one or more transformers that may have formerly occupied the vacant concrete pad. However, the manner by which PCBs have come to be located in the soil in this area is unknown since there is no known record of a release or releases of oil from the existing pad-mounted transformer or other transformers which may have been located at the site.

### **3.2 Identification of PCBs at the Site**

PCBs were initially identified from May 18, 2016 soil sample that abuts the pad-mounted transformer located just west of the portion of the building at the site that fronts along Brook Street. The sample was submitted to a laboratory for analysis of PCBs. The testing results identified two PCBs in the sample: Aroclor 1254 in a concentration of 1.6 mg/kg and Aroclor 1260 in a concentration of 0.77 mg/kg. Subsequent sampling and testing of an oil sample from the pad-mounted transformer revealed it contained PCBs, specifically Aroclor 1260, in a concentration of 110 mg/kg. Further sampling and testing of soil in the vicinity of the transformer is described in Section 5.0.

Additional soil sampling and testing revealed a total PCB concentration in one sample of 12.9 mg/kg. This concentration constituted an IH condition under the MCP [310 CMR 40.0321(2)(b)] since:

- ◆ The total PCB concentration was equal to or greater than 10 mg/kg;
- ◆ The sample was collected within 12 inches of the ground surface, and
- ◆ In this case, the sample location was located within 500 feet of a residential dwelling and access to this location is not presently controlled or prevented.

### **3.3 Initial Mitigation Measures**

On behalf of The Kelly Company, Inc., CJW reported the above condition to the MA DEP on August 16, 2016. MA DEP assigned Release Tracking Number 2-19956 to this matter and orally approved the removal/excavation of up to 25 cubic yards of impacted soil under an IRA 310 CMR 40.0410. MA DEP further required fencing around this impacted area so that children could not access it. CJW erected a 6-foot high chain link fence around the transformer and the known impacted area of soil which negated the IH condition.

## **4.0 MCP RISK CHARACTERIZATION CATEGORIES FOR SOIL AND GROUNDWATER**

The MCP establishes categories of groundwater and soil for use in the characterization of risk posed by contamination at a site. When considering the use of Method 1 and Method 2 risk characterizations, it is necessary to categorize these media. When Method 3 is used to characterize risk, the groundwater categories are used to identify applicable or suitably analogous standards.

The MCP identifies three types of applicable groundwater categories: GW-1, GW-2, and GW-3. One or more groundwater categories may apply at a given site. Groundwater category GW-1 is defined as a Current Drinking Water Source Area or a Potential Drinking Water Source Area as defined below:

A Current Drinking Water Source Area is defined as groundwater located:

- ◆ within a Zone II of a public water supply;
- ◆ within an Interim Well Head Protection Area (IWPA) of a public water supply;
- ◆ within the Zone A of a Class A surface water body used for a public water supply; or
- ◆ within 500 feet of a private drinking water supply well.

A Potential Drinking Water Source Area is defined as groundwater located:

- ◆ within 500 feet or more from a public water system distribution pipeline; unless the groundwater is located under a parcel of land or a facility where any portion of that parcel of land or facility is located less than 500 feet from a public water supply distribution pipeline;

- ◆ within an area designated by a municipality specifically for the protection of groundwater quality to ensure its availability for use as a source of potable water supply; and
- ◆ within a Potentially Productive Aquifer (PPA) that has not been excluded as a NPDWSA.

Groundwater is classified GW-2 when it is located within 30 feet of a planned or existing occupied building or structure, and the average annual depth to groundwater in the area is 15 feet or less. Groundwater in this category could serve as a source of volatile contaminants to indoor air.

Groundwater category GW-3 applies to all groundwater in the Commonwealth based upon discharge to surface water because it is deemed that all groundwater ultimately discharges to a surface water body.

The site is not located within a Current or Potential Drinking Water Source Area, therefore, groundwater category GW-1 does not apply. The site is located within 30 feet of an occupied structure (i.e. the manufacturing building). One (1) monitoring well (designated CJW-1) was installed through the base of the completed excavation area prior to backfilling of the excavation area (Section 6.6.4) (Figure 5). The depth to water in CJW-1 was recorded to be located approximately 3.05 feet below the ground surface (monitoring well CJW-1 was not surveyed into the existing well matrix for the entire site; however, CJW-1 was completed to the approximate elevation of the surrounding ground surface) during the groundwater sampling activities conducted on December 8, 2016 (refer to Table 2 – Summary of Groundwater Gauging Data). Therefore, under the MCP groundwater category GW-2 applies to this portion of the site. Further, category GW-3 applies as this category applies to all groundwater in the Commonwealth. Therefore, the MCP risk characterization categories for groundwater at the site are GW-2/GW-3.

The categorization of soils is based on the potential for exposure, considering both the current and reasonably foreseeable site activities and uses. There are three soil categories: S-1, S-2, and S-3. Category S-1 is associated with the highest potential for exposure, and category S-3 the lowest potential for exposure. Several factors are considered when categorizing the soils at the site. These include the type of receptor present at a site, the frequency of use, the intensity of use, and the accessibility of the soil.

For risk characterization purposes, soils at the disposal site may be classified as S-1, S-2, and S-3. It is likely that one or more of these soil classifications exist for this site. Soil is classified as S-1 if either:

- ◆ The soil is “accessible” (zero to 3 feet and unpaved) and either the soil is currently used for growing fruits or vegetables for human consumption or it is reasonably foreseeable that the soil may be put to such use; or a child’s frequency or intensity of use is considered high and/or an adult’s frequency and intensity of use are both considered to be high; or
- ◆ The soil is “potentially accessible” (3 feet to 15 feet and unpaved or zero to 15 feet and paved) and a child’s frequency or intensity of use is considered to be high.

Soil is classified as S-2 if either:

- ◆ The soil is “accessible” and a child’s frequency and intensity of use are considered low or children are not present at the disposal site and either (but not both) the adult’s frequency or intensity of use is considered to be high; or
- ◆ The soil is “potentially accessible” and either (but not both) a child’s frequency or intensity of use is considered to be high or children are not present at the disposal site and an adult’s frequency and intensity of use are both considered to be high.

Soil is classified as S-3 if either:

- ◆ The soil is “accessible” and children are not present at the disposal site and an adult’s frequency and intensity of use are both considered low; or
- ◆ The soil is “potentially accessible” and a child’s frequency or intensity of use are both considered to be low; or a demonstration has been made that children are not present at the disposal site, and an adult’s frequency and intensity of use are both considered to be low; or
- ◆ The soil is isolated (greater than 15 feet or under the footprint of a building or permanent structure), regardless of any receptor’s frequency or intensity of use.

Receptor characteristics are that children could be present at a high frequency since the site is abutted by residential property; intensity of use is low; and the soil is considered to be accessible (0 to 3 feet below grade). Although the applicable category for soil that is located beneath the pad that supported the former transformer and the pad that supports the new transformer would be S-3, we have conservatively used an applicable soil category of S-1 for all soil at the site located between 0 feet to 3 feet below grade. Soil category S-1 would further apply when considering the potential applicability of an Activity and Use Limitation (AUL).

Ultimately, the soil categories are combined with the groundwater categories. Therefore, for this disposal site, the applicable Method 1 soil categories would be S-1/GW-2/GW-3 with S-1/GW-2/GW-3 being further used for consideration of an AUL under the MCP. For each of these combinations, the S-1 soil standard is 1 mg/kg (or 1 ppm).

## **5.0 ENVIRONMENTAL ASSESSMENT ACTIVITIES**

The following sections discuss the various assessment activities that were conducted prior to implementing cleanup activities and included sampling and laboratory testing of the transformer oil, soil, and concrete pads. All samples were submitted under chain-of-custody to Con-Test Analytical Laboratory of E. Longmeadow, Massachusetts (Con-Test) for analysis. Figure 4 displays the locations of the concrete pads and soil samples discussed herein. Figure 5 displays the monitoring wells at the site.

### **5.1 Transformer Oil Sample**

On July 19, 2016, CJW collected a discrete sample of the oil from the transformer and submitted it to Con-Test for analysis of PCBs by SW-846, Method 600/4-81-045. The testing results, presented in Appendix B, identified the oil as containing Aroclor 1260 in a concentration of 110 mg/kg.

### **5.2 Concrete Pad Sampling and Testing**

On August 19, 2016, CJW collected three (3) concrete samples from each of the two (2) concrete pads in the area where PCBs were identified in site soils in accordance with the Standard Operating Procedure for Sampling Porous Surfaces for PCBs (May 2011). Samples 1A, 1B, and 1C were collected from the pad that houses the transformer and samples 2A, 2B, and 2C were collected from the vacant pad (Figure 4). Each sample was collected by using a hammer drill to scour the surface of the pad to a depth of approximately 0.5 inch to obtain concrete dust/chips which were placed into sampling containers. The original document provided to US EPA indicated that the sampling depth interval was 1-inch. However, upon reviewing the field notes and scope of work for CJW's field technician who conducted the sampling, CJW confirmed that the sampling depth interval was 0.5 inch, as specified by the USEAP in its Standard Operating Procedure for Sampling Porous Surfaces for Polychlorinated Biphenyls (USEPA, May 2011).. As three (3) samples were collected for each type of porous surface [i.e. each of the two (2) transformer pads], samples were collected at a frequency greater than one (1) sample per 100 square feet [six (6)samples were

submitted for approximately 70 square feet of concrete], and suspected stained area(s) were sampled (as staining was uniform and heavily weathered across both concrete pads), CJW concludes that the concrete sampling and testing was adequate to define PCB concentrations for off-site disposal.

The samples were submitted to Con-Test for analysis of PCBs by SW-846, Method 8082 using soxhlet extraction (Method 3540C). The laboratory testing results, presented in Appendix C, reveal the following:

Sample ID	PCB Concentration (mg/kg)
1A	No PCBs were identified at or above the laboratory's RL* of 0.096 mg/kg
1B	No PCBs were identified at or above the laboratory's RL* of 0.075 mg/kg
1C	Aroclor 1254 at 0.18 mg/kg
2A	Aroclor 1248 at 0.18 mg/kg
DUP (duplicate of 2A)	Aroclor 1248 at 0.14 mg/kg
2B	No PCBs were identified at or above the laboratory's RL* of 0.090 mg/kg
2C	Aroclor 1248 at 0.14 mg/kg

Note: \* RL = Laboratory Reporting Limit

### **5.3 Soil Sampling and Testing**

Soil samples were collected as either composite samples or discrete (grab). Composite samples were initially collected in May 2016 (Section 5.3.1) as part of an ASTM Phase II Environmental Site Assessment (ESA) that was performed at the site. A composite sample is a mixture of more than one sample collected from certain locations at the same depth or depth range. The individual samples were then thoroughly mixed in a stainless steel bowl with a stainless steel mixing device and the composite sample was then collected from this mixture. All subsequent samples, as described herein, consisted of discrete or grab samples collected at a specific location and depth.

One or more subsequent sections discuss the collection of surface soil samples. Under 40 CFR Part 761, soil samples generally are required to be collected from the soil surface (top 0 to 3 inches). In addition, this sampling interval is also specified under 40 CFR 761, Subparts O and N. CJW did indeed collect surface samples from 0 to 6 inches. However, what the original SIP

Plan failed to note was that the first 3 inches consisted of organic matter including leaves, pine needles and root matter. Therefore, although these soil samples were collected from 3 to 6 inches from ground surface, they were technically collected from the top 3 inches of soil.

### **5.3.1 Initial Soil Sampling and Testing**

On May 18, 2016 as part of an ASTM Phase II ESA, CJW collected two soil samples at the site within 6-inches of the ground surface. One sample, labeled as “Pad Mount Transformer” was a composite sample made up of soil collected adjacent to the four sides of the existing pad-mounted transformer pad within 6-inches of the ground surface. The second sample, labeled as “Pole Mount Transformer”, was also a composite sample made up of three soil samples collected directly beneath the three transformers attached to the existing utility pole which is located approximately 8 feet north of the pad-mounted transformer (Figure 4). The samples were submitted to Con-Test for analysis of PCBs by SW-846, Method 8082 using microwave extraction (Method 3546) and extractable petroleum hydrocarbon (EPH) carbon fractions and polynuclear aromatic hydrocarbon (PAH) target analytes in accordance with MA DEP methodology.

As these two (2) composite soil samples were collected as part of ASTM Phase II ESA activities conducted at the site, and prior to the sampling of MODF (July 19, 2016) from the pad-mounted transformer which triggered TSCA 40 CFR Part 761, the sampling and testing results discussed in this Section were not intended to meet the requirements under 40 CFR Part 761, and should not be considered to support disposal of the noted soil as a <50 ppm PCB waste (as compositing of samples for characterization and/or to confirm PCB concentrations are <50 ppm is not authorized by USEPA). Please refer to Sections 5.3.2, 5.3.3 and 5.3.4 for discussion of discrete soil sampling performed under the requirements of 40 CFR Part 761 to support disposal as a < 50 ppm PCB waste in accordance with 40 CFR 761.61(a)(5)(i)(B)(2)(ii).

The testing results, presented in Appendix D and summarized in Table 1, reveal that PCBs were identified in both samples. Sample “Pad Mount Transformer” contained a total of 2.37 mg/kg PCBs (1.6 mg/kg Aroclor 1254 and 0.77 mg/kg Aroclor 1260). Sample “Pole Mount Transformer” contained Aroclor 1260 in a concentration of 0.14 mg/kg. These concentrations are less than the Method 1, S-3/GW-2/GW-3 standard of 4 mg/kg but above the S-1/GW-2/GW-3 standard of 1 mg/kg.

For the EPH testing results, carbon fractions and PAH target analytes were identified in both samples, however, the concentrations were less than the applicable S-3/GW-2/GW-3 standards and the S-1/GW-2/GW-3 standard.

### **5.3.2 Subsequent Soil Sampling, August 9, 2016**

CJW collected 12 discrete soil samples on August 9, 2016 in the immediate vicinity of the pad-mounted transformer. The sample locations are shown on Figure 4. Samples depths ranged as follows:

Sample ID	Approx. Depth Range (inches below grade)
S-1	0-6
S-1	6-12
S-1	12-18
S-2	0-6
S-2	6-12
S-3	0-6
S-3	6-12
S-4	0-6
S-4	6-12
S-5	0-6
S-6	0-6
S-7	0-6

The samples were submitted to Con-Test for analysis of PCBs by SW-846, Method 8082 using soxhlet extraction (Method 3540C). The laboratory testing results, presented in Appendix D and summarized in Table 1, reveal the following:

- ◆ One or more PCBs (Aroclor 1254 and/or Aroclor 1260) were identified in 10 of the 12 samples. Samples S-2 (6"-12") and S-4 (6"-12") were not identified as containing PCBs at concentrations equal to or in excess of the laboratory's RL of 0.1 mg/kg.
- ◆ Of the samples identified as containing PCBs, 3 samples [S-1 (0"-6"); S-1 (6"-12"); and S-7 (0"-6")] were identified as containing PCBs with total concentrations in excess of the S-1/GW-2/GW-3 standard.
- ◆ Soil was identified as containing PCBs up to 18 inches below grade.

- ◆ Sample S-1 (0"-6") contained a total PCB concentration of 12.9 mg/kg. As previously discussed, this soil sample triggered the 2-hour reporting condition to MA DEP as an IH.

Access to subsurface soils has been limited in the PCB impacted area since the pad-mounted transformer and associated underground electrical conduits had been energized throughout the duration of the assessment activities discussed herein, as the manufacturing facility tenant had been operating continuously (24 hours a day, 7 days a week). As such, CJW was unable, due to electrical safety concerns, to conduct any subsurface sampling activates at depths exceeding those discussed herein, which did not exceed 18 inches below the ground surface. However, based on the following data, it appeared that the PCB concentrations were attenuating relative to the sample depth(s) as observed at the following sampling locations:

- ◆ S-1 [12.9 mg/kg PCBs at the surface to 1.96 mg/kg PCBs from 12-18" below ground surface (bgs)];
- ◆ S-2 (0.26 mg/kg PCBs at the surface to non-detected at 6-12" bgs);
- ◆ S-3 (0.25 mg/kg PCBs at the surface to 0.24 mg/kg PCBs at 6-12" bgs); and
- ◆ S-4 (0.85 mg/kg PCBs at the surface to non-detected at 6-12" bgs),

Following the completion of the assessment activities discussed herein, CJW determined that PCB concentrations in soil greater than 1 mg/kg were not anticipated to be encountered at depths exceeding 2 to 3 feet bgs.

### **5.3.3 Soil Sampling, August 19, 2016**

Soil sampling from this date forward in the vicinity of the concrete pads was guided by 40 CFR 761, Subpart N, Cleanup Site Characterization Sampling for PCB Remediation Waste in Accordance with 761.61(a)(2). Subpart N specifies a sampling grid interval of 3 meters (approximately 9.84 feet). Soil samples discussed in this Section were collected using a maximum grid interval of approximately 10 feet as seen on Figure 4. More specifically, sample spacing ranged from approximately 5.7 (e.g. between samples S-13 and S-23) to approximately 10 feet (e.g. between samples S-12 and S-14; and S-11 and S-13). However, initial assessment soil samples collected in the immediately vicinity of the pad-mounted transformer (e.g. samples S-5, S-2 and S-6, S-3 and S-3, S-10 and S-10, S-4 and S-4, S-7, S-9) were done so at closer intervals in an effort to confirm the likely source of the PCB release (Section 5.3.2).

CJW collected a total of 7 samples (S-8 through S-14, inclusive) plus one duplicate (labeled as DUP; duplicated of S-8) from approximately 0"-6" below grade sample on August 19, 2016. The sample locations are shown on Figure 4.

The samples were submitted to Con-Test for analysis of PCBs by SW-846, Method 8082 using soxhlet extraction (Method 3540C). The laboratory testing results, presented in Appendix D and summarized in Table 1, reveal the following:

- ◆ Each sample and the duplicate contained two PCBs (Aroclor 1254 and Aroclor 1260). Samples S-12 (0"-6") and S-14 (0"-6") also contained Aroclor 1248. Concentrations of individual PCBs ranged from 0.19 mg/kg (Aroclor 1260 in S-9) to 8.7 mg/kg (Aroclor 1248 in S-12). The highest total PCB concentration of 12.7 mg/kg was identified in S-12 (0"-6").
- ◆ Six of the samples plus the duplicate were identified as containing PCBs with total concentrations in excess of the S-1/GW-2/GW-3 standard. Only sample S-9 contained individual PCBs and a total PCB concentration less than the S-1/GW-2/GW-3 standard.

#### **5.3.4 Soil Sampling, September 1, 2016**

CJW collected a total of 9 discrete soil samples (S-15 through S-23, inclusive) from approximately 0"-6" below grade sample on September 1, 2016. The sample locations are shown on Figure 4.

The samples were submitted to Con-Test for analysis of PCBs by SW-846, Method 8082 using soxhlet extraction (Method 3540C). The laboratory testing results, presented in Appendix D and summarized in Table 1, reveal the following:

- ◆ Each sample contained Aroclor 1254. Four samples (S-15, S-16, S-22, and S-23) also contained Aroclor 1260. Sample S-22 contained a third PCB (Aroclor 1248).
- ◆ S-15 was identified as containing individual PCBs greater than the S-1/GW-2/GW-3 standard. The total PCB concentration in this sample was greater than the S-1/GW-2/GW-3 standard.

#### **5.4 Distribution of PCB Identified**

Assessment activities conducted to date have identified concentrations of PCBs in near-surface soil (up to 18-inches below grade) in the vicinity of the pad-mounted transformer in concentrations ranging up to 9.3 mg/kg for an individual PCB (Aroclor 1254) to 12.9 mg/kg total PCBs. Both of

these concentrations are associated with sample S-1 (0"-6"). The lateral distribution of total PCB concentration in any given sample prior to remediation is shown on Figure 4 by way of color coding.

### **5.5 Conceptual Site Model**

One of the elements that should be evaluated in a Representativeness Evaluation in support of a Permanent Solution, pursuant to 310 CMR 40.1056(2)(k), is a Conceptual Site Model (CSM). The CSM is a site-specific description of what and how contaminants entered the environment, how they were transported within the system, and routes of exposure to and identification of human and environmental receptors. It provides a framework for assessing risks from contaminants, controlling or eliminating sources, developing response action strategies, and determining whether those strategies have been effective in achieving the requirements of the Permanent Solution. The CSM should be modified as necessary to incorporate new information and guide decision-making throughout the site assessment, risk characterization, and remediation of the disposal site. Its complexity is directly related to the complexity of disposal site conditions.

Components of a CSM include:

- ◆ History of the disposal site as applicable to the potential presence of oil and hazardous materials;
- ◆ Geologic and hydrogeological setting;
- ◆ Description of known/likely source(s) and types of contaminants
- ◆ Description of the known/estimated volume/mass of contaminant(s) released;
- ◆ The approximate date/time period of the release(s);
- ◆ The location(s) of the release(s) and affected media and horizontal and vertical extent of the contamination;
- ◆ Description of contaminant fate and transport in the environment, including migration pathways and rates, density and hydrodynamic factors, and contaminant degradation rates and degradation products; and
- ◆ Mechanisms/pathways and points of exposure by human and ecological receptors

There is no known or documented use of PCBs at the site other than what has been described in the former exterior pad-mounted transformer and potential transformers that may have previously occupied the former vacant concrete pad located just to the south of the existing pad-mounted

transformer (Figure 4). The source(s) of the PCBs identified in soil in the vicinity of the current pad-mounted transformer may likely have been the former PCB containing transformer itself and/or one or more transformers that may have formerly occupied the vacant concrete pad. However, the manner by which PCBs have come to be located in the soil in this area is unknown since there is no known record of a release or releases of oil from the existing pad-mounted transformer or other transformers which may have been located at the site.

Three additional transformers (pole-mount type) are currently active and staged on a raised wooden platform which spans between two utility poles, located approximately 92 feet to the north of the PCB containing/TSCA regulated pad-mounted transformer (Figure 5). No other active or inactive oil filled transformers are known to be located at the site, as the only electrical service to the building enters from the southwestern corner of the site building adjacent to the pad-mounted transformer and continues, via overhead wires, to the platform containing the three pole-mounted transformers, and subsequently enters the northwestern portion of the site building thereafter.

The manner in which the PCBs were released is unknown and the volume/mass of PCBs released in this area is unknown. However, the volume/mass of PCBs released appears to have been minor based on the lateral distribution of PCBs, impacting the concrete pads and soil located within the immediate vicinity of the pads. Further, the relatively limited horizontal and vertical distribution of PCBs identified in soil in the vicinity of the transformers would suggest that the soil had not been disturbed since the original release or releases occurred since soil disturbance would have likely resulted in PCB-impacted soil that was distributed over a larger area and likely to greater depths.

According to the Agency for Toxic Substances and Disease Registry (ATSDR), PCBs in general are relatively insoluble in water, and the solubility decreases with increased chlorination (see Table 4-3). The primary PCBs identified at this site include Aroclor 1254 and 1260. ATSDR also states that PCBs are soluble in nonpolar organic solvents (i.e., hydrocarbons such as gasoline) and biological lipids. According to information prepared by the Oregon Department of Environmental Quality, PCBs are nonpolar and therefore are only slightly soluble. This characteristic inhibits the transport of PCBs from soil to water (groundwater or surface water) and makes them bind strongly to soils. The fact that PCBs were not identified in groundwater from the monitoring well placed within the excavation area is likely due to the fact that PCBs are relative insoluble and no nonpolar organic solvents were identified within the vicinity of where PCBs were found to be present in soil at the site.

PCBs can be transported to surface water via entrainment of contaminated soil particles in surface water runoff. In water, a small portion of PCBs will dissolve, but the majority will bind to organic particles and bottom sediments. Although PCBs have a strong affinity for sediment, small amounts of PCBs are released from sediments to water over time. Once in the water, PCBs are also taken up by small organisms and fish. PCBs accumulate in the fatty tissue of these organisms. PCBs have a relatively low vapor pressure. Despite their low volatility, PCBs do volatilize from both soil and water.

PCBs tend to build up in living organisms both by uptake from the environment over time (bioaccumulation) and along the food chain (biomagnification). PCBs remain stored in fatty tissues much more than in muscles or other body parts.

ATSDR notes that routes of exposure for humans are inhalation, oral, and dermal. Although PCBs are readily absorbed into the body, they are slowly metabolized and excreted. PCBs initially distribute preferentially to the liver and muscle tissue.

## **6.0 PCB REMEDIATION**

### **6.1 Objectives**

#### **6.1.1 TSCA Objectives**

The intent of the SIP Plan was to perform cleanup of the impacted soil to meet the minimum requirement under 40 CFR 761.61(a)(4)(i)(B) for Low Occupancy Areas of less than or equal to 25 parts per million (ppm). However, the overall goal was to perform cleanup such that the concentrations of PCBs in soil and concrete remaining at the site were less than 1 mg/kg so that a deed notice was not required per 40 CFR 761.61(a)(8).

#### **6.1.2 MCP Objectives**

The objectives of the IRA Plan were to: 1) assess the vertical and horizontal extent of PCBs in soil; 2) remove PCB-impacted from the site to meet MCP requirements; 3) assess the need to assess groundwater quality; 4) stabilize site conditions as necessary; and 5) assess site conditions during and at the completion of response activities to determine the need to conduct further response actions.

The minimum goal of the IRA activities was the demonstrated reduction of PCB concentrations in site soil to levels below the applicable risk characterization standard for soil categories S-3/GW-2/GW-3 of 4 mg/kg. However, such a cleanup goal would require the implementation of an AUL. Therefore, similar to the goal stated in Section 6.1.1 above, the overall goal under the MCP was to perform cleanup such that the concentrations of PCBs in soil remaining at the site are less than 1 mg/kg S-1/GW-2/GW-3 risk characterization standard so that an AUL was not necessary.

### **6.2 Laboratory Analytical Procedures**

In accordance with 40 CFR 761.272, all soil and concrete samples were submitted to Con-Test for analysis of PCBs by SW-846, Method 8082 using soxhlet extraction (Method 3540C). A duplicate sample was submitted at a frequency on one per twenty samples.

### **6.3 Health and Safety Activities**

Prior to the beginning of each day work activities at the site, a meeting was held with the on-site workers to apprise them of the health and safety concerns and procedures, as described in the Work Plan, Health and Safety Plan and Equipment Decontamination Plan that was prepared for this project and to respond to any questions that arose.

### **6.4 PCB Cleanup and Associated Activities – December 5 and 6, 2016**

On December 5, 2016, CJW removed the chain-link fencing that was in-place around the impacted soil and concrete pads to facilitate access to the immediate site area for cleanup and other activities. Initially, the pad-mounted transformer and associated electrical equipment were de-energized. Upon arrival at the site, New England Disposal Technologies, Inc. (NEDT) of Sutton, Massachusetts set up operations such that lined roll-off containers were staged north of Brook Street and 6-mil polyethylene sheeting was placed on the ground surface in the area between Brook Street, the roll-off containers and the Support zone. The impacted concrete pads were removed and the soil was excavated with a track-mounted backhoe which was stationed in or outside of the Support Zone. As the concrete and soil was removed/excavated, it was placed in a skid-steer loader that remained in or outside of the Support Zone and the skid-steer moved along the polyethylene sheeting to empty its loads into the lined roll-off containers.

On December 5, 2016, NEDT utilized jack hammers to break the concrete pad closest to Brook Street into manageable pieces which were placed in skid-steer loader and then the roll-off containers. Once this pad was removed, NEDT proceeded to excavate soil from below and surrounding this pad to a depth of approximately 2 to 3 feet below grade as noted on Figure 6.

On December 6, 2016, the pad mounted transformer was wrapped in 6-mil polyethylene sheeting and then lifted off of the concrete pad with a crane and placed onto a secondary containment truck provided by TCI of NY, LLC (TCI). The transformer was subsequently transported by TCI to the TCI of Alabama, LLC facility in Pell City, Alabama for disposal (US EPA Facility ID No. ALD983167891). Subsequently, NEDT utilized jack hammers to break the associated concrete pad into manageable pieces which were placed in skid-steer loader and then the roll-off containers. Once this pad was removed, NEDT proceeded to excavate soil from below and surrounding this pad to a depth of approximately 2 to 3 feet below grade as noted on Figure 6.

Refer to Photos 1 through 8 in the Photographic Log presented in Appendix I for photos of the additional excavation activities conducted on December 5 and 6, 2016.

## **6.5 Electrical Power Restoration**

Since electrical power needed to be restored to the building as soon as possible, NEDT placed backfill within the area where the former transformer was located and compacted this soil. One (1) new precast concrete pad was then placed atop of this backfill, a new transformer was placed onto the pad, electrical connections were made to the new transformer and the transformer was energized.

## **6.6 Sampling and Testing of Media**

### **6.6.1 Verification Sampling Approach**

In accordance with 40 CFR 761.61(a)(6), sampling and testing of soil to verify the completion of SIP cleanup was performed in accordance with Subpart O. As such, CJW establish a grid pattern [761.283(b)(1)(ii)(2) and (3)] where sampling points were approximately 1.5 meters (or approximately 5 feet) apart. Figures 7 and 8 show the soil sample locations of the excavation and verification sample areas.

Verification sampling of soil that remained in place subsequent to excavation was based on a grid pattern and dependent upon the depth of the excavation(s) at the time of and following the soil removal activities. Grid locations representing the base of the excavation were obtained from the lowest point of the excavation, while grid locations representing the sidewalls of the excavation

were obtained from a mid-point depth located below the existing surface grade and the base of the excavation at that location.

A north/south oriented 5-foot by 5-foot grid pattern was overlain onto these areas shown on Figures 7 and 8. The intersection of each 5-foot by 5-foot grid or cell was assigned an alpha-numeric identification [consecutive letters (A, B, C, and D) along the X-axis and consecutive numbers (1 through 9, inclusive)]. A verification grab sample was collected from the intersection of each grid line at the base of the excavation once the excavation reached its final, proposed depth. For example, a sample identified as B7 Bot 1' would mean that the sample was collected at grid intersection “B” in the east-west direction, at grid intersection “7” in the north-south direction, and at the base “Bot” of the excavation at a depth of 1 foot below the original grade. If additional and deeper excavations were necessary at a certain sampling location based on the testing results of the initial sample that was collected, the subsequent sample collected at a greater depth would be labeled as having been collected at a depth further below grade. Soil samples which were over-excavated (i.e., A9 North SW and B1 Bot) are shown highlighted in yellow on Table 1, as the concentrations are no longer representative of in-situ soil conditions.

Soil samples were also collected from the north, south, and west sidewalls of the excavation along its perimeter at a depth representing the mid-point below the initial, existing grade and the depth of the excavation. Such a sample would have a “SW” in the sample label. For example, a sample identified as B6 North SW 1.25' would mean that the sample was collected at grid intersection “B” on the North Sidewall, at a depth of 1.25 feet below the original grade. If the excavation was initially deeper or subsequently proceeded deeper in certain abutting areas, the mid-point sidewall sample location then became the halfway point between the depth of the previous excavation and the depth of the new excavation. Since the eastern sidewall of the excavation continued to and abutted the wall of the site building some concrete samples of the building foundation sidewall were also collected and analyzed.

### **6.6.2 Soil Verification Sampling and Analysis and Further Soil Removal Activities**

On December 6, 2016, prior to NEDT placing backfill within the area where the former transformer was located to prepare for the placement of a new pad-mounted transformer, CJW collected a total of 20 grab or discrete soil samples from the base and sidewalls of the excavation. These samples were submitted to Con-Test for analysis of PCBs.

All testing results, presented in Appendix D and summarized in Table 1, revealed PCB concentrations of less than 1 mg/kg except for samples A9 North SW ½' (3.7 mg/kg PCB 1254), DUP-3 A9 North SW ½' (5.6-mg/kg PCB 1254; 1.4 mg/kg PCB 1260), and B1 Bot 1' (3 mg/kg PCB 1254). These concentrations meet the minimum requirement under 40 CFR 761.61(a)(4)(i)(B) for Low Occupancy Areas of less than or equal to 25 parts per million (ppm). However, since the overall goal was to perform cleanup such that the concentrations of PCBs in soil remaining at the site were less than 1 ppm [PCB concentrations greater than 1 ppm but less than or equal to 25 ppm remaining in soil at the site after cleanup would a deed notice in accordance with 40 CFR 761.61(a)(8)], CJW returned the site on December 15, 2016 to remove additional soil from these two sample locations in an effort to reduce the concentrations of PCBs in soil remaining at the site to less than 1 ppm.

On December 15, 2016, an additional 1 foot of soil was removed from initial sample location A9 North SW ½' such that the excavation extended to the foundation of the building extension to the north, and an additional 12-inches of soil was removed from initial sample location B1 Bot 1' (Figures 6 and 7). Soil that was removed was placed into three (3) 55-gallon steel drums for disposal off site (Section 12.2). Refer to Photos 9 and 10 in the Photographic Log presented in Appendix I for photos of the additional excavation activities conducted on December 15, 2016.

Additionally on December 15, 2016, CJW collected samples soil from these two (2) additional excavation areas/locations. The identification of the samples was changed to reflect the new depth of the excavation at these locations such that initial sample location A9 North SW ½' now became sample A9 North SW 0.75' and initial sample location B1 Bot 1' became B1 Bot 2'. These samples were submitted to Con-Test for analysis of PCBs. The testing results, presented in Appendix D and summarized in Table 1, reveal PCB concentrations of less than 1 mg/kg. As such, the combined testing results of soil remaining in-place at the site now meet the minimum requirement under 40 CFR 761.61(a)(4)(i)(B) for Low Occupancy Areas of less than or equal to 25 parts per million (ppm) and the overall goal of less than 1 ppm such that a deed notice was not required per 40 CFR 761.61(a)(8). The testing results are also less than the MCP S-1/GW-2/GW-3 standard.

### **6.6.3 Concrete Foundation Sampling and Analysis**

Since the eastern sidewall of the excavation continued up to and abutted the sidewall of the building foundation, CJW collected three concrete foundation samples (labeled Concrete-3, Concrete-4, and Concrete-5) on December 8, 2016 in accordance with the Standard Operating Procedure for Sampling Porous Surfaces for Polychlorinated Biphenyls (USEPA, May 2011). The

sample locations are shown on Figure 8. It should be noted that in areas where the excavation area was completed flush to the concrete building foundation that the foundation extended to depths exceeding the depth of the excavation, such that no exposed were present underlying the foundation wall/

Each sample was collected by using a hammer drill to scour the surface of the pad to a depth of approximately 0.5 inch to obtain concrete dust/chips which were placed into sampling containers. The samples were submitted to Con-Test for analysis of PCBs by SW-846, Method 8082 using soxhlet extraction (Method 3540C). The laboratory testing results, presented in Appendix C and summarized in Table 3, reveal the following:

Sample ID	PCB Concentration (mg/kg)
Concrete-3	No PCBs were identified at or above the laboratory's RL* of 0.091 mg/kg
Concrete-4	Aroclor 1254 at 0.16 mg/kg (RL of 0.078 mg/kg)
Concrete-5	No PCBs were identified at or above the laboratory's RL* of 0.092 mg/kg

Note: \* RL = Laboratory Reporting Limit

#### **6.6.4 Groundwater Sampling and Analysis**

Subsequent to the excavation of the concrete pads and soil, a relatively thin layer of groundwater accumulated in a portion of the excavation located south of the concrete pad that supported the transformer. To evaluate groundwater for PCB impact, CJW installed a 1-inch diameter polyvinyl chloride (PVC) pipe monitoring well at this location (Figures 7 and 8). The well, labeled as CJW-1, was installed by hand such that a 5-foot section of “screened” or machine-slotted portion of the PVC pipe extended to a depth of approximately 6 feet below grade. A “riser” or non-slotted portion of PVC pipe was threaded onto the machine-slotted portion and extended vertically above ground surface of the open excavation, and was completed to the approximate level of the surrounding ground surface.

On December 8, 2016, collected a groundwater sample from this well using a peristaltic pump and low flow methodology (USEPA, July 1996, revised January 2010). Teflon-lined polyethylene tubing was lowered to within the approximate midpoint of the screened interval. This tubing was

connected to approximately 8-inches of silicone tubing which was placed in the pump head. Additional Teflon-lined polyethylene tubing was attached to the other end of the silicone tubing.

Subsequent to measuring the depth of groundwater (3.05 feet), approximate three (3) well volumes of groundwater were purged from the well. The sample was then collected into two unpreserved, 1 liter amber glass containers provided by the laboratory. The samples was submitted to Con-Test for analysis of PCBs by Method SW-846, 8082A. The testing results, presented in Appendix E and summarized in Table 4, reveal that no PCBs were identified in concentrations equal to or in excess of the laboratory's RL of 0.20 micrograms per liter (ug/l) which is below the RC of 5 ug/l for PCBs under the MCP for applicable groundwater category GW-2.

#### **6.6.5 Dust/Air Monitoring**

CJW performed real time monitoring at the active work zone and the Exclusion Zone perimeter in accordance with the Work Plan, Health and Safety Plan and Equipment Decontamination Plan that was developed for the project. A Thermo Scientific personal DataRAM pDR-1000AN was used for this effort. It is a passive, real-time, personal aerosol monitor/data logger capable of real-time, mass concentration measurements of dust, smoke, mists and fumes in real-time.

This work was performed on December 5 and 6, 2016 when the when a frost permeated the near surface of the ground, a light snow covered the ground surface, the temperature ranged from 28 degrees Fahrenheit (°F) to 35 °F, and the wind was reported (at the Worcester, MA Regional Airport) as 3 miles per hour (mph) to 14 mph. These factors reduced the likelihood of the generation of any significant dust as the result of excavation activities.

The baseline time-weighted average measured prior to the ground breaking was 0.018 mg/m<sup>3</sup>. As such, the airborne project criteria established for this project was not exceeded. Measurements were taken every 15-minutes to 30-minutes during the work periods. The highest concentrations measured were during jack-hammering of the concrete pads over a 45-minute period. These concentrations ranged from 0.088 mg/m<sup>3</sup> to 0.206 mg/m<sup>3</sup>. Measurement recorded at other times ranged from 0.002 mg/m<sup>3</sup> to 0.016 mg/m<sup>3</sup>. As such, the airborne project criteria established for this project was not exceeded.

## **6.7 Disposal Site Boundary**

The lateral extent of the Disposal Site Boundary is shown on Figure 4 and is based upon the results of the verification sampling and analysis. Table 1 reveals that the vertical extent of PCBs remaining is soil at the site extends to approximately 18 inches below grade in some areas. No PCBs were identified in groundwater.

## **7.0 RISK ASSESSMENT**

Under the MCP, the characterization of risk of harm to health, safety, public welfare and the environment is required for sites where the concentrations of contaminants have not been reduced to background levels as is the case at this site. In accordance with 310 CMR 40.0902, a characterization of the risks posed by the release of oil or hazardous material (OHM) is required at disposal sites to provide the quantitative and qualitative information to evaluate the need for remedial actions, and to document that a level of No Significant Risk (NSR) of harm of health, safety, public welfare, and the environment exists or has been achieved.

There are three methods available for performing a risk characterization. Method 1 allows for the comparison of the concentrations of contaminants in soil and/or groundwater (and no other media) to standards that the MADEP has established for any site in Massachusetts. A Method 2 risk characterization can also be used for soil and groundwater. It supplements and modifies Method 1 standards with site- and chemical-specific information. A Method 3 risk characterization relies on detailed information about a specific site, the oil and/or hazardous material present in the environment at the site, and potential exposures to human and environmental receptors under all current and reasonably foreseeable site activities and uses to characterize the risk of harm posed by the identified contaminants. It can be used for soil and groundwater but also can be used to assess other media such as indoor air, surface water, and sediments for which no Method 1 standards exist.

The conclusions presented in this PSS are based upon a Method 3 Risk Characterization which demonstrates that a condition of NSR of harm to health, safety, public welfare, and the environment exists at the disposal site. The Method 3 Risk Characterization, presented in Appendix F, was performed for CJW by EnviroRisk Solutions, LLC of Stowe, Massachusetts. It should be noted that the Method 3 Risk Assessment discussed herein includes site data covering both an IRA Completion Report and Permanent Solution Statement associated with the MADEP

release RTN 2-19882 (release of hydraulic oil) and this SIP Completion Report, IRA Completion Report and PS Statement associated with RTN 2-19956 prepared by CJW.

In summary, the results of the risk characterization reveal that a level of NSR to human health, public welfare, safety, and the environment has been achieved and no AUL is required to maintain the level of NSR. As such a Permanent Solution has been attained. However, a condition of the Permanent Solution, as noted in the Risk Characterization (Appendix F), is that Best Management Practices (BMP) be implemented for potential future gardening at the site. Specifically, “since the estimated human health risks associated with ingestion of PCBs from soil that bioaccumulate into plants that are then eaten as produce were greater than non-cancer and cancer MassDEP risk limits, a Condition of the Permanent Solution for RTN 19956 is that Best Management Practices (BMP) will be implemented for potential future residential gardening at the site. It should be noted that the BMP are for use of PCB-impacted site soil for growing home grown produce for consumption only and in no way restricts the use of outdoor raised beds or any gardening activity inside or outside the facility as long as the PCB-impacted soil is not used for produce that will be consumed. Landscaping of the PCB impacted area is not restricted so long as BMP are followed. The BMP only pertains to the PCB impacted soil that is currently located at the southwestern exterior of the site building, where the site building abuts Brook Street. The use of soil brought in from a source other than the PCB impacted area for gardening purposes is acceptable and in no way restricted. Therefore, this site as a whole is eligible for Permanent Solutions that do not require an AUL (40.1056(2)(j)(1). To further emphasize, this condition only applies to the PCB-impacted soil area located on the southeastern exterior corner of the site building”.

## **8.0 IMMINENT HAZARD EVALUATION**

Under the MCP, an (IH) is defined as a hazard that would pose a significant risk of harm to health, safety, public welfare or the environment if it were present for even a short period of time. As described in Section 1.2.2, an IH was identified at the site due to the concentration of PCBs in near-surface soil. However, the IH condition was initially negated once the 6-foot high chain link fence was erected around the site. Subsequently, the successful cleanup of PCB impacted soil and concrete has resulted in remaining concentration of less than 1 mg/kg. Therefore, no IH currently exists relative to this matter.

## **9.0 CRITICAL EXPOSURE PATHWAY EVALUATION**

Critical Exposure Pathways (CEPs), as defined in 310 CMR 40.0006, “means those routes by which oil or hazardous material (OHM) released at a disposal site are transported, or are likely to be transported, to human receptors via:

- ◆ Vapor phase emissions of measurable concentrations of OHM into the living or working space of a pre-school, daycare, school or occupied residential dwelling; or
- ◆ Ingestion, dermal absorption or inhalation of measurable concentrations of OHM from drinking water supply wells located at and servicing a pre-school, daycare, school or occupied residential dwelling.

CJW is of the opinion that CEPs do not exist at the site relative to the release of PCBs to soil and concrete and as a result of cleanup activities.

## **10.0 SUBSTANTIAL RELEASE MIGRATION EVALUATION**

Under the MCP, a Substantial Release Migration (SRM) is defined as the presence of one or more of the following conditions at a disposal site:

- ◆ Releases that have resulted in the discharge of separate-phase oil and/or separate-phase hazardous material to surface waters, buildings, underground utilities or conduits;
- ◆ Releases to the ground surface or vadose zone that, if not promptly removed or contained, are likely to significantly impact the underlying groundwater, or significantly exacerbate an existing condition of groundwater pollution;
- ◆ Releases to groundwater that have migrated or area expected to migrate more than 200 feet per year;
- ◆ Releases to the groundwater that have been or are within one year likely to be detected in a public or private drinking water well;
- ◆ Releases to the groundwater that have been or are within one year likely to be detected in a surface water body, wetland, or public water supply reservoir; or
- ◆ Releases to the groundwater or to the vadose zone that have resulted in or have the potential to result in the discharge of vapors into a School, Daycare or Child Care Center or occupied residential dwelling.

An SRM is not known to exist at the site.

## **11.0 EQUIPMENT DECONTAMINATION**

Decontamination, when necessary, was performed in accordance with the Work Plan, Health and Safety Plan and Equipment Decontamination Plan that was developed for the project. The management of decon liquids/materials is discussed in Section 12.3.

## **12.0 MANAGEMENT OF WASTE**

### **12.1 PCB Transformer and Transformer Oil**

The PCB containing pad-mounted transformer was transported by TCI of NY, LLC to the TCI of Alabama, LLC facility in Pell City, Alabama for disposal (US EPA Facility ID No. ALD983167891). The Uniform Hazardous Waste Manifest (Manifest #003260039GBF) in Appendix G reveals that the transformer was received on December 15, 2016. The transformer weighed 6,280 lbs. and contained 183 gallons of oil.

### **12.2 Soil, Concrete and Personal Protective Equipment**

On August 16, 2016, MA DEP orally approved the removal/excavation of up to 25 cubic yards of impacted soil under an IRA. With the submittal of the IRA Plan, CJW requested an additional 50 cubic yards of impacted soil for removal/excavation bringing the total to 75 cubic yards.

In accordance with 40 CFR 761.61(a)(5)(v)(A), bulk PCB remediation waste (PCB-impacted impacted concrete and soil) with PCB concentrations less than 50 mg/kg excavated and removed from the site was transported, under a Bill of Lading (BOL) (310 CMR 40.0034), to Waste Management of New Hampshire, Inc.'s Turnkey Recycling and Environmental Enterprise (TREE) Facility in Rochester, New Hampshire which is a fully permitted Subtitle D solid waste disposal facility.

A total of 30.61 tons (approximately 19 to 20 cubic yards) of soil and concrete were transported off-site by NEDT in two (2) lined, covered steel roll-off containers, which were disposed of at the TREE facility in Rochester, New Hampshire on December 7 and 8, 2016, respectively.

Additionally, three (3) drums of PCB impacted soils generated during the additional excavation activities conducted on December 15, 2016, and one (1) drum of personal protective equipment,

totaling 0.82 tons of PCB remediation waste, were transported off-site by NEDT under BOL on January 26, 2017, to the TREE facility in Rochester, New Hampshire on February 14, 2017.

At the completion of disposal activities, approximately 31.42 tons of PCB remediation waste transported under BOL to the TREE facility in Rochester, New Hampshire.

Copies of the disposal documentation discussed in this Section are included in Appendix G.

### **12.3 Liquid Waste**

One (1) drum of liquid waste (diesel fuel, detergent and water) resulting from the decontamination of the equipment used in the Exclusion Zone was analyzed by Con-Test for PCBs by US EPA Method 8082. While PCBs were not detected in the sample at concentrations in excess of the Laboratory RLs, since the laboratory RLs were not able to meet the limits of 0.5 µg/L or approximately  $\leq$  0.5 ppb, which would have allowed for the unrestricted use under § 761.79(b)(1), the drum of liquid waste required incineration according to § 761.60.

As such, one (1) drum of was transported off-site by NEDT on January 26, 2016, under Uniform Hazardous Waste Manifest (manifest tracking number 016972703JJK), to the ENPRO Services of Vermont, Inc. facility in Williston Vermont for incineration. A copy of the hazardous waste manifest is included in Appendix G.

## **13.0 CONCLUSIONS AND LSP OPINION**

### **13.1 TSCA**

Based upon the assessment and cleanup of bulk PCB remediation waste under a SIP [40 CFR 761.61(a)], it is our opinion that the SIP was successfully implemented and completed since the concentrations of soil and concrete remaining at the site meet the minimum requirement under 40 CFR 761.61(a)(4)(i)(B) for Low Occupancy Areas of less than or equal to 25 parts per million (ppm). Further, a deed notice is not required in accordance with 40 CFR 761.61(a)(8), since the cleanup resulted in concentrations of PCBs of less than 1 mg/kg (or 1 ppm). Therefore, there is no restricted use of and for the site.

ASTM International (2013) has prepared a guide which provides a systematic protocol to identify, prioritize, select, implement, and report on the use of greener cleanup best management practices

(BMP) and the USEPA encourages the compliance with such practices. Generally, BMPs employed at this site included:

- ◆ The use of local staff to minimize resource consumption; and
- ◆ The development and implementation of a properly devised site sampling plan that resulted in data representative of the site. Systematic planning, a critical component of optimized strategies for investigating hazardous waste sites, involves identifying key decisions to be made, developing a CSM to support decision making, and evaluating decision uncertainty along with approaches for actively managing that uncertainty. The CSM combines analytical data with historical information to identify data gaps and allows for refinement as additional data become available.

### **13.2 MCP**

It is the opinion of the LSP-of-Record for this disposal site that this document meets the requirements of 310 CMR 40.0424 for an IRA Completion Report. Based on the results of completed IRA activities, an IRA Completion Statement is considered appropriate pursuant to the requirements of 310 CMR 40.0427. Response actions have abated this condition that initially required the IRA, stabilized disposal site conditions to the degree necessary, and neither an IH, SRM nor CEP exist at the site.

It further meets the requirements of a Permanent Solution with Conditions (BMP only) in accordance with the 310 CMR 40.1040(1), and 40.1041(2). The concentrations of PCBs remaining in soil at the site have been reduced to levels below the applicable MCP standards, such that, an AUL is not required to maintain a level of NSR pursuant to 310 CMR 40.1012(2). Therefore, a Permanent Solution Statement is appropriate for the disposal site pursuant to 310 CMR 40.1040.

The LSP-of-Record has reviewed the laboratory testing results and is of the opinion that laboratory quality control/quality assurance was appropriate for the tests that were performed. Further, the LSP is of the opinion that the quality control measures taken during sampling events for soil were of sufficient and appropriate nature to render an LSP opinion. Five (5) duplicate discrete samples were collected during the IRA/SIP activities discussed herein. The detected concentration of PCBs in A9 North SW 1' BG (3.7 mg/Kg) and DUP-3 (7.0 mg/Kg) are not considered to be comparable, as the reported concentration in DUP-3 was approximately 1.9 times greater than was reported for the soil sample A9 North SW 1' BG. This discrepancy was likely due to the homogenization, or lack thereof, of the discrete soil sample; however, as the area was over-excavated and re-sampled,

the A9 North SW 1' BG soil sample and associated DUP-3 duplicate sample are not utilized/relied upon in the Method 3 Risk Characterization (Section 7.0). Based upon the relative comparability of the analytical results of the samples and duplicates (excluding A9 North SW 1' BG and DUP-3), and based upon the completeness of the removal activities, the quality control measures are deemed appropriate. In support of this opinion, the LSP has conducted an evaluation of the acceptability of the laboratory data used to characterize site conditions. The results are summarized below.

Pursuant to 310 CMR 40.0017 and 40.1056(2)(k), any person undertaking response actions under the provisions of the MCP shall ensure that analytical and environmental monitoring data used in support of recommendations, conclusions, or LSP opinions with respect to assessment, removal or containment actions are scientifically valid and defensible, and of a level of precision and accuracy commensurate with its stated or intended use.

An evaluation of the overall quality and suitability of data utilized to support site characterization decisions and opinions at a disposal site is the responsibility of parties conducting response actions, and is subject to the requirements of the Response Action Performance Standard (RAPS) set forth in 310 CMR 40.0191. Decisions that may directly impact data quality and suitability include:

- ◆ Selection of an analytical service provider;
- ◆ Identification of environmental sampling locations and parameters;
- ◆ Identification of appropriate analytical methods and Reporting Limits; and
- ◆ Specification of Quality Assurance/Quality Control procedures and performance standards.

In achieving the status of “Presumptive Certainty”, one will be assured that an analytical data set:

- ◆ Satisfy the broad QA/QC requirements of 310 CMR 40.0017 and 40.0191 regarding the scientific defensibility, precision and accuracy, and reporting of analytical data;
- ◆ May be used in a data usability assessment, and, if in compliance with all MCP Analytical Method standards, laboratory QC requirements, and field QC recommended limits and action levels, the data set will be considered usable data to support site characterization decisions made pursuant to the MCP; and
- ◆ May be used to support a data representativeness assessment.

CJW collected all samples with the knowledge of the LSP-of-Record for this site in accordance with accepted practices. Samples were collected in containers supplied by the laboratory. The laboratory also supplied chemical preservatives, as necessary. Samples were kept on ice in the field and refrigerated prior to pick up by the laboratory courier. The samples were delivered to the laboratory under a chain-of-custody record. Based on the sample collection protocol and the responses made by the laboratory on the Analytical Report Certification Form (see Appendices of laboratory data), the LSP is of the opinion that the laboratory data is an acceptable data set identified for a data usability assessment.

The LSP performed a review and assessment of the analytical data and quality control data for the laboratory testing results of the sampling performed during the period of May 18, 2016 through December 15, 2016, (collectively known as data) used to support opinions, conclusions, and/or recommendations contained in this document. The complete laboratory analytical reports for oil, concrete, soil and groundwater not previously provided containing this data are provided in Appendices B through E, respectively.

The data usability is based on an evaluation of the following parameters: precision, accuracy, representativeness, comparability, completeness, and sensitivity.

Precision is a measure of mutual agreement among individual measurements of the same property, under prescribed conditions. Precision was evaluated based on sample data repeatability that combines the cumulative precision of the sampling technique, non-homogeneity of the matrix, and the analytical method. As previously mentioned, five (5) duplicate discrete soil samples were collected for laboratory analysis; however, the level of precision was not suitable from soil samples A9 North SW 1' BG and DUP-3 (as discussed above), which were over-excavated as discussed in Section 6.6.2, and are not utilized/relied upon in the Method 3 Risk Characterization. The precision of the remaining four (4) soil samples and associated duplicates were determined to be comparable. Additionally, the reported concentrations of PCBs in the areas where remediation was not conducted and the post remediation soil samples were also comparable. In all cases, the laboratory RLs were below the applicable MCP standards for the applicable soil or groundwater categories. As such, CJW concludes that the precision of data collected at the site is acceptable.

Accuracy is the degree of agreement of a measurement with an accepted reference or true value. The difference between the measurement and the true value is usually expressed as a percentage

or ratio. Accuracy was evaluated on various samples that were spiked by the laboratory such as control spikes, surrogates, matrix spike, and blanks.

According to the laboratory analytical report assessment soil samples collected on August 9, 2016, the result for Aroclor-1254 was confirmed using a dissimilar column for soil sample S-5 0-6" BG, and the relative percent difference between the two results was >40%. In accordance with the method, the higher result was reported. CJW concludes that data validation is not affected, and it is unlikely that improved precision would affect the outcome of the risk characterization presented herein, as the higher result was reported. No other issues identified in the Case Narrative impacted the two (2) other soil sample results representative of remaining in-situ site soils.

According to the laboratory analytical report assessment soil samples collected on September 1, 2016, the sample to spike ratio was greater than or equal to 4:1, and the spiked amount was not representative of the native amount in the sample. As such, appropriate or meaningful recoveries could not be calculated for Aroclor-1260 for the quality control laboratory Matrix Spike. CJW concludes that data validation is not affected, and it is unlikely that improved precision would affect the outcome of the risk characterization presented herein, as sample to spike ratio does not impact/alter the detected concentration in the actual soil samples. Additionally, the result for Aroclor-1254 was confirmed using a dissimilar column for soil sample S-20 0-6" BG, and the relative percent difference between the two results was >40%. In accordance with the method, the higher result was reported. CJW concludes that data validation is not affected, and it is unlikely that improved precision would affect the outcome of the risk characterization presented herein, as the higher result was reported.

According to the laboratory analytical reports for post excavation soil samples collected on December 6, 2016, a dilution was performed as part of the standard analytical procedure for the soil samples: C6 North SW 1.25' Bg, C5 Bot 2 1/2' Bg, A4 Bot 1' Bg, D5 West SW 1.75' Bg, B6 North SW 1.25' Bg, A6 North SW 2' Bg, A6 Bot 2 1/2' Bg, B5 Bot 2 1/2' Bg, C4 Bot 2' Bg and B7 West SW 1/2' Bg. CJW concludes that data validation is not affected, and it is unlikely that improved precision would affect the outcome of the risk characterization presented herein, as PCBs were not detected in any of the above referenced soil samples at concentrations equal to or in excess of the laboratory RLs. Additionally, the surrogate recovery for soil sample DUP-3 was not available due to sample dilution below the surrogate reporting limit required from high analyte concentration and/or matrix interferences. However, CJW concludes that data validation is not affected, and it is unlikely that improved precision would affect the outcome of the risk

characterization presented herein, as the location of DUP-3 (submitted from A9 North SW 1' BG) was over-excavated (Section 6.6.2) as both the soil sample and duplicate contained PCBs at a concentration in excess of 1 mg/Kg.

According to the laboratory analytical report for post excavation (over-excavation of samples exceeding 1 ppm PCBs) soil samples collected on December 15, 2016, a dilution was performed as part of the standard analytical procedure for the soil samples: B1 Bot 2' BG, B1 East SW 1.5' BG, B1 North SW 1.5' BG and B1 West SW 1.5' BG. CJW concludes that data validation is not affected, and it is unlikely that improved precision would affect the outcome of the risk characterization presented herein, as PCBs were not detected in any of the above referenced soil samples at concentrations equal to or in excess of the laboratory RLs.

According to the laboratory analytical reports, the reported results for remaining soil and groundwater used in the preparation of the Method 3 Risk Characterization were within defined laboratory quality control objectives.

Representativeness expresses the degree to which data accurately and precisely represent a characteristic of a population, parameter variation, or environmental condition. It is a qualitative assessment based on observed conditions and measurements. The data and the results are considered to be representative of the conditions at the disposal site based on current site uses and field observations.

Comparability expresses the confidence with which one data set can be compared to another. It is typically evaluated based upon different rounds of response action. Personnel from CJW performed four (4) rounds of assessment soil sampling, two (2) rounds of post remediation soil sampling, and one (1) round of groundwater sampling as part of this program. CJW concludes that the comparability of the data sets used to characterize the site is acceptable as the results are similar.

Completeness is a measure of the amount of valid data obtained from a measurement system compared to the amount expected under normal conditions and is usually expressed as a percentage. Completeness was evaluated based on the total acceptable samples divided by the total collected samples times 100. All of the post remediation soil samples and the groundwater sample discussed herein are considered acceptable for this submittal; therefore, a completeness goal of 100% has been attained.

Sensitivity is the ability of the method to detect the contaminant of concern at the concentration of interest, expressed as the Reporting Limit. It is based on an evaluation of the laboratory's RL as compared to the applicable MCP Method 1 standards for this disposal site. For those samples where the laboratory reported non-detectable concentrations (method reporting limits), the RLs were below the applicable Method 1 standards.

The LSP is of the opinion that the data are and of a level of precision and accuracy commensurate with their stated or intended use.

## **14.0 PUBLIC NOTIFICATION**

In accordance with 310 CMR 40.1403(3)(c) and (f), copies of applicable public notification documents are presented in Appendix H.

## **15.0 LIMITATIONS**

The substance, content, and findings of documents and/or other deliverables made to The Kelly Company, Inc. including but not limited to reports, data, memorandums, and facsimiles, are for the sole use of The Kelly Company, Inc. and distribution to the MA DEP in accordance with the requirements of the MCP (310 CMR 40.0000) and the USEPA in accordance with 40 CFR 761. No reliance for the data or findings contained in these deliverables may be extended to any other party without the express written consent of CJW. Any unauthorized use or distribution of CJW's work shall be at the sole risk of The Kelly Company, Inc. and the recipient and without liability to CJW.

This report presents conditions observed and encountered at the site on the days of CJW's site work only. CJW does not warrant or guarantee the accuracy, completeness, and/or current status of the information prepared by others. Such information is the product of independent investigation by parties other than CJW and/or information maintained by government agencies. Therefore, no representation concerning agency records or work performed by others is expressed or implied.

The scope of this project did not include determining the current compliance status of the site with regard to all environmental regulations and/or permitting requirements. Any comments in the report regarding compliance with environmental regulations are provided for informational

purposes only, and should not be considered a thorough review of all environmental regulatory requirements.

Conclusions, recommendations, and/or opinions in this report are based on field work, available laboratory testing results, and current Massachusetts and federal regulations. Any qualitative or quantitative information regarding the site, which was not available to CJW at the time of the production of this report, may result in a modification of the representations made herein.

## **16.0 REFERENCES**

ASTM International (November, 2013), “Standard Guide for Greener Cleanups”, E2893-13.

Agency for Toxic Substances and Disease Registry website:

<https://www.atsdr.cdc.gov/csem/csem.asp?csem=30&po=9>

Code of Federal Regulations, Title 40 “Protection of the Environment”, Volume 30, Part 761, Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions, U.S. Environmental Protection Agency.

Massachusetts Department of Environmental Protection, “Massachusetts Contingency Plan”, 310 CMR 40.0000.

Oregon Department of Environmental Quality (DEQ). Fact Sheet: Sources of Polychlorinated Biphenyls, PCB Fact Sheet CP.8-6-03.DOC.

Web page <http://www.deq.state.or.us/lq/cu/nwr/PortlandHarbor/docs/SourcePCBs.pdf>

U.S. Environmental Protection Agency, Region 1, July 1009, revise January 2010, “Low Stress (Low Flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells”.

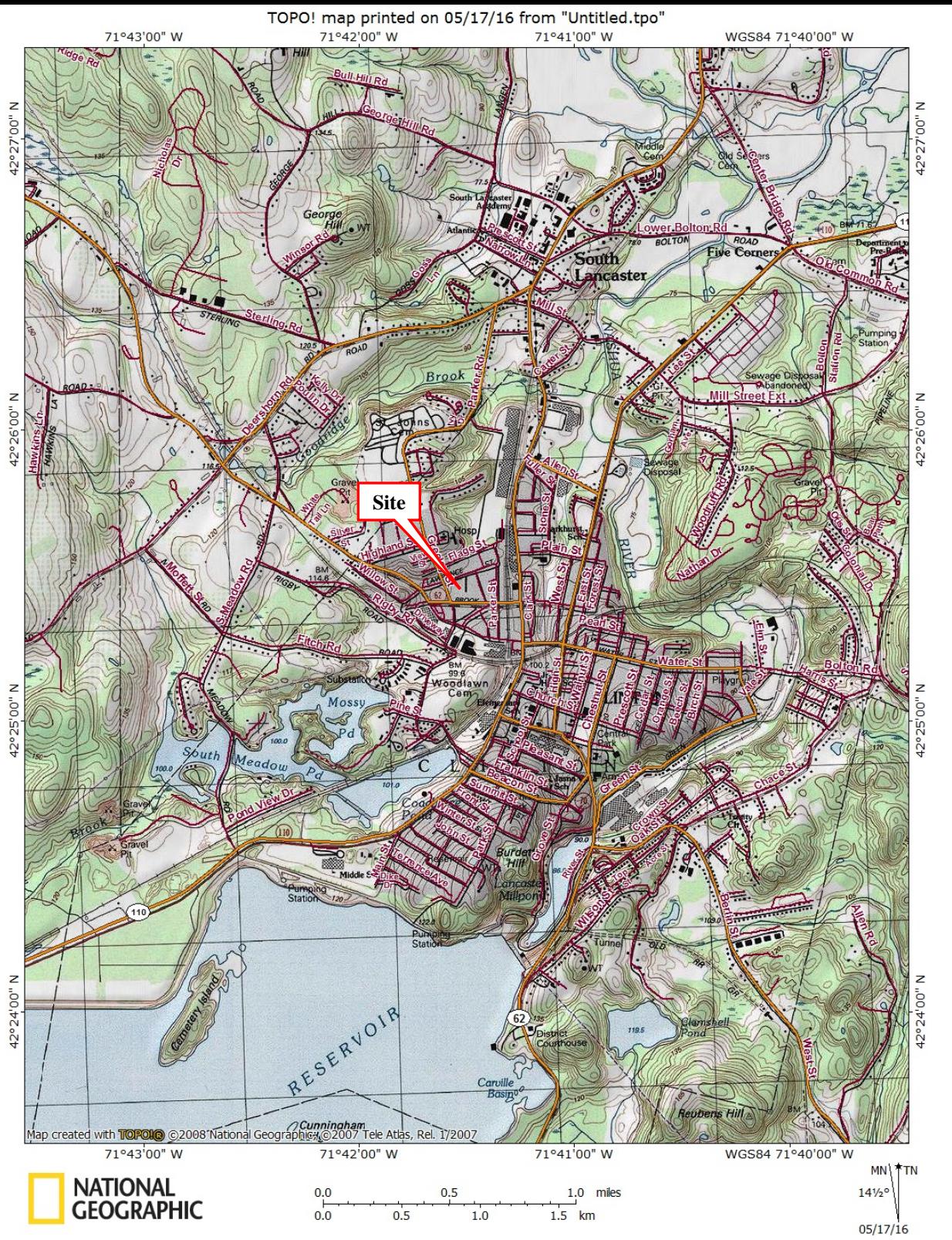
U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation, December 2009. “Green Remediation Best Management Practices: Site Investigation”, EPA 542-F-09-004.

U.S. Environmental Protection Agency, Region 1, May 2011, “Standard Operating Procedure for Sampling Porous Surfaces for Polychlorinated Biphenyls”.

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***FIGURES***

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**CUSHING, JAMMALLO &  
WHEELER, INC.**

### LOCUS MAP

**179 Brook Street  
Clinton, Massachusetts**  
42° 25' 25.59" N, 71° 41' 31.23" W; elev. 293 ft. msl  
UTM: Zone 19T, 278532.92mE, 4700338.26mN



**FIGURE 1**

#5812



**CUSHING, JAMMALLO &  
WHEELER, INC.**

**FIGURE 2**

**Aerial View of Subject Site  
179 Brook Street  
Clinton, MA**

Source: Google Earth (05/17/2016)

N  
↑

#5812

# MassDEP - Bureau of Waste Site Cleanup

Figure 3: Phase 1 Site Assessment Map

**Site Information:**

179 BROOK ST CLINTON, MA

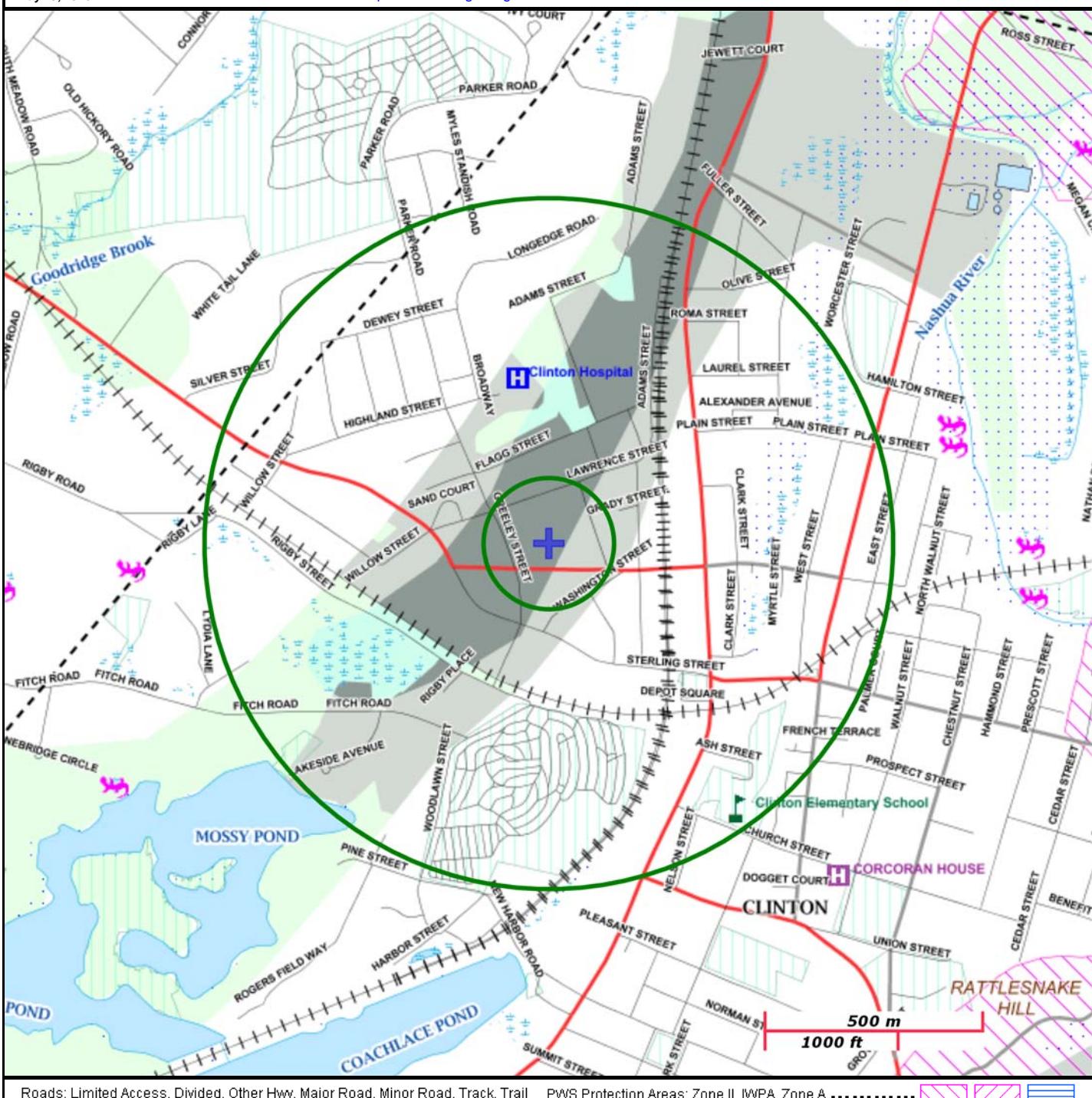
NAD83 UTM Meters:  
4700361mN, 278545mE (Zone: 19)  
May 19, 2016

The information shown is the best available at the date of printing. However, it may be incomplete. The responsible party and LSP are ultimately responsible for ascertaining the true conditions surrounding the site. Metadata for data layers shown on this map can be found at: <http://www.mass.gov/mgis/>.



**MassDEP**

Commonwealth of Massachusetts  
Department of Environmental Protection



Roads: Limited Access, Divided, Other Hwy, Major Road, Minor Road, Track, Trail

PWS Protection Areas: Zone II, IWPA, Zone A

Boundaries: Town, County, DEP Region; Train; Powerline; Pipeline; Aqueduct

Hydrography: Open Water, PWS Reservoir, Tidal Flat

Basins: Major, PWS; Streams: Perennial, Intermittent, Man Made Shore, Dam

Wetlands: Freshwater, Saltwater, Cranberry Bog

Aquifers: Medium Yield, High Yield, EPA Sole Source

FEMA 100yr Floodplain; Protected Open Space; ACEC

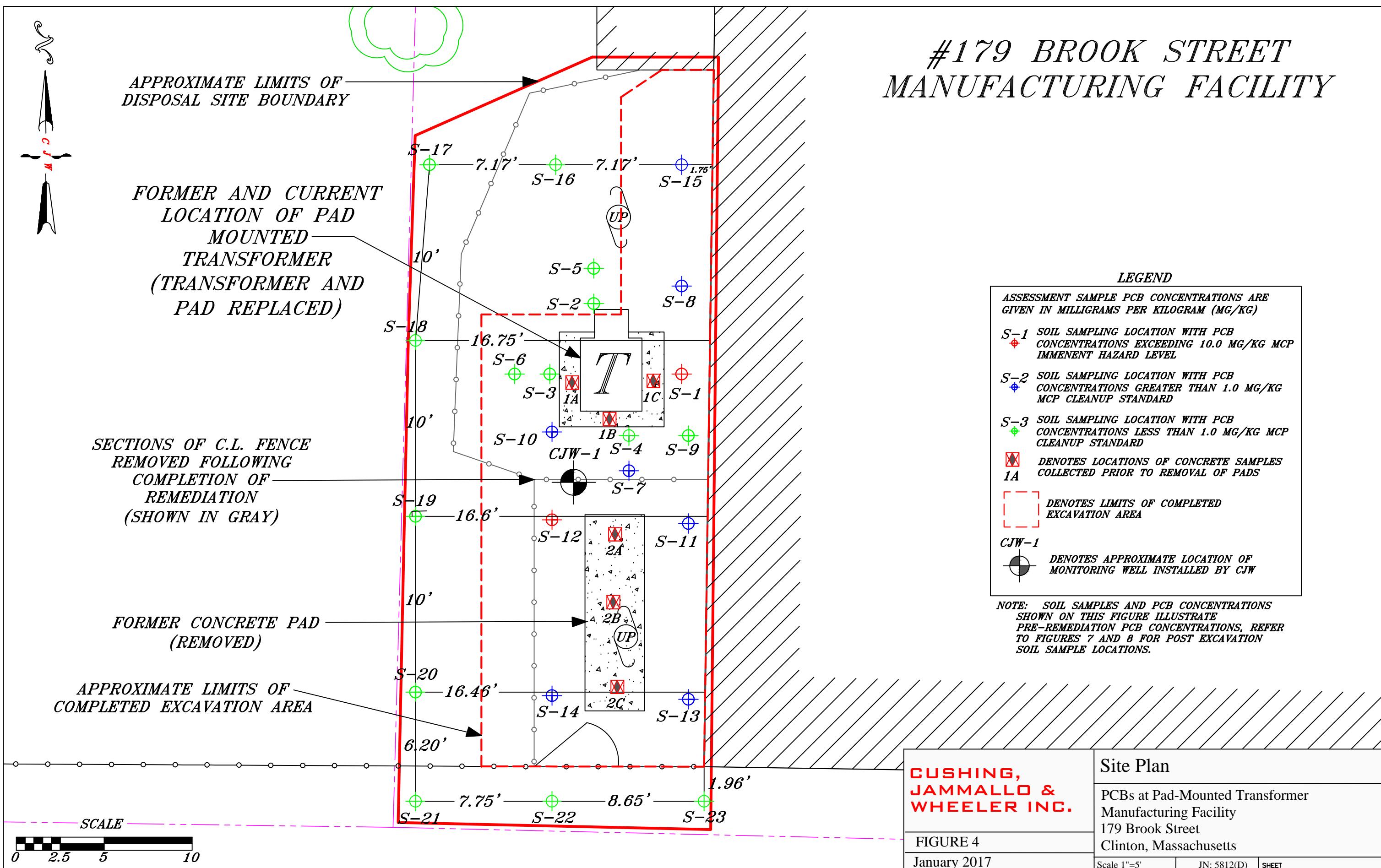
Non Potential Drinking Water Source Area: Medium, High (Yield)

Est. Rare Wetland Wildlife Hab; Vernal Pool; Cert, Potential

Solid Waste Landfill; PWS: Com.GW,SW, Emerg., Non-Com.

Solid Waste Landfill; PWS: Com.GW,SW, Emerg., Non-Com.

# #179 BROOK STREET MANUFACTURING FACILITY





### *LEGEND*

- |                    |  |   |
|--------------------|--|---|
| <i>CJW-1</i>       |  | <i>MONITORING WELL INSTALLED TO ASSESS GROUNDWATER UNDER RTN 2-19956</i>                              |
| <i>MW-1</i>        |  | <i>MONITORING WELLS INSTALLED BY CJW AS PART OF PHASE I/II ESA</i>                                    |
| <i>MW-A</i>        |  | <i>MONITORING WELLS INSTALLED BY CJW TO ASSESS HYDRAULIC OIL RELEASES REGULATED UNDER RTN 2-19882</i> |
| <i>FORMER MW-4</i> |  | <i>MONITORING WELLS PREVIOUSLY INSTALLED BY OTHERS (DESTROYED)</i>                                    |

# BROOK ST

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**FIGURE 5**

## Monitoring Well Location Plan

Manufacturing Facility  
179 Brook Street  
Clinton, Massachusetts

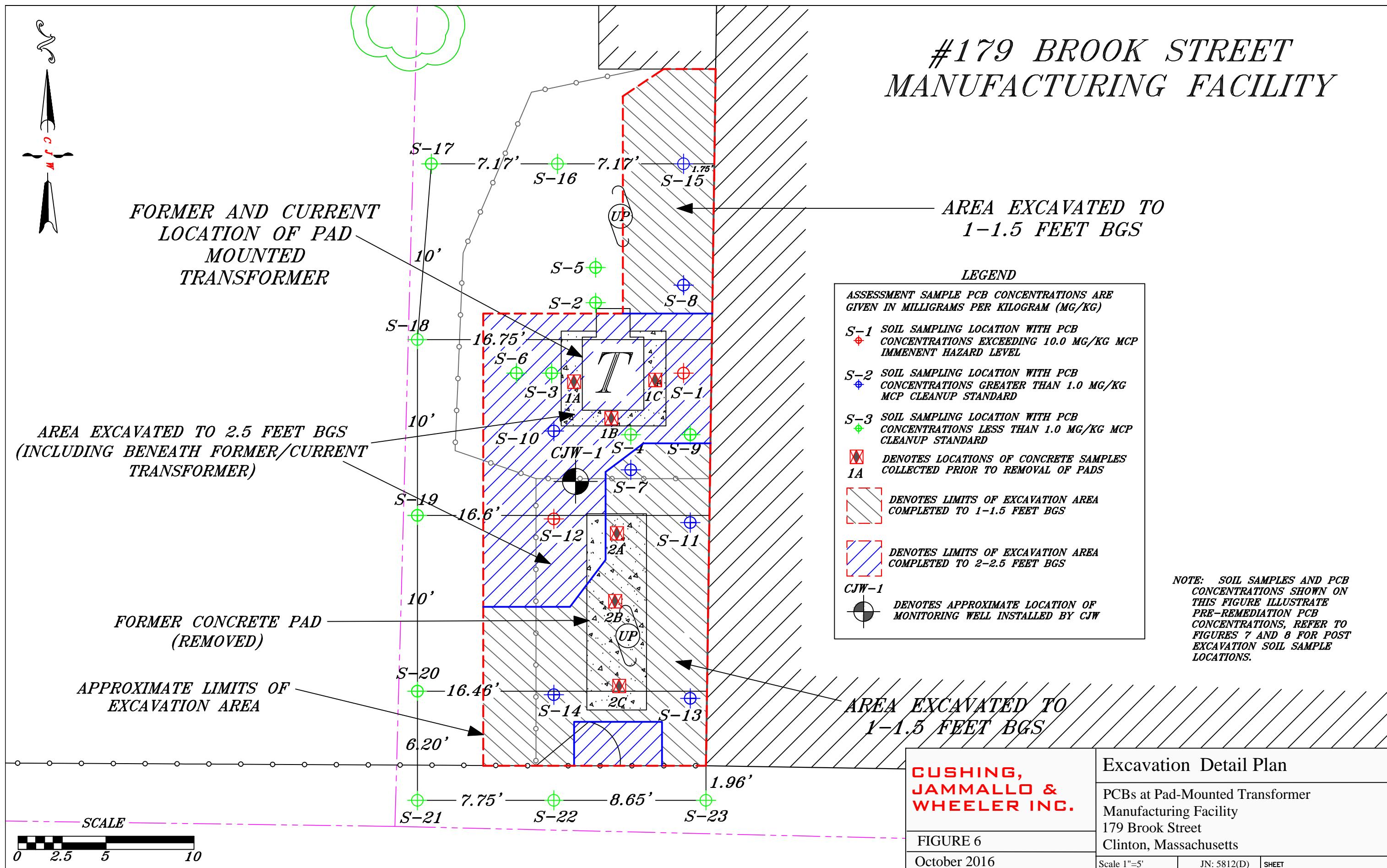
## **FIGURE 5**

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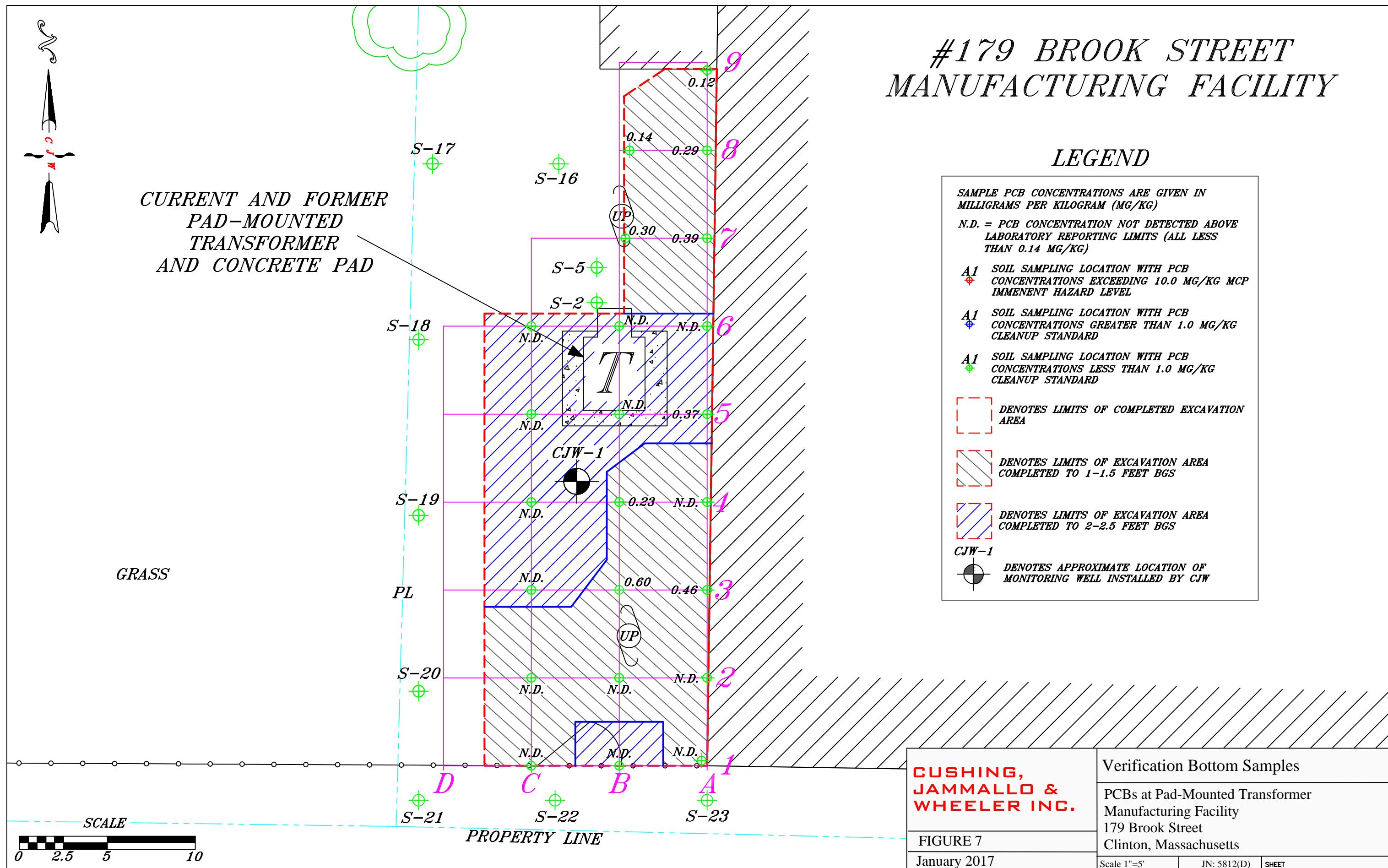
Scale 1"=20' JN: 5812D SHEET

JN: 5812D | SHEET

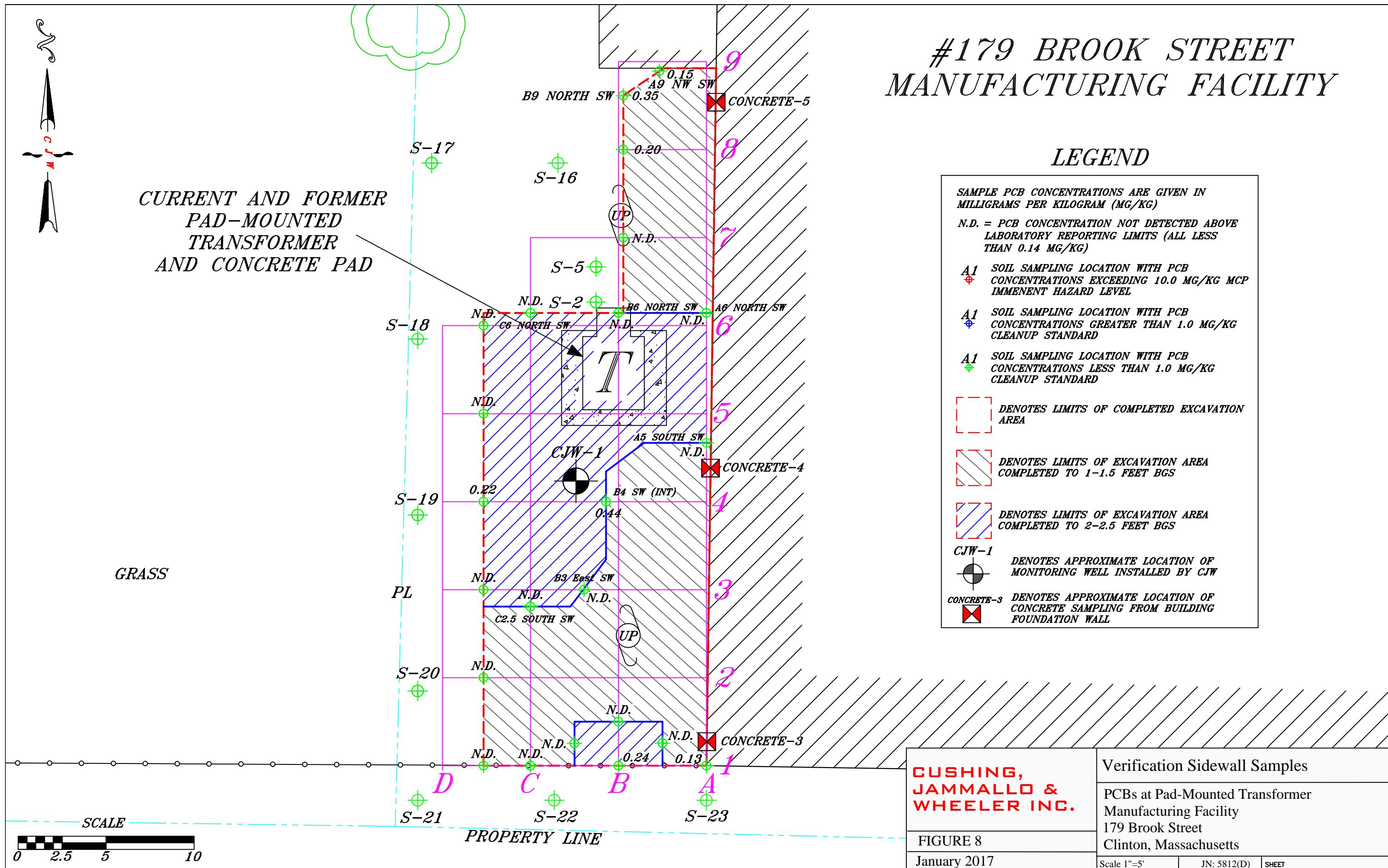
# #179 BROOK STREET MANUFACTURING FACILITY



# #179 BROOK STREET MANUFACTURING FACILITY



# #179 BROOK STREET MANUFACTURING FACILITY



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***TABLES***

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**Table 1**  
**Summary of Soil Analytical Data - Polychlorinated Biphenyls with 3540 Soxhlet Extraction**  
**179 Brook St, Clinton, MA**

Soil Category	MCP STANDARDS (mg/kg)									
	PCB 1016	PCB 1221	PCB 1232	PCB 1242	PCB 1248	PCB 1254	PCB 1260	PCB 1262	PCB 1268	
S-1/GW-2	1	1	1	1	1	1	1	1	1	1
S-1/GW-3	1	1	1	1	1	1	1	1	1	1
UCL	100	100	100	100	100	100	100	100	100	100

LABORATORY ANALYTICAL RESULTS (mg/Kg)																	
Sample ID (Applicable Soil Category)	Sample Date	Sample Depth (feet)	PCB 1016	PCB 1221	PCB 1232	PCB 1242	PCB 1248	PCB 1254	PCB 1260	PCB 1262	PCB 1268						
<b>ASSESSMENT SOIL SAMPLES</b>																	
Pad Mount Transformer	05/18/2016 1055 0 - 6 Inches	0.45	U	0.45	U	0.45	U	0.45	U	1.6		0.77		0.45	U	0.45	U
Pole Mount Transformer	05/18/2016 1100 0 - 6 Inches	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12		0.12	U	0.12	U
MW-6	05/25/2016 1010 4 - 6 Feet	0.14	U	0.14	U	0.14	U	0.14	U	0.14	U	0.14		0.14	U	0.14	U
MW-7	05/25/2016 1020 3 - 6 Feet	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12		0.12	U	0.12	U
S-1 0-6" Bg	08/09/2016 1040 0 - 6 Inches	2.1	U	2.1	U	2.1	U	2.1	U	9.3		3.6		2.1	U	2.1	U
S-1 6-12" Bg	08/09/2016 1045 6 - 12 Inches	0.53	U	0.53	U	0.53	U	0.53	U	2.3		0.8		0.53	U	0.53	U
S-1 (12-18" bg)	08/09/2016 1050 12 - 18 Inches	0.21	U	0.21	U	0.21	U	0.21	U	1.6		0.36		0.21	U	0.21	U
S-2 0-6" Bg	08/09/2016 1055 0 - 6 Inches	0.1	U	0.1	U	0.1	U	0.1	U	0.26		0.1		0.1	U	0.1	U
S-2 6-12" Bg	08/09/2016 1100 6 - 12 Inches	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1		0.1	U	0.1	U
S-3 0-6" Bg	08/09/2016 1110 0 - 6 Inches	0.11	U	0.11	U	0.11	U	0.11	U	0.25		0.11		0.11	U	0.11	U
S-3 6-12" Bg	08/09/2016 1115 6 - 12 Inches	0.1	U	0.1	U	0.1	U	0.1	U	0.24		0.1		0.1	U	0.1	U
S-4 0-6" Bg	08/09/2016 1125 0 - 6 Inches	0.1	U	0.1	U	0.1	U	0.1	U	0.58		0.27		0.1	U	0.1	U
S-4 6-12" Bg	08/09/2016 1130 6 - 12 Inches	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1		0.1	U	0.1	U
S-5 0-6" Bg	08/09/2016 1135 0 - 6 Inches	0.1	U	0.1	U	0.1	U	0.1	U	0.21		0.1		0.1	U	0.1	U
S-6 0-6" Bg	08/09/2016 1140 0 - 6 Inches	0.098	U	0.098	U	0.098	U	0.098	U	0.14		0.098		0.098	U	0.098	U
S-7 0-6" Bg	08/09/2016 1145 0 - 6 Inches	0.21	U	0.21	U	0.21	U	0.21	U	1		0.32		0.21	U	0.21	U
S-8 (0-6"bg)	08/19/2016 1220 0 - 6 Inches	1.1	U	1.1	U	1.1	U	1.1	U	4.6		1.8		1.1	U	1.1	U
S-9 (0-6"bg)	08/19/2016 1225 0 - 6 Inches	0.11	U	0.11	U	0.11	U	0.11	U	0.6		0.19		0.11	U	0.11	U
S-10 (0-6"bg)	08/19/2016 1230 0 - 6 Inches	1.1	U	1.1	U	1.1	U	1.1	U	2.6		1.5		1.1	U	1.1	U
S-11 (0-6"bg)	08/19/2016 1235 0 - 6 Inches	1.1	U	1.1	U	1.1	U	1.1	U	4.6		1.9		1.1	U	1.1	U
S-12 (0-6"bg)	08/19/2016 1240 0 - 6 Inches	2.3	U	2.3	U	2.3	U	2.3	U	8.7		4		2.3	U	2.3	U
S-13 (0-6"bg)	08/19/2016 1245 0 - 6 Inches	0.42	U	0.42	U	0.42	U	0.42	U	1.2		0.42		0.42	U	0.42	U
S-14 (0-6"bg)	08/19/2016 1250 0 - 6 Inches	1.2	U	1.2	U	1.2	U	1.2	U	5.8		1.9		1.2	U	1.2	U
DUP/Duplicate	08/19/2016 1255	1.1	U	1.1	U	1.1	U	1.1	U	4.1		1.5		1.1	U	1.1	U
S-15 0-6"bg	09/01/2016 1115 0 - 6 Inches	0.54	U	0.54	U	0.54	U	0.54	U	2.4		1.2		0.54	U	0.54	U

**Table 1**  
**Summary of Soil Analytical Data - Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

179 Brook St, Clinton, MA

Soil Category	MCP STANDARDS (mg/kg)								
	PCB 1016	PCB 1221	PCB 1232	PCB 1242	PCB 1248	PCB 1254	PCB 1260	PCB 1262	PCB 1268
S-1/GW-2	1	1	1	1	1	1	1	1	1
S-1/GW-3	1	1	1	1	1	1	1	1	1
UCL	100	100	100	100	100	100	100	100	100

LABORATORY ANALYTICAL RESULTS (mg/Kg)													
Sample ID (Applicable Soil Category)	Sample Date	Sample Depth (feet)	PCB 1016	PCB 1221	PCB 1232	PCB 1242	PCB 1248	PCB 1254	PCB 1260	PCB 1262	PCB 1268		
S-16 0-6"Bg	09/01/2016 1120 0 - 6 Inches	0.11 U 0.11 U 0.11 U 0.11 U 0.11 U 0.11 U 0.41 U 0.11 U 0.11 U 0.11 U											
S-17 0-6"Bg	09/01/2016 1125 0 - 6 Inches	0.11 U 0.11 U 0.11 U 0.11 U 0.11 U 0.11 U 0.16 U 0.11 U 0.11 U 0.11 U 0.11 U 0.11 U											
S-18 0-6"Bg	09/01/2016 1130 0 - 6 Inches	0.1 U 0.1 U 0.1 U 0.1 U 0.1 U 0.1 U 0.14 U 0.1 U 0.1 U 0.1 U 0.1 U 0.1 U											
S-19 0-6"Bg	09/01/2016 1135 0 - 6 Inches	0.11 U 0.11 U 0.11 U 0.11 U 0.11 U 0.11 U 0.2 U 0.11 U 0.11 U 0.11 U 0.11 U 0.11 U											
S-20 0-6"Bg	09/01/2016 1140 0 - 6 Inches	0.11 U 0.11 U 0.11 U 0.11 U 0.11 U 0.11 U 0.25 U 0.11 U 0.11 U 0.11 U 0.11 U 0.11 U											
S-21 0-6"Bg	09/01/2016 1145 0 - 6 Inches	0.1 U 0.1 U 0.1 U 0.1 U 0.1 U 0.1 U 0.13 U 0.1 U 0.1 U 0.1 U 0.1 U 0.1 U											
S-22 0-6"Bg	09/01/2016 0935 0 - 6 Inches	0.1 U 0.1 U 0.1 U 0.1 U 0.1 U 0.24 U 0.3 U 0.11 U 0.1 U 0.1 U 0.1 U 0.1 U											
S-23 0-6"Bg	09/01/2016 0930 0 - 6 Inches	0.1 U 0.1 U 0.1 U 0.1 U 0.1 U 0.1 U 0.48 U 0.15 U 0.1 U 0.1 U 0.1 U 0.1 U											
POST EXCAVATION CONFIRMATORY SOIL SAMPLES													
A1 Bot 1' Bg (S-1/GW-2/GW-3)	12/06/2016 1035 1 - Feet	0.1 U											
A1 South SW 1/2' Bg (S-1/GW-2/GW-3)	12/06/2016 1110 0.5 - Feet	0.099 U 0.099 U 0.099 U 0.099 U 0.099 U 0.099 U 0.13 U 0.099 U 0.099 U 0.099 U 0.099 U 0.099 U 0.099 U											
A2 Bot 1' Bg (S-1/GW-2/GW-3)	12/06/2016 1040 1 - Feet	0.11 U											
A3 Bot 1' Bg (S-1/GW-2/GW-3)	12/06/2016 1030 1 - Feet	0.1 U 0.1 U 0.1 U 0.1 U 0.1 U 0.1 U 0.35 U 0.11 U 0.11 U 0.11 U 0.11 U 0.11 U 0.11 U											
A4 Bot 1' Bg (S-1/GW-2/GW-3)	12/06/2016 1225 1 - Feet	0.11 U											
A5 Bot 2 1/2' Bg (S-1/GW-2/GW-3)	12/06/2016 1235 2.5 - Feet	0.12 U 0.12 U 0.12 U 0.12 U 0.12 U 0.12 U 0.37 U 0.12 U 0.12 U 0.12 U 0.12 U 0.12 U 0.12 U											
A6 Bot 2 1/2' Bg (S-1/GW-2/GW-3)	12/06/2016 1305 2.5 - Feet	0.11 U											
A5 South SW 1.75' Bg (S-1/GW-2/GW-3)	12/06/2016 1155 1.75 - Feet	0.11 U											
A6 North SW 2' Bg (S-1/GW-2/GW-3)	12/06/2016 1245 2 - Feet	0.11 U											
A7 Bot 1' Bg (S-1/GW-2/GW-3)	12/06/2016 1355 1 - Feet	0.11 U 0.11 U 0.11 U 0.11 U 0.11 U 0.11 U 0.39 U 0.11 U 0.11 U 0.11 U 0.11 U 0.11 U 0.11 U											
Dup-1 Duplicate 1 (A7 Bot 1' Bg)	12/06/2016 1400	0.11 U 0.11 U 0.11 U 0.11 U 0.11 U 0.11 U 0.38 U 0.12 U 0.11 U 0.11 U 0.11 U 0.11 U 0.11 U											
A8 Bot 1' Bg (S-1/GW-2/GW-3)	12/06/2016 1345 1 - Feet	0.11 U 0.11 U 0.11 U 0.11 U 0.11 U 0.11 U 0.29 U 0.11 U 0.11 U 0.11 U 0.11 U 0.11 U 0.11 U											
A9 North SW 1/2' Bg (S-1/GW-2/GW-3)	12/06/2016 1215 0.5 - Feet	0.53 U 0.53 U 0.53 U 0.53 U 0.53 U 0.53 U 3.7 U 0.53 U 0.53 U 0.53 U 0.53 U 0.53 U 0.53 U											
Dup-3 Duplicate 3 (A9 North SW 1/2' Bg)	12/06/2016 1410	1.1 U 1.1 U 1.1 U 1.1 U 1.1 U 1.1 U 5.6 U 1.4 U 1.1 U 1.1 U 1.1 U 1.1 U 1.1 U											
A9 Bot 1.5' BG (S-1/GW-2/GW-3)	12/15/2016 1300 1.5 - Feet	0.1 U 0.1 U 0.1 U 0.1 U 0.1 U 0.1 U 0.12 U 0.1 U 0.1 U 0.1 U 0.1 U 0.1 U 0.1 U											
A9 NW SW 0.75' BG (S-1/GW-2/GW-3)	12/15/2016 1310 0.75 - Feet	0.11 U 0.11 U 0.11 U 0.11 U 0.11 U 0.11 U 0.15 U 0.11 U 0.11 U 0.11 U 0.11 U 0.11 U 0.11 U											
B1 Bot 1' Bg (S-1/GW-2/GW-3)	12/06/2016 1045 1 - Feet	0.55 U 0.55 U 0.55 U 0.55 U 0.55 U 0.55 U 3 U 0.83 U 0.55 U 0.55 U 0.55 U 0.55 U 0.55 U											
B1 Bot 2' BG (S-1/GW-2/GW-3)	12/15/2016 1000 2 - Feet	0.11 U											
B1 East SW 1.5' BG (S-1/GW-2/GW-3)	12/15/2016 1010 1.5 - Feet	0.11 U											
B1 North SW 1.5' BG (S-1/GW-2/GW-3)	12/15/2016 1020 1.5 - Feet	0.12 U											
B1 West SW 1.5' BG (S-1/GW-2/GW-3)	12/15/2016 1030 1.5 - Feet	0.11 U											
B1 South SW 1/2' Bg (S-1/GW-2/GW-3)	12/06/2016 1050 0.5 - Feet	0.1 U 0.1 U 0.1 U 0.1 U 0.1 U 0.1 U 0.14 U 0.1 U 0.1 U 0.1 U 0.1 U 0.1 U 0.1 U											
B2 Bot 1' Bg (S-1/GW-2/GW-3)	12/06/2016 1055 1 - Feet	0.1 U											
B3 Bot 1' Bg (S-1/GW-2/GW-3)	12/06/2016 1100 1 - Feet	0.11 U 0.11 U 0.11 U 0.11 U 0.11 U 0.11 U 0.46 U 0.14 U 0.14 U 0.14 U 0.11 U 0.11 U 0.11 U											
Dup-2 Duplicate 2 (B3 Bot 1' Bg)	12/06/2016 1405 1 - Feet	0.11 U 0.11 U 0.11 U 0.11 U 0.11 U 0.11 U 0.38 U 0.14 U 0.14 U 0.14 U 0.11 U 0.11 U 0.11 U											

**Table 1**  
**Summary of Soil Analytical Data - Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

**179 Brook St, Clinton, MA**

Notes

## **NOTES:**

L = Not detected by laboratory in concentration at or above reporting limit that is presented in previous column.

U = Not detected by laboratory in concentration at or above reporting limit that is equal to or less than the applicable MCL Standard if applicable.

Concentration exceeds currently applicable MCP

Concentration exceeds laboratory limit

**UCL = Upper Concentration Limit**  
[redacted] means that soil at this sample location was subsequently removed and, therefore, this sample is no longer representative of soil that remains at the site

**Table 2**  
**Summary of Groundwater Gauging Data**  
**179 Brook Street, Clinton, MA**

Well Identification	Well Elevation	Gauging Date	Depth to Water (feet)	Depth to NAPL (feet)	NAPL Thickness (feet)	Groundwater Elevation (feet)
CJW-1	N.M.	12/8/2016	3.05	N.D.	N.A.	T.B.D.
MW-2	96.46	5/26/2016	0.96	N.D.	N.A.	95.50
	96.46	6/9/2016	0.05	N.D.	N.A.	96.41
	96.46	6/30/2016	0.50	N.D.	N.A.	95.96
MW-3	96.37	5/26/2016	1.50	N.D.	N.A.	94.87
	96.37	6/9/2016	0.32	N.D.	N.A.	96.05
	96.37	6/30/2016	0.53	N.D.	N.A.	95.84
MW-5	98.58	5/26/2016	1.93	N.D.	N.A.	96.65
	98.58	6/9/2016	1.95	N.D.	N.A.	96.63
	98.58	6/30/2016	2.74	N.D.	N.A.	95.84
MW-6	99.17	5/26/2016	3.28	N.D.	N.A.	95.89
	99.17	6/9/2016	3.28	N.D.	N.A.	95.89
	99.17	6/30/2016	3.54	N.D.	N.A.	95.63
MW-7	99.10	5/26/2016	3.40	2.94	0.46	95.70
	99.10	6/9/2016	3.54	2.85	0.69	95.56
	99.10	6/30/2016	3.96	3.16	0.80	95.14
	99.10	7/15/2016	4.05	3.23	0.82	95.05
	99.10	8/8/2016	3.88	3.23	0.65	95.22
	99.10	9/22/2016	3.88	3.38	0.50	95.22
	99.10	9/28/2016	3.95	3.35	0.60	95.15
MW-10	100.23	6/17/2016	3.81	N.D.	N.A.	96.42
	100.23	6/30/2016	4.14	N.D.	N.A.	96.09
MW-14	99.02	8/8/2016	3.19	N.D.	N.A.	95.83
MW-15	99.15	8/8/2016	3.36	N.D.	N.A.	95.79
	99.15	9/1/2016	3.21	N.D.	N.A.	95.94
MW-15A	99.19	9/1/2016	3.35	N.D.	N.A.	95.84
MW-15B	99.33	9/1/2016	3.84	N.D.	N.A.	95.49
MW-15C	99.30	9/1/2016	3.72	N.D.	N.A.	95.58
MW-15D	99.37	9/1/2016	4.05	N.D.	N.A.	95.32
MW-16	99.47	8/8/2016	3.34	N.D.	N.A.	96.13
	99.47	9/21/2016	3.30	N.D.	N.A.	96.17
MW-20	98.83	9/8/2016	2.95	N.D.	N.A.	95.88
MW-21	98.80	9/8/2016	2.90	N.D.	N.A.	95.90
MW-22	98.85	9/8/2016	3.12	N.D.	N.A.	95.73
MW-23	T.B.D.	9/28/2016	2.85	N.D.	N.A.	T.B.D.
MW-24	T.B.D.	9/28/2016	2.74	N.D.	N.A.	T.B.D.
MW-25	T.B.D.	9/28/2016	2.88	N.D.	N.A.	T.B.D.
MW-26	T.B.D.	9/28/2016	2.83	N.D.	N.A.	T.B.D.
MW-27	T.B.D.	9/28/2016	2.98	N.D.	N.A.	T.B.D.
MW-A	98.93	6/30/2016	3.30	3.25	0.05	95.63
	98.93	7/15/2016	3.48	3.35	0.13	95.45
	98.93	9/22/2016	4.45	3.35	1.10	94.48
	98.93	9/28/2016	4.25	3.30	0.95	94.68
MW-B	99.04	6/30/2016	4.10	3.14	0.96	94.94
	99.04	7/15/2016	4.30	3.29	1.01	94.74
	99.04	8/8/2016	4.05	3.27	0.78	94.99

**Table 2**  
**Summary of Groundwater Gauging Data**  
**179 Brook Street, Clinton, MA**

Well Identification	Well Elevation	Gauging Date	Depth to Water (feet)	Depth to NAPL (feet)	NAPL Thickness (feet)	Groundwater Elevation (feet)
MW-C	98.94	6/30/2016	3.12	N.D.	N.A.	95.82
	COULD NOT BE ACCESSED DUE TO STORED MATERIALS					
	98.94	8/8/2016	3.59	3.21	0.38	95.35
	98.94	9/22/2016	3.75	3.30	0.45	95.19
	98.94	9/28/2016	3.48	3.30	0.18	95.46
MW-D	98.67	6/30/2016	3.25	N.D.	N.A.	95.42
	98.67	7/15/2016	3.36	N.D.	N.A.	95.31
	98.67	8/8/2016	3.34	N.D.	N.A.	95.33
	98.67	9/22/2016	3.54	3.50	0.04	95.13
MW-E	99.45	6/30/2016	3.98	N.D.	N.A.	95.47
	99.45	7/15/2016	4.03	N.D.	N.A.	95.42
MW-F	99.46	6/30/2016	4.24	N.D.	N.A.	95.22
	99.46	7/15/2016	4.30	N.D.	N.A.	95.16
MW-G	T.B.D.	7/15/2016	4.49	4.38	0.11	T.B.D.
	T.B.D.	7/27/2016	4.65	4.48	0.17	T.B.D.
	T.B.D.	8/8/2016	4.58	4.34	0.24	T.B.D.
	T.B.D.	9/22/2016	5.00	4.41	0.59	T.B.D.
	T.B.D.	9/28/2016	4.64	4.40	0.24	T.B.D.
MW-H	T.B.D.	7/15/2016	4.01	N.D.	N.A.	T.B.D.
	T.B.D.	7/27/2016	4.14	N.D.	N.A.	T.B.D.
	T.B.D.	8/8/2016	3.99	N.D.	N.A.	T.B.D.
	T.B.D.	9/22/2016	4.13	N.D.	N.A.	T.B.D.
MW-I	T.B.D.	7/15/2016	4.61	4.53	0.08	T.B.D.
	T.B.D.	7/27/2016	5.23	4.59	0.64	T.B.D.
	T.B.D.	8/8/2016	5.06	4.46	0.60	T.B.D.
	T.B.D.	9/22/2016	5.38	4.54	0.84	T.B.D.
	T.B.D.	9/28/2016	4.98	4.55	0.43	T.B.D.
MW-J	T.B.D.	7/15/2016	3.45	3.40	0.05	T.B.D.
	T.B.D.	8/8/2016	4.90	3.56	1.34	T.B.D.
MW-K	T.B.D.	7/15/2016	3.51	N.D.	N.A.	T.B.D.
	T.B.D.	7/27/2016	3.85	3.85	0.00	T.B.D.
	T.B.D.	8/8/2016	3.78	3.73	0.05	T.B.D.
	T.B.D.	9/22/2016	4.08	3.80	0.28	T.B.D.
	T.B.D.	9/28/2016	3.87	3.77	0.10	T.B.D.
MW-L	T.B.D.	7/27/2016	3.94	N.D.	N.A.	T.B.D.
	T.B.D.	8/8/2016	3.83	3.83	0.00	T.B.D.
	T.B.D.	9/22/2016	4.05	3.88	0.17	T.B.D.
	T.B.D.	9/28/2016	3.89	3.84	0.05	T.B.D.
MW-M	T.B.D.	7/27/2016	4.51	N.D.	N.A.	T.B.D.
MW-N	T.B.D.	7/27/2016	4.35	N.D.	N.A.	T.B.D.
	T.B.D.	8/8/2016	4.26	N.D.	N.A.	T.B.D.
	T.B.D.	9/22/2016	4.31	N.D.	N.A.	T.B.D.
MW-O	T.B.D.	8/8/2016	3.31	N.D.	N.A.	T.B.D.
	T.B.D.	9/22/2016	3.42	N.D.	N.A.	T.B.D.
MW-P	T.B.D.	8/8/2016	3.40	N.D.	N.A.	T.B.D.
	T.B.D.	9/22/2016	3.50	N.D.	N.A.	T.B.D.

N.D. - Non-Detect

N.A. - Not Applicable

N.M. - Not Measured

T.B.D. - To Be Determined

NAPL - Non Aqueous Phase Liquid

**Table 3**  
**Summary of Concrete Analytical Data - PCBs**

179 Brook Street, Clinton, MA

Category	MCP STANDARDS (mg/l)									
	PCB 1016	PCB 1221	PCB 1232	PCB 1242	PCB 1248	PCB 1254	PCB 1260	PCB 1262	PCB 1268	
UCL	~	~	~	~	~	~	~	~	~	~

LABORATORY ANALYTICAL RESULTS (mg/Kg)														
Sample ID (Applicable Category)	Sample Date	Sample Depth (Inches)	PCB 1016	PCB 1221	PCB 1232	PCB 1242	PCB 1248	PCB 1254	PCB 1260	PCB 1262	PCB 1268			
Concrete-3	12/08/2016 1200	0.091	U	0.091	U	0.091	U	0.091	U	0.091	U	0.091	U	0.091
Concrete-4	12/08/2016 1230	0.078	U	0.078	U	0.078	U	0.078	U	0.16	U	0.078	U	0.078
Concrete-5	12/08/2016 1300	0.092	U	0.092	U	0.092	U	0.092	U	0.092	U	0.092	U	0.092

**NOTES:**

~ = Indicates no MCP Standard was found.

mg/kg = Milligrams per kilogram

U = Not detected by laboratory in concentration at or above reporting limit that is presented in previous column

Concentration exceeds currently applicable MCP Standard, if bold and shaded

UCL = Upper Concentration Limit

**Table 4**  
**Summary of Groundwater Analytical Data - PCBs**

179 Brook Street, Clinton, MA

Groundwater Category	MCP STANDARDS (ug/l)									
	PCB 1016	PCB 1221	PCB 1232	PCB 1242	PCB 1248	PCB 1254	PCB 1260	PCB 1262	PCB 1268	
<b>GW-2</b>	5	5	5	5	5	5	5	5	5	
<b>GW-3</b>	10	10	10	10	10	10	10	10	10	
<b>UCL</b>	100	100	100	100	100	100	100	100	100	

LABORATORY ANALYTICAL RESULTS (μg/L)											
Sample ID (Applicable GW Category)	Sample Date and Time	PCB 1016	PCB 1221	PCB 1232	PCB 1242	PCB 1248	PCB 1254	PCB 1260	PCB 1262	PCB 1268	
CJW-1/ Monitoring Well GW-2/GW-3	12/08/2016 1400	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U

**NOTES:**

~ = Indicates no MCP Standard was found.

ug// = Milligrams per liter

U = Not detected by laboratory in concentration at or above reporting limit that is presented in previous column

Concentration exceeds currently applicable MCP Standard, if bold and shaded

UCL = Upper Concentration Limit

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**APPENDIX A**

***US EPA Letters and Correspondence***

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## UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION I

5 POST OFFICE SQUARE, SUITE 100  
BOSTON, MASSACHUSETTS 02109-3912

October 24, 2016

J. J. Kelly  
The Kelly Company, Inc.  
27 Johnson Road  
Sterling, Massachusetts 01510

Re: 179 Brook Street  
Clinton, Massachusetts  
Self-Implementing Cleanup Plan  
October 5, 2016

Dear Mr. Kelly:

The US Environmental Protection Agency - New England ("EPA") received a Self-Implementing Plan Notification for Clean-up of PCBs under 40 CFR 761.61(a) (the Plan) dated October 5, 2016 to address PCB contamination at 179 Brook Street (the "Site") located in Clinton, Massachusetts. Specifically, PCBs are present at the Site that are regulated for cleanup and disposal under the federal PCB regulations at 40 CFR Part 761. The Plan was submitted by Cushing, Jammallo & Wheeler, Inc. on your behalf. EPA received the Notification on October 12, 2016.

EPA has reviewed your Notification and **has determined that it is incomplete and does not meet the notification requirements at 40 CFR § 761.61(a)(3)**. EPA's comments on the Notification follow:

### General Comments

1. Although the title on page 1 of the document is "Notification and Self-Implementing Procedure Plan Under 40 CFR 761.61(a) and Immediate Response Action Plan", it is unclear whether this plan is actually the Notification. For example, on page 2, section 1.2 and page 16, paragraph 3 there is text that indicates that the information presented in this document will be used for the preparation of a remedial plan that meets the requirements of 40 CFR 761.61. Thus, please clarify that this document is being submitted to satisfy the notification requirement as specified under 40 CFR § 761.61(a)(3). (See Specific Comment 7.a.)

2. Although paragraph 2 on page 4, characterizes this location as a *low occupancy area*, as defined at 40 CFR 761.3, no cleanup standards were proposed, nor were any contingencies proposed as required in 40 CFR 761.61(a)(3)(i)(D). Please propose cleanup standards for this Site and include discussion of the contingency plans that will be in place for this project. (See Specific Comment 7.c.)

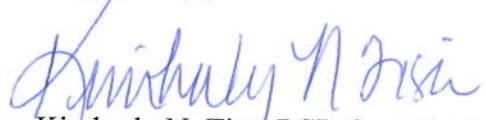
### Specific Comments

1. Page 2. Section 1.2. Paragraph 2. The conceptual site model (CSM) is that the source of the PCB contamination was from the transformer oil found in the pad mounted transformer. The PCB concentration in the pad-mounted transformer was 110 ppm; however, no additional information was provided on the other transformers located at the facility. Please provide additional discussion about the other transformers, including PCB concentrations and date of manufacture, if known, and a figure showing location of these transformers in reference to the pad-mounted transformer.
2. Page 8. Paragraph 4. The depth to groundwater has not been specifically determined in this exterior area; however, other monitoring wells at the site confirm that the depth to groundwater is less than 15 ft below ground surface (bgs).
  - a. It is unclear what is meant by “this exterior area”. Please provide additional discussion that clarifies this statement.
  - b. Please provide a drawing that identifies the location of the monitoring wells.
  - c. Please provide additional information concerning the current depth to groundwater at the location where the excavation work is planned.
3. Page 10, Section 5.2. The R1 Porous Surfaces Sampling Procedure dated May 2011 specifies a sampling depth interval of 0.5 inches. In this section, it is indicated that the sampling interval was 1 inch, which could have resulted in dilution of higher concentration PCBs located at the surface. Please provide a discussion concerning the sampling rational and sampling depth interval for the concrete, and how the sampling was/is adequate to define PCB concentrations for off-site disposal.
4. Page 11. Section 5.3. Paragraph 1.
  - a. Under 40 CFR Part 761, samples generally are required to be collected from the soil surface (top 0 to 3 inches). In addition, this sampling interval is also specified under 40 CFR 761, Subparts O and N. As the CSM indicates that the contamination is from a surface release of transformer oil, surface samples would be expected. Based on the information provided, soil samples were collected from the 0-6” depth interval. Please provide a discussion concerning the sampling rational and sampling depth intervals used in this project and how the sampling was/is adequate to define nature and extent of PCB contamination and to support off-site disposal requirements.

- b. With respect to the characterization samples, the Notification indicates that samples were composited. Under 40 CFR Part 761, Subparts N and O, compositing of samples for characterization and/or to confirm PCB concentrations are < 50 ppm is not authorized; discrete samples are required. Please review the data and discuss the sample results with respect to how the sampling complied with the requirements under 40 CFR Part 761 to support disposal as a < 50 ppm PCB waste in accordance with 40 CFR § 761.61(a)(5)(i)(B)(2)(ii).
5. Page 12. Section 5.3.2. The table shown in this section provides the depth intervals for the samples that were collected August 9, 2016. Three samples were collected from 6 to 12 inches and 1 sample was collected from a depth of 12 to 18 inches. The remaining samples were collected from a depth of 0 to 6 inches. At sample location S-1 (12-18") the PCB concentration was 1.96 ppm and at S-12 (0 to 6") the PCB concentration was 12.7 ppm. Based on this information, it does not appear that the vertical extent was adequately defined. Thus, it is unclear what the soil excavation depth is and how it was determined. Please provide discussion on the proposed excavation.
6. Page 13. Section 5.3.3. Paragraph 1. According to the text, the August 19, 2016 samples “were collected using a minimum grid interval of approximately 5 feet as shown on Figure 4.” However, the distance between samples shown on Figure 4 is generally 10 feet. Please review and correct the text/figure, as required for accuracy and consistency.
7. Page 16.
  - a. The 1<sup>st</sup> paragraph specifies the objectives of “this IRA Plan”. For purposes of overlap with the federal PCB requirements, EPA does not understand how this document meets all the objectives as specified in this paragraph. For example, it is indicated that one objective is to “remove PCB-impacted from the site to the extent feasible”. In the 2<sup>nd</sup> paragraph it states “The goal of the IRA activities is the demonstrated reduction of PCB concentrations in site soil to levels below the applicable risk characterization standards”. Thus, for compliance with TSCA, clarification on these objectives is requested.
  - b. Section 9.3. The pad-mounted transformer will be removed and disposed at an approved facility. It is unclear if the oil will be drained prior to transport of the transformer. Please also clarify the disposal for the transformer, including the oil.
  - c. Section 9.6. The PCB cleanup standard was not specified in the Notification. Please clarify what the PCB cleanup standard is for this project. Please also be aware that if PCB concentrations > 1 ppm remain at this Site, a deed notice in accordance with 40 CFR § 761.61(a)(8) will be required.

Should you have any questions regarding the above, please feel free to contact me at 617-918-1527 or Katherine Woodward at 617-918-1353.

Respectfully,



Kimberly N. Tisa, PCB Coordinator  
Office of Site Remediation and Restoration

Cc: Joseph M. Jammallo, CJW, Inc.  
MassDEP, Central Region  
File

# CUSHING, JAMMALLO & WHEELER, INC.

October 26, 2016

Ms. Kimberly N. Tisa  
PCB Coordinator  
Office of Site Remediation and Restoration  
United States Environmental Protection Agency  
Region 1  
5 Post Office Square, Suite 100  
Boston, Massachusetts 02109-3912

*Re: Revised Self-Implementing Procedure Plan  
Site: 179 Brook Street  
Clinton, Massachusetts  
CJW Project #5812D*

Dear Ms. Tisa:

In regard to the US Environmental Protection Agency - New England's (USEPA) October 24, 2016 letter and on behalf of The Kelly Company, Inc., Cushing, Jammallo & Wheeler, Inc. (CJW) is providing the following responses to your comments and is enclosing herewith a revised Self-Implementing Procedure (SIP) Plan to address polychlorinated biphenyl (PCB) contamination identified in soil at 179 Brook Street, Clinton, Massachusetts (the "site"). We have reproduced your comments below along with our responses in italics.

## USEPA General Comments

1. Although the title on page 1 of the document is "Notification and Self-Implementing Procedure Plan under 40 CFR 761.61 (a) and Immediate Response Action Plan", it is unclear whether this plan is actually the Notification. For example, on page 2, section 1.2 and page 16, paragraph 3 there is text that indicates that the information presented in this document will be used for the preparation of a remedial plan that meets the requirements of 40 CFR 761.61. Thus, please clarify that this document is being submitted to satisfy the notification requirement as specified under 40 CFR 761.61 (See Specific Comment 7.a.)

## CJW Response to USEPA General Comment #1

*The SIP Plan is being submitted to the USEPA to satisfy the notification requirement as specified under 40 CFR 761.61(a)(3). See Section 1.2.1 of the revised SIP Plan.*

2. Although paragraph 2 on page 4, characterizes this location as a low occupancy area, as defined at 40 CFR 761.3, no cleanup standards were proposed, nor were any contingencies proposed as required in 40 CFR 761.61 (a)(3)(i)(D). Please propose cleanup standards for

*464 High Street  
Clinton, MA 01510  
Tel. 978.368.6320  
Fax 978.368.6121*

this Site and include discussion of the contingency plans that will be in place for this project. (See Specific Comment 7.c.)

**CJW Response to USEPA General Comment #2**

*The intent of this SIP Plan is to perform cleanup of the impacted soil to meet the minimum requirement under 40 CFR 761.61(a)(4)(i)(B) for Low Occupancy Areas of less than or equal to 25 parts per million (ppm). However, our overall expectation and goal is to perform cleanup such that the concentrations of PCBs in soil remaining at the site are less than 1 ppm. Should unanticipated higher concentrations or wider distributions of PCBs in soil (both vertically and laterally) be identified or other obstacles force changes in the cleanup approach, reasonable cleanup options that are technically feasible and which are not cost prohibited versus the benefit of reducing the risk to human health, safety, public welfare, and the environment will be implemented with the authorization of The Kelly Company, Inc. and the USEPA.*

*It is understood, that in accordance with 40 CFR 761.61(a)(8), should PCB concentrations greater than 1 ppm but less than or equal to 25 ppm remain in soil at the site after cleanup, a deed notice will be required.*

*See Sections 9.1.1 and 9.6.1.1 of the revised SIP Plan.*

**USEPA Specific Comments**

1. Page 2, Section 1.2. Paragraph 2. The conceptual site model (CSM) is that the source of the PCB contamination was from the transformer oil found in the pad mounted transformer. The PCB concentration in the pad-mounted transformer was 110 ppm; however, no additional information was provided on the other transformers located at the facility. Please provide additional discussion about the other transformers, including PCB concentrations and date of manufacture, if known, and a figure showing location of these transformers in reference to the pad-mounted transformer.

**CJW Response to USEPA Specific Comment #1**

*Three additional pole-mounted transformer are currently located exterior to the building and approximately 92 feet north of the pad-mounted transformer which has been shown to contain transformer oil containing 110 ppm of PCBs. See Section 1.2.1 and Figure 5 in the revised SIP Plan.*

2. Page 8. Paragraph 4. The depth to groundwater has not been specifically determined in this exterior area; however, other monitoring wells at the site confirm that the depth to groundwater is less than 15 ft below ground surface (bgs).
  - a. It is unclear what is meant by "this exterior area". Please provide additional discussion that clarifies this statement.

- b. Please provide a drawing that identifies the location of the monitoring wells.
- c. Please provide additional information concerning the current depth to groundwater at the location where the excavation work is planned.

CJW Response to USEPA Specific Comments #2a, 2b, and 2c.

*The phrase "this exterior area" simply refers to the area at and in the immediate vicinity of the pad-mounted transformer that is located adjacent to the western exterior of the building and which has been shown to contain transformer oil containing 110 ppm of PCBs. See Figure 5 in the revised SIP Plan which shows the location of monitoring well at 179 Brook Street. See Section 4.0 in the revised SIP Plan for a discussion of the depth to groundwater in monitoring wells at 179 Brook Street and the expected depth to groundwater expected in the immediate vicinity of the pad-mounted transformer that has been shown to contain transformer oil containing 110 ppm of PCBs. See Figure 5 – Monitoring Well Location Plan and Table 2 – Summary of Groundwater Gauging Data in the revised SIP Plan.*

3. Page 10, Section 5.2. The RI Porous Surfaces Sampling Procedure dated May 2011 specifies a sampling depth interval of 0.5 inches. In this section, it is indicated that the sampling interval was 1 inch, which could have resulted in dilution of higher concentration PCBs located at the surface. Please provide a discussion concerning the sampling rational and sampling depth interval for the concrete, and how the sampling was/is adequate to define PCB concentrations for off-site disposal.

CJW Response to USEPA Specific Comment #3

*We discussed the sampling effort with CJW's staff member that collected the concrete samples and reviewed his field notes. We mistakenly noted in the original SIP Plan that the sampling depth was 1-inch. We have made revisions to the noted section of the revised SIP Plan indicating that the sampling depth interval was 0.5 inches. See Section 5.2 of the revised SIP Plan.*

4. Page 11, Section 5.3. Paragraph 1.
  - a. Under 40 CFR Part 761, samples generally are required to be collected from the soil surface (top 0 to 3 inches). In addition, this sampling interval is also specified under 40 CFR 761, Subparts O and N. As the CSM indicates that the contamination is from a surface release of transformer oil, surface samples would be expected. Based on the information provided, soil samples were collected from the 0-6" depth interval. Please provide a discussion concerning the sampling rational and sampling depth intervals used in this project and how the sampling was/is adequate to define nature and extent of PCB contamination and to support off-site disposal requirements.

**CJW Response to USEPA Specific Comment #4a**

*CJW did indeed collect surface samples from 0 to 6 inches. However, what the original SIP Plan failed to note was that the first 3 inches consisted of organic matter including leaves, pine needles and root matter. Therefore, although these soil samples were collected from 3 to 6 inches from ground surface, they were technically collected from the top 3 inches of soil. See Section 5.3 of the revised SIP Plan.*

- b. With respect to the characterization samples, the Notification indicates that samples were composited. Under 40 CFR Part 761, Subparts N and O, compositing of samples for characterization and/or to confirm PCB concentrations are < 50 ppm is not authorized; discrete samples are required. Please review the data and discuss the sample results with respect to how the sampling complied with the requirements under 40 CFR Part 761 to support disposal as a < 50 ppm PCB waste in accordance with 40 CFR 761.61(a)(5)(i)(B)(2)(ii).

**CJW Response to USEPA Specific Comment #4b**

*Soil samples were collected as either composite samples or discrete (grab). Composite samples were initially collected in May 2016 (see Section 5.3.1 of the revised SIP Plan) as part of an ASTM Phase II Environmental Site Assessment (ESA) that was performed at the site. A composite sample is a mixture of more than one sample collected from certain locations at the same depth or depth range. The individual samples were then thoroughly mixed in a stainless steel bowl with a stainless steel mixing device and the composite sample was then collected from this mixture. All subsequent samples consisted of discrete or grab samples collected at a specific location and depth.*

5. Page 12, Section 5.3.2. The table shown in this section provides the depth intervals for the samples that were collected August 9, 2016. Three samples were collected from 6 to 12 inches and 1 sample was collected from a depth of 12 to 18 inches. The remaining samples were collected from a depth of 0 to 6 inches. At sample location S-1 (12-18") the PCB concentration was 1.96 ppm and at S-12 (0 to 6") the PCB concentration was 12.7 ppm. Based on this information, it does not appear that the vertical extent was adequately defined. Thus, it is unclear what the soil excavation depth is and how it was determined. Please provide discussion on the proposed excavation.

**CJW Response to USEPA Specific Comment #5**

*Access to subsurface soils was limited in the PCB impacted area since the pad-mounted transformer and associated underground electrical conduits have been energized throughout the duration of the assessment activities discussed herein, as the manufacturing facility tenant has been operating continuously (24 hours a day, 7 days a week). As such, CJW was unable, due to electrical safety concerns, to conduct any subsurface sampling activates at depths exceeding those discussed herein, which did not exceed 18 inches below the ground surface. However, given the*

attenuation of PCB concentrations relative to the sample depth(s) observed at the following sampling locations:

- ◆ S-1 [12.9 mg/kg PCBs at the surface to 1.96 mg/kg PCBs from 12-18" below ground surface (bgs)];
- ◆ S-2 (0.26 mg/kg PCBs at the surface to non-detected at 6-12" bgs);
- ◆ S-3 (0.25 mg/kg PCBs at the surface to 0.24 mg/kg PCBs at 6-12" bgs); and
- ◆ S-4 (0.85 mg/kg PCBs at the surface to non-detected at 6-12" bgs),

PCB concentrations in soil greater than 1 mg/kg are not anticipated to be encountered at depths exceeding 2 to 3 feet bgs. Based on the currently known vertical extent of PCBs in soil, CJW intends on excavating the following areas to the corresponding depths based on the surficial soil concentration of PCBs, as follows:

- ◆ For areas where PCB concentrations in surficial soil samples exceed 10 mg/kg (constitute an IH under the MCP) (S-1 and S-12 areas), CJW will excavate soils to depths of approximately 2 to 3 feet bgs, as PCBs were detected in the 12-18" bgs S-1 soil sample at 1.96 mg/kg;
- ◆ For areas where PCB concentrations in surficial soil samples exceed 1 mg/kg, CJW will excavate soils to depths of approximately 1 to 2 feet bgs, based on the surficial concentration of PCBs at the surficial soil sample location; and
- ◆ For areas where PCB concentrations in surficial soil samples have been identified at less than 1 mg/kg (the overall cleanup goal for this project), CJW will not excavate soils in such areas.

See Sections 5.3.2 and 9.5 for further discussion.

6. Page 13. Section 5.3.3. Paragraph 1. According to the text, the August 19, 2016 samples "were collected using a minimum grid interval of approximately 5 feet as shown on Figure 4." However, the distance between samples shown on Figure 4 is generally 10 feet. Please review and correct the text/figure, as required for accuracy and consistency.

#### CJW Response to USEPA Specific Comment #6

Soil sampling from this date forward in the vicinity of the concrete pads was guided by 40 CFR 761, Subpart N, Cleanup Site Characterization Sampling for PCB Remediation Waste in Accordance with 761.61(a)(2). Subpart N specifies a sampling grid interval of 3 meters (approximately 9.84 feet). Soil samples discussed in this Section were collected using a maximum grid interval of approximately 10 feet as seen on Figure 4. More specifically, sample spacing ranged from approximately 5.7 (e.g. between samples S-13 and S-23) to approximately 10 feet (e.g. between samples S-12 and S-14; and S-11 and S-13). However, initial assessment soil samples collected in the immediately vicinity of the pad-mounted transformer (e.g. samples S-5, S-2 and S-6, S-3 and S-3, S-10 and S-10, S-4 and S-4, S-7, S-9) were done so at closer intervals in an effort to confirm the likely source of the PCB release. See Sections 5.3.2 and 5.3.3).

7. Page 16.

- a. The 1<sup>st</sup> paragraph specifies the objectives of "this IRA Plan". For purposes of overlap with the federal PCB requirements, EPA does not understand how this document meets all the objectives as specified in this paragraph. For example, it is indicated that one objective is to "remove PCB-impacted from the site to the extent feasible". In the 2<sup>nd</sup> paragraph it states "The goal of the IRA activities is the demonstrated reduction of PCB concentrations in site soil to levels below the applicable risk characterization standards". Thus, for compliance with TSCA, clarification on these objectives is requested.

**CJW Response to USEPA Specific Comment #7a**

*The intent of this SIP Plan is to perform cleanup of the impacted soil to meet the minimum requirement under 40 CFR 761.61(a)(4)(i)(B) for Low Occupancy Areas of less than or equal to 25 parts per million (ppm). However, our overall expectation and goal is to perform cleanup such that the concentrations of PCBs in soil remaining at the site are less than 1 ppm. It is understood, that in accordance with 40 CFR 761.61(a)(8), should PCB concentrations greater than 1 ppm, but less than or equal to 25 ppm remain in soil at the site after cleanup, a deed notice will be required.*

*Should unanticipated higher concentrations or wider distributions of PCBs in soil (both vertically and laterally) be identified or other obstacles force changes in the cleanup approach, reasonable cleanup options that are technically feasible and which are not cost prohibited versus the benefit of reducing the risk to human health, safety, public welfare, and the environment will be implemented with the authorization of The Kelly Company, Inc. and the USEPA*

*In accordance with 310 CMR 40.0420(7)(a), an IRA Plan is required to be submitted to the MA DEP within 60 days of providing oral notification of the release to the MA DEP. The date of oral notification for this release was August 16, 2016. In accordance with 310 CMR 40.0424, CJW submitted the original document as the IRA Plan electronically, via eDEP, to MA DEP on October 7, 2016.*

*The objectives of this IRA Plan are to: 1) assess the vertical and horizontal extent of PCBs in soil; 2) remove PCB-impacted from the site to meet MCP requirements; 3) assess the need to assess groundwater quality; 4) stabilize site conditions as necessary; and 5) assess site conditions during and at the completion of response activities to determine the need to conduct further response actions.*

*The minimum goal of the IRA activities is the demonstrated reduction of PCB concentrations in site soil to levels below the applicable risk characterization standard for soil categories S-3/GW-2/GW-3 of 4 mg/kg. However, such a cleanup goal may require the implementation of an AUL. Therefore, similar to the goal stated in Section 9.1.1 above, our overall expectation and goal under the MCP is to perform cleanup such that the concentrations of PCBs in soil remaining at the site are less than 1 mg/kg.*

*Please refer to Section 9.1.1 and 9.1.2 in the revised SIP Plan.*

- b. Section 9.3. The pad-mounted transformer will be removed and disposed at an approved facility. It is unclear if the oil will be drained prior to transport of the transformer. Please also clarify the disposal for the transformer, including the oil.

**CJW Response to USEPA Specific Comment #7b**

*The pad-mounted transformer will be removed from its concrete pad utilizing a truck-mounted crane and wrapped in 6-mil polyethylene sheeting. The transformer will be placed directly onto a truck for transport by TCI of NY, LLC to the TCI of Alabama, LLC facility in Pell City, Alabama for disposal (US EPA Facility ID No. ALD983167891). The transformer is not believed to actively leaking. TCI of NY, LLC will transport the transformer with the oil remaining inside. Additionally, the TCI of NY, LLC truck transporting the transformer and fluid is specifically designed to provide adequate containment in the event of a release during transportation.*

*In the event that the transformer is found to be actively leaking once unseated from the concrete pad, personnel from CJW and TCI of NY, LLC will transfer the PCB containing MODF into 55-gallon steel drums, which would then be transported offsite by TCI of NY, LLC with the transformer.*

*Containment measures will be implemented onsite during the transformer removal activities discussed herein, capable of containing a release of the entire 190-gallon capacity of the transformer.*

*See Section 9.3 of the revised SIP Plan*

- c. Section 9.6. The PCB cleanup standard was not specified in the Notification. Please clarify what the PCB cleanup standard is for this project. Please also be aware that if PCB concentrations > 1 ppm remain at this Site, a deed notice in accordance with 40 CFR 761.61 will be required.

**CJW Response to USEPA Specific Comment #7c**

*The intent of this SIP Plan is to perform cleanup of the impacted soil to meet the minimum requirement under 40 CFR 761.61(a)(4)(i)(B) for Low Occupancy Areas of less than or equal to 25 parts per million (ppm). However, our overall expectation and goal is to perform cleanup such that the concentrations of PCBs in soil remaining at the site are less than 1 ppm. It is understood, however, that in accordance with 40 CFR 761.61(a)(8), should PCB concentrations greater than 1 ppm but less than or equal to 25 ppm remain in soil at the site after cleanup, a deed notice will be required.*

*Should unanticipated higher concentrations or wider distributions of PCBs in soil (both vertically and laterally) be identified or other obstacles force changes in the cleanup approach, reasonable cleanup options that are technically feasible and which are not cost prohibited versus the benefit of reducing the risk to human health, safety, public welfare, and the environment will be implemented with the authorization of The Kelly Company, Inc. and the USEPA.*

*See Section 9.6.1.1 of the revised SIP Plan.*

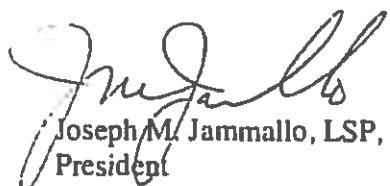
If you have any questions regarding these responses to your comments, please do not hesitate to contact us at (978) 368-6320. Again, we hope to begin work under the SIP Plan on Monday, November 14, 2016, pending your approval.

Sincerely,

CUSHING, JAMMALLO & WHEELER, INC.



Michael L. Bloom  
Project Manager



Joseph M. Jammallo, LSP, PG  
President

C: J.J. Kelly



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION I  
5 POST OFFICE SQUARE, SUITE 100  
BOSTON, MASSACHUSETTS 02109-3912

**CERTIFIED MAIL - RETURN RECEIPT REQUESTED**

**NOV 07 2016**

The Kelly Company Inc.  
c/o Mr. J. Joseph Kelly III  
27 Johnson Road  
Sterling, Massachusetts 01510

Re: PCB Cleanup and Disposal Approval under 40 CFR § 761.61(a)  
179 Brook Street  
Clinton, Massachusetts

Dear Mr. Kelly:

This is in response to The Kelly Company Inc (Kelly Company) Notification<sup>1</sup> to clean up and dispose of *PCB remediation waste* (e.g., concrete pads and soil) located at 179 Brook Street (the Site), Clinton, Massachusetts. The Site contains PCB concentrations that exceed the allowable PCB levels for unrestricted use under the federal PCB regulations at 40 CFR § 761.61(a). The Kelly Company has requested an approval to clean up and dispose of the PCB-contaminated *porous surfaces* and PCB-contaminated soil located at the Site under the PCB self-implementing cleanup and disposal option at 40 CFR § 761.61(a).

The Kelly Company is proposing the following PCB cleanup and disposal activities under § 761.61(a):

- Remove PCB-contaminated *porous surfaces* (i.e., active transformer concrete pad and vacant concrete pad) and PCB-contaminated soil as shown on Figure 6 of the Notification and dispose as a less than (<) 50 parts per million (ppm) *PCB remediation waste* at a state permitted solid waste landfill in accordance with 40 CFR § 761.61(a)(5)(i)(B)(2)(ii)
- Conduct verification sampling of the soil following removal of *PCB remediation waste* in accordance with 40 CFR Part 761 Subpart O to document that the PCB cleanup standard of less than or equal to ( $\leq$ ) 1 ppm has been met
- In the event the PCB cleanup standard of  $\leq$  1 ppm cannot be achieved for the soil, a PCB cleanup standard of  $\leq$  25 ppm will be used and a deed restriction will be recorded on the Site

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<sup>1</sup>Information was submitted on behalf of The Kelly Company Inc by Cushing, Jammallo, & Wheeler. The information was provided to satisfy the notification requirement under 40 CFR § 761.61(a)(3). Information was provided dated October 7, 2016 (Self Implementing PCB Procedure Plan), October 27, 2016 (Response to EPA comments and Revised Self Implementing PCB Procedure Plan); and October 31, 2016 (email Figure 6 defining excavation areas). These submittals will be referred to as the "Notification."

The Notification meets the requirements at § 761.61(a)(3). The Kelly Company may proceed with its PCB cleanup and disposal under 40 CFR § 761.61(a); its Notification; and this Approval, subject to the conditions of Attachment 1.

EPA encourages the compliance with greener cleanup practices for all cleanup projects, and recommends adherence to the ASTM Standard Guide to Greener Cleanups E2893-16 (Guide) for work conducted under this Approval and the Notification. Greener cleanups is the practice of incorporating options that minimize the environmental impacts of cleanup actions in order to incorporate practices that maximize environmental and human benefit. Please see Section 6 of the Guide for the Best Management Practices (BMP) Process published May 2016. (See [www.astm.org/Standards/E2893.htm](http://www.astm.org/Standards/E2893.htm) for additional information) EPA encourages you to review the Guide and implement any practices that are feasible. The final report (see Attachment 1, Condition 21) should include a section on BMP Documentation, as described in Section 6.6.5 of the Guide.

This Approval does not release the Kelly Company from any applicable requirements of federal, state or local law, including the requirements related to cleanup and disposal of contaminated wastes under the Massachusetts Department of Environmental Protection (MassDEP) regulations.

Questions and correspondence regarding this Approval should be directed to:

Katherine A. Woodward, PE, Project Manager  
United States Environmental Protection Agency  
5 Post Office Square, Suite 100  
Mail Code: OSRR07-2  
Boston, Massachusetts 02109-3912  
Telephone: (617) 918-1353  
Facsimile: (617) 918-0527

EPA shall not consider this project complete until it has received all submittals required under this Approval. Please be aware that upon EPA receipt and review of the submittals, EPA may request any additional information necessary to establish that the work has been completed in accordance with 40 CFR Part 761, the Notification, and this Approval.

Sincerely,

  
Ginny Lombardo, Chief  
Remediation & Restoration II Branch

Attachment 1: PCB Approval Conditions

cc: Joseph Jammallo, CJW  
MassDEP, Central Region (RTN: 2-19956)  
File

**ATTACHMENT 1:**

**PCB CLEANUP AND DISPOSAL APPROVAL CONDITIONS  
179 BROOK STREET-TRANSFORMER AREA (the Site)  
CLINTON, MASSACHUSETTS**

**GENERAL CONDITIONS**

1. This Approval is granted under the authority of Section 6(e) of the Toxic Substances Control Act (TSCA), 15 U.S.C. § 2605(e), and the PCB regulations at 40 CFR Part 761, and applies solely to *PCB remediation waste* located at and adjacent to the active transformer as shown on Figure 6 of the Notification (hereinafter, "the Site").
2. The Kelly Company Inc (Kelly Company) shall conduct on-site activities in accordance with the conditions of this Approval and with the Notification.
3. In the event that the cleanup plan described in the Notification differs from the conditions specified in this Approval, the conditions of this Approval shall govern.
4. The terms and abbreviations used herein shall have the meanings as defined in 40 CFR § 761.3 unless otherwise defined within this Approval.
5. The Kelly Company must comply with all applicable federal, state and local regulations in the storage, handling, and disposal of all PCB wastes, including PCBs, PCB Items and decontamination wastes generated under this Approval. In the event of a new spill during response actions, the Kelly Company shall contact EPA within 24 hours for direction on sampling and cleanup requirements.
6. The Kelly Company is responsible for the actions of all officers, employees, agents, contractors, subcontractors, and others who are involved in activities conducted under this Approval. If at any time the Kelly Company has or receives information indicating that the Kelly Company or any other person has failed, or may have failed, to comply with any provision of this Approval, it must report the information to EPA in writing within 24 hours of having or receiving the information.
7. This Approval does not constitute a determination by EPA that the transporters or disposal facilities selected by the Kelly Company are authorized to conduct the activities set forth in the Notification. The Kelly Company is responsible for ensuring that its selected transporters and disposal facilities are authorized to conduct these activities in accordance with all applicable federal, state and local statutes and regulations.

8. This Approval does not: 1) waive or compromise EPA's enforcement and regulatory authority; 2) release the Kelly Company from compliance with any applicable requirements of federal, state or local law; or 3) release the Kelly Company from liability for, or otherwise resolve any violations of federal, state or local law.
9. Failure to comply with the Approval conditions specified herein shall constitute a violation of the requirement in § 761.50(a) to store or dispose of PCB waste in accordance with 40 CFR Part 761 Subpart D.

#### **NOTIFICATION AND CERTIFICATION CONDITIONS**

10. This Approval may be revoked if the EPA does not receive written notification from the Kelly Company of its acceptance of the conditions of this Approval within 10 business days of receipt.
11. The Kelly Company shall submit the following information for EPA review and/or approval:
  - a. a certification signed by its selected contractor, stating that the contractor(s) has read and understands the Notification, and agrees to abide by the conditions specified in this Approval;
  - b. a contractor work plan detailing the specific methods for air monitoring, and removal, decontamination, storage (including a diagram of the PCB waste storage area), if applicable, and disposal of PCB-containing wastes. The Kelly Company and its remediation contractor shall incorporate any changes EPA deems necessary to comply with the conditions of this Approval and the PCB Regulations at 40 CFR Part 761; and,
  - c. a certification signed by the selected analytical laboratory, stating that the laboratory has read and understands the extraction and analytical methods and quality assurance requirements specified in the Notification and in this Approval.

#### **CLEANUP AND DISPOSAL CONDITIONS**

12. The cleanup level for *PCB remediation waste* (e.g., soil and concrete) at the Site shall be less than or equal to ( $\leq$ ) 1 part per million (ppm) or alternatively  $\leq 25$  ppm if the  $\leq 1$  ppm standard cannot be achieved.

- a. Post-excavation discrete soil samples shall be collected in accordance with 40 CFR Part 761 Subpart O to confirm that all greater than ( $>$ ) 1 ppm *PCB remediation waste* has been removed. Samples shall be collected on a bulk basis (i.e., mg/kg) and reported on a dry weight basis. Soil samples shall be collected in accordance with Subpart O from both excavation bottoms and sidewalls, as applicable.
  - b. Chemical extraction for PCBs shall be conducted using Methods 3500B/3540C of SW-846 for solid matrices and Method 3500B/3510C of SW-846 for aqueous matrices; and, chemical analysis for PCBs shall be conducted using Method 8082 of SW-846, unless another extraction or analytical method(s) is validated according to Subpart Q.
13. All PCB waste (regardless of concentration) generated as a result of the activities described in the Notification, excluding any decontaminated materials, shall be marked in accordance with § 761.40; stored in a manner prescribed in § 761.65; and, disposed of in accordance with 40 CFR § 761.61(a)(5), unless otherwise specified below:
  - a. Decontamination wastes and residues shall be disposed of in accordance with 40 CFR § 761.79(g).
  - b. Moveable equipment, tools, and sampling equipment shall be decontaminated in accordance with either 40 CFR § 761.79(b)(3)(i)(A), § 761.79(b)(3)(ii)(A), or § 761.79(c)(2).
  - c. PCB-contaminated water generated during decontamination shall be decontaminated in accordance with 40 CFR § 761.79(b)(1) or disposed of under § 761.60.

#### **INSPECTION, MODIFICATION AND REVOCATION CONDITIONS**

14. The Kelly Company shall allow any authorized representative of the Administrator of the EPA to inspect the Site, to inspect records, and to take samples as may be necessary to determine compliance with the PCB regulations and this Approval. Any refusal by the Kelly Company to allow such an inspection (as authorized by Section 11 of TSCA) shall be grounds for revocation of this Approval.
15. Any proposed modification(s) in the plan, specifications, or information in the Notification must be submitted to EPA no less than 14 calendar days prior to the proposed implementation of the change. Such proposed modifications will be subject to the procedures of 40 CFR § 761.61(a)(3)(ii).
16. Any departure from the conditions of this Approval without prior, written authorization from the EPA may result in the revocation, suspension and/or modification of the Approval, in addition to any other legal or equitable relief or remedy the EPA may choose to pursue.

17. Any misrepresentation or omission of any material fact in the Notification or in any records or reports may result in the EPA's revocation, suspension and/or modification of the Approval, in addition to any other legal or equitable relief or remedy the EPA may choose to pursue.
18. Approval for these activities may be revoked, modified or otherwise altered: if EPA finds a violation of the conditions of this Approval or of 40 CFR Part 761, including EPA's PCB Spill Cleanup Policy, or other applicable rules and regulations; or, if EPA finds that these activities present an unreasonable risk to public health or the environment.

#### **RECORDKEEPING AND REPORTING CONDITIONS**

19. The Kelly Company shall prepare and maintain all records and documents required by 40 CFR Part 761, including but not limited to the records required under Subparts J and K. A written record of the cleanup and the analytical sampling shall be established and maintained by the Kelly Company in one centralized location until such time as EPA authorizes, in writing, an alternative disposition for such records. All records shall be made available for inspection by authorized representatives of EPA.
20. Within 60 days of completion of the cleanup activities described in the Notification and authorized by this Approval, and as required under 40 CFR § 761.61(a)(8)(i)(B), the Kelly Company shall submit to EPA a certification, signed by an approving official, that it has recorded the notation on the deed as required under 40 CFR § 761.61(a)(8)(i)(A). A copy of the notation on the deed must also be submitted.
  - a. In the event that the Kelly Company is able to achieve a PCB cleanup standard of  $\leq$  1 ppm, the deed notation and certification requirements shall not apply.
21. The Kelly Company shall submit a final report to EPA in both hardcopy and electronic (e.g., CD-ROM) formats, within 60 days of completion of the activities authorized under this Approval. At a minimum, this final report shall include: a short narrative of the cleanup and disposal activities, with photo documentation and Greener Cleanups BMP documentation, if implemented; characterization and confirmation sampling analytical results (as applicable); copies of the accompanying analytical chains of custody; field and laboratory quality control/quality assurance checks; an estimate of the quantity of PCB waste disposed of and the size of the remediated area(s); copies of manifests and/or bills of lading; and copies of certificates of disposal or similar certifications issued by the disposer.

22. Required submittals shall be mailed to:

Katherine A Woodward, PE, Project Manager  
United States Environmental Protection Agency  
5 Post Office Square, Suite 100  
Mail Code: OSRR07-2  
Boston, Massachusetts 02109-3912

23. No record, report or communication required under this Approval shall qualify as a self-audit or voluntary disclosure under EPA audit, self-disclosure or penalty policies.

\*\*\*\*\*

**END OF ATTACHMENT 1**

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**APPENDIX B**

***Laboratory Testing Results of Transformer Oil***

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July 26, 2016

Mike Bloom  
Cushing, Jammallo & Wheeler  
464 High Street  
Clinton, MA 01510

Project Location: 179 Brook St., Clinton, MA

Client Job Number:

Project Number: 5812D

Laboratory Work Order Number: 16G0909

Enclosed are results of analyses for samples received by the laboratory on July 20, 2016. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Meghan E. Kelley  
Project Manager

## Table of Contents

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---

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Cushing, Jammallo & Wheeler  
464 High Street  
Clinton, MA 01510  
ATTN: Mike Bloom

REPORT DATE: 7/26/2016

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 5812D

**ANALYTICAL SUMMARY**

---

WORK ORDER NUMBER: 16G0909

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: 179 Brook St., Clinton, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
Pad-Mount Transformer Oil	16G0909-01	Oil		EPA 600 4-81-045	

#### CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

#### EPA 600 4-81-045

##### **Qualifications:**

###### **L-06**

Laboratory fortified blank/laboratory control sample recovery and duplicate recovery are outside of control limits. Reported value for this compound is likely to be biased on the high side.

##### **Analyte & Samples(s) Qualified:**

###### **Aroclor-1260 [2C]**

16G0909-01[Pad-Mount Transformer Oil], B154253-BS1, B154253-BSD1

###### **Z-01**

Due to LCS/LCSD recovery non-conformance on the confirmatory detector, the lower of two results was reported.

##### **Analyte & Samples(s) Qualified:**

###### **Aroclor-1260**

16G0909-01[Pad-Mount Transformer Oil]

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.



Lisa A. Worthington  
Project Manager



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16G0909

Date Received: 7/20/2016

Field Sample #: Pad-Mount Transformer Oil

Sampled: 7/19/2016 12:30

Sample ID: 16G0909-01

Sample Matrix: Oil

**Polychlorinated Biphenyls By GC/ECD**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	9.9	mg/Kg	10		EPA 600 4-81-045	7/22/16	7/25/16 17:00	KAL
Aroclor-1221 [1]	ND	9.9	mg/Kg	10		EPA 600 4-81-045	7/22/16	7/25/16 17:00	KAL
Aroclor-1232 [1]	ND	9.9	mg/Kg	10		EPA 600 4-81-045	7/22/16	7/25/16 17:00	KAL
Aroclor-1242 [1]	ND	9.9	mg/Kg	10		EPA 600 4-81-045	7/22/16	7/25/16 17:00	KAL
Aroclor-1248 [1]	ND	9.9	mg/Kg	10		EPA 600 4-81-045	7/22/16	7/25/16 17:00	KAL
Aroclor-1254 [1]	ND	9.9	mg/Kg	10		EPA 600 4-81-045	7/22/16	7/25/16 17:00	KAL
Aroclor-1260 [1]	110	9.9	mg/Kg	10	Z-01	EPA 600 4-81-045	7/22/16	7/25/16 17:00	KAL
Aroclor-1262 [1]	ND	9.9	mg/Kg	10		EPA 600 4-81-045	7/22/16	7/25/16 17:00	KAL
Aroclor-1268 [1]	ND	9.9	mg/Kg	10		EPA 600 4-81-045	7/22/16	7/25/16 17:00	KAL
Surrogates	% Recovery		Recovery Limits		Flag/Qual				
Decachlorobiphenyl [1]	97.4		30-150					7/25/16 17:00	
Decachlorobiphenyl [2]	114		30-150					7/25/16 17:00	
Tetrachloro-m-xylene [1]	75.3		30-150					7/25/16 17:00	
Tetrachloro-m-xylene [2]	81.9		30-150					7/25/16 17:00	



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#### Sample Extraction Data

Prep Method: SW-846 3580A-EPA 600 4-81-045

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
16G0909-01 [Pad-Mount Transformer Oil]	B154253	0.202	10.0	07/22/16

**QUALITY CONTROL**
**Polychlorinated Biphenyls By GC/ECD - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD RPD	Limit Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	---------	-------------

**Batch B154253 - SW-846 3580A**
**Blank (B154253-BLK1)**

Prepared: 07/22/16 Analyzed: 07/25/16

Aroclor-1016	ND	0.97	mg/Kg						
Aroclor-1016 [2C]	ND	0.97	mg/Kg						
Aroclor-1221	ND	0.97	mg/Kg						
Aroclor-1221 [2C]	ND	0.97	mg/Kg						
Aroclor-1232	ND	0.97	mg/Kg						
Aroclor-1232 [2C]	ND	0.97	mg/Kg						
Aroclor-1242	ND	0.97	mg/Kg						
Aroclor-1242 [2C]	ND	0.97	mg/Kg						
Aroclor-1248	ND	0.97	mg/Kg						
Aroclor-1248 [2C]	ND	0.97	mg/Kg						
Aroclor-1254	ND	0.97	mg/Kg						
Aroclor-1254 [2C]	ND	0.97	mg/Kg						
Aroclor-1260	ND	0.97	mg/Kg						
Aroclor-1260 [2C]	ND	0.97	mg/Kg						
Aroclor-1262	ND	0.97	mg/Kg						
Aroclor-1262 [2C]	ND	0.97	mg/Kg						
Aroclor-1268	ND	0.97	mg/Kg						
Aroclor-1268 [2C]	ND	0.97	mg/Kg						
Surrogate: Decachlorobiphenyl	9.02		mg/Kg	9.72		92.9	30-150		
Surrogate: Decachlorobiphenyl [2C]	10.9		mg/Kg	9.72		113	30-150		
Surrogate: Tetrachloro-m-xylene	7.42		mg/Kg	9.72		76.4	30-150		
Surrogate: Tetrachloro-m-xylene [2C]	8.51		mg/Kg	9.72		87.5	30-150		

**LCS (B154253-BS1)**

Prepared: 07/22/16 Analyzed: 07/25/16

Aroclor-1260	32	5.9	mg/Kg	29.4		108	85-115		
<b>Aroclor-1260 [2C]</b>	36	5.9	mg/Kg	29.4		<b>123</b> *	85-115		L-06
Surrogate: Decachlorobiphenyl	59.9		mg/Kg	58.8		102	30-150		
Surrogate: Decachlorobiphenyl [2C]	69.7		mg/Kg	58.8		118	30-150		
Surrogate: Tetrachloro-m-xylene	49.1		mg/Kg	58.8		83.5	30-150		
Surrogate: Tetrachloro-m-xylene [2C]	51.9		mg/Kg	58.8		88.2	30-150		

**LCS Dup (B154253-BSD1)**

Prepared: 07/22/16 Analyzed: 07/25/16

Aroclor-1260	31	5.7	mg/Kg	29.4		105	85-115	3.19	30
<b>Aroclor-1260 [2C]</b>	35	5.7	mg/Kg	29.4		<b>119</b> *	85-115	3.26	30 L-06
Surrogate: Decachlorobiphenyl	56.4		mg/Kg	56.8		99.2	30-150		
Surrogate: Decachlorobiphenyl [2C]	66.3		mg/Kg	56.8		117	30-150		
Surrogate: Tetrachloro-m-xylene	45.3		mg/Kg	56.8		79.8	30-150		
Surrogate: Tetrachloro-m-xylene [2C]	49.5		mg/Kg	56.8		87.0	30-150		



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## IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

EPA 600 4-81-045

## **Pad-Mount Transformer Oil**

Lab Sample ID: 16G0909-01

Date(s) Analyzed: 07/25/2016      07/25/2016

### Instrument ID (1):

## Instrument ID (2):

### GC Column (1):

ID: (mm)

## GC Column (2):

ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1260	1	0.00	0.00	0.00	110	
	2	0.00	0.00	0.00	120	11.5



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## IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

LCS

EPA 600 4-81-045

Lab Sample ID: B154253-BS1

Date(s) Analyzed: 07/25/2016 07/25/2016

Instrument ID (1):

## Instrument ID (2):

### GC Column (1):

ID: (mm)

## GC Column (2):

ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1260	1	0.00	0.00	0.00	32	
	2	0.00	0.00	0.00	36	12



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## **IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES**

LCS Dup

EPA 600 4-81-045

Lab Sample ID: B154253-BSD1 Date(s) Analyzed: 07/25/2016 07/25/2016

Date(s) Analyzed: 07/25/2016 07/25/2016

Instrument ID (1): **1234567890**      Instrument ID (2): **9876543210**

## Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1260	1	0.00	0.00	0.00	31	
	2	0.00	0.00	0.00	35	13

**FLAG/QUALIFIER SUMMARY**

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit
DL	Method Detection Limit
MCL	Maximum Contaminant Level

Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.

No results have been blank subtracted unless specified in the case narrative section.

L-06      Laboratory fortified blank/laboratory control sample recovery and duplicate recovery are outside of control limits.  
              Reported value for this compound is likely to be biased on the high side.  
Z-01      Due to LCS/LCSD recovery non-conformance on the confirmatory detector, the lower of two results was reported.

#### CERTIFICATIONS

##### Certified Analyses included in this Report

Analyte	Certifications
<b>EPA 600 4-81-045 in Oil</b>	
Aroclor-1016	MA,NY,ME
Aroclor-1016 [2C]	MA,NY,ME
Aroclor-1221	MA,NY,ME
Aroclor-1221 [2C]	MA,NY,ME
Aroclor-1232	MA,NY,ME
Aroclor-1232 [2C]	MA,NY,ME
Aroclor-1242	MA,NY,ME
Aroclor-1242 [2C]	MA,NY,ME
Aroclor-1248	MA,NY,ME
Aroclor-1248 [2C]	MA,NY,ME
Aroclor-1254	MA,NY,ME
Aroclor-1254 [2C]	MA,NY,ME
Aroclor-1260	MA,NY,ME
Aroclor-1260 [2C]	MA,NY,ME
Aroclor-1262	MA,NY,ME
Aroclor-1262 [2C]	MA,NY,ME
Aroclor-1268	MA,NY,ME
Aroclor-1268 [2C]	MA,NY,ME

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC	100033	02/1/2018
MA	Massachusetts DEP	M-MA100	06/30/2017
CT	Connecticut Department of Public Health	PH-0567	09/30/2017
NY	New York State Department of Health	10899 NELAP	04/1/2017
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2017
RI	Rhode Island Department of Health	LAO00112	12/30/2016
NC	North Carolina Div. of Water Quality	652	12/31/2016
NJ	New Jersey DEP	MA007 NELAP	06/30/2017
FL	Florida Department of Health	E871027 NELAP	06/30/2017
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2017
ME	State of Maine	2011028	06/9/2017
VA	Commonwealth of Virginia	460217	12/14/2016
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2016



39 Spruce St.  
East Longmeadow, MA. 01028  
P: 413-525-2332  
F: 413-525-6405  
www.contestlabs.com



Page 1 of 2

## Sample Receipt Checklist

CLIENT NAME: Cushing Juanito E Wheeler

RECEIVED BY: AB

DATE: 7/20/16

- 1) Was the chain(s) of custody relinquished and signed? Yes  No  No COC Incl.
- 2) Does the chain agree with the samples?  
If not, explain: \_\_\_\_\_
- 3) Are all the samples in good condition?  
If not, explain: \_\_\_\_\_
- 4) How were the samples received:  
On Ice  Direct from Sampling \_\_\_\_\_ Ambient \_\_\_\_\_ In Cooler(s)   
Were the samples received in Temperature Compliance of (2-6°C)? Yes  No  N/A \_\_\_\_\_  
Temperature °C by Temp blank \_\_\_\_\_ Temperature °C by Temp gun 5.0
- 5) Are there Dissolved samples for the lab to filter?  
Who was notified \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_ Yes  No
- 6) Are there any RUSH or SHORT HOLDING TIME samples?  
Who was notified \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_ Yes  No
- 7) Location where samples are stored: Log In Permission to subcontract samples? Yes  No   
(Walk-in clients only) if not already approved Client Signature: \_\_\_\_\_
- 8) Do all samples have the proper Acid pH: Yes  No  N/A
- 9) Do all samples have the proper Base pH: Yes  No  N/A
- 10) Was the PC notified of any discrepancies with the CoC vs the samples: Yes  N/A

### Containers received at Con-Test

	# of containers		# of containers
1 Liter Amber		16 oz amber	
500 mL Amber		8 oz amber/clear jar	1
250 mL Amber (8oz amber)		4 oz amber/clear jar	
1 Liter Plastic		2 oz amber/clear jar	
500 mL Plastic		Plastic Bag / Ziploc	
250 mL plastic		SOC Kit	
40 mL Vial - type listed below		Perchlorate Kit	
Colisure / bacteria bottle		Flashpoint bottle	
Dissolved Oxygen bottle		Other glass jar	
Encore		Other	

40 mL vials:	# HCl	# Methanol	Time and Date Frozen:
Doc# 277	# Bisulfate	# DI Water	
Rev. 4 August 2013	# Thiosulfate	Unpreserved	

Login Sample Receipt Checklist

(Rejection Criteria Listing - Using Sample Acceptance Policy)

Any False statement will be brought to the attention of Client

<u>Question</u>	<u>Answer (True/False)</u>	<u>Comment</u>
	T/F/NA	
1) The cooler's custody seal, if present, is intact.	N/A	
2) The cooler or samples do not appear to have been compromised or tampered with.	T	
3) Samples were received on ice.	T	
4) Cooler Temperature is acceptable.	T	
5) Cooler Temperature is recorded.	T	5.6 with gen
6) COC is filled out in ink and legible.	T	
7) COC is filled out with all pertinent information.	T	
8) Field Sampler's name present on COC.	T	
9) There are no discrepancies between the sample IDs on the container and the COC.	T	
10) Samples are received within Holding Time.	T	
11) Sample containers have legible labels.	T	
12) Containers are not broken or leaking.	T	
13) Air Cassettes are not broken/open.	N/A	
14) Sample collection date/times are provided.	T	
15) Appropriate sample containers are used.	T	
16) Proper collection media used.	T	
17) No headspace sample bottles are completely filled.	N/A	
18) There is sufficient volume for all requested analyses, including any requested MS/MSDs.	T	
19) Trip blanks provided if applicable.	N/A	
20) VOA sample vials do not have head space or bubble is <6mm (1/4") in diameter.	N/A	
21) Samples do not require splitting or compositing.	T	

Who notified of False statements?

Doc #277 Rev. 4 August 2013

Log-In Technician Initials:

CB

Date/Time:

Date/Time: 7/20/16

1730

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**APPENDIX C**

***Laboratory Testing Results of Concrete***

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39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

August 25, 2016

Mike Bloom  
Cushing, Jammallo & Wheeler  
464 High Street  
Clinton, MA 01510

Project Location: 179 Brook St., Clinton, MA

Client Job Number:

Project Number: 5812D

Laboratory Work Order Number: 16H1032

Enclosed are results of analyses for samples received by the laboratory on August 19, 2016. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Meghan S. Kelley". The signature is fluid and cursive, with "Meghan" and "S." on the first line and "Kelley" on the second line.

Meghan E. Kelley  
Project Manager

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39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Cushing, Jammallo & Wheeler  
464 High Street  
Clinton, MA 01510  
ATTN: Mike Bloom

REPORT DATE: 8/25/2016

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 5812D

#### **ANALYTICAL SUMMARY**

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WORK ORDER NUMBER: 16H1032

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: 179 Brook St., Clinton, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
Trans Pad-1A	16H1032-01	Concrete		SW-846 8082A	
Trans Pad-1B	16H1032-02	Concrete		SW-846 8082A	
Trans Pad-1C	16H1032-03	Concrete		SW-846 8082A	
Trans Pad-2A	16H1032-04	Concrete		SW-846 8082A	
Trans Pad-2B	16H1032-05	Concrete		SW-846 8082A	
Trans Pad-2C	16H1032-06	Concrete		SW-846 8082A	
DUP/Duplicate	16H1032-07	Concrete		SW-846 8082A	



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#### CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

#### SW-846 8082A

##### **Qualifications:**

###### **R-05**

Laboratory fortified blank duplicate RPD is outside of control limits. Reduced precision is anticipated for any reported value for this compound.

##### **Analyte & Samples(s) Qualified:**

###### **Aroclor-1260**

16H1032-01[Trans Pad-1A], 16H1032-02[Trans Pad-1B], 16H1032-03[Trans Pad-1C], 16H1032-04[Trans Pad-2A], 16H1032-05[Trans Pad-2B], 16H1032-06[Trans Pad-2C], 16H1032-07[DUP/Duplicate], B156711-BLK1, B156711-BS1, B156711-BSD1, B156711-MS1, B156711-MSD1

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

A handwritten signature in black ink, appearing to read "Tod E. Kopyscinski".

Tod E. Kopyscinski  
Laboratory Director



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16H1032

Date Received: 8/19/2016

**Field Sample #:** Trans Pad-1A

Sampled: 8/19/2016 13:00

**Sample ID:** 16H1032-01Sample Matrix: Concrete**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 19:37	KAL
Aroclor-1221 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 19:37	KAL
Aroclor-1232 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 19:37	KAL
Aroclor-1242 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 19:37	KAL
Aroclor-1248 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 19:37	KAL
Aroclor-1254 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 19:37	KAL
Aroclor-1260 [1]	ND	0.096	mg/Kg	1	R-05	SW-846 8082A	8/23/16	8/24/16 19:37	KAL
Aroclor-1262 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 19:37	KAL
Aroclor-1268 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 19:37	KAL
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	97.1	30-150							8/24/16 19:37
Decachlorobiphenyl [2]	104	30-150							8/24/16 19:37
Tetrachloro-m-xylene [1]	84.1	30-150							8/24/16 19:37
Tetrachloro-m-xylene [2]	90.5	30-150							8/24/16 19:37



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16H1032

Date Received: 8/19/2016

**Field Sample #:** Trans Pad-1B

Sampled: 8/19/2016 13:05

**Sample ID:** 16H1032-02Sample Matrix: Concrete**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.075	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 19:50	KAL
Aroclor-1221 [1]	ND	0.075	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 19:50	KAL
Aroclor-1232 [1]	ND	0.075	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 19:50	KAL
Aroclor-1242 [1]	ND	0.075	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 19:50	KAL
Aroclor-1248 [1]	ND	0.075	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 19:50	KAL
Aroclor-1254 [1]	ND	0.075	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 19:50	KAL
Aroclor-1260 [1]	ND	0.075	mg/Kg	1	R-05	SW-846 8082A	8/23/16	8/24/16 19:50	KAL
Aroclor-1262 [1]	ND	0.075	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 19:50	KAL
Aroclor-1268 [1]	ND	0.075	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 19:50	KAL
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	77.6	30-150							8/24/16 19:50
Decachlorobiphenyl [2]	85.1	30-150							8/24/16 19:50
Tetrachloro-m-xylene [1]	69.8	30-150							8/24/16 19:50
Tetrachloro-m-xylene [2]	75.7	30-150							8/24/16 19:50



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16H1032

Date Received: 8/19/2016

**Field Sample #:** Trans Pad-1C

Sampled: 8/19/2016 13:10

**Sample ID:** 16H1032-03Sample Matrix: Concrete**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.094	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 20:03	KAL
Aroclor-1221 [1]	ND	0.094	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 20:03	KAL
Aroclor-1232 [1]	ND	0.094	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 20:03	KAL
Aroclor-1242 [1]	ND	0.094	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 20:03	KAL
Aroclor-1248 [1]	ND	0.094	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 20:03	KAL
Aroclor-1254 [2]	0.18	0.094	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 20:03	KAL
Aroclor-1260 [1]	ND	0.094	mg/Kg	1	R-05	SW-846 8082A	8/23/16	8/24/16 20:03	KAL
Aroclor-1262 [1]	ND	0.094	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 20:03	KAL
Aroclor-1268 [1]	ND	0.094	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 20:03	KAL
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	90.2	30-150							8/24/16 20:03
Decachlorobiphenyl [2]	98.5	30-150							8/24/16 20:03
Tetrachloro-m-xylene [1]	80.5	30-150							8/24/16 20:03
Tetrachloro-m-xylene [2]	86.9	30-150							8/24/16 20:03



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16H1032

Date Received: 8/19/2016

**Field Sample #:** Trans Pad-2A

Sampled: 8/19/2016 13:15

**Sample ID:** 16H1032-04Sample Matrix: Concrete**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.074	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 20:15	KAL
Aroclor-1221 [1]	ND	0.074	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 20:15	KAL
Aroclor-1232 [1]	ND	0.074	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 20:15	KAL
Aroclor-1242 [1]	ND	0.074	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 20:15	KAL
Aroclor-1248 [2]	0.18	0.074	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 20:15	KAL
Aroclor-1254 [1]	ND	0.074	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 20:15	KAL
Aroclor-1260 [1]	ND	0.074	mg/Kg	1	R-05	SW-846 8082A	8/23/16	8/24/16 20:15	KAL
Aroclor-1262 [1]	ND	0.074	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 20:15	KAL
Aroclor-1268 [1]	ND	0.074	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 20:15	KAL
Surrogates	% Recovery	Recovery Limits		Flag/Qual					
Decachlorobiphenyl [1]	84.8	30-150					8/24/16 20:15		
Decachlorobiphenyl [2]	91.4	30-150					8/24/16 20:15		
Tetrachloro-m-xylene [1]	74.6	30-150					8/24/16 20:15		
Tetrachloro-m-xylene [2]	81.4	30-150					8/24/16 20:15		



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16H1032

Date Received: 8/19/2016

**Field Sample #:** Trans Pad-2B

Sampled: 8/19/2016 13:20

**Sample ID:** 16H1032-05Sample Matrix: Concrete**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.090	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 20:28	KAL
Aroclor-1221 [1]	ND	0.090	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 20:28	KAL
Aroclor-1232 [1]	ND	0.090	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 20:28	KAL
Aroclor-1242 [1]	ND	0.090	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 20:28	KAL
Aroclor-1248 [1]	ND	0.090	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 20:28	KAL
Aroclor-1254 [1]	ND	0.090	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 20:28	KAL
Aroclor-1260 [1]	ND	0.090	mg/Kg	1	R-05	SW-846 8082A	8/23/16	8/24/16 20:28	KAL
Aroclor-1262 [1]	ND	0.090	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 20:28	KAL
Aroclor-1268 [1]	ND	0.090	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 20:28	KAL
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	79.2	30-150							8/24/16 20:28
Decachlorobiphenyl [2]	86.0	30-150							8/24/16 20:28
Tetrachloro-m-xylene [1]	73.9	30-150							8/24/16 20:28
Tetrachloro-m-xylene [2]	80.5	30-150							8/24/16 20:28



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16H1032

Date Received: 8/19/2016

**Field Sample #:** Trans Pad-2C

Sampled: 8/19/2016 13:25

**Sample ID:** 16H1032-06Sample Matrix: Concrete**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.076	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 20:41	KAL
Aroclor-1221 [1]	ND	0.076	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 20:41	KAL
Aroclor-1232 [1]	ND	0.076	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 20:41	KAL
Aroclor-1242 [1]	ND	0.076	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 20:41	KAL
Aroclor-1248 [2]	0.14	0.076	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 20:41	KAL
Aroclor-1254 [1]	ND	0.076	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 20:41	KAL
Aroclor-1260 [1]	ND	0.076	mg/Kg	1	R-05	SW-846 8082A	8/23/16	8/24/16 20:41	KAL
Aroclor-1262 [1]	ND	0.076	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 20:41	KAL
Aroclor-1268 [1]	ND	0.076	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 20:41	KAL
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	71.2	30-150							8/24/16 20:41
Decachlorobiphenyl [2]	77.2	30-150							8/24/16 20:41
Tetrachloro-m-xylene [1]	65.7	30-150							8/24/16 20:41
Tetrachloro-m-xylene [2]	72.1	30-150							8/24/16 20:41



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16H1032

Date Received: 8/19/2016

**Field Sample #:** DUP/Duplicate

Sampled: 8/19/2016 13:30

**Sample ID:** 16H1032-07Sample Matrix: Concrete**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.084	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 20:53	KAL
Aroclor-1221 [1]	ND	0.084	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 20:53	KAL
Aroclor-1232 [1]	ND	0.084	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 20:53	KAL
Aroclor-1242 [1]	ND	0.084	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 20:53	KAL
Aroclor-1248 [2]	0.14	0.084	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 20:53	KAL
Aroclor-1254 [1]	ND	0.084	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 20:53	KAL
Aroclor-1260 [1]	ND	0.084	mg/Kg	1	R-05	SW-846 8082A	8/23/16	8/24/16 20:53	KAL
Aroclor-1262 [1]	ND	0.084	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 20:53	KAL
Aroclor-1268 [1]	ND	0.084	mg/Kg	1		SW-846 8082A	8/23/16	8/24/16 20:53	KAL
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	76.9	30-150							8/24/16 20:53
Decachlorobiphenyl [2]	82.3	30-150							8/24/16 20:53
Tetrachloro-m-xylene [1]	72.8	30-150							8/24/16 20:53
Tetrachloro-m-xylene [2]	79.5	30-150							8/24/16 20:53



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39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

#### Sample Extraction Data

Prep Method: SW-846 3540C-SW-846 8082A

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
16H1032-01 [Trans Pad-1A]	B156711	2.09	10.0	08/23/16
16H1032-02 [Trans Pad-1B]	B156711	2.65	10.0	08/23/16
16H1032-03 [Trans Pad-1C]	B156711	2.12	10.0	08/23/16
16H1032-04 [Trans Pad-2A]	B156711	2.70	10.0	08/23/16
16H1032-05 [Trans Pad-2B]	B156711	2.23	10.0	08/23/16
16H1032-06 [Trans Pad-2C]	B156711	2.62	10.0	08/23/16
16H1032-07 [DUP/Duplicate]	B156711	2.39	10.0	08/23/16

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39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

**QUALITY CONTROL****Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD RPD	RPD Limit	Notes
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**Batch B156711 - SW-846 3540C**

<b>Blank (B156711-BLK1)</b>										
Aroclor-1016	ND	0.099	mg/Kg							
Aroclor-1016 [2C]	ND	0.099	mg/Kg							
Aroclor-1221	ND	0.099	mg/Kg							
Aroclor-1221 [2C]	ND	0.099	mg/Kg							
Aroclor-1232	ND	0.099	mg/Kg							
Aroclor-1232 [2C]	ND	0.099	mg/Kg							
Aroclor-1242	ND	0.099	mg/Kg							
Aroclor-1242 [2C]	ND	0.099	mg/Kg							
Aroclor-1248	ND	0.099	mg/Kg							
Aroclor-1248 [2C]	ND	0.099	mg/Kg							
Aroclor-1254	ND	0.099	mg/Kg							
Aroclor-1254 [2C]	ND	0.099	mg/Kg							
Aroclor-1260	ND	0.099	mg/Kg							R-05
Aroclor-1260 [2C]	ND	0.099	mg/Kg							
Aroclor-1262	ND	0.099	mg/Kg							
Aroclor-1262 [2C]	ND	0.099	mg/Kg							
Aroclor-1268	ND	0.099	mg/Kg							
Aroclor-1268 [2C]	ND	0.099	mg/Kg							
Surrogate: Decachlorobiphenyl	0.909		mg/Kg	0.985		92.2		30-150		
Surrogate: Decachlorobiphenyl [2C]	0.988		mg/Kg	0.985		100		30-150		
Surrogate: Tetrachloro-m-xylene	0.811		mg/Kg	0.985		82.4		30-150		
Surrogate: Tetrachloro-m-xylene [2C]	0.891		mg/Kg	0.985		90.4		30-150		

<b>LCS (B156711-BS1)</b>										
Aroclor-1016	0.23	0.093	mg/Kg	0.234		97.7		40-140		
Aroclor-1016 [2C]	0.24	0.093	mg/Kg	0.234		103		40-140		
Aroclor-1260	0.22	0.093	mg/Kg	0.234		95.3		40-140		
Aroclor-1260 [2C]	0.23	0.093	mg/Kg	0.234		99.8		40-140		R-05
Surrogate: Decachlorobiphenyl	0.857		mg/Kg	0.935		91.7		30-150		
Surrogate: Decachlorobiphenyl [2C]	0.931		mg/Kg	0.935		99.6		30-150		
Surrogate: Tetrachloro-m-xylene	0.766		mg/Kg	0.935		81.9		30-150		
Surrogate: Tetrachloro-m-xylene [2C]	0.841		mg/Kg	0.935		90.0		30-150		

<b>LCS Dup (B156711-BSD1)</b>										
Aroclor-1016	0.17	0.078	mg/Kg	0.194		89.5		40-140	27.3	30
Aroclor-1016 [2C]	0.19	0.078	mg/Kg	0.194		97.0		40-140	24.7	30
Aroclor-1260	0.16	0.078	mg/Kg	0.194		84.1		40-140	31.0 *	30
Aroclor-1260 [2C]	0.17	0.078	mg/Kg	0.194		89.3		40-140	29.7	30
Surrogate: Decachlorobiphenyl	0.606		mg/Kg	0.775		78.2		30-150		
Surrogate: Decachlorobiphenyl [2C]	0.660		mg/Kg	0.775		85.1		30-150		
Surrogate: Tetrachloro-m-xylene	0.571		mg/Kg	0.775		73.7		30-150		
Surrogate: Tetrachloro-m-xylene [2C]	0.633		mg/Kg	0.775		81.6		30-150		



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### QUALITY CONTROL

#### Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD RPD	Limit Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	---------	-------------

Batch B156711 - SW-846 3540C

<b>Matrix Spike (B156711-MS1)</b>		<b>Source: 16H1032-01</b>		Prepared: 08/23/16 Analyzed: 08/24/16					
Aroclor-1016	0.17	0.071	mg/Kg	0.178	ND	96.1	40-140		
Aroclor-1016 [2C]	0.18	0.071	mg/Kg	0.178	ND	98.9	40-140		
Aroclor-1260	0.19	0.071	mg/Kg	0.178	ND	107	40-140		R-05
Aroclor-1260 [2C]	0.20	0.071	mg/Kg	0.178	ND	110	40-140		
Surrogate: Decachlorobiphenyl	0.636		mg/Kg	0.712		89.3	30-150		
Surrogate: Decachlorobiphenyl [2C]	0.677		mg/Kg	0.712		95.2	30-150		
Surrogate: Tetrachloro-m-xylene	0.595		mg/Kg	0.712		83.6	30-150		
Surrogate: Tetrachloro-m-xylene [2C]	0.642		mg/Kg	0.712		90.2	30-150		
<b>Matrix Spike Dup (B156711-MSD1)</b>		<b>Source: 16H1032-01</b>		Prepared: 08/23/16 Analyzed: 08/24/16					
Aroclor-1016	0.23	0.090	mg/Kg	0.225	ND	102	40-140	28.9	50
Aroclor-1016 [2C]	0.24	0.090	mg/Kg	0.225	ND	107	40-140	31.2	50
Aroclor-1260	0.24	0.090	mg/Kg	0.225	ND	108	40-140	24.3	50
Aroclor-1260 [2C]	0.25	0.090	mg/Kg	0.225	ND	112	40-140	25.1	50
Surrogate: Decachlorobiphenyl	0.843		mg/Kg	0.901		93.6	30-150		
Surrogate: Decachlorobiphenyl [2C]	0.910		mg/Kg	0.901		101	30-150		
Surrogate: Tetrachloro-m-xylene	0.757		mg/Kg	0.901		84.0	30-150		
Surrogate: Tetrachloro-m-xylene [2C]	0.822		mg/Kg	0.901		91.2	30-150		



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**  
**SW-846 8082A**

Trans Pad-1C

Lab Sample ID: 16H1032-03 Date(s) Analyzed: 08/24/2016 08/24/2016

Instrument ID (1):  Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1254	1	0.00	0.00	0.00	0.14	
	2	0.00	0.00	0.00	0.18	21.5



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**  
*SW-846 8082A*

Trans Pad-2A

Lab Sample ID: 16H1032-04 Date(s) Analyzed: 08/24/2016 08/24/2016

Instrument ID (1):  Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1248	1	0.00	0.00	0.00	0.18	
	2	0.00	0.00	0.00	0.18	2.2



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**  
*SW-846 8082A*

Trans Pad-2C

Lab Sample ID: 16H1032-06 Date(s) Analyzed: 08/24/2016 08/24/2016

Instrument ID (1):  Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1248	1	0.00	0.00	0.00	0.14	
	2	0.00	0.00	0.00	0.14	2.9



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## IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

## DUP/Duplicate

*SW-846 8082A*

Lab Sample ID: 16H1032-07

Date(s) Analyzed: 08/24/2016 08/24/2016

### Instrument ID (1):

## Instrument ID (2):

### GC Column (1):

ID: (mm)

## GC Column (2):

ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1248	1	0.00	0.00	0.00	0.13	
	2	0.00	0.00	0.00	0.14	5.9



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**

*SW-846 8082A*

LCS

Lab Sample ID: B156711-BS1 Date(s) Analyzed: 08/24/2016 08/24/2016

Instrument ID (1): \_\_\_\_\_ Instrument ID (2): \_\_\_\_\_

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1016	1	0.00	0.00	0.00	0.23	
	2	0.00	0.00	0.00	0.24	5
Aroclor-1260	1	0.00	0.00	0.00	0.22	
	2	0.00	0.00	0.00	0.23	3



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## IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

LCS Dup

*SW-846 8082A*

Lab Sample ID: B156711-BSD1 Date(s) Analyzed: 08/24/2016 08/24/2016

Date(s) Analyzed: 08/24/2016 08/24/2016

Instrument ID (1): **Instrument ID (2)**

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1016	1	0.00	0.00	0.00	0.17	
	2	0.00	0.00	0.00	0.19	9
Aroclor-1260	1	0.00	0.00	0.00	0.16	
	2	0.00	0.00	0.00	0.17	4



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## IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

## Matrix Spike

*SW-846 8082A*

Lab Sample ID: B156711-MS1 Date(s) Analyzed: 08/24/2016 08/24/2016

Date(s) Analyzed: 08/24/2016 08/24/2016

Instrument ID (1): **Instrument ID (2)**

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1016	1	0.00	0.00	0.00	0.17	
	2	0.00	0.00	0.00	0.18	5
Aroclor-1260	1	0.00	0.00	0.00	0.19	
	2	0.00	0.00	0.00	0.20	5



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## IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

*SW-846 8082A*

## Matrix Spike Up

Lab Sample ID: B156711-MSD1 Date(s) Analyzed: 08/24/2016 08/24/2016

Date(s) Analyzed: 08/24/2016 08/24/2016

**Instrument ID (1):** **Instrument ID (2):**

## Instrument ID (2)

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1016	1	0.00	0.00	0.00	0.23	
	2	0.00	0.00	0.00	0.24	5
Aroclor-1260	1	0.00	0.00	0.00	0.24	
	2	0.00	0.00	0.00	0.25	3



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**FLAG/QUALIFIER SUMMARY**

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit
DL	Method Detection Limit
MCL	Maximum Contaminant Level

Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.

No results have been blank subtracted unless specified in the case narrative section.

R-05      Laboratory fortified blank duplicate RPD is outside of control limits. Reduced precision is anticipated for any reported value for this compound.



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#### CERTIFICATIONS

##### Certified Analyses included in this Report

Analyte	Certifications
<b><i>SW-846 8082A in Product/Solid</i></b>	
Aroclor-1016	CT,NH,NY,ME,NC,VA
Aroclor-1016 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1221	CT,NH,NY,ME,NC,VA
Aroclor-1221 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1232	CT,NH,NY,ME,NC,VA
Aroclor-1232 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1242	CT,NH,NY,ME,NC,VA
Aroclor-1242 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1248	CT,NH,NY,ME,NC,VA
Aroclor-1248 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1254	CT,NH,NY,ME,NC,VA
Aroclor-1254 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1260	CT,NH,NY,ME,NC,VA
Aroclor-1260 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1262	NY,NC,VA
Aroclor-1262 [2C]	NY,NC,VA
Aroclor-1268	NY,NC,VA
Aroclor-1268 [2C]	NY,NC,VA

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC	100033	02/1/2018
MA	Massachusetts DEP	M-MA100	06/30/2017
CT	Connecticut Department of Public Health	PH-0567	09/30/2017
NY	New York State Department of Health	10899 NELAP	04/1/2017
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2017
RI	Rhode Island Department of Health	LAO00112	12/30/2016
NC	North Carolina Div. of Water Quality	652	12/31/2016
NJ	New Jersey DEP	MA007 NELAP	06/30/2017
FL	Florida Department of Health	E871027 NELAP	06/30/2017
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2017
ME	State of Maine	2011028	06/9/2017
VA	Commonwealth of Virginia	460217	12/14/2016
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2016



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### Sample Receipt Checklist

CLIENT NAME: Cushing Jamaillo & Wheeler RECEIVED BY: MG DATE: 8/19/16

- 1) Was the chain(s) of custody relinquished and signed? Yes  No  No COC Incl.
- 2) Does the chain agree with the samples?  
If not, explain:
- 3) Are all the samples in good condition?  
If not, explain:
- 4) How were the samples received:  
On Ice  Direct from Sampling  Ambient  In Cooler(s)
- Were the samples received in Temperature Compliance of (2-6°C)? Yes  No  N/A
- Temperature °C by Temp blank \_\_\_\_\_ Temperature °C by Temp gun 4.3
- 5) Are there Dissolved samples for the lab to filter?  
Who was notified \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_
- 6) Are there any RUSH or SHORT HOLDING TIME samples?  
Who was notified \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_
- 7) Location where samples are stored:  
LOG IN
- Permission to subcontract samples? Yes  No   
(Walk-in clients only) if not already approved  
Client Signature: ✓
- 8) Do all samples have the proper Acid pH: Yes  No  N/A
- 9) Do all samples have the proper Base pH: Yes  No  N/A
- 10) Was the PC notified of any discrepancies with the CoC vs the samples: Yes  N/A

### Containers received at Con-Test

	# of containers		# of containers
1 Liter Amber		16 oz amber 8 oz amber/clear jar 4 oz amber/clear jar 2 oz amber/clear jar Plastic Bag / Ziploc SOC Kit Perchlorate Kit Flashpoint bottle Other glass jar Other	
500 mL Amber			
250 mL Amber (8oz amber)			
1 Liter Plastic			
500 mL Plastic			
250 mL plastic			
40 mL Vial - type listed below			
Colisure / bacteria bottle			
Dissolved Oxygen bottle			
Encore			

40 mL vials: # HCl _____	# Methanol _____	Time and Date Frozen:
Doc# 277 # Bisulfate _____	# DI Water _____	
Rev. 4 August 2013 # Thiosulfate _____	Unpreserved	

Page 2 of 2

Login Sample Receipt Checklist

(Rejection Criteria Listing - Using Sample Acceptance Policy)

Any False statement will be brought to the attention of Client

<u>Question</u>	<u>Answer (True/False)</u>	<u>Comment</u>
	T/F/NA	
1) The cooler's custody seal, if present, is intact.	N/A	
2) The cooler or samples do not appear to have been compromised or tampered with.	T	
3) Samples were received on ice.	T	
4) Cooler Temperature is acceptable.	T	
5) Cooler Temperature is recorded.	T	
6) COC is filled out in ink and legible.	T	
7) COC is filled out with all pertinent information.	T	
8) Field Sampler's name present on COC.	T	
9) There are no discrepancies between the sample IDs on the container and the COC.	T	
10) Samples are received within Holding Time.	T	
11) Sample containers have legible labels.	T	
12) Containers are not broken or leaking.	T	
13) Air Cassettes are not broken/open.	N/A	
14) Sample collection date/times are provided.	T	
15) Appropriate sample containers are used.	T	
16) Proper collection media used.	T	
17) No headspace sample bottles are completely filled.	N/A	
18) There is sufficient volume for all requested analyses, including any requested MS/MSDs.	T	
19) Trip blanks provided if applicable.	N/A	
20) VOA sample vials do not have head space or bubble is <6mm (1/4") in diameter.	N/A	
21) Samples do not require splitting or compositing.	T	

Who notified of False statements?

Date/Time:

Doc #277 Rev. 4 August 2013

Log-In Technician Initials:

MG

8/19/16

1634



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December 14, 2016

James Bennett  
Cushing, Jammallo & Wheeler  
464 High Street  
Clinton, MA 01510

Project Location: 179 Brook Street, Clinton, MA

Client Job Number:

Project Number: 5812D

Laboratory Work Order Number: 16L0494

Enclosed are results of analyses for samples received by the laboratory on December 9, 2016. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Meghan S. Kelley". The signature is fluid and cursive, with "Meghan" and "S." on the first line and "Kelley" on the second line.

Meghan E. Kelley  
Project Manager

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Cushing, Jammallo & Wheeler  
464 High Street  
Clinton, MA 01510  
ATTN: James Bennett

REPORT DATE: 12/14/2016

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 5812D

#### **ANALYTICAL SUMMARY**

---

WORK ORDER NUMBER: 16L0494

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: 179 Brook Street, Clinton, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
Concrete-3	16L0494-01	Product/Solid		SW-846 8082A	
Concrete-4	16L0494-02	Product/Solid		SW-846 8082A	
Concrete-5	16L0494-03	Product/Solid		SW-846 8082A	



---

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**CASE NARRATIVE SUMMARY**

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.  
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

A handwritten signature in black ink that reads "Lisa A. Worthington". The signature is fluid and cursive, with "Lisa A." on the first line and "Worthington" on the second line.

Lisa A. Worthington  
Project Manager



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook Street, Clinton, MA

Sample Description:

Work Order: 16L0494

Date Received: 12/9/2016

Sampled: 12/8/2016 12:00

**Field Sample #:** Concrete-3**Sample ID:** 16L0494-01

Sample Matrix: Product/Solid

**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.091	mg/Kg	1		SW-846 8082A	12/10/16	12/12/16 11:56	JMB
Aroclor-1221 [1]	ND	0.091	mg/Kg	1		SW-846 8082A	12/10/16	12/12/16 11:56	JMB
Aroclor-1232 [1]	ND	0.091	mg/Kg	1		SW-846 8082A	12/10/16	12/12/16 11:56	JMB
Aroclor-1242 [1]	ND	0.091	mg/Kg	1		SW-846 8082A	12/10/16	12/12/16 11:56	JMB
Aroclor-1248 [1]	ND	0.091	mg/Kg	1		SW-846 8082A	12/10/16	12/12/16 11:56	JMB
Aroclor-1254 [1]	ND	0.091	mg/Kg	1		SW-846 8082A	12/10/16	12/12/16 11:56	JMB
Aroclor-1260 [1]	ND	0.091	mg/Kg	1		SW-846 8082A	12/10/16	12/12/16 11:56	JMB
Aroclor-1262 [1]	ND	0.091	mg/Kg	1		SW-846 8082A	12/10/16	12/12/16 11:56	JMB
Aroclor-1268 [1]	ND	0.091	mg/Kg	1		SW-846 8082A	12/10/16	12/12/16 11:56	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	134	30-150						12/12/16 11:56	
Decachlorobiphenyl [2]	139	30-150						12/12/16 11:56	
Tetrachloro-m-xylene [1]	121	30-150						12/12/16 11:56	
Tetrachloro-m-xylene [2]	127	30-150						12/12/16 11:56	



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Project Location: 179 Brook Street, Clinton, MA

Sample Description:

Work Order: 16L0494

Date Received: 12/9/2016

Sampled: 12/8/2016 12:30

**Field Sample #:** Concrete-4**Sample ID:** 16L0494-02

Sample Matrix: Product/Solid

**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.078	mg/Kg	1		SW-846 8082A	12/10/16	12/12/16 12:14	JMB
Aroclor-1221 [1]	ND	0.078	mg/Kg	1		SW-846 8082A	12/10/16	12/12/16 12:14	JMB
Aroclor-1232 [1]	ND	0.078	mg/Kg	1		SW-846 8082A	12/10/16	12/12/16 12:14	JMB
Aroclor-1242 [1]	ND	0.078	mg/Kg	1		SW-846 8082A	12/10/16	12/12/16 12:14	JMB
Aroclor-1248 [1]	ND	0.078	mg/Kg	1		SW-846 8082A	12/10/16	12/12/16 12:14	JMB
Aroclor-1254 [2]	0.16	0.078	mg/Kg	1		SW-846 8082A	12/10/16	12/12/16 12:14	JMB
Aroclor-1260 [1]	ND	0.078	mg/Kg	1		SW-846 8082A	12/10/16	12/12/16 12:14	JMB
Aroclor-1262 [1]	ND	0.078	mg/Kg	1		SW-846 8082A	12/10/16	12/12/16 12:14	JMB
Aroclor-1268 [1]	ND	0.078	mg/Kg	1		SW-846 8082A	12/10/16	12/12/16 12:14	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	147	30-150							12/12/16 12:14
Decachlorobiphenyl [2]	146	30-150							12/12/16 12:14
Tetrachloro-m-xylene [1]	131	30-150							12/12/16 12:14
Tetrachloro-m-xylene [2]	137	30-150							12/12/16 12:14



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook Street, Clinton, MA

Sample Description:

Work Order: 16L0494

Date Received: 12/9/2016

Sampled: 12/8/2016 13:00

**Field Sample #:** Concrete-5**Sample ID:** 16L0494-03

Sample Matrix: Product/Solid

**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.092	mg/Kg	1		SW-846 8082A	12/10/16	12/12/16 12:32	JMB
Aroclor-1221 [1]	ND	0.092	mg/Kg	1		SW-846 8082A	12/10/16	12/12/16 12:32	JMB
Aroclor-1232 [1]	ND	0.092	mg/Kg	1		SW-846 8082A	12/10/16	12/12/16 12:32	JMB
Aroclor-1242 [1]	ND	0.092	mg/Kg	1		SW-846 8082A	12/10/16	12/12/16 12:32	JMB
Aroclor-1248 [1]	ND	0.092	mg/Kg	1		SW-846 8082A	12/10/16	12/12/16 12:32	JMB
Aroclor-1254 [1]	ND	0.092	mg/Kg	1		SW-846 8082A	12/10/16	12/12/16 12:32	JMB
Aroclor-1260 [1]	ND	0.092	mg/Kg	1		SW-846 8082A	12/10/16	12/12/16 12:32	JMB
Aroclor-1262 [1]	ND	0.092	mg/Kg	1		SW-846 8082A	12/10/16	12/12/16 12:32	JMB
Aroclor-1268 [1]	ND	0.092	mg/Kg	1		SW-846 8082A	12/10/16	12/12/16 12:32	JMB
Surrogates	% Recovery	Recovery Limits		Flag/Qual					
Decachlorobiphenyl [1]	125	30-150					12/12/16 12:32		
Decachlorobiphenyl [2]	124	30-150					12/12/16 12:32		
Tetrachloro-m-xylene [1]	118	30-150					12/12/16 12:32		
Tetrachloro-m-xylene [2]	120	30-150					12/12/16 12:32		



---

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#### Sample Extraction Data

Prep Method: SW-846 3540C-SW-846 8082A

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
16L0494-01 [Concrete-3]	B165466	2.19	10.0	12/10/16
16L0494-02 [Concrete-4]	B165466	2.57	10.0	12/10/16
16L0494-03 [Concrete-5]	B165466	2.18	10.0	12/10/16



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**QUALITY CONTROL****Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	---------	-----------	-------

**Batch B165466 - SW-846 3540C**

<b>Blank (B165466-BLK1)</b>					Prepared: 12/10/16 Analyzed: 12/12/16					
Aroclor-1016	ND	0.10	mg/Kg							
Aroclor-1016 [2C]	ND	0.10	mg/Kg							
Aroclor-1221	ND	0.10	mg/Kg							
Aroclor-1221 [2C]	ND	0.10	mg/Kg							
Aroclor-1232	ND	0.10	mg/Kg							
Aroclor-1232 [2C]	ND	0.10	mg/Kg							
Aroclor-1242	ND	0.10	mg/Kg							
Aroclor-1242 [2C]	ND	0.10	mg/Kg							
Aroclor-1248	ND	0.10	mg/Kg							
Aroclor-1248 [2C]	ND	0.10	mg/Kg							
Aroclor-1254	ND	0.10	mg/Kg							
Aroclor-1254 [2C]	ND	0.10	mg/Kg							
Aroclor-1260	ND	0.10	mg/Kg							
Aroclor-1260 [2C]	ND	0.10	mg/Kg							
Aroclor-1262	ND	0.10	mg/Kg							
Aroclor-1262 [2C]	ND	0.10	mg/Kg							
Aroclor-1268	ND	0.10	mg/Kg							
Aroclor-1268 [2C]	ND	0.10	mg/Kg							
Surrogate: Decachlorobiphenyl	1.01	mg/Kg	1.00		101	30-150				
Surrogate: Decachlorobiphenyl [2C]	1.04	mg/Kg	1.00		104	30-150				
Surrogate: Tetrachloro-m-xylene	0.957	mg/Kg	1.00		95.7	30-150				
Surrogate: Tetrachloro-m-xylene [2C]	0.972	mg/Kg	1.00		97.2	30-150				

<b>LCS (B165466-BS1)</b>					Prepared: 12/10/16 Analyzed: 12/12/16					
Aroclor-1016	0.25	0.10	mg/Kg	0.250		101	40-140			
Aroclor-1016 [2C]	0.24	0.10	mg/Kg	0.250		97.8	40-140			
Aroclor-1260	0.25	0.10	mg/Kg	0.250		99.3	40-140			
Aroclor-1260 [2C]	0.24	0.10	mg/Kg	0.250		96.8	40-140			
Surrogate: Decachlorobiphenyl	1.05	mg/Kg	1.00		105	30-150				
Surrogate: Decachlorobiphenyl [2C]	1.05	mg/Kg	1.00		105	30-150				
Surrogate: Tetrachloro-m-xylene	1.02	mg/Kg	1.00		102	30-150				
Surrogate: Tetrachloro-m-xylene [2C]	1.02	mg/Kg	1.00		102	30-150				

<b>LCS Dup (B165466-BSD1)</b>					Prepared: 12/10/16 Analyzed: 12/12/16					
Aroclor-1016	0.24	0.10	mg/Kg	0.250		97.7	40-140	3.45	30	
Aroclor-1016 [2C]	0.25	0.10	mg/Kg	0.250		99.2	40-140	1.47	30	
Aroclor-1260	0.25	0.10	mg/Kg	0.250		98.5	40-140	0.811	30	
Aroclor-1260 [2C]	0.24	0.10	mg/Kg	0.250		97.3	40-140	0.457	30	
Surrogate: Decachlorobiphenyl	1.03	mg/Kg	1.00		103	30-150				
Surrogate: Decachlorobiphenyl [2C]	1.07	mg/Kg	1.00		107	30-150				
Surrogate: Tetrachloro-m-xylene	1.02	mg/Kg	1.00		102	30-150				
Surrogate: Tetrachloro-m-xylene [2C]	1.02	mg/Kg	1.00		102	30-150				



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**  
**SW-846 8082A**

Concrete-4

Lab Sample ID: 16L0494-02 Date(s) Analyzed: 12/12/2016 12/12/2016

Instrument ID (1):  Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1254	1	0.00	0.00	0.00	0.16	
	2	0.00	0.00	0.00	0.16	1.9



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## IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

*SW-846 8082A*

LCS

Lab Sample ID: B165466-BS1 Date(s) Analyzed: 12/12/2016 12/12/2016

Date(s) Analyzed: 12/12/2016 12/12/2016

**Instrument ID (1):** **Instrument ID (2):**

## Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1016	1	0.00	0.00	0.00	0.25	
	2	0.00	0.00	0.00	0.24	5
Aroclor-1260	1	0.00	0.00	0.00	0.25	
	2	0.00	0.00	0.00	0.24	3



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## IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

LCS Dup

*SW-846 8082A*

Lab Sample ID: B165466-BSD1 Date(s) Analyzed: 12/12/2016 12/12/2016

Date(s) Analyzed: 12/12/2016 12/12/2016

Instrument ID (1): **Instrument ID (2)**

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1016	1	0.00	0.00	0.00	0.24	
	2	0.00	0.00	0.00	0.25	2
Aroclor-1260	1	0.00	0.00	0.00	0.25	
	2	0.00	0.00	0.00	0.24	2



---

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**FLAG/QUALIFIER SUMMARY**

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit
DL	Method Detection Limit
MCL	Maximum Contaminant Level

Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.

No results have been blank subtracted unless specified in the case narrative section.



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#### CERTIFICATIONS

##### Certified Analyses included in this Report

Analyte	Certifications
<b><i>SW-846 8082A in Product/Solid</i></b>	
Aroclor-1016	CT,NH,NY,ME,NC,VA
Aroclor-1016 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1221	CT,NH,NY,ME,NC,VA
Aroclor-1221 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1232	CT,NH,NY,ME,NC,VA
Aroclor-1232 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1242	CT,NH,NY,ME,NC,VA
Aroclor-1242 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1248	CT,NH,NY,ME,NC,VA
Aroclor-1248 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1254	CT,NH,NY,ME,NC,VA
Aroclor-1254 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1260	CT,NH,NY,ME,NC,VA
Aroclor-1260 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1262	NY,NC,VA
Aroclor-1262 [2C]	NY,NC,VA
Aroclor-1268	NY,NC,VA
Aroclor-1268 [2C]	NY,NC,VA

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2005	100033	02/1/2018
MA	Massachusetts DEP	M-MA100	06/30/2017
CT	Connecticut Department of Public Health	PH-0567	09/30/2017
NY	New York State Department of Health	10899 NELAP	04/1/2017
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2017
RI	Rhode Island Department of Health	LAO00112	12/30/2016
NC	North Carolina Div. of Water Quality	652	12/31/2016
NJ	New Jersey DEP	MA007 NELAP	06/30/2017
FL	Florida Department of Health	E871027 NELAP	06/30/2017
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2017
ME	State of Maine	2011028	06/9/2017
VA	Commonwealth of Virginia	460217	12/14/2016
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2017



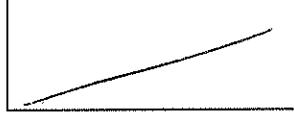
39 Spruce St.  
East Longmeadow, MA. 01028  
P: 413-525-2332  
F: 413-525-6405  
www.contestlabs.com



Page 1 of 2

Sample Receipt Checklist

CLIENT NAME: CSC RECEIVED BY: BLF DATE: 12/9/10

- 1) Was the chain(s) of custody relinquished and signed? Yes  No  No COC Incl.
- 2) Does the chain agree with the samples?  
If not, explain:
- 3) Are all the samples in good condition?  
If not, explain:
- 4) How were the samples received:  
On Ice  Direct from Sampling \_\_\_\_\_ Ambient \_\_\_\_\_ In Cooler(s)
- Were the samples received in Temperature Compliance of (2-6°C)? Yes  No  N/A \_\_\_\_\_  
Temperature °C by Temp blank \_\_\_\_\_ Temperature °C by Temp gun 3.8C
- 5) Are there Dissolved samples for the lab to filter? Yes  No
- Who was notified \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_
- 6) Are there any RUSH or SHORT HOLDING TIME samples? Yes  No
- Who was notified \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_
- 7) Location where samples are stored: 
- Permission to subcontract samples? Yes  No   
(Walk-in clients only) if not already approved  
Client Signature: \_\_\_\_\_
- 8) Do all samples have the proper Acid pH: Yes  No  N/A
- 9) Do all samples have the proper Base pH: Yes  No  N/A
- 10) Was the PC notified of any discrepancies with the CoC vs the samples: Yes  N/A

**Containers received at Con-Test**

	# of containers		# of containers
1 Liter Amber		16 oz amber	
500 mL Amber		8 oz amber/clear jar	<u>3</u>
250 mL Amber (8oz amber)		4 oz amber/clear jar	
1 Liter Plastic		2 oz amber/clear jar	
500 mL Plastic		Plastic Bag / Ziploc	
250 mL plastic		SOC Kit	
40 mL Vial - type listed below		Perchlorate Kit	
Colisure / bacteria bottle		Flashpoint bottle	
Dissolved Oxygen bottle		Other glass jar	
Encore		Other	

40 mL vials: # HCl _____	# Methanol _____	Time and Date Frozen:
Doc# 277: # Bisulfate _____	# DI Water _____	
Rev. 4 August 2013: # Thiosulfate _____	Unpreserved _____	

Page 2 of 2

Login Sample Receipt Checklist

(Rejection Criteria Listing - Using Sample Acceptance Policy)  
**Any False statement will be brought to the attention of Client**

<u>Question</u>	<u>Answer (True/False)</u>	<u>Comment</u>
	T/F/NA	
1) The cooler's custody seal, if present, is intact.	NA	
2) The cooler or samples do not appear to have been compromised or tampered with.	T	
3) Samples were received on ice.	T	
4) Cooler Temperature is acceptable.	T	
5) Cooler Temperature is recorded.	T	
6) COC is filled out in ink and legible.	T	
7) COC is filled out with all pertinent information.	T	
8) Field Sampler's name present on COC.	T	
9) There are no discrepancies between the sample IDs on the container and the COC.	T	
10) Samples are received within Holding Time.	T	
11) Sample containers have legible labels.	T	
12) Containers are not broken or leaking.	T	
13) Air Cassettes are not broken/open.	NA	
14) Sample collection date/times are provided.	T	
15) Appropriate sample containers are used.	T	
16) Proper collection media used.	T	
17) No headspace sample bottles are completely filled.	NA	
18) There is sufficient volume for all requested analyses, including any requested MS/MSDs.	T	
19) Trip blanks provided if applicable.	NA	
20) VOA sample vials do not have head space or bubble is <6mm (1/4") in diameter.	NA	
21) Samples do not require splitting or compositing.	T	

Who notified of False statements?

Date/Time:

Doc #277 Rev. 4 August 2013

Log-In Technician Initials:

Date/Time:

RLF 12/9/16 1625

## MADEP MCP Analytical Method Report Certification Form

Laboratory Name:	Con-Test Analytical Laboratory	Project #:	16L0494
Project Location:	179 Brook Street, Clinton, MA	RTN:	

This Form provides certifications for the following data set: [list Laboratory Sample ID Number(s)]

16L0494-01 thru 16L0494-03

Matrices: Product/Solid

**CAM Protocol (check all that below)**

8260 VOC CAM II A ()	7470/7471 Hg CAM IIIB ()	MassDEP VPH CAM IV A ()	8081 Pesticides CAM V B ()	7196 Hex Cr CAM VI B ()	MassDEP APH CAM IX A ()
8270 SVOC CAM II B ()	7010 Metals CAM III C ()	MassDEP EPH CAM IV A ()	8151 Herbicides CAM V C ()	8330 Explosives CAM VIII A ()	TO-15 VOC CAM IX B ()
6010 Metals CAM III A ()	6020 Metals CAM III D ()	8082 PCB CAM V A (X)	9014 Total Cyanide/PAC CAM VI A ()	6860 Perchlorate CAM VIII B ()	

**Affirmative response to Questions A through F is required for "Presumptive Certainty" status**

<b>A</b>	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>B</b>	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>C</b>	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>D</b>	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>E a</b>	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	<input type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>E b</b>	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	<input type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>F</b>	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all No responses to Questions A through E)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>

**A response to questions G, H and I below is required for "Presumptive Certainty" status**

<b>G</b>	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
----------	---	--

**Data User Note:** Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.

<b>H</b>	Were all QC performance standards specified in the CAM protocol(s) achieved?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>I</b>	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>

<sup>1</sup> All Negative responses must be addressed in an attached Environmental Laboratory case narrative.

**I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.**

Signature:		Position:	Project Manager
Printed Name:	Lisa A. Worthington	Date:	12/14/16

---

**APPENDIX D**

***Laboratory Testing Results of Soil***

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39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

May 25, 2016

Mike Bloom  
Cushing, Jammallo & Wheeler  
464 High Street  
Clinton, MA 01510

Project Location: 179 Brook St., Clinton

Client Job Number:

Project Number: 5812

Laboratory Work Order Number: 16E0816

Enclosed are results of analyses for samples received by the laboratory on May 18, 2016. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Meghan S. Kelley". The signature is fluid and cursive, with "Meghan" and "S." sharing a common initial stroke, and "Kelley" following below.

Meghan E. Kelley  
Project Manager

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39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Cushing, Jammallo & Wheeler  
464 High Street  
Clinton, MA 01510  
ATTN: Mike Bloom

REPORT DATE: 5/25/2016

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 5812

#### **ANALYTICAL SUMMARY**

---

WORK ORDER NUMBER: 16E0816

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: 179 Brook St., Clinton

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
Pad Mount Transformer	16E0816-01	Soil		MADEP-EPH-04-1.1 SM 2540G SW-846 8082A	
Pole Mount Transformer	16E0816-02	Soil		MADEP-EPH-04-1.1 SM 2540G SW-846 8082A	



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#### CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

#### SW-846 8082A

##### **Qualifications:**

S-02

The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.

##### **Analyte & Sample(s) Qualified:**

Decachlorobiphenyl [2C]

16E0816-02[Pole Mount Transformer]

#### MADEP-EPH-04-1.1

SPE cartridge contamination with non-petroleum compounds, if present, is verified by GC/MS in each method blank per extraction batch and excluded from C 11-C22 aromatic range fraction in all samples in the batch. No significant modifications were made to the method.

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

A handwritten signature in black ink, appearing to read "Lisa A. Worthington".

Lisa A. Worthington  
Project Manager



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton

Sample Description:

Work Order: 16E0816

Date Received: 5/18/2016

**Field Sample #:** Pad Mount Transformer

Sampled: 5/18/2016 10:55

**Sample ID:** 16E0816-01Sample Matrix: Soil**Polychlorinated Biphenyls By GC/ECD**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.45	mg/Kg dry	20		SW-846 8082A	5/19/16	5/21/16 12:54	KAL
Aroclor-1221 [1]	ND	0.45	mg/Kg dry	20		SW-846 8082A	5/19/16	5/21/16 12:54	KAL
Aroclor-1232 [1]	ND	0.45	mg/Kg dry	20		SW-846 8082A	5/19/16	5/21/16 12:54	KAL
Aroclor-1242 [1]	ND	0.45	mg/Kg dry	20		SW-846 8082A	5/19/16	5/21/16 12:54	KAL
Aroclor-1248 [1]	ND	0.45	mg/Kg dry	20		SW-846 8082A	5/19/16	5/21/16 12:54	KAL
Aroclor-1254 [2]	1.6	0.45	mg/Kg dry	20		SW-846 8082A	5/19/16	5/21/16 12:54	KAL
Aroclor-1260 [2]	0.77	0.45	mg/Kg dry	20		SW-846 8082A	5/19/16	5/21/16 12:54	KAL
Aroclor-1262 [1]	ND	0.45	mg/Kg dry	20		SW-846 8082A	5/19/16	5/21/16 12:54	KAL
Aroclor-1268 [1]	ND	0.45	mg/Kg dry	20		SW-846 8082A	5/19/16	5/21/16 12:54	KAL
Surrogates	% Recovery		Recovery Limits		Flag/Qual				
Decachlorobiphenyl [1]	105		30-150					5/21/16 12:54	
Decachlorobiphenyl [2]	127		30-150					5/21/16 12:54	
Tetrachloro-m-xylene [1]	108		30-150					5/21/16 12:54	
Tetrachloro-m-xylene [2]	129		30-150					5/21/16 12:54	



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton

Sample Description:

Work Order: 16E0816

Date Received: 5/18/2016

**Field Sample #:** Pad Mount Transformer

Sampled: 5/18/2016 10:55

**Sample ID:** 16E0816-01Sample Matrix: Soil**Petroleum Hydrocarbons Analyses - EPH**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
C9-C18 Aliphatics	ND	11	mg/Kg dry	1		MADEP-EPH-04-1.1	5/19/16	5/23/16 8:04	SCS
C19-C36 Aliphatics	41	11	mg/Kg dry	1		MADEP-EPH-04-1.1	5/19/16	5/23/16 8:04	SCS
Unadjusted C11-C22 Aromatics	73	11	mg/Kg dry	1		MADEP-EPH-04-1.1	5/19/16	5/23/16 8:04	SCS
C11-C22 Aromatics	58	11	mg/Kg dry	1		MADEP-EPH-04-1.1	5/19/16	5/23/16 8:04	SCS
Acenaphthene	ND	0.11	mg/Kg dry	1		MADEP-EPH-04-1.1	5/19/16	5/23/16 8:04	SCS
Acenaphthylene	ND	0.11	mg/Kg dry	1		MADEP-EPH-04-1.1	5/19/16	5/23/16 8:04	SCS
Anthracene	0.30	0.11	mg/Kg dry	1		MADEP-EPH-04-1.1	5/19/16	5/23/16 8:04	SCS
Benzo(a)anthracene	1.1	0.11	mg/Kg dry	1		MADEP-EPH-04-1.1	5/19/16	5/23/16 8:04	SCS
Benzo(a)pyrene	1.2	0.11	mg/Kg dry	1		MADEP-EPH-04-1.1	5/19/16	5/23/16 8:04	SCS
Benzo(b)fluoranthene	1.9	0.11	mg/Kg dry	1		MADEP-EPH-04-1.1	5/19/16	5/23/16 8:04	SCS
Benzo(g,h,i)perylene	0.75	0.11	mg/Kg dry	1		MADEP-EPH-04-1.1	5/19/16	5/23/16 8:04	SCS
Benzo(k)fluoranthene	0.68	0.11	mg/Kg dry	1		MADEP-EPH-04-1.1	5/19/16	5/23/16 8:04	SCS
Chrysene	1.5	0.11	mg/Kg dry	1		MADEP-EPH-04-1.1	5/19/16	5/23/16 8:04	SCS
Dibenz(a,h)anthracene	ND	0.11	mg/Kg dry	1		MADEP-EPH-04-1.1	5/19/16	5/23/16 8:04	SCS
Fluoranthene	2.7	0.11	mg/Kg dry	1		MADEP-EPH-04-1.1	5/19/16	5/23/16 8:04	SCS
Fluorene	ND	0.11	mg/Kg dry	1		MADEP-EPH-04-1.1	5/19/16	5/23/16 8:04	SCS
Indeno(1,2,3-cd)pyrene	0.82	0.11	mg/Kg dry	1		MADEP-EPH-04-1.1	5/19/16	5/23/16 8:04	SCS
2-Methylnaphthalene	ND	0.11	mg/Kg dry	1		MADEP-EPH-04-1.1	5/19/16	5/23/16 8:04	SCS
Naphthalene	ND	0.11	mg/Kg dry	1		MADEP-EPH-04-1.1	5/19/16	5/23/16 8:04	SCS
Phenanthrene	1.5	0.11	mg/Kg dry	1		MADEP-EPH-04-1.1	5/19/16	5/23/16 8:04	SCS
Pyrene	2.7	0.11	mg/Kg dry	1		MADEP-EPH-04-1.1	5/19/16	5/23/16 8:04	SCS
Surrogates	% Recovery		Recovery Limits		Flag/Qual				
Chlorooctadecane (COD)	50.3		40-140					5/23/16 8:04	
o-Terphenyl (OTP)	59.1		40-140					5/23/16 8:04	
2-Bromonaphthalene	92.8		40-140					5/23/16 8:04	
2-Fluorobiphenyl	86.9		40-140					5/23/16 8:04	




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 39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton

Sample Description:

Work Order: 16E0816

Date Received: 5/18/2016

**Field Sample #:** Pad Mount Transformer

Sampled: 5/18/2016 10:55

**Sample ID:** 16E0816-01Sample Matrix: Soil

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**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	89.4		% Wt	1		SM 2540G	5/19/16	5/20/16 8:52	MRL



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton

Sample Description:

Work Order: 16E0816

Date Received: 5/18/2016

**Field Sample #:** Pole Mount Transformer

Sampled: 5/18/2016 11:00

**Sample ID:** 16E0816-02

Sample Matrix: Soil

**Polychlorinated Biphenyls By GC/ECD**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.12	mg/Kg dry	5		SW-846 8082A	5/19/16	5/21/16 13:07	KAL
Aroclor-1221 [1]	ND	0.12	mg/Kg dry	5		SW-846 8082A	5/19/16	5/21/16 13:07	KAL
Aroclor-1232 [1]	ND	0.12	mg/Kg dry	5		SW-846 8082A	5/19/16	5/21/16 13:07	KAL
Aroclor-1242 [1]	ND	0.12	mg/Kg dry	5		SW-846 8082A	5/19/16	5/21/16 13:07	KAL
Aroclor-1248 [1]	ND	0.12	mg/Kg dry	5		SW-846 8082A	5/19/16	5/21/16 13:07	KAL
Aroclor-1254 [1]	ND	0.12	mg/Kg dry	5		SW-846 8082A	5/19/16	5/21/16 13:07	KAL
Aroclor-1260 [2]	0.14	0.12	mg/Kg dry	5		SW-846 8082A	5/19/16	5/21/16 13:07	KAL
Aroclor-1262 [1]	ND	0.12	mg/Kg dry	5		SW-846 8082A	5/19/16	5/21/16 13:07	KAL
Aroclor-1268 [1]	ND	0.12	mg/Kg dry	5		SW-846 8082A	5/19/16	5/21/16 13:07	KAL
Surrogates	% Recovery		Recovery Limits		Flag/Qual				
Decachlorobiphenyl [1]	95.2		30-150					5/21/16 13:07	
<b>Decachlorobiphenyl [2]</b>	<b>158</b>	*	30-150		S-02			5/21/16 13:07	
Tetrachloro-m-xylene [1]	99.4		30-150					5/21/16 13:07	
Tetrachloro-m-xylene [2]	111		30-150					5/21/16 13:07	



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton

Sample Description:

Work Order: 16E0816

Date Received: 5/18/2016

**Field Sample #:** Pole Mount Transformer

Sampled: 5/18/2016 11:00

**Sample ID:** 16E0816-02Sample Matrix: Soil**Petroleum Hydrocarbons Analyses - EPH**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
C9-C18 Aliphatics	55	12	mg/Kg dry	1		MADEP-EPH-04-1.1	5/19/16	5/23/16 8:25	SCS
C19-C36 Aliphatics	110	12	mg/Kg dry	1		MADEP-EPH-04-1.1	5/19/16	5/23/16 8:25	SCS
Unadjusted C11-C22 Aromatics	140	12	mg/Kg dry	1		MADEP-EPH-04-1.1	5/19/16	5/23/16 8:25	SCS
C11-C22 Aromatics	120	12	mg/Kg dry	1		MADEP-EPH-04-1.1	5/19/16	5/23/16 8:25	SCS
Acenaphthene	ND	0.12	mg/Kg dry	1		MADEP-EPH-04-1.1	5/19/16	5/23/16 8:25	SCS
Acenaphthylene	ND	0.12	mg/Kg dry	1		MADEP-EPH-04-1.1	5/19/16	5/23/16 8:25	SCS
Anthracene	0.27	0.12	mg/Kg dry	1		MADEP-EPH-04-1.1	5/19/16	5/23/16 8:25	SCS
Benzo(a)anthracene	0.70	0.12	mg/Kg dry	1		MADEP-EPH-04-1.1	5/19/16	5/23/16 8:25	SCS
Benzo(a)pyrene	0.64	0.12	mg/Kg dry	1		MADEP-EPH-04-1.1	5/19/16	5/23/16 8:25	SCS
Benzo(b)fluoranthene	1.4	0.12	mg/Kg dry	1		MADEP-EPH-04-1.1	5/19/16	5/23/16 8:25	SCS
Benzo(g,h,i)perylene	0.58	0.12	mg/Kg dry	1		MADEP-EPH-04-1.1	5/19/16	5/23/16 8:25	SCS
Benzo(k)fluoranthene	0.47	0.12	mg/Kg dry	1		MADEP-EPH-04-1.1	5/19/16	5/23/16 8:25	SCS
Chrysene	1.1	0.12	mg/Kg dry	1		MADEP-EPH-04-1.1	5/19/16	5/23/16 8:25	SCS
Dibenz(a,h)anthracene	ND	0.12	mg/Kg dry	1		MADEP-EPH-04-1.1	5/19/16	5/23/16 8:25	SCS
Fluoranthene	2.5	0.12	mg/Kg dry	1		MADEP-EPH-04-1.1	5/19/16	5/23/16 8:25	SCS
Fluorene	ND	0.12	mg/Kg dry	1		MADEP-EPH-04-1.1	5/19/16	5/23/16 8:25	SCS
Indeno(1,2,3-cd)pyrene	0.48	0.12	mg/Kg dry	1		MADEP-EPH-04-1.1	5/19/16	5/23/16 8:25	SCS
2-Methylnaphthalene	ND	0.12	mg/Kg dry	1		MADEP-EPH-04-1.1	5/19/16	5/23/16 8:25	SCS
Naphthalene	ND	0.12	mg/Kg dry	1		MADEP-EPH-04-1.1	5/19/16	5/23/16 8:25	SCS
Phenanthrene	1.2	0.12	mg/Kg dry	1		MADEP-EPH-04-1.1	5/19/16	5/23/16 8:25	SCS
Pyrene	2.0	0.12	mg/Kg dry	1		MADEP-EPH-04-1.1	5/19/16	5/23/16 8:25	SCS
Surrogates	% Recovery		Recovery Limits		Flag/Qual				
Chlorooctadecane (COD)	48.6		40-140					5/23/16 8:25	
o-Terphenyl (OTP)	75.4		40-140					5/23/16 8:25	
2-Bromonaphthalene	133		40-140					5/23/16 8:25	
2-Fluorobiphenyl	131		40-140					5/23/16 8:25	




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 39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton

Sample Description:

Work Order: 16E0816

Date Received: 5/18/2016

**Field Sample #:** Pole Mount Transformer

Sampled: 5/18/2016 11:00

**Sample ID:** 16E0816-02Sample Matrix: Soil

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**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	86.8		% Wt	1		SM 2540G	5/19/16	5/20/16 8:52	MRL



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

### Sample Extraction Data

**Prep Method: SW-846 3546-MADEP-EPH-04-1.1**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
16E0816-01 [Pad Mount Transformer]	B149577	20.0	2.00	05/19/16
16E0816-02 [Pole Mount Transformer]	B149577	20.0	2.00	05/19/16

**Prep Method: % Solids-SM 2540G**

Lab Number [Field ID]	Batch	Date
16E0816-01 [Pad Mount Transformer]	B149584	05/19/16
16E0816-02 [Pole Mount Transformer]	B149584	05/19/16

**Prep Method: SW-846 3546-SW-846 8082A**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
16E0816-01 [Pad Mount Transformer]	B149569	10.0	10.0	05/19/16
16E0816-02 [Pole Mount Transformer]	B149569	10.0	10.0	05/19/16



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

**QUALITY CONTROL****Polychlorinated Biphenyls By GC/ECD - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD RPD	RPD Limit	Notes
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**Batch B149569 - SW-846 3546**

<b>Blank (B149569-BLK1)</b>										Prepared: 05/19/16 Analyzed: 05/20/16
Aroclor-1016	ND	0.020	mg/Kg wet							
Aroclor-1016 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1221	ND	0.020	mg/Kg wet							
Aroclor-1221 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1232	ND	0.020	mg/Kg wet							
Aroclor-1232 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1242	ND	0.020	mg/Kg wet							
Aroclor-1242 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1248	ND	0.020	mg/Kg wet							
Aroclor-1248 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1254	ND	0.020	mg/Kg wet							
Aroclor-1254 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1260	ND	0.020	mg/Kg wet							
Aroclor-1260 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1262	ND	0.020	mg/Kg wet							
Aroclor-1262 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1268	ND	0.020	mg/Kg wet							
Aroclor-1268 [2C]	ND	0.020	mg/Kg wet							
Surrogate: Decachlorobiphenyl	0.185		mg/Kg wet	0.200		92.7		30-150		
Surrogate: Decachlorobiphenyl [2C]	0.209		mg/Kg wet	0.200		104		30-150		
Surrogate: Tetrachloro-m-xylene	0.192		mg/Kg wet	0.200		96.2		30-150		
Surrogate: Tetrachloro-m-xylene [2C]	0.201		mg/Kg wet	0.200		101		30-150		

<b>LCS (B149569-BS1)</b>										Prepared: 05/19/16 Analyzed: 05/20/16
Aroclor-1016	0.17	0.020	mg/Kg wet	0.200		83.5		40-140		
Aroclor-1016 [2C]	0.19	0.020	mg/Kg wet	0.200		94.4		40-140		
Aroclor-1260	0.16	0.020	mg/Kg wet	0.200		81.9		40-140		
Aroclor-1260 [2C]	0.18	0.020	mg/Kg wet	0.200		91.5		40-140		
Surrogate: Decachlorobiphenyl	0.185		mg/Kg wet	0.200		92.3		30-150		
Surrogate: Decachlorobiphenyl [2C]	0.208		mg/Kg wet	0.200		104		30-150		
Surrogate: Tetrachloro-m-xylene	0.189		mg/Kg wet	0.200		94.7		30-150		
Surrogate: Tetrachloro-m-xylene [2C]	0.200		mg/Kg wet	0.200		99.8		30-150		

<b>LCS Dup (B149569-BSD1)</b>										Prepared: 05/19/16 Analyzed: 05/20/16
Aroclor-1016	0.17	0.020	mg/Kg wet	0.200		85.6		40-140	2.39	30
Aroclor-1016 [2C]	0.20	0.020	mg/Kg wet	0.200		97.6		40-140	3.36	30
Aroclor-1260	0.17	0.020	mg/Kg wet	0.200		83.8		40-140	2.30	30
Aroclor-1260 [2C]	0.19	0.020	mg/Kg wet	0.200		94.6		40-140	3.28	30
Surrogate: Decachlorobiphenyl	0.187		mg/Kg wet	0.200		93.4		30-150		
Surrogate: Decachlorobiphenyl [2C]	0.211		mg/Kg wet	0.200		106		30-150		
Surrogate: Tetrachloro-m-xylene	0.191		mg/Kg wet	0.200		95.6		30-150		
Surrogate: Tetrachloro-m-xylene [2C]	0.203		mg/Kg wet	0.200		101		30-150		

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

**QUALITY CONTROL****Petroleum Hydrocarbons Analyses - EPH - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD RPD	RPD Limit	Notes
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**Batch B149577 - SW-846 3546**

<b>Blank (B149577-BLK1)</b>	Prepared & Analyzed: 05/19/16					
C9-C18 Aliphatics	ND	10	mg/Kg wet			
C19-C36 Aliphatics	ND	10	mg/Kg wet			
Unadjusted C11-C22 Aromatics	ND	10	mg/Kg wet			
C11-C22 Aromatics	ND	10	mg/Kg wet			
Acenaphthene	ND	0.10	mg/Kg wet			
Acenaphthylene	ND	0.10	mg/Kg wet			
Anthracene	ND	0.10	mg/Kg wet			
Benzo(a)anthracene	ND	0.10	mg/Kg wet			
Benzo(a)pyrene	ND	0.10	mg/Kg wet			
Benzo(b)fluoranthene	ND	0.10	mg/Kg wet			
Benzo(g,h,i)perylene	ND	0.10	mg/Kg wet			
Benzo(k)fluoranthene	ND	0.10	mg/Kg wet			
Chrysene	ND	0.10	mg/Kg wet			
Dibenz(a,h)anthracene	ND	0.10	mg/Kg wet			
Fluoranthene	ND	0.10	mg/Kg wet			
Fluorene	ND	0.10	mg/Kg wet			
Indeno(1,2,3-cd)pyrene	ND	0.10	mg/Kg wet			
2-Methylnaphthalene	ND	0.10	mg/Kg wet			
Naphthalene	ND	0.10	mg/Kg wet			
Phenanthrene	ND	0.10	mg/Kg wet			
Pyrene	ND	0.10	mg/Kg wet			
n-Decane	ND	0.10	mg/Kg wet			
n-Docosane	ND	0.10	mg/Kg wet			
n-Dodecane	ND	0.10	mg/Kg wet			
n-Eicosane	ND	0.10	mg/Kg wet			
n-Hexacosane	ND	0.10	mg/Kg wet			
n-Hexadecane	ND	0.10	mg/Kg wet			
n-Hexatriacontane	ND	0.10	mg/Kg wet			
n-Nonadecane	ND	0.10	mg/Kg wet			
n-Nonane	ND	0.10	mg/Kg wet			
n-Octacosane	ND	0.10	mg/Kg wet			
n-Octadecane	ND	0.10	mg/Kg wet			
n-Tetracosane	ND	0.10	mg/Kg wet			
n-Tetradecane	ND	0.10	mg/Kg wet			
n-Triacontane	ND	0.10	mg/Kg wet			
Naphthalene-aliphatic fraction	ND	0.10	mg/Kg wet			
2-Methylnaphthalene-aliphatic fraction	ND	0.10	mg/Kg wet			
Surrogate: Chlorooctadecane (COD)	2.56	mg/Kg wet	4.99	51.3	40-140	
Surrogate: o-Terphenyl (OTP)	3.42	mg/Kg wet	5.00	68.3	40-140	
Surrogate: 2-Bromonaphthalene	4.35	mg/Kg wet	5.00	87.0	40-140	
Surrogate: 2-Fluorobiphenyl	4.15	mg/Kg wet	5.00	82.9	40-140	

<b>LCS (B149577-BS1)</b>	Prepared & Analyzed: 05/19/16					
Acenaphthene	3.82	0.10	mg/Kg wet	5.00	76.4	40-140
Acenaphthylene	3.56	0.10	mg/Kg wet	5.00	71.2	40-140
Anthracene	4.47	0.10	mg/Kg wet	5.00	89.3	40-140
Benzo(a)anthracene	3.99	0.10	mg/Kg wet	5.00	79.7	40-140
Benzo(a)pyrene	3.93	0.10	mg/Kg wet	5.00	78.6	40-140
Benzo(b)fluoranthene	3.97	0.10	mg/Kg wet	5.00	79.4	40-140
Benzo(g,h,i)perylene	3.90	0.10	mg/Kg wet	5.00	78.0	40-140
Benzo(k)fluoranthene	3.97	0.10	mg/Kg wet	5.00	79.4	40-140
Chrysene	4.02	0.10	mg/Kg wet	5.00	80.5	40-140



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

**QUALITY CONTROL****Petroleum Hydrocarbons Analyses - EPH - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B149577 - SW-846 3546</b>										
<b>LCS (B149577-BS1)</b>										
Prepared & Analyzed: 05/19/16										
Dibenz(a,h)anthracene	4.10	0.10	mg/Kg wet	5.00	82.0	40-140				
Fluoranthene	4.01	0.10	mg/Kg wet	5.00	80.2	40-140				
Fluorene	3.88	0.10	mg/Kg wet	5.00	77.6	40-140				
Indeno(1,2,3-cd)pyrene	3.86	0.10	mg/Kg wet	5.00	77.1	40-140				
2-Methylnaphthalene	3.29	0.10	mg/Kg wet	5.00	65.8	40-140				
Naphthalene	3.17	0.10	mg/Kg wet	5.00	63.3	40-140				
Phenanthrene	4.00	0.10	mg/Kg wet	5.00	80.0	40-140				
Pyrene	4.01	0.10	mg/Kg wet	5.00	80.3	40-140				
n-Decane	2.37	0.10	mg/Kg wet	5.00	47.5	40-140				
n-Docosane	3.38	0.10	mg/Kg wet	5.00	67.6	40-140				
n-Dodecane	2.78	0.10	mg/Kg wet	5.00	55.6	40-140				
n-Eicosane	3.55	0.10	mg/Kg wet	5.00	71.0	40-140				
n-Hexacosane	3.44	0.10	mg/Kg wet	5.00	68.9	40-140				
n-Hexadecane	3.44	0.10	mg/Kg wet	5.00	68.9	40-140				
n-Hexatriacontane	3.49	0.10	mg/Kg wet	5.00	69.8	40-140				
n-Nonadecane	3.55	0.10	mg/Kg wet	5.00	71.0	40-140				
n-Nonane	1.89	0.10	mg/Kg wet	5.00	37.8	30-140				
n-Octacosane	3.44	0.10	mg/Kg wet	5.00	68.9	40-140				
n-Octadecane	3.55	0.10	mg/Kg wet	5.00	71.1	40-140				
n-Tetracosane	3.74	0.10	mg/Kg wet	5.00	74.7	40-140				
n-Tetradecane	3.11	0.10	mg/Kg wet	5.00	62.2	40-140				
n-Triacontane	3.50	0.10	mg/Kg wet	5.00	70.1	40-140				
Naphthalene-aliphatic fraction	ND	0.10	mg/Kg wet	5.00		0-5				
2-Methylnaphthalene-aliphatic fraction	ND	0.10	mg/Kg wet	5.00		0-5				
Surrogate: Chlorooctadecane (COD)	3.02		mg/Kg wet	4.99	60.6	40-140				
Surrogate: o-Terphenyl (OTP)	3.90		mg/Kg wet	5.00	78.0	40-140				
Surrogate: 2-Bromonaphthalene	4.97		mg/Kg wet	5.00	99.4	40-140				
Surrogate: 2-Fluorobiphenyl	4.87		mg/Kg wet	5.00	97.4	40-140				
<b>LCS Dup (B149577-BS1D)</b>										
Prepared & Analyzed: 05/19/16										
Acenaphthene	3.91	0.10	mg/Kg wet	5.00	78.1	40-140	2.32	25		
Acenaphthylene	3.66	0.10	mg/Kg wet	5.00	73.3	40-140	2.93	25		
Anthracene	4.45	0.10	mg/Kg wet	5.00	89.0	40-140	0.292	25		
Benzo(a)anthracene	3.97	0.10	mg/Kg wet	5.00	79.5	40-140	0.322	25		
Benzo(a)pyrene	3.91	0.10	mg/Kg wet	5.00	78.2	40-140	0.587	25		
Benzo(b)fluoranthene	3.94	0.10	mg/Kg wet	5.00	78.8	40-140	0.713	25		
Benzo(g,h,i)perylene	3.80	0.10	mg/Kg wet	5.00	76.0	40-140	2.65	25		
Benzo(k)fluoranthene	3.95	0.10	mg/Kg wet	5.00	79.0	40-140	0.477	25		
Chrysene	3.99	0.10	mg/Kg wet	5.00	79.8	40-140	0.803	25		
Dibenz(a,h)anthracene	3.99	0.10	mg/Kg wet	5.00	79.8	40-140	2.75	25		
Fluoranthene	3.99	0.10	mg/Kg wet	5.00	79.8	40-140	0.505	25		
Fluorene	3.93	0.10	mg/Kg wet	5.00	78.5	40-140	1.24	25		
Indeno(1,2,3-cd)pyrene	3.82	0.10	mg/Kg wet	5.00	76.3	40-140	1.03	25		
2-Methylnaphthalene	3.42	0.10	mg/Kg wet	5.00	68.3	40-140	3.68	25		
Naphthalene	3.29	0.10	mg/Kg wet	5.00	65.7	40-140	3.73	25		
Phenanthrene	4.01	0.10	mg/Kg wet	5.00	80.2	40-140	0.217	25		
Pyrene	3.99	0.10	mg/Kg wet	5.00	79.8	40-140	0.592	25		
n-Decane	2.45	0.10	mg/Kg wet	5.00	48.9	40-140	2.98	25		
n-Docosane	3.36	0.10	mg/Kg wet	5.00	67.1	40-140	0.710	25		
n-Dodecane	2.87	0.10	mg/Kg wet	5.00	57.5	40-140	3.33	25		
n-Eicosane	3.48	0.10	mg/Kg wet	5.00	69.7	40-140	1.88	25		
n-Hexacosane	3.37	0.10	mg/Kg wet	5.00	67.3	40-140	2.24	25		



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**QUALITY CONTROL****Petroleum Hydrocarbons Analyses - EPH - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B149577 - SW-846 3546**

LCS Dup (B149577-BSD1)									
Prepared & Analyzed: 05/19/16									
Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
n-Hexadecane	3.41	0.10	mg/Kg wet	5.00	68.2	40-140	1.07	25	
n-Hexatriacontane	3.41	0.10	mg/Kg wet	5.00	68.3	40-140	2.21	25	
n-Nonadecane	3.48	0.10	mg/Kg wet	5.00	69.6	40-140	1.89	25	
n-Nonane	1.94	0.10	mg/Kg wet	5.00	38.7	30-140	2.51	25	
n-Octacosane	3.36	0.10	mg/Kg wet	5.00	67.1	40-140	2.51	25	
n-Octadecane	3.49	0.10	mg/Kg wet	5.00	69.8	40-140	1.86	25	
n-Tetracosane	3.67	0.10	mg/Kg wet	5.00	73.5	40-140	1.71	25	
n-Tetradecane	3.17	0.10	mg/Kg wet	5.00	63.5	40-140	2.10	25	
n-Triacontane	3.42	0.10	mg/Kg wet	5.00	68.4	40-140	2.49	25	
Naphthalene-aliphatic fraction	ND	0.10	mg/Kg wet	5.00		0-5			
2-Methylnaphthalene-aliphatic fraction	ND	0.10	mg/Kg wet	5.00		0-5			
Surrogate: Chlorooctadecane (COD)	2.91		mg/Kg wet	4.99	58.3	40-140			
Surrogate: o-Terphenyl (OTP)	3.82		mg/Kg wet	5.00	76.4	40-140			
Surrogate: 2-Bromonaphthalene	4.70		mg/Kg wet	5.00	94.1	40-140			
Surrogate: 2-Fluorobiphenyl	4.61		mg/Kg wet	5.00	92.2	40-140			



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#### QUALITY CONTROL

##### Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD RPD	Limit Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	---------	-------------

##### Batch B149584 - % Solids

Duplicate (B149584-DUP4)	<b>Source: 16E0816-01</b>			Prepared: 05/19/16 Analyzed: 05/20/16				
% Solids	89.0		% Wt		89.4		0.448	20



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**  
**SW-846 8082A**

**Pad Mount Transformer**

Lab Sample ID: 16E0816-01 Date(s) Analyzed: 05/21/2016 05/21/2016

Instrument ID (1):  Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1254	1	0.00	0.00	0.00	1.6	
	2	0.00	0.00	0.00	1.6	1.3
Aroclor-1260	1	0.00	0.00	0.00	0.63	
	2	0.00	0.00	0.00	0.77	20.8



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**

*SW-846 8082A*

LCS

Lab Sample ID: B149569-BS1 Date(s) Analyzed: 05/20/2016 05/20/2016

Instrument ID (1): \_\_\_\_\_ Instrument ID (2): \_\_\_\_\_

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1016	1	0.00	0.00	0.00	0.17	
	2	0.00	0.00	0.00	0.19	13
Aroclor-1260	1	0.00	0.00	0.00	0.16	
	2	0.00	0.00	0.00	0.18	9



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES****LCS Dup****SW-846 8082A**Lab Sample ID: B149569-BSD1 Date(s) Analyzed: 05/20/2016 05/20/2016Instrument ID (1):  Instrument ID (2): 

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1016	1	0.00	0.00	0.00	0.17	
	2	0.00	0.00	0.00	0.20	16
Aroclor-1260	1	0.00	0.00	0.00	0.17	
	2	0.00	0.00	0.00	0.19	12



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**FLAG/QUALIFIER SUMMARY**

- \* QC result is outside of established limits.
- † Wide recovery limits established for difficult compound.
- ‡ Wide RPD limits established for difficult compound.
- # Data exceeded client recommended or regulatory level
- ND Not Detected
- RL Reporting Limit
- DL Method Detection Limit
- MCL Maximum Contaminant Level

Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.

No results have been blank subtracted unless specified in the case narrative section.

- S-02 The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.



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#### CERTIFICATIONS

##### Certified Analyses included in this Report

Analyte	Certifications
<b><i>MADEP-EPH-04-1.1 in Soil</i></b>	
C9-C18 Aliphatics	CT,NC,ME,NH-P
C19-C36 Aliphatics	CT,NC,ME,NH-P
Unadjusted C11-C22 Aromatics	CT,NC,ME,NH-P
C11-C22 Aromatics	CT,NC,ME,NH-P
Acenaphthene	CT,NC,ME,NH-P
Acenaphthylene	CT,NC,ME,NH-P
Anthracene	CT,NC,ME,NH-P
Benzo(a)anthracene	CT,NC,ME,NH-P
Benzo(a)pyrene	CT,NC,ME,NH-P
Benzo(b)fluoranthene	CT,NC,ME,NH-P
Benzo(g,h,i)perylene	CT,NC,ME,NH-P
Benzo(k)fluoranthene	CT,NC,ME,NH-P
Chrysene	CT,NC,ME,NH-P
Dibenz(a,h)anthracene	CT,NC,ME,NH-P
Fluoranthene	CT,NC,ME,NH-P
Fluorene	CT,NC,ME
Indeno(1,2,3-cd)pyrene	CT,NC,ME,NH-P
2-Methylnaphthalene	CT,NC,ME
Naphthalene	CT,NC,ME,NH-P
Phenanthrene	CT,NC,ME,NH-P
Pyrene	CT,NC,ME,NH-P
<b><i>SW-846 8082A in Soil</i></b>	
Aroclor-1016	CT,NH,NY,NC,ME,VA
Aroclor-1016 [2C]	CT,NH,NY,NC,ME,VA
Aroclor-1221	CT,NH,NY,NC,ME,VA
Aroclor-1221 [2C]	CT,NH,NY,NC,ME,VA
Aroclor-1232	CT,NH,NY,NC,ME,VA
Aroclor-1232 [2C]	CT,NH,NY,NC,ME,VA
Aroclor-1242	CT,NH,NY,NC,ME,VA
Aroclor-1242 [2C]	CT,NH,NY,NC,ME,VA
Aroclor-1248	CT,NH,NY,NC,ME,VA
Aroclor-1248 [2C]	CT,NH,NY,NC,ME,VA
Aroclor-1254	CT,NH,NY,NC,ME,VA
Aroclor-1254 [2C]	CT,NH,NY,NC,ME,VA
Aroclor-1260	CT,NH,NY,NC,ME,VA
Aroclor-1260 [2C]	CT,NH,NY,NC,ME,VA
Aroclor-1262	NH,NY,NC,ME,VA
Aroclor-1262 [2C]	NH,NY,NC,ME,VA
Aroclor-1268	NH,NY,NC,ME,VA
Aroclor-1268 [2C]	NH,NY,NC,ME,VA




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The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC	100033	02/1/2018
MA	Massachusetts DEP	M-MA100	06/30/2016
CT	Connecticut Department of Public Health	PH-0567	09/30/2017
NY	New York State Department of Health	10899 NELAP	04/1/2017
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2017
RI	Rhode Island Department of Health	LAO00112	12/30/2016
NC	North Carolina Div. of Water Quality	652	12/31/2016
NJ	New Jersey DEP	MA007 NELAP	06/30/2016
FL	Florida Department of Health	E871027 NELAP	06/30/2016
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2016
ME	State of Maine	2011028	06/9/2017
VA	Commonwealth of Virginia	460217	12/14/2016
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2016



39 Spruce St.  
East Longmeadow, MA. 01028  
P: 413-525-2332  
F: 413-525-6405  
[www.contestlabs.com](http://www.contestlabs.com)



Page 1 of 2

Sample Receipt Checklist

CLIENT NAME: Cushing, Jimmo RECEIVED BY: VE DATE: 5/18/16

1) Was the chain(s) of custody relinquished and signed?  Yes  No No CoC Included

2) Does the chain agree with the samples?  Yes  No

If not, explain:

3) Are all the samples in good condition?  Yes  No

If not, explain:

4) How were the samples received:

On Ice  Direct from Sampling  Ambient  In Cooler(s)

Were the samples received in Temperature Compliance of (2-6°C)?  Yes  No N/A

Temperature °C by Temp blank \_\_\_\_\_ Temperature °C by Temp gun 4.2

5) Are there Dissolved samples for the lab to filter?  Yes  No

Who was notified \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

6) Are there any RUSH or SHORT HOLDING TIME samples?  Yes  No

Who was notified \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

7) Location where samples are stored: 19 Permission to subcontract samples? Yes  No

(Walk-in clients only) if not already approved

Client Signature:

8) Do all samples have the proper Acid pH: Yes  No  N/A

9) Do all samples have the proper Base pH: Yes  No  N/A

10) Was the PC notified of any discrepancies with the CoC vs the samples: Yes  No  N/A

**Containers received at Con-Test**

	# of containers		# of containers
1 Liter Amber		8 oz amber/clear jar	<u>4</u>
500 mL Amber		4 oz amber/clear jar	
250 mL Amber (8oz amber)		2 oz amber/clear jar	
1 Liter Plastic		Plastic Bag / Ziploc	
500 mL Plastic		SOC Kit	
250 mL plastic		Non-ConTest Container	
40 mL Vial - type listed below		Perchlorate Kit	
Colisure / bacteria bottle		Flashpoint bottle	
Dissolved Oxygen bottle		Other glass jar	
Encore		Other	

Laboratory Comments:

40 mL vials: # HCl _____	# Methanol _____	Time and Date Frozen:
Doc# 277 # Bisulfate _____	# DI Water _____	
Rev. 4 August 2013 # Thiosulfate _____	Unpreserved _____	

Page 2 of 2

Login Sample Receipt Checklist

(Rejection Criteria Listing - Using Sample Acceptance Policy)  
**Any False statement will be brought to the attention of Client**

<u>Question</u>	<u>Answer (True/False)</u>	<u>Comment</u>
	T/F/NA	
1) The cooler's custody seal, if present, is intact.	NA	
2) The cooler or samples do not appear to have been compromised or tampered with.	T	
3) Samples were received on ice.	T	
4) Cooler Temperature is acceptable.	T	
5) Cooler Temperature is recorded.	T	
6) COC is filled out in ink and legible.	T	
7) COC is filled out with all pertinent information.	T	
8) Field Sampler's name present on COC.	T	
9) There are no discrepancies between the sample IDs on the container and the COC.	T	
10) Samples are received within Holding Time.	T	
11) Sample containers have legible labels.	T	
12) Containers are not broken or leaking.	T	
13) Air Cassettes are not broken/open.	NA	
14) Sample collection date/times are provided.	T	
15) Appropriate sample containers are used.	T	
16) Proper collection media used.	T	
17) No headspace sample bottles are completely filled.	T	
18) There is sufficient volume for all requested analyses, including any requested MS/MSDs.	T	
19) Trip blanks provided if applicable.	NA	
20) VOA sample vials do not have head space or bubble is <6mm (1/4") in diameter.	NA	
21) Samples do not require splitting or compositing.	T	

Who notified of False statements?

Doc #277 Rev. 4 August 2013

Log-In Technician Initials:

VR

Date/Time:

Date/Time: 5/18/16 1730

## MADEP MCP Analytical Method Report Certification Form

Laboratory Name:	Con-Test Analytical Laboratory	Project #:	16E0816
Project Location:	179 Brook St., Clinton	RTN:	

This Form provides certifications for the following data set: [list Laboratory Sample ID Number(s)]

16E0816-01 thru 16E0816-02

Matrices: Soil

**CAM Protocol (check all that below)**

8260 VOC CAM II A ()	7470/7471 Hg CAM IIIB ()	MassDEP VPH CAM IV A ()	8081 Pesticides CAM V B ()	7196 Hex Cr CAM VI B ()	MassDEP APH CAM IX A ()
8270 SVOC CAM II B ()	7010 Metals CAM III C ()	MassDEP EPH CAM IV A (X)	8151 Herbicides CAM V C ()	8330 Explosives CAM VIII A ()	TO-15 VOC CAM IX B ()
6010 Metals CAM III A ()	6020 Metals CAM III D ()	8082 PCB CAM V A (X)	9014 Total Cyanide/PAC CAM VI A ()	6860 Perchlorate CAM VIII B ()	

**Affirmative response to Questions A through F is required for "Presumptive Certainty" status**

<b>A</b>	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>B</b>	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>C</b>	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>D</b>	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>E a</b>	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>E b</b>	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	<input type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>F</b>	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all No responses to Questions A through E)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>

**A response to questions G, H and I below is required for "Presumptive Certainty" status**

<b>G</b>	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
----------	---	--

**Data User Note: Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.**

<b>H</b>	Were all QC performance standards specified in the CAM protocol(s) achieved?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <sup>1</sup>
<b>I</b>	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>

<sup>1</sup> All Negative responses must be addressed in an attached Environmental Laboratory case narrative.

**I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.**

Signature:		Position:	Project Manager
Printed Name:	Lisa A. Worthington	Date:	05/25/16

August 15, 2016

Mike Bloom  
Cushing, Jammallo & Wheeler  
464 High Street  
Clinton, MA 01510

Project Location: 179 Brook St., Clinton, MA

Client Job Number:

Project Number: 5812 (D)

Laboratory Work Order Number: 16H0431

Enclosed are results of analyses for samples received by the laboratory on August 9, 2016. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Meghan E. Kelley  
Project Manager

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Cushing, Jammallo & Wheeler  
464 High Street  
Clinton, MA 01510  
ATTN: Mike Bloom

REPORT DATE: 8/15/2016

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 5812 (D)

**ANALYTICAL SUMMARY**

WORK ORDER NUMBER: 16H0431

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: 179 Brook St., Clinton, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
S-1 0-6" Bg	16H0431-01	Soil		SM 2540G	
				SW-846 8082A	
S-1 6-12" Bg	16H0431-02	Soil		SM 2540G	
				SW-846 8082A	
S-2 0-6" Bg	16H0431-03	Soil		SM 2540G	
				SW-846 8082A	
S-2 6-12" Bg	16H0431-04	Soil		SM 2540G	
				SW-846 8082A	
S-3 0-6" Bg	16H0431-05	Soil		SM 2540G	
				SW-846 8082A	
S-3 6-12" Bg	16H0431-06	Soil		SM 2540G	
				SW-846 8082A	
S-4 0-6" Bg	16H0431-07	Soil		SM 2540G	
				SW-846 8082A	
S-4 6-12" Bg	16H0431-08	Soil		SM 2540G	
				SW-846 8082A	
S-5 0-6" Bg	16H0431-09	Soil		SM 2540G	
				SW-846 8082A	
S-6 0-6" Bg	16H0431-10	Soil		SM 2540G	
				SW-846 8082A	
S-7 0-6" Bg	16H0431-11	Soil		SM 2540G	
				SW-846 8082A	

#### CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

#### SW-846 8082A

##### **Qualifications:**

##### **MS-21**

Matrix spike and/or spike duplicate recovery bias high due to contribution of other Aroclors present in the source sample.

##### **Analyte & Samples(s) Qualified:**

##### **Aroclor-1260**

B155672-MS1, B155672-MSD1

##### **Aroclor-1260 [2C]**

B155672-MS1, B155672-MSD1

##### **O-32**

A dilution was performed as part of the standard analytical procedure.

##### **Analyte & Samples(s) Qualified:**

16H0431-04[S-2 6-12" Bg], 16H0431-08[S-4 6-12" Bg]

##### **P-01**

Result was confirmed using a dissimilar column. Relative percent difference between the two results was >40%. In accordance with the method, the higher result was reported.

##### **Analyte & Samples(s) Qualified:**

##### **Aroclor-1254 [2C]**

16H0431-09[S-5 0-6" Bg]

##### **S-01**

The surrogate recovery for this sample is not available due to sample dilution below the surrogate reporting limit required from high analyte concentration and/or matrix interferences.

##### **Analyte & Samples(s) Qualified:**

##### **Decachlorobiphenyl**

16H0431-01[S-1 0-6" Bg]

##### **Decachlorobiphenyl [2C]**

16H0431-01[S-1 0-6" Bg]

##### **Tetrachloro-m-xylene**

16H0431-01[S-1 0-6" Bg]

##### **Tetrachloro-m-xylene [2C]**

16H0431-01[S-1 0-6" Bg]

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.



Lisa A. Worthington  
Project Manager



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16H0431

Date Received: 8/9/2016

Field Sample #: S-1 0-6" Bg

Sampled: 8/9/2016 10:40

Sample ID: 16H0431-01

Sample Matrix: Soil

**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	2.1	mg/Kg dry	100		SW-846 8082A	8/9/16	8/11/16 13:00	KAL
Aroclor-1221 [1]	ND	2.1	mg/Kg dry	100		SW-846 8082A	8/9/16	8/11/16 13:00	KAL
Aroclor-1232 [1]	ND	2.1	mg/Kg dry	100		SW-846 8082A	8/9/16	8/11/16 13:00	KAL
Aroclor-1242 [1]	ND	2.1	mg/Kg dry	100		SW-846 8082A	8/9/16	8/11/16 13:00	KAL
Aroclor-1248 [1]	ND	2.1	mg/Kg dry	100		SW-846 8082A	8/9/16	8/11/16 13:00	KAL
Aroclor-1254 [2]	9.3	2.1	mg/Kg dry	100		SW-846 8082A	8/9/16	8/11/16 13:00	KAL
Aroclor-1260 [2]	3.6	2.1	mg/Kg dry	100		SW-846 8082A	8/9/16	8/11/16 13:00	KAL
Aroclor-1262 [1]	ND	2.1	mg/Kg dry	100		SW-846 8082A	8/9/16	8/11/16 13:00	KAL
Aroclor-1268 [1]	ND	2.1	mg/Kg dry	100		SW-846 8082A	8/9/16	8/11/16 13:00	KAL
Surrogates	% Recovery		Recovery Limits		Flag/Qual				
Decachlorobiphenyl [1]	*		30-150		S-01			8/11/16 13:00	
Decachlorobiphenyl [2]	*		30-150		S-01			8/11/16 13:00	
Tetrachloro-m-xylene [1]	*		30-150		S-01			8/11/16 13:00	
Tetrachloro-m-xylene [2]	*		30-150		S-01			8/11/16 13:00	



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16H0431

Date Received: 8/9/2016

Sampled: 8/9/2016 10:40

**Field Sample #:** S-1 0-6" Bg

Sample ID: 16H0431-01

Sample Matrix: Soil

**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	92.2		% Wt	1		SM 2540G	8/10/16	8/11/16 8:28	MRL



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16H0431

Date Received: 8/9/2016

Field Sample #: S-1 6-12" Bg

Sampled: 8/9/2016 10:45

Sample ID: 16H0431-02

Sample Matrix: Soil

**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.53	mg/Kg dry	25		SW-846 8082A	8/9/16	8/11/16 11:10	KAL
Aroclor-1221 [1]	ND	0.53	mg/Kg dry	25		SW-846 8082A	8/9/16	8/11/16 11:10	KAL
Aroclor-1232 [1]	ND	0.53	mg/Kg dry	25		SW-846 8082A	8/9/16	8/11/16 11:10	KAL
Aroclor-1242 [1]	ND	0.53	mg/Kg dry	25		SW-846 8082A	8/9/16	8/11/16 11:10	KAL
Aroclor-1248 [1]	ND	0.53	mg/Kg dry	25		SW-846 8082A	8/9/16	8/11/16 11:10	KAL
Aroclor-1254 [2]	2.3	0.53	mg/Kg dry	25		SW-846 8082A	8/9/16	8/11/16 11:10	KAL
Aroclor-1260 [2]	0.80	0.53	mg/Kg dry	25		SW-846 8082A	8/9/16	8/11/16 11:10	KAL
Aroclor-1262 [1]	ND	0.53	mg/Kg dry	25		SW-846 8082A	8/9/16	8/11/16 11:10	KAL
Aroclor-1268 [1]	ND	0.53	mg/Kg dry	25		SW-846 8082A	8/9/16	8/11/16 11:10	KAL
Surrogates	% Recovery		Recovery Limits		Flag/Qual				
Decachlorobiphenyl [1]	86.0		30-150					8/11/16 11:10	
Decachlorobiphenyl [2]	89.1		30-150					8/11/16 11:10	
Tetrachloro-m-xylene [1]	74.4		30-150					8/11/16 11:10	
Tetrachloro-m-xylene [2]	78.7		30-150					8/11/16 11:10	



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16H0431

Date Received: 8/9/2016

**Field Sample #:** S-1 6-12" Bg

Sampled: 8/9/2016 10:45

**Sample ID:** 16H0431-02

Sample Matrix: Soil

**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	90.9		% Wt	1		SM 2540G	8/10/16	8/11/16 8:28	MRL



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

### Sample Description:

Work Order: 16H0431

Date Received: 8/9/2016

**Field Sample #: S-2 0-6" Bg**

Sampled: 8/9/2016 10:55

**Sample ID:** 16H0431-

## Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time	
								Analyzed	Analyst
Aroclor-1016 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 10:34	KAL
Aroclor-1221 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 10:34	KAL
Aroclor-1232 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 10:34	KAL
Aroclor-1242 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 10:34	KAL
Aroclor-1248 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 10:34	KAL
Aroclor-1254 [2]	0.26	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 10:34	KAL
Aroclor-1260 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 10:34	KAL
Aroclor-1262 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 10:34	KAL
Aroclor-1268 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 10:34	KAL
Surrogates	% Recovery	Recovery Limits			Flag/Qual				
Decachlorobiphenyl [1]	72.4	30-150						8/11/16 10:34	
Decachlorobiphenyl [2]	75.5	30-150						8/11/16 10:34	
Tetrachloro-m-xylene [1]	66.8	30-150						8/11/16 10:34	
Tetrachloro-m-xylene [2]	70.8	30-150						8/11/16 10:34	



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16H0431

Date Received: 8/9/2016

**Field Sample #:** S-2 0-6" Bg

Sampled: 8/9/2016 10:55

**Sample ID:** 16H0431-03

Sample Matrix: Soil

**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	94.8		% Wt	1		SM 2540G	8/10/16	8/11/16 8:28	MRL



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

### Sample Description:

Work Order: 16H0431

Date Received: 8/9/2016

Sampled: 8/9/2016 11:00

Field Sample #: S-2 0-12 Bg

Sample ID: 10H0451-04

### Sample Matrix: Son

### Sample Flags: U-32

## **Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date	Date/Time	
							Prepared	Analyzed	Analyst
Aroclor-1016 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/10/16 23:56	KAL
Aroclor-1221 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/10/16 23:56	KAL
Aroclor-1232 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/10/16 23:56	KAL
Aroclor-1242 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/10/16 23:56	KAL
Aroclor-1248 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/10/16 23:56	KAL
Aroclor-1254 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/10/16 23:56	KAL
Aroclor-1260 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/10/16 23:56	KAL
Aroclor-1262 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/10/16 23:56	KAL
Aroclor-1268 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/10/16 23:56	KAL
Surrogates		% Recovery	Recovery Limits		Flag/Qual				
Decachlorobiphenyl [1]		64.2	30-150						
Decachlorobiphenyl [2]		65.6	30-150						
Tetrachloro-m-xylene [1]		59.6	30-150						
Tetrachloro-m-xylene [2]		62.8	30-150						



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Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16H0431

Date Received: 8/9/2016

Sampled: 8/9/2016 11:00

**Field Sample #:** S-2 6-12" Bg

Sample ID: 16H0431-04

Sample Matrix: Soil

**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	93.5		% Wt	1		SM 2540G	8/10/16	8/11/16 8:28	MRL



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Project Location: 179 Brook St., Clinton, MA

### Sample Description:

Work Order: 16H0431

Date Received: 8/9/2016

Sampled: 8/9/2016 11:10

Field Sample #: S-3 0-0 Bg

### **Sample #2: 100% LS**

## Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date	Date/Time	
							Prepared	Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 0:09	KAL
Aroclor-1221 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 0:09	KAL
Aroclor-1232 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 0:09	KAL
Aroclor-1242 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 0:09	KAL
Aroclor-1248 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 0:09	KAL
Aroclor-1254 [2]	0.25	0.11	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 0:09	KAL
Aroclor-1260 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 0:09	KAL
Aroclor-1262 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 0:09	KAL
Aroclor-1268 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 0:09	KAL
Surrogates		% Recovery	Recovery Limits		Flag/Qual				
Decachlorobiphenyl [1]		53.9	30-150				8/11/16 0:09		
Decachlorobiphenyl [2]		59.3	30-150				8/11/16 0:09		
Tetrachloro-m-xylene [1]		56.7	30-150				8/11/16 0:09		
Tetrachloro-m-xylene [2]		60.0	30-150				8/11/16 0:09		



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16H0431

Date Received: 8/9/2016

Sampled: 8/9/2016 11:10

**Field Sample #:** S-3 0-6" Bg

Sample ID: 16H0431-05

Sample Matrix: Soil

**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	92.6		% Wt	1		SM 2540G	8/10/16	8/11/16 8:28	MRL



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16H0431

Date Received: 8/9/2016

Field Sample #: S-3 6-12" Bg

Sampled: 8/9/2016 11:15

Sample ID: 16H0431-06

Sample Matrix: Soil

**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 0:22	KAL
Aroclor-1221 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 0:22	KAL
Aroclor-1232 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 0:22	KAL
Aroclor-1242 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 0:22	KAL
Aroclor-1248 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 0:22	KAL
Aroclor-1254 [2]	0.24	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 0:22	KAL
Aroclor-1260 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 0:22	KAL
Aroclor-1262 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 0:22	KAL
Aroclor-1268 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 0:22	KAL
Surrogates	% Recovery		Recovery Limits		Flag/Qual				
Decachlorobiphenyl [1]	67.6		30-150					8/11/16 0:22	
Decachlorobiphenyl [2]	73.6		30-150					8/11/16 0:22	
Tetrachloro-m-xylene [1]	73.2		30-150					8/11/16 0:22	
Tetrachloro-m-xylene [2]	77.2		30-150					8/11/16 0:22	



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Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16H0431

Date Received: 8/9/2016

**Field Sample #:** S-3 6-12" Bg

Sampled: 8/9/2016 11:15

**Sample ID:** 16H0431-06

Sample Matrix: Soil

**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	93.8		% Wt	1		SM 2540G	8/10/16	8/11/16 8:28	MRL



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16H0431

Date Received: 8/9/2016

Field Sample #: S-4 0-6" Bg

Sampled: 8/9/2016 11:25

Sample ID: 16H0431-07

Sample Matrix: Soil

**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 1:14	KAL
Aroclor-1221 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 1:14	KAL
Aroclor-1232 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 1:14	KAL
Aroclor-1242 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 1:14	KAL
Aroclor-1248 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 1:14	KAL
Aroclor-1254 [2]	0.58	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 1:14	KAL
Aroclor-1260 [2]	0.27	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 1:14	KAL
Aroclor-1262 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 1:14	KAL
Aroclor-1268 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 1:14	KAL
Surrogates	% Recovery		Recovery Limits		Flag/Qual				
Decachlorobiphenyl [1]	80.6		30-150					8/11/16 1:14	
Decachlorobiphenyl [2]	89.7		30-150					8/11/16 1:14	
Tetrachloro-m-xylene [1]	82.6		30-150					8/11/16 1:14	
Tetrachloro-m-xylene [2]	86.0		30-150					8/11/16 1:14	



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Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16H0431

Date Received: 8/9/2016

**Field Sample #:** S-4 0-6" Bg

Sampled: 8/9/2016 11:25

**Sample ID:** 16H0431-07

Sample Matrix: Soil

**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	91.0		% Wt	1		SM 2540G	8/10/16	8/11/16 8:28	MRL



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

### Sample Description:

Work Order: 16H0431

Date Received: 8/9/2016

Sampled: 8/9/2016 11:30

Field Sample #: S-4 0-12 Bg

Sample ID: 10H0451-06

### Sample Matrix: Son

### Sample Flags: U-32

## **Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date	Date/Time	
							Prepared	Analyzed	Analyst
Aroclor-1016 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 1:27	KAL
Aroclor-1221 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 1:27	KAL
Aroclor-1232 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 1:27	KAL
Aroclor-1242 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 1:27	KAL
Aroclor-1248 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 1:27	KAL
Aroclor-1254 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 1:27	KAL
Aroclor-1260 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 1:27	KAL
Aroclor-1262 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 1:27	KAL
Aroclor-1268 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 1:27	KAL
Surrogates		% Recovery	Recovery Limits		Flag/Qual				
Decachlorobiphenyl [1]		80.7	30-150				8/11/16 1:27		
Decachlorobiphenyl [2]		82.8	30-150				8/11/16 1:27		
Tetrachloro-m-xylene [1]		82.7	30-150				8/11/16 1:27		
Tetrachloro-m-xylene [2]		87.4	30-150				8/11/16 1:27		



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16H0431

Date Received: 8/9/2016

**Field Sample #:** S-4 6-12" Bg

Sampled: 8/9/2016 11:30

**Sample ID:** 16H0431-08

Sample Matrix: Soil

**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	95.7		% Wt	1		SM 2540G	8/10/16	8/11/16 8:28	MRL



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16H0431

Date Received: 8/9/2016

Field Sample #: S-5 0-6" Bg

Sampled: 8/9/2016 11:35

Sample ID: 16H0431-09

Sample Matrix: Soil

**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 1:40	KAL
Aroclor-1221 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 1:40	KAL
Aroclor-1232 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 1:40	KAL
Aroclor-1242 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 1:40	KAL
Aroclor-1248 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 1:40	KAL
Aroclor-1254 [2]	0.21	0.10	mg/Kg dry	5	P-01	SW-846 8082A	8/9/16	8/11/16 1:40	KAL
Aroclor-1260 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 1:40	KAL
Aroclor-1262 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 1:40	KAL
Aroclor-1268 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 1:40	KAL
Surrogates	% Recovery	Recovery Limits		Flag/Qual					
Decachlorobiphenyl [1]	84.2	30-150							8/11/16 1:40
Decachlorobiphenyl [2]	89.9	30-150							8/11/16 1:40
Tetrachloro-m-xylene [1]	81.9	30-150							8/11/16 1:40
Tetrachloro-m-xylene [2]	88.2	30-150							8/11/16 1:40



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Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16H0431

Date Received: 8/9/2016

**Field Sample #:** S-5 0-6" Bg

Sampled: 8/9/2016 11:35

**Sample ID:** 16H0431-09

Sample Matrix: Soil

**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	93.4		% Wt	1		SM 2540G	8/10/16	8/11/16 8:28	MRL



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

### Sample Description:

Work Order: 16H0431

Date Received: 8/9/2016

Sampled: 8/9/2016 11:40

Field Sample #: S-0 0-0 Bg

### **Sample #2: 100% LS**

## Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time	
							Analyzed	Analyst	
Aroclor-1016 [1]	ND	0.098	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 1:54	KAL
Aroclor-1221 [1]	ND	0.098	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 1:54	KAL
Aroclor-1232 [1]	ND	0.098	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 1:54	KAL
Aroclor-1242 [1]	ND	0.098	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 1:54	KAL
Aroclor-1248 [1]	ND	0.098	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 1:54	KAL
Aroclor-1254 [2]	0.14	0.098	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 1:54	KAL
Aroclor-1260 [1]	ND	0.098	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 1:54	KAL
Aroclor-1262 [1]	ND	0.098	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 1:54	KAL
Aroclor-1268 [1]	ND	0.098	mg/Kg dry	5		SW-846 8082A	8/9/16	8/11/16 1:54	KAL
Surrogates	% Recovery	Recovery Limits		Flag/Qual					
Decachlorobiphenyl [1]	76.4	30-150						8/11/16 1:54	
Decachlorobiphenyl [2]	83.7	30-150						8/11/16 1:54	
Tetrachloro-m-xylene [1]	76.9	30-150						8/11/16 1:54	
Tetrachloro-m-xylene [2]	79.9	30-150						8/11/16 1:54	



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16H0431

Date Received: 8/9/2016

**Field Sample #:** S-6 0-6" Bg

Sampled: 8/9/2016 11:40

**Sample ID:** 16H0431-10

Sample Matrix: Soil

**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	97.2		% Wt	1		SM 2540G	8/10/16	8/11/16 8:28	MRL



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Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16H0431

Date Received: 8/9/2016

Field Sample #: S-7 0-6" Bg

Sampled: 8/9/2016 11:45

Sample ID: 16H0431-11

Sample Matrix: Soil

**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.21	mg/Kg dry	10		SW-846 8082A	8/9/16	8/11/16 11:29	KAL
Aroclor-1221 [1]	ND	0.21	mg/Kg dry	10		SW-846 8082A	8/9/16	8/11/16 11:29	KAL
Aroclor-1232 [1]	ND	0.21	mg/Kg dry	10		SW-846 8082A	8/9/16	8/11/16 11:29	KAL
Aroclor-1242 [1]	ND	0.21	mg/Kg dry	10		SW-846 8082A	8/9/16	8/11/16 11:29	KAL
Aroclor-1248 [1]	ND	0.21	mg/Kg dry	10		SW-846 8082A	8/9/16	8/11/16 11:29	KAL
Aroclor-1254 [2]	1.0	0.21	mg/Kg dry	10		SW-846 8082A	8/9/16	8/11/16 11:29	KAL
Aroclor-1260 [2]	0.32	0.21	mg/Kg dry	10		SW-846 8082A	8/9/16	8/11/16 11:29	KAL
Aroclor-1262 [1]	ND	0.21	mg/Kg dry	10		SW-846 8082A	8/9/16	8/11/16 11:29	KAL
Aroclor-1268 [1]	ND	0.21	mg/Kg dry	10		SW-846 8082A	8/9/16	8/11/16 11:29	KAL
Surrogates	% Recovery		Recovery Limits		Flag/Qual				
Decachlorobiphenyl [1]	85.2		30-150					8/11/16 11:29	
Decachlorobiphenyl [2]	93.1		30-150					8/11/16 11:29	
Tetrachloro-m-xylene [1]	86.3		30-150					8/11/16 11:29	
Tetrachloro-m-xylene [2]	90.7		30-150					8/11/16 11:29	



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Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16H0431

Date Received: 8/9/2016

**Field Sample #:** S-7 0-6" Bg

Sampled: 8/9/2016 11:45

**Sample ID:** 16H0431-11

Sample Matrix: Soil

**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	93.3		% Wt	1		SM 2540G	8/10/16	8/11/16 8:28	MRL

**Sample Extraction Data**
**Prep Method: % Solids-SM 2540G**

Lab Number [Field ID]	Batch	Date
16H0431-01 [S-1 0-6" Bg]	B155711	08/10/16
16H0431-02 [S-1 6-12" Bg]	B155711	08/10/16
16H0431-03 [S-2 0-6" Bg]	B155711	08/10/16
16H0431-04 [S-2 6-12" Bg]	B155711	08/10/16
16H0431-05 [S-3 0-6" Bg]	B155711	08/10/16
16H0431-06 [S-3 6-12" Bg]	B155711	08/10/16
16H0431-07 [S-4 0-6" Bg]	B155711	08/10/16
16H0431-08 [S-4 6-12" Bg]	B155711	08/10/16
16H0431-09 [S-5 0-6" Bg]	B155711	08/10/16
16H0431-10 [S-6 0-6" Bg]	B155711	08/10/16
16H0431-11 [S-7 0-6" Bg]	B155711	08/10/16

**Prep Method: SW-846 3540C-SW-846 8082A**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
16H0431-01 [S-1 0-6" Bg]	B155672	10.2	10.0	08/09/16
16H0431-02 [S-1 6-12" Bg]	B155672	10.3	10.0	08/09/16
16H0431-03 [S-2 0-6" Bg]	B155672	10.2	10.0	08/09/16
16H0431-04 [S-2 6-12" Bg]	B155672	10.4	10.0	08/09/16
16H0431-05 [S-3 0-6" Bg]	B155672	10.2	10.0	08/09/16
16H0431-06 [S-3 6-12" Bg]	B155672	10.2	10.0	08/09/16
16H0431-07 [S-4 0-6" Bg]	B155672	10.5	10.0	08/09/16
16H0431-08 [S-4 6-12" Bg]	B155672	10.3	10.0	08/09/16
16H0431-09 [S-5 0-6" Bg]	B155672	10.4	10.0	08/09/16
16H0431-10 [S-6 0-6" Bg]	B155672	10.5	10.0	08/09/16
16H0431-11 [S-7 0-6" Bg]	B155672	10.2	10.0	08/09/16

**QUALITY CONTROL**
**Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD RPD	RPD Limit	Notes
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**Batch B155672 - SW-846 3540C**
**Blank (B155672-BLK1)**

Prepared: 08/09/16 Analyzed: 08/10/16

Aroclor-1016	ND	0.020	mg/Kg wet							
Aroclor-1016 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1221	ND	0.020	mg/Kg wet							
Aroclor-1221 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1232	ND	0.020	mg/Kg wet							
Aroclor-1232 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1242	ND	0.020	mg/Kg wet							
Aroclor-1242 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1248	ND	0.020	mg/Kg wet							
Aroclor-1248 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1254	ND	0.020	mg/Kg wet							
Aroclor-1254 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1260	ND	0.020	mg/Kg wet							
Aroclor-1260 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1262	ND	0.020	mg/Kg wet							
Aroclor-1262 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1268	ND	0.020	mg/Kg wet							
Aroclor-1268 [2C]	ND	0.020	mg/Kg wet							

Surrogate: Decachlorobiphenyl	0.149	mg/Kg wet	0.200	74.5	30-150
Surrogate: Decachlorobiphenyl [2C]	0.159	mg/Kg wet	0.200	79.4	30-150
Surrogate: Tetrachloro-m-xylene	0.142	mg/Kg wet	0.200	71.2	30-150
Surrogate: Tetrachloro-m-xylene [2C]	0.153	mg/Kg wet	0.200	76.7	30-150

**LCS (B155672-BS1)**

Prepared: 08/09/16 Analyzed: 08/10/16

Aroclor-1016	0.16	0.020	mg/Kg wet	0.200	80.2	40-140
Aroclor-1016 [2C]	0.16	0.020	mg/Kg wet	0.200	82.1	40-140
Aroclor-1260	0.15	0.020	mg/Kg wet	0.200	74.4	40-140
Aroclor-1260 [2C]	0.15	0.020	mg/Kg wet	0.200	74.6	40-140
Surrogate: Decachlorobiphenyl	0.159	mg/Kg wet	0.200	79.3	30-150	
Surrogate: Decachlorobiphenyl [2C]	0.169	mg/Kg wet	0.200	84.6	30-150	
Surrogate: Tetrachloro-m-xylene	0.156	mg/Kg wet	0.200	77.9	30-150	
Surrogate: Tetrachloro-m-xylene [2C]	0.166	mg/Kg wet	0.200	82.9	30-150	

**LCS Dup (B155672-BSD1)**

Prepared: 08/09/16 Analyzed: 08/10/16

Aroclor-1016	0.16	0.020	mg/Kg wet	0.200	79.1	40-140	1.40	30
Aroclor-1016 [2C]	0.16	0.020	mg/Kg wet	0.200	80.5	40-140	1.98	30
Aroclor-1260	0.15	0.020	mg/Kg wet	0.200	76.2	40-140	2.41	30
Aroclor-1260 [2C]	0.15	0.020	mg/Kg wet	0.200	76.4	40-140	2.41	30
Surrogate: Decachlorobiphenyl	0.161	mg/Kg wet	0.200	80.6	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.171	mg/Kg wet	0.200	85.5	30-150			
Surrogate: Tetrachloro-m-xylene	0.141	mg/Kg wet	0.200	70.3	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.150	mg/Kg wet	0.200	74.9	30-150			

**QUALITY CONTROL**
**Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD RPD	Limit Notes
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**Batch B155672 - SW-846 3540C**

<b>Matrix Spike (B155672-MS1)</b>		<b>Source: 16H0431-01</b>		Prepared: 08/09/16 Analyzed: 08/11/16					
Aroclor-1016	0.27	0.10	mg/Kg dry	0.209	ND	129	40-140		
Aroclor-1016 [2C]	0.26	0.10	mg/Kg dry	0.209	ND	125	40-140		
<b>Aroclor-1260</b>	5.5	0.10	mg/Kg dry	0.209	2.8	<b>1270</b> *	40-140		MS-21
<b>Aroclor-1260 [2C]</b>	6.2	0.10	mg/Kg dry	0.209	3.6	<b>1220</b> *	40-140		MS-21
Surrogate: Decachlorobiphenyl	0.143		mg/Kg dry	0.209		68.3	30-150		
Surrogate: Decachlorobiphenyl [2C]	0.160		mg/Kg dry	0.209		76.6	30-150		
Surrogate: Tetrachloro-m-xylene	0.152		mg/Kg dry	0.209		72.6	30-150		
Surrogate: Tetrachloro-m-xylene [2C]	0.157		mg/Kg dry	0.209		75.2	30-150		
<b>Matrix Spike Dup (B155672-MSD1)</b>		<b>Source: 16H0431-01</b>		Prepared: 08/09/16 Analyzed: 08/11/16					
Aroclor-1016	0.26	0.11	mg/Kg dry	0.216	ND	119	40-140	50	
Aroclor-1016 [2C]	0.25	0.11	mg/Kg dry	0.216	ND	114	40-140	50	
<b>Aroclor-1260</b>	6.1	0.11	mg/Kg dry	0.216	2.8	<b>1540</b> *	40-140	11.3	50 MS-21
<b>Aroclor-1260 [2C]</b>	7.7	0.11	mg/Kg dry	0.216	3.6	<b>1890</b> *	40-140	22.0	50 MS-21
Surrogate: Decachlorobiphenyl	0.262		mg/Kg dry	0.216		121	30-150		
Surrogate: Decachlorobiphenyl [2C]	0.181		mg/Kg dry	0.216		83.6	30-150		
Surrogate: Tetrachloro-m-xylene	0.176		mg/Kg dry	0.216		81.3	30-150		
Surrogate: Tetrachloro-m-xylene [2C]	0.182		mg/Kg dry	0.216		84.3	30-150		



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**

S-1 0-6" bg

Lab Sample ID: 16H0431-01

Date(s) Analyzed: 08/11/2016      08/11/2016

### Instrument ID (1):

## Instrument ID (2):

### GC Column (1):

ID: (mm)

## GC Column (2):

ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1254	1	0.00	-0.03	0.03	8.1	
	2	0.00	-0.03	0.03	9.3	14.4
Aroclor-1260	1	0.00	-0.03	0.03	2.8	
	2	0.00	-0.03	0.03	3.6	24.0



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**

**S-1 6-12" bg**

*SW-846 8082A*

Lab Sample ID: 16H0431-02 Date(s) Analyzed: 08/11/2016 08/11/2016

Instrument ID (1):  Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1254	1	0.00	-0.03	0.03	1.9	
	2	0.00	-0.03	0.03	2.3	17.0
Aroclor-1260	1	0.00	-0.03	0.03	0.62	
	2	0.00	-0.03	0.03	0.80	25.0



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**

*SW-846 8082A*

**S-2 0-6" bg**

Lab Sample ID: 16H0431-03 Date(s) Analyzed: 08/11/2016 08/11/2016

Instrument ID (1):  Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1254	1	0.00	-0.03	0.03	0.19	
	2	0.00	-0.03	0.03	0.26	29.1



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**

**S-3 0-6" bg**

*SW-846 8082A*

Lab Sample ID: 16H0431-05 Date(s) Analyzed: 08/11/2016 08/11/2016

Instrument ID (1):  Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1254	1	0.00	-0.03	0.03	0.17	
	2	0.00	-0.03	0.03	0.25	35.3



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**

**S-3 6-12" bg**

*SW-846 8082A*

Lab Sample ID: 16H0431-06 Date(s) Analyzed: 08/11/2016 08/11/2016

Instrument ID (1):  Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1254	1	0.00	-0.03	0.03	0.17	
	2	0.00	-0.03	0.03	0.24	36.5



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**

**S-4 0-6" bg**

*SW-846 8082A*

Lab Sample ID: 16H0431-07 Date(s) Analyzed: 08/11/2016 08/11/2016

Instrument ID (1):  Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1254	1	0.00	-0.03	0.03	0.48	
	2	0.00	-0.03	0.03	0.58	19.1
Aroclor-1260	1	0.00	-0.03	0.03	0.22	
	2	0.00	-0.03	0.03	0.27	18.2



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**

**S-5 0-6" bg**

*SW-846 8082A*

Lab Sample ID: 16H0431-09 Date(s) Analyzed: 08/11/2016 08/11/2016

Instrument ID (1):  Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1254	1	0.00	-0.03	0.03	0.13	
	2	0.00	-0.03	0.03	0.21	44.2



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**

**S-7 0-6" bg**

*SW-846 8082A*

Lab Sample ID: 16H0431-11 Date(s) Analyzed: 08/11/2016 08/11/2016

Instrument ID (1):  Instrument ID (2):

GC Column (1):  ID: (mm) GC Column (2):  ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1254	1	0.00	-0.03	0.03	0.84	
	2	0.00	-0.03	0.03	1.0	17.0
Aroclor-1260	1	0.00	-0.03	0.03	0.27	
	2	0.00	-0.03	0.03	0.32	15.9



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## **IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES**

LCS

*SW-846 8082A*

Lab Sample ID: B155672-BS1 Date(s) Analyzed: 08/10/2016 08/10/2016

Date(s) Analyzed: 08/10/2016 08/10/2016

Instrument ID (1): **Instrument ID (2):**

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1016	1	0.00	-0.03	0.03	0.16	
	2	0.00	-0.03	0.03	0.16	0
Aroclor-1260	1	0.00	-0.03	0.03	0.15	
	2	0.00	-0.03	0.03	0.15	1



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## **IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES**

LCS Dup

*SW-846 8082A*

Lab Sample ID: B155672-BSD1 Date(s) Analyzed: 08/10/2016 08/10/2016

Date(s) Analyzed: 08/10/2016 08/10/2016

Instrument ID (1): **Instrument ID (2):**

### Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1016	1	0.00	-0.03	0.03	0.16	
	2	0.00	-0.03	0.03	0.16	1
Aroclor-1260	1	0.00	-0.03	0.03	0.15	
	2	0.00	-0.03	0.03	0.15	1

**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**

**Matrix Spike**

*SW-846 8082A*

Lab Sample ID: B155672-MS1 Date(s) Analyzed: 08/11/2016 08/11/2016

Instrument ID (1):  Instrument ID (2):

GC Column (1):  ID: (mm) GC Column (2):  ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1016	1	0.00	-0.03	0.03	0.27	
	2	0.00	-0.03	0.03	0.26	4
Aroclor-1260	1	0.00	-0.03	0.03	5.5	
	2	0.00	-0.03	0.03	6.2	12

**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**

*SW-846 8082A*

Matrix Spike Dup

Lab Sample ID: B155672-MSD1 Date(s) Analyzed: 08/11/2016 08/11/2016

Instrument ID (1):  Instrument ID (2):

GC Column (1):  ID: (mm) GC Column (2):  ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1016	1	0.00	-0.03	0.03	0.26	
	2	0.00	-0.03	0.03	0.25	3
Aroclor-1260	1	0.00	-0.03	0.03	6.1	
	2	0.00	-0.03	0.03	7.7	22

**FLAG/QUALIFIER SUMMARY**

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit
DL	Method Detection Limit
MCL	Maximum Contaminant Level

Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.

No results have been blank subtracted unless specified in the case narrative section.

MS-21	Matrix spike and/or spike duplicate recovery bias high due to contribution of other Aroclors present in the source sample.
O-32	A dilution was performed as part of the standard analytical procedure.
P-01	Result was confirmed using a dissimilar column. Relative percent difference between the two results was >40%. In accordance with the method, the higher result was reported.
S-01	The surrogate recovery for this sample is not available due to sample dilution below the surrogate reporting limit required from high analyte concentration and/or matrix interferences.

**CERTIFICATIONS**
**Certified Analyses included in this Report**

Analyte	Certifications
<b><i>SW-846 8082A in Soil</i></b>	
Aroclor-1016	CT,NH,NY,ME,NC,VA
Aroclor-1016 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1221	CT,NH,NY,ME,NC,VA
Aroclor-1221 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1232	CT,NH,NY,ME,NC,VA
Aroclor-1232 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1242	CT,NH,NY,ME,NC,VA
Aroclor-1242 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1248	CT,NH,NY,ME,NC,VA
Aroclor-1248 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1254	CT,NH,NY,ME,NC,VA
Aroclor-1254 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1260	CT,NH,NY,ME,NC,VA
Aroclor-1260 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1262	NY,NC,VA
Aroclor-1262 [2C]	NY,NC,VA
Aroclor-1268	NY,NC,VA
Aroclor-1268 [2C]	NY,NC,VA

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC	100033	02/1/2018
MA	Massachusetts DEP	M-MA100	06/30/2017
CT	Connecticut Department of Public Health	PH-0567	09/30/2017
NY	New York State Department of Health	10899 NELAP	04/1/2017
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2017
RI	Rhode Island Department of Health	LAO00112	12/30/2016
NC	North Carolina Div. of Water Quality	652	12/31/2016
NJ	New Jersey DEP	MA007 NELAP	06/30/2017
FL	Florida Department of Health	E871027 NELAP	06/30/2017
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2017
ME	State of Maine	2011028	06/9/2017
VA	Commonwealth of Virginia	460217	12/14/2016
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2016

**CHAIN OF CUSTODY RECORD**

③ Phone: 413-525-2332

Fax: 413-525-6405

Email: info@contestlabs.com  
www.contestlabs.comC431  
Rev 04/05/1239 Spruce Street  
East Longmeadow, MA 01028

Page 1 of 2

Company Name: Cushing, Jammallo and Wheeler		Telephone: (978) 368-6320	A	ANALYSIS REQUESTED		# of Containers	
Address: 464 High St. Clinton, MA 01510		Project # 5812 (D)				** Preservation	
Attention: MLB	Client PO#	DATA DELIVERY (check all that apply)				***Container Code	
Project Location: 179 Brook St., Clinton	Fax #	<input type="checkbox"/> FAX <input type="checkbox"/> EMAIL <input checked="" type="checkbox"/> WEBSITE				Dissolved Metals	
Sampled By: KT	Email:	mblloom@cjw-env.com				<input type="checkbox"/> Field Filtered	
Project Proposal Provided? (for billing purposes) <input type="checkbox"/> yes	Format:	<input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> GIS <input type="checkbox"/> OTHER				<input type="checkbox"/> Lab to Filter	
			Collection	Ending Date/Time	Composite Grab Date	*Matrix Conc Code	
						I = Iced	
						H = HCl	
01	S-1 0-6" Bg	8/9/16 10:40	X	S	U	M = Methanol	
02	S-1 6-12" Bg	8/9/16 10:45	X	S	U	N = Nitric Acid	
03	S-2 0-6" Bg	8/9/16 10:55	X	S	U	S = Sulfuric Acid	
04	S-2 6-12" Bg	8/9/16 11:00	X	S	U	B = Sodium bisulfate	
05	S-3 0-6" Bg	8/9/16 11:10	X	S	U	X = Na hydroxide	
06	S-3 6-12" Bg	8/9/16 11:15	X	S	U	T = Na thiosulfate	
07	S-4 0-6" Bg	8/9/16 11:25	X	S	U	O = Other	
08	S-4 6-12" Bg	8/9/16 11:30	X	S	U		
09	S-5 0-6" Bg	8/9/16 11:35	X	S	U		
10	S-6 0-6" Bg	8/9/16 11:40	X	S	U		
Comments:						Please use the following codes to let Con-Test know if a specific sample may be high in concentration in Matrix/Conc. Code Box:	
						H - High; M - Medium; L - Low; C - Clean; U - Unknown	
Relinquished by: (signature)	Date/Time: 8/9/16	Turnaround <sup>†</sup>	Detection Limit Requirements		Is your project MCP or RCP?		
Received by: (signature)	Date/Time: 8/11/16	<input type="checkbox"/> 7-Day <input type="checkbox"/> 10-Day <input checked="" type="checkbox"/> Other <sup>5</sup> _____	Massachusetts: S-1 soil standards		<input checked="" type="checkbox"/> MCP Form Required <input type="checkbox"/> RCP Form Required <input type="checkbox"/> MA State DW Form Required PVSID # _____		
Relinquished by: (signature)	Date/Time: 8/9/16 14:25	<input checked="" type="checkbox"/> RUSH <sup>†</sup>	Connecticut: _____		<input checked="" type="checkbox"/> NELAC & AIHA-LAP, LLC Accredited		
Received by: (signature)	Date/Time: 8/9/16 14:25	<input type="checkbox"/> 124-Hr <input type="checkbox"/> 148-Hr <input type="checkbox"/> 172-Hr <input type="checkbox"/> 14-Day	Other: _____		<input checked="" type="checkbox"/> WBE/DBE Certified		

<sup>†</sup> TURNAROUND TIME STARTS AT 8:00 A.M. THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON YOUR CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT





39 Spruce St.  
East Longmeadow, MA. 01028  
P: 413-525-2332  
F: 413-525-6405  
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Page 1 of 2

### Sample Receipt Checklist

CLIENT NAME: Cushing, Jamnallal Cwef RECEIVED BY: EB DATE: 8/9/16

1) Was the chain(s) of custody relinquished and signed? Yes  No  No COC Incl.

2) Does the chain agree with the samples? Yes  No

If not, explain:

3) Are all the samples in good condition? Yes  No

If not, explain:

4) How were the samples received:

On Ice  Direct from Sampling \_\_\_\_\_ Ambient \_\_\_\_\_ In Cooler(s)

Were the samples received in Temperature Compliance of (2-6°C)? Yes  No  N/A \_\_\_\_\_

Temperature °C by Temp blank \_\_\_\_\_ Temperature °C by Temp gun 2.4 \_\_\_\_\_

5) Are there Dissolved samples for the lab to filter? Yes  No

Who was notified \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

6) Are there any RUSH or SHORT HOLDING TIME samples? Yes  No

Who was notified \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

Permission to subcontract samples? Yes  No

(Walk-in clients only) if not already approved

Client Signature: \_\_\_\_\_

7) Location where samples are stored:

Log In

8) Do all samples have the proper Acid pH: Yes  No  N/A

9) Do all samples have the proper Base pH: Yes  No  N/A

10) Was the PC notified of any discrepancies with the CoC vs the samples: Yes  N/A

### Containers received at Con-Test

	# of containers		# of containers
1 Liter Amber		16 oz amber	
500 mL Amber		8 oz amber/clear jar	<u>1</u>
250 mL Amber (8oz amber)		4 oz amber/clear jar	
1 Liter Plastic		2 oz amber/clear jar	
500 mL Plastic		Plastic Bag / Ziploc	
250 mL plastic		SOC Kit	
40 mL Vial - type listed below		Perchlorate Kit	
Colisure / bacteria bottle		Flashpoint bottle	
Dissolved Oxygen bottle		Other glass jar	
Encore		Other	

40 mL vials: # HCl \_\_\_\_\_ # Methanol \_\_\_\_\_ Time and Date Frozen:

Doc# 277 # Bisulfate \_\_\_\_\_ # DI Water \_\_\_\_\_

Rev. 4 August 2013 # Thiosulfate \_\_\_\_\_ Unpreserved

Login Sample Receipt Checklist

(Rejection Criteria Listing - Using Sample Acceptance Policy)

Any False statement will be brought to the attention of Client

<u>Question</u>	<u>Answer (True/False)</u>	<u>Comment</u>
	T/F/NA	
1) The cooler's custody seal, if present, is intact.	N/A	
2) The cooler or samples do not appear to have been compromised or tampered with.	T	
3) Samples were received on ice.	T	
4) Cooler Temperature is acceptable.	T	
5) Cooler Temperature is recorded.	T	2.4 with gun
6) COC is filled out in ink and legible.	T	
7) COC is filled out with all pertinent information.	T	
8) Field Sampler's name present on COC.	T	
9) There are no discrepancies between the sample IDs on the container and the COC.	T	
10) Samples are received within Holding Time.	T	
11) Sample containers have legible labels.	T	
12) Containers are not broken or leaking.	T	
13) Air Cassettes are not broken/open.	N/A	
14) Sample collection date/times are provided.	T	
15) Appropriate sample containers are used.	T	
16) Proper collection media used.	T	
17) No headspace sample bottles are completely filled.	N/A	
18) There is sufficient volume for all requested analyses, including any requested MS/MSDs.	T	
19) Trip blanks provided if applicable.	N/A	
20) VOA sample vials do not have head space or bubble is <6mm (1/4") in diameter.	N/A	
21) Samples do not require splitting or compositing.	T	

Who notified of False statements?

Date/Time:

Date/Time:

Doc #277 Rev. 4 August 2013

Log-In Technician Initials:

EB

8/9/16

14:25

MADEP MCP Analytical Method Report Certification Form

Laboratory Name:	Con-Test Analytical Laboratory	Project #:	16H0431
Project Location:	179 Brook St., Clinton, MA	RTN:	

This Form provides certifications for the following data set: [list Laboratory Sample ID Number(s)]

16H0431-01 thru 16H0431-11

Matrices: Soil

**CAM Protocol (check all that below)**

8260 VOC CAM II A ()	7470/7471 Hg CAM IIIB ()	MassDEP VPH CAM IV A ()	8081 Pesticides CAM V B ()	7196 Hex Cr CAM VI B ()	MassDEP APH CAM IX A ()
8270 SVOC CAM II B ()	7010 Metals CAM III C ()	MassDEP EPH CAM IV A ()	8151 Herbicides CAM V C ()	8330 Explosives CAM VIII A ()	TO-15 VOC CAM IX B ()
6010 Metals CAM III A ()	6020 Metals CAM III D ()	8082 PCB CAM V A (X)	9014 Total Cyanide/PAC CAM VI A ()	6860 Perchlorate CAM VIII B ()	

**Affirmative response to Questions A through F is required for "Presumptive Certainty" status**

<b>A</b>	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>B</b>	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>C</b>	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>D</b>	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>E a</b>	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <sup>1</sup>
<b>E b</b>	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <sup>1</sup>
<b>F</b>	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all No responses to Questions A through E)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>

**A response to questions G, H and I below is required for "Presumptive Certainty" status**

<b>G</b>	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <sup>1</sup>
----------	---	--

**Data User Note: Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.**

<b>H</b>	Were all QC performance standards specified in the CAM protocol(s) achieved?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <sup>1</sup>
<b>I</b>	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>

<sup>1</sup> All Negative responses must be addressed in an attached Environmental Laboratory case narrative.

**I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.**

Signature:		Position:	Project Manager
Printed Name:	Lisa A. Worthington	Date:	08/15/16



---

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

August 25, 2016

Mike Bloom  
Cushing, Jammallo & Wheeler  
464 High Street  
Clinton, MA 01510

Project Location: 179 Brook St., Clinton, MA

Client Job Number:

Project Number: 5812D

Laboratory Work Order Number: 16H1031

Enclosed are results of analyses for samples received by the laboratory on August 19, 2016. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Meghan S. Kelley". The signature is fluid and cursive, with "Meghan" and "S." on the first line and "Kelley" on the second line.

Meghan E. Kelley  
Project Manager

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Cushing, Jammallo & Wheeler  
464 High Street  
Clinton, MA 01510  
ATTN: Mike Bloom

REPORT DATE: 8/25/2016

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 5812D

#### **ANALYTICAL SUMMARY**

---

WORK ORDER NUMBER: 16H1031

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: 179 Brook St., Clinton, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
S-8 (0-6"bg)	16H1031-01	Soil		SM 2540G SW-846 8082A	
S-9 (0-6"bg)	16H1031-02	Soil		SM 2540G SW-846 8082A	
S-10 (0-6"bg)	16H1031-03	Soil		SM 2540G SW-846 8082A	
S-11 (0-6"bg)	16H1031-04	Soil		SM 2540G SW-846 8082A	
S-12 (0-6"bg)	16H1031-05	Soil		SM 2540G SW-846 8082A	
S-13 (0-6"bg)	16H1031-06	Soil		SM 2540G SW-846 8082A	
S-14 (0-6"bg)	16H1031-07	Soil		SM 2540G SW-846 8082A	
DUP/Duplicate	16H1031-08	Soil		SM 2540G SW-846 8082A	



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#### CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

#### SW-846 8082A

##### **Qualifications:**

###### **MS-21**

Matrix spike and/or spike duplicate recovery bias high due to contribution of other Aroclors present in the source sample.

##### **Analyte & Samples(s) Qualified:**

###### **Aroclor-1260 [2C]**

B156688-MSD1

###### **S-01**

The surrogate recovery for this sample is not available due to sample dilution below the surrogate reporting limit required from high analyte concentration and/or matrix interferences.

##### **Analyte & Samples(s) Qualified:**

###### **Decachlorobiphenyl**

16H1031-01[S-8 (0-6"bg)], 16H1031-03[S-10 (0-6"bg)], 16H1031-04[S-11 (0-6"bg)], 16H1031-05[S-12 (0-6"bg)], 16H1031-07[S-14 (0-6"bg)], 16H1031-08[DUP/Duplicate]

###### **Decachlorobiphenyl [2C]**

16H1031-01[S-8 (0-6"bg)], 16H1031-03[S-10 (0-6"bg)], 16H1031-04[S-11 (0-6"bg)], 16H1031-05[S-12 (0-6"bg)], 16H1031-07[S-14 (0-6"bg)], 16H1031-08[DUP/Duplicate]

###### **Tetrachloro-m-xylene**

16H1031-01[S-8 (0-6"bg)], 16H1031-03[S-10 (0-6"bg)], 16H1031-04[S-11 (0-6"bg)], 16H1031-05[S-12 (0-6"bg)], 16H1031-07[S-14 (0-6"bg)], 16H1031-08[DUP/Duplicate]

###### **Tetrachloro-m-xylene [2C]**

16H1031-01[S-8 (0-6"bg)], 16H1031-03[S-10 (0-6"bg)], 16H1031-04[S-11 (0-6"bg)], 16H1031-05[S-12 (0-6"bg)], 16H1031-07[S-14 (0-6"bg)], 16H1031-08[DUP/Duplicate]

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Tod E. Kopyscinski  
Laboratory Director



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16H1031

Date Received: 8/19/2016

**Field Sample #:** S-8 (0-6"bg)

Sampled: 8/19/2016 12:20

**Sample ID:** 16H1031-01Sample Matrix: Soil**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	1.1	mg/Kg dry	50		SW-846 8082A	8/22/16	8/24/16 23:51	KAL
Aroclor-1221 [1]	ND	1.1	mg/Kg dry	50		SW-846 8082A	8/22/16	8/24/16 23:51	KAL
Aroclor-1232 [1]	ND	1.1	mg/Kg dry	50		SW-846 8082A	8/22/16	8/24/16 23:51	KAL
Aroclor-1242 [1]	ND	1.1	mg/Kg dry	50		SW-846 8082A	8/22/16	8/24/16 23:51	KAL
Aroclor-1248 [1]	ND	1.1	mg/Kg dry	50		SW-846 8082A	8/22/16	8/24/16 23:51	KAL
Aroclor-1254 [2]	4.6	1.1	mg/Kg dry	50		SW-846 8082A	8/22/16	8/24/16 23:51	KAL
Aroclor-1260 [2]	1.8	1.1	mg/Kg dry	50		SW-846 8082A	8/22/16	8/24/16 23:51	KAL
Aroclor-1262 [1]	ND	1.1	mg/Kg dry	50		SW-846 8082A	8/22/16	8/24/16 23:51	KAL
Aroclor-1268 [1]	ND	1.1	mg/Kg dry	50		SW-846 8082A	8/22/16	8/24/16 23:51	KAL
Surrogates	% Recovery		Recovery Limits		Flag/Qual				
Decachlorobiphenyl [1]	*		30-150		S-01				8/24/16 23:51
Decachlorobiphenyl [2]	*		30-150		S-01				8/24/16 23:51
Tetrachloro-m-xylene [1]	*		30-150		S-01				8/24/16 23:51
Tetrachloro-m-xylene [2]	*		30-150		S-01				8/24/16 23:51




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 39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16H1031

Date Received: 8/19/2016

**Field Sample #:** S-8 (0-6"bg)

Sampled: 8/19/2016 12:20

**Sample ID:** 16H1031-01Sample Matrix: Soil

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**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	92.0		% Wt	1		SM 2540G	8/20/16	8/20/16 17:08	JW



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16H1031

Date Received: 8/19/2016

**Field Sample #:** S-9 (0-6"bg)

Sampled: 8/19/2016 12:25

**Sample ID:** 16H1031-02Sample Matrix: Soil**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	8/22/16	8/24/16 19:31	KAL
Aroclor-1221 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	8/22/16	8/24/16 19:31	KAL
Aroclor-1232 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	8/22/16	8/24/16 19:31	KAL
Aroclor-1242 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	8/22/16	8/24/16 19:31	KAL
Aroclor-1248 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	8/22/16	8/24/16 19:31	KAL
Aroclor-1254 [2]	0.60	0.11	mg/Kg dry	5		SW-846 8082A	8/22/16	8/24/16 19:31	KAL
Aroclor-1260 [2]	0.19	0.11	mg/Kg dry	5		SW-846 8082A	8/22/16	8/24/16 19:31	KAL
Aroclor-1262 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	8/22/16	8/24/16 19:31	KAL
Aroclor-1268 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	8/22/16	8/24/16 19:31	KAL
Surrogates	% Recovery		Recovery Limits		Flag/Qual				
Decachlorobiphenyl [1]	114		30-150					8/24/16 19:31	
Decachlorobiphenyl [2]	102		30-150					8/24/16 19:31	
Tetrachloro-m-xylene [1]	91.2		30-150					8/24/16 19:31	
Tetrachloro-m-xylene [2]	86.8		30-150					8/24/16 19:31	




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 39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16H1031

Date Received: 8/19/2016

**Field Sample #:** S-9 (0-6"bg)

Sampled: 8/19/2016 12:25

**Sample ID:** 16H1031-02Sample Matrix: Soil

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**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	91.6		% Wt	1		SM 2540G	8/20/16	8/20/16 17:08	JW



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16H1031

Date Received: 8/19/2016

**Field Sample #:** S-10 (0-6"bg)

Sampled: 8/19/2016 12:30

**Sample ID:** 16H1031-03Sample Matrix: Soil**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	1.1	mg/Kg dry	50		SW-846 8082A	8/22/16	8/25/16 0:08	KAL
Aroclor-1221 [1]	ND	1.1	mg/Kg dry	50		SW-846 8082A	8/22/16	8/25/16 0:08	KAL
Aroclor-1232 [1]	ND	1.1	mg/Kg dry	50		SW-846 8082A	8/22/16	8/25/16 0:08	KAL
Aroclor-1242 [1]	ND	1.1	mg/Kg dry	50		SW-846 8082A	8/22/16	8/25/16 0:08	KAL
Aroclor-1248 [1]	ND	1.1	mg/Kg dry	50		SW-846 8082A	8/22/16	8/25/16 0:08	KAL
Aroclor-1254 [1]	2.6	1.1	mg/Kg dry	50		SW-846 8082A	8/22/16	8/25/16 0:08	KAL
Aroclor-1260 [2]	1.5	1.1	mg/Kg dry	50		SW-846 8082A	8/22/16	8/25/16 0:08	KAL
Aroclor-1262 [1]	ND	1.1	mg/Kg dry	50		SW-846 8082A	8/22/16	8/25/16 0:08	KAL
Aroclor-1268 [1]	ND	1.1	mg/Kg dry	50		SW-846 8082A	8/22/16	8/25/16 0:08	KAL
Surrogates	% Recovery		Recovery Limits		Flag/Qual				
Decachlorobiphenyl [1]	*		30-150		S-01			8/25/16 0:08	
Decachlorobiphenyl [2]	*		30-150		S-01			8/25/16 0:08	
Tetrachloro-m-xylene [1]	*		30-150		S-01			8/25/16 0:08	
Tetrachloro-m-xylene [2]	*		30-150		S-01			8/25/16 0:08	




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 39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16H1031

Date Received: 8/19/2016

**Field Sample #:** S-10 (0-6"bg)

Sampled: 8/19/2016 12:30

**Sample ID:** 16H1031-03Sample Matrix: Soil

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**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	85.3		% Wt	1		SM 2540G	8/20/16	8/20/16 17:08	JW



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16H1031

Date Received: 8/19/2016

**Field Sample #:** S-11 (0-6"bg)

Sampled: 8/19/2016 12:35

**Sample ID:** 16H1031-04Sample Matrix: Soil**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	1.1	mg/Kg dry	50		SW-846 8082A	8/22/16	8/25/16 0:25	KAL
Aroclor-1221 [1]	ND	1.1	mg/Kg dry	50		SW-846 8082A	8/22/16	8/25/16 0:25	KAL
Aroclor-1232 [1]	ND	1.1	mg/Kg dry	50		SW-846 8082A	8/22/16	8/25/16 0:25	KAL
Aroclor-1242 [1]	ND	1.1	mg/Kg dry	50		SW-846 8082A	8/22/16	8/25/16 0:25	KAL
Aroclor-1248 [1]	ND	1.1	mg/Kg dry	50		SW-846 8082A	8/22/16	8/25/16 0:25	KAL
Aroclor-1254 [2]	4.6	1.1	mg/Kg dry	50		SW-846 8082A	8/22/16	8/25/16 0:25	KAL
Aroclor-1260 [1]	1.9	1.1	mg/Kg dry	50		SW-846 8082A	8/22/16	8/25/16 0:25	KAL
Aroclor-1262 [1]	ND	1.1	mg/Kg dry	50		SW-846 8082A	8/22/16	8/25/16 0:25	KAL
Aroclor-1268 [1]	ND	1.1	mg/Kg dry	50		SW-846 8082A	8/22/16	8/25/16 0:25	KAL
Surrogates	% Recovery		Recovery Limits		Flag/Qual				
Decachlorobiphenyl [1]	*		30-150		S-01			8/25/16 0:25	
Decachlorobiphenyl [2]	*		30-150		S-01			8/25/16 0:25	
Tetrachloro-m-xylene [1]	*		30-150		S-01			8/25/16 0:25	
Tetrachloro-m-xylene [2]	*		30-150		S-01			8/25/16 0:25	




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 39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16H1031

Date Received: 8/19/2016

**Field Sample #:** S-11 (0-6"bg)

Sampled: 8/19/2016 12:35

**Sample ID:** 16H1031-04Sample Matrix: Soil

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**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	90.1		% Wt	1		SM 2540G	8/20/16	8/20/16 17:08	JW



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Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16H1031

Date Received: 8/19/2016

**Field Sample #:** S-12 (0-6"bg)

Sampled: 8/19/2016 12:40

**Sample ID:** 16H1031-05Sample Matrix: Soil**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	2.3	mg/Kg dry	100		SW-846 8082A	8/22/16	8/25/16 0:43	KAL
Aroclor-1221 [1]	ND	2.3	mg/Kg dry	100		SW-846 8082A	8/22/16	8/25/16 0:43	KAL
Aroclor-1232 [1]	ND	2.3	mg/Kg dry	100		SW-846 8082A	8/22/16	8/25/16 0:43	KAL
Aroclor-1242 [1]	ND	2.3	mg/Kg dry	100		SW-846 8082A	8/22/16	8/25/16 0:43	KAL
Aroclor-1248 [1]	8.7	2.3	mg/Kg dry	100		SW-846 8082A	8/22/16	8/25/16 0:43	KAL
Aroclor-1254 [2]	4.0	2.3	mg/Kg dry	100		SW-846 8082A	8/22/16	8/25/16 0:43	KAL
Aroclor-1260 [1]	ND	2.3	mg/Kg dry	100		SW-846 8082A	8/22/16	8/25/16 0:43	KAL
Aroclor-1262 [1]	ND	2.3	mg/Kg dry	100		SW-846 8082A	8/22/16	8/25/16 0:43	KAL
Aroclor-1268 [1]	ND	2.3	mg/Kg dry	100		SW-846 8082A	8/22/16	8/25/16 0:43	KAL
Surrogates	% Recovery		Recovery Limits		Flag/Qual				
Decachlorobiphenyl [1]	*		30-150		S-01				8/25/16 0:43
Decachlorobiphenyl [2]	*		30-150		S-01				8/25/16 0:43
Tetrachloro-m-xylene [1]	*		30-150		S-01				8/25/16 0:43
Tetrachloro-m-xylene [2]	*		30-150		S-01				8/25/16 0:43




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Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16H1031

Date Received: 8/19/2016

**Field Sample #:** S-12 (0-6"bg)

Sampled: 8/19/2016 12:40

**Sample ID:** 16H1031-05Sample Matrix: Soil

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**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	84.6		% Wt	1		SM 2540G	8/20/16	8/20/16 17:08	JW



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16H1031

Date Received: 8/19/2016

**Field Sample #:** S-13 (0-6"bg)

Sampled: 8/19/2016 12:45

**Sample ID:** 16H1031-06Sample Matrix: Soil**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.42	mg/Kg dry	20		SW-846 8082A	8/22/16	8/25/16 1:00	KAL
Aroclor-1221 [1]	ND	0.42	mg/Kg dry	20		SW-846 8082A	8/22/16	8/25/16 1:00	KAL
Aroclor-1232 [1]	ND	0.42	mg/Kg dry	20		SW-846 8082A	8/22/16	8/25/16 1:00	KAL
Aroclor-1242 [1]	ND	0.42	mg/Kg dry	20		SW-846 8082A	8/22/16	8/25/16 1:00	KAL
Aroclor-1248 [1]	ND	0.42	mg/Kg dry	20		SW-846 8082A	8/22/16	8/25/16 1:00	KAL
Aroclor-1254 [1]	1.2	0.42	mg/Kg dry	20		SW-846 8082A	8/22/16	8/25/16 1:00	KAL
Aroclor-1260 [2]	0.42	0.42	mg/Kg dry	20		SW-846 8082A	8/22/16	8/25/16 1:00	KAL
Aroclor-1262 [1]	ND	0.42	mg/Kg dry	20		SW-846 8082A	8/22/16	8/25/16 1:00	KAL
Aroclor-1268 [1]	ND	0.42	mg/Kg dry	20		SW-846 8082A	8/22/16	8/25/16 1:00	KAL
Surrogates	% Recovery		Recovery Limits		Flag/Qual				
Decachlorobiphenyl [1]	100		30-150					8/25/16 1:00	
Decachlorobiphenyl [2]	98.0		30-150					8/25/16 1:00	
Tetrachloro-m-xylene [1]	93.7		30-150					8/25/16 1:00	
Tetrachloro-m-xylene [2]	89.6		30-150					8/25/16 1:00	




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Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16H1031

Date Received: 8/19/2016

**Field Sample #:** S-13 (0-6"bg)

Sampled: 8/19/2016 12:45

**Sample ID:** 16H1031-06Sample Matrix: Soil

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**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	89.3		% Wt	1		SM 2540G	8/20/16	8/20/16 17:08	JW



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16H1031

Date Received: 8/19/2016

**Field Sample #:** S-14 (0-6"bg)

Sampled: 8/19/2016 12:50

**Sample ID:** 16H1031-07Sample Matrix: Soil**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	1.2	mg/Kg dry	50		SW-846 8082A	8/22/16	8/25/16 1:17	KAL
Aroclor-1221 [1]	ND	1.2	mg/Kg dry	50		SW-846 8082A	8/22/16	8/25/16 1:17	KAL
Aroclor-1232 [1]	ND	1.2	mg/Kg dry	50		SW-846 8082A	8/22/16	8/25/16 1:17	KAL
Aroclor-1242 [1]	ND	1.2	mg/Kg dry	50		SW-846 8082A	8/22/16	8/25/16 1:17	KAL
Aroclor-1248 [1]	5.8	1.2	mg/Kg dry	50		SW-846 8082A	8/22/16	8/25/16 1:17	KAL
Aroclor-1254 [1]	1.9	1.2	mg/Kg dry	50		SW-846 8082A	8/22/16	8/25/16 1:17	KAL
Aroclor-1260 [1]	ND	1.2	mg/Kg dry	50		SW-846 8082A	8/22/16	8/25/16 1:17	KAL
Aroclor-1262 [1]	ND	1.2	mg/Kg dry	50		SW-846 8082A	8/22/16	8/25/16 1:17	KAL
Aroclor-1268 [1]	ND	1.2	mg/Kg dry	50		SW-846 8082A	8/22/16	8/25/16 1:17	KAL
Surrogates	% Recovery		Recovery Limits		Flag/Qual				
Decachlorobiphenyl [1]	*		30-150		S-01			8/25/16 1:17	
Decachlorobiphenyl [2]	*		30-150		S-01			8/25/16 1:17	
Tetrachloro-m-xylene [1]	*		30-150		S-01			8/25/16 1:17	
Tetrachloro-m-xylene [2]	*		30-150		S-01			8/25/16 1:17	




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Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16H1031

Date Received: 8/19/2016

**Field Sample #:** S-14 (0-6"bg)

Sampled: 8/19/2016 12:50

**Sample ID:** 16H1031-07Sample Matrix: Soil

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**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	80.2		% Wt	1		SM 2540G	8/20/16	8/20/16 17:08	JW



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16H1031

Date Received: 8/19/2016

**Field Sample #:** DUP/Duplicate

Sampled: 8/19/2016 12:55

**Sample ID:** 16H1031-08**Sample Matrix:** Soil**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	1.1	mg/Kg dry	50		SW-846 8082A	8/22/16	8/25/16 1:35	KAL
Aroclor-1221 [1]	ND	1.1	mg/Kg dry	50		SW-846 8082A	8/22/16	8/25/16 1:35	KAL
Aroclor-1232 [1]	ND	1.1	mg/Kg dry	50		SW-846 8082A	8/22/16	8/25/16 1:35	KAL
Aroclor-1242 [1]	ND	1.1	mg/Kg dry	50		SW-846 8082A	8/22/16	8/25/16 1:35	KAL
Aroclor-1248 [1]	ND	1.1	mg/Kg dry	50		SW-846 8082A	8/22/16	8/25/16 1:35	KAL
Aroclor-1254 [1]	4.1	1.1	mg/Kg dry	50		SW-846 8082A	8/22/16	8/25/16 1:35	KAL
Aroclor-1260 [2]	1.5	1.1	mg/Kg dry	50		SW-846 8082A	8/22/16	8/25/16 1:35	KAL
Aroclor-1262 [1]	ND	1.1	mg/Kg dry	50		SW-846 8082A	8/22/16	8/25/16 1:35	KAL
Aroclor-1268 [1]	ND	1.1	mg/Kg dry	50		SW-846 8082A	8/22/16	8/25/16 1:35	KAL
Surrogates	% Recovery		Recovery Limits		Flag/Qual				
Decachlorobiphenyl [1]	*		30-150		S-01			8/25/16 1:35	
Decachlorobiphenyl [2]	*		30-150		S-01			8/25/16 1:35	
Tetrachloro-m-xylene [1]	*		30-150		S-01			8/25/16 1:35	
Tetrachloro-m-xylene [2]	*		30-150		S-01			8/25/16 1:35	




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 39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16H1031

Date Received: 8/19/2016

**Field Sample #:** DUP/Duplicate

Sampled: 8/19/2016 12:55

**Sample ID:** 16H1031-08Sample Matrix: Soil

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**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	92.4		% Wt	1		SM 2540G	8/20/16	8/20/16 17:08	JW



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

### Sample Extraction Data

**Prep Method: % Solids-SM 2540G**

Lab Number [Field ID]	Batch	Date
16H1031-01 [S-8 (0-6"bg)]	B156555	08/20/16
16H1031-02 [S-9 (0-6"bg)]	B156555	08/20/16
16H1031-03 [S-10 (0-6"bg)]	B156555	08/20/16
16H1031-04 [S-11 (0-6"bg)]	B156555	08/20/16
16H1031-05 [S-12 (0-6"bg)]	B156555	08/20/16
16H1031-06 [S-13 (0-6"bg)]	B156555	08/20/16
16H1031-07 [S-14 (0-6"bg)]	B156555	08/20/16
16H1031-08 [DUP/Duplicate]	B156555	08/20/16

**Prep Method: SW-846 3540C-SW-846 8082A**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
16H1031-01 [S-8 (0-6"bg)]	B156688	10.1	10.0	08/22/16
16H1031-02 [S-9 (0-6"bg)]	B156688	10.0	10.0	08/22/16
16H1031-03 [S-10 (0-6"bg)]	B156688	10.4	10.0	08/22/16
16H1031-04 [S-11 (0-6"bg)]	B156688	10.1	10.0	08/22/16
16H1031-05 [S-12 (0-6"bg)]	B156688	10.2	10.0	08/22/16
16H1031-06 [S-13 (0-6"bg)]	B156688	10.6	10.0	08/22/16
16H1031-07 [S-14 (0-6"bg)]	B156688	10.0	10.0	08/22/16
16H1031-08 [DUP/Duplicate]	B156688	10.1	10.0	08/22/16



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**QUALITY CONTROL****Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD RPD	RPD Limit	Notes
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**Batch B156688 - SW-846 3540C**

<b>Blank (B156688-BLK1)</b>										Prepared: 08/22/16 Analyzed: 08/24/16
Aroclor-1016	ND	0.020	mg/Kg wet							
Aroclor-1016 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1221	ND	0.020	mg/Kg wet							
Aroclor-1221 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1232	ND	0.020	mg/Kg wet							
Aroclor-1232 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1242	ND	0.020	mg/Kg wet							
Aroclor-1242 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1248	ND	0.020	mg/Kg wet							
Aroclor-1248 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1254	ND	0.020	mg/Kg wet							
Aroclor-1254 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1260	ND	0.020	mg/Kg wet							
Aroclor-1260 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1262	ND	0.020	mg/Kg wet							
Aroclor-1262 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1268	ND	0.020	mg/Kg wet							
Aroclor-1268 [2C]	ND	0.020	mg/Kg wet							
Surrogate: Decachlorobiphenyl	0.200		mg/Kg wet	0.200		99.8		30-150		
Surrogate: Decachlorobiphenyl [2C]	0.196		mg/Kg wet	0.200		98.2		30-150		
Surrogate: Tetrachloro-m-xylene	0.177		mg/Kg wet	0.200		88.3		30-150		
Surrogate: Tetrachloro-m-xylene [2C]	0.174		mg/Kg wet	0.200		87.1		30-150		

<b>LCS (B156688-BS1)</b>										Prepared: 08/22/16 Analyzed: 08/24/16
Aroclor-1016	0.19	0.020	mg/Kg wet	0.200		92.9		40-140		
Aroclor-1016 [2C]	0.18	0.020	mg/Kg wet	0.200		91.3		40-140		
Aroclor-1260	0.17	0.020	mg/Kg wet	0.200		85.0		40-140		
Aroclor-1260 [2C]	0.16	0.020	mg/Kg wet	0.200		78.4		40-140		
Surrogate: Decachlorobiphenyl	0.201		mg/Kg wet	0.200		101		30-150		
Surrogate: Decachlorobiphenyl [2C]	0.198		mg/Kg wet	0.200		99.1		30-150		
Surrogate: Tetrachloro-m-xylene	0.183		mg/Kg wet	0.200		91.3		30-150		
Surrogate: Tetrachloro-m-xylene [2C]	0.180		mg/Kg wet	0.200		89.9		30-150		

<b>LCS Dup (B156688-BSD1)</b>										Prepared: 08/22/16 Analyzed: 08/24/16
Aroclor-1016	0.17	0.020	mg/Kg wet	0.200		87.2		40-140	6.30	30
Aroclor-1016 [2C]	0.17	0.020	mg/Kg wet	0.200		86.8		40-140	5.03	30
Aroclor-1260	0.16	0.020	mg/Kg wet	0.200		79.9		40-140	6.17	30
Aroclor-1260 [2C]	0.15	0.020	mg/Kg wet	0.200		73.6		40-140	6.22	30
Surrogate: Decachlorobiphenyl	0.188		mg/Kg wet	0.200		94.0		30-150		
Surrogate: Decachlorobiphenyl [2C]	0.184		mg/Kg wet	0.200		92.1		30-150		
Surrogate: Tetrachloro-m-xylene	0.169		mg/Kg wet	0.200		84.7		30-150		
Surrogate: Tetrachloro-m-xylene [2C]	0.167		mg/Kg wet	0.200		83.4		30-150		



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**QUALITY CONTROL****Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD RPD	Limit Notes
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**Batch B156688 - SW-846 3540C**

Matrix Spike (B156688-MS1)	Source: 16H1031-01		Prepared: 08/22/16 Analyzed: 08/24/16				
Aroclor-1016	0.23	0.11	mg/Kg dry	0.215	ND	107	40-140
Aroclor-1016 [2C]	0.19	0.11	mg/Kg dry	0.215	ND	89.2	40-140
Aroclor-1260	2.0	0.11	mg/Kg dry	0.215	1.8	85.6	40-140
Aroclor-1260 [2C]	2.0	0.11	mg/Kg dry	0.215	1.8	96.2	40-140
Surrogate: Decachlorobiphenyl	0.256		mg/Kg dry	0.215	119	30-150	
Surrogate: Decachlorobiphenyl [2C]	0.222		mg/Kg dry	0.215	103	30-150	
Surrogate: Tetrachloro-m-xylene	0.197		mg/Kg dry	0.215	92.0	30-150	
Surrogate: Tetrachloro-m-xylene [2C]	0.188		mg/Kg dry	0.215	87.5	30-150	
Matrix Spike Dup (B156688-MSD1)	Source: 16H1031-01		Prepared: 08/22/16 Analyzed: 08/24/16				
Aroclor-1016	0.23	0.11	mg/Kg dry	0.216	ND	107	40-140
Aroclor-1016 [2C]	0.20	0.11	mg/Kg dry	0.216	ND	92.6	40-140
Aroclor-1260	1.9	0.11	mg/Kg dry	0.216	1.8	48.4	40-140
<b>Aroclor-1260 [2C]</b>	<b>1.9</b>	<b>0.11</b>	<b>mg/Kg dry</b>	<b>0.216</b>	<b>1.8</b>	<b>34.9 *</b>	<b>40-140</b>
Surrogate: Decachlorobiphenyl	0.277		mg/Kg dry	0.216	128	30-150	
Surrogate: Decachlorobiphenyl [2C]	0.221		mg/Kg dry	0.216	102	30-150	
Surrogate: Tetrachloro-m-xylene	0.199		mg/Kg dry	0.216	92.2	30-150	
Surrogate: Tetrachloro-m-xylene [2C]	0.190		mg/Kg dry	0.216	87.8	30-150	



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#### QUALITY CONTROL

##### Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD RPD	Limit Notes
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##### Batch B156555 - % Solids

Duplicate (B156555-DUP5)	<b>Source: 16H1031-01</b>			Prepared & Analyzed: 08/20/16					
% Solids	92.7		% Wt		92.0		0.758	20	



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**  
**SW-846 8082A**

**S-8 (0-6"bg)**

Lab Sample ID: 16H1031-01 Date(s) Analyzed: 08/24/2016 08/24/2016

Instrument ID (1):                                    Instrument ID (2):                                   

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1254	1	0.00	-0.03	0.03	4.2	
	2	0.00	-0.03	0.03	4.6	9.6
Aroclor-1260	1	0.00	-0.03	0.03	1.8	
	2	0.00	-0.03	0.03	1.8	1.1



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**

*SW-846 8082A*

**S-9 (0-6"bg)**

Lab Sample ID: 16H1031-02 Date(s) Analyzed: 08/24/2016 08/24/2016

Instrument ID (1):  Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1254	1	0.00	-0.03	0.03	0.56	
	2	0.00	-0.03	0.03	0.60	6.7
Aroclor-1260	1	0.00	-0.03	0.03	0.17	
	2	0.00	-0.03	0.03	0.19	8.8



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**

*SW-846 8082A*

**S-10 (0-6"bg)**

Lab Sample ID: 16H1031-03 Date(s) Analyzed: 08/25/2016 08/25/2016

Instrument ID (1):  Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1254	1	0.00	-0.03	0.03	2.6	
	2	0.00	-0.03	0.03	2.3	13.0
Aroclor-1260	1	0.00	-0.03	0.03	1.2	
	2	0.00	-0.03	0.03	1.5	20.6



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**

*SW-846 8082A*

**S-11 (0-6"bg)**

Lab Sample ID: 16H1031-04 Date(s) Analyzed: 08/25/2016 08/25/2016

Instrument ID (1):  Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1254	1	0.00	-0.03	0.03	4.2	
	2	0.00	-0.03	0.03	4.6	8.1
Aroclor-1260	1	0.00	-0.03	0.03	1.9	
	2	0.00	-0.03	0.03	1.9	2.6



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**

*SW-846 8082A*

**S-12 (0-6"bg)**

Lab Sample ID: 16H1031-05 Date(s) Analyzed: 08/25/2016 08/25/2016

Instrument ID (1):  Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1248	1	0.00	-0.03	0.03	8.7	
	2	0.00	-0.03	0.03	8.4	4.1
Aroclor-1254	1	0.00	-0.03	0.03	3.9	
	2	0.00	-0.03	0.03	4.0	2.3



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**

*SW-846 8082A*

**S-13 (0-6"bg)**

Lab Sample ID: 16H1031-06 Date(s) Analyzed: 08/25/2016 08/25/2016

Instrument ID (1):  Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1254	1	0.00	-0.03	0.03	1.2	
	2	0.00	-0.03	0.03	1.1	11.2



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**

*SW-846 8082A*

**S-14 (0-6"bg)**

Lab Sample ID: 16H1031-07 Date(s) Analyzed: 08/25/2016 08/25/2016

Instrument ID (1):  Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1248	1	0.00	-0.03	0.03	5.8	
	2	0.00	-0.03	0.03	5.2	10.7
Aroclor-1254	1	0.00	-0.03	0.03	1.9	
	2	0.00	-0.03	0.03	1.6	18.2



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## IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

## DUP/Duplicate

*SW-846 8082A*

Lab Sample ID: 16H1031-08

Date(s) Analyzed: 08/25/2016 08/25/2016

Instrument ID (1):

## Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1254	1	0.00	-0.03	0.03	4.1	
	2	0.00	-0.03	0.03	3.6	12.3
Aroclor-1260	1	0.00	-0.03	0.03	1.2	
	2	0.00	-0.03	0.03	1.5	21.4



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**

*SW-846 8082A*

LCS

Lab Sample ID: B156688-BS1 Date(s) Analyzed: 08/24/2016 08/24/2016

Instrument ID (1): \_\_\_\_\_ Instrument ID (2): \_\_\_\_\_

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1016	1	0.00	-0.03	0.03	0.19	
	2	0.00	-0.03	0.03	0.18	3
Aroclor-1260	1	0.00	-0.03	0.03	0.17	
	2	0.00	-0.03	0.03	0.16	6



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## IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

LCS.Dup

*SW-846 8082A*

Lab Sample ID: B156688-BSD1 Date(s) Analyzed: 08/24/2016 08/24/2016

Date(s) Analyzed: 08/24/2016 08/24/2016

Instrument ID (1): **Instrument ID (2)**

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1016	1	0.00	-0.03	0.03	0.17	
	2	0.00	-0.03	0.03	0.17	2
Aroclor-1260	1	0.00	-0.03	0.03	0.16	
	2	0.00	-0.03	0.03	0.15	6



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## IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

## Matrix Spike

*SW-846 8082A*

Lab Sample ID: B156688-MS1 Date(s) Analyzed: 08/24/2016 08/24/2016

Date(s) Analyzed: 08/24/2016 08/24/2016

Instrument ID (1): **Instrument ID (2)**

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1016	1	0.00	-0.03	0.03	0.23	
	2	0.00	-0.03	0.03	0.19	20
Aroclor-1260	1	0.00	-0.03	0.03	2.0	
	2	0.00	-0.03	0.03	2.0	2



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## IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

Matrix Spike Dup

SW-846 8082A

Lab Sample ID: B156688-MSD1 Date(s) Analyzed: 08/24/2016 08/24/2016

Date(s) Analyzed: 08/24/2016 08/24/2016

Instrument ID (1): **Instrument ID (2)**

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1016	1	0.00	-0.03	0.03	0.23	
	2	0.00	-0.03	0.03	0.20	14
Aroclor-1260	1	0.00	-0.03	0.03	1.9	
	2	0.00	-0.03	0.03	1.9	1



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**FLAG/QUALIFIER SUMMARY**

- \* QC result is outside of established limits.
- † Wide recovery limits established for difficult compound.
- ‡ Wide RPD limits established for difficult compound.
- # Data exceeded client recommended or regulatory level
- ND Not Detected
- RL Reporting Limit
- DL Method Detection Limit
- MCL Maximum Contaminant Level

Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.

No results have been blank subtracted unless specified in the case narrative section.

- MS-21 Matrix spike and/or spike duplicate recovery bias high due to contribution of other Aroclors present in the source sample.
- S-01 The surrogate recovery for this sample is not available due to sample dilution below the surrogate reporting limit required from high analyte concentration and/or matrix interferences.



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#### CERTIFICATIONS

##### Certified Analyses included in this Report

Analyte	Certifications
<b><i>SW-846 8082A in Soil</i></b>	
Aroclor-1016	CT,NH,NY,ME,NC,VA
Aroclor-1016 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1221	CT,NH,NY,ME,NC,VA
Aroclor-1221 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1232	CT,NH,NY,ME,NC,VA
Aroclor-1232 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1242	CT,NH,NY,ME,NC,VA
Aroclor-1242 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1248	CT,NH,NY,ME,NC,VA
Aroclor-1248 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1254	CT,NH,NY,ME,NC,VA
Aroclor-1254 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1260	CT,NH,NY,ME,NC,VA
Aroclor-1260 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1262	NY,NC,VA
Aroclor-1262 [2C]	NY,NC,VA
Aroclor-1268	NY,NC,VA
Aroclor-1268 [2C]	NY,NC,VA

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC	100033	02/1/2018
MA	Massachusetts DEP	M-MA100	06/30/2017
CT	Connecticut Department of Public Health	PH-0567	09/30/2017
NY	New York State Department of Health	10899 NELAP	04/1/2017
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2017
RI	Rhode Island Department of Health	LAO00112	12/30/2016
NC	North Carolina Div. of Water Quality	652	12/31/2016
NJ	New Jersey DEP	MA007 NELAP	06/30/2017
FL	Florida Department of Health	E871027 NELAP	06/30/2017
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2017
ME	State of Maine	2011028	06/9/2017
VA	Commonwealth of Virginia	460217	12/14/2016
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2016



39 Spruce St.  
East Longmeadow, MA. 01028  
P: 413-525-2332  
F: 413-525-6405  
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**Sample Receipt Checklist**

CLIENT NAME: Cushing, Jammallo & Wheeler RECEIVED BY: MG DATE: 8/19/16

1) Was the chain(s) of custody relinquished and signed? Yes  No  No COC Incl.

2) Does the chain agree with the samples? Yes  No

If not, explain:

3) Are all the samples in good condition? Yes  No

If not, explain:

4) How were the samples received:

On Ice  Direct from Sampling \_\_\_\_\_ Ambient \_\_\_\_\_ In Cooler(s)

Were the samples received in Temperature Compliance of (2-6°C)? Yes  No  N/A \_\_\_\_\_

Temperature °C by Temp blank \_\_\_\_\_ Temperature °C by Temp gun 4.3

5) Are there Dissolved samples for the lab to filter? Yes  No

Who was notified \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

6) Are there any RUSH or SHORT HOLDING TIME samples? Yes  No

Who was notified \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

7) Location where samples are stored:

LOG IN

Permission to subcontract samples? Yes  No   
(Walk-in clients only) if not already approved  
Client Signature:                   

8) Do all samples have the proper Acid pH: Yes  No  N/A \_\_\_\_\_

9) Do all samples have the proper Base pH: Yes  No  N/A

10) Was the PC notified of any discrepancies with the CoC vs the samples: Yes  N/A

**Containers received at Con-Test**

	# of containers		# of containers
1 Liter Amber		16 oz amber	
500 mL Amber		8 oz <del>amber</del> /clear jar	<u>8</u>
250 mL Amber (8oz amber)		4 oz amber/clear jar	
1 Liter Plastic		2 oz amber/clear jar	
500 mL Plastic		Plastic Bag / Ziploc	
250 mL plastic		SOC Kit	
40 mL Vial - type listed below		Perchlorate Kit	
Colisure / bacteria bottle		Flashpoint bottle	
Dissolved Oxygen bottle		Other glass jar	
Encore		Other	

40 mL vials: # HCl _____	# Methanol _____	Time and Date Frozen:
Doc# 277 # Bisulfate _____	# DI Water _____	
Rev. 4 August 2013 # Thiosulfate _____	Unpreserved	

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Login Sample Receipt Checklist

(Rejection Criteria Listing - Using Sample Acceptance Policy)  
 Any False statement will be brought to the attention of Client

<u>Question</u>	<u>Answer (True/False)</u>	<u>Comment</u>
	T/F/NA	
1) The cooler's custody seal, if present, is intact.	N/A	
2) The cooler or samples do not appear to have been compromised or tampered with.	T	
3) Samples were received on ice.	T	
4) Cooler Temperature is acceptable.	T	
5) Cooler Temperature is recorded.	T	
6) COC is filled out in ink and legible.	T	
7) COC is filled out with all pertinent information.	T	
8) Field Sampler's name present on COC.	T	
9) There are no discrepancies between the sample IDs on the container and the COC.	T	
10) Samples are received within Holding Time.	T	
11) Sample containers have legible labels.	T	
12) Containers are not broken or leaking.	T	
13) Air Cassettes are not broken/open.	N/A	
14) Sample collection date/times are provided.	T	
15) Appropriate sample containers are used.	T	
16) Proper collection media used.	T	
17) No headspace sample bottles are completely filled.	N/A	
18) There is sufficient volume for all requested analyses, including any requested MS/MSDs.	T	
19) Trip blanks provided if applicable.	N/A	
20) VOA sample vials do not have head space or bubble is <6mm (1/4") in diameter.	N/A	
21) Samples do not require splitting or compositing.	T	

Who notified of False statements?

Doc #277 Rev. 4 August 2013

Log-In Technician Initials:

MG

Date/Time:

Date/Time:

8/19/16

1637



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39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

September 9, 2016

Mike Bloom  
Cushing, Jammallo & Wheeler  
464 High Street  
Clinton, MA 01510

Project Location: 179 Brook St., Clinton, MA

Client Job Number:

Project Number: 5812

Laboratory Work Order Number: 16I0067

Enclosed are results of analyses for samples received by the laboratory on September 1, 2016. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Meghan S. Kelley". The signature is fluid and cursive, with "Meghan" and "S." sharing a common initial stroke, and "Kelley" following below.

Meghan E. Kelley  
Project Manager

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39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Cushing, Jammallo & Wheeler  
464 High Street  
Clinton, MA 01510  
ATTN: Mike Bloom

REPORT DATE: 9/9/2016

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 5812

#### **ANALYTICAL SUMMARY**

---

WORK ORDER NUMBER: 16I0067

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: 179 Brook St., Clinton, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
S-15 0-6"bg	16I0067-01	Soil		SM 2540G SW-846 8082A	
S-16 0-6"bg	16I0067-02	Soil		SM 2540G SW-846 8082A	
S-17 0-6"bg	16I0067-03	Soil		SM 2540G SW-846 8082A	
S-18 0-6"bg	16I0067-04	Soil		SM 2540G SW-846 8082A	
S-19 0-6"bg	16I0067-05	Soil		SM 2540G SW-846 8082A	
S-20 0-6"bg	16I0067-06	Soil		SM 2540G SW-846 8082A	
S-21 0-6"bg	16I0067-07	Soil		SM 2540G SW-846 8082A	
S-22 0-6"bg	16I0067-08	Soil		SM 2540G SW-846 8082A	
S-23 0-6"bg	16I0067-09	Soil		SM 2540G SW-846 8082A	



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39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

#### CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

#### SW-846 8082A

##### **Qualifications:**

###### **MS-19**

Sample to spike ratio is greater than or equal to 4:1. Spiked amount is not representative of the native amount in the sample. Appropriate or meaningful recoveries cannot be calculated.

##### **Analyte & Samples(s) Qualified:**

###### **Aroclor-1260**

B157692-MS1, B157692-MSD1

###### **Aroclor-1260 [2C]**

B157692-MS1, B157692-MSD1

---

###### **P-01**

Result was confirmed using a dissimilar column. Relative percent difference between the two results was >40%. In accordance with the method, the higher result was reported.

##### **Analyte & Samples(s) Qualified:**

###### **Aroclor-1254 [2C]**

16I0067-06[S-20 0-6"bg]

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

A handwritten signature in black ink, appearing to read "Lisa A. Worthington".

Lisa A. Worthington  
Project Manager



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16I0067

Date Received: 9/1/2016

**Field Sample #:** S-15 0-6"bg

Sampled: 9/1/2016 11:15

**Sample ID:** 16I0067-01

Sample Matrix: Soil

**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.54	mg/Kg dry	25		SW-846 8082A	9/6/16	9/7/16 19:59	KAL
Aroclor-1221 [1]	ND	0.54	mg/Kg dry	25		SW-846 8082A	9/6/16	9/7/16 19:59	KAL
Aroclor-1232 [1]	ND	0.54	mg/Kg dry	25		SW-846 8082A	9/6/16	9/7/16 19:59	KAL
Aroclor-1242 [1]	ND	0.54	mg/Kg dry	25		SW-846 8082A	9/6/16	9/7/16 19:59	KAL
Aroclor-1248 [1]	ND	0.54	mg/Kg dry	25		SW-846 8082A	9/6/16	9/7/16 19:59	KAL
Aroclor-1254 [2]	2.4	0.54	mg/Kg dry	25		SW-846 8082A	9/6/16	9/7/16 19:59	KAL
Aroclor-1260 [2]	1.2	0.54	mg/Kg dry	25		SW-846 8082A	9/6/16	9/7/16 19:59	KAL
Aroclor-1262 [1]	ND	0.54	mg/Kg dry	25		SW-846 8082A	9/6/16	9/7/16 19:59	KAL
Aroclor-1268 [1]	ND	0.54	mg/Kg dry	25		SW-846 8082A	9/6/16	9/7/16 19:59	KAL
Surrogates	% Recovery		Recovery Limits		Flag/Qual				
Decachlorobiphenyl [1]	107		30-150					9/7/16 19:59	
Decachlorobiphenyl [2]	109		30-150					9/7/16 19:59	
Tetrachloro-m-xylene [1]	95.6		30-150					9/7/16 19:59	
Tetrachloro-m-xylene [2]	97.8		30-150					9/7/16 19:59	




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 39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16I0067

Date Received: 9/1/2016

**Field Sample #:** S-15 0-6"bg

Sampled: 9/1/2016 11:15

**Sample ID:** 16I0067-01Sample Matrix: Soil

---

**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	91.8		% Wt	1		SM 2540G	9/2/16	9/9/16 8:54	MRL



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16I0067

Date Received: 9/1/2016

**Field Sample #:** S-16 0-6"bg

Sampled: 9/1/2016 11:20

**Sample ID:** 16I0067-02**Sample Matrix:** Soil**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 15:30	KAL
Aroclor-1221 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 15:30	KAL
Aroclor-1232 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 15:30	KAL
Aroclor-1242 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 15:30	KAL
Aroclor-1248 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 15:30	KAL
Aroclor-1254 [2]	0.41	0.11	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 15:30	KAL
Aroclor-1260 [1]	0.11	0.11	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 15:30	KAL
Aroclor-1262 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 15:30	KAL
Aroclor-1268 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 15:30	KAL
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	82.7	30-150							9/7/16 15:30
Decachlorobiphenyl [2]	101	30-150							9/7/16 15:30
Tetrachloro-m-xylene [1]	81.7	30-150							9/7/16 15:30
Tetrachloro-m-xylene [2]	84.8	30-150							9/7/16 15:30




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 39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16I0067

Date Received: 9/1/2016

**Field Sample #:** S-16 0-6"bg

Sampled: 9/1/2016 11:20

**Sample ID:** 16I0067-02Sample Matrix: Soil

---

**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	92.2		% Wt	1		SM 2540G	9/2/16	9/9/16 8:54	MRL



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16I0067

Date Received: 9/1/2016

**Field Sample #:** S-17 0-6"bg

Sampled: 9/1/2016 11:25

**Sample ID:** 16I0067-03**Sample Matrix:** Soil**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 15:43	KAL
Aroclor-1221 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 15:43	KAL
Aroclor-1232 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 15:43	KAL
Aroclor-1242 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 15:43	KAL
Aroclor-1248 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 15:43	KAL
Aroclor-1254 [2]	0.16	0.11	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 15:43	KAL
Aroclor-1260 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 15:43	KAL
Aroclor-1262 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 15:43	KAL
Aroclor-1268 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 15:43	KAL
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	88.7	30-150							9/7/16 15:43
Decachlorobiphenyl [2]	95.7	30-150							9/7/16 15:43
Tetrachloro-m-xylene [1]	85.2	30-150							9/7/16 15:43
Tetrachloro-m-xylene [2]	88.9	30-150							9/7/16 15:43




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 39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16I0067

Date Received: 9/1/2016

**Field Sample #:** S-17 0-6"bg

Sampled: 9/1/2016 11:25

**Sample ID:** 16I0067-03Sample Matrix: Soil

---

**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	91.2		% Wt	1		SM 2540G	9/2/16	9/9/16 8:54	MRL



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16I0067

Date Received: 9/1/2016

**Field Sample #:** S-18 0-6"bg

Sampled: 9/1/2016 11:30

**Sample ID:** 16I0067-04**Sample Matrix:** Soil**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 16:00	KAL
Aroclor-1221 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 16:00	KAL
Aroclor-1232 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 16:00	KAL
Aroclor-1242 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 16:00	KAL
Aroclor-1248 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 16:00	KAL
Aroclor-1254 [2]	0.14	0.10	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 16:00	KAL
Aroclor-1260 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 16:00	KAL
Aroclor-1262 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 16:00	KAL
Aroclor-1268 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 16:00	KAL
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	91.7	30-150							9/7/16 16:00
Decachlorobiphenyl [2]	102	30-150							9/7/16 16:00
Tetrachloro-m-xylene [1]	87.6	30-150							9/7/16 16:00
Tetrachloro-m-xylene [2]	89.1	30-150							9/7/16 16:00




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 39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16I0067

Date Received: 9/1/2016

**Field Sample #:** S-18 0-6"bg

Sampled: 9/1/2016 11:30

**Sample ID:** 16I0067-04Sample Matrix: Soil

---

**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	96.0		% Wt	1		SM 2540G	9/2/16	9/9/16 8:54	MRL



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16I0067

Date Received: 9/1/2016

**Field Sample #:** S-19 0-6"bg

Sampled: 9/1/2016 11:35

**Sample ID:** 16I0067-05**Sample Matrix:** Soil**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	9/7/16	9/8/16 10:59	KAL
Surrogates	% Recovery	Recovery Limits		Flag/Qual					
Decachlorobiphenyl [1]	107	30-150					9/8/16 10:59		
Decachlorobiphenyl [2]	128	30-150					9/8/16 10:59		
Tetrachloro-m-xylene [1]	106	30-150					9/8/16 10:59		
Tetrachloro-m-xylene [2]	102	30-150					9/8/16 10:59		




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 39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16I0067

Date Received: 9/1/2016

**Field Sample #:** S-19 0-6"bg

Sampled: 9/1/2016 11:35

**Sample ID:** 16I0067-05Sample Matrix: Soil

---

**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	89.8		% Wt	1		SM 2540G	9/2/16	9/9/16 8:54	MRL



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16I0067

Date Received: 9/1/2016

**Field Sample #:** S-20 0-6"bg

Sampled: 9/1/2016 11:40

**Sample ID:** 16I0067-06

Sample Matrix: Soil

**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 16:17	KAL
Aroclor-1221 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 16:17	KAL
Aroclor-1232 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 16:17	KAL
Aroclor-1242 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 16:17	KAL
Aroclor-1248 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 16:17	KAL
Aroclor-1254 [2]	0.25	0.11	mg/Kg dry	5	P-01	SW-846 8082A	9/6/16	9/7/16 16:17	KAL
Aroclor-1260 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 16:17	KAL
Aroclor-1262 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 16:17	KAL
Aroclor-1268 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 16:17	KAL
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	82.2	30-150							9/7/16 16:17
Decachlorobiphenyl [2]	96.2	30-150							9/7/16 16:17
Tetrachloro-m-xylene [1]	80.5	30-150							9/7/16 16:17
Tetrachloro-m-xylene [2]	79.5	30-150							9/7/16 16:17




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 39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16I0067

Date Received: 9/1/2016

**Field Sample #:** S-20 0-6"bg

Sampled: 9/1/2016 11:40

**Sample ID:** 16I0067-06Sample Matrix: Soil

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**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	88.9		% Wt	1		SM 2540G	9/2/16	9/9/16 8:54	MRL



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16I0067

Date Received: 9/1/2016

**Field Sample #:** S-21 0-6"bg

Sampled: 9/1/2016 11:45

**Sample ID:** 16I0067-07

Sample Matrix: Soil

**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 16:35	KAL
Aroclor-1221 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 16:35	KAL
Aroclor-1232 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 16:35	KAL
Aroclor-1242 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 16:35	KAL
Aroclor-1248 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 16:35	KAL
Aroclor-1254 [2]	0.13	0.10	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 16:35	KAL
Aroclor-1260 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 16:35	KAL
Aroclor-1262 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 16:35	KAL
Aroclor-1268 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 16:35	KAL
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	78.2	30-150							9/7/16 16:35
Decachlorobiphenyl [2]	103	30-150							9/7/16 16:35
Tetrachloro-m-xylene [1]	78.6	30-150							9/7/16 16:35
Tetrachloro-m-xylene [2]	75.3	30-150							9/7/16 16:35




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 39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16I0067

Date Received: 9/1/2016

**Field Sample #:** S-21 0-6"bg

Sampled: 9/1/2016 11:45

**Sample ID:** 16I0067-07Sample Matrix: Soil

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**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	96.8		% Wt	1		SM 2540G	9/2/16	9/9/16 8:54	MRL



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16I0067

Date Received: 9/1/2016

**Field Sample #:** S-22 0-6"bg

Sampled: 9/1/2016 09:35

**Sample ID:** 16I0067-08

Sample Matrix: Soil

**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 16:52	KAL
Aroclor-1221 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 16:52	KAL
Aroclor-1232 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 16:52	KAL
Aroclor-1242 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 16:52	KAL
Aroclor-1248 [1]	0.24	0.10	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 16:52	KAL
Aroclor-1254 [2]	0.30	0.10	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 16:52	KAL
Aroclor-1260 [2]	0.11	0.10	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 16:52	KAL
Aroclor-1262 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 16:52	KAL
Aroclor-1268 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 16:52	KAL
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	95.8	30-150							9/7/16 16:52
Decachlorobiphenyl [2]	117	30-150							9/7/16 16:52
Tetrachloro-m-xylene [1]	92.4	30-150							9/7/16 16:52
Tetrachloro-m-xylene [2]	87.5	30-150							9/7/16 16:52




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Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16I0067

Date Received: 9/1/2016

**Field Sample #:** S-22 0-6"bg

Sampled: 9/1/2016 09:35

**Sample ID:** 16I0067-08Sample Matrix: Soil

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**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	97.3		% Wt	1		SM 2540G	9/2/16	9/9/16 8:54	MRL



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Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16I0067

Date Received: 9/1/2016

**Field Sample #:** S-23 0-6"bg

Sampled: 9/1/2016 09:30

**Sample ID:** 16I0067-09**Sample Matrix:** Soil**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 17:09	KAL
Aroclor-1221 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 17:09	KAL
Aroclor-1232 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 17:09	KAL
Aroclor-1242 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 17:09	KAL
Aroclor-1248 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 17:09	KAL
Aroclor-1254 [2]	0.48	0.10	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 17:09	KAL
Aroclor-1260 [2]	0.15	0.10	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 17:09	KAL
Aroclor-1262 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 17:09	KAL
Aroclor-1268 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	9/6/16	9/7/16 17:09	KAL
Surrogates	% Recovery		Recovery Limits		Flag/Qual				
Decachlorobiphenyl [1]	89.5		30-150					9/7/16 17:09	
Decachlorobiphenyl [2]	112		30-150					9/7/16 17:09	
Tetrachloro-m-xylene [1]	91.7		30-150					9/7/16 17:09	
Tetrachloro-m-xylene [2]	87.3		30-150					9/7/16 17:09	




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Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16I0067

Date Received: 9/1/2016

**Field Sample #:** S-23 0-6"bg

Sampled: 9/1/2016 09:30

**Sample ID:** 16I0067-09Sample Matrix: Soil

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**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	96.6		% Wt	1		SM 2540G	9/2/16	9/9/16 8:54	MRL



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### Sample Extraction Data

**Prep Method: % Solids-SM 2540G**

Lab Number [Field ID]	Batch	Date
16I0067-01 [S-15 0-6"bg]	B157547	09/02/16
16I0067-02 [S-16 0-6"bg]	B157547	09/02/16
16I0067-03 [S-17 0-6"bg]	B157547	09/02/16
16I0067-04 [S-18 0-6"bg]	B157547	09/02/16
16I0067-05 [S-19 0-6"bg]	B157547	09/02/16
16I0067-06 [S-20 0-6"bg]	B157547	09/02/16
16I0067-07 [S-21 0-6"bg]	B157547	09/02/16
16I0067-08 [S-22 0-6"bg]	B157547	09/02/16
16I0067-09 [S-23 0-6"bg]	B157547	09/02/16

**Prep Method: SW-846 3540C-SW-846 8082A**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
16I0067-01 [S-15 0-6"bg]	B157692	10.0	10.0	09/06/16
16I0067-02 [S-16 0-6"bg]	B157692	10.1	10.0	09/06/16
16I0067-03 [S-17 0-6"bg]	B157692	10.0	10.0	09/06/16
16I0067-04 [S-18 0-6"bg]	B157692	10.0	10.0	09/06/16
16I0067-06 [S-20 0-6"bg]	B157692	10.0	10.0	09/06/16
16I0067-07 [S-21 0-6"bg]	B157692	10.1	10.0	09/06/16
16I0067-08 [S-22 0-6"bg]	B157692	10.0	10.0	09/06/16
16I0067-09 [S-23 0-6"bg]	B157692	10.0	10.0	09/06/16

**Prep Method: SW-846 3540C-SW-846 8082A**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
16I0067-05RE1 [S-19 0-6"bg]	B157776	10.0	10.0	09/07/16



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**QUALITY CONTROL****Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD RPD	RPD Limit	Notes
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**Batch B157692 - SW-846 3540C**

<b>Blank (B157692-BLK1)</b>										Prepared: 09/06/16 Analyzed: 09/07/16
Aroclor-1016	ND	0.020	mg/Kg wet							
Aroclor-1016 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1221	ND	0.020	mg/Kg wet							
Aroclor-1221 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1232	ND	0.020	mg/Kg wet							
Aroclor-1232 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1242	ND	0.020	mg/Kg wet							
Aroclor-1242 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1248	ND	0.020	mg/Kg wet							
Aroclor-1248 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1254	ND	0.020	mg/Kg wet							
Aroclor-1254 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1260	ND	0.020	mg/Kg wet							
Aroclor-1260 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1262	ND	0.020	mg/Kg wet							
Aroclor-1262 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1268	ND	0.020	mg/Kg wet							
Aroclor-1268 [2C]	ND	0.020	mg/Kg wet							
Surrogate: Decachlorobiphenyl	0.208		mg/Kg wet	0.200		104		30-150		
Surrogate: Decachlorobiphenyl [2C]	0.222		mg/Kg wet	0.200		111		30-150		
Surrogate: Tetrachloro-m-xylene	0.184		mg/Kg wet	0.200		92.0		30-150		
Surrogate: Tetrachloro-m-xylene [2C]	0.174		mg/Kg wet	0.200		87.2		30-150		

<b>LCS (B157692-BS1)</b>										Prepared: 09/06/16 Analyzed: 09/07/16
Aroclor-1016	0.19	0.020	mg/Kg wet	0.200		93.3		40-140		
Aroclor-1016 [2C]	0.18	0.020	mg/Kg wet	0.200		92.2		40-140		
Aroclor-1260	0.17	0.020	mg/Kg wet	0.200		83.6		40-140		
Aroclor-1260 [2C]	0.17	0.020	mg/Kg wet	0.200		86.2		40-140		
Surrogate: Decachlorobiphenyl	0.208		mg/Kg wet	0.200		104		30-150		
Surrogate: Decachlorobiphenyl [2C]	0.226		mg/Kg wet	0.200		113		30-150		
Surrogate: Tetrachloro-m-xylene	0.188		mg/Kg wet	0.200		93.8		30-150		
Surrogate: Tetrachloro-m-xylene [2C]	0.174		mg/Kg wet	0.200		86.8		30-150		

<b>LCS Dup (B157692-BSD1)</b>										Prepared: 09/06/16 Analyzed: 09/07/16
Aroclor-1016	0.18	0.020	mg/Kg wet	0.200		88.2		40-140	5.64	30
Aroclor-1016 [2C]	0.17	0.020	mg/Kg wet	0.200		84.3		40-140	8.95	30
Aroclor-1260	0.16	0.020	mg/Kg wet	0.200		78.6		40-140	6.11	30
Aroclor-1260 [2C]	0.16	0.020	mg/Kg wet	0.200		80.8		40-140	6.52	30
Surrogate: Decachlorobiphenyl	0.198		mg/Kg wet	0.200		98.9		30-150		
Surrogate: Decachlorobiphenyl [2C]	0.218		mg/Kg wet	0.200		109		30-150		
Surrogate: Tetrachloro-m-xylene	0.173		mg/Kg wet	0.200		86.3		30-150		
Surrogate: Tetrachloro-m-xylene [2C]	0.169		mg/Kg wet	0.200		84.3		30-150		



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**QUALITY CONTROL****Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD RPD	Limit Notes
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**Batch B157692 - SW-846 3540C**

Matrix Spike (B157692-MS1)	Source: 16I0067-01			Prepared: 09/06/16 Analyzed: 09/07/16			
Aroclor-1016	0.22	0.11	mg/Kg dry	0.218	ND	102	40-140
Aroclor-1016 [2C]	0.20	0.11	mg/Kg dry	0.218	ND	93.4	40-140
<b>Aroclor-1260</b>	1.5	0.11	mg/Kg dry	0.218	0.88	<b>292</b> *	40-140
<b>Aroclor-1260 [2C]</b>	1.6	0.11	mg/Kg dry	0.218	1.2	<b>204</b> *	40-140

Surrogate: Decachlorobiphenyl	0.190	mg/Kg dry	0.218	87.1	30-150
Surrogate: Decachlorobiphenyl [2C]	0.225	mg/Kg dry	0.218	103	30-150
Surrogate: Tetrachloro-m-xylene	0.201	mg/Kg dry	0.218	92.1	30-150
Surrogate: Tetrachloro-m-xylene [2C]	0.198	mg/Kg dry	0.218	90.8	30-150

Matrix Spike Dup (B157692-MSD1)	Source: 16I0067-01			Prepared: 09/06/16 Analyzed: 09/07/16			
Aroclor-1016	0.22	0.11	mg/Kg dry	0.218	ND	102	40-140
Aroclor-1016 [2C]	0.22	0.11	mg/Kg dry	0.218	ND	102	40-140
<b>Aroclor-1260</b>	1.4	0.11	mg/Kg dry	0.218	0.88	<b>241</b> *	40-140
<b>Aroclor-1260 [2C]</b>	1.5	0.11	mg/Kg dry	0.218	1.2	<b>149</b> *	40-140

Surrogate: Decachlorobiphenyl	0.208	mg/Kg dry	0.218	95.5	30-150
Surrogate: Decachlorobiphenyl [2C]	0.224	mg/Kg dry	0.218	103	30-150
Surrogate: Tetrachloro-m-xylene	0.201	mg/Kg dry	0.218	92.1	30-150
Surrogate: Tetrachloro-m-xylene [2C]	0.202	mg/Kg dry	0.218	92.5	30-150

**Batch B157776 - SW-846 3540C**

Blank (B157776-BLK1)	Prepared: 09/07/16 Analyzed: 09/08/16				
Aroclor-1016	ND	0.020	mg/Kg wet		
Aroclor-1016 [2C]	ND	0.020	mg/Kg wet		
Aroclor-1221	ND	0.020	mg/Kg wet		
Aroclor-1221 [2C]	ND	0.020	mg/Kg wet		
Aroclor-1232	ND	0.020	mg/Kg wet		
Aroclor-1232 [2C]	ND	0.020	mg/Kg wet		
Aroclor-1242	ND	0.020	mg/Kg wet		
Aroclor-1242 [2C]	ND	0.020	mg/Kg wet		
Aroclor-1248	ND	0.020	mg/Kg wet		
Aroclor-1248 [2C]	ND	0.020	mg/Kg wet		
Aroclor-1254	ND	0.020	mg/Kg wet		
Aroclor-1254 [2C]	ND	0.020	mg/Kg wet		
Aroclor-1260	ND	0.020	mg/Kg wet		
Aroclor-1260 [2C]	ND	0.020	mg/Kg wet		
Aroclor-1262	ND	0.020	mg/Kg wet		
Aroclor-1262 [2C]	ND	0.020	mg/Kg wet		
Aroclor-1268	ND	0.020	mg/Kg wet		
Aroclor-1268 [2C]	ND	0.020	mg/Kg wet		
Surrogate: Decachlorobiphenyl	0.220	mg/Kg wet	0.200	110	30-150
Surrogate: Decachlorobiphenyl [2C]	0.234	mg/Kg wet	0.200	117	30-150
Surrogate: Tetrachloro-m-xylene	0.188	mg/Kg wet	0.200	94.0	30-150
Surrogate: Tetrachloro-m-xylene [2C]	0.174	mg/Kg wet	0.200	86.9	30-150



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### QUALITY CONTROL

#### Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD RPD	Limit Notes
<b>Batch B157776 - SW-846 3540C</b>									
<b>LCS (B157776-BS1)</b>									
Prepared: 09/07/16 Analyzed: 09/08/16									
Aroclor-1016	0.19	0.020	mg/Kg wet	0.200	97.3	40-140			
Aroclor-1016 [2C]	0.19	0.020	mg/Kg wet	0.200	93.8	40-140			
Aroclor-1260	0.17	0.020	mg/Kg wet	0.200	86.8	40-140			
Aroclor-1260 [2C]	0.18	0.020	mg/Kg wet	0.200	90.2	40-140			
Surrogate: Decachlorobiphenyl	0.223		mg/Kg wet	0.200	112	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.234		mg/Kg wet	0.200	117	30-150			
Surrogate: Tetrachloro-m-xylene	0.195		mg/Kg wet	0.200	97.4	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.178		mg/Kg wet	0.200	89.1	30-150			
<b>LCS Dup (B157776-BSD1)</b>									
Prepared: 09/07/16 Analyzed: 09/08/16									
Aroclor-1016	0.19	0.020	mg/Kg wet	0.200	96.3	40-140	1.02	30	
Aroclor-1016 [2C]	0.19	0.020	mg/Kg wet	0.200	96.9	40-140	3.25	30	
Aroclor-1260	0.18	0.020	mg/Kg wet	0.200	90.2	40-140	3.83	30	
Aroclor-1260 [2C]	0.19	0.020	mg/Kg wet	0.200	92.9	40-140	2.91	30	
Surrogate: Decachlorobiphenyl	0.233		mg/Kg wet	0.200	116	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.240		mg/Kg wet	0.200	120	30-150			
Surrogate: Tetrachloro-m-xylene	0.199		mg/Kg wet	0.200	99.4	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.179		mg/Kg wet	0.200	89.6	30-150			



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#### QUALITY CONTROL

##### Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD RPD	Limit Notes
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##### Batch B157547 - % Solids

Duplicate (B157547-DUP7)	<b>Source: 16I0067-01</b>		Prepared: 09/02/16 Analyzed: 09/09/16						
% Solids	92.4		% Wt		91.8		0.651		20
Duplicate (B157547-DUP8)	<b>Source: 16I0067-02</b>		Prepared: 09/02/16 Analyzed: 09/09/16						
% Solids	93.6		% Wt		92.2		1.51		20
Duplicate (B157547-DUP9)	<b>Source: 16I0067-03</b>		Prepared: 09/02/16 Analyzed: 09/09/16						
% Solids	90.6		% Wt		91.2		0.660		20



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**  
*SW-846 8082A*

**S-15 0-6"bg**

Lab Sample ID: 16I0067-01 Date(s) Analyzed: 09/07/2016 09/07/2016

Instrument ID (1):                                    Instrument ID (2):                                   

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1254	1	0.00	-0.03	0.03	2.4	
	2	0.00	-0.03	0.03	2.4	0.0
Aroclor-1260	1	0.00	-0.03	0.03	0.88	
	2	0.00	-0.03	0.03	1.2	30.2



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**

*SW-846 8082A*

**S-16 0-6"bg**

Lab Sample ID: 16I0067-02 Date(s) Analyzed: 09/07/2016 09/07/2016

Instrument ID (1): \_\_\_\_\_ Instrument ID (2): \_\_\_\_\_

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1254	1	0.00	-0.03	0.03	0.40	
	2	0.00	-0.03	0.03	0.41	2.0



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**

*SW-846 8082A*

**S-17 0-6"bg**

Lab Sample ID: 16I0067-03 Date(s) Analyzed: 09/07/2016 09/07/2016

Instrument ID (1): \_\_\_\_\_ Instrument ID (2): \_\_\_\_\_

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1254	1	0.00	-0.03	0.03	0.13	
	2	0.00	-0.03	0.03	0.16	21.5



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## IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

*SW-846 8082A*

S-19 0-6"bg

Lab Sample ID: 16I0067-05RE1

Date(s) Analyzed: 09/08/2016 09/08/2016

### Instrument ID (1):

## Instrument ID (2):

### GC Column (1):

ID: (mm)

## GC Column (2):

ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1254	1	0.00	-0.03	0.03	0.18	
	2	0.00	-0.03	0.03	0.20	13.3



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**

*SW-846 8082A*

**S-20 0-6"bg**

Lab Sample ID: 16I0067-06 Date(s) Analyzed: 09/07/2016 09/07/2016

Instrument ID (1): \_\_\_\_\_ Instrument ID (2): \_\_\_\_\_

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1254	1	0.00	-0.03	0.03	0.17	
	2	0.00	-0.03	0.03	0.25	40.4



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**

*SW-846 8082A*

**S-22 0-6"bg**

Lab Sample ID: 16I0067-08 Date(s) Analyzed: 09/07/2016 09/07/2016

Instrument ID (1): \_\_\_\_\_ Instrument ID (2): \_\_\_\_\_

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1248	1	0.00	-0.03	0.03	0.24	
	2	0.00	-0.03	0.03	0.24	1.7
Aroclor-1254	1	0.00	-0.03	0.03	0.23	
	2	0.00	-0.03	0.03	0.30	25.6



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**

*SW-846 8082A*

**S-23 0-6"bg**

Lab Sample ID: 16I0067-09 Date(s) Analyzed: 09/07/2016 09/07/2016

Instrument ID (1): \_\_\_\_\_ Instrument ID (2): \_\_\_\_\_

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1254	1	0.00	-0.03	0.03	0.33	
	2	0.00	-0.03	0.03	0.48	37.0
Aroclor-1260	1	0.00	-0.03	0.03	0.12	
	2	0.00	-0.03	0.03	0.15	23.9



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**

*SW-846 8082A*

LCS

Lab Sample ID: B157692-BS1 Date(s) Analyzed: 09/07/2016 09/07/2016

Instrument ID (1): \_\_\_\_\_ Instrument ID (2): \_\_\_\_\_

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1016	1	0.00	-0.03	0.03	0.19	
	2	0.00	-0.03	0.03	0.18	4
Aroclor-1260	1	0.00	-0.03	0.03	0.17	
	2	0.00	-0.03	0.03	0.17	2



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## IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

LCS Dup

*SW-846 8082A*

Lab Sample ID: B157692-BSD1 Date(s) Analyzed: 09/07/2016 09/07/2016

Date(s) Analyzed: 09/07/2016 09/07/2016

Instrument ID (1): **Instrument ID (2)**

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1016	1	0.00	-0.03	0.03	0.18	
	2	0.00	-0.03	0.03	0.17	3
Aroclor-1260	1	0.00	-0.03	0.03	0.16	
	2	0.00	-0.03	0.03	0.16	2



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**

*SW-846 8082A*

**Matrix Spike**

Lab Sample ID: B157692-MS1 Date(s) Analyzed: 09/07/2016 09/07/2016

Instrument ID (1): \_\_\_\_\_ Instrument ID (2): \_\_\_\_\_

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1016	1	0.00	-0.03	0.03	0.22	
	2	0.00	-0.03	0.03	0.20	11
Aroclor-1260	1	0.00	-0.03	0.03	1.5	
	2	0.00	-0.03	0.03	1.6	5



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## IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

SW-846 8082A

## Matrix Spike Up

Lab Sample ID: B157692-MSD1 Date(s) Analyzed: 09/07/2016 09/07/2016

Date(s) Analyzed: 09/07/2016 09/07/2016

**Instrument ID (1):** **Instrument ID (2):**

## Instrument ID (2)

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1016	1	0.00	-0.03	0.03	0.22	
	2	0.00	-0.03	0.03	0.22	1
Aroclor-1260	1	0.00	-0.03	0.03	1.4	
	2	0.00	-0.03	0.03	1.5	6



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**

*SW-846 8082A*

LCS

Lab Sample ID: B157776-BS1 Date(s) Analyzed: 09/08/2016 09/08/2016

Instrument ID (1): \_\_\_\_\_ Instrument ID (2): \_\_\_\_\_

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1016	1	0.00	-0.03	0.03	0.19	
	2	0.00	-0.03	0.03	0.19	3
Aroclor-1260	1	0.00	-0.03	0.03	0.17	
	2	0.00	-0.03	0.03	0.18	3



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**

*SW-846 8082A*

LCS Dup

Lab Sample ID: B157776-BSD1 Date(s) Analyzed: 09/08/2016 09/08/2016

Instrument ID (1): \_\_\_\_\_ Instrument ID (2): \_\_\_\_\_

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1016	1	0.00	-0.03	0.03	0.19	
	2	0.00	-0.03	0.03	0.19	2
Aroclor-1260	1	0.00	-0.03	0.03	0.18	
	2	0.00	-0.03	0.03	0.19	5



---

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**FLAG/QUALIFIER SUMMARY**

- \* QC result is outside of established limits.
- † Wide recovery limits established for difficult compound.
- ‡ Wide RPD limits established for difficult compound.
- # Data exceeded client recommended or regulatory level
- ND Not Detected
- RL Reporting Limit
- DL Method Detection Limit
- MCL Maximum Contaminant Level

Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.

No results have been blank subtracted unless specified in the case narrative section.

- MS-19 Sample to spike ratio is greater than or equal to 4:1. Spiked amount is not representative of the native amount in the sample. Appropriate or meaningful recoveries cannot be calculated.
- P-01 Result was confirmed using a dissimilar column. Relative percent difference between the two results was >40%. In accordance with the method, the higher result was reported.



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#### CERTIFICATIONS

##### Certified Analyses included in this Report

Analyte	Certifications
<b><i>SW-846 8082A in Soil</i></b>	
Aroclor-1016	CT,NH,NY,ME,NC,VA
Aroclor-1016 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1221	CT,NH,NY,ME,NC,VA
Aroclor-1221 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1232	CT,NH,NY,ME,NC,VA
Aroclor-1232 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1242	CT,NH,NY,ME,NC,VA
Aroclor-1242 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1248	CT,NH,NY,ME,NC,VA
Aroclor-1248 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1254	CT,NH,NY,ME,NC,VA
Aroclor-1254 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1260	CT,NH,NY,ME,NC,VA
Aroclor-1260 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1262	NY,NC,VA
Aroclor-1262 [2C]	NY,NC,VA
Aroclor-1268	NY,NC,VA
Aroclor-1268 [2C]	NY,NC,VA

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2005	100033	02/1/2018
MA	Massachusetts DEP	M-MA100	06/30/2017
CT	Connecticut Department of Public Health	PH-0567	09/30/2017
NY	New York State Department of Health	10899 NELAP	04/1/2017
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2017
RI	Rhode Island Department of Health	LAO00112	12/30/2016
NC	North Carolina Div. of Water Quality	652	12/31/2016
NJ	New Jersey DEP	MA007 NELAP	06/30/2017
FL	Florida Department of Health	E871027 NELAP	06/30/2017
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2017
ME	State of Maine	2011028	06/9/2017
VA	Commonwealth of Virginia	460217	12/14/2016
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2017



# CHAIN OF CUSTODY RECORD

Phone: 413-525-2332  
Fax: 413-525-6405

**ANALYTICAL LABORATORY**  
Email: info@contestlabs.com  
www.contestlabs.com

Company Name: Cushing, Jammallo and Wheeler

Address: 464 High St.

Project # 5812 (D)

Client PO#

DATA DELIVERY (check all that apply)

FAX  EMAIL  WEBSITE

Fax #

Format:  PDF  EXCEL  ODS

OTHER

Enhanced Data Package\*

Collection

Beginning Date/Time

Ending Date/Time

Composite

Grab

Matrix

Unit

Conc./lot

Comments

39 Spruce St.  
East Longmeadow, MA. 01028  
P: 413-525-2332  
F: 413-525-6405  
www.contestlabs.com



Page 1 of 2

**Sample Receipt Checklist**CLIENT NAME: CJWRECEIVED BY: BLFDATE: 9/1/161) Was the chain(s) of custody relinquished and signed? Yes X No \_\_\_\_\_ No COC Incl.2) Does the chain agree with the samples? Yes X No \_\_\_\_\_

If not, explain:

3) Are all the samples in good condition? Yes X No \_\_\_\_\_

If not, explain:

4) How were the samples received:

On Ice X Direct from Sampling \_\_\_\_\_ Ambient \_\_\_\_\_ In Cooler(s) XWere the samples received in Temperature Compliance of (2-6°C)? Yes X No \_\_\_\_\_ N/A \_\_\_\_\_Temperature °C by Temp blank \_\_\_\_\_ Temperature °C by Temp gun 4.9 C5) Are there Dissolved samples for the lab to filter? Yes \_\_\_\_\_ No X

Who was notified \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

6) Are there any RUSH or SHORT HOLDING TIME samples? Yes \_\_\_\_\_ No X

Who was notified \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

Permission to subcontract samples? Yes No

(Walk-in clients only) if not already approved

Client Signature: \_\_\_\_\_

7) Location where samples are stored: \_\_\_\_\_

8) Do all samples have the proper Acid pH: Yes \_\_\_\_\_ No \_\_\_\_\_ N/A X9) Do all samples have the proper Base pH: Yes \_\_\_\_\_ No \_\_\_\_\_ N/A X10) Was the PC notified of any discrepancies with the CoC vs the samples: Yes \_\_\_\_\_ N/A X**Containers received at Con-Test**

	# of containers		# of containers
1 Liter Amber		16 oz amber	
500 mL Amber		8 oz amber/clear jar	<u>9</u>
250 mL Amber (8oz amber)		4 oz amber/clear jar	
1 Liter Plastic		2 oz amber/clear jar	
500 mL Plastic		Plastic Bag / Ziploc	
250 mL plastic		SOC Kit	
40 mL Vial - type listed below		Perchlorate Kit	
Colisure / bacteria bottle		Flashpoint bottle	
Dissolved Oxygen bottle		Other glass jar	
Encore		Other	

40 mL vials: # HCl _____	# Methanol _____	Time and Date Frozen: _____
Doc# 277 # Bisulfate _____	# DI Water _____	
Rev. 4 August 2013 # Thiosulfate _____	Unpreserved	

Page 2 of 2

Login Sample Receipt Checklist

(Rejection Criteria Listing - Using Sample Acceptance Policy)

Any False statement will be brought to the attention of Client

<u>Question</u>	<u>Answer (True/False)</u>	<u>Comment</u>
	T/F/NA	
1) The cooler's custody seal, if present, is intact.	NA	
2) The cooler or samples do not appear to have been compromised or tampered with.	T	
3) Samples were received on ice.	T	
4) Cooler Temperature is acceptable.	T	
5) Cooler Temperature is recorded.	T	
6) COC is filled out in ink and legible.	T	
7) COC is filled out with all pertinent information.	T	
8) Field Sampler's name present on COC.	T	
9) There are no discrepancies between the sample IDs on the container and the COC.	T	
10) Samples are received within Holding Time.	T	
11) Sample containers have legible labels.	T	
12) Containers are not broken or leaking.	T	
13) Air Cassettes are not broken/open.	NA	
14) Sample collection date/times are provided.	T	
15) Appropriate sample containers are used.	T	
16) Proper collection media used.	T	
17) No headspace sample bottles are completely filled.	NA	
18) There is sufficient volume for all requested analyses, including any requested MS/MSDs.	T	
19) Trip blanks provided if applicable.	NA	
20) VOA sample vials do not have head space or bubble is <6mm (1/4") in diameter.	NA	
21) Samples do not require splitting or compositing.	T	

Who notified of False statements?

Date/Time:

Doc #277 Rev. 4 August 2013

Log-In Technician Initials:

Date/Time:

RLF 9/1/16 1806



---

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

December 14, 2016

James Bennett  
Cushing, Jammallo & Wheeler  
464 High Street  
Clinton, MA 01510

Project Location: 179 Brook St, Clinton, MA

Client Job Number:

Project Number: 5812D

Laboratory Work Order Number: 16L0367

Enclosed are results of analyses for samples received by the laboratory on December 7, 2016. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Meghan S. Kelley". The signature is fluid and cursive, with "Meghan" and "S." on the first line and "Kelley" on the second line.

Meghan E. Kelley  
Project Manager

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Cushing, Jammallo & Wheeler  
 464 High Street  
 Clinton, MA 01510  
 ATTN: James Bennett

REPORT DATE: 12/14/2016

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 5812D

**ANALYTICAL SUMMARY**

WORK ORDER NUMBER: 16L0367

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: 179 Brook St, Clinton, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
C6 North SW 1.25' Bg	16L0367-01	Soil		SM 2540G SW-846 8082A	
A9 North SW 1/2' Bg	16L0367-02	Soil		SM 2540G SW-846 8082A	
C5 Bot 2 1/2' Bg	16L0367-03	Soil		SM 2540G SW-846 8082A	
A4 Bot 1' Bg	16L0367-04	Soil		SM 2540G SW-846 8082A	
D5 West SW 1.75' Bg	16L0367-05	Soil		SM 2540G SW-846 8082A	
A5 Bot 2 1/2' Bg	16L0367-06	Soil		SM 2540G SW-846 8082A	
B6 North SW 1.25' Bg	16L0367-07	Soil		SM 2540G SW-846 8082A	
A6 North SW 2' Bg	16L0367-08	Soil		SM 2540G SW-846 8082A	
B9 North SW 1/2' Bg	16L0367-09	Soil		SM 2540G SW-846 8082A	
B7 Bot 1' Bg	16L0367-10	Soil		SM 2540G SW-846 8082A	
B8 Bot 1' Bg	16L0367-11	Soil		SM 2540G SW-846 8082A	
A6 Bot 2 1/2' Bg	16L0367-12	Soil		SM 2540G SW-846 8082A	
B5 Bot 2 1/2' Bg	16L0367-13	Soil		SM 2540G SW-846 8082A	
B4 SW (Int) 1 1/2' Bg	16L0367-14	Soil		SM 2540G SW-846 8082A	
C4 Bot 2' Bg	16L0367-15	Soil		SM 2540G SW-846 8082A	
D4 West SW 1' Bg	16L0367-16	Soil		SM 2540G SW-846 8082A	
B8 West SW 1/2' Bg	16L0367-17	Soil		SM 2540G SW-846 8082A	
B4 Bot 1' Bg	16L0367-18	Soil		SM 2540G SW-846 8082A	
B7 West SW 1/2' Bg	16L0367-19	Soil		SM 2540G SW-846 8082A	
A8 Bot 1' Bg	16L0367-20	Soil		SM 2540G SW-846 8082A	



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#### CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

REVISED REPORT - 12/14/2016 - 16L0367-13 ID revised.

**SW-846 8082A**

#### **Qualifications:**

**O-32**

A dilution was performed as part of the standard analytical procedure.

#### **Analyte & Samples(s) Qualified:**

16L0367-01[C6 North SW 1.25' Bg], 16L0367-03[C5 Bot 2 1/2' Bg], 16L0367-04[A4 Bot 1' Bg], 16L0367-05[D5 West SW 1.75' Bg], 16L0367-07[B6 North SW 1.25' Bg],  
16L0367-08[A6 North SW 2' Bg], 16L0367-12[A6 Bot 2 1/2' Bg], 16L0367-13[B5 Bot 2 1/2' Bg], 16L0367-15[C4 Bot 2' Bg], 16L0367-19[B7 West SW 1/2' Bg]

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

A handwritten signature in black ink that reads "Meghan S. Kelley". The signature is fluid and cursive, with "Meghan" and "S." on the first line and "Kelley" on the second line.

Meghan E. Kelley  
Project Manager



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0367

Date Received: 12/7/2016

**Field Sample #:** C6 North SW 1.25' Bg

Sampled: 12/6/2016 12:10

**Sample ID:** 16L0367-01Sample Matrix: Soil

Sample Flags: O-32

**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/13/16 23:37	JMB
Aroclor-1221 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/13/16 23:37	JMB
Aroclor-1232 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/13/16 23:37	JMB
Aroclor-1242 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/13/16 23:37	JMB
Aroclor-1248 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/13/16 23:37	JMB
Aroclor-1254 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/13/16 23:37	JMB
Aroclor-1260 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/13/16 23:37	JMB
Aroclor-1262 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/13/16 23:37	JMB
Aroclor-1268 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/13/16 23:37	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	88.4	30-150							12/13/16 23:37
Decachlorobiphenyl [2]	79.2	30-150							12/13/16 23:37
Tetrachloro-m-xylene [1]	79.2	30-150							12/13/16 23:37
Tetrachloro-m-xylene [2]	69.7	30-150							12/13/16 23:37




---

 39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0367

Date Received: 12/7/2016

**Field Sample #:** C6 North SW 1.25' Bg

Sampled: 12/6/2016 12:10

**Sample ID:** 16L0367-01Sample Matrix: Soil

---

**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	89.0		% Wt	1		SM 2540G	12/12/16	12/13/16 9:03	EC



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0367

Date Received: 12/7/2016

**Field Sample #:** A9 North SW 1/2' Bg

Sampled: 12/6/2016 12:15

**Sample ID:** 16L0367-02Sample Matrix: Soil**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.53	mg/Kg dry	25		SW-846 8082A	12/8/16	12/14/16 5:35	JMB
Aroclor-1221 [1]	ND	0.53	mg/Kg dry	25		SW-846 8082A	12/8/16	12/14/16 5:35	JMB
Aroclor-1232 [1]	ND	0.53	mg/Kg dry	25		SW-846 8082A	12/8/16	12/14/16 5:35	JMB
Aroclor-1242 [1]	ND	0.53	mg/Kg dry	25		SW-846 8082A	12/8/16	12/14/16 5:35	JMB
Aroclor-1248 [1]	ND	0.53	mg/Kg dry	25		SW-846 8082A	12/8/16	12/14/16 5:35	JMB
Aroclor-1254 [1]	3.7	0.53	mg/Kg dry	25		SW-846 8082A	12/8/16	12/14/16 5:35	JMB
Aroclor-1260 [1]	ND	0.53	mg/Kg dry	25		SW-846 8082A	12/8/16	12/14/16 5:35	JMB
Aroclor-1262 [1]	ND	0.53	mg/Kg dry	25		SW-846 8082A	12/8/16	12/14/16 5:35	JMB
Aroclor-1268 [1]	ND	0.53	mg/Kg dry	25		SW-846 8082A	12/8/16	12/14/16 5:35	JMB
Surrogates	% Recovery		Recovery Limits		Flag/Qual				
Decachlorobiphenyl [1]	93.8		30-150					12/14/16 5:35	
Decachlorobiphenyl [2]	84.6		30-150					12/14/16 5:35	
Tetrachloro-m-xylene [1]	81.2		30-150					12/14/16 5:35	
Tetrachloro-m-xylene [2]	74.3		30-150					12/14/16 5:35	




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 39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0367

Date Received: 12/7/2016

**Field Sample #:** A9 North SW 1/2' Bg

Sampled: 12/6/2016 12:15

**Sample ID:** 16L0367-02Sample Matrix: Soil

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**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	92.1		% Wt	1		SM 2540G	12/12/16	12/13/16 9:03	EC



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0367

Date Received: 12/7/2016

**Field Sample #:** C5 Bot 2 1/2' Bg

Sampled: 12/6/2016 12:20

**Sample ID:** 16L0367-03Sample Matrix: Soil

Sample Flags: O-32

**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.12	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 5:52	JMB
Aroclor-1221 [1]	ND	0.12	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 5:52	JMB
Aroclor-1232 [1]	ND	0.12	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 5:52	JMB
Aroclor-1242 [1]	ND	0.12	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 5:52	JMB
Aroclor-1248 [1]	ND	0.12	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 5:52	JMB
Aroclor-1254 [1]	ND	0.12	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 5:52	JMB
Aroclor-1260 [1]	ND	0.12	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 5:52	JMB
Aroclor-1262 [1]	ND	0.12	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 5:52	JMB
Aroclor-1268 [1]	ND	0.12	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 5:52	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	81.4	30-150							12/14/16 5:52
Decachlorobiphenyl [2]	73.7	30-150							12/14/16 5:52
Tetrachloro-m-xylene [1]	77.8	30-150							12/14/16 5:52
Tetrachloro-m-xylene [2]	68.8	30-150							12/14/16 5:52




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 39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0367

Date Received: 12/7/2016

**Field Sample #:** C5 Bot 2 1/2' Bg

Sampled: 12/6/2016 12:20

**Sample ID:** 16L0367-03Sample Matrix: Soil

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**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	82.9		% Wt	1		SM 2540G	12/12/16	12/13/16 9:03	EC



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0367

Date Received: 12/7/2016

**Field Sample #:** A4 Bot 1' Bg

Sampled: 12/6/2016 12:25

**Sample ID:** 16L0367-04Sample Matrix: Soil

Sample Flags: O-32

**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 0:14	JMB
Aroclor-1221 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 0:14	JMB
Aroclor-1232 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 0:14	JMB
Aroclor-1242 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 0:14	JMB
Aroclor-1248 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 0:14	JMB
Aroclor-1254 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 0:14	JMB
Aroclor-1260 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 0:14	JMB
Aroclor-1262 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 0:14	JMB
Aroclor-1268 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 0:14	JMB
Surrogates	% Recovery	Recovery Limits		Flag/Qual					
Decachlorobiphenyl [1]	80.6	30-150					12/14/16 0:14		
Decachlorobiphenyl [2]	78.1	30-150					12/14/16 0:14		
Tetrachloro-m-xylene [1]	77.8	30-150					12/14/16 0:14		
Tetrachloro-m-xylene [2]	65.9	30-150					12/14/16 0:14		




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 39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0367

Date Received: 12/7/2016

**Field Sample #:** A4 Bot 1' Bg

Sampled: 12/6/2016 12:25

**Sample ID:** 16L0367-04Sample Matrix: Soil

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**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	87.0		% Wt	1		SM 2540G	12/12/16	12/13/16 9:03	EC



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0367

Date Received: 12/7/2016

**Field Sample #:** D5 West SW 1.75' Bg

Sampled: 12/6/2016 12:30

**Sample ID:** 16L0367-05Sample Matrix: Soil

Sample Flags: O-32

**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 0:26	JMB
Aroclor-1221 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 0:26	JMB
Aroclor-1232 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 0:26	JMB
Aroclor-1242 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 0:26	JMB
Aroclor-1248 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 0:26	JMB
Aroclor-1254 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 0:26	JMB
Aroclor-1260 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 0:26	JMB
Aroclor-1262 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 0:26	JMB
Aroclor-1268 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 0:26	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	89.6	30-150							12/14/16 0:26
Decachlorobiphenyl [2]	81.5	30-150							12/14/16 0:26
Tetrachloro-m-xylene [1]	84.6	30-150							12/14/16 0:26
Tetrachloro-m-xylene [2]	74.5	30-150							12/14/16 0:26




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 39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0367

Date Received: 12/7/2016

**Field Sample #:** D5 West SW 1.75' Bg

Sampled: 12/6/2016 12:30

**Sample ID:** 16L0367-05Sample Matrix: Soil

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**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	89.4		% Wt	1		SM 2540G	12/12/16	12/13/16 9:03	EC



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0367

Date Received: 12/7/2016

**Field Sample #:** A5 Bot 2 1/2' Bg

Sampled: 12/6/2016 12:35

**Sample ID:** 16L0367-06Sample Matrix: Soil**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.12	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 0:38	JMB
Aroclor-1221 [1]	ND	0.12	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 0:38	JMB
Aroclor-1232 [1]	ND	0.12	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 0:38	JMB
Aroclor-1242 [1]	ND	0.12	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 0:38	JMB
Aroclor-1248 [1]	ND	0.12	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 0:38	JMB
Aroclor-1254 [1]	0.37	0.12	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 0:38	JMB
Aroclor-1260 [1]	ND	0.12	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 0:38	JMB
Aroclor-1262 [1]	ND	0.12	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 0:38	JMB
Aroclor-1268 [1]	ND	0.12	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 0:38	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	81.9	30-150						12/14/16 0:38	
Decachlorobiphenyl [2]	77.2	30-150						12/14/16 0:38	
Tetrachloro-m-xylene [1]	81.6	30-150						12/14/16 0:38	
Tetrachloro-m-xylene [2]	70.2	30-150						12/14/16 0:38	




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 39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0367

Date Received: 12/7/2016

**Field Sample #:** A5 Bot 2 1/2' Bg

Sampled: 12/6/2016 12:35

**Sample ID:** 16L0367-06Sample Matrix: Soil

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**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	80.9		% Wt	1		SM 2540G	12/12/16	12/13/16 9:03	EC



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0367

Date Received: 12/7/2016

**Field Sample #:** B6 North SW 1.25' Bg

Sampled: 12/6/2016 12:40

**Sample ID:** 16L0367-07Sample Matrix: Soil

Sample Flags: O-32

**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 0:50	JMB
Aroclor-1221 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 0:50	JMB
Aroclor-1232 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 0:50	JMB
Aroclor-1242 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 0:50	JMB
Aroclor-1248 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 0:50	JMB
Aroclor-1254 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 0:50	JMB
Aroclor-1260 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 0:50	JMB
Aroclor-1262 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 0:50	JMB
Aroclor-1268 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 0:50	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	86.9	30-150							12/14/16 0:50
Decachlorobiphenyl [2]	80.7	30-150							12/14/16 0:50
Tetrachloro-m-xylene [1]	84.0	30-150							12/14/16 0:50
Tetrachloro-m-xylene [2]	74.1	30-150							12/14/16 0:50




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 39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0367

Date Received: 12/7/2016

**Field Sample #:** B6 North SW 1.25' Bg

Sampled: 12/6/2016 12:40

**Sample ID:** 16L0367-07Sample Matrix: Soil

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**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	89.4		% Wt	1		SM 2540G	12/12/16	12/13/16 9:03	EC



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0367

Date Received: 12/7/2016

**Field Sample #:** A6 North SW 2' Bg

Sampled: 12/6/2016 12:45

**Sample ID:** 16L0367-08Sample Matrix: Soil

Sample Flags: O-32

**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 1:03	JMB
Aroclor-1221 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 1:03	JMB
Aroclor-1232 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 1:03	JMB
Aroclor-1242 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 1:03	JMB
Aroclor-1248 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 1:03	JMB
Aroclor-1254 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 1:03	JMB
Aroclor-1260 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 1:03	JMB
Aroclor-1262 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 1:03	JMB
Aroclor-1268 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 1:03	JMB
Surrogates	% Recovery	Recovery Limits		Flag/Qual					
Decachlorobiphenyl [1]	86.7	30-150					12/14/16 1:03		
Decachlorobiphenyl [2]	77.5	30-150					12/14/16 1:03		
Tetrachloro-m-xylene [1]	86.9	30-150					12/14/16 1:03		
Tetrachloro-m-xylene [2]	74.7	30-150					12/14/16 1:03		




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 39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0367

Date Received: 12/7/2016

**Field Sample #:** A6 North SW 2' Bg

Sampled: 12/6/2016 12:45

**Sample ID:** 16L0367-08Sample Matrix: Soil

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**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	84.5		% Wt	1		SM 2540G	12/12/16	12/13/16 9:03	EC



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0367

Date Received: 12/7/2016

**Field Sample #:** B9 North SW 1/2' Bg

Sampled: 12/6/2016 12:50

**Sample ID:** 16L0367-09Sample Matrix: Soil**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 1:15	JMB
Aroclor-1221 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 1:15	JMB
Aroclor-1232 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 1:15	JMB
Aroclor-1242 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 1:15	JMB
Aroclor-1248 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 1:15	JMB
Aroclor-1254 [2]	0.35	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 1:15	JMB
Aroclor-1260 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 1:15	JMB
Aroclor-1262 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 1:15	JMB
Aroclor-1268 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 1:15	JMB
Surrogates	% Recovery		Recovery Limits		Flag/Qual				
Decachlorobiphenyl [1]	84.6		30-150					12/14/16 1:15	
Decachlorobiphenyl [2]	73.5		30-150					12/14/16 1:15	
Tetrachloro-m-xylene [1]	80.5		30-150					12/14/16 1:15	
Tetrachloro-m-xylene [2]	70.0		30-150					12/14/16 1:15	




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 39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0367

Date Received: 12/7/2016

**Field Sample #:** B9 North SW 1/2' Bg

Sampled: 12/6/2016 12:50

**Sample ID:** 16L0367-09Sample Matrix: Soil

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**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	91.5		% Wt	1		SM 2540G	12/12/16	12/13/16 9:03	EC



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0367

Date Received: 12/7/2016

**Field Sample #:** B7 Bot 1' Bg

Sampled: 12/6/2016 12:55

**Sample ID:** 16L0367-10**Sample Matrix:** Soil**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 1:27	JMB
Aroclor-1221 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 1:27	JMB
Aroclor-1232 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 1:27	JMB
Aroclor-1242 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 1:27	JMB
Aroclor-1248 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 1:27	JMB
Aroclor-1254 [1]	0.30	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 1:27	JMB
Aroclor-1260 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 1:27	JMB
Aroclor-1262 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 1:27	JMB
Aroclor-1268 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 1:27	JMB
Surrogates	% Recovery		Recovery Limits		Flag/Qual				
Decachlorobiphenyl [1]	77.9		30-150					12/14/16 1:27	
Decachlorobiphenyl [2]	71.2		30-150					12/14/16 1:27	
Tetrachloro-m-xylene [1]	75.8		30-150					12/14/16 1:27	
Tetrachloro-m-xylene [2]	66.4		30-150					12/14/16 1:27	




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 39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0367

Date Received: 12/7/2016

**Field Sample #:** B7 Bot 1' Bg

Sampled: 12/6/2016 12:55

**Sample ID:** 16L0367-10Sample Matrix: Soil

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**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	90.0		% Wt	1		SM 2540G	12/12/16	12/13/16 9:03	EC



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0367

Date Received: 12/7/2016

**Field Sample #:** B8 Bot 1' Bg

Sampled: 12/6/2016 13:00

**Sample ID:** 16L0367-11**Sample Matrix:** Soil**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 2:16	JMB
Aroclor-1221 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 2:16	JMB
Aroclor-1232 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 2:16	JMB
Aroclor-1242 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 2:16	JMB
Aroclor-1248 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 2:16	JMB
Aroclor-1254 [2]	0.14	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 2:16	JMB
Aroclor-1260 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 2:16	JMB
Aroclor-1262 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 2:16	JMB
Aroclor-1268 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 2:16	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	83.9	30-150							12/14/16 2:16
Decachlorobiphenyl [2]	75.0	30-150							12/14/16 2:16
Tetrachloro-m-xylene [1]	84.3	30-150							12/14/16 2:16
Tetrachloro-m-xylene [2]	73.7	30-150							12/14/16 2:16




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 39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0367

Date Received: 12/7/2016

**Field Sample #:** B8 Bot 1' Bg

Sampled: 12/6/2016 13:00

**Sample ID:** 16L0367-11Sample Matrix: Soil

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**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	93.5		% Wt	1		SM 2540G	12/12/16	12/13/16 9:03	EC



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0367

Date Received: 12/7/2016

**Field Sample #:** A6 Bot 2 1/2' Bg

Sampled: 12/6/2016 13:05

**Sample ID:** 16L0367-12Sample Matrix: Soil

Sample Flags: O-32

**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 2:28	JMB
Aroclor-1221 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 2:28	JMB
Aroclor-1232 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 2:28	JMB
Aroclor-1242 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 2:28	JMB
Aroclor-1248 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 2:28	JMB
Aroclor-1254 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 2:28	JMB
Aroclor-1260 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 2:28	JMB
Aroclor-1262 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 2:28	JMB
Aroclor-1268 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 2:28	JMB
Surrogates	% Recovery	Recovery Limits		Flag/Qual					
Decachlorobiphenyl [1]	84.0	30-150							12/14/16 2:28
Decachlorobiphenyl [2]	74.9	30-150							12/14/16 2:28
Tetrachloro-m-xylene [1]	81.5	30-150							12/14/16 2:28
Tetrachloro-m-xylene [2]	70.9	30-150							12/14/16 2:28




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 39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0367

Date Received: 12/7/2016

**Field Sample #:** A6 Bot 2 1/2' Bg

Sampled: 12/6/2016 13:05

**Sample ID:** 16L0367-12Sample Matrix: Soil

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**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	86.9		% Wt	1		SM 2540G	12/12/16	12/13/16 9:03	EC



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0367

Date Received: 12/7/2016

**Field Sample #:** B5 Bot 2 1/2' Bg

Sampled: 12/6/2016 13:10

**Sample ID:** 16L0367-13Sample Matrix: Soil

Sample Flags: O-32

**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 2:40	JMB
Aroclor-1221 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 2:40	JMB
Aroclor-1232 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 2:40	JMB
Aroclor-1242 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 2:40	JMB
Aroclor-1248 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 2:40	JMB
Aroclor-1254 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 2:40	JMB
Aroclor-1260 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 2:40	JMB
Aroclor-1262 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 2:40	JMB
Aroclor-1268 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 2:40	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	81.8	30-150							12/14/16 2:40
Decachlorobiphenyl [2]	74.3	30-150							12/14/16 2:40
Tetrachloro-m-xylene [1]	76.9	30-150							12/14/16 2:40
Tetrachloro-m-xylene [2]	68.5	30-150							12/14/16 2:40




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 39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0367

Date Received: 12/7/2016

**Field Sample #:** B5 Bot 2 1/2' Bg

Sampled: 12/6/2016 13:10

**Sample ID:** 16L0367-13Sample Matrix: Soil

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**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	86.8		% Wt	1		SM 2540G	12/12/16	12/13/16 9:03	EC



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0367

Date Received: 12/7/2016

**Field Sample #:** B4 SW (Int) 1 1/2' Bg

Sampled: 12/6/2016 13:15

**Sample ID:** 16L0367-14Sample Matrix: Soil**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 2:53	JMB
Aroclor-1221 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 2:53	JMB
Aroclor-1232 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 2:53	JMB
Aroclor-1242 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 2:53	JMB
Aroclor-1248 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 2:53	JMB
Aroclor-1254 [1]	0.34	0.10	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 2:53	JMB
Aroclor-1260 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 2:53	JMB
Aroclor-1262 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 2:53	JMB
Aroclor-1268 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 2:53	JMB
Surrogates	% Recovery		Recovery Limits		Flag/Qual				
Decachlorobiphenyl [1]	90.0		30-150					12/14/16 2:53	
Decachlorobiphenyl [2]	83.9		30-150					12/14/16 2:53	
Tetrachloro-m-xylene [1]	87.7		30-150					12/14/16 2:53	
Tetrachloro-m-xylene [2]	75.4		30-150					12/14/16 2:53	




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 39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0367

Date Received: 12/7/2016

**Field Sample #:** B4 SW (Int) 1 1/2' Bg

Sampled: 12/6/2016 13:15

**Sample ID:** 16L0367-14Sample Matrix: Soil

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**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	90.2		% Wt	1		SM 2540G	12/12/16	12/13/16 9:03	EC



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0367

Date Received: 12/7/2016

**Field Sample #:** C4 Bot 2' Bg

Sampled: 12/6/2016 13:20

**Sample ID:** 16L0367-15Sample Matrix: Soil

Sample Flags: O-32

**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.13	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:05	JMB
Aroclor-1221 [1]	ND	0.13	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:05	JMB
Aroclor-1232 [1]	ND	0.13	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:05	JMB
Aroclor-1242 [1]	ND	0.13	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:05	JMB
Aroclor-1248 [1]	ND	0.13	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:05	JMB
Aroclor-1254 [1]	ND	0.13	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:05	JMB
Aroclor-1260 [1]	ND	0.13	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:05	JMB
Aroclor-1262 [1]	ND	0.13	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:05	JMB
Aroclor-1268 [1]	ND	0.13	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:05	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	69.1	30-150							12/14/16 3:05
Decachlorobiphenyl [2]	78.0	30-150							12/14/16 3:05
Tetrachloro-m-xylene [1]	70.8	30-150							12/14/16 3:05
Tetrachloro-m-xylene [2]	61.3	30-150							12/14/16 3:05




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 39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0367

Date Received: 12/7/2016

**Field Sample #:** C4 Bot 2' Bg

Sampled: 12/6/2016 13:20

**Sample ID:** 16L0367-15Sample Matrix: Soil

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**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	75.0		% Wt	1		SM 2540G	12/12/16	12/13/16 9:03	EC



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0367

Date Received: 12/7/2016

**Field Sample #:** D4 West SW 1' Bg

Sampled: 12/6/2016 13:25

**Sample ID:** 16L0367-16Sample Matrix: Soil**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.12	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:17	JMB
Aroclor-1221 [1]	ND	0.12	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:17	JMB
Aroclor-1232 [1]	ND	0.12	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:17	JMB
Aroclor-1242 [1]	ND	0.12	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:17	JMB
Aroclor-1248 [1]	ND	0.12	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:17	JMB
Aroclor-1254 [1]	0.22	0.12	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:17	JMB
Aroclor-1260 [1]	ND	0.12	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:17	JMB
Aroclor-1262 [1]	ND	0.12	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:17	JMB
Aroclor-1268 [1]	ND	0.12	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:17	JMB
Surrogates	% Recovery		Recovery Limits		Flag/Qual				
Decachlorobiphenyl [1]	82.8		30-150					12/14/16 3:17	
Decachlorobiphenyl [2]	78.9		30-150					12/14/16 3:17	
Tetrachloro-m-xylene [1]	75.7		30-150					12/14/16 3:17	
Tetrachloro-m-xylene [2]	65.3		30-150					12/14/16 3:17	




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 39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0367

Date Received: 12/7/2016

**Field Sample #:** D4 West SW 1' Bg

Sampled: 12/6/2016 13:25

**Sample ID:** 16L0367-16Sample Matrix: Soil

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**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	85.1		% Wt	1		SM 2540G	12/12/16	12/13/16 9:03	EC



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0367

Date Received: 12/7/2016

**Field Sample #:** B8 West SW 1/2' Bg

Sampled: 12/6/2016 13:30

**Sample ID:** 16L0367-17Sample Matrix: Soil**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:29	JMB
Aroclor-1221 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:29	JMB
Aroclor-1232 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:29	JMB
Aroclor-1242 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:29	JMB
Aroclor-1248 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:29	JMB
Aroclor-1254 [2]	0.20	0.10	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:29	JMB
Aroclor-1260 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:29	JMB
Aroclor-1262 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:29	JMB
Aroclor-1268 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:29	JMB
Surrogates	% Recovery		Recovery Limits		Flag/Qual				
Decachlorobiphenyl [1]	81.7		30-150					12/14/16 3:29	
Decachlorobiphenyl [2]	75.4		30-150					12/14/16 3:29	
Tetrachloro-m-xylene [1]	80.4		30-150					12/14/16 3:29	
Tetrachloro-m-xylene [2]	69.9		30-150					12/14/16 3:29	




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 39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0367

Date Received: 12/7/2016

**Field Sample #:** B8 West SW 1/2' Bg

Sampled: 12/6/2016 13:30

**Sample ID:** 16L0367-17Sample Matrix: Soil

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**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	92.0		% Wt	1		SM 2540G	12/12/16	12/13/16 9:03	EC



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0367

Date Received: 12/7/2016

**Field Sample #:** B4 Bot 1' Bg

Sampled: 12/6/2016 13:35

**Sample ID:** 16L0367-18**Sample Matrix:** Soil**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:41	JMB
Aroclor-1221 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:41	JMB
Aroclor-1232 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:41	JMB
Aroclor-1242 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:41	JMB
Aroclor-1248 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:41	JMB
Aroclor-1254 [1]	0.23	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:41	JMB
Aroclor-1260 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:41	JMB
Aroclor-1262 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:41	JMB
Aroclor-1268 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:41	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	79.8	30-150							12/14/16 3:41
Decachlorobiphenyl [2]	77.4	30-150							12/14/16 3:41
Tetrachloro-m-xylene [1]	74.7	30-150							12/14/16 3:41
Tetrachloro-m-xylene [2]	64.4	30-150							12/14/16 3:41




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 39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0367

Date Received: 12/7/2016

**Field Sample #:** B4 Bot 1' Bg

Sampled: 12/6/2016 13:35

**Sample ID:** 16L0367-18Sample Matrix: Soil

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**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	85.3		% Wt	1		SM 2540G	12/12/16	12/13/16 9:03	EC



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0367

Date Received: 12/7/2016

**Field Sample #:** B7 West SW 1/2' Bg

Sampled: 12/6/2016 13:40

**Sample ID:** 16L0367-19Sample Matrix: Soil

Sample Flags: O-32

**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:54	JMB
Aroclor-1221 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:54	JMB
Aroclor-1232 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:54	JMB
Aroclor-1242 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:54	JMB
Aroclor-1248 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:54	JMB
Aroclor-1254 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:54	JMB
Aroclor-1260 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:54	JMB
Aroclor-1262 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:54	JMB
Aroclor-1268 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 3:54	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	84.2	30-150							12/14/16 3:54
Decachlorobiphenyl [2]	76.5	30-150							12/14/16 3:54
Tetrachloro-m-xylene [1]	82.5	30-150							12/14/16 3:54
Tetrachloro-m-xylene [2]	71.8	30-150							12/14/16 3:54




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 39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0367

Date Received: 12/7/2016

**Field Sample #:** B7 West SW 1/2' Bg

Sampled: 12/6/2016 13:40

**Sample ID:** 16L0367-19Sample Matrix: Soil

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**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	91.9		% Wt	1		SM 2540G	12/12/16	12/13/16 9:03	EC



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0367

Date Received: 12/7/2016

**Field Sample #:** A8 Bot 1' Bg

Sampled: 12/6/2016 13:45

**Sample ID:** 16L0367-20Sample Matrix: Soil**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 4:06	JMB
Aroclor-1221 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 4:06	JMB
Aroclor-1232 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 4:06	JMB
Aroclor-1242 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 4:06	JMB
Aroclor-1248 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 4:06	JMB
Aroclor-1254 [1]	0.29	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 4:06	JMB
Aroclor-1260 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 4:06	JMB
Aroclor-1262 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 4:06	JMB
Aroclor-1268 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/14/16 4:06	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	88.3	30-150							12/14/16 4:06
Decachlorobiphenyl [2]	84.9	30-150							12/14/16 4:06
Tetrachloro-m-xylene [1]	87.5	30-150							12/14/16 4:06
Tetrachloro-m-xylene [2]	74.3	30-150							12/14/16 4:06




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 39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0367

Date Received: 12/7/2016

**Field Sample #:** A8 Bot 1' Bg

Sampled: 12/6/2016 13:45

**Sample ID:** 16L0367-20Sample Matrix: Soil

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**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	92.5		% Wt	1		SM 2540G	12/12/16	12/13/16 9:03	EC



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### Sample Extraction Data

**Prep Method: % Solids-SM 2540G**

Lab Number [Field ID]	Batch	Date
16L0367-01 [C6 North SW 1.25' Bg]	B165512	12/12/16
16L0367-02 [A9 North SW 1/2' Bg]	B165512	12/12/16
16L0367-03 [C5 Bot 2 1/2' Bg]	B165512	12/12/16
16L0367-04 [A4 Bot 1' Bg]	B165512	12/12/16
16L0367-05 [D5 West SW 1.75' Bg]	B165512	12/12/16
16L0367-06 [A5 Bot 2 1/2' Bg]	B165512	12/12/16
16L0367-07 [B6 North SW 1.25' Bg]	B165512	12/12/16
16L0367-08 [A6 North SW 2' Bg]	B165512	12/12/16
16L0367-09 [B9 North SW 1/2' Bg]	B165512	12/12/16
16L0367-10 [B7 Bot 1' Bg]	B165512	12/12/16
16L0367-11 [B8 Bot 1' Bg]	B165512	12/12/16
16L0367-12 [A6 Bot 2 1/2' Bg]	B165512	12/12/16
16L0367-13 [B5 Bot 2 1/2' Bg]	B165512	12/12/16
16L0367-14 [B4 SW (Int) 1 1/2' Bg]	B165512	12/12/16
16L0367-15 [C4 Bot 2' Bg]	B165512	12/12/16
16L0367-16 [D4 West SW 1' Bg]	B165512	12/12/16
16L0367-17 [B8 West SW 1/2' Bg]	B165512	12/12/16
16L0367-18 [B4 Bot 1' Bg]	B165512	12/12/16
16L0367-19 [B7 West SW 1/2' Bg]	B165512	12/12/16
16L0367-20 [A8 Bot 1' Bg]	B165512	12/12/16

**Prep Method: SW-846 3540C-SW-846 8082A**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
16L0367-01 [C6 North SW 1.25' Bg]	B165225	10.4	10.0	12/08/16
16L0367-02 [A9 North SW 1/2' Bg]	B165225	10.3	10.0	12/08/16
16L0367-03 [C5 Bot 2 1/2' Bg]	B165225	10.4	10.0	12/08/16
16L0367-04 [A4 Bot 1' Bg]	B165225	10.2	10.0	12/08/16
16L0367-05 [D5 West SW 1.75' Bg]	B165225	10.5	10.0	12/08/16
16L0367-06 [A5 Bot 2 1/2' Bg]	B165225	10.2	10.0	12/08/16
16L0367-07 [B6 North SW 1.25' Bg]	B165225	10.3	10.0	12/08/16
16L0367-08 [A6 North SW 2' Bg]	B165225	10.8	10.0	12/08/16
16L0367-09 [B9 North SW 1/2' Bg]	B165225	10.2	10.0	12/08/16
16L0367-10 [B7 Bot 1' Bg]	B165225	10.1	10.0	12/08/16
16L0367-11 [B8 Bot 1' Bg]	B165225	10.1	10.0	12/08/16
16L0367-12 [A6 Bot 2 1/2' Bg]	B165225	10.8	10.0	12/08/16
16L0367-13 [B5 Bot 2 1/2' Bg]	B165225	10.4	10.0	12/08/16
16L0367-14 [B4 SW (Int) 1 1/2' Bg]	B165225	10.7	10.0	12/08/16
16L0367-15 [C4 Bot 2' Bg]	B165225	10.1	10.0	12/08/16
16L0367-16 [D4 West SW 1' Bg]	B165225	10.2	10.0	12/08/16
16L0367-17 [B8 West SW 1/2' Bg]	B165225	10.5	10.0	12/08/16
16L0367-18 [B4 Bot 1' Bg]	B165225	10.4	10.0	12/08/16
16L0367-19 [B7 West SW 1/2' Bg]	B165225	10.5	10.0	12/08/16
16L0367-20 [A8 Bot 1' Bg]	B165225	10.1	10.0	12/08/16



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**QUALITY CONTROL****Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD RPD	RPD Limit	Notes
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**Batch B165225 - SW-846 3540C****Blank (B165225-BLK1)**

Prepared: 12/08/16 Analyzed: 12/13/16

Aroclor-1016	ND	0.020	mg/Kg wet							
Aroclor-1016 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1221	ND	0.020	mg/Kg wet							
Aroclor-1221 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1232	ND	0.020	mg/Kg wet							
Aroclor-1232 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1242	ND	0.020	mg/Kg wet							
Aroclor-1242 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1248	ND	0.020	mg/Kg wet							
Aroclor-1248 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1254	ND	0.020	mg/Kg wet							
Aroclor-1254 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1260	ND	0.020	mg/Kg wet							
Aroclor-1260 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1262	ND	0.020	mg/Kg wet							
Aroclor-1262 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1268	ND	0.020	mg/Kg wet							
Aroclor-1268 [2C]	ND	0.020	mg/Kg wet							
Surrogate: Decachlorobiphenyl	0.176		mg/Kg wet	0.200		88.2		30-150		
Surrogate: Decachlorobiphenyl [2C]	0.159		mg/Kg wet	0.200		79.3		30-150		
Surrogate: Tetrachloro-m-xylene	0.167		mg/Kg wet	0.200		83.4		30-150		
Surrogate: Tetrachloro-m-xylene [2C]	0.144		mg/Kg wet	0.200		72.2		30-150		

**LCS (B165225-BS1)**

Prepared: 12/08/16 Analyzed: 12/13/16

Aroclor-1016	0.16	0.020	mg/Kg wet	0.200		82.3		40-140		
Aroclor-1016 [2C]	0.16	0.020	mg/Kg wet	0.200		79.2		40-140		
Aroclor-1260	0.17	0.020	mg/Kg wet	0.200		82.9		40-140		
Aroclor-1260 [2C]	0.15	0.020	mg/Kg wet	0.200		73.8		40-140		
Surrogate: Decachlorobiphenyl	0.168		mg/Kg wet	0.200		84.1		30-150		
Surrogate: Decachlorobiphenyl [2C]	0.152		mg/Kg wet	0.200		76.0		30-150		
Surrogate: Tetrachloro-m-xylene	0.150		mg/Kg wet	0.200		75.1		30-150		
Surrogate: Tetrachloro-m-xylene [2C]	0.131		mg/Kg wet	0.200		65.6		30-150		

**LCS Dup (B165225-BSD1)**

Prepared: 12/08/16 Analyzed: 12/13/16

Aroclor-1016	0.18	0.020	mg/Kg wet	0.200		89.9		40-140	8.90	30
Aroclor-1016 [2C]	0.16	0.020	mg/Kg wet	0.200		80.8		40-140	1.89	30
Aroclor-1260	0.19	0.020	mg/Kg wet	0.200		93.2		40-140	11.7	30
Aroclor-1260 [2C]	0.17	0.020	mg/Kg wet	0.200		83.4		40-140	12.3	30
Surrogate: Decachlorobiphenyl	0.195		mg/Kg wet	0.200		97.5		30-150		
Surrogate: Decachlorobiphenyl [2C]	0.177		mg/Kg wet	0.200		88.7		30-150		
Surrogate: Tetrachloro-m-xylene	0.157		mg/Kg wet	0.200		78.6		30-150		
Surrogate: Tetrachloro-m-xylene [2C]	0.138		mg/Kg wet	0.200		69.0		30-150		



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### QUALITY CONTROL

#### Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD RPD	Limit Notes
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Batch B165225 - SW-846 3540C

<b>Matrix Spike (B165225-MS1)</b>		<b>Source: 16L0367-01</b>		Prepared: 12/08/16 Analyzed: 12/14/16					
Aroclor-1016	0.18	0.11	mg/Kg dry	0.216	ND	84.9	40-140		
Aroclor-1016 [2C]	0.18	0.11	mg/Kg dry	0.216	ND	84.6	40-140		
Aroclor-1260	0.20	0.11	mg/Kg dry	0.216	ND	94.3	40-140		
Aroclor-1260 [2C]	0.17	0.11	mg/Kg dry	0.216	ND	77.2	40-140		
Surrogate: Decachlorobiphenyl	0.175		mg/Kg dry	0.216		81.2	30-150		
Surrogate: Decachlorobiphenyl [2C]	0.159		mg/Kg dry	0.216		73.7	30-150		
Surrogate: Tetrachloro-m-xylene	0.166		mg/Kg dry	0.216		76.7	30-150		
Surrogate: Tetrachloro-m-xylene [2C]	0.145		mg/Kg dry	0.216		67.3	30-150		
<b>Matrix Spike Dup (B165225-MSD1)</b>		<b>Source: 16L0367-01</b>		Prepared: 12/08/16 Analyzed: 12/14/16					
Aroclor-1016	0.19	0.11	mg/Kg dry	0.214	ND	89.7	40-140	4.57	50
Aroclor-1016 [2C]	0.19	0.11	mg/Kg dry	0.214	ND	90.6	40-140	5.92	50
Aroclor-1260	0.18	0.11	mg/Kg dry	0.214	ND	85.9	40-140	10.3	50
Aroclor-1260 [2C]	0.17	0.11	mg/Kg dry	0.214	ND	80.2	40-140	2.83	50
Surrogate: Decachlorobiphenyl	0.182		mg/Kg dry	0.214		84.8	30-150		
Surrogate: Decachlorobiphenyl [2C]	0.165		mg/Kg dry	0.214		76.9	30-150		
Surrogate: Tetrachloro-m-xylene	0.175		mg/Kg dry	0.214		81.7	30-150		
Surrogate: Tetrachloro-m-xylene [2C]	0.153		mg/Kg dry	0.214		71.7	30-150		



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#### QUALITY CONTROL

##### Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD RPD	Limit Notes
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##### Batch B165512 - % Solids

Duplicate (B165512-DUP1)	<b>Source: 16L0367-01</b>		Prepared: 12/12/16 Analyzed: 12/13/16						
% Solids	89.2		% Wt		89.0		0.224		20
Duplicate (B165512-DUP2)	<b>Source: 16L0367-20</b>		Prepared: 12/12/16 Analyzed: 12/13/16						
% Solids	92.6		% Wt		92.5		0.108		20



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES  
SW-846 8082A**

A9 North SW 1/2' Bg

Lab Sample ID: 16L0367-02 Date(s) Analyzed: 12/14/2016 12/14/2016

Instrument ID (1):  Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1254	1	0.00	-0.03	0.03	3.7	
	2	0.00	-0.03	0.03	3.4	9.3



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## IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

A5 Bot 2 1/2' Bg

*SW-846 8082A*

Lab Sample ID: 16L0367-06

Date(s) Analyzed: 12/14/2016 12/14/2016

### Instrument ID (1):

## Instrument ID (2):

## GC Column (1):

ID: (mm)

## GC Column (2):

ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1254	1	0.00	-0.03	0.03	0.37	
	2	0.00	-0.03	0.03	0.35	5.6



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**  
*SW-846 8082A*

B9 North SW 1/2' Bg

Lab Sample ID: 16L0367-09 Date(s) Analyzed: 12/14/2016 12/14/2016

Instrument ID (1):  Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1254	1	0.00	-0.03	0.03	0.30	
	2	0.00	-0.03	0.03	0.35	14.1



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**

*SW-846 8082A*

B7 Bot 1' Bg

Lab Sample ID: 16L0367-10 Date(s) Analyzed: 12/14/2016 12/14/2016

Instrument ID (1):  Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1254	1	0.00	-0.03	0.03	0.30	
	2	0.00	-0.03	0.03	0.27	9.9



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**

*SW-846 8082A*

B8 Bot 1' Bg

Lab Sample ID: 16L0367-11 Date(s) Analyzed: 12/14/2016 12/14/2016

Instrument ID (1):  Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1254	1	0.00	-0.03	0.03	0.12	
	2	0.00	-0.03	0.03	0.14	12.9



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## IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

B4 SW (Int) 1 1/2' Bg

*SW-846 8082A*

Lab Sample ID: 16L0367-14

Date(s) Analyzed: 12/14/2016 12/14/2016

### Instrument ID (1):

## Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1254	1	0.00	-0.03	0.03	0.34	
	2	0.00	-0.03	0.03	0.33	3.6



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**  
*SW-846 8082A*

D4 West SW 1' Bg

Lab Sample ID: 16L0367-16 Date(s) Analyzed: 12/14/2016 12/14/2016

Instrument ID (1):  Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1254	1	0.00	-0.03	0.03	0.22	
	2	0.00	-0.03	0.03	0.21	4.2



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**  
*SW-846 8082A*

**B8 West SW 1/2' Bg**

Lab Sample ID: 16L0367-17 Date(s) Analyzed: 12/14/2016 12/14/2016

Instrument ID (1):  Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1254	1	0.00	-0.03	0.03	0.19	
	2	0.00	-0.03	0.03	0.20	7.8



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## IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

*SW-846 8082A*

B4 Bot 1' Bg

Lab Sample ID: 16L0367-18

Date(s) Analyzed: 12/14/2016 12/14/2016

### Instrument ID (1):

## Instrument ID (2):

## GC Column (1):

ID: (mm)

## GC Column (2):

ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1254	1	0.00	-0.03	0.03	0.23	
	2	0.00	-0.03	0.03	0.21	9.1



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## IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

*SW-846 8082A*

A8 Bot 1' Bg

Lab Sample ID: 16L0367-20

Date(s) Analyzed: 12/14/2016 12/14/2016

### Instrument ID (1):

## Instrument ID (2):

## GC Column (1):

ID: (mm)

## GC Column (2):

ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1254	1	0.00	-0.03	0.03	0.29	
	2	0.00	-0.03	0.03	0.25	14.5



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**

*SW-846 8082A*

LCS

Lab Sample ID: B165225-BS1 Date(s) Analyzed: 12/13/2016 12/13/2016

Instrument ID (1):                                    Instrument ID (2):                                   

GC Column (1):                                    ID:                                    (mm) GC Column (2):                                    ID:                                    (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1016	1	0.00	-0.03	0.03	0.16	
	2	0.00	-0.03	0.03	0.16	3
Aroclor-1260	1	0.00	-0.03	0.03	0.17	
	2	0.00	-0.03	0.03	0.15	10



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## IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

LCS Dup

*SW-846 8082A*

Lab Sample ID: B165225-BSD1 Date(s) Analyzed: 12/13/2016 12/13/2016

Date(s) Analyzed: 12/13/2016 12/13/2016

Instrument ID (1): **1234567890**      Instrument ID (2): **9876543210**

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1016	1	0.00	-0.03	0.03	0.18	
	2	0.00	-0.03	0.03	0.16	12
Aroclor-1260	1	0.00	-0.03	0.03	0.19	
	2	0.00	-0.03	0.03	0.17	9



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## IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

*SW-846 8082A*

## Matrix Spike

Lab Sample ID: B165225-MS1 Date(s) Analyzed: 12/14/2016 12/14/2016

Date(s) Analyzed: 12/14/2016 12/14/2016

Instrument ID (1): **Instrument ID (2)**

## Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1016	1	0.00	-0.03	0.03	0.18	
	2	0.00	-0.03	0.03	0.18	2
Aroclor-1260	1	0.00	-0.03	0.03	0.20	
	2	0.00	-0.03	0.03	0.17	18



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## IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

*SW-846 8082A*

## Matrix Spike Up

Lab Sample ID: B165225-MSD1 Date(s) Analyzed: 12/14/2016 12/14/2016

Date(s) Analyzed: 12/14/2016 12/14/2016

**Instrument ID (1):** **Instrument ID (2):**

## Instrument ID (2)

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1016	1	0.00	-0.03	0.03	0.19	
	2	0.00	-0.03	0.03	0.19	1
Aroclor-1260	1	0.00	-0.03	0.03	0.18	
	2	0.00	-0.03	0.03	0.17	8



---

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**FLAG/QUALIFIER SUMMARY**

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit
DL	Method Detection Limit
MCL	Maximum Contaminant Level

Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.

No results have been blank subtracted unless specified in the case narrative section.

O-32      A dilution was performed as part of the standard analytical procedure.



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#### CERTIFICATIONS

##### Certified Analyses included in this Report

Analyte	Certifications
<b><i>SW-846 8082A in Soil</i></b>	
Aroclor-1016	CT,NH,NY,ME,NC,VA
Aroclor-1016 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1221	CT,NH,NY,ME,NC,VA
Aroclor-1221 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1232	CT,NH,NY,ME,NC,VA
Aroclor-1232 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1242	CT,NH,NY,ME,NC,VA
Aroclor-1242 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1248	CT,NH,NY,ME,NC,VA
Aroclor-1248 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1254	CT,NH,NY,ME,NC,VA
Aroclor-1254 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1260	CT,NH,NY,ME,NC,VA
Aroclor-1260 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1262	NY,NC,VA
Aroclor-1262 [2C]	NY,NC,VA
Aroclor-1268	NY,NC,VA
Aroclor-1268 [2C]	NY,NC,VA

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2005	100033	02/1/2018
MA	Massachusetts DEP	M-MA100	06/30/2017
CT	Connecticut Department of Public Health	PH-0567	09/30/2017
NY	New York State Department of Health	10899 NELAP	04/1/2017
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2017
RI	Rhode Island Department of Health	LAO00112	12/30/2016
NC	North Carolina Div. of Water Quality	652	12/31/2016
NJ	New Jersey DEP	MA007 NELAP	06/30/2017
FL	Florida Department of Health	E871027 NELAP	06/30/2017
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2017
ME	State of Maine	2011028	06/9/2017
VA	Commonwealth of Virginia	460217	12/14/2016
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2017

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**CHAIN OF CUSTODY RECORD**Phone: 413-525-2332  
Fax: 413-525-6405Email: info@con-testlabs.com  
www.con-testlabs.com**con-test**  
ANALYTICAL LABORATORYRev. 04/05/12  
39 Spruce Street  
East Longmeadow, MA 01028Company Name: **CJW**Address: **144 High St**Attention: **MUB**Project Location: **Clinton MA 01510**Sampled By: **KT/MUP**

Project Proposal Provided? (for billing purposes)

 yes  proposal dateTelephone: **(416) 365-1630**Project # **SS12D**

Client PO#

 FAX  EMAIL  WEBSITE

Fax #

Email: **oblin@cjw.on.ca**Format:  PDF  EXCEL  GIS  
 OTHER

Collection

Beginning Date/Time

Ending Date/Time

Composite

Grab

Matrix

Conc/Cpte

Code

Lab

Date

Code



39 Spruce St.  
East Longmeadow, MA. 01028  
P: 413-525-2332  
F: 413-525-6405  
www.contestlabs.com



Page 1 of 2

## Sample Receipt Checklist

CLIENT NAME: CJW RECEIVED BY: JM DATE: 12/7/16

1) Was the chain(s) of custody relinquished and signed? Yes  No  No COC Incl.

2) Does the chain agree with the samples?  
If not, explain:

3) Are all the samples in good condition?  
If not, explain:

4) How were the samples received:

On Ice  Direct from Sampling  Ambient  In Cooler(s)

Were the samples received in Temperature Compliance of (2-6°C)? Yes  No  N/A  
Temperature °C by Temp blank  Temperature °C by Temp gun  <sup>#1</sup> 2.9 <sup>#2</sup> 3.4

5) Are there Dissolved samples for the lab to filter? Yes  No

Who was notified \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

6) Are there any RUSH or SHORT HOLDING TIME samples? Yes  No

Who was notified \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

7) Location where samples are stored:

Login

Permission to subcontract samples? Yes  No

(Walk-in clients only) if not already approved

Client Signature: ✓

8) Do all samples have the proper Acid pH: Yes  No  N/A

9) Do all samples have the proper Base pH: Yes  No  N/A

10) Was the PC notified of any discrepancies with the CoC vs the samples: Yes  N/A

### Containers received at Con-Test

	# of containers		# of containers
1 Liter Amber		16 oz amber	
500 mL Amber		8 oz <del>amber</del> /clear jar	<u>20</u>
250 mL Amber (8oz amber)		4 oz amber/clear jar	
1 Liter Plastic		2 oz amber/clear jar	
500 mL Plastic		Plastic Bag / Ziploc	
250 mL plastic		SOC Kit	
40 mL Vial - type listed below		Perchlorate Kit	
Colisure / bacteria bottle		Flashpoint bottle	
Dissolved Oxygen bottle		Other glass jar	
Encore		Other	

40 mL vials: # HCl	# Methanol	Time and Date Frozen:
Doc# 277 # Bisulfate	# DI Water	
Rev. 4 August 2013 # Thiosulfate	Unpreserved	

Page 2 of 2

Login Sample Receipt Checklist

(Rejection Criteria Listing - Using Sample Acceptance Policy)  
 Any False statement will be brought to the attention of Client

<u>Question</u>	<u>Answer (True/False)</u>	<u>Comment</u>
	T/F/N/A	
1) The cooler's custody seal, if present, is intact.	N/A	
2) The cooler or samples do not appear to have been compromised or tampered with.	T	
3) Samples were received on ice.	T	
4) Cooler Temperature is acceptable.	T	
5) Cooler Temperature is recorded.	T	
6) COC is filled out in ink and legible.	T	
7) COC is filled out with all pertinent information.	T	
8) Field Sampler's name present on COC.	T	
9) There are no discrepancies between the sample IDs on the container and the COC.	T	
10) Samples are received within Holding Time.	T	
11) Sample containers have legible labels.	T	
12) Containers are not broken or leaking.	T	
13) Air Cassettes are not broken/open.	N/A	
14) Sample collection date/times are provided.	T	
15) Appropriate sample containers are used.	T	
16) Proper collection media used.	T	
17) No headspace sample bottles are completely filled.	N/A	
18) There is sufficient volume for all requested analyses, including any requested MS/MSDs.	T	
19) Trip blanks provided if applicable.	N/A	
20) VOA sample vials do not have head space or bubble is <6mm (1/4") in diameter.	N/A	
21) Samples do not require splitting or compositing.	T	

Who notified of False statements?

Doc #277 Rev. 4 August 2013

Log-In Technician Initials:

JM

Date/Time:

Date/Time:

12/7/16  
1915

## MADEP MCP Analytical Method Report Certification Form

Laboratory Name:	Con-Test Analytical Laboratory	Project #:	16L0367
Project Location:	179 Brook St, Clinton, MA	RTN:	

This Form provides certifications for the following data set: [list Laboratory Sample ID Number(s)]

16L0367-01 thru 16L0367-20

Matrices: Soil

**CAM Protocol (check all that below)**

8260 VOC CAM II A ()	7470/7471 Hg CAM IIIB ()	MassDEP VPH CAM IV A ()	8081 Pesticides CAM V B ()	7196 Hex Cr CAM VI B ()	MassDEP APH CAM IX A ()
8270 SVOC CAM II B ()	7010 Metals CAM III C ()	MassDEP EPH CAM IV A ()	8151 Herbicides CAM V C ()	8330 Explosives CAM VIII A ()	TO-15 VOC CAM IX B ()
6010 Metals CAM III A ()	6020 Metals CAM III D ()	8082 PCB CAM V A (X)	9014 Total Cyanide/PAC CAM VI A ()	6860 Perchlorate CAM VIII B ()	

**Affirmative response to Questions A through F is required for "Presumptive Certainty" status**

<b>A</b>	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>B</b>	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>C</b>	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>D</b>	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>E a</b>	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	<input type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>E b</b>	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	<input type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>F</b>	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all No responses to Questions A through E)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>

**A response to questions G, H and I below is required for "Presumptive Certainty" status**

<b>G</b>	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
----------	---	--

**Data User Note: Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.**

<b>H</b>	Were all QC performance standards specified in the CAM protocol(s) achieved?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>I</b>	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>

<sup>1</sup> All Negative responses must be addressed in an attached Environmental Laboratory case narrative.

**I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.**

Signature:

Position: Project Manager

Printed Name: Lisa A. Worthington

Date: 12/14/16



---

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

December 13, 2016

James Bennett  
Cushing, Jammallo & Wheeler  
464 High Street  
Clinton, MA 01510

Project Location: 179 Brook St, Clinton, MA

Client Job Number:

Project Number: 5812D

Laboratory Work Order Number: 16L0369

Enclosed are results of analyses for samples received by the laboratory on December 7, 2016. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Meghan S. Kelley". The signature is fluid and cursive, with "Meghan" and "S." sharing a common initial stroke, and "Kelley" following below.

Meghan E. Kelley  
Project Manager

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Cushing, Jammallo & Wheeler  
464 High Street  
Clinton, MA 01510  
ATTN: James Bennett

REPORT DATE: 12/13/2016

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 5812D

#### **ANALYTICAL SUMMARY**

---

WORK ORDER NUMBER: 16L0369

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: 179 Brook St, Clinton, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
D6 West Sw 1.25' Bg	16L0369-01	Soil		SM 2540G SW-846 8082A	
A7 Bot 1' Bg	16L0369-02	Soil		SM 2540G SW-846 8082A	
Dup-1 Duplicate 1	16L0369-03	Soil		SM 2540G SW-846 8082A	
Dup-2 Duplicate 2	16L0369-04	Soil		SM 2540G SW-846 8082A	
Dup-3 Duplicate 3	16L0369-05	Soil		SM 2540G SW-846 8082A	
Dup-4 Duplicate 4	16L0369-06	Soil		SM 2540G SW-846 8082A	



---

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#### CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

#### SW-846 8082A

##### **Qualifications:**

S-01

The surrogate recovery for this sample is not available due to sample dilution below the surrogate reporting limit required from high analyte concentration and/or matrix interferences.

##### **Analyte & Sample(s) Qualified:**

###### **Decachlorobiphenyl**

16L0369-05[Dup-3 Duplicate 3]

###### **Decachlorobiphenyl [2C]**

16L0369-05[Dup-3 Duplicate 3]

###### **Tetrachloro-m-xylene**

16L0369-05[Dup-3 Duplicate 3]

###### **Tetrachloro-m-xylene [2C]**

16L0369-05[Dup-3 Duplicate 3]

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

A handwritten signature in black ink, appearing to read "Tod E. Kopyscinski".

Tod E. Kopyscinski  
Laboratory Director



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0369

Date Received: 12/7/2016

**Field Sample #:** D6 West Sw 1.25' Bg

Sampled: 12/6/2016 13:50

**Sample ID:** 16L0369-01Sample Matrix: Soil**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/9/16 23:35	KAL
Aroclor-1221 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/9/16 23:35	KAL
Aroclor-1232 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/9/16 23:35	KAL
Aroclor-1242 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/9/16 23:35	KAL
Aroclor-1248 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/9/16 23:35	KAL
Aroclor-1254 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/9/16 23:35	KAL
Aroclor-1260 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/9/16 23:35	KAL
Aroclor-1262 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/9/16 23:35	KAL
Aroclor-1268 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/9/16 23:35	KAL
Surrogates	% Recovery	Recovery Limits		Flag/Qual					
Decachlorobiphenyl [1]	80.8	30-150					12/9/16 23:35		
Decachlorobiphenyl [2]	77.2	30-150					12/9/16 23:35		
Tetrachloro-m-xylene [1]	94.7	30-150					12/9/16 23:35		
Tetrachloro-m-xylene [2]	88.5	30-150					12/9/16 23:35		




---

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Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0369

Date Received: 12/7/2016

**Field Sample #:** D6 West Sw 1.25' Bg

Sampled: 12/6/2016 13:50

**Sample ID:** 16L0369-01Sample Matrix: Soil

---

**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	91.3		% Wt	1		SM 2540G	12/12/16	12/13/16 9:03	EC



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0369

Date Received: 12/7/2016

**Field Sample #:** A7 Bot 1' Bg

Sampled: 12/6/2016 13:55

**Sample ID:** 16L0369-02**Sample Matrix:** Soil**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/9/16 23:52	KAL
Aroclor-1221 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/9/16 23:52	KAL
Aroclor-1232 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/9/16 23:52	KAL
Aroclor-1242 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/9/16 23:52	KAL
Aroclor-1248 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/9/16 23:52	KAL
Aroclor-1254 [2]	0.39	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/9/16 23:52	KAL
Aroclor-1260 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/9/16 23:52	KAL
Aroclor-1262 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/9/16 23:52	KAL
Aroclor-1268 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/9/16 23:52	KAL
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	83.3	30-150							12/9/16 23:52
Decachlorobiphenyl [2]	88.1	30-150							12/9/16 23:52
Tetrachloro-m-xylene [1]	81.7	30-150							12/9/16 23:52
Tetrachloro-m-xylene [2]	75.6	30-150							12/9/16 23:52




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 39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0369

Date Received: 12/7/2016

**Field Sample #:** A7 Bot 1' Bg

Sampled: 12/6/2016 13:55

**Sample ID:** 16L0369-02Sample Matrix: Soil

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**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	90.4		% Wt	1		SM 2540G	12/12/16	12/13/16 9:03	EC



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Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0369

Date Received: 12/7/2016

**Field Sample #:** Dup-1 Duplicate 1

Sampled: 12/6/2016 14:00

**Sample ID:** 16L0369-03Sample Matrix: Soil**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/10/16 12:50	KAL
Surrogates	% Recovery	Recovery Limits		Flag/Qual					
Decachlorobiphenyl [1]	80.5	30-150					12/10/16 12:50		
Decachlorobiphenyl [2]	89.8	30-150					12/10/16 12:50		
Tetrachloro-m-xylene [1]	86.3	30-150					12/10/16 12:50		
Tetrachloro-m-xylene [2]	78.6	30-150					12/10/16 12:50		




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Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0369

Date Received: 12/7/2016

**Field Sample #:** Dup-1 Duplicate 1

Sampled: 12/6/2016 14:00

**Sample ID:** 16L0369-03Sample Matrix: Soil

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**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	92.7		% Wt	1		SM 2540G	12/12/16	12/13/16 9:03	EC



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Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0369

Date Received: 12/7/2016

**Field Sample #:** Dup-2 Duplicate 2

Sampled: 12/6/2016 14:05

**Sample ID:** 16L0369-04Sample Matrix: Soil**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/10/16 0:27	KAL
Aroclor-1221 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/10/16 0:27	KAL
Aroclor-1232 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/10/16 0:27	KAL
Aroclor-1242 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/10/16 0:27	KAL
Aroclor-1248 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/10/16 0:27	KAL
Aroclor-1254 [1]	0.38	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/10/16 0:27	KAL
Aroclor-1260 [2]	0.14	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/10/16 0:27	KAL
Aroclor-1262 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/10/16 0:27	KAL
Aroclor-1268 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/10/16 0:27	KAL
Surrogates	% Recovery	Recovery Limits		Flag/Qual					
Decachlorobiphenyl [1]	89.6	30-150					12/10/16 0:27		
Decachlorobiphenyl [2]	88.6	30-150					12/10/16 0:27		
Tetrachloro-m-xylene [1]	91.5	30-150					12/10/16 0:27		
Tetrachloro-m-xylene [2]	83.2	30-150					12/10/16 0:27		




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Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0369

Date Received: 12/7/2016

**Field Sample #:** Dup-2 Duplicate 2

Sampled: 12/6/2016 14:05

**Sample ID:** 16L0369-04Sample Matrix: Soil

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**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	90.4		% Wt	1		SM 2540G	12/12/16	12/13/16 9:03	EC



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Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0369

Date Received: 12/7/2016

**Field Sample #:** Dup-3 Duplicate 3

Sampled: 12/6/2016 14:10

**Sample ID:** 16L0369-05Sample Matrix: Soil**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	1.1	mg/Kg dry	50		SW-846 8082A	12/8/16	12/10/16 13:08	KAL
Aroclor-1221 [1]	ND	1.1	mg/Kg dry	50		SW-846 8082A	12/8/16	12/10/16 13:08	KAL
Aroclor-1232 [1]	ND	1.1	mg/Kg dry	50		SW-846 8082A	12/8/16	12/10/16 13:08	KAL
Aroclor-1242 [1]	ND	1.1	mg/Kg dry	50		SW-846 8082A	12/8/16	12/10/16 13:08	KAL
Aroclor-1248 [1]	ND	1.1	mg/Kg dry	50		SW-846 8082A	12/8/16	12/10/16 13:08	KAL
Aroclor-1254 [1]	5.6	1.1	mg/Kg dry	50		SW-846 8082A	12/8/16	12/10/16 13:08	KAL
Aroclor-1260 [2]	1.4	1.1	mg/Kg dry	50		SW-846 8082A	12/8/16	12/10/16 13:08	KAL
Aroclor-1262 [1]	ND	1.1	mg/Kg dry	50		SW-846 8082A	12/8/16	12/10/16 13:08	KAL
Aroclor-1268 [1]	ND	1.1	mg/Kg dry	50		SW-846 8082A	12/8/16	12/10/16 13:08	KAL
Surrogates	% Recovery		Recovery Limits		Flag/Qual				
Decachlorobiphenyl [1]	*		30-150		S-01				12/10/16 13:08
Decachlorobiphenyl [2]	*		30-150		S-01				12/10/16 13:08
Tetrachloro-m-xylene [1]	*		30-150		S-01				12/10/16 13:08
Tetrachloro-m-xylene [2]	*		30-150		S-01				12/10/16 13:08




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Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0369

Date Received: 12/7/2016

**Field Sample #:** Dup-3 Duplicate 3

Sampled: 12/6/2016 14:10

**Sample ID:** 16L0369-05Sample Matrix: Soil

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**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	91.4		% Wt	1		SM 2540G	12/12/16	12/13/16 9:03	EC



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Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0369

Date Received: 12/7/2016

**Field Sample #:** Dup-4 Duplicate 4

Sampled: 12/6/2016 14:15

**Sample ID:** 16L0369-06

Sample Matrix: Soil

**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/10/16 1:01	KAL
Aroclor-1221 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/10/16 1:01	KAL
Aroclor-1232 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/10/16 1:01	KAL
Aroclor-1242 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/10/16 1:01	KAL
Aroclor-1248 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/10/16 1:01	KAL
Aroclor-1254 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/10/16 1:01	KAL
Aroclor-1260 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/10/16 1:01	KAL
Aroclor-1262 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/10/16 1:01	KAL
Aroclor-1268 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/8/16	12/10/16 1:01	KAL
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	89.3	30-150						12/10/16 1:01	
Decachlorobiphenyl [2]	101	30-150						12/10/16 1:01	
Tetrachloro-m-xylene [1]	90.2	30-150						12/10/16 1:01	
Tetrachloro-m-xylene [2]	81.7	30-150						12/10/16 1:01	




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Project Location: 179 Brook St, Clinton, MA

Sample Description:

Work Order: 16L0369

Date Received: 12/7/2016

**Field Sample #:** Dup-4 Duplicate 4

Sampled: 12/6/2016 14:15

**Sample ID:** 16L0369-06Sample Matrix: Soil

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**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	89.5		% Wt	1		SM 2540G	12/12/16	12/13/16 9:03	EC



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### Sample Extraction Data

**Prep Method: % Solids-SM 2540G**

Lab Number [Field ID]	Batch	Date
16L0369-01 [D6 West Sw 1.25' Bg]	B165512	12/12/16
16L0369-02 [A7 Bot 1' Bg]	B165512	12/12/16
16L0369-03 [Dup-1 Duplicate 1]	B165512	12/12/16
16L0369-04 [Dup-2 Duplicate 2]	B165512	12/12/16
16L0369-05 [Dup-3 Duplicate 3]	B165512	12/12/16
16L0369-06 [Dup-4 Duplicate 4]	B165512	12/12/16

**Prep Method: SW-846 3540C-SW-846 8082A**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
16L0369-01 [D6 West Sw 1.25' Bg]	B165245	10.4	10.0	12/08/16
16L0369-02 [A7 Bot 1' Bg]	B165245	10.1	10.0	12/08/16
16L0369-03 [Dup-1 Duplicate 1]	B165245	10.1	10.0	12/08/16
16L0369-04 [Dup-2 Duplicate 2]	B165245	10.3	10.0	12/08/16
16L0369-05 [Dup-3 Duplicate 3]	B165245	10.1	10.0	12/08/16
16L0369-06 [Dup-4 Duplicate 4]	B165245	10.3	10.0	12/08/16



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**QUALITY CONTROL****Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD RPD	RPD Limit	Notes
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**Batch B165245 - SW-846 3540C**

<b>Blank (B165245-BLK1)</b>										Prepared: 12/08/16 Analyzed: 12/09/16
Aroclor-1016	ND	0.020	mg/Kg wet							
Aroclor-1016 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1221	ND	0.020	mg/Kg wet							
Aroclor-1221 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1232	ND	0.020	mg/Kg wet							
Aroclor-1232 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1242	ND	0.020	mg/Kg wet							
Aroclor-1242 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1248	ND	0.020	mg/Kg wet							
Aroclor-1248 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1254	ND	0.020	mg/Kg wet							
Aroclor-1254 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1260	ND	0.020	mg/Kg wet							
Aroclor-1260 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1262	ND	0.020	mg/Kg wet							
Aroclor-1262 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1268	ND	0.020	mg/Kg wet							
Aroclor-1268 [2C]	ND	0.020	mg/Kg wet							
Surrogate: Decachlorobiphenyl	0.195		mg/Kg wet	0.200		97.4		30-150		
Surrogate: Decachlorobiphenyl [2C]	0.189		mg/Kg wet	0.200		94.3		30-150		
Surrogate: Tetrachloro-m-xylene	0.190		mg/Kg wet	0.200		95.1		30-150		
Surrogate: Tetrachloro-m-xylene [2C]	0.173		mg/Kg wet	0.200		86.6		30-150		

<b>LCS (B165245-BS1)</b>										Prepared: 12/08/16 Analyzed: 12/09/16
Aroclor-1016	0.20	0.020	mg/Kg wet	0.200		99.1		40-140		
Aroclor-1016 [2C]	0.19	0.020	mg/Kg wet	0.200		94.4		40-140		
Aroclor-1260	0.18	0.020	mg/Kg wet	0.200		91.6		40-140		
Aroclor-1260 [2C]	0.18	0.020	mg/Kg wet	0.200		88.2		40-140		
Surrogate: Decachlorobiphenyl	0.199		mg/Kg wet	0.200		99.5		30-150		
Surrogate: Decachlorobiphenyl [2C]	0.193		mg/Kg wet	0.200		96.3		30-150		
Surrogate: Tetrachloro-m-xylene	0.194		mg/Kg wet	0.200		96.9		30-150		
Surrogate: Tetrachloro-m-xylene [2C]	0.180		mg/Kg wet	0.200		90.1		30-150		

<b>LCS Dup (B165245-BSD1)</b>										Prepared: 12/08/16 Analyzed: 12/09/16
Aroclor-1016	0.20	0.020	mg/Kg wet	0.200		97.7		40-140	1.45	30
Aroclor-1016 [2C]	0.19	0.020	mg/Kg wet	0.200		94.0		40-140	0.381	30
Aroclor-1260	0.19	0.020	mg/Kg wet	0.200		92.8		40-140	1.33	30
Aroclor-1260 [2C]	0.18	0.020	mg/Kg wet	0.200		90.6		40-140	2.74	30
Surrogate: Decachlorobiphenyl	0.196		mg/Kg wet	0.200		98.0		30-150		
Surrogate: Decachlorobiphenyl [2C]	0.190		mg/Kg wet	0.200		94.9		30-150		
Surrogate: Tetrachloro-m-xylene	0.193		mg/Kg wet	0.200		96.6		30-150		
Surrogate: Tetrachloro-m-xylene [2C]	0.178		mg/Kg wet	0.200		89.0		30-150		



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#### QUALITY CONTROL

##### Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD RPD	Limit Notes
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##### Batch B165512 - % Solids

Duplicate (B165512-DUP4)	<b>Source: 16L0369-01</b>			Prepared: 12/12/16 Analyzed: 12/13/16				
% Solids	91.9		% Wt		91.3		0.655	20



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**

A7 Bot 1' Bg

Lab Sample ID: 16L0369-02

Date(s) Analyzed: 12/09/2016 12/09/2016

Instrument ID (1):

## Instrument ID (2):

## GC Column (1):

ID: (mm)

## GC Column (2):

ID:

(mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1254	1	0.00	-0.03	0.03	0.39	
	2	0.00	-0.03	0.03	0.39	0.0



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## IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

Dup-1 Duplicate 1

*SW-846 8082A*

Lab Sample ID: 16L0369-03

Date(s) Analyzed: 12/10/2016 12/10/2016

Instrument ID (1):

## Instrument ID (2):

### GC Column (1):

ID: (mm)

## GC Column (2):

ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1254	1	0.00	-0.03	0.03	0.38	
	2	0.00	-0.03	0.03	0.36	4.6



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## IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

Dup-2 Duplicate 2

*SW-846 8082A*

Lab Sample ID: 16L0369-04 Date(s) Analyzed: 12/10/2016 12/10/2016

Date(s) Analyzed: 12/10/2016 12/10/2016

Instrument ID (1): **Instrument ID (2)**

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1254	1	0.00	-0.03	0.03	0.38	
	2	0.00	-0.03	0.03	0.36	5.4
Aroclor-1260	1	0.00	-0.03	0.03	0.12	
	2	0.00	-0.03	0.03	0.14	18.8



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## IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

Dup-3 Duplicate 3

*SW-846 8082A*

Lab Sample ID: 16L0369-05 Date(s) Analyzed: 12/10/2016 12/10/2016

Date(s) Analyzed: 12/10/2016 12/10/2016

**Instrument ID (1):** **Instrument ID (2):**

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1254	1	0.00	-0.03	0.03	5.6	
	2	0.00	-0.03	0.03	5.2	6.7
Aroclor-1260	1	0.00	-0.03	0.03	1.1	
	2	0.00	-0.03	0.03	1.4	23.1



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## IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

LCS

SW-846 8082A

Lab Sample ID: B165245-BS1 Date(s) Analyzed: 12/09/2016 12/09/2016

Date(s) Analyzed: 12/09/2016 12/09/2016

Instrument ID (1): **1234567890**      Instrument ID (2): **9876543210**

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1016	1	0.00	-0.03	0.03	0.20	
	2	0.00	-0.03	0.03	0.19	4
Aroclor-1260	1	0.00	-0.03	0.03	0.18	
	2	0.00	-0.03	0.03	0.18	2



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## IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

LCS Dup

*SW-846 8082A*

Lab Sample ID: B165245-BSD1 Date(s) Analyzed: 12/09/2016 12/09/2016

Date(s) Analyzed: 12/09/2016 12/09/2016

Instrument ID (1): **Instrument ID (2)**

## Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1016	1	0.00	-0.03	0.03	0.20	
	2	0.00	-0.03	0.03	0.19	3
Aroclor-1260	1	0.00	-0.03	0.03	0.19	
	2	0.00	-0.03	0.03	0.18	3



---

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**FLAG/QUALIFIER SUMMARY**

- \* QC result is outside of established limits.
- † Wide recovery limits established for difficult compound.
- ‡ Wide RPD limits established for difficult compound.
- # Data exceeded client recommended or regulatory level
- ND Not Detected
- RL Reporting Limit
- DL Method Detection Limit
- MCL Maximum Contaminant Level

Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.

No results have been blank subtracted unless specified in the case narrative section.

- S-01 The surrogate recovery for this sample is not available due to sample dilution below the surrogate reporting limit required from high analyte concentration and/or matrix interferences.



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#### CERTIFICATIONS

##### Certified Analyses included in this Report

Analyte	Certifications
<b><i>SW-846 8082A in Soil</i></b>	
Aroclor-1016	CT,NH,NY,ME,NC,VA
Aroclor-1016 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1221	CT,NH,NY,ME,NC,VA
Aroclor-1221 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1232	CT,NH,NY,ME,NC,VA
Aroclor-1232 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1242	CT,NH,NY,ME,NC,VA
Aroclor-1242 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1248	CT,NH,NY,ME,NC,VA
Aroclor-1248 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1254	CT,NH,NY,ME,NC,VA
Aroclor-1254 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1260	CT,NH,NY,ME,NC,VA
Aroclor-1260 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1262	NY,NC,VA
Aroclor-1262 [2C]	NY,NC,VA
Aroclor-1268	NY,NC,VA
Aroclor-1268 [2C]	NY,NC,VA

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2005	100033	02/1/2018
MA	Massachusetts DEP	M-MA100	06/30/2017
CT	Connecticut Department of Public Health	PH-0567	09/30/2017
NY	New York State Department of Health	10899 NELAP	04/1/2017
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2017
RI	Rhode Island Department of Health	LAO00112	12/30/2016
NC	North Carolina Div. of Water Quality	652	12/31/2016
NJ	New Jersey DEP	MA007 NELAP	06/30/2017
FL	Florida Department of Health	E871027 NELAP	06/30/2017
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2017
ME	State of Maine	2011028	06/9/2017
VA	Commonwealth of Virginia	460217	12/14/2016
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2017





Page 2 of 2

Login Sample Receipt Checklist

(Rejection Criteria Listing - Using Sample Acceptance Policy)

Any False statement will be brought to the attention of Client

<u>Question</u>	<u>Answer (True/False)</u>	<u>Comment</u>
	T/F/N/A	
1) The cooler's custody seal, if present, is intact.	N/A	
2) The cooler or samples do not appear to have been compromised or tampered with.	T	
3) Samples were received on ice.	T	
4) Cooler Temperature is acceptable.	T	
5) Cooler Temperature is recorded.	T	
6) COC is filled out in ink and legible.	T	
7) COC is filled out with all pertinent information.	T	
8) Field Sampler's name present on COC.	T	
9) There are no discrepancies between the sample IDs on the container and the COC.	T	
10) Samples are received within Holding Time.	T	
11) Sample containers have legible labels.	T	
12) Containers are not broken or leaking.	T	
13) Air Cassettes are not broken/open.	N/A	
14) Sample collection date/times are provided.	T	
15) Appropriate sample containers are used.	T	
16) Proper collection media used.	T	
17) No headspace sample bottles are completely filled.	N/A	
18) There is sufficient volume for all requested analyses, including any requested MS/MSDs.	T	
19) Trip blanks provided if applicable.	N/A	
20) VOA sample vials do not have head space or bubble is <6mm (1/4") in diameter.	N/A	
21) Samples do not require splitting or compositing.	T	

Who notified of False statements?

Date/Time:

Date/Time:

Doc #277 Rev. 4 August 2013

Log-In Technician Initials:

JM

12/7/16  
1915

## MADEP MCP Analytical Method Report Certification Form

Laboratory Name:	Con-Test Analytical Laboratory	Project #:	16L0369
Project Location:	179 Brook St, Clinton, MA	RTN:	

This Form provides certifications for the following data set: [list Laboratory Sample ID Number(s)]

16L0369-01 thru 16L0369-06

Matrices: Soil

**CAM Protocol (check all that below)**

8260 VOC CAM II A ()	7470/7471 Hg CAM III B ()	MassDEP VPH CAM IV A ()	8081 Pesticides CAM V B ()	7196 Hex Cr CAM VI B ()	MassDEP APH CAM IX A ()
8270 SVOC CAM II B ()	7010 Metals CAM III C ()	MassDEP EPH CAM IV A ()	8151 Herbicides CAM V C ()	8330 Explosives CAM VIII A ()	TO-15 VOC CAM IX B ()
6010 Metals CAM III A ()	6020 Metals CAM III D ()	8082 PCB CAM V A (X)	9014 Total Cyanide/PAC CAM VI A ()	6860 Perchlorate CAM VIII B ()	

**Affirmative response to Questions A through F is required for "Presumptive Certainty" status**

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
E a	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	<input type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
E b	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	<input type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all No responses to Questions A through E)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>

**A response to questions G, H and I below is required for "Presumptive Certainty" status**

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>Data User Note:</b> Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.		
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <sup>1</sup>
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>

<sup>1</sup>All Negative responses must be addressed in an attached Environmental Laboratory case narrative.

**I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.**

Signature: \_\_\_\_\_

Position: \_\_\_\_\_ Laboratory Director

Printed Name: \_\_\_\_\_ Tod E. Kopyscinski

Date: \_\_\_\_\_ 12/13/16



---

39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

December 23, 2016

Mike Bloom  
Cushing, Jammallo & Wheeler  
464 High Street  
Clinton, MA 01510

Project Location: 179 Brook St., Clinton, MA

Client Job Number:

Project Number: 5812D

Laboratory Work Order Number: 16L0877

Enclosed are results of analyses for samples received by the laboratory on December 16, 2016. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Meghan S. Kelley". The signature is fluid and cursive, with "Meghan" and "S." on the first line and "Kelley" on the second line.

Meghan E. Kelley  
Project Manager

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Cushing, Jammallo & Wheeler  
464 High Street  
Clinton, MA 01510  
ATTN: Mike Bloom

REPORT DATE: 12/23/2016

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 5812D

#### **ANALYTICAL SUMMARY**

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WORK ORDER NUMBER: 16L0877

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: 179 Brook St., Clinton, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
B1 Bot 2' BG	16L0877-01	Soil		SM 2540G SW-846 8082A	
B1 East SW 1.5' BG	16L0877-02	Soil		SM 2540G SW-846 8082A	
B1 North SW 1.5' BG	16L0877-03	Soil		SM 2540G SW-846 8082A	
B1 West SW 1.5' BG	16L0877-04	Soil		SM 2540G SW-846 8082A	
A9 Bot 1.5' BG	16L0877-05	Soil		SM 2540G SW-846 8082A	
A9 NW SW 0.75' BG	16L0877-06	Soil		SM 2540G SW-846 8082A	



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#### CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

#### SW-846 8082A

##### **Qualifications:**

###### **O-32**

A dilution was performed as part of the standard analytical procedure.

##### **Analyte & Samples(s) Qualified:**

16L0877-01[B1 Bot 2' BG], 16L0877-02[B1 East SW 1.5' BG], 16L0877-03[B1 North SW 1.5' BG], 16L0877-04[B1 West SW 1.5' BG]

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.  
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

A handwritten signature in black ink, appearing to read "Lisa A. Worthington".

Lisa A. Worthington  
Project Manager



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16L0877

Date Received: 12/16/2016

**Field Sample #:** B1 Bot 2' BG

Sampled: 12/15/2016 10:00

**Sample ID:** 16L0877-01Sample Matrix: Soil

Sample Flags: O-32

**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 22:17	JMB
Aroclor-1221 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 22:17	JMB
Aroclor-1232 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 22:17	JMB
Aroclor-1242 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 22:17	JMB
Aroclor-1248 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 22:17	JMB
Aroclor-1254 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 22:17	JMB
Aroclor-1260 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 22:17	JMB
Aroclor-1262 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 22:17	JMB
Aroclor-1268 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 22:17	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	98.9	30-150							12/20/16 22:17
Decachlorobiphenyl [2]	84.5	30-150							12/20/16 22:17
Tetrachloro-m-xylene [1]	94.9	30-150							12/20/16 22:17
Tetrachloro-m-xylene [2]	90.7	30-150							12/20/16 22:17




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Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16L0877

Date Received: 12/16/2016

**Field Sample #:** B1 Bot 2' BG

Sampled: 12/15/2016 10:00

**Sample ID:** 16L0877-01Sample Matrix: Soil

---

**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	86.1		% Wt	1		SM 2540G	12/22/16	12/23/16 8:09	MRL



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Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16L0877

Date Received: 12/16/2016

**Field Sample #:** B1 East SW 1.5' BG

Sampled: 12/15/2016 10:10

**Sample ID:** 16L0877-02Sample Matrix: Soil

Sample Flags: O-32

**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 22:35	JMB
Aroclor-1221 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 22:35	JMB
Aroclor-1232 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 22:35	JMB
Aroclor-1242 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 22:35	JMB
Aroclor-1248 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 22:35	JMB
Aroclor-1254 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 22:35	JMB
Aroclor-1260 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 22:35	JMB
Aroclor-1262 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 22:35	JMB
Aroclor-1268 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 22:35	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	101	30-150							12/20/16 22:35
Decachlorobiphenyl [2]	84.2	30-150							12/20/16 22:35
Tetrachloro-m-xylene [1]	98.3	30-150							12/20/16 22:35
Tetrachloro-m-xylene [2]	91.0	30-150							12/20/16 22:35




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Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16L0877

Date Received: 12/16/2016

**Field Sample #:** B1 East SW 1.5' BG

Sampled: 12/15/2016 10:10

**Sample ID:** 16L0877-02Sample Matrix: Soil

---

**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	87.9		% Wt	1		SM 2540G	12/22/16	12/23/16 8:09	MRL



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Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16L0877

Date Received: 12/16/2016

**Field Sample #:** B1 North SW 1.5' BG

Sampled: 12/15/2016 10:20

**Sample ID:** 16L0877-03Sample Matrix: Soil

Sample Flags: O-32

**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.12	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 22:53	JMB
Aroclor-1221 [1]	ND	0.12	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 22:53	JMB
Aroclor-1232 [1]	ND	0.12	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 22:53	JMB
Aroclor-1242 [1]	ND	0.12	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 22:53	JMB
Aroclor-1248 [1]	ND	0.12	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 22:53	JMB
Aroclor-1254 [1]	ND	0.12	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 22:53	JMB
Aroclor-1260 [1]	ND	0.12	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 22:53	JMB
Aroclor-1262 [1]	ND	0.12	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 22:53	JMB
Aroclor-1268 [1]	ND	0.12	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 22:53	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	101	30-150							12/20/16 22:53
Decachlorobiphenyl [2]	86.2	30-150							12/20/16 22:53
Tetrachloro-m-xylene [1]	95.2	30-150							12/20/16 22:53
Tetrachloro-m-xylene [2]	87.1	30-150							12/20/16 22:53




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Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16L0877

Date Received: 12/16/2016

**Field Sample #:** B1 North SW 1.5' BG

Sampled: 12/15/2016 10:20

**Sample ID:** 16L0877-03Sample Matrix: Soil

---

**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	82.9		% Wt	1		SM 2540G	12/22/16	12/23/16 8:09	MRL



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Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16L0877

Date Received: 12/16/2016

**Field Sample #:** B1 West SW 1.5' BG

Sampled: 12/15/2016 10:30

**Sample ID:** 16L0877-04Sample Matrix: Soil

Sample Flags: O-32

**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 23:11	JMB
Aroclor-1221 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 23:11	JMB
Aroclor-1232 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 23:11	JMB
Aroclor-1242 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 23:11	JMB
Aroclor-1248 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 23:11	JMB
Aroclor-1254 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 23:11	JMB
Aroclor-1260 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 23:11	JMB
Aroclor-1262 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 23:11	JMB
Aroclor-1268 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 23:11	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	99.5	30-150							12/20/16 23:11
Decachlorobiphenyl [2]	83.0	30-150							12/20/16 23:11
Tetrachloro-m-xylene [1]	97.0	30-150							12/20/16 23:11
Tetrachloro-m-xylene [2]	88.6	30-150							12/20/16 23:11




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Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16L0877

Date Received: 12/16/2016

**Field Sample #:** B1 West SW 1.5' BG

Sampled: 12/15/2016 10:30

**Sample ID:** 16L0877-04Sample Matrix: Soil

---

**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	87.3		% Wt	1		SM 2540G	12/22/16	12/23/16 8:09	MRL



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16L0877

Date Received: 12/16/2016

**Field Sample #:** A9 Bot 1.5' BG

Sampled: 12/15/2016 13:00

**Sample ID:** 16L0877-05Sample Matrix: Soil**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 23:29	JMB
Aroclor-1221 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 23:29	JMB
Aroclor-1232 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 23:29	JMB
Aroclor-1242 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 23:29	JMB
Aroclor-1248 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 23:29	JMB
Aroclor-1254 [2]	0.12	0.10	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 23:29	JMB
Aroclor-1260 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 23:29	JMB
Aroclor-1262 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 23:29	JMB
Aroclor-1268 [1]	ND	0.10	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 23:29	JMB
Surrogates	% Recovery		Recovery Limits		Flag/Qual				
Decachlorobiphenyl [1]	106		30-150					12/20/16 23:29	
Decachlorobiphenyl [2]	86.1		30-150					12/20/16 23:29	
Tetrachloro-m-xylene [1]	98.9		30-150					12/20/16 23:29	
Tetrachloro-m-xylene [2]	90.2		30-150					12/20/16 23:29	




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Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16L0877

Date Received: 12/16/2016

**Field Sample #:** A9 Bot 1.5' BG

Sampled: 12/15/2016 13:00

**Sample ID:** 16L0877-05Sample Matrix: Soil

---

**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	90.4		% Wt	1		SM 2540G	12/22/16	12/23/16 8:09	MRL



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Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16L0877

Date Received: 12/16/2016

**Field Sample #:** A9 NW SW 0.75' BG

Sampled: 12/15/2016 13:10

**Sample ID:** 16L0877-06Sample Matrix: Soil**Polychlorinated Biphenyls with 3540 Soxhlet Extraction**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 23:47	JMB
Aroclor-1221 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 23:47	JMB
Aroclor-1232 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 23:47	JMB
Aroclor-1242 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 23:47	JMB
Aroclor-1248 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 23:47	JMB
Aroclor-1254 [2]	0.15	0.11	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 23:47	JMB
Aroclor-1260 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 23:47	JMB
Aroclor-1262 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 23:47	JMB
Aroclor-1268 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	12/19/16	12/20/16 23:47	JMB
Surrogates	% Recovery		Recovery Limits		Flag/Qual				
Decachlorobiphenyl [1]	105		30-150						12/20/16 23:47
Decachlorobiphenyl [2]	85.0		30-150						12/20/16 23:47
Tetrachloro-m-xylene [1]	96.3		30-150						12/20/16 23:47
Tetrachloro-m-xylene [2]	87.8		30-150						12/20/16 23:47




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Project Location: 179 Brook St., Clinton, MA

Sample Description:

Work Order: 16L0877

Date Received: 12/16/2016

**Field Sample #:** A9 NW SW 0.75' BG

Sampled: 12/15/2016 13:10

**Sample ID:** 16L0877-06Sample Matrix: Soil

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**Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	90.2		% Wt	1		SM 2540G	12/22/16	12/23/16 8:09	MRL



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### Sample Extraction Data

**Prep Method: % Solids-SM 2540G**

Lab Number [Field ID]	Batch	Date
16L0877-01 [B1 Bot 2' BG]	B166426	12/22/16
16L0877-02 [B1 East SW 1.5' BG]	B166426	12/22/16
16L0877-03 [B1 North SW 1.5' BG]	B166426	12/22/16
16L0877-04 [B1 West SW 1.5' BG]	B166426	12/22/16
16L0877-05 [A9 Bot 1.5' BG]	B166426	12/22/16
16L0877-06 [A9 NW SW 0.75' BG]	B166426	12/22/16

**Prep Method: SW-846 3540C-SW-846 8082A**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
16L0877-01 [B1 Bot 2' BG]	B166110	10.8	10.0	12/19/16
16L0877-02 [B1 East SW 1.5' BG]	B166110	10.7	10.0	12/19/16
16L0877-03 [B1 North SW 1.5' BG]	B166110	10.1	10.0	12/19/16
16L0877-04 [B1 West SW 1.5' BG]	B166110	10.7	10.0	12/19/16
16L0877-05 [A9 Bot 1.5' BG]	B166110	10.6	10.0	12/19/16
16L0877-06 [A9 NW SW 0.75' BG]	B166110	10.0	10.0	12/19/16



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**QUALITY CONTROL****Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD RPD	RPD Limit	Notes
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**Batch B166110 - SW-846 3540C**

<b>Blank (B166110-BLK1)</b>										Prepared: 12/19/16 Analyzed: 12/20/16
Aroclor-1016	ND	0.020	mg/Kg wet							
Aroclor-1016 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1221	ND	0.020	mg/Kg wet							
Aroclor-1221 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1232	ND	0.020	mg/Kg wet							
Aroclor-1232 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1242	ND	0.020	mg/Kg wet							
Aroclor-1242 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1248	ND	0.020	mg/Kg wet							
Aroclor-1248 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1254	ND	0.020	mg/Kg wet							
Aroclor-1254 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1260	ND	0.020	mg/Kg wet							
Aroclor-1260 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1262	ND	0.020	mg/Kg wet							
Aroclor-1262 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1268	ND	0.020	mg/Kg wet							
Aroclor-1268 [2C]	ND	0.020	mg/Kg wet							
Surrogate: Decachlorobiphenyl	0.220		mg/Kg wet	0.200		110		30-150		
Surrogate: Decachlorobiphenyl [2C]	0.165		mg/Kg wet	0.200		82.4		30-150		
Surrogate: Tetrachloro-m-xylene	0.198		mg/Kg wet	0.200		99.1		30-150		
Surrogate: Tetrachloro-m-xylene [2C]	0.171		mg/Kg wet	0.200		85.5		30-150		

<b>LCS (B166110-BS1)</b>										Prepared: 12/19/16 Analyzed: 12/20/16
Aroclor-1016	0.18	0.020	mg/Kg wet	0.200		90.4		40-140		
Aroclor-1016 [2C]	0.16	0.020	mg/Kg wet	0.200		78.2		40-140		
Aroclor-1260	0.18	0.020	mg/Kg wet	0.200		91.0		40-140		
Aroclor-1260 [2C]	0.15	0.020	mg/Kg wet	0.200		74.5		40-140		
Surrogate: Decachlorobiphenyl	0.210		mg/Kg wet	0.200		105		30-150		
Surrogate: Decachlorobiphenyl [2C]	0.158		mg/Kg wet	0.200		79.0		30-150		
Surrogate: Tetrachloro-m-xylene	0.186		mg/Kg wet	0.200		93.0		30-150		
Surrogate: Tetrachloro-m-xylene [2C]	0.162		mg/Kg wet	0.200		80.9		30-150		

<b>LCS Dup (B166110-BSD1)</b>										Prepared: 12/19/16 Analyzed: 12/20/16
Aroclor-1016	0.19	0.020	mg/Kg wet	0.200		94.7		40-140	4.55	30
Aroclor-1016 [2C]	0.17	0.020	mg/Kg wet	0.200		84.0		40-140	7.15	30
Aroclor-1260	0.19	0.020	mg/Kg wet	0.200		93.3		40-140	2.51	30
Aroclor-1260 [2C]	0.16	0.020	mg/Kg wet	0.200		78.7		40-140	5.48	30
Surrogate: Decachlorobiphenyl	0.221		mg/Kg wet	0.200		111		30-150		
Surrogate: Decachlorobiphenyl [2C]	0.166		mg/Kg wet	0.200		83.1		30-150		
Surrogate: Tetrachloro-m-xylene	0.195		mg/Kg wet	0.200		97.5		30-150		
Surrogate: Tetrachloro-m-xylene [2C]	0.171		mg/Kg wet	0.200		85.6		30-150		



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**  
**SW-846 8082A**

A9 Bot 1.5' BG

Lab Sample ID: 16L0877-05 Date(s) Analyzed: 12/20/2016 12/20/2016

Instrument ID (1):  Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1254	1	0.00	-0.03	0.03	0.11	
	2	0.00	-0.03	0.03	0.12	7.8



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**

*SW-846 8082A*

A9 NW SW 0.75' BG

Lab Sample ID: 16L0877-06 Date(s) Analyzed: 12/20/2016 12/20/2016

Instrument ID (1):  Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1254	1	0.00	-0.03	0.03	0.13	
	2	0.00	-0.03	0.03	0.15	12.8



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## IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

LCS

*SW-846 8082A*

Lab Sample ID: B166110-BS1 Date(s) Analyzed: 12/20/2016 12/20/2016

Date(s) Analyzed: 12/20/2016 12/20/2016

Instrument ID (1): **Instrument ID (2)**

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1016	1	0.00	-0.03	0.03	0.18	
	2	0.00	-0.03	0.03	0.16	12
Aroclor-1260	1	0.00	-0.03	0.03	0.18	
	2	0.00	-0.03	0.03	0.15	19



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## IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

LCS Dup

*SW-846 8082A*

Lab Sample ID: B166110-BSD1 Date(s) Analyzed: 12/20/2016 12/20/2016

Date(s) Analyzed: 12/20/2016 12/20/2016

Instrument ID (1): **Instrument ID (2)**

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1016	1	0.00	-0.03	0.03	0.19	
	2	0.00	-0.03	0.03	0.17	11
Aroclor-1260	1	0.00	-0.03	0.03	0.19	
	2	0.00	-0.03	0.03	0.16	16



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**FLAG/QUALIFIER SUMMARY**

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit
DL	Method Detection Limit
MCL	Maximum Contaminant Level

Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.

No results have been blank subtracted unless specified in the case narrative section.

O-32      A dilution was performed as part of the standard analytical procedure.



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#### CERTIFICATIONS

##### Certified Analyses included in this Report

Analyte	Certifications
<b><i>SW-846 8082A in Soil</i></b>	
Aroclor-1016	CT,NH,NY,ME,NC,VA
Aroclor-1016 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1221	CT,NH,NY,ME,NC,VA
Aroclor-1221 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1232	CT,NH,NY,ME,NC,VA
Aroclor-1232 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1242	CT,NH,NY,ME,NC,VA
Aroclor-1242 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1248	CT,NH,NY,ME,NC,VA
Aroclor-1248 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1254	CT,NH,NY,ME,NC,VA
Aroclor-1254 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1260	CT,NH,NY,ME,NC,VA
Aroclor-1260 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1262	NY,NC,VA
Aroclor-1262 [2C]	NY,NC,VA
Aroclor-1268	NY,NC,VA
Aroclor-1268 [2C]	NY,NC,VA

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2005	100033	02/1/2018
MA	Massachusetts DEP	M-MA100	06/30/2017
CT	Connecticut Department of Public Health	PH-0567	09/30/2017
NY	New York State Department of Health	10899 NELAP	04/1/2017
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2017
RI	Rhode Island Department of Health	LAO00112	12/30/2016
NC	North Carolina Div. of Water Quality	652	12/31/2017
NJ	New Jersey DEP	MA007 NELAP	06/30/2017
FL	Florida Department of Health	E871027 NELAP	06/30/2017
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2017
ME	State of Maine	2011028	06/9/2017
VA	Commonwealth of Virginia	460217	12/14/2017
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2017



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### Sample Receipt Checklist

CLIENT NAME: CSW

RECEIVED BY: PLF

DATE: 12/16/14

1) Was the chain(s) of custody relinquished and signed? Yes  No  No COC Incl.2) Does the chain agree with the samples? Yes  No 

If not, explain:

3) Are all the samples in good condition? Yes  No 

If not, explain:

4) How were the samples received:

On Ice  Direct from Sampling  Ambient  In Cooler(s) Were the samples received in Temperature Compliance of (2-6°C)? Yes  No  N/A 

Temperature °C by Temp blank \_\_\_\_\_ Temperature °C by Temp gun 4.2

5) Are there Dissolved samples for the lab to filter? Yes  No 

Who was notified \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

6) Are there any RUSH or SHORT HOLDING TIME samples? Yes  No 

Who was notified \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

Permission to subcontract samples? Yes  No 

(Walk-in clients only) if not already approved

Client Signature: \_\_\_\_\_

7) Location where samples are stored: \_\_\_\_\_

8) Do all samples have the proper Acid pH: Yes  No  N/A 9) Do all samples have the proper Base pH: Yes  No  N/A 10) Was the PC notified of any discrepancies with the CoC vs the samples: Yes  N/A 

### Containers received at Con-Test

	# of containers		# of containers
1 Liter Amber			16 oz amber
500 mL Amber			8 oz amber/clear jar
250 mL Amber (8oz amber)			4 oz amber/clear jar
1 Liter Plastic			2 oz amber/clear jar
500 mL Plastic			Plastic Bag / Ziploc
250 mL plastic			SOC Kit
40 mL Vial - type listed below			Perchlorate Kit
Colisure / bacteria bottle			Flashpoint bottle
Dissolved Oxygen bottle			Other glass jar
Encore			Other

40 mL vials: # HCl _____	# Methanol _____	Time and Date Frozen: _____
Doc# 277 # Bisulfate _____	# DI Water _____	
Rev. 4 August 2013 # Thiosulfate _____	Unpreserved _____	

Page 2 of 2

Login Sample Receipt Checklist

(Rejection Criteria Listing - Using Sample Acceptance Policy)

Any False statement will be brought to the attention of Client

<u>Question</u>	<u>Answer (True/False)</u>	<u>Comment</u>
	T/F/NA	
1) The cooler's custody seal, if present, is intact.	1A	
2) The cooler or samples do not appear to have been compromised or tampered with.	T	
3) Samples were received on ice.	T	
4) Cooler Temperature is acceptable.	T	
5) Cooler Temperature is recorded.	T	
6) COC is filled out in ink and legible.	T	
7) COC is filled out with all pertinent information.	T	
8) Field Sampler's name present on COC.	T	
9) There are no discrepancies between the sample IDs on the container and the COC.	T	
10) Samples are received within Holding Time.	T	
11) Sample containers have legible labels.	T	
12) Containers are not broken or leaking.	T	
13) Air Cassettes are not broken/open.	NA	
14) Sample collection date/times are provided.	T	
15) Appropriate sample containers are used.	T	
16) Proper collection media used.	T	
17) No headspace sample bottles are completely filled.	NA	
18) There is sufficient volume for all requested analyses, including any requested MS/MSDs.	T	
19) Trip blanks provided if applicable.	NA	
20) VOA sample vials do not have head space or bubble is <6mm (1/4") in diameter.	NA	
21) Samples do not require splitting or compositing.	T	

Who notified of False statements?

Date/Time:

Doc #277 Rev. 4 August 2013

Log-In Technician Initials:

Date/Time:

RUF 10/11/14 1900

## MADEP MCP Analytical Method Report Certification Form

Laboratory Name:	Con-Test Analytical Laboratory	Project #:	16L0877
Project Location:	179 Brook St., Clinton, MA	RTN:	

This Form provides certifications for the following data set: [list Laboratory Sample ID Number(s)]

16L0877-01 thru 16L0877-06

Matrices: Soil

**CAM Protocol (check all that below)**

8260 VOC CAM II A ()	7470/7471 Hg CAM IIIB ()	MassDEP VPH CAM IV A ()	8081 Pesticides CAM V B ()	7196 Hex Cr CAM VI B ()	MassDEP APH CAM IX A ()
8270 SVOC CAM II B ()	7010 Metals CAM III C ()	MassDEP EPH CAM IV A ()	8151 Herbicides CAM V C ()	8330 Explosives CAM VIII A ()	TO-15 VOC CAM IX B ()
6010 Metals CAM III A ()	6020 Metals CAM III D ()	8082 PCB CAM V A (X)	9014 Total Cyanide/PAC CAM VI A ()	6860 Perchlorate CAM VIII B ()	

**Affirmative response to Questions A through F is required for "Presumptive Certainty" status**

<b>A</b>	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>B</b>	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>C</b>	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>D</b>	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>E a</b>	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	<input type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>E b</b>	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	<input type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>F</b>	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all No responses to Questions A through E)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>

**A response to questions G, H and I below is required for "Presumptive Certainty" status**

<b>G</b>	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
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**Data User Note: Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.**

<b>H</b>	Were all QC performance standards specified in the CAM protocol(s) achieved?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>I</b>	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>

<sup>1</sup> All Negative responses must be addressed in an attached Environmental Laboratory case narrative.

**I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.**

Signature:		Position:	Project Manager
Printed Name:	Lisa A. Worthington	Date:	12/23/16

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**APPENDIX E**

*Laboratory Testing Results of Groundwater*

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39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

December 15, 2016

Mike Bloom  
Cushing, Jammallo & Wheeler  
464 High Street  
Clinton, MA 01510

Project Location: 179 Brook Street, Clinton, MA

Client Job Number:

Project Number: 5812D

Laboratory Work Order Number: 16L0495

Enclosed are results of analyses for samples received by the laboratory on December 9, 2016. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Meghan S. Kelley". The signature is fluid and cursive, with "Meghan" and "S." on the first line and "Kelley" on the second line.

Meghan E. Kelley  
Project Manager

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Cushing, Jammallo & Wheeler  
464 High Street  
Clinton, MA 01510  
ATTN: Mike Bloom

REPORT DATE: 12/15/2016

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 5812D

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**ANALYTICAL SUMMARY**

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WORK ORDER NUMBER: 16L0495

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: 179 Brook Street, Clinton, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
CJW-1/ Monitoring Well	16L0495-01	Ground Water		SW-846 8082A	



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**CASE NARRATIVE SUMMARY**

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.  
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

A handwritten signature in black ink that reads "Lisa A. Worthington". The signature is fluid and cursive, with "Lisa A." on the first line and "Worthington" on the second line.

Lisa A. Worthington  
Project Manager



39 Spruce Street \* East Longmeadow, MA 01028 \* FAX 413/525-6405 \* TEL. 413/525-2332

Project Location: 179 Brook Street, Clinton, MA

Sample Description:

Work Order: 16L0495

Date Received: 12/9/2016

**Field Sample #:** CJW-1/ Monitoring Well

Sampled: 12/8/2016 14:00

**Sample ID:** 16L0495-01Sample Matrix: Ground Water**Polychlorinated Biphenyls By GC/ECD**

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.20	µg/L	1		SW-846 8082A	12/13/16	12/14/16 7:16	KAL
Aroclor-1221 [1]	ND	0.20	µg/L	1		SW-846 8082A	12/13/16	12/14/16 7:16	KAL
Aroclor-1232 [1]	ND	0.20	µg/L	1		SW-846 8082A	12/13/16	12/14/16 7:16	KAL
Aroclor-1242 [1]	ND	0.20	µg/L	1		SW-846 8082A	12/13/16	12/14/16 7:16	KAL
Aroclor-1248 [1]	ND	0.20	µg/L	1		SW-846 8082A	12/13/16	12/14/16 7:16	KAL
Aroclor-1254 [1]	ND	0.20	µg/L	1		SW-846 8082A	12/13/16	12/14/16 7:16	KAL
Aroclor-1260 [1]	ND	0.20	µg/L	1		SW-846 8082A	12/13/16	12/14/16 7:16	KAL
Aroclor-1262 [1]	ND	0.20	µg/L	1		SW-846 8082A	12/13/16	12/14/16 7:16	KAL
Aroclor-1268 [1]	ND	0.20	µg/L	1		SW-846 8082A	12/13/16	12/14/16 7:16	KAL
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	88.7	30-150						12/14/16 7:16	
Decachlorobiphenyl [2]	74.4	30-150						12/14/16 7:16	
Tetrachloro-m-xylene [1]	79.9	30-150						12/14/16 7:16	
Tetrachloro-m-xylene [2]	74.8	30-150						12/14/16 7:16	



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#### Sample Extraction Data

Prep Method: SW-846 3510C-SW-846 8082A

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
16L0495-01 [CJW-1/ Monitoring Well]	B165607	1000	10.0	12/13/16



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**QUALITY CONTROL****Polychlorinated Biphenyls By GC/ECD - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	---------	-----------	-------

**Batch B165607 - SW-846 3510C**

<b>Blank (B165607-BLK1)</b>										Prepared: 12/13/16 Analyzed: 12/14/16
Aroclor-1016	ND	0.040	µg/L							
Aroclor-1016 [2C]	ND	0.040	µg/L							
Aroclor-1221	ND	0.040	µg/L							
Aroclor-1221 [2C]	ND	0.040	µg/L							
Aroclor-1232	ND	0.040	µg/L							
Aroclor-1232 [2C]	ND	0.040	µg/L							
Aroclor-1242	ND	0.040	µg/L							
Aroclor-1242 [2C]	ND	0.040	µg/L							
Aroclor-1248	ND	0.040	µg/L							
Aroclor-1248 [2C]	ND	0.040	µg/L							
Aroclor-1254	ND	0.040	µg/L							
Aroclor-1254 [2C]	ND	0.040	µg/L							
Aroclor-1260	ND	0.040	µg/L							
Aroclor-1260 [2C]	ND	0.040	µg/L							
Aroclor-1262	ND	0.040	µg/L							
Aroclor-1262 [2C]	ND	0.040	µg/L							
Aroclor-1268	ND	0.040	µg/L							
Aroclor-1268 [2C]	ND	0.040	µg/L							
Surrogate: Decachlorobiphenyl	1.35		µg/L	2.00		67.6		30-150		
Surrogate: Decachlorobiphenyl [2C]	1.07		µg/L	2.00		53.3		30-150		
Surrogate: Tetrachloro-m-xylene	1.31		µg/L	2.00		65.6		30-150		
Surrogate: Tetrachloro-m-xylene [2C]	1.13		µg/L	2.00		56.3		30-150		
<b>LCS (B165607-BS1)</b>										Prepared: 12/13/16 Analyzed: 12/14/16
Aroclor-1016	0.40	0.20	µg/L	0.500		80.0		40-140		
Aroclor-1016 [2C]	0.39	0.20	µg/L	0.500		78.0		40-140		
Aroclor-1260	0.41	0.20	µg/L	0.500		82.4		40-140		
Aroclor-1260 [2C]	0.39	0.20	µg/L	0.500		77.7		40-140		
Surrogate: Decachlorobiphenyl	1.45		µg/L	2.00		72.5		30-150		
Surrogate: Decachlorobiphenyl [2C]	1.24		µg/L	2.00		61.8		30-150		
Surrogate: Tetrachloro-m-xylene	1.43		µg/L	2.00		71.4		30-150		
Surrogate: Tetrachloro-m-xylene [2C]	1.34		µg/L	2.00		66.9		30-150		
<b>LCS Dup (B165607-BSD1)</b>										Prepared: 12/13/16 Analyzed: 12/14/16
Aroclor-1016	0.40	0.20	µg/L	0.500		80.9		40-140	1.07	20
Aroclor-1016 [2C]	0.40	0.20	µg/L	0.500		79.1		40-140	1.33	20
Aroclor-1260	0.42	0.20	µg/L	0.500		83.4		40-140	1.10	20
Aroclor-1260 [2C]	0.39	0.20	µg/L	0.500		77.4		40-140	0.495	20
Surrogate: Decachlorobiphenyl	1.50		µg/L	2.00		74.8		30-150		
Surrogate: Decachlorobiphenyl [2C]	1.27		µg/L	2.00		63.4		30-150		
Surrogate: Tetrachloro-m-xylene	1.43		µg/L	2.00		71.5		30-150		
Surrogate: Tetrachloro-m-xylene [2C]	1.37		µg/L	2.00		68.5		30-150		



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**IDENTIFICATION SUMMARY  
FOR SINGLE COMPONENT ANALYTES**  
**SW-846 8082A**

LCS

Lab Sample ID: B165607-BS1 Date(s) Analyzed: 12/14/2016 12/14/2016

Instrument ID (1):  Instrument ID (2):

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1016	1	0.00	0.00	0.00	0.40	
	2	0.00	0.00	0.00	0.39	3
Aroclor-1260	1	0.00	0.00	0.00	0.41	
	2	0.00	0.00	0.00	0.39	5



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## IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

LCS Dup

*SW-846 8082A*

Lab Sample ID: B165607-BSD1 Date(s) Analyzed: 12/14/2016 12/14/2016

Date(s) Analyzed: 12/14/2016 12/14/2016

Instrument ID (1): **Instrument ID (2)**

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
Aroclor-1016	1	0.00	0.00	0.00	0.40	
	2	0.00	0.00	0.00	0.40	1
Aroclor-1260	1	0.00	0.00	0.00	0.42	
	2	0.00	0.00	0.00	0.39	7



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**FLAG/QUALIFIER SUMMARY**

- \* QC result is outside of established limits.
- † Wide recovery limits established for difficult compound.
- ‡ Wide RPD limits established for difficult compound.
- # Data exceeded client recommended or regulatory level
- ND Not Detected
- RL Reporting Limit
- DL Method Detection Limit
- MCL Maximum Contaminant Level

Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.

No results have been blank subtracted unless specified in the case narrative section.



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#### CERTIFICATIONS

##### Certified Analyses included in this Report

Analyte	Certifications
<b><i>SW-846 8082A in Water</i></b>	
Aroclor-1016	CT,NH,NY,NC,ME,VA
Aroclor-1016 [2C]	CT,NH,NY,NC,ME,VA
Aroclor-1221	CT,NH,NY,NC,ME,VA
Aroclor-1221 [2C]	CT,NH,NY,NC,ME,VA
Aroclor-1232	CT,NH,NY,NC,ME,VA
Aroclor-1232 [2C]	CT,NH,NY,NC,ME,VA
Aroclor-1242	CT,NH,NY,NC,ME,VA
Aroclor-1242 [2C]	CT,NH,NY,NC,ME,VA
Aroclor-1248	CT,NH,NY,NC,ME,VA
Aroclor-1248 [2C]	CT,NH,NY,NC,ME,VA
Aroclor-1254	CT,NH,NY,NC,ME,VA
Aroclor-1254 [2C]	CT,NH,NY,NC,ME,VA
Aroclor-1260	CT,NH,NY,NC,ME,VA
Aroclor-1260 [2C]	CT,NH,NY,NC,ME,VA
Aroclor-1262	NH,NY,NC,ME,VA
Aroclor-1262 [2C]	NH,NY,NC,ME,VA
Aroclor-1268	NH,NY,NC,ME,VA
Aroclor-1268 [2C]	NH,NY,NC,ME,VA

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2005	100033	02/1/2018
MA	Massachusetts DEP	M-MA100	06/30/2017
CT	Connecticut Department of Public Health	PH-0567	09/30/2017
NY	New York State Department of Health	10899 NELAP	04/1/2017
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2017
RI	Rhode Island Department of Health	LAO00112	12/30/2016
NC	North Carolina Div. of Water Quality	652	12/31/2016
NJ	New Jersey DEP	MA007 NELAP	06/30/2017
FL	Florida Department of Health	E871027 NELAP	06/30/2017
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2017
ME	State of Maine	2011028	06/9/2017
VA	Commonwealth of Virginia	460217	12/14/2016
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2017



# CHAIN OF CUSTODY RECORD

⑤ Phone: 413-525-2332

Fax: 413-525-6405

Email: info@contestlabs.com  
www.contestlabs.com

Company Name: Cushing, Jammalio & Wheeler Inc.		Telephone: 978-368-6320	39 Spruce Street East Longmeadow, MA 01028		Page 1 of 1																					
Address: 464 High Street		Project # 5812D																								
Project Location: Clinton MA 01510		Client PO#																								
Attention:	MLB	<b>DATA DELIVERY</b> (Check all that apply)																								
Sampled By: MLB		<input type="checkbox"/> FAX <input checked="" type="checkbox"/> EMAIL <input checked="" type="checkbox"/> WEBSITE																								
Project Proposal Provided? (for billing purposes)		<input type="checkbox"/> Yes																								
Con-Test Lab ID (laboratory use only)	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	Composite Grab	*Matrix Conc Code																					
01	CJW-1 / Monitoring Well	12/8/16	14:00	X	G W U ✓																					
<b>Collection</b>																										
<b>"Enhanced Data Package"</b>																										
<b>Preservation</b>																										
<input checked="" type="checkbox"/> Iced <input type="checkbox"/> HCL <input type="checkbox"/> Methanol <input type="checkbox"/> Nitric Acid <input type="checkbox"/> Sulfuric Acid <input type="checkbox"/> Sodium bisulfate <input type="checkbox"/> Na hydroxide <input type="checkbox"/> Na thiosulfate <input type="checkbox"/> Other _____																										
<b>Comments:</b>																										
<p>Please use the following codes to let Con-Test know if a specific sample may be high in concentration in Matrix/Conc. Code Box:</p> <p>H - High; M - Medium; L - Low; C - Clean; U - Unknown</p> <p>No need to filter sample per client - MEK 12/12/2016</p>																										
<p>Please use the following codes to let Con-Test know if a specific sample may be high in concentration in Matrix/Conc. Code Box:</p> <p>H - High; M - Medium; L - Low; C - Clean; U - Unknown</p>																										
<p><b>Turnaround</b></p> <table border="1"> <tr> <td>Date/Time: 12/8/16</td> <td><input type="checkbox"/> 7-Day</td> <td><b>Detection Limit Requirements</b></td> </tr> <tr> <td>Date/Time: 12/9-16</td> <td><input type="checkbox"/> 10-Day</td> <td>Massachusetts: DLs &lt; 1.0 mg/kg</td> </tr> <tr> <td>Date/Time: 12/9-16</td> <td><input checked="" type="checkbox"/> Other <small>EDTA</small></td> <td></td> </tr> <tr> <td>Date/Time: 12/9-16</td> <td><input checked="" type="checkbox"/> RUSH<sup>†</sup></td> <td>Connecticut: _____</td> </tr> <tr> <td>Date/Time: 12/9-16</td> <td><input type="checkbox"/> 24-Hr</td> <td>148-Hr</td> </tr> <tr> <td>Date/Time: 12/9-16</td> <td><input type="checkbox"/> 72-Hr</td> <td>14-Day</td> </tr> <tr> <td>Date/Time: 12/9-16</td> <td><input type="checkbox"/> Require lab approval</td> <td>Other: _____</td> </tr> </table>						Date/Time: 12/8/16	<input type="checkbox"/> 7-Day	<b>Detection Limit Requirements</b>	Date/Time: 12/9-16	<input type="checkbox"/> 10-Day	Massachusetts: DLs < 1.0 mg/kg	Date/Time: 12/9-16	<input checked="" type="checkbox"/> Other <small>EDTA</small>		Date/Time: 12/9-16	<input checked="" type="checkbox"/> RUSH <sup>†</sup>	Connecticut: _____	Date/Time: 12/9-16	<input type="checkbox"/> 24-Hr	148-Hr	Date/Time: 12/9-16	<input type="checkbox"/> 72-Hr	14-Day	Date/Time: 12/9-16	<input type="checkbox"/> Require lab approval	Other: _____
Date/Time: 12/8/16	<input type="checkbox"/> 7-Day	<b>Detection Limit Requirements</b>																								
Date/Time: 12/9-16	<input type="checkbox"/> 10-Day	Massachusetts: DLs < 1.0 mg/kg																								
Date/Time: 12/9-16	<input checked="" type="checkbox"/> Other <small>EDTA</small>																									
Date/Time: 12/9-16	<input checked="" type="checkbox"/> RUSH <sup>†</sup>	Connecticut: _____																								
Date/Time: 12/9-16	<input type="checkbox"/> 24-Hr	148-Hr																								
Date/Time: 12/9-16	<input type="checkbox"/> 72-Hr	14-Day																								
Date/Time: 12/9-16	<input type="checkbox"/> Require lab approval	Other: _____																								
<p>Relinquished by: (signature) <i>[Signature]</i> Date/Time: 12/8/16</p> <p>Received by: (signature) <i>[Signature]</i> Date/Time: 12/9-16</p> <p>Relinquished by: (signature) <i>[Signature]</i> Date/Time: 12/9-16</p> <p>Received by: (signature) <i>[Signature]</i> Date/Time: 12/9-16</p>																										

TURNAROUND TIME STARTS AT 9:00 A.M. THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON YOUR CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

# of Containers  
\*\* Preservation

\*\*\*Container Code  
Dissolved Metals

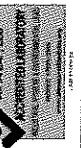
○ Field Filtered  
○ Lab to Filter

\*\*\*Cont. Code:  
A=Amber glass  
G=glass  
P=plastic  
ST=sterile

V=vial  
S=summa can  
T=tedlar bag  
O=Other

\*Matrix Code:  
GW=groundwater  
WW=wastewater

DW=drinking water  
A=air  
S=soil/solid  
SL=sludge  
O=other CONCRETE



WBE/DBE Certified

39 Spruce St.  
East Longmeadow, MA. 01028  
P: 413-525-2332  
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Page 1 of 2

## Sample Receipt Checklist

CLIENT NAME: CSWRECEIVED BY: RLFDATE: 12/9/101) Was the chain(s) of custody relinquished and signed? Yes  No  No COC Incl.2) Does the chain agree with the samples? Yes  No 

If not, explain:

3) Are all the samples in good condition? Yes  No 

If not, explain:

4) How were the samples received:

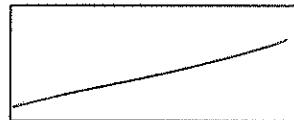
On Ice  Direct from Sampling \_\_\_\_\_ Ambient \_\_\_\_\_ In Cooler(s) Were the samples received in Temperature Compliance of (2-6°C)? Yes  No  N/A \_\_\_\_\_Temperature °C by Temp blank \_\_\_\_\_ Temperature °C by Temp gun 3.8°C5) Are there Dissolved samples for the lab to filter? Yes  No 

Who was notified \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

6) Are there any RUSH or SHORT HOLDING TIME samples? Yes  No 

Who was notified \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

7) Location where samples are stored:



Permission to subcontract samples? Yes  No   
(Walk-in clients only) if not already approved  
Client Signature: \_\_\_\_\_

8) Do all samples have the proper Acid pH: Yes  No  N/A 9) Do all samples have the proper Base pH: Yes  No  N/A 10) Was the PC notified of any discrepancies with the CoC vs the samples: Yes  N/A 

### Containers received at Con-Test

	# of containers		# of containers
1 Liter Amber	<u>2</u>	16 oz amber	
500 mL Amber		8 oz amber/clear jar	
250 mL Amber (8oz amber)		4 oz amber/clear jar	
1 Liter Plastic		2 oz amber/clear jar	
500 mL Plastic		Plastic Bag / Ziploc	
250 mL plastic		SOC Kit	
40 mL Vial - type listed below		Perchlorate Kit	
Colisure / bacteria bottle		Flashpoint bottle	
Dissolved Oxygen bottle		Other glass jar	
Encore		Other	

40 mL vials: # HCl \_\_\_\_\_ # Methanol \_\_\_\_\_ Time and Date Frozen:

Doc# 277

# Bisulfate \_\_\_\_\_ # DI Water \_\_\_\_\_

Rev. 4 August 2013

# Thiosulfate \_\_\_\_\_ Unpreserved \_\_\_\_\_

Page 2 of 2

Login Sample Receipt Checklist

(Rejection Criteria Listing - Using Sample Acceptance Policy)  
 Any False statement will be brought to the attention of Client

<u>Question</u>	<u>Answer (True/False)</u>	<u>Comment</u>
	T/F/NA	
1) The cooler's custody seal, if present, is intact.	N/A	
2) The cooler or samples do not appear to have been compromised or tampered with.	T	
3) Samples were received on ice.	T	
4) Cooler Temperature is acceptable.	T	
5) Cooler Temperature is recorded.	T	
6) COC is filled out in ink and legible.	T	
7) COC is filled out with all pertinent information.	T	
8) Field Sampler's name present on COC.	T	
9) There are no discrepancies between the sample IDs on the container and the COC.	T	
10) Samples are received within Holding Time.	T	
11) Sample containers have legible labels.	T	
12) Containers are not broken or leaking.	T	
13) Air Cassettes are not broken/open.	N/A	
14) Sample collection date/times are provided.	T	
15) Appropriate sample containers are used.	T	
16) Proper collection media used.	T	
17) No headspace sample bottles are completely filled.	N/A	
18) There is sufficient volume for all requested analyses, including any requested MS/MSDs.	T	
19) Trip blanks provided if applicable.	N/A	
20) VOA sample vials do not have head space or bubble is <6mm (1/4") in diameter.	N/A	
21) Samples do not require splitting or compositing.	T	

Who notified of False statements?

Date/Time:

Doc #277 Rev. 4 August 2013

Log-In Technician Initials:

Date/Time:

RLF 10/9/10 N/A

## MADEP MCP Analytical Method Report Certification Form

Laboratory Name:	Con-Test Analytical Laboratory	Project #:	16L0495
Project Location:	179 Brook Street, Clinton, MA	RTN:	

This Form provides certifications for the following data set: [list Laboratory Sample ID Number(s)]

16L0495-01

Matrices: Water

**CAM Protocol (check all that below)**

8260 VOC CAM II A ()	7470/7471 Hg CAM IIIB ()	MassDEP VPH CAM IV A ()	8081 Pesticides CAM V B ()	7196 Hex Cr CAM VI B ()	MassDEP APH CAM IX A ()
8270 SVOC CAM II B ()	7010 Metals CAM III C ()	MassDEP EPH CAM IV A ()	8151 Herbicides CAM V C ()	8330 Explosives CAM VIII A ()	TO-15 VOC CAM IX B ()
6010 Metals CAM III A ()	6020 Metals CAM III D ()	8082 PCB CAM V A (X)	9014 Total Cyanide/PAC CAM VI A ()	6860 Perchlorate CAM VIII B ()	

**Affirmative response to Questions A through F is required for "Presumptive Certainty" status**

<b>A</b>	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>B</b>	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>C</b>	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>D</b>	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>E a</b>	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	<input type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>E b</b>	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	<input type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>F</b>	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all No responses to Questions A through E)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>

**A response to questions G, H and I below is required for "Presumptive Certainty" status**

<b>G</b>	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
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**Data User Note: Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.**

<b>H</b>	Were all QC performance standards specified in the CAM protocol(s) achieved?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>I</b>	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>

<sup>1</sup> All Negative responses must be addressed in an attached Environmental Laboratory case narrative.

**I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.**

Signature:		Position:	Project Manager
Printed Name:	Lisa A. Worthington	Date:	12/15/16

---

**APPENDIX F**

***Method 3 Risk Charecterization***

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February 9, 2017

Mr. Joseph Jammallo  
Cushing, Jammallo, & Wheeler, Inc.  
464 High Street  
Clinton, MA 01510

**Re: Method 3 Risk Characterization**  
**179 Brook Street**  
**Clinton, MA**  
**RTN # 2-19882 (Hydraulic Oil Release)**  
**RTN # 2-19956 (PCB Release)**

Dear Mr. Jammallo:

EnviroRisk Solutions, LLC has prepared this Massachusetts Contingency Plan (MCP) Method 3 Risk Characterization report for the Site located at 179 Brook Street in Clinton, Massachusetts. This Method 3 Risk Characterization of potential harm to human health, public welfare, safety and the environment associated with Site conditions was completed in accordance with the requirements of 310 CMR 40.0000 Subpart I of the MCP.

The human health Risk Characterization evaluated potential risk to on-Site residents and construction/utility workers assumed to be exposed to residual hydraulic oil constituents located under the building slab (RTN 2-19882) and polychlorinated biphenyls (PCBs) located on the exterior of the southeast corner of the Site building (RTN 2-19956). The results of the human health Risk Characterization demonstrate that a condition of No Significant Risk of harm to human health exists for current and reasonably foreseeable Site activities and uses. A condition of No Significant Risk of harm to safety, public welfare, and the environment was found under current and foreseeable conditions. The results of this Risk Characterization support a Permanent Solution with No Conditions for the hydraulic oil release and a Permanent Solution with Conditions for the PCB release. The only condition associated with the PCB release is that Best Management Practices (refer to Attachment E) be followed should PCB-impacted soil be used for gardening and the produce used for consumption. Therefore, an Activity and Use Limitation is not required for RTN 2-19956.

**EnviroRisk Solutions, LLC**  
Complex Sites, Resourceful Solutions

Should you have any questions, please do not hesitate to contact the undersigned at (978) 793-2798.

Sincerely,

**EnviroRisk Solutions, LLC**

A handwritten signature in black ink that reads "Marie Rudiman". The signature is fluid and cursive, with "Marie" on top and "Rudiman" below it, both starting with a capital letter.

Marie Rudiman  
Senior Risk Assessor/Toxicologist

**Method 3 Risk Characterization Report**

179 Brook Street  
Clinton, MA

RTN # 2-19882 (Hydraulic Oil) and  
RTN # 2-19956 (Polychlorinated Biphenyls)

Prepared for:

Cushing, Jammallo, & Wheeler, Inc.  
464 High Street  
Clinton, MA 01510

Prepared by:

EnviroRisk Solutions, LLC  
121 Kirkland Drive  
Stow, Massachusetts 01775

February 2017

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- Attachment B All Groundwater Data, Calculation of Groundwater EPCs
- Attachment C Risk Calculation Spreadsheets, Exposure and Risk Estimates Associated with Exposures, On-Site Resident, Soil
- Attachment D Risk Calculation Spreadsheets, Exposure and Risk Estimates Associated with Exposures, Construction/Utility Worker, Soil and Groundwater
- Attachment E Best Management Practices

## ACRONYMS AND ABBREVIATIONS

ACEC	Areas of Critical Environmental Concern
ADD	Average Daily Dose
AF	Adherence Factor
AP	Averaging Period
ASAS	Applicable and Suitably Analogous Standards
AUL	Activity and Use Limitation
AWQC	Ambient Water Quality Criteria
BW	Body Weight
CF	Conversion Factor
cm <sup>2</sup> /day	square centimeters per day
CMR	Code of Massachusetts Regulations
COPC	Constituents of Potential Concern
CSF	Cancer Slope Factor
ED	Exposure Duration
EF	Exposure Frequency
ELCR	Estimated Lifetime Cancer Risk
EP	Exposure Period
EPA	Environmental Protection Agency
EPC	Exposure Point Concentrations
EPH	Extractable Petroleum Hydrocarbons
GI	Gastrointestinal
HI	Hazard Index
HQ	Hazard Quotient
IR	Ingestion Rate
IRIS	Integrated Risk Information System
LADD	Lifetime Average Daily Dose
LOAEL	Lowest Observed Adverse Effect Level
LSP	Licensed Site Professional
MADEP	Massachusetts Department of Environmental Protection
MCP	Massachusetts Contingency Plan
mg/cm <sup>2</sup>	milligram per square centimeter
mg/kg	milligram per kilogram
mg/kg-day	milligram per kilogram per day
NOAEL	No Observed Adverse Effect Level
NOR	Notice of Responsibility
OHM	Oil or Hazardous Material

**ACRONYMS AND ABBREVIATIONS (continued)**

ORS	MADEP's Office of Research and Standards
PAH	Polynuclear Aromatic Hydrocarbon
PM	Respirable Particulate Mass
PRP	Potentially Responsible Party
RAF	Relative Absorption Factor
RAM	Release Abatement Measure
RAO	Response Action Outcome
Rfc	Reference Concentration
RfD	Reference Dose
RTN	Release Tracking Number
SA	Surface Area
SCR	Soil Contact Rate
TPH	Total Petroleum Hydrocarbons
ug/l	micrograms per liter
UCLs	Upper Concentration Limits
URF	Unit Risk Factor
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VOC	Volatile Organic Compounds
VPH	Volatile Petroleum Hydrocarbon
yr	year

## 1.0 INTRODUCTION

EnviroRisk Solutions, LLC is pleased to provide this report summarizing the results of a Massachusetts Contingency Plan (MCP) Method 3 Risk Characterization performed for 179 Brook Street, Clinton, Massachusetts (the "Site"). The Site under evaluation is a manufacturing and warehouse building, which is located within in a mixed commercial/industrial/residential area of Clinton, Massachusetts. This Method 3 Risk Characterization of potential harm to human health, public welfare, safety and the environment associated with Site conditions was completed in accordance with the requirements of 310 CMR 40.0000 Subpart I of the MCP.

This Risk Characterization evaluates residual soil and groundwater impacts at the Site property that are associated with historic release(s) of free phase hydraulic oil [Release Tracking Number (RTN) 2-19882] that was observed in multiple sump/collection basins located within the site building. Additionally, during investigations to determine if a release of polychlorinated biphenyls (PCBs) had occurred from an existing pad mounted transformer, an area of PCB impacted soil was identified at the southwestern exterior of the Site building. The PCBs detected in soil were also evaluated in this risk characterization.

This Risk Characterization was conducted in accordance with 310 CMR 40.0900 of the MCP (MADEP, 2014), the MADEP's Guidance for Disposal Site Risk Characterization - In Support of the MCP (MADEP, 1996), and current risk assessment practice in Massachusetts. The purpose of this Risk Characterization was to evaluate the potential risk of harm to health, safety, public welfare, and the environment posed by Site conditions.

This Risk Characterization is an Appendix to both an Immediate Response Action Completion Report and Permanent Solution Statement associated with MADEP RTN 2-19882, and a Self-Implementing Procedure (SIP) Completion Report, Immediate Response Action Completion Report and a Permanent Solution Statement (PSS) associated with RTN 2-19956 (the Reports) prepared by Cushing, Jammallo, & Wheeler, Inc.; therefore, it is not intended to be a stand-alone document. It summarizes, where applicable, information on Site characterization and MCP compliance; however, additional information is contained in previous reports prepared for the Site. In addition, the Figures referenced in this Appendix are contained in the Reports to which this Risk Characterization is appended.

## **1.1 Background**

This Method 3 Human Health and Environmental Risk Characterization addresses soil and groundwater impact associated with residual contamination from releases of hydraulic oil and PCBs at 179 Brook Street in Clinton, Massachusetts. The Site area consists of the area of the manufacturing and warehouse building. Concentrations of constituents in all Site media are expected to continue to decrease over time because the source, the manufacturing equipment and much of the impacted soil, was removed.

## **1.2 Approach**

A Method 3 approach to characterize risk was selected for the Site because the impacts in soil and groundwater at the Site warranted a Site-specific evaluation. As specified in the MCP, application of a Method 3 Risk Characterization is acceptable for any site. The human health evaluation of the Method 3 Risk Characterization approach involved four (4) steps. The first step, Hazard Identification, involved identification of the Constituents of Potential Concern (COPCs) detected at the Site and any adverse carcinogenic or non-carcinogenic effects associated with the COPCs. The second step, Dose-Response Assessment, described the relationship between the magnitude of exposure for each COPC (dose) and the occurrence of specific health effects for a potential receptor (response). The third step, Exposure Assessment, involved identification of potential human receptors, based on characteristics of the Site and the surrounding area. Subsequently, the magnitude and frequency of receptors' potential exposure to COPCs was quantified. This step also included review of the spatial and temporal aspects of groundwater conditions at the subject property in the Reports to provide a basis for selecting regulatory criteria and exposure scenarios under a Method 3 Risk Characterization at this particular site.

The fourth step, Risk Characterization, combined the information from the Exposure Assessment with the information from the Dose-Response Assessment to derive quantitative estimates of the likelihood of potential adverse health effects or potential carcinogenic effects. These effects were estimated for each receptor for each potential exposure pathway identified in the Exposure Assessment. The potential risk estimates for each exposure pathway were summed to obtain a cumulative estimate of total risk for each receptor. Details regarding these human health assessment steps, as well as the characterization of risk to human safety, public welfare, and the environment, are provided in the remainder of this Risk Characterization document.

The Site will continue to be a manufacturing or commercial facility with a warehouse for the foreseeable future. The Site is located in a mixed industrial/commercial and residential area of Clinton, Massachusetts. No Activity and Use Limitation (AUL) will be implemented at this Site.

The only condition at Site is to use Best Management Practices (BMP) when using the Site soil for gardening purposes relating to the RTN for PCBs (2-19956).

This Risk Characterization was conducted using conservative assumptions and methods. For example, conservative exposure point concentrations for each of the affected media were calculated by considering the contaminant distribution and, as applicable, focusing on the areas of the Site where contaminant concentrations were highest. These and other conservative assumptions and methods used to prepare this Risk Characterization are described in the following sections.

## **2.0 HAZARD IDENTIFICATION**

This section includes a description of the data used as the basis of the Risk Characterization and presents the selection of COPC, and the references to Tables from this point forward refer to those included within this Risk Characterization document and should be distinguished from those referenced in the Reports.

General comparisons to Method 1 standards are made in the following paragraphs for discussion purposes to give an indication of the levels of impact at the Site. Method 1 standards are not applicable in this Method 3 Risk Characterization.

### **2.1 Data Sets**

#### **2.1.1 Soil**

Table 1 presents the current soil analytical data set used in this Risk Characterization. A total of thirty-eight soil samples were collected from the Site at various intervals between approximately 0 and 6 feet below grade and analyzed for extractable petroleum hydrocarbons (EPH) fractions with target polycyclic aromatic hydrocarbons (PAHs). Nine soil samples were analyzed for volatile petroleum hydrocarbons (VPH) fractions, thirteen soil samples were analyzed for volatile organic compounds (VOCs), and four soil samples were analyzed for metals. An additional forty-five soil samples were collected at intervals between zero and two feet below grade and analyzed for polychlorinated biphenyls (PCBs). Soil samples were collected at the Site during Site investigations and post-excavation between May and November 2016. Soil samples presented in this risk characterization represent current conditions and do not include soil samples that have been removed from the Site.

Residual soil samples contained total EPH fractions (i.e., the total of the three EPH fraction ranges within a sample) at concentrations ranging from non-detectable levels to 14,410 mg/kg. The highest concentrations of EPH fractions were detected in soil samples MW-15 (3 to 4 feet), MW-15B (3 to 4 feet), MW-20 (2 to 4 feet), MW-21 (1 to 3 feet), CS-7A (1 to 4.5 feet), and CS-8A (1 to 4.5 feet). C19 to C35 aliphatic fractions in each of these soil samples were greater than Method 1 S-1/GW-2 and S-1/GW-3 soil standards. Total PAHs were detected at concentrations

ranging from non-detectable levels to 128 mg/kg. The highest concentrations of PAHs were detected in soil samples CS-14 SW (1 to 4.5 feet) and CS-2 SW (1 to 4.5 feet). The detected PAHs did not exceed Method 1 S-1 standards. The higher concentrations of detected PAHs were not in the same areas as the higher concentrations of detected EPH fractions.

Detections of VPH fractions and VOCs were minimal and well below Method 1 S-1 soil standards. Metals including copper, mercury, selenium, thallium, and zinc were detected in soil collected from the Site at concentrations greater than MassDEP Background concentrations in natural soil. However, the detected concentrations of metals were less than Method 1 S-1 soil standards.

PCBs, as Aroclor 1254 and 1260, were detected in fifteen of forty-five soil samples at total PCB concentrations ranging from 0.1 to 0.6 mg/kg.

### **2.1.2      Groundwater**

Groundwater samples were collected from thirty-one monitoring wells between May 2016 and January 2017 and analyzed for EPH fractions and target PAHs. Groundwater collected prior to May 2016 was reviewed to determine concentration trends but not included in this risk characterization because groundwater collected within the last year is representative of current conditions at the Site post-remediation. Groundwater was collected from monitoring wells on up to three occasions between May 2016 and January 2017. Groundwater collected from individual monitoring wells was averaged over time to represent the concentrations of constituents within that monitoring well. One-half the detection limit was used to represent instances where data was not detected. Refer to Table 2 for a summary of groundwater data used in this risk characterization. No light non-aqueous phase liquid (LNAPL) has been observed in any monitoring wells since the completion excavation activities in November 2016.

Groundwater collected from Site monitoring wells contained total EPH fractions at time-weighted well-averaged concentrations ranging from non-detectable levels to 3,225 µg/L; limited EPH fractions were only detected in five monitoring wells. The highest concentrations of EPH fractions were detected in monitoring well MW-15 in December 2016 and no EPH fractions were detected in a subsequent groundwater sample collected from MW-15 in January 2017. PAHs were detected in groundwater from one of thirty-one monitoring wells, MW-10. There was also single detection of naphthalene in a groundwater sample collected from RMW-1. No EPH fractions or PAHs were detected at concentrations exceeding the Method 1 GW-2 or GW-3 groundwater standards. Detected concentrations of constituents in groundwater have generally decreased over time or remained at non-detectable concentrations since completion of excavation activities.

VPH fractions, VOCs and PCBs were not detected above detection limits in groundwater collected from the Site.

Metals detected in Site groundwater included concentrations of arsenic, copper, nickel and zinc. It should be noted that none of the Site-related constituents (EPH fractions, PAHs, PCBs) were detected in the groundwater that contained these low concentrations of metals. These metals were detected in groundwater at concentrations well below Method 1 GW-3 groundwater standards. It is unlikely that the low concentrations of metals detected in groundwater are Site-related. They may represent natural background concentrations of metals in groundwater in the area of the Site.

## **2.2 Identification of Background Conditions**

Background conditions are defined in the MCP (310 CMR 40.0006) as those levels of oil and hazardous material that would exist in the absence of the disposal site of concern, including both Natural Background and Anthropogenic Background.

As shown on Table 3, the maximum detected concentrations of PAHs and metals in soil were compared to Massachusetts Background concentrations in "natural" soil. Detections of several PAHs were greater than background concentrations. Therefore, PAHs were conservatively not excluded from consideration in this risk characterization. Detected concentrations of arsenic, barium, beryllium, cadmium, chromium, lead, and nickel were less than background concentrations and therefore, were eliminated from this risk characterization on this basis. Other metals detected in soil were retained and evaluated in the risk characterization.

There are no published background concentrations of metals in groundwater. Therefore, although the concentrations of metals detected in groundwater were less than Method 1 GW-3 standards and were not co-located with constituents of potential concern (COPC) at the Site (EPH fractions, PAHs, and PCBs), they were conservatively retained as possible COPC.

## **2.3 Selection of Constituents of Potential Concern**

With the exceptions of arsenic, barium, beryllium, cadmium, chromium, lead, and nickel in soil that are at concentrations that are equivalent to natural background in soil as discussed above, all constituents detected in at least one (1) sample were evaluated to determine if it was appropriate to include them as constituents of potential concern (COPCs). The COPCs for soil include EPH fractions, PAHs, the VPH fraction C9 to C10 aromatic fractions, naphthalene, toluene, and metals (copper, mercury, selenium, thallium, and zinc), and PCBs. The COPCs for groundwater include EPH fractions, PAHs, and metals. Because arsenic and nickel were less than background concentrations in soil, the limited detections of arsenic and nickel detected in groundwater are likely to be part of the background as well. Also, since the low detections of metals in groundwater were not co-located with COPC in groundwater, these metals are likely a background condition. However, they were conservatively retained as COPCs in groundwater.

### **3.0 DOSE-RESPONSE ASSESSMENT**

The purpose of the Dose-Response Assessment was to identify the relationship between the magnitude of COPCs to which receptors may be exposed (dose) and the likelihood of an adverse health effect (response). Both noncarcinogenic (i.e., threshold) and carcinogenic (i.e., non-threshold) health effects were considered in the Dose-Response Assessment. The information provided in the Dose-Response Assessment was combined with the results of the Exposure Assessment (Section 4.0) to provide an estimate of potential health risk (Section 5.0).

Dose-response information used in this risk assessment was obtained from MADEP (MADEP, 2015). Sources of toxicity data are listed on the MADEP website at <http://www.mass.gov/dep/service/compliance/riskasmt.htm> under the Numerical Standards Development Worksheets. The only exception to using the MADEP Numerical Standards was the use of the toxicity values for benzo(a)pyrene that were recently released by US EPA Integrated Risk Information Systems (IRIS) (US EPA, 2017). These new values not only affect benzo(a)pyrene but also other PAHs that have toxicity values based on the benzo(a)pyrene numbers as detailed below and presented in Table 5.

**Comparison of 2017 IRIS benzo(a)pyrene values to MADEP toxicity values**

	MADEP Values	IRIS Toxicity Values 2017 Final
Cancer		
Oral Cancer Slope Factor (mg/kg/day) <sup>-1</sup>	7.3E+00	1E+00
Inhalation Unit Risk ( $\mu\text{g}/\text{m}^3$ ) <sup>-1</sup>	2E-03	6E-04
Non-cancer		
Oral Reference Dose (mg/kg/day) (chronic)	3E-02	3E-04
Inhalation Reference Concentration (mg/m <sup>3</sup> )	5E-02	2E-06

The updated oral cancer slope factor and inhalation unit risk for benzo(a)pyrene were used to estimate the values for the other carcinogenic PAHs including benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene. A relative potency factor was applied to each carcinogenic PAH to account for the compounds that are less toxic than benzo(a)pyrene as follows:

**PAH Relative Potency Factors**

Carcinogenic PAH	Relative Potency Factor
benzo(a)anthracene	0.1
benzo(b)fluoranthene	0.1
benzo(k)fluoranthene	0.01
chrysene	0.001
dibenzo(a,h)anthracene	1
indeno(1,2,3-cd)pyrene	0.1

For non-cancer toxicity values, the oral reference dose and inhalation reference concentration for benzo(a)pyrene were used as surrogate compounds for many of the PAHs for which there are no non-cancer toxicity values. Refer to Table 5 for the undated values.

### **3.1 Noncarcinogenic Dose-Response**

Constituents with known or potential noncarcinogenic effects are assumed to have a dose below which no adverse effect occurs, or conversely, above which an effect may be seen. In laboratory experiments, this dose is known as the "No Observed Adverse Effect Level" (NOAEL). The lowest dose at which an adverse effect is seen is called the "Lowest Observed Adverse Effect Level" (LOAEL). By applying uncertainty factors to the NOAEL or the LOAEL, the United States Environmental Protection Agency (USEPA) developed Reference Doses (RfDs) for chronic and, in some cases, subchronic, exposures to constituents with potential noncarcinogenic effects (USEPA, 2008). Subchronic toxicity values were used for evaluating exposure lasting from several days up to seven (7) years.

Uncertainty factors account for uncertainties associated with the dose-response data, such as the appropriateness of using an animal study to derive a human dose-response value, and the potential for sensitive subpopulations to exist, which may not be adequately represented by the laboratory testing of animals. For constituents with potential noncarcinogenic effects, the RfD or Reference Concentration (RfC) provides reasonable certainty through the use of uncertainty factors that, if the specified exposure dose is below the threshold, then no noncarcinogenic health effects are expected to occur. RfDs are expressed in terms of milligrams of compound per kilogram of body weight per day (mg/kg-day) and are used to evaluate estimated doses from oral and dermal exposures. RfCs are expressed in terms of milligrams of compound per cubic meter of air (mg/m<sup>3</sup>) and are used to evaluate estimated inhalation exposures in a specific exposure context (e.g., continuous exposure for a chronic period of time). Table RS-7 (Attachment C – on-Site resident) and Tables CW-5 and CWGW-5 (Attachment D –

construction/utility worker) summarize the toxicity information for the COPCs evaluated at this Site for the inhalation, oral, and dermal exposure routes.

### **3.2 Carcinogenic Dose-Response**

In 2005, the USEPA published new guidelines (USEPA, 2005) for evaluating carcinogenic risk in which a new weight of evidence approach considers all scientific information in determining whether and under which conditions an agent may cause cancer in humans. In addition, the new guidelines provide a narrative approach to characterizing carcinogenicity rather than using specific categories (e.g., Group A and Group B). Although the 2005 revised guidelines are the basis of the USEPA's guidance to evaluating cancer risk, not all constituents in the Integrated Risk Information System (IRIS) database have been revised under the new guidelines.

Under the previous cancer risk assessment guidelines (USEPA, 1986), the underlying assumption of regulatory risk assessment for constituents with known or assumed potential carcinogenic effects was that no threshold dose exists. In other words, it was assumed that a finite level of risk is associated with any dose above zero (0). Theoretically, even a single molecule could cause some level of risk. For carcinogenic effects, the USEPA risk assessment guidelines (USEPA, 1986) used a two-step evaluation in which the compound was assigned a weight-of-evidence classification, and then a cancer slope factor was calculated. Cancer slope factors are a numerical estimate of the carcinogenic potency of a compound. The weight-of-evidence classification was based on the likelihood of the compound being a human carcinogen.

Under this system, which is still in place for constituents in IRIS that have not been revised since 1999, Group A constituents are classified as human carcinogens, Group B constituents are probable human carcinogens, Group C constituents are possible human carcinogens, Group D constituents are not classifiable as to human carcinogenicity, and for Group E constituents there is evidence of noncarcinogenicity for humans. Furthermore, in the second part of the evaluation, cancer slope factors were calculated for constituents that are known or probable human carcinogens.

The risk assessment guidelines (USEPA, 1986) used linear models in the low dose region (which represents environmental exposure) as a default to estimate cancer slope factors. The USEPA's approach was to use the upper ninety-five (95) percent confidence bound on the slope of the line generated by the linear model to estimate the potency of carcinogens. Such potencies were then used to estimate risks at various exposures.

Under the new cancer guidelines (USEPA, 2005), one (1) of the most important features is the incorporation of greater emphasis on mechanisms for carcinogenic action. The USEPA has proposed a departure from using linearized models to relate doses to responses when the mode of action is deemed not to be genotoxic. In these cases, the guidelines propose to use a

benchmark dose approach to risk assessment (USEPA, 2005). A benchmark approach uses a model to determine the dose that would result in a defined rate of an outcome, usually five (5) or ten (10) percent. Safety factors can then be applied to this benchmark dose level.

Table RS-8 (Attachment C – on-Site resident) and Tables CW-5 and CWGW-5 (Attachment D – construction/ utility worker) summarize toxicity information for COPCs assumed by the MADEP to produce potential carcinogenic effects through the oral and inhalation routes of exposure, respectively. Carcinogenic toxicity values for oral exposure are cancer slope factors and are expressed in terms of  $(\text{mg/kg-day})^{-1}$ ; carcinogenic toxicity values for inhalation exposures are inhalation unit risk values and are expressed in terms of 1/microgram per cubic meter ( $\mu\text{g}/\text{m}^3$ ) $^{-1}$ .

Unit risk values are defined as the upper-bound excess lifetime cancer risk estimated to result from continuous exposure to an agent at a concentration of 1  $\mu\text{g}/\text{m}^3$  in air (USEPA, 2005). For this evaluation, unit risk values were converted to an inhalation cancer slope factor correcting for body weight, inhalation rates, and units using the following equation:

$$\text{CSF}_{\text{inh}} = \frac{\text{UF}_{\text{inh}} \times 70 \text{ kg}}{20 \text{ m}^3 / \text{day}} \times 1000 \text{ } \mu\text{g}/\text{mg}$$

where:

$\text{CSF}_{\text{inh}}$  = inhalation cancer slope factor ( $\text{mg}/\text{kg}\cdot\text{day}$ )-1

$\text{UR}_{\text{inh}}$  = inhalation unit risk ( $\mu\text{g}/\text{m}^3$ )-1

70 kg = body weight

1000  $\mu\text{g}/\text{mg}$  = conversion factor in micrograms per milligram; and

20  $\text{m}^3/\text{day}$  = inhalation rate in cubic meters per day.

#### **4.0 EXPOSURE ASSESSMENT**

This section identifies the type and magnitude of potential exposures to COPCs that may occur at the Site under current and reasonably foreseeable future use. First, potential receptors were identified based on conditions present at the Site and surrounding area. Next, potential routes and pathways of exposure were identified for each receptor based on information about activities that typically occur or could be expected to occur at the Site.

Consistent with the requirements of the MCP (310 CMR 40.0923), the exposure assessment considered both current and reasonably foreseeable future Site activities and uses, and it is assumed future use is in no way restricted by an AUL. Also refer to Section 5.0 of the Report for Exposure Assessment information. Table 4 presents the exposure assessment summary.

#### **4.1 Site Use and Activities**

This risk characterization evaluates the Site located at 179 Brook Street, a manufacturing facility and warehouse in an industrial/commercial/residential neighborhood. Under current conditions, receptors include employees that work at the Site. Customers, visitors and/or trespassers may also visit the Site, however, on an irregular basis. Although no utility or construction work is scheduled, utility or construction workers may be present at the Site in the future to perform utility repair, construction or maintenance activities. In the future, should the Site be redeveloped, construction workers may also be present during Site redevelopment. Under future foreseeable uses, since there are no activity and use limitations on the property, it was assumed that the Site may be redeveloped for residential use.

The Site is defined as an area where contamination is located or has come to be located. For this evaluation, the Site soil associated with the hydraulic oil release is located at depths generally between 0 and 6 feet below grade in soil that is currently under the slab of the manufacturing facility and the Site soil associated with the PCB impacts are on the exterior of the southeast corner of the facility in shallow soil. Residual impacts of hydraulic oil in groundwater are extremely limited and were detected in a few monitoring wells located in the building slab of the manufacturing facility. No PCBs were detected in groundwater collected from the Site. Residual impacts of hydraulic oil are represented by monitoring wells MW-10, MW-15, MW-15A, MW-15B, and MW-15C which contained limited concentrations of EPH fractions or PAHs. Constituents analyzed in groundwater collected from monitoring wells MW-1, MW-2, MW-4, MW-6, MW-14, MW-16, MW-20, MW-21, MW-22, MW-25, MW-27, MW-E, MW-F, MW-M, MW-N, MW-O, MW-P, RMW-2, RMW-3, RMW-4, RMW-5, RMW-6, and RMW-7 were at non-detectable concentrations.

Hydraulic oil constituents would not be considered volatile under the MADEP Vapor Intrusion (VI) Policy (MADEP, 2016). According to the policy, "VOCs are defined in the MCP (310 CMR 40.0006(12)) as an organic compound with a boiling point equal to or less than 218°C that are targeted analytes in the United States Environmental Protection Agency (USEPA) Method 8260B and other purgeable organic methods specified in the Department's Compendium of Analytical Methods." A review of the documented boiling point of hydraulic oil indicates that hydraulic oil has a boiling point of greater than 316°C (Oilman Group, 2014; CGF, 2009). Since there were only minimal detections of VPH fractions and VOCs in soil, no VPH fractions or VOCs in groundwater, and the constituents that were detected in soil and groundwater are not considered volatile, volatilization of constituents into indoor air is not considered a complete exposure pathway at this Site.

There are no Zone II Areas, Interim Wellhead Protection Areas (IWPA), Zone A, Potentially Productive Aquifers, or private wells within 500 feet of the disposal Site. An industrial process water supply well is located within the footprint of the building structure, within the northwestern portion of the building; however, this well is not, and has never been, connected to any of the

bathrooms, sinks, or any other fixture from which any person at the site would come in contact. The industrial process water supply well has not been utilized at the site for approximately 20 years, according to the property owner, and is not currently connected to any systems at the site building.

There are no wetlands, vernal pools, ponds, lakes, rivers, or reservoirs within 500 feet of the disposal Site. However, Rigby Brook is located south of the property, flows through a concrete culvert under a portion of the property and exits the culvert to the northeast of the property. There are no Areas of Critical Environmental Concern (ACEC), Sole Source Aquifers, fish habitats or habitats of Species of Special Concern or Threatened or Endangered Species.

#### **4.2 Soil and Groundwater Categorization**

Soil and groundwater were categorized, as is required by the MCP (310 CMR 40.0930).

The Site is located within an industrial/commercial and residential area of Clinton, Massachusetts. Since the Site area associated with the release of hydraulic oil (RTN 2-19882) is located under the building slab, Site soil associated with the hydraulic oil release is considered inaccessible. The PCB impacted soil (RTN 2-19956) is located at the southeastern exterior of the building and is therefore, considered accessible. Under current conditions, it is assumed that employees may have high frequency of contact because they work at the Site and low intensity of contact with Site soil since Site soil is located under the building slab. Under hypothetical future conditions, should the Site be redeveloped and soil that is currently under the building slab become accessible, future residents may have high frequency and high intensity contact with soil. Under future redevelopment conditions, construction/utility workers would have low frequency and high intensity exposure to Site soil. Based on these potential exposures, Site soil is categorized as S-2 and S-3 under current conditions and S-1 under potential future conditions. Soil under building foundations is always categorized as S-3 per 310 CMR 40.0933.

Groundwater underlying the Site does not meet the definitions of a Current or Potential Drinking Water Source Area (310 CMR 40.0932). Therefore, the Site does not meet the criteria for GW-1.

Under current conditions, the groundwater under the Site building meets the criteria for GW-2. Site groundwater is categorized as GW-3 (310 CMR 40.0932(2)) because all groundwater of the Commonwealth is assumed to discharge to surface water and thus meets the criteria for this category.

#### **4.3 Identification of Receptors and Exposure Pathways**

Potential receptors that were evaluated for the Site include hypothetical, future on-Site residents and construction/utility workers. Employees, off-Site residents, visitors, and trespassers were

considered to be lesser exposed receptors than the on-Site residents. Therefore, risks calculated for the on-Site resident are protective of potential risks to these other receptors. Consistent with the requirements of the MCP (310 CMR 40.0923), the exposure assessment considered both current and reasonably foreseeable future Site activities and uses. Refer to Table 4 for a review of potential exposure pathways.

The Site is not located in a GW-1 drinking water area (refer to Section 4.2). Therefore, use of groundwater as potable water at the Site and at surrounding properties is not a complete exposure pathway.

Exposure pathways are the mechanisms by which receptors may be exposed to COPCs at the Site. According to USEPA (1989) and MADEP (1995), the following elements must be present in order for a potential human exposure pathway to be complete:

- A constituent source
- A mechanism by which a constituent may be released to the environment
- An environmental transport medium
- An exposure point (discussed above), and
- A receptor with a route of exposure at the point of contact (discussed above)

As mentioned above, potential Site receptors evaluated include hypothetical, future on-Site residents and construction/utility workers. Although hydraulic oil impacted soil is currently under the building slab, hypothetical on-Site residents were conservatively assumed to be exposed to both hydraulic oil and PCB impacted soil via dermal contact and incidental ingestion under hypothetical future conditions. As mentioned above, the PCB impacted soil is located at the southeastern exterior of the building.

Based on the lack of significant detections of VOCs and VPH fractions in soil or groundwater, migration of volatiles into indoor air of the Site building or future residence were not considered complete exposure pathways.

Construction/utility workers were conservatively assumed to be exposed to soil via incidental ingestion, dermal contact, and inhalation of particulates. Construction/utility workers were also assumed to be exposed to groundwater via dermal contact.

Concentrations of VOCs and VPH fractions in groundwater collected from the subject property were less than Method 1 GW-2 groundwater standards. Therefore, the detections are not considered to be a significant pathway in indoor air. For volatile concentrations in an open trench where vapors are less likely to accumulate, concentrations of volatile constituents will be even less than would be likely in indoor air. Based on the length of time construction workers are in a trench, they are lesser exposed receptors than residents. Therefore, construction

worker exposure to volatile constituents in a trench from groundwater was also eliminated as an exposure pathway.

The MADEP Short Forms (MADEP, 2012 with updates March 2015) were used to estimate potential risks to on-Site resident receptor exposure to soil via dermal contact and incidental ingestion. MADEP Short forms were used to estimate potential risks to construction/utility workers exposed to soil via dermal contact, incidental ingestion, and inhalation of fugitive dust. Modified Short form tables were used to estimate potential risks to construction/utility worker via groundwater exposures. The exposure assumptions used in the evaluation of these receptors are presented in Tables RS-6 (Attachment C) and CW-4 and CWGW-4 (Attachment D).

On-Site residential exposure to soil via dermal contact and incidental ingestion was calculated assuming that residents would encounter soil 5 days per week over a period of 30 weeks per year for 30 years. The exposure assumptions for a resident are equivalent to the MADEP default values published in MADEP Short Form worksheets (MADEP, 2012 with March 2015 updates). The ingestion rate is assumed to be 100 mg/day soil for young children and 50 mg/day soil for older children and adults. Surface area was based on exposure to face, forearms, lower legs, and feet. These exposure assumptions are presented in Table RS-6 in Attachment C.

Construction/utility worker exposure to soil via dermal contact, incidental ingestion, and inhalation of fugitive dust was calculated assuming that workers would encounter soil in an excavation during utility repair or Site redevelopment work. Workers were assumed to be exposed to soil 8 hours per day, 5 days per week over a period of six months. The exposure assumptions for a construction/utility worker are consistent with MADEP default values published in MADEP Short form worksheets (MADEP, 2012 with March 2015 updates). For dermal contact with groundwater, construction/utility workers were assumed to be exposed to groundwater 5 days per week over a period of six months. Since groundwater is pumped from excavations for the safety of workers during utility or excavation work, workers were assumed to be exposed to groundwater 1.0 hour per day for set up of dewatering equipment. These exposure assumptions are presented on Table CW-4 and CWGW-4 in Attachment D.

No COPCs are considered by MADEP to be acutely toxic constituents. Therefore, no acute exposure pathways were performed in this evaluation.

#### **4.4 Exposure Areas**

Exposure areas, or exposure points, are defined as locations of potential contact between a receptor and portions/media of the Site. The exposure point concentration (EPC) is thereby defined as the COPC concentration in the soil that a potential receptor may encounter within an exposure area. The exposure points evaluated in this Risk Characterization are described

below. The estimation of EPCs, based on the selected exposure points, is described in Section 4.5.

#### **4.4.1      Soil**

The exposure point at this Site is defined as the area of soil located beneath the building slab where petroleum hydrocarbon impact has come to be located and an area at the southeastern exterior of the building where the PCB impacted soil has come to be located. Soil samples MW-14 (3 to 5 feet), MW-23 (0 to 2.5 feet), MW-25 (0 to 2.5 feet), MW-26 (2 to 4 feet), and MW-27 (0 to 2.5 feet), were conservatively eliminated from calculation of the EPC because they contained concentrations of constituents that were at non-detectable concentrations or slightly above detection limits, however, these soil samples are within the Site boundaries.

For EPH fractions and PAHs, the arithmetic mean concentrations of detected concentrations in soil, with the exclusion of those five soil samples, were used to represent EPCs. The use of the arithmetic mean for soil EPCs for EPH fractions and PAHs is applicable at this Site because of the relatively large data set (38 samples were analyzed for EPH fractions and PAHs) and since soil samples that contained low or non-detectable concentrations were eliminated from the EPC calculations, skewing the data to higher concentrations. Furthermore, a review of the distribution of the data collected from the Site indicated that soil samples were collected preferentially in the area of highest petroleum impact based on PID readings during sampling. Therefore, the arithmetic mean calculated for EPCs for EPH fractions and PAHs likely represents concentrations that are higher and more conservative than the true mean concentrations in soil across the Site.

Since fewer soil samples were analyzed for VPH fractions, VOCs and metals, the maximum detected concentrations of these constituents were conservatively selected as the EPCs.

PCBs were detected in only fifteen of forty-five soil samples. Forty-five soil samples is an adequate data set to represent the relatively small area in which the PCBs were detected. However, to not dilute the arithmetic mean concentration with the large number of non-detects, the arithmetic mean for PCBs was calculated using only detected concentrations of PCBs even though many of the samples that did not contain detectable concentrations were within the Site area. This yields a conservative EPC estimate.

#### **4.4.2      Groundwater**

For groundwater, each individual monitoring well is considered its own exposure point. The maximum well-averaged concentration of each constituent was used to represent EPCs for groundwater. Residual impacts are represented by monitoring wells MW-10, MW-15, MW-15A, MW-15B, and MW-15C which contained limited concentrations of EPH fractions or PAHs. Groundwater EPCs were used to evaluate dermal contact with groundwater, for comparison to

upper concentration limits (UCLs), and for comparison to ambient water quality benchmarks in the downgradient surface water body (Rigby Brook).

#### **4.4.3 “Hot spot” Evaluation**

MADEP Guidance (MADEP, 1996) defines a “hot spot” as an area where concentrations more than 100-fold higher than surrounding areas are observed, except where potential for greater exposure exists. At these latter sub-areas, concentrations more than 10-fold higher than surrounding concentrations might be “hot spots.” Though there were a few soil samples that contained elevated detections of petroleum hydrocarbons, these detections are not more than 10-fold higher than surrounding areas. Therefore, no potential “hot spots” were identified at this Site.

### **4.5 Estimation of Exposure Point Concentrations**

In accordance with the MCP (310 CMR 40.0926), the arithmetic mean of measured COPC concentrations is considered a conservative estimate of the average concentration contacted by potential receptors at an exposure point. Therefore, the arithmetic mean concentrations of constituents detected in soil for EPH fractions, PAHs and PCBs, as described above, were conservatively used as the EPCs for soil exposures and for comparison to soil upper concentration limits (UCLs). The EPCs for VPH fractions, VOCs and metals were based upon the maximum detected concentrations because these constituents were analyzed in fewer samples.

For groundwater EPCs, the maximum well-averaged concentrations were used as the EPCs for groundwater exposures and UCL comparison.

### **4.6 Quantification of Potential Exposures**

This section describes the equations and assumptions used to evaluate potential exposure of identified receptors to COPCs detected at the subject Site. The equations used to evaluate potential exposures in this Risk Characterization were consistent with equations presented in guidance developed by MADEP (1996) and USEPA (1989, 1991).

The Average Daily Dose (ADD) was calculated to estimate a receptor's potential daily intake from exposure to constituents with potential noncarcinogenic effects. According to MADEP (1996) and USEPA (1989), the exposure dose should be calculated by averaging over the period of time for which the receptor was assumed to be exposed. Subsequently, the ADD for each compound via each route of exposure was compared to the noncarcinogenic RfD for that compound in order to estimate the potential noncarcinogenic hazard index due to exposure to that compound via that route of exposure.

For constituents with potential carcinogenic effects, the lifetime average daily dose (LADD) was calculated to estimate potential exposures over the course of a lifetime (70 years).

Subsequently, the LADD for each compound via each route of exposure was multiplied by the cancer slope factor for that compound to estimate the potential lifetime carcinogenic risk due to exposure to that compound via that route of exposure.

The equations used to estimate ADDs and LADDs are presented below. The spreadsheets used to calculate ADDs and LADDs from these equations and parameter values are contained in Attachments C (on-Site resident) and D (construction/utility worker) to this report.

#### **4.6.1      Soil Exposure**

Exposure to soil by on-Site residents and construction/utility workers was assumed to occur via incidental ingestion and dermal contact. ADDs and LADDs were calculated as follows:

$$ADD \text{ or } LADD = \frac{CS \times [(IR \times FI \times RAFos) + (SA \times AF \times RAFds)] \times EF \times EP \times CF}{BW \times AP}$$

where:

ADD	= Average Daily Dose Due to Ingestion and Dermal Contact (mg/kg-day)
LADD	= Lifetime Average Daily Dose Due to Ingestion and Dermal Contact (mg/kg/day)
CS	= Compound Concentration in Soil (mg/kg)
IR	= Soil Ingestion Rate (mg/day)
RAFos	= Relative Absorption Factor (Oral-Soil) (unitless)
RAFds	= Relative Absorption Factor (Dermal-Soil) (unitless)
SA	= Skin Surface Area Exposed (cm <sup>2</sup> /day)
AF	= Soil to Skin Adherence Factor (mg/cm <sup>2</sup> )
EF	= Exposure Frequency (days/year)
EP	= Exposure Period (years)
CF	= Conversion Factor (10 <sup>-6</sup> kg/mg)
BW	= Body Weight (kg)
AP	= Averaging Period (days)

#### **4.6.2      Inhalation Exposure**

Inhalation of particulates (fugitive dust) was also evaluated for construction/utility worker receptors. Exposure via inhalation of soil-derived fugitive dust is a function of the concentration at the source (e.g., soil), frequency and duration of contact, and a factor describing the concentration of a compound in respirable particles in the air.

MADEP (2002a) considers that potential exposure via inhalation of dust occurs via two (2) uptake pathways: uptake by the gastrointestinal (GI) tract following coughing up and subsequent swallowing of particulates trapped by the mucosa of the upper respiratory track, and uptake by the respiratory system following inhalation into the lungs. To calculate the exposure

associated with these two (2) uptake pathways, MADEP assumes the following for the maintenance and construction worker scenarios:

- 100% of respirable particulate mass (PM) is equal to or less than 30 microns in diameter ( $\leq PM_{30}$ )
- 40% of total respiratory particulate mass is equal to or less than 10 microns in diameter ( $\leq PM_{10}$ )
- 100% of inhaled particulates greater than ten (10) microns but less than or equal to thirty (30) microns are swallowed
- 50% of inhaled particulates equal to or less than ten (10) microns are swallowed
- 50% of inhaled particulates equal to or less than ten (10) microns enters the lungs

Based on these assumptions, the effective exposure concentration of respirable particulates for the GI system is two (2) times the concentration of  $PM_{10}$ , while that for the lungs is 0.5 times the concentration of  $PM_{10}$ . For the evaluation of the maintenance and construction workers, the concentration of  $PM_{10}$  in the air was assumed to be 60  $\mu g/m^3$  (MADEP, 1995; MADEP, 2002a). Using these effective exposure concentrations, average daily doses of COPCs for the GI and respiratory systems can be estimated using the following equations:

Average Daily Dose for the GI System ( $ADD_{inhalation-GI}$ )

$$[OHM_{particulate}] = [OHM_{soil}] \times [PM_{10}]$$

$$ADD_{inhalation - GI} = \frac{[OHM_{particulate}] \times 2 \times IR_{air} \times RAF \times ET \times EF \times EP \times CF}{BW \times AP}$$

where:

$ADD_{inhalation-GI}$	= Average daily dose due to coughing up and subsequent ingestion of inhaled particulates ( $mg/kg\cdot day$ )
$[OHM_{particulate}]$	= Concentration of OHM in airborne particulates ( $\mu g/m^3$ )
$[OHM_{soil}]$	= Concentration of OHM in soil ( $mg/kg$ )
$[PM_{10}]$	= Concentration in air of particulates less than or equal to ten (10) microns in diameter ( $\mu g/m^3$ )
$IR_{air}$	= Inhalation rate for the receptor of concern during the period of exposure ( $m^3/hour$ )
$RAF$	= Relative Absorption Factor
$EF$	= Number of exposure events during the exposure period divided by the number of days in the exposure period (day/year)
$ET$	= Exposure time (hour/day)

EP	= Duration of the exposure period (year)
BW	= Body weight of the receptor of concern during the averaging period (kg)
AP	= Averaging period (day)
CF	= Appropriate unit conversion factor

Average Daily Dose for the Respiratory System (ADD<sub>inhalation</sub>)

$$[\text{OHM}_{\text{particulate}}] = [\text{OHM}_{\text{soil}}] \times [\text{PM}_{10}]$$

$$\text{ADD}_{\text{inhalation}} = \frac{[\text{OHM}_{\text{particulate}}] \times 0.5 \times \text{IR}_{\text{air}} \times \text{RAF} \times \text{ET} \times \text{EF} \times \text{EP} \times \text{CF}}{\text{BW} \times \text{AP}}$$

where:

ADD <sub>inhalation-GI</sub>	= Average daily dose due to coughing up and subsequent ingestion of inhaled particulates (mg/kg-day)
[\text{OHM}_{\text{particulate}}]	= Concentration of OHM in airborne particulates ( $\mu\text{g}/\text{m}^3$ )
[\text{OHM}_{\text{soil}}]	= Concentration of OHM in soil (mg/kg)
[\text{PM}_{10}]	= Concentration in air of particulates less than or equal to ten (10) microns in diameter ( $\mu\text{g}/\text{m}^3$ )
\text{IR}_{\text{air}}	= Inhalation rate for the receptor of concern during the period of exposure ( $\text{m}^3/\text{hour}$ )
\text{RAF}	= Relative Absorption Factor
\text{EF}	= Number of exposure events during the exposure period divided by the number of days in the exposure period (day/year)
\text{ET}	= Exposure time (hour/day)
\text{EP}	= Duration of the exposure period (year)
\text{BW}	= Body weight of the receptor of concern during the averaging period (kg)
\text{AP}	= Averaging period (day)
\text{CF}	= Appropriate unit conversion factor

Dose-response values for inhalation exposure (i.e., unit risk factor and reference concentration) are expressed on a mass of compound per volume of air basis, using the assumption that a person weighs 70 kg and has a daily inhalation rate ( $\text{Inh}_{\text{day}}$ ) of  $20 \text{ m}^3$ . Therefore, prior to the characterization of risk,  $\text{ADD}_{\text{inhalation}}$  expressed in terms of ( $\text{mg/kg-day}$ ) for the compound must be converted to an average daily exposure ( $\text{ADE}_{\text{inhalation}}$ ) ( $\text{mg/m}^3$ ) in order to make it compatible with the corresponding dose-response values. This can be accomplished using the following equation:

$$\text{ADE}_{\text{inhalation}} = \frac{\text{ADD}_{\text{inhalation}} \times \text{BW}_{\text{assumed}}}{\text{Inh}_{\text{assumed}}}$$

where:

$\text{ADE}_{\text{inhalation}}$	= Average daily concentration of oil/hazardous material to which a receptor is exposed in air ( $\text{mg/m}^3$ )
$\text{ADD}_{\text{inhalation}}$	= Average daily dose due to inhaled particulates entering the lungs ( $\text{mg/kg-d}$ )
$\text{BW}_{\text{assumed}}$	= Body weight assumed in the development of RfCs and Unit Risk Factors (URFs) (kg)
$\text{Inh}_{\text{assumed}}$	= Daily inhalation rate assumed in the development of RfCs and URFs ( $20 \text{ m}^3/\text{d}$ )

#### **4.6.3 Groundwater Exposure**

Exposure to groundwater by construction/utility workers was assumed to occur via dermal contact. ADDs and LADDs were calculated as follows:

$$\text{ADD}_{\text{dermal}} \text{ or } \text{LADD}_{\text{dermal}} = \frac{EPC \times SA \times RAF \times EF \times ED_{\text{dermal}} \times EP \times C1 \times Kp}{BW \times AP}$$

where:

$\text{ADD}_{\text{dermal}}$	= Average Daily Dose Due to dermal contact ( $\text{mg/kg-day}$ )
$\text{LADD}$	= Lifetime Average Daily Dose due to dermal contact ( $\text{mg/kg/day}$ )
$\text{SA}$	= Surface area ( $\text{cm}^2$ )
$\text{RAF}$	= Relative absorption factor (dimensionless)
$\text{EF}$	= Exposure frequency (event/day)
$\text{ED}$	= Exposure duration (hours/event)
$\text{EP}$	= Exposure period (days)
$\text{C}$	= Conversion factor (liters/ $\text{cm}^3$ )
$\text{Kp}$	= Permeability Coefficient (cm/hour)
$\text{BW}$	= Body weight (kg)
$\text{AP}$	= Averaging Period (days)

#### **4.7 Relative Absorption Factors (RAFs)**

The premise of estimating risk or hazard is that potential dose to the defined receptor is similar to the administered dose or applied dose in the laboratory experiment used as the basis for the RfD or CSF. The animal-derived CSFs and RfDs used in the quantitative risk assessment were based on applied doses, in most cases. However, the efficiency of COPC absorption via a particular route and from a particular matrix (e.g., soil, water) at the Site may differ from the absorption efficiency for the exposure route and matrix used in the experimental study that serves as the basis for the CSF or RfD. RAFs are used to adjust the calculated exposure dose to a particulate COPC so that it is comparable to the toxicity information for that compound as recommended by MADEP (1996) and USEPA (1989). RAFs for site-related COPCs were derived and used in the calculation of human exposure doses and are shown in Table RS-8 (Attachment C – on-Site resident) and Tables CW-5 and CWGW-5 (Attachment D – construction/utility worker). The RAFs were obtained from the MADEP recommended values (MADEP, 2012).

### **5.0 RISK CHARACTERIZATION**

Risk characterization is the step in the risk assessment process that combines the results of the exposure assessment and the toxicity assessment for each COPC to estimate the potential for noncarcinogenic and carcinogenic human health effects from exposure to that compound. This section summarizes the results of the Risk Characterization for each receptor evaluated in this risk assessment. Table 5 summarizes the total noncarcinogenic and carcinogenic risks calculated for the Site. The risk calculations, which provide results for each receptor, exposure pathway, and COPC, are contained in Attachments C (on-Site resident) and D (construction/utility worker).

#### **5.1 Noncarcinogenic Risk Characterization**

The potential for exposures to COPCs identified at the Site to result in adverse noncarcinogenic health effects was estimated for each receptor by comparing the ADD or ADE for each compound (derived in Section 4.6) with the RfD or RfC for that compound (presented in Section 3.1). The resulting ratio is known as the Hazard Quotient (HQ) for that compound. The HQ was calculated using the following formula:

$$HQ = \frac{ADD}{RfD}$$

where:

- |     |                                  |
|-----|----------------------------------|
| HQ  | = Hazard Quotient (unitless)     |
| ADD | = Average Daily Dose (mg/kg-day) |
| RfD | = Reference Dose (mg/kg-day)     |

$$HQ = \frac{ADE}{RfC}$$

where:

HQ	= Hazard Quotient (unitless)
ADE	= Average Daily Exposure (mg/m <sup>3</sup> )
RfC	= Reference Dose (mg/m <sup>3</sup> )

When a HQ for a given compound does not exceed one (1), the RfD or RfC has not been exceeded, and no adverse noncarcinogenic health effects are expected to occur. The HQs for each compound were summed to yield the Hazard Index (HI) for that pathway. A total Hazard Index for a chemical was then calculated for each receptor by summing the pathway-specific HIs.

Table 5 presents the total HIs estimated for the on-Site resident and construction/utility worker. A separate Method 3 Risk Characterization (EnviroRisk Solutions, 2017) was performed for a separate RTN (RTN 2-19975) on the eastern portion of the property related to elevated detections of zinc in soil and groundwater. The results of this Risk Characterization were conservatively added into the results of this risk characterization to show a total Site risk for both receptors. The calculated total subchronic and chronic HIs for each of these receptors were less than MADEP's target of 1. Due to the conservative nature of assumptions used in this Method 3 Risk Characterization, it is likely that true risks are less than those calculated.

Residential exposure to homegrown produce was also calculated for informational purposes since this is an unlikely pathway at the Site. As shown on Table RS-2 in Attachment C, the HIs calculated for residential exposure to homegrown produce were greater than the MADEP target of 1, due to the presence of low concentrations of PCBs in soil. Best management practices should be used if vegetable gardening occurs at the Site, including the use of raised beds with imported clean soil.

## 5.2 Carcinogenic Risk Characterization

The purpose of carcinogenic risk characterization is to estimate the likelihood, over and above the background cancer rate, that a receptor could develop cancer in his or her lifetime as a result of site-related exposures to COPCs. This likelihood is a function of the dose of a compound and the CSF for that compound. The relationship between the Excess Lifetime Cancer Risk (ELCR) and the estimated LADD of a compound may be expressed as:

$$\text{ELCR} = 1 - e^{-\text{CSF} \times \text{LADD}}$$

where:

ELCR	= Excess Lifetime Cancer Risk (unitless)
CSF	= Cancer Slope Factor (1/(mg/kg-day))
LADD	= Lifetime Average Daily Dose (mg/kg-day)

When the product of the CSF and the LADD is much greater than 1, the ELCR approaches 1 (i.e., 100% probability). When the product is less than 0.01 ( $1 \times 10^{-2}$ ), the equation can be closely approximated by:

$$\text{ELCR} = \text{CSF} \times \text{LADD}$$

For inhalation risks, the ELCR can be calculated as:

$$\text{ELCR} = \text{UR} \times \text{LADE}$$

where:

ELCR	= Excess Lifetime Cancer Risk (unitless)
UR	= Unit Risk (1/(\mu g/m <sup>3</sup> ))
LADE	= Lifetime Average Daily Exposure (\mu g/m <sup>3</sup> )

The product of the equation is unitless and represents an estimate of the potential carcinogenic risk associated with a receptor's exposure to that compound via that pathway. ELCRs are calculated for each potentially carcinogenic compound. For each receptor, the ELCRs for each pathway by which the receptor is assumed to be exposed is calculated by summing the potential risks derived for each compound. A total ELCR is then calculated by summing the pathway-specific ELCRs.

As with non-carcinogenic risks, the risks calculated in a separate Method 3 Risk Characterization (EnviroRisk Solutions, 2017) were conservatively added into the results of this risk characterization to show a total Site risk for both receptors. As shown in Table 5, total

ELCRs calculated for both hypothetical residents and construction/utility workers are less than the MADEP risk limit of 1E-5.

Residential exposure to homegrown produce was also calculated for informational purposes since this is an unlikely pathway at the Site. As shown on Table RS-2 in Attachment C, the ELCR calculated for residential exposure to homegrown produce was greater than the MADEP target of 1E-5 due to the presence of low concentrations of PCBs in soil. Best management practices should be used if vegetable gardening occurs at the Site, including the use of raised beds with imported clean soil.

### **5.3 Applicable or Suitably Analogous Public Health Standards**

The MCP (310 CMR 40.0993 (3)) requires an evaluation of Applicable and Suitably Analogous Standards (ASAS) in addition to quantitative risk assessment. The general list of ASAS provided in the MCP (310 CMR 40.0993) includes the Massachusetts Drinking Water Quality Standards, the Massachusetts Air Quality Standards, and the Massachusetts Surface Water Quality Standards.

Massachusetts Drinking Water Standards and Guidelines are not applicable at this Site because the Site is not in a drinking water area.

The Massachusetts Air Quality Standards relate to ambient concentrations of the so-called "criteria pollutants" (sulfur oxides, particulate, carbon monoxide, ozone, nitrogen dioxide and lead). The lead detected in soil was less than background concentrations in natural soil and is unlikely to become an air quality risk. Lead in air is typically from emissions from cars or the burning of landfill waste. The other criteria pollutants were not COPCs at this Site, therefore the Air Quality Standards are not considered to be applicable to the Site.

Refer to Section 5.5 of this Risk Characterization for the Stage I Ecological Risk Characterization.

### **5.4 Risk to Safety and Public Welfare**

In accordance with 310 CMR 40.0994, the risk of harm to safety and public welfare was evaluated. No overt situations posing a threat of physical harm or bodily injury exist, nor have persistent odors associated with the release been reported. Furthermore, no nuisance conditions or degradation of public resources have been identified or are expected. As such, the Site does not pose a threat of physical harm or bodily injury, does not present a dangerous or nuisance condition, and does not pose a threat to any public welfare factors.

As part of the public welfare evaluation, Site soil and groundwater EPCs were compared to UCLs as shown in Tables 6 and 7, respectively. No soil or groundwater EPCs exceeded UCLs.

Based on this evaluation, a condition of No Significant Risk of harm to safety and public welfare exists for the Site.

### **5.5 Risk to the Environment**

Risk to the Environment was evaluated in this Risk Characterization in accordance with MADEP guidance for Method 3 Environmental Risk Characterization (MADEP, 1996). This MADEP guidance provides for two (2) stages of environmental risk characterization:

- Stage I, which is used to identify those situations that require further evaluation
- Stage II, which is a detailed evaluation of those environmental exposure pathways identified in Stage I

For terrestrial habitats, an evaluation of habitat quality was undertaken as the first step of the Stage I screening, in accordance with MADEP guidance (1996). To evaluate terrestrial habitat quality, available Site information was reviewed. No Habitats of Rare Wetlands Wildlife are located on-site or within 500 feet of the Site. The Site is not designated to be within a protected open space or an ACEC. The Site, currently defined as being an area under the building slab and an area southeast of the Site building on the exterior of the building, is fully developed and, therefore, does not represent a potentially significant habitat, as it is less than two (2) acres. Additionally, impacted soil is under a building slab is unlikely to be accessible to ecological receptors. As a result, the Site does not represent important habitat for terrestrial species and therefore, further evaluation of terrestrial habitat is not required (MADEP, 1996).

A Stage I screening of aquatic habitats was performed for the Site. Potential aquatic receptors in the site area include aquatic organisms in Rigby Brook situated approximately 230 feet to the south of the subject property, is culverted under Brook Street and the abutting 203 Brook Street property and then emerges approximately 390 feet to the northeast of the subject property. Residual concentrations of constituents in groundwater at much of the Site have been reduced to non-detectable levels. Only minor detections of petroleum hydrocarbons, PAHs, and metals have been detected in Site monitoring wells MW-10, MW-15, MW-15A, MW-15B, and MW-15C. The low concentrations of metals that were detected in groundwater are likely a background condition.

To be conservative, surface water concentrations were estimated based on the maximum time-weighted average concentrations in groundwater as shown in Table 8. A dilution factor was calculated based on the distance between the Site and the closest surface water body and applied to the maximum concentrations in groundwater. An additional dilution factor of 10 was applied to account for dilution of groundwater as it enters surface water. Estimated surface water concentrations were then compared to target surface water quality benchmarks. As shown in Table 8, estimated concentrations of constituents in surface water were equivalent to or less than target surface water quality benchmarks. Additionally, all groundwater EPCs were

less than Method 1 GW-3 groundwater standards. Based on this terrestrial and aquatic habitat evaluation, the Site poses No Significant Risk to the Environment, and a Stage II evaluation is not deemed necessary.

Although groundwater within 500 feet of surface water contained detectable concentrations of metals that may bioaccumulate in aquatic receptors, the concentrations of dissolved metals in groundwater were well below Method 1 GW-3 standards, protective of aquatic receptors. Furthermore, the detections of metals in groundwater were not co-located with known COPCs at the Site and may be a background condition in groundwater in the area of the Site. On this basis, no further analysis of metals and the potential migration to surface water is warranted.

On a separate portion of the subject property near the southeastern-most warehouse area at the Site, elevated concentrations of zinc were detected in groundwater above Method 1 GW-3 groundwater standards in two monitoring wells. These detections of zinc, potential sources of zinc, and the potential migration of zinc to Rigby Brook were investigated in a separate Method 3 Risk Characterization report (EnviroRisk Solutions, 2017) associated with RTN 2-19975. The detections of zinc in groundwater were determined to not be Site-related but were related to dissolved zinc in rain water and possibly zinc mobilized from the metal roof (roof run-off). Please refer to that report for the evaluation of elevated concentrations of zinc in groundwater on the eastern portion of the subject property.

## **6.0 UNCERTAINTY ANALYSIS**

Within any of the four (4) steps of the risk assessment process, assumptions must be made due to a lack of absolute scientific knowledge. Some of the assumptions are supported by considerable scientific evidence, while others have less support. Every assumption introduces some degree of uncertainty into the risk assessment process. Conservative assumptions are made throughout the risk assessment to ensure that the health of local residents and/or potential receptors and the environment are protected. Therefore, when all of the assumptions are combined, it is much more likely that actual risks, if any, are over-estimated rather than under-estimated.

The assumptions that introduce the greatest amount of uncertainty in this risk assessment are discussed in this section. They are discussed in general terms, because for most of the assumptions there is not enough quantitative information to assign a numerical value that can be factored into the calculation of risk.

### **6.1 Hazard Identification**

During the Hazard Identification step, constituents are selected for inclusion in the quantitative Risk Characterization. Careful consideration of all detected constituents in Site soil and groundwater was used to determine which constituents should be considered COPCs and

evaluated in the Risk Characterization. Therefore, unless constituents have been overlooked in the MCP protocols used for the collection of samples and analytical methodologies conducted at the Site, it is unlikely that exposures are under-estimated by the Hazard Identification step.

## **6.2 Toxicity Assessment**

Dose-response values are usually based on limited toxicological data. For this reason, a margin of safety is built into estimates of both carcinogenic and noncarcinogenic risk, and actual risks may be lower than those estimated.

Human dose-response values are often extrapolated, or conservatively estimated, using the results of animal studies. Extrapolation from animals to humans introduces a great deal of uncertainty in the risk assessment because in most instances, it is not known how differently a human may react to the chemical compared to the reaction of the animal species used to test the compound. The procedures used to extrapolate from animals to humans involve conservative assumptions and incorporate several uncertainty factors (explicit factors for species extrapolation, and possible sensitive populations in the case of the RfD) that are more likely to over-estimate than under-estimate no-effect dose in humans.

## **6.3 Exposure Assessment**

During the exposure assessment, ADDs of COPCs to which receptors are potentially exposed are calculated, which involves assumptions about how often exposure occurs. Such assumptions include location, accessibility, and use of an area. With this in mind, the receptor, or person who may potentially be exposed, and the location of exposure, were both defined for this Risk Characterization. The locations where certain activities were assumed to take place have been purposely selected because chemical concentrations and frequency of exposure are expected to be high (i.e., use of the maximally affected areas). Since the residual soil and groundwater impacts associated with the hydraulic oil are located under the building slab, assuming residents would be exposed to hydraulic oil impacted soil from the Site is extremely conservative. Since residual PCB impacted soils are located on the exterior of the southeast corner of the building, receptors are more likely to be exposed to PCB impacted soil. Additionally, actual frequencies of exposure are likely to be much lower than assumed. In these cases, the person's potential exposure would be reduced, and the health risks discussed here would be over-estimated. Receptors may be exposed to a mix of areas not containing any impacts, such as those areas that were excluded from the EPC calculation. Thus, assuming that the receptors would be exposed to only Site media that contained the highest concentrations of constituents would likely over-estimate health risks.

## **6.4 Risk Characterization**

The risk of adverse human health effects depends on estimated levels of exposure and on dose-response relationships. Once exposure to and risk from each of the selected constituents is calculated, the total risk posed by exposure to Site soil is determined by combining the health

risk contributed by each constituent. Where COPCs do not interact, do not affect the same target organ, or do not have the same mechanism of action, summing the risks for multiple COPCs results in an over-estimate of risk posed by the Site. However, in order not to underestimate the risk, it is assumed that the effects of different constituents may be added together. While there does exist the theoretical possibility of greater than additive effects (synergism) among constituents with effects on the same target organ, overall the application of the assumption of additivity is expected to conservatively estimate health risks.

## 7.0 SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

A Method 3 Risk Characterization of harm to human health, public welfare, safety, and the environment associated with Site conditions was completed in accordance with the requirements of 310 CMR 40.0000 Subpart I of the MCP. Data from Site assessment activities completed by Cushing, Jammallo, and Wheeler, Inc., as well as information from other sources (e.g., MADEP and USEPA guidance documents and databases), were used to conduct the Risk Characterization. The human health Risk Characterization evaluated potential risk to on-Site residents and construction/utility workers assumed to be exposed to soil and construction/utility worker exposure to groundwater. The results of the human health Risk Characterization (see Table below) demonstrate that a condition of No Significant Risk of harm to human health can be demonstrated for current and reasonably foreseeable Site activities and uses.

Calculated Total Site Risks

	Subchronic Non-cancer HI	Chronic Non-cancer HI	ELCR
Hypothetical Resident	0.8	0.9	$1 \times 10^{-6}$
Construction/Utility Worker	0.8	NA	$5 \times 10^{-8}$
MADEP Risk Limits	1	1	$1 \times 10^{-5}$

The results of the evaluation of risk of harm to safety and public welfare indicate that no unsafe or nuisance conditions exist at the Site. In addition, no UCL exceedances were identified. As such, Site conditions pose No Significant Risk of harm to safety and public welfare under current and foreseeable conditions.

The evaluation of potential risk of harm to the environment included an evaluation of whether ecological receptors were present, and whether the Site included potential important habitat for ecological receptors. Because the Site is developed and is unlikely to represent a potentially significant habitat based on its small size and presence under the building slab, an evaluation of terrestrial exposures was not necessary. Based on the concentrations of constituents detected in Site groundwater, the potential for the Site to impact the assumed downgradient surface water body, Rigby Brook, was determined to be negligible (i.e., less than ecologically-based

criteria). Based on these findings, the Site conditions pose No Significant Risk of harm to the environment.

The results of the Method 3 Risk Characterization of harm to human health, public welfare, safety, and the environment indicate that RTN 2-19956, associated with the PCB release, is eligible for a Permanent Solution with Conditions in accordance with the requirements established in 310 CMR 40.1041(2) and RTN 2-19882, associated with the hydraulic oil release, is eligible for a Permanent Solution with No Conditions in accordance with the requirements established in 310 CMR 40.1041(1).

Since the estimated human health risks associated with ingestion of PCBs from soil that bioaccumulate into plants that are then eaten as produce were greater than non-cancer and cancer MassDEP risk limits, a Condition of the Permanent Solution for RTN 19956 is that Best Management Practices will be implemented for potential future residential gardening at the Site. It should be noted that the Best Management Practices (BMP) are for use of PCB-impacted Site soil for growing home grown produce for consumption only and in no way restricts the use of outdoor raised beds or any gardening activity inside or outside the facility as long as the PCB-impacted soil is not used for produce that will be consumed. Landscaping of the PCB impacted area is not restricted so long as BMP are followed. The BMP only pertains to the PCB impacted soil that is currently located at the southwestern exterior of the site building, where the site building abuts Brook Street. The use of soil brought in from a source other than the PCB impacted area for gardening purposes is acceptable and in no way restricted. Therefore, this Site as a whole is eligible for a Permanent Solution that do not require an AUL (40.1056(2)(j)(1)).

## **8.0 REFERENCES**

CGF, Inc., 2009. Material Safety Data Sheet, for AW Hydraulic Oil ISO 46, [http://www.defelsko.com/quality/AW\\_Hydraulic\\_Oil\\_MSDS.pdf](http://www.defelsko.com/quality/AW_Hydraulic_Oil_MSDS.pdf), December 2009.

EnviroRisk Solutions, LLC, 2017. MCP Method 3 Risk Characterization prepared for RTN 2-19975. January.

Massachusetts Department of Environmental Protection (MADEP), 1995. Guidance for Disposal Site Risk Characterization - In Support of the Massachusetts Contingency Plan. Interim Final Policy. WSC/ORS-95-141. July.

MADEP, 1996. Guidance for Disposal Site Risk Characterization - In Support of the Massachusetts Contingency Plan. Section 9.0: Method 3 - Environmental Risk Characterization. Interim Final Policy. WSC/ORS-95-141. April.

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MADEP, 2002a. Office of Research and Standards. Characterization of Risks Due to Inhalation of Particulates by Construction Workers. April 2002.

MADEP, 2002b. Implementation of the MADEP VPH/EPH Approach. Policy #WSC-02-411. October 2002.

MADEP, 2007. Standard Operating Procedure Indoor Air Contamination, August 2007.

MADEP, 2009. Expressing the Precision of Exposure Point Concentrations in MCP Risk Characterizations, Final Technical Update, December.

MADEP, 2014, Bureau of Waste Site Cleanup, Massachusetts Contingency Plan, 310 CMR 40.0000.

MADEP, 2015. Numerical Standards Development Spreadsheets for Calculating the MCP Standards, <http://www.mass.gov/dep/service/compliance/riskasmt.htm> MCP Toxicity spreadsheet, March 2015.

MADEP, 2016. Historic Fill / Anthropogenic Background Public Comment DRAFT Technical Update, Version 1.0, May 24, 2016.

MADEP, 2016. Vapor Intrusion Guidance, Interim Draft, October.

National Groundwater Association, 2000. Natural Attenuation for Remediation of Contaminated Sites, October 2000.

Oilman Group, 2014. The Oilman Group PTY LPD, Masterlube 68 MSDS - Hydraulic Oil, Material Safety Data Sheet, <http://www.oilman.com.au/msds/hydraulic/masterlube-68-msds-hydraulic-oil/>, June 20, 2014.

USEPA., 1989. *Risk Assessment Guidance for Superfund. Volume I: Human Health Evaluation Manual*. Part A. Interim Final. Office of Emergency and Remedial Response.

USEPA., 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors." OSWER Directive 9285.6-03. March 25, 1991.

USEPA., 1999. Exposure Factors Handbook. Office of Research and Development, Washington, D.C. USEPA 600/C-99/001.

USEPA, 2005. Guidelines for Carcinogen Risk Assessment. Risk Assessment Forum. Washington D.C. USEPA/630/P-30/001F, March.

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USEPA, 2017. Integrated Risk Information System (IRIS). Environmental Criteria and Assessment Office, Cincinnati, OH.

## **Tables**

**Table 1**  
**Summary of Analytical Data for All Soil Samples**  
**179 Brook Street**  
**Clinton, MA**

Constituent	Frequency of Detection	Range Detected (mg/kg)			Location of Maximum Detected Concentration	Arithmetic Mean Concentration (mg/kg)	
<i>Extractable Petroleum Hydrocarbons (EPH)</i>							
C9-C18 Aliphatic Hydrocarbons	15 / 38	12	-	110	MW-21 (1-3')	16	
C19-C36 Aliphatic Hydrocarbons	29 / 38	26	-	13,000	MW-21 (1-3')	1,682	
C11-C22 Aromatic Hydrocarbons	31 / 38	17	-	1,600	MW-15 (3-5')	238	
<i>Polycyclic Aromatic Hydrocarbons (PAHs)</i>							
Acenaphthene	14 / 38	0.2	-	2.3	CS-2 SW (1-4.5')	0.4	
Acenaphthylene	13 / 38	0.1	-	0.5	MW-15 (3-5')	0.1	
Anthracene	16 / 38	0.2	-	5.3	CS-2 SW (1-4.5')	0.9	
Benzo(a)anthracene	23 / 38	0.2	-	10	CS-14 SW (1-4.5')	1.7	
Benzo(a)pyrene	25 / 38	0.1	-	9	CS-14 SW (1-4.5')	1.7	
Benzo(b)fluoranthene	25 / 38	0.2	-	11	CS-14 SW (1-4.5')	2.0	
Benzo(g,h,i)perylene	20 / 38	0.2	-	4	CS-14 SW (1-4.5')	0.8	
Benzo(k)fluoranthene	21 / 38	0.1	-	4	CS-14 SW (1-4.5')	0.7	
Chrysene	26 / 38	0.1	-	11	CS-14 SW (1-4.5')	2.0	
Dibenzo(a,h)anthracene	14 / 38	0.2	-	2	CS-14 SW (1-4.5')	0.3	
Fluoranthene	27 / 38	0.2	-	21	CS-14 SW (1-4.5')	3.9	
Fluorene	17 / 38	0.2	-	3.2	CS-2 SW (1-4.5')	0.5	
Indeno(1,2,3-cd)pyrene	21 / 38	0.2	-	5	CS-14 SW (1-4.5')	0.9	
2-Methylnaphthalene	9 / 38	0.2	-	1	CS-2 SW (1-4.5')	0.2	
Naphthalene	11 / 38	0.1	-	2	CS-2 SW (1-4.5')	0.3	
Phenanthrene	25 / 38	0.2	-	20	CS-14 SW (1-4.5')	3.6	
Pyrene	27 / 38	0.1	-	21	CS-14 SW (1-4.5')	3.9	
<i>Volatile Petroleum Hydrocarbons (VPH)</i>							
C9-C10 Aromatic Hydrocarbons	1 / 9	15			MW-10C (0-3')	8	
<i>Volatile Organic Compounds</i>							
Naphthalene	1 / 13	7			DS-3 SW (1-4.5') w/ dup	1	
Toluene	1 / 13	0.1				0.02	
<i>Metals</i>							
Arsenic	3 / 4	9	-	15	MW-22 (1-2')	9	
Barium	2 / 2	24	-	27	MW-22 (1-2')	26	
Beryllium	1 / 4	0.4			MW-22 (1-2')	0.2	
Cadmium	4 / 4	0.4	-	1	MW-22 (1-2')	1	
Chromium (Total)	4 / 4	11	-	26	MW-2 (0-4')	19	
Copper	4 / 4	4	-	230	MW-5 (0-3')	66	
Lead	3 / 4	0.04	-	57	MW-5 (0-3')	16	
Mercury	3 / 4	0.06	-	17	MW-22 (1-2')	6	
Nickel	2 / 4	15	-	16	MW-5 (0-3')	9	
Selenium	1 / 4	1	-	1	MW-22 (1-2')	0.5	
Thallium	2 / 4	11	-	16	MW-22 (1-2')	7	
Zinc	4 / 4	24	-	190	MW-5 (0-3')	116	
<i>Total Polychlorinated Biphenyls (PCBs)</i>	15 / 45	0.1	-	0.6	B3 Bot (1') w/ dup	0.1	

Notes:

- For the purpose of calculating arithmetic mean concentrations, one-half the method detection limit was used to represent the concentrations of constituents reported as non-detects (ND).
- Analytical results were based on samples collected between May and December 2016.

**Table 2**  
**Summary of Analytical Data for Groundwater Samples**  
**179 Brook Street**  
**Clinton, MA**

Constituent	Frequency of Detection	Range Detected (ug/L)		Location of Maximum Detected Concentration	Arithmetic Mean Concentration (ug/L)
<b><u>Extractable Petroleum Hydrocarbons</u></b>					
C9-C18 Aliphatics	1 / 31	75		MW-15	51
C19-C36 Aliphatics	5 / 31	100	- 2,575	MW-15	141
C11-C22 Aromatics	5 / 31	73	- 575	MW-15	78
<b><u>Polycyclic Aromatic Hydrocarbons</u></b>					
Benzo(a)anthracene	1 / 31	4		MW-10	1
Benzo(a)pyrene	1 / 31	5		MW-10	1
Benzo(b)fluoranthene	1 / 31	6		MW-10	1
Benzo(g,h,i)perylene	1 / 31	4		MW-10	1
Benzo(k)fluoranthene	1 / 31	2		MW-10	1
Chrysene	1 / 31	7		MW-10	1
Fluoranthene	1 / 31	9		MW-10	1
Naphthalene	1 / 31	5		RMW-1	1
Pyrene	1 / 31	11		MW-10	1
<b><u>Dissolved Metals</u></b>					
Arsenic	3 / 3	40	- 65	MW-2	49
Copper	1 / 3	6		MW-3	4
Nickel	1 / 3	9		MW-3	5
Zinc	2 / 3	67	- 340	MW-5	137

Notes:

1. For the purpose of calculating arithmetic mean concentrations, one-half the method detection limit was used to represent the concentrations of constituents reported as non-detects (ND).
2. Analytical results were based on groundwater samples collected from monitoring wells between May 2016 and January 2017.

**Table 3**  
**Comparison of Detected PAHs and Metals in Soil to Massachusetts Background Concentrations**  
**179 Brook Street**  
**Clinton, MA**

Constituent	Maximum Detected Concentration mg/kg	Massachusetts Background Concentration In "Natural" Soil mg/kg
<u><i>Polycyclic Aromatic Hydrocarbons (PAHs)</i></u>		
Acenaphthene	2.3	0.5
Acenaphthylene	0.5	0.5
Anthracene	5.3	1
Benzo(a)anthracene	10	2
Benzo(a)pyrene	9	2
Benzo(b)fluoranthene	11	2
Benzo(g,h,i)perylene	4	1
Benzo(k)fluoranthene	4	1
Chrysene	11	2
Dibenzo(a,h)anthracene	1.5	0.5
Fluoranthene	21	4
Fluorene	3.2	1
Indeno(1,2,3-cd)pyrene	5	1
2-Methylnaphthalene	1	0.5
Naphthalene	2	0.5
Phenanthrene	20	3
Pyrene	21	4
<u><i>Metals</i></u>		
Arsenic	15	20
Barium	27	50
Beryllium	0.4	0.4
Cadmium	1	2
Chromium (Total)	26	30
Copper	230	40
Lead	57	100
Mercury	17	0.3
Nickel	16	20
Selenium	0.7	0.5
Thallium	16	0.6
Zinc	190	100

Notes:

1. The Massachusetts Background Concentration was obtained from MADEP (2016) Historic Fill / Anthropogenic Background Public Comment DRAFT Technical Update, Version 1.0, May 24, 2016.
2. \* Indicates maximum detected concentration in Site soil exceeds background concentration in natural soil.

**Table 4**  
**Exposure Assessment Summary**  
**179 Brook Street**  
**Clinton, MA**

Potential Receptor	Media	Exposure Pathway	Current or Future	Exposure Point	Quantitatively Evaluated?	Reasoning
On-Site Resident	surface and subsurface soil	dermal contact and incidental ingestion	current and future	Potential future conditions: Mixture of surface and subsurface soil	Yes	Although the residual soil impacts are under the building slab, soil that is currently inaccessible may be mixed with surface soil. Thus, under future hypothetical conditions, site residents may be exposed to impacted soils in future unpaved areas.
On-Site Resident	surface and subsurface soil	ingestion of homegrown produce	current and future	Potential future conditions: Mixture of surface and subsurface soil	Yes Informational Purposes	Metals and PCBs are considered to bioaccumulate in home grown produce. Therefore, this pathway was considered to be a complete pathway and was evaluated.
On-Site Resident	indoor air	inhalation	current and future	Potential future conditions: Indoor Air of Residential Home	No	Constituents detected in soil and groundwater are not volatile. Therefore, detected concentrations of constituents in soil and groundwater are unlikely to migrate into indoor air in significant concentrations.
Off-site Resident/Visitor/Trespasser On-site Employees	surface and subsurface soil	dermal contact and incidental ingestion	current and future	Current conditions: Surface soil Potential future conditions: Mixture of surface and subsurface soil	No	Calculations made for the on-site resident are protective of potential exposures to these receptors.
Construction/Utility Worker	surface and subsurface soil	dermal contact, incidental ingestion, and Inhalation of fugitive dust	future	Potential future conditions: Mixture of surface and subsurface soil	Yes	During future construction or utility work, workers may be exposed to surface and subsurface soil.
Construction/Utility Worker	groundwater	dermal contact and ingestion	current and future	Groundwater	Yes	Construction workers may be exposed to groundwater in an excavation for a limited amount of time. Groundwater is typically pumped from excavations for the safety of the workers.
Construction/Utility Worker	ambient air	inhalation	current and future	Vapor within a trench emanating from groundwater	No	Limited volatiles detected in soil and groundwater from the Site. Since volatiles are unlikely to significantly accumulate in an open trench, this pathway was not considered to be complete.

Table 5  
Updated PAH Toxicity Values  
170 Brook Street  
Clinton, MA

OIL OR HAZARDOUS MATERIAL	CAS	CHRONIC ORAL		SUBCHRONIC		Chronic		Subchronic		Oral		Inhalation			
		REFERENCE DOSE (OR SUBSTITUTE)	mg/kg/day	REFERENCE DOSE (OR SUBSTITUTE)	mg/kg/day	Reference Concentration (or substitute)	mg/m3	Reference Concentration (or substitute)	mg/m3	Cancer Slope Factor	1/(mg/kg/day)	CLASS	REF	Unit Risk	1/(\mu g/m3)
ACENAPHTHENE	83-32-9	6.0E-02	1	2.0E-01	6	2.0E-06	5d	2.0E-06	5d						
ACENAPHTHYLENE	208-96-8	3.0E-04	5d	3.0E-04	5d	2.0E-06	5d	2.0E-06	5d		D	1			
ANTHRACENE	120-12-7	3.0E-01	1	1.0E+00	6	2.0E-06	5d	2.0E-06	5d		D	1			
BENZO(a)ANTHRACENE	56-55-3	3.0E-04	5d	3.0E-04	5d	2.0E-06	5d	2.0E-06	5d	1.0E-01	B2	1e	6.0E-05	7a	
BENZO(a)PYRENE	50-32-8	3.0E-04	5d	3.0E-04	5d	2.0E-06	5d	2.0E-06	5d	1.0E+00	B2	1	6.0E-04	7a	
BENZO(b)FLUORANTHENE	205-99-2	3.0E-04	5d	3.0E-04	5d	2.0E-06	5d	2.0E-06	5d	1.0E-01	B2	1e	6.0E-05	7a	
BENZO(g,h,i)PERYLENE	191-24-2	3.0E-04	5d	3.0E-04	5d	2.0E-06	5d	2.0E-06	5d						
BENZO(k)FLUORANTHENE	207-08-9	3.0E-04	5d	3.0E-04	5d	2.0E-06	5d	2.0E-06	5d	1.0E-02	B2	1e	6.0E-06	7a	
CHRYSENE	218-01-9	3.0E-04	5d	3.0E-04	5d	2.0E-06	5d	2.0E-06	5d	1.0E-03	B2	1e	6.0E-07	7a	
DIBENZO(a,h)ANTHRACENE	53-70-3	3.0E-04	5d	3.0E-04	5d	2.0E-06	5d	2.0E-06	5d	1.0E+00	B2	1e	6.0E-04	7a	
FLUORANTHENE	206-44-0	4.0E-02	1	1.0E-01	6	2.0E-06	5d	2.0E-06	5d		D	1			
FLUORENE	86-73-7	4.0E-02	1	4.0E-01	2	2.0E-06	5d	2.0E-06	5d						
INDENO(1,2,3-cd)PYRENE	193-39-5	3.0E-04	5d	3.0E-04	5d	2.0E-06	5d	2.0E-06	5d	1.0E-01	B2	1e	6.0E-05	7a	
METHYLNAPHTHALENE, 2-	91-57-6	4.0E-03	1	4.0E-03	6	2.0E-06	5d	2.0E-06	5d						
NAPHTHALENE	91-20-3	2.0E-02	1	2.0E-01	1i	3.0E-03	1	3.0E-03	7c						
PHENANTHRENE	85-01-8	3.0E-04	5d	3.0E-04	5d	2.0E-06	5d	2.0E-06	5d		D	1			
PYRENE	129-00-0	3.0E-02	1	3.0E-01	6	2.0E-06	5d	2.0E-06	5d		D	1			

**Table 6**  
**Summary of Results**  
**179 Brook Street**  
**Clinton, MA**

Potential Receptor	Exposure Media	Exposure and Migration Pathway	Hazard Index		ELCR
			Subchronic	Chronic	
On-Site Resident	Surface and Subsurface Soil	Incidental Ingestion and Dermal Contact	0.7	0.9	1E-06
	Surface and Subsurface Soil Zinc Evaluation*	Incidental Ingestion and Dermal Contact	0.1	0.04	NC
		Total: DEP Risk Limit: Exceeds DEP Risk Limit?	<b>0.8</b> 1 NO	<b>0.9</b> 1.0 NO	<b>1E-06</b> 1E-05 NO
Construction Worker	Surface and Subsurface Soil	Incidental Ingestion and Dermal Contact and Inhalation of Soil-Derived Particulates in Air	0.7	NA	3E-08
	Surface and Subsurface Soil Zinc Evaluation*	Incidental Ingestion and Dermal Contact	0.1	NA	NC
	Groundwater	Dermal Contact	0.1	NA	2E-08
	Groundwater Zinc Evaluation* (Refer to Risk Characterization for RTN 2-19975)	Dermal Contact	0.03	NA	NC
		Total: DEP Risk Limit: Exceeds DEP Risk Limit?	<b>0.8</b> 1.0 NO	<b>NA</b> 1.0 NO	<b>5E-08</b> 1E-05 NO

1. NA = Not Applicable, NC = Not Calculated, ELCR = Excess Lifetime Cancer Risk.

**Table 7**  
**Comparison of Detected Concentrations in Soil to Upper Concentration Limits**  
**179 Brook Street**  
**Clinton, MA**

Constituent	Arithmetic Mean Detected Concentration mg/kg	Maximum Detected Concentration mg/kg	Soil UCL mg/kg
<i>Extractable Petroleum Hydrocarbons (EPH)</i>			
C9-C18 Aliphatic Hydrocarbons	18	110	20,000
C19-C36 Aliphatic Hydrocarbons	1,936	13,000	20,000
C11-C22 Aromatic Hydrocarbons	273	1,600	10,000
<i>Polycyclic Aromatic Hydrocarbons (PAHs)</i>			
Acenaphthene	0.4	2.3	10,000
Acenaphthylene	0.1	0.5	10,000
Anthracene	1.0	5.3	10,000
Benzo(a)anthracene	2.0	10	3,000
Benzo(a)pyrene	1.9	8.6	300
Benzo(b)fluoranthene	2.3	11	3,000
Benzo(g,h,i)perylene	0.9	4	10,000
Benzo(k)fluoranthene	0.8	4	10,000
Chrysene	2.3	11	10,000
Dibenzo(a,h)anthracene	0.3	1.5	300
Fluoranthene	4.5	21	10,000
Fluorene	0.5	3.2	10,000
Indeno(1,2,3-cd)pyrene	1.0	5	3,000
2-Methylnaphthalene	0.2	1	5,000
Naphthalene	0.3	2	10,000
Phenanthrene	4.2	20	10,000
Pyrene	4.5	21	10,000
<i>Volatile Petroleum Hydrocarbons (VPH)</i>			
C9-C10 Aromatic Hydrocarbons	8	15	5,000
<i>Volatile Organic Compounds</i>			
Naphthalene	1	7	10,000
Toluene	0.02	0.06	10,000
<i>Metals</i>			
Arsenic	9	15	500
Barium	26	27	10,000
Beryllium	0.2	0.4	2,000
Cadmium	1	1	1,000
Chromium (Total)	19	26	2,000
Copper	66	230	NA
Lead	16	57	6,000
Mercury	6	17	300
Nickel	9	16	10,000
Selenium	0.5	1	7,000
Thallium	7	16	800
Zinc	116	190	10,000
<i>Total Polychlorinated Biphenyls (PCBs)</i>	0.1	0.6	100

Notes:

1. MCP Table 6 - 310 CMR 40.0996(7), Upper Concentration Limits in Soil  
2014 Massachusetts Contingency Plan.

**Table 8**  
**Comparison of Detected Concentrations in Groundwater to Upper Concentration Limits**  
**179 Brook Street**  
**Clinton, MA**

Constituent	Arithmetic Mean Detected Concentration ug/L	Maximum Detected Concentration ug/L	Groundwater UCL ug/L
<i>Extractable Petroleum Hydrocarbons</i>			
C9-C18 Aliphatics	51	75	100,000
C19-C36 Aliphatics	141	2,575	100,000
C11-C22 Aromatics	78	575	100,000
<i>Polycyclic Aromatic Hydrocarbons</i>			
Benzo(a)anthracene	1	4	10,000
Benzo(a)pyrene	1	5	5,000
Benzo(b)fluoranthene	1	6	4,000
Benzo(g,h,i)perylene	1	4	500
Benzo(k)fluoranthene	1	2	1,000
Chrysene	1	7	700
Fluoranthene	1	9	2,000
Naphthalene	1	5	100,000
Phenanthrene	1	9	100,000
Pyrene	1	11	600
<i>Dissolved Metals</i>			
Arsenic	49	65	9,000
Copper	4	6	NA
Nickel	5	9	2,000
Zinc	137	340	50,000

Notes:

1. MCP Table 6 - 310 CMR 40.0996(7), Upper Concentration Limits in Groundwater  
2014 Massachusetts Contingency Plan.

**Table 9**  
**Comparison of Estimated Surface Water Concentrations to Ambient Water Quality Criteria Benchmarks**  
**179 Brook Street**  
**Clinton, MA**

Constituent	Maximum Detected Concentration ug/L	Method 1 GW-3 Groundwater Standards ug/L	Estimated Surface Water Concentration ug/L	Surface Water Ambient Water Quality Benchmarks ug/L
<u>Extractable Petroleum Hydrocarbons</u>				
C9-C18 Aliphatics	75	50,000	0.14	1,800
C19-C36 Aliphatics	2,575	50,000	4.7	2,100
C11-C22 Aromatics	575	5,000	1.0	5
<u>Polycyclic Aromatic Hydrocarbons</u>				
Benzo(a)anthracene	4	1,000	0.03	1
Benzo(a)pyrene	5	500	0.04	0.5
Benzo(b)fluoranthene	6	400	0.05	0.42
Benzo(g,h,i)perylene	4	20	0.04	0.02
Benzo(k)fluoranthene	2	100	0.02	0.14
Chrysene	7	70	0.06	200
Fluoranthene	9	200	0.1	0.1
Naphthalene	5	20,000	0.04	72
Phenanthrene	9	10,000	0.08	38
Pyrene	11	20	0.1	0.1
<u>Dissolved Metals</u>				
Arsenic	65	900	0.5	36
Copper	6	NA	0.06	NA
Nickel	9	200	0.1	8
Zinc	340	900	4.2	36

Notes:

1. Surface Water Benchmarks Used as GW-3 Target Values were obtained from Development of MCP Risk-Based Levels for Soil and Groundwater, 2014.
2. Dilution was calculated as follows:

30ft x 30ft source area, DF = 303 (distance in feet) -1.365, r2 =0.99  
The distance between the site and Rigby Brook, the closest surface water body to the subject property.

Dilution MW-15 =	0.181	230 feet away from nearest surface water
Dilution MW-10 =	0.091	380 feet away from nearest surface water
Dilution MW-2 =	0.082	410 feet away from nearest surface water
Dilution MW-3 =	0.088	390 feet away from nearest surface water
Dilution MW-5 =	0.123	305 feet away from nearest surface water

Dilution Factor Calculation was obtained from MADEP (2002) Characterizing Risks Posed by Petroleum Contaminated Sites: Implementation of the MADEP VPH/EPH Approach, Final Policy, Policy #WSC-02-411, October 31.

A second dilution factor of 100 for EPH fractions and 10 for other constituents was applied to account for additional dilution once the groundwater enters the surface water of Rigby Brook.

**Attachment A**

**All Soil Data, Calculation of Soil EPCs**

**Post Excavation Soil Data**  
**179 Brook Street**  
**Clinton, Massachusetts**

Sample ID: Sample Date:	MW-6 (4-6') 5/25/16	MW-10C (0-3') 6/17/16	MW-14 (3-5') 7/29/16	MW-15 (3-5') 7/29/16	MW-15A (2.5-4') 8/26/16	MW-15B (3-4') 8/26/16	MW-15C (2-4') 8/26/16	MW-15D (2-4') 8/26/16					
ANALYTES	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	
<i>Extractable Petroleum Hydrocarbons (EPH)</i>													
C9-C18 Aliphatic Hydrocarbons	17	28	ND	12	ND	1400	ND	15	48	ND	15	ND	13
C19-C36 Aliphatic Hydrocarbons	130	ND	11	26	9300		49		9100	160		75	
C11-C22 Aromatic Hydrocarbons	170	120	ND	12	1600		110		1500	170		150	
<i>Polycyclic Aromatic Hydrocarbons (PAHs)</i>													
Acenaphthene	0.47	0.17	ND	0.12	1		0.61		0.23		0.48		0.63
Acenaphthylene	0.38	0.33	ND	0.12	0.45		0.17		ND	0.11	0.23		0.39
Anthracene	1.2	0.57	ND	0.12	1.7		1.7		0.81		1.3		1.7
Benzo(a)anthracene	3.6	1.8	ND	0.12	4		3.8		1.8		2.8		4
Benzo(a)pyrene	4.3	2.1	ND	0.12	4.5		3.4		2.5		3.7		4.1
Benzo(b)fluoranthene	5.5	2.6	ND	0.12	5.8		4.3		2		3.8		5.1
Benzo(g,h,i)perylene	2.5	1.2	ND	0.12	2.1		1.7		ND	0.11	1.4		2.2
Benzo(k)fluoranthene	2	0.84	ND	0.12	1.6		1.5		0.86		1.4		1.9
Chrysene	4.7	2.8	ND	0.12	4.8		4.2		2.4		3.5		4.8
Dibenzo(a,h)anthracene	0.71	0.28	ND	0.12	ND	0.14	0.51		ND	0.11	0.46		0.71
Fluoranthene	8.3	4.1	ND	0.12	10		8.8		4.8		7		9.2
Fluorene	0.41	0.62	ND	0.12	1.4		0.63		0.46		0.59		0.68
Indeno(1,2,3-cd)pyrene	2.6	1	ND	0.12	1.5		2		ND	0.11	1.8		2.6
2-Methylnaphthalene	ND	0.14	ND	0.11	ND	0.12	0.37		ND	0.15	ND	0.11	0.16
Naphthalene	ND	0.14	ND	0.11	ND	0.12	0.62		ND	0.15	ND	0.11	0.3
Phenanthrene	5.2	4.9	ND	0.12	8.3		6.9		3.5		5.8		7
Pyrene	8.3	5.5	ND	0.12	10		8.4		4.6		6.6		8.9

**Post Excavation Soil Data**  
**179 Brook Street**  
**Clinton, Massachusetts**

Sample ID: Sample Date:	MW-16 (3-5') 7/29/16	MW-20 (2-4') 9/7/16	MW-21 (1-3') 9/7/16	MW-22 (1-2') 9/7/16	MW-23 (0-2.5') 9/29/16	MW-24 (0-2.5') 9/29/16	MW-25 (0-2.5') 9/29/16	MW-26 (2-4') 9/29/16				
ANALYTES	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL
<i>Extractable Petroleum Hydrocarbons (EPH)</i>				14410								
C9-C18 Aliphatic Hydrocarbons	ND	13	44		110		ND	11	ND	12	ND	11
C19-C36 Aliphatic Hydrocarbons	ND	13	5500		13000		230		ND	12	ND	11
C11-C22 Aromatic Hydrocarbons	17		590		1300		49		ND	11	17	
<i>Polycyclic Aromatic Hydrocarbons (PAHs)</i>												
Acenaphthene	ND	0.13	ND	0.11	ND	0.2	ND	0.11	ND	0.12	ND	0.11
Acenaphthylene	ND	0.13	ND	0.11	ND	0.2	ND	0.11	ND	0.12	ND	0.11
Anthracene	ND	0.13	ND	0.11	ND	0.2	ND	0.11	ND	0.11	ND	0.13
Benzo(a)anthracene	0.21		ND	0.11	ND	0.2	ND	0.11	ND	0.19	ND	0.11
Benzo(a)pyrene	0.24		ND	0.11	ND	0.2	0.15		ND	0.11	0.31	
Benzo(b)fluoranthene	0.33		ND	0.11	ND	0.2	0.2		ND	0.11	0.32	
Benzo(g,h,i)perylene	0.15		ND	0.11	ND	0.2	ND	0.11	ND	0.17	ND	0.11
Benzo(k)fluoranthene	ND	0.13	ND	0.11	ND	0.2	ND	0.11	ND	0.12	ND	0.11
Chrysene	0.3		ND	0.11	ND	0.2	0.13		ND	0.11	0.34	
Dibenzo(a,h)anthracene	ND	0.13	ND	0.11	ND	0.2	ND	0.11	ND	0.12	ND	0.11
Fluoranthene	0.49		ND	0.11	ND	0.2	0.18		ND	0.11	0.47	
Fluorene	ND	0.13	ND	0.11	ND	0.2	ND	0.11	ND	0.12	ND	0.11
Indeno(1,2,3-cd)pyrene	0.15		ND	0.11	ND	0.2	ND	0.11	ND	0.11	0.16	
2-Methylnaphthalene	ND	0.13	ND	0.11	ND	0.2	ND	0.11	ND	0.12	ND	0.11
Naphthalene	ND	0.13	ND	0.11	ND	0.2	ND	0.11	ND	0.11	ND	0.13
Phenanthrene	0.43		ND	0.11	ND	0.2	ND	0.11	ND	0.11	0.42	
Pyrene	0.47		ND	0.11	ND	0.2	0.24		ND	0.11	0.59	

## Post Excavation Soil Data

179 Brook Street

Clinton, Massachusetts

Sample ID:	MW-27 (0-2.5')		MW-E (1-5')		MW-F (1-5')		MW-M (2-4')		MW-N (2-4')		MW-P (2-4')		MW-O (2-4')		CS-1 SW (1-4.5')		CS-2 SW (1-4.5')	
Sample Date:	9/29/16		42549		42549		7/25/16		7/25/16		7/29/16		7/29/16		11/28/16		11/28/16	
ANALYTES	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL
<i>Extractable Petroleum Hydrocarbons (EPH)</i>																		
C9-C18 Aliphatic Hydrocarbons	ND	12	ND	22	ND	22	ND	10	ND	11	ND	11	ND	12	19		ND	13
C19-C36 Aliphatic Hydrocarbons	ND	12	170		470		ND	10	33		ND	11	64		1500		80	
C11-C22 Aromatic Hydrocarbons	ND	12	140		190		ND	10	25		ND	11	180		180		210	
<i>Polycyclic Aromatic Hydrocarbons (PAHs)</i>																		
Acenaphthene	ND	0.12	ND	0.22	ND	0.22	ND	0.1	ND	0.11	ND	0.11	1.5		ND	0.11	2.3	
Acenaphthylene	ND	0.12	ND	0.22	ND	0.22	ND	0.1	ND	0.11	ND	0.11	0.12		ND	0.11	0.25	
Anthracene	ND	0.12	ND	0.22	ND	0.22	ND	0.1	ND	0.11	ND	0.11	3.6		ND	0.11	5.3	
Benzo(a)anthracene	ND	0.12	ND	0.22	1		ND	0.1	0.26		ND	0.11	6.8		0.27		8.1	
Benzo(a)pyrene	ND	0.12	ND	0.22	0.95		ND	0.1	0.29		0.12		5.6		0.58		6.5	
Benzo(b)fluoranthene	ND	0.12	ND	0.22	1.5		ND	0.1	0.37		0.18		7.2		0.42		7.5	
Benzo(g,h,i)perylene	ND	0.12	ND	0.22	0.66		ND	0.1	0.18		ND	0.11	2.5		ND	0.11	2.9	
Benzo(k)fluoranthene	ND	0.12	ND	0.22	0.58		ND	0.1	0.14		ND	0.11	2.7		0.13		2.8	
Chrysene	ND	0.12	ND	0.22	1.3		ND	0.1	0.29		0.15		7.3		0.41		8.5	
Dibenz(a,h)anthracene	ND	0.12	ND	0.22	ND	0.22	ND	0.1	ND	0.11	ND	0.11	0.9		ND	0.11	1	
Fluoranthene	ND	0.12	ND	0.22	2.4		0.16		0.63		0.19		17		0.8		18	
Fluorene	ND	0.12	ND	0.22	ND	0.22	ND	0.1	ND	0.11	ND	0.11	1.5		ND	0.11	3.2	
Indeno(1,2,3-cd)pyrene	ND	0.12	ND	0.22	0.59		ND	0.1	0.18		ND	0.11	3.3		ND	0.11	3.2	
2-Methylnaphthalene	ND	0.12	ND	0.22	ND	0.22	ND	0.1	ND	0.11	ND	0.11	0.34		ND	0.11	1	
Naphthalene	ND	0.12	ND	0.22	ND	0.22	ND	0.1	ND	0.11	ND	0.11	0.43		0.53		2.1	
Phenanthrene	ND	0.12	ND	0.22	1.9		0.17		0.24		0.18		16		0.61		20	
Pyrene	ND	0.12	ND	0.22	2.1		0.17		0.71		0.22		16		0.67		18	

**Post Excavation Soil Data**  
**179 Brook Street**  
**Clinton, Massachusetts**

Sample ID:	CS-3 SW (1-4.5') w/Dup		CS-4 SW (1-4.5')		CS 5A SW (1-4.5')		CS-6 SW (1-4.5')		CS-7A SW (1-4.5')		CS-8A SW (1-4.5')		CS-9 SW (1-4.5')		CS 10A SW (1-4.5')	
Sample Date:	11/28/16		11/28/16		12/14/16		11/28/16		12/9/16		12/9/16		11/28/16		12/14/16	
ANALYTES	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL
<i>Extractable Petroleum Hydrocarbons (EPH)</i>																
C9-C18 Aliphatic Hydrocarbons	ND	12.5	ND	13	ND	13	29		31		36		14		13	
C19-C36 Aliphatic Hydrocarbons	83.5		56		45		4000		5800		6500		1700		410	
C11-C22 Aromatic Hydrocarbons	150		100		32		220		340		400		120		100	
<i>Polycyclic Aromatic Hydrocarbons (PAHs)</i>																
Acenaphthene	1.7		1		ND	0.13	ND	0.12	ND	0.11	ND	0.11	ND	0.11	ND	0.11
Acenaphthylene	0.175		0.14		ND	0.13	ND	0.12	ND	0.11	ND	0.11	ND	0.11	ND	0.31
Anthracene	4.3		2.1		0.16		ND	0.12	ND	0.11	ND	0.11	ND	0.11	ND	0.25
Benzo(a)anthracene	6.15		3.3		0.78		0.22		ND	0.11	ND	0.11	ND	0.11	ND	1.1
Benzo(a)pyrene	5.05		3.1		1.1		0.29		ND	0.11	ND	0.11	ND	0.11	ND	1.3
Benzo(b)fluoranthene	6		3.5		1		0.36		ND	0.11	ND	0.11	ND	0.11	ND	1.5
Benzo(g,h,i)perylene	2.1		1.4		0.44		ND	0.12	ND	0.11	ND	0.11	ND	0.11	ND	0.88
Benzo(k)fluoranthene	2.25		1.3		0.38		0.24		ND	0.11	ND	0.11	ND	0.11	ND	0.53
Chrysene	6.25		3.7		0.87		0.61		ND	0.11	ND	0.11	ND	0.11	ND	1.6
Dibenz(a,h)anthracene	0.77		0.44		0.15		ND	0.12	ND	0.11	ND	0.11	ND	0.11	ND	0.23
Fluoranthene	14		7.6		1.3		0.52		ND	0.11	ND	0.11	ND	0.19		1.9
Fluorene	2.8		1.2		ND	0.13	0.23		ND	0.11	ND	0.11	ND	0.2		0.2
Indeno(1,2,3-cd)pyrene	2.85		1.7		0.52		0.2		ND	0.11	ND	0.11	ND	0.11	ND	0.74
2-Methylnaphthalene	0.775		0.34		ND	0.13	ND	0.12	ND	0.11	ND	0.11	ND	0.11	ND	0.11
Naphthalene	1.7		0.57		ND	0.13	ND	0.12	ND	0.11	ND	0.11	ND	0.11	ND	0.11
Phenanthrene	16.5		8.5		0.6		0.31		ND	0.11	ND	0.11	ND	0.11	ND	1.5
Pyrene	14		7.5		1.4		0.54		ND	0.11	ND	0.11	ND	0.13		2.6

**Post Excavation Soil Data**  
**179 Brook Street**  
**Clinton, Massachusetts**

Sample ID: Sample Date:	CS-11A SW (1-4.5') 12/9/16	CS-12 SW (1-4.5') 12/1/16	CS-13 SW (1-4.5') 12/1/16	CS-14 SW (1-4.5') 12/1/16	CS-15 SW (1-4.5') 12/1/16			
ANALYTES	Result	MDL	Result	MDL	Result	MDL	Result	MDL
<i>Extractable Petroleum Hydrocarbons (EPH)</i>								
C9-C18 Aliphatic Hydrocarbons	12	ND	12	19	25		16	
C19-C36 Aliphatic Hydrocarbons	1200	390		1100	1700		1000	
C11-C22 Aromatic Hydrocarbons	100	29		170	370		140	
<i>Polycyclic Aromatic Hydrocarbons (PAHs)</i>								
Acenaphthene	ND	0.11	ND	0.12	0.63	1.9	0.22	
Acenaphthylene	ND	0.11	ND	0.12	ND	0.12	0.19	ND
Anthracene	ND	0.11	ND	0.12	1.4	4.8	0.6	
Benzo(a)anthracene	0.28		ND	0.12	2.6	10	1.3	
Benzo(a)pyrene	0.34		ND	0.12	2.5	8.6	1.3	
Benzo(b)fluoranthene	0.49		ND	0.12	3	11	1.6	
Benzo(g,h,i)perylene	0.2		ND	0.12	1.3	4.2	0.75	
Benzo(k)fluoranthene	0.17		ND	0.12	1.2	4.1	0.62	
Chrysene	0.48		ND	0.12	3.1	11	1.6	
Dibenzo(a,h)anthracene	ND	0.11	ND	0.12	0.43	1.5	0.23	
Fluoranthene	0.62		ND	0.12	6.2	21	3.1	
Fluorene	ND	0.11	ND	0.12	0.63	2	0.25	
Indeno(1,2,3-cd)pyrene	0.22		ND	0.12	1.5	4.9	0.77	
2-Methylnaphthalene	ND	0.11	ND	0.12	0.19	0.54	ND	0.13
Naphthalene	ND	0.11	ND	0.12	0.26	0.9	0.14	
Phenanthrene	0.34		ND	0.12	5.9	20	2.5	
Pyrene	0.65		ND	0.12	5.9	21	3	

## Post Excavation Soil Data

179 Brook Street

Clinton, Massachusetts

Sample ID: Sample Date:	Min	Max	Number of Samples	Number of Sample Locations	Mean	LOCATION OF MAX DETECTED
ANALYTES						
<i>Extractable Petroleum Hydrocarbons (EPH)</i>						
C9-C18 Aliphatic Hydrocarbons	12	110	15	38	16	MW-21 (1-3')
C19-C36 Aliphatic Hydrocarbons	26	13000	29	38	1682	MW-21 (1-3')
C11-C22 Aromatic Hydrocarbons	17	1600	31	38	238	MW-15 (3-5')
<i>Polycyclic Aromatic Hydrocarbons (PAHs)</i>						
Acenaphthene	0.17	2.3	14	38	0.38	CS-2 SW (1-4.5')
Acenaphthylene	0.12	0.45	13	38	0.13	MW-15 (3-5')
Anthracene	0.16	5.3	16	38	0.87	CS-2 SW (1-4.5')
Benzo(a)anthracene	0.19	10	23	38	1.72	CS-14 SW (1-4.5')
Benzo(a)pyrene	0.12	8.6	25	38	1.68	CS-14 SW (1-4.5')
Benzo(b)fluoranthene	0.18	11	25	38	2.01	CS-14 SW (1-4.5')
Benzo(g,h,i)perylene	0.15	4.2	20	38	0.79	CS-14 SW (1-4.5')
Benzo(k)fluoranthene	0.13	4.1	21	38	0.75	CS-14 SW (1-4.5')
Chrysene	0.13	11	26	38	2.00	CS-14 SW (1-4.5')
Dibenzo(a,h)anthracene	0.15	1.5	14	38	0.26	CS-14 SW (1-4.5')
Fluoranthene	0.16	21	27	38	3.94	CS-14 SW (1-4.5')
Fluorene	0.2	3.2	17	38	0.48	CS-2 SW (1-4.5')
Indeno(1,2,3-cd)pyrene	0.15	4.9	21	38	0.88	CS-14 SW (1-4.5')
2-Methylnaphthalene	0.16	1	9	38	0.15	CS-2 SW (1-4.5')
Naphthalene	0.14	2.1	11	38	0.25	CS-2 SW (1-4.5')
Phenanthrene	0.17	20	25	38	3.65	CS-14 SW (1-4.5')
Pyrene	0.13	21	27	38	3.92	CS-14 SW (1-4.5')

## Post Excavation Soil Data

**179 Brook Street**

## Clinton, Massachusetts

## Post Excavation Soil Data

179 Brook Street

Clinton, Massachusetts

Sample ID:	DS-11 SW (1-4.5') w/dup 12/1/16		DS-15 SW (1-4.5') 12/1/16		MW-5 (0-3') 5/25/16		MW-7 (3-6') 5/25/16		MW-20 (2-4') 9/7/16		MW-22 (1-2') 9/7/16		MW-2 (0-4') 5/25/16	
ANALYTES	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL
<u>Volatile Petroleum Hydrocarbons (VPH)</u>														
C9-C10 Aromatic Hydrocarbons	ND	13	ND	15										
<u>Volatile Organic Compounds</u>														
Naphthalene	ND	0.325	ND	0.36	ND	0.004	ND	0.007	ND	0.098	ND	0.11		
Toluene	ND	0.0665	ND	0.07	ND	0.002	ND	0.002	ND	0.049	ND	0.055		
<u>Metals</u>														
Arsenic					9.4				9.2		15		ND	2.9
Barium									24		27			
Beryllium					ND	0.26			ND	0.28	0.37		ND	0.29
Cadmium					0.7				0.44		1.2		0.69	
Chromium (Total)					23				11		15		26	
Copper					230				4		21		9	
Lead					57				ND	0.029	0.037		6.9	
Mercury					0.06				6.9		17		ND	0.03
Nickel					16				ND	5.6	ND	5.5	15	
Selenium					ND	5.3			ND	0.56	0.68		ND	5.8
Silver					ND	0.53			ND	2.8	ND	2.8	ND	0.58
Thallium					ND	2.6			11		16		ND	2.9
Zinc					190				24		160		88	

**Post Excavation Soil Data**  
**179 Brook Street**  
**Clinton, Massachusetts**

Sample ID: Sample Date: <b>ANALYTES</b>	Min	Max	Number of Samples with Detections	Total Samples	Arithmetic Mean	Location of Max Detected
<i>Volatile Petroleum Hydrocarbons (VPH)</i>						
C9-C10 Aromatic Hydrocarbons	15	15	1	9	7.81	MW-10C (0-3')
<i>Volatile Organic Compounds</i>						
Naphthalene	6.85	6.85	1	13	0.61	DS-3 SW (1-4.5') w/ dup
Toluene	0.06	0.06	1	13	0.02	DS-3 SW (1-4.5') w/ dup
<i>Metals</i>						
Arsenic	9.2	15	3	4	8.76	MW-22 (1-2')
Barium	24	27	2	2	26	MW-22 (1-2')
Beryllium	0.37	0.37	1	4	0.20	MW-22 (1-2')
Cadmium	0.44	1.2	4	4	0.76	MW-22 (1-2')
Chromium (Total)	11	26	4	4	19	MW-2 (0-4')
Copper	4	230	4	4	66	MW-5 (0-3')
Lead	0.04	57	3	4	16	MW-5 (0-3')
Mercury	0.06	17	3	4	5.99	MW-22 (1-2')
Nickel	15	16	2	4	9.14	MW-5 (0-3')
Selenium	0.68	0.68	1	4	0.48	MW-22 (1-2')
Silver	0	ND	0	4	NCC	ND
Thallium	11	16	2	4	7.44	MW-22 (1-2')
Zinc	24	190	4	4	116	MW-5 (0-3')

**Post Excavation Soil Data**  
**179 Brook Street**  
**Clinton, Massachusetts**

Sample ID:	A1 Bot (1')		A1 South SW (1/2')		A2 Bot (1')		A3 Bot (1')		A4 Bot (1')		A5 Bot (2 1/2')		A6 Bot (2 1/2')		A5 South SW (1.75')		A6 North SW (2')	
Sample Date:	12/6/16		12/6/16		12/6/16		12/6/16		12/6/16		12/6/16		12/6/16		12/6/16		12/6/16	
ANALYTES	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL
PCB 1254	ND	0.1	0.13		ND	0.11	0.35		ND	0.11	0.37		ND	0.11	ND	0.11	ND	0.11
PCB 1260	ND	0.1	ND	0.099	ND	0.11	0.11		ND	0.11	ND	0.12	ND	0.11	ND	0.11	ND	0.11
<i>Total Polychlorinated Biphenyls (PCBs)</i>	ND	0.1	0.13		ND	0.11	0.46		ND	0.11			ND	0.11	ND	0.11	ND	0.11

**Post Excavation Soil Data**  
**179 Brook Street**  
**Clinton, Massachusetts**

Sample ID:	A7 Bot (1') w/dup 12/6/16	A8 Bot (1') 12/6/16	A9 Bot (1.5') 12/15/16	A9 NW SW (0.75') 12/15/16	B1 Bot (2') 12/15/16	B1 East SW (1.5') 12/15/16	B1 North SW (1.5') 12/15/16	B1 West SW (1.5') 12/15/16	B1 South SW (1/2') 12/6/16	B2 Bot (1') 12/6/16				
ANALYTES	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL
PCB 1254	0.385		0.29	0.12	0.15	ND	0.11	ND	0.11	ND	0.12	ND	0.11	0.14
PCB 1260	0.0875	0.11	ND	0.11	ND	0.1	ND	0.11	ND	0.11	ND	0.11	ND	0.1
<i>Total Polychlorinated Biphenyls (PCBs)</i>	0.4725		0.29	0.12	0.15	ND	0.11	ND	0.11	ND	0.12	ND	0.11	0.14

**Post Excavation Soil Data**  
**179 Brook Street**  
**Clinton, Massachusetts**

Sample ID:	B3 Bot (1') w/ dup 12/6/16	B3 East SW (1/2') 12/6/16	B4 Bot (1') 12/6/16	B4 SW (Int) (1 1/2') 12/6/16	B5 Bot (2 1/2') 12/6/16	B6 Bot (2 1/2') 12/6/16	B6 North SW (1.25') 12/6/16	B7 Bot (1') 12/6/16	B7 West SW (1/2') 12/6/16	B8 Bot (1') 12/6/16				
ANALYTES	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL
PCB 1254	0.42	ND	0.11	0.23	0.34	ND	0.11	ND	0.11	ND	0.11	0.3	ND	0.1
PCB 1260	0.14	ND	0.11	ND	0.11	ND	0.11	ND	0.11	ND	0.11	ND	0.11	ND
<i>Total Polychlorinated Biphenyls (PCBs)</i>	0.56	ND	0.11	0.23	0.34	ND	0.11	ND	0.11	ND	0.11	0.3	ND	0.1

**Post Excavation Soil Data**  
**179 Brook Street**  
**Clinton, Massachusetts**

Sample ID:	B8 West SW (1/2')	B9 North SW (1/2')	C1 Bot (1')	C1 South SW (1/2')	C2 Bot (1')	C2.5 South SW (1 1/2')	C3 Bot (2')	C4 Bot (2')	C5 Bot (2 1/2')	C6 Bot (2 1/2')		
Sample Date:	12/6/16	12/6/16	12/6/16	12/6/16	12/6/16	12/6/16	12/6/16	12/6/16	12/6/16	12/6/16		
ANALYTES	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL
PCB 1254	0.2	0.35	ND	0.12	ND	0.11	ND	0.11	ND	0.14	ND	0.13
PCB 1260	ND	0.1	ND	0.11	ND	0.12	ND	0.11	ND	0.14	ND	0.13
<i>Total Polychlorinated Biphenyls (PCBs)</i>	0.2	0.35	ND	0.12	ND	0.11	ND	0.11	ND	0.14	ND	0.13

**Post Excavation Soil Data**  
**179 Brook Street**  
**Clinton, Massachusetts**

Sample ID:	C6 North SW (1.25')		D1 West SW (1/2') w/ dup		D2 West SW (1/2')		D3 West SW (1')		D4 West SW (1')		D5 West SW (1.75')		D6 West Sw (1.25')	
Sample Date:	12/6/16		12/6/16		12/6/16		12/6/16		12/6/16		12/6/16		12/6/16	
ANALYTES	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL
PCB 1254	ND	0.11	ND	0.11	ND	0.11	ND	0.11	0.22		ND	0.11	ND	0.11
PCB 1260	ND	0.11	ND	0.11	ND	0.11	ND	0.11	ND	0.12	ND	0.11	ND	0.11
<i>Total Polychlorinated Biphenyls (PCBs)</i>	ND	0.11	ND	0.11	ND	0.11	ND	0.11	0.22		ND	0.11	ND	0.11

**Post Excavation Soil Data**  
**179 Brook Street**  
**Clinton, Massachusetts**

Sample ID: Sample Date: ANALYTES	Min	Max	Number of Samples with Detections	Total Samples	Arithmetic Mean	Location of Max Detected
PCB 1254 PCB 1260 <i>Total Polychlorinated Biphenyls (PCBs)</i>	0.12	0.56	15	45	0.13	B3 Bot (1') w/ dup

**Attachment B**

**All Groundwater Data, Calculation of Groundwater EPCs**

## Calculation of Groundwater EPCs - Groundwater 2016 - 2017

179 Brook Street  
Clinton, Massachusetts

Sample ID: Sample Date:	MW-1 5/19/16	MW-2 5/26/16	MW-3 5/26/16	MW-4 5/26/16	MW-5 5/26/16	MW-6 5/26/16	MW-6 12/13/16	MW-6 Average	MW-10 6/17/16	MW-14 8/8/16	MW-15 12/15/16	MW-15 w/ dup 1/17/17	MW-15 Average
ANALYTES	Result MDL	Result MDL	Result MDL	Result MDL	Result MDL	Result MDL	Result MDL						
<u>Extractable Petroleum Hydrocarbons</u>													
C9-C18 Aliphatics	ND	100	ND	100	ND	100	ND	100	ND	100	ND	100	100
C19-C36 Aliphatics	ND	100	ND	100	ND	100	ND	100	ND	100	ND	100	5100
C11-C22 Aromatics	ND	100	ND	100	ND	100	ND	100	ND	100	ND	100	1100
<u>Polycyclic Aromatic Hydrocarbons</u>													
Benzo(a)anthracene	ND	2	ND	2	ND	2	ND	2	ND	2	ND	2	ND
Benzo(a)pyrene	ND	2	ND	2	ND	2	ND	2	ND	2	ND	2	ND
Benzo(b)fluoranthene	ND	2	ND	2	ND	2	ND	2	ND	2	ND	2	ND
Benzo(g,h,i)perylene	ND	2	ND	2	ND	2	ND	2	ND	2	ND	2	ND
Benzo(k)fluoranthene	ND	2	ND	2	ND	2	ND	2	ND	2	ND	2	ND
Chrysene	ND	2	ND	2	ND	2	ND	2	ND	2	ND	2	ND
Fluoranthene	ND	2	ND	2	ND	2	ND	2	ND	2	ND	2	ND
Naphthalene	ND	2	ND	2	ND	2	ND	2	ND	2	ND	2	ND
Phenanthrene	ND	2	ND	2	ND	2	ND	2	ND	2	ND	2	ND
Pyrene	ND	2	ND	2	ND	2	ND	2	ND	2	ND	2	ND
<u>Dissolved Metals</u>													
Arsenic			65	41		40							
Copper			ND	5	6.3	ND	5						
Nickel			ND	5	8.6	ND	5						
Zinc			67	ND	10		340						

Calculation of Groundwater EPCs - Groundwater 2016 - 2017

**179 Brook Street  
Wellesley, Massachusetts**

**Calculation of Groundwater EPCs - Groundwater 2016 - 2017**

**179 Brook Street  
Clinton, Massachusetts**

Calculation of Groundwater EPCs - Groundwater 2016 - 2017

**179 Brook Street  
Clinton, Massachusetts**

Calculation of Groundwater EPCs - Groundwater 2016 - 2017

**179 Brook Street  
Wellesley, Massachusetts**

Calculation of Groundwater EPCs - Groundwater 2016 - 2017

**179 Brook Street  
Clinton, Massachusetts**

## Calculation of Groundwater EPCs - 2016-2017

179 Brook Street  
 Clinton, Massachusetts

Sample ID:	MW-1		MW-2		MW-3		MW-4		MW-5		MW-6		MW-10		MW-14		MW-15		MW-15A		MW-15B	
Sample Date:	5/19/2016		5/26/2016		5/26/2016		5/26/2016		5/26/2016		Average		6/17/2016		8/8/2016		Average		Average		Average	
ANALYTES	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL								
<u>Extractable Petroleum Hydrocarbons</u>																						
C9-C18 Aliphatics	ND	100	ND	100			ND	100	ND	100	ND	100	ND	100	ND	100	75		ND	100	ND	100
C19-C36 Aliphatics	ND	100	ND	100			ND	100	ND	100	ND	100	ND	100	ND	100	2575		160	120		
C11-C22 Aromatics	ND	100	ND	100			ND	100	ND	100	ND	100	300		ND	100	575		ND	100	73.3	
<u>Polycyclic Aromatic Hydrocarbons</u>																						
Benzo(a)anthracene	ND	2	ND	2			ND	2	ND	2	ND	2	3.5		ND	2	ND	2	ND	2	ND	2
Benzo(a)pyrene	ND	2	ND	2			ND	2	ND	2	ND	2	4.9		ND	2	ND	2	ND	2	ND	2
Benzo(b)fluoranthene	ND	2	ND	2			ND	2	ND	2	ND	2	5.7		ND	2	ND	2	ND	2	ND	2
Benzo(g,h,i)perylene	ND	2	ND	2			ND	2	ND	2	ND	2	3.9		ND	2	ND	2	ND	2	ND	2
Benzo(k)fluoranthene	ND	2	ND	2			ND	2	ND	2	ND	2	2.2		ND	2	ND	2	ND	2	ND	2
Chrysene	ND	2	ND	2			ND	2	ND	2	ND	2	6.7		ND	2	ND	2	ND	2	ND	2
Fluoranthene	ND	2	ND	2			ND	2	ND	2	ND	2	9.1		ND	2	ND	2	ND	2	ND	2
Naphthalene	ND	2	ND	2			ND	2	ND	2	ND	2	2		ND	2	ND	2	ND	2	ND	2
Phenanthrene	ND	2	ND	2			ND	2	ND	2	ND	2	8.6		ND	2	ND	2	ND	2	ND	2
Pyrene	ND	2	ND	2			ND	2	ND	2	ND	2	11		ND	2	ND	2	ND	2	ND	2
<u>Dissolved Metals</u>																						
Arsenic			65		41			40														
Copper			ND	5	6.3			ND	5													
Nickel			ND	5	8.6			ND	5													
Zinc			67		ND	10			340													

Data units are ug/L

## Calculation of Groundwater EPCs - 2016-2017

179 Brook Street  
 Clinton, Massachusetts

Sample ID: Sample Date:	MW-15C Average	MW-15D Average	MW-16 8/8/2016	MW-20 Average	MW-21 Average	MW-22 9/8/2016	MW-25 12/14/2016	MW-27 12/14/2016	MW-E Average	MW-F Average	MW-M Average	MW-N Average	
ANALYTES	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result	MDL	Result
<u>Extractable Petroleum Hydrocarbons</u>													
C9-C18 Aliphatics	ND	100	ND	100	ND	100	ND	100	ND	100	ND	100	ND
C19-C36 Aliphatics	115		ND	100	ND	100	ND	100	ND	100	ND	100	ND
C11-C22 Aromatics	ND	100	85		ND	100	ND	100	ND	100	ND	100	ND
<u>Polycyclic Aromatic Hydrocarbons</u>													
Benzo(a)anthracene	ND	2	ND	2	ND	2	ND	2	ND	2	ND	2	ND
Benzo(a)pyrene	ND	2	ND	2	ND	2	ND	2	ND	2	ND	2	ND
Benzo(b)fluoranthene	ND	2	ND	2	ND	2	ND	2	ND	2	ND	2	ND
Benzo(g,h,i)perylene	ND	2	ND	2	ND	2	ND	2	ND	2	ND	2	ND
Benzo(k)fluoranthene	ND	2	ND	2	ND	2	ND	2	ND	2	ND	2	ND
Chrysene	ND	2	ND	2	ND	2	ND	2	ND	2	ND	2	ND
Fluoranthene	ND	2	ND	2	ND	2	ND	2	ND	2	ND	2	ND
Naphthalene	ND	2	ND	2	ND	2	ND	2	ND	2	ND	2	ND
Phenanthrene	ND	2	ND	2	ND	2	ND	2	ND	2	ND	2	ND
Pyrene	ND	2	ND	2	ND	2	ND	2	ND	2	ND	2	ND
<u>Dissolved Metals</u>													
Arsenic													
Copper													
Nickel													
Zinc													

Data units are ug/L

## Calculation of Groundwater EPCs - 2016-2017

179 Brook Street  
 Clinton, Massachusetts

Sample ID: Sample Date:	MW-O Average	MW-P Average	RMW-1 Average	RMW-2 12/13/2016	RMW-3 Average	RMW-4 12/13/2016	RMW-5 Average	RMW-6 12/15/2016	RMW-7 w/ dup Average
ANALYTES	Result MDL	Result MDL	Result MDL	Result MDL	Result MDL	Result MDL	Result MDL	Result MDL	Result MDL
<u>Extractable Petroleum Hydrocarbons</u>									
C9-C18 Aliphatics	ND	100	ND	100	ND	100	ND	100	ND
C19-C36 Aliphatics	ND	100	100	ND	100	ND	100	ND	100
C11-C22 Aromatics	ND	100	ND	100	ND	100	ND	100	ND
<u>Polycyclic Aromatic Hydrocarbons</u>									
Benzo(a)anthracene	ND	2	ND	2	ND	2	ND	2	ND
Benzo(a)pyrene	ND	2	ND	2	ND	2	ND	2	ND
Benzo(b)fluoranthene	ND	2	ND	2	ND	2	ND	2	ND
Benzo(g,h,i)perylene	ND	2	ND	2	ND	2	ND	2	ND
Benzo(k)fluoranthene	ND	2	ND	2	ND	2	ND	2	ND
Chrysene	ND	2	ND	2	ND	2	ND	2	ND
Fluoranthene	ND	2	ND	2	ND	2	ND	2	ND
Naphthalene	ND	2	ND	2	4.9	ND	2	ND	2
Phenanthrene	ND	2	ND	2	ND	2	ND	2	ND
Pyrene	ND	2	ND	2	ND	2	ND	2	ND
<u>Dissolved Metals</u>									
Arsenic									
Copper									
Nickel									
Zinc									

Data units are ug/L

## Calculation of Groundwater EPCs - 2016-2017

179 Brook Street  
 Clinton, Massachusetts

Sample ID: Sample Date: ANALYTES	Min	Max	Samples	Number Samples	Mean	LOCATION OF MAX DETECTED
<i>Extractable Petroleum Hydrocarbons</i>						
C9-C18 Aliphatics	75	75	1	31	50.81	MW-15
C19-C36 Aliphatics	100	2575	5	31	141	MW-15
C11-C22 Aromatics	73.3333	575	5	31	78.33	MW-15
	0	ND	0	0	NA	ND
<i>Polycyclic Aromatic Hydrocarbons</i>						
	0	ND	0	0	NA	ND
Benzo(a)anthracene	3.5	3.5	1	31	1.081	MW-10
Benzo(a)pyrene	4.9	4.9	1	31	1.126	MW-10
Benzo(b)fluoranthene	5.7	5.7	1	31	1.152	MW-10
Benzo(g,h,i)perylene	3.9	3.9	1	31	1.094	MW-10
Benzo(k)fluoranthene	2.2	2.2	1	31	1.039	MW-10
Chrysene	6.7	6.7	1	31	1.184	MW-10
Fluoranthene	9.1	9.1	1	31	1.261	MW-10
Naphthalene	4.9	4.9	1	31	1.126	RMW-1
Phenanthrene	8.6	8.6	1	31	1.245	MW-10
Pyrene	11	11	1	31	1.323	MW-10
	0	ND	0	0	NA	ND
<i>Dissolved Metals</i>						
	0	ND	0	0	NA	ND
	0	ND	0	0	NA	ND
Arsenic	40	65	3	3	48.67	MW-2
Copper	6.3	6.3	1	3	3.767	MW-3
Nickel	8.6	8.6	1	3	4.533	MW-3
Zinc	67	340	2	3	137.3	MW-5

**Attachment C**

**Risk Calculation Spreadsheets, Exposure and Risk Estimates Associated with Exposures,  
On-Site Resident, Soil**

## **Method 3 Risk Assessment for Resident Exposed to Chemicals in Soil - Shortform 2012 (sf12rs)**

### **Index**

#### **Tab**

<b>EPCs</b>	Table RS-1: Select chemicals and enter Exposure Point Concentrations (EPCs). Estimated risks are shown to the right.
	Table RS-2: Produce risk. Select chemical and enter EPCs.
<b>C Eq</b>	Table RS-3: Equations to calculate cancer risks
<b>cNC Eq</b>	Table RS-4: Equations to calculate chronic noncancer risks
<b>scNC Eq</b>	Table RS-5: Equations to calculate subchronic noncancer risks
<b>Exp</b>	Table RS-6: Definitions and exposure factors
<b>Produce</b>	Table RS-7: Equations to calculate produce ingestion rate
<b>Chem</b>	Table RS-8: Chemical-specific data
<b>Cyanide</b>	Table RS-9: Cyanide Calculations

Spreadsheets designed by Andrew Friedmann, MassDEP

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**Resident - Soil: Table RS-1**  
**Exposure Point Concentration (EPC)**

Based on Resident Ages 1-31 (Cancer), 1-8 (Chronic Noncancer), and 1-2 (Subchronic Noncancer)

ShortForm Version 10-12

Vlookup Versionv0315

ELCR (all chemicals) = 1.3E-06

Chronic HI (all chemicals) = 8.6E-01

Subchronic HI (all chemicals) = 7.5E-01

Do not insert or delete any rows

Click on empty cell below and select OHM using arrow.

Oil or Hazardous Material	EPC (mg/kg)	ELCR <sub>ingestion</sub>	ELCR <sub>dermal</sub>	Derm & Ing ELCR <sub>total</sub>	Chronic		Derm & Ing HQ <sub>total</sub>	Subchronic		Derm & Ing HQ <sub>total</sub>
					HQ <sub>ing</sub>	HQ <sub>derm</sub>		HQ <sub>ing</sub>	HQ <sub>derm</sub>	
ALIPHATICS C9 to C18	1.8E+01				4.4E-04	7.4E-04	1.2E-03	1.2E-04	1.4E-04	2.6E-04
ALIPHATICS C19 to C36	1.9E+03				2.3E-03	4.0E-03	6.3E-03	2.2E-03	2.5E-03	4.7E-03
AROMATICS C11 to C22	2.7E+02				6.6E-03	1.9E-02	2.5E-02	1.8E-03	3.5E-03	5.4E-03
ACENAPHTHENE	4.3E-01				5.2E-06	1.5E-05	2.0E-05	4.3E-06	8.3E-06	1.3E-05
ACENAPHTHYLENE	1.4E-01				3.3E-04	9.5E-04	1.3E-03	9.2E-04	1.8E-03	2.7E-03
ANTHRACENE	9.9E-01				2.4E-06	6.8E-06	9.2E-06	2.0E-06	3.9E-06	5.8E-06
BENZO(a)ANTHRACENE	2.0E+00	2.2E-08	1.5E-08	3.7E-08	4.8E-03	2.7E-03	7.5E-03	1.3E-02	5.1E-03	1.8E-02
BENZO(a)PYRENE	1.9E+00	2.2E-07	1.5E-07	3.7E-07	4.7E-03	2.6E-03	7.3E-03	1.3E-02	5.0E-03	1.8E-02
BENZO(b)FLUORANTHENE	2.3E+00	2.6E-08	1.8E-08	4.4E-08	5.6E-03	3.2E-03	8.8E-03	1.5E-02	6.0E-03	2.1E-02
BENZO(g,h,i)PERYLENE	9.0E-01				2.2E-03	6.2E-03	8.4E-03	6.0E-03	1.2E-02	1.8E-02
CHRYSENE	8.5E-01	9.5E-11	6.6E-11	1.6E-10	2.1E-03	1.2E-03	3.2E-03	5.7E-03	2.2E-03	7.9E-03
DIBENZO(a,h)ANTHRACENE	2.3E+00	2.6E-07	1.8E-07	4.4E-07	5.6E-03	3.2E-03	8.7E-03	1.5E-02	6.0E-03	2.1E-02
FLUORANTHENE	2.9E-01				5.3E-06	1.5E-05	2.0E-05	5.8E-06	1.1E-05	1.7E-05
FLUORENE	4.5E+00				8.2E-05	2.3E-04	3.2E-04	2.3E-05	4.4E-05	6.7E-05
INDENO(1,2,3-cd)PYRENE	5.5E-01	6.1E-09	4.2E-09	1.0E-08	1.3E-03	7.5E-04	2.1E-03	3.7E-03	1.4E-03	5.1E-03
METHYLNAPHTHALENE, 2-	1.0E+00				1.8E-04	5.2E-04	7.0E-04	5.0E-04	9.8E-04	1.5E-03
NAPHTHALENE	6.1E-01				2.2E-05	6.3E-05	8.5E-05	6.1E-06	1.2E-05	1.8E-05
PHENANTHRENE	2.8E-01				6.9E-04	2.0E-03	2.6E-03	1.9E-03	3.7E-03	5.6E-03
PYRENE	4.2E+00				1.0E-04	2.9E-04	3.9E-04	2.8E-05	5.4E-05	8.2E-05
AROMATICS C9 to C10	1.5E+01				1.2E-03	2.1E-03	3.3E-03	3.3E-04	3.9E-04	7.2E-04
TOLUENE	6.2E-02				1.9E-06	4.8E-07	2.3E-06	5.2E-07	9.0E-08	6.1E-07
MERCURY	1.7E+01				6.9E-02	1.2E-01	1.9E-01	1.9E-01	2.2E-01	4.1E-01
SELENIUM	6.8E-01				3.3E-04	2.8E-05	3.6E-04	9.1E-04	5.3E-05	9.6E-04
THALLIUM	1.6E+01				4.8E-01	4.1E-02	5.3E-01	1.3E-01	7.8E-03	1.4E-01
ZINC	1.9E+02				1.5E-03	1.3E-03	2.8E-03	4.2E-03	2.5E-03	6.7E-03
POLYCHLORINATED BIPHENYLS (PCBs)	2.7E-01	2.0E-07	2.1E-07	4.2E-07	3.3E-02	2.8E-02	6.1E-02	3.7E-02	2.1E-02	5.8E-02

## Resident - Soil: Table RS-2

### Exposure Point Concentration (EPC)

Based on Resident Ages 1-31 (Cancer), 1-8 (Chronic Noncancer), and 1-2 (Subchronic Noncancer)

\*Vegetable uptake is informational only and NOT included in totals on EPC tab.

**Do not insert or delete any rows**

Click on empty cell below and select OHM using arrow.

Oil or Hazardous Material	EPC (mg/kg)	Chronic		Subchronic
		ELCR <sub>vegetable*</sub>	HQ <sub>vegetable*</sub>	HQ <sub>vegetable*</sub>
MERCURY	6.0E+00			
SELENIUM	4.8E-01			
THALLIUM	7.4E+00			
ZINC	1.2E+02		4.1E-01	5.9E-01
POLYCHLORINATED BIPHENYLS (PCBs)	2.7E-01	9.7E-05	8.2E+00	4.7E+00

Vlookup Versionv0315

ELCR (all chemicals) = 1E-04  
Chronic HI (all chemicals) = 9E+00  
Subchronic HI (all chemicals) = 5E+00

## Resident - Soil: Table RS-3

### Equations to Calculate Cancer Risk for Resident (Age 1-31 years)

#### Cancer Risk from Ingestion

$$ELCR_{ing} = LADD_{ing(1-31)} * CSF$$

$$LADD_{ing(1-31)} = LADD_{ing(1-8)} + LADD_{ing(8-15)} + LADD_{ing(15-31)}$$

$$LADD_{ing(\text{age group } x)} = \frac{[OHM]_{soil} * IR_x * RAF_{c-ing} * EF_{ing} * ED * EP_x * C}{BW_x * AP_{\text{lifetime}}}$$

#### Cancer Risk from Dermal Absorption

$$ELCR_{derm} = LADD_{derm} * CSF$$

$$LADD_{derm(1-31)} = LADD_{derm(1-8)} + LADD_{derm(8-15)} + LADD_{derm(15-31)}$$

$$LADD_{derm(\text{age group } x)} = \frac{[OHM]_{soil} * SA_x * RAF_{c-derm} * SAF_x * EF_{derm} * ED * EP_x * C}{BW_x * AP_{\text{lifetime}}}$$

#### Cancer Risk from Homegrown Produce

$$ELCR_{produce} = LADD_{produce(1-31)} * CSF$$

$$LADD_{produce(1-31)} = LADD_{produce(1-8)} + LADD_{produce(8-15)} + LADD_{produce(15-31)}$$

$$LADD_{produce(\text{age } x)} = \frac{[OHM]_{soil} * PUF * PIR_x * RAF_{produce} * EF_{produce} * ED * EP_x * C}{BW_x * AP_{\text{lifetime}}}$$

Vlookup Versionv0315

Parameter	Value	Units
CSF	OHM specific	(mg/kg-day) <sup>-1</sup>
LADD [OHM] <sub>soil</sub>	age/OHM specific	mg/kg-day
IR <sub>(1-8)</sub>	OHM specific	mg/kg
IR <sub>(8-15)</sub>	100	mg/day
IR <sub>(15-31)</sub>	50	mg/day
PIR <sub>(1-8)</sub>	50	mg/day
PIR <sub>(8-15)</sub>	12,099	mg/day
PIR <sub>(15-31)</sub>	17,809	mg/day
RAF <sub>c-ing</sub>	24,420	mg/day
RAF <sub>c-ing</sub>	OHM specific	dimensionless
RAF <sub>c-derm</sub>	OHM specific	dimensionless
RAF <sub>c-produce</sub>	OHM specific	dimensionless
EF <sub>ing,derm</sub>	0.412	event/day
EF <sub>produce</sub>	1.00	event/day
ED	1	day/event
EP <sub>(1-8)</sub>	7	years
EP <sub>(8-15)</sub>	7	years
EP <sub>(15-31)</sub>	16	years
C	0.000001	kg/mg
BW <sub>(1-8)</sub>	17.0	kg
BW <sub>(8-15)</sub>	39.9	kg
BW <sub>(15-31)</sub>	58.7	kg
AP <sub>(lifetime)</sub>	70	years
SA <sub>(1-8)</sub>	2431	cm <sup>2</sup> / day
SA <sub>(8-15)</sub>	4427	cm <sup>2</sup> / day
SA <sub>(15-31)</sub>	5653	cm <sup>2</sup> / day
SAF <sub>(1-8)</sub>	0.35	mg/cm <sup>2</sup>
SAF <sub>(8-15)</sub>	0.14	mg/cm <sup>2</sup>
SAF <sub>(15-31)</sub>	0.13	mg/cm <sup>2</sup>
PUF	OHM specific	(mg/mg)(mg/mg) <sup>-1</sup>

**Resident - Soil: Table RS-4**  
**Equations to Calculate Chronic Noncancer Risk for Resident Child (Age 1-8 years)**

Vlookup Versionv0315

**Chronic Noncancer Risk from Ingestion**

$$HQ_{ing} = \frac{ADD_{ing}}{RfD}$$

$$ADD_{ing} = \frac{[OHM]_{soil} * IR * RAF_{nc-ing} * EF_{ing} * ED * EP * C}{BW * AP}$$

**Chronic Noncancer Risk from Dermal Absorption**

$$HQ_{derm} = \frac{ADD_{ing,derm}}{RfD}$$

$$ADD_{derm} = \frac{[OHM]_{soil} * SA * RAF_{nc-derm} * SAF * EF_{derm} * ED * EP * C}{BW * AP}$$

**Chronic Noncancer Risk from Homegrown Produce**

$$HQ_{produce} = \frac{ADD_{produce}}{RfD}$$

$$ADD_{produce} = \frac{[OHM]_{soil} * PUF * PIR * RAF_{produce} * EF_{produce} * ED * EP * C}{BW * AP}$$

Parameter	Value	Units
RfD	OHM specific	mg/kg-day
ADD	OHM specific	mg/kg-day
[OHM] <sub>soil</sub>	OHM specific	mg/kg
IR	100	mg/day
PIR	12,099	mg/day
RAF <sub>nc-ing</sub>	OHM specific	dimensionless
RAF <sub>nc-derm</sub>	OHM specific	dimensionless
RAF <sub>nc-produce</sub>	OHM specific	dimensionless
EF <sub>ing,derm</sub>	0.412	event/day
EF <sub>produce</sub>	1.00	event/day
ED	1	day/event
EP	7	years
C	0.000001	kg/mg
BW	17.0	kg
AP	7	year
SA	2431	cm <sup>2</sup> / day
SAF	0.35	mg/cm <sup>2</sup>
PUF	OHM specific	(mg/mg)(mg/mg) <sup>-1</sup>

## Resident - Soil: Table RS-5

### Equations to Calculate Subchronic Noncancer Risk for Resident Child (Age 1-2 years)

Vlookup Versionv0315

#### Subchronic Noncancer Risk from Ingestion

$$HQ_{ing} = \frac{ADD_{ing}}{RfD_{subchronic}}$$

$$ADD_{ing} = \frac{[OHM]_{soil} * IR * RAF_{nc-ing} * EF_{ing} * ED * EP * C}{BW * AP}$$

#### Subchronic Noncancer Risk from Dermal Absorption

$$HQ_{derm} = \frac{ADD_{derm}}{RfD_{subchronic}}$$

$$ADD_{derm} = \frac{[OHM]_{soil} * SA * RAF_{nc-derm} * SAF * EF_{derm} * ED * EP * C}{BW * AP}$$

#### Subchronic Noncancer Risk from Homegrown Produce

$$HQ_{produce} = \frac{ADD_{produce}}{RfD_{subchronic}}$$

$$ADD_{produce} = \frac{[OHM]_{soil} * PUF * PIR * RAF_{produce} * EF_{produce} * ED * EP * C}{BW * AP}$$

Parameter	Value	Units
RfD	OHM specific	mg/kg-day
ADD	OHM specific	mg/kg-day
[OHM] <sub>soil</sub>	OHM specific	mg/kg
IR	100	mg/day
PIR	10,900	mg/day
RAF <sub>nc-ing</sub>	OHM specific	dimensionless
RAF <sub>nc-derm</sub>	OHM specific	dimensionless
RAF <sub>nc-produce</sub>	OHM specific	dimensionless
EF <sub>ing,derm</sub>	0.714	event/day
EF <sub>produce</sub>	1.00	event/day
ED	1	day/event
EP	0.577	years
C	0.000001	kg/mg
BW	10.7	kg
AP	0.577	year
SA	1670	cm <sup>2</sup> / day
SAF	0.35	mg/cm <sup>2</sup>
PUF	OHM specific	(mg/mg)(mg/mg) <sup>-1</sup>

**Resident - Soil: Table RS-6**  
**Definitions and Exposure Factors**

Vlookup Versionv0315

Parameter	Value	Units	Notes
ELCR - Excess Lifetime Cancer Risk	chemical specific	dimensionless	Pathway specific (ing =ingestion, derm=dermal, inh=inhalation)
CSF - Cancer Slope Factor	chemical specific	(mg/kg-day) <sup>-1</sup>	see Table RS-7
LADD - Lifetime Average Daily Dose	chemical specific	mg/kg-day	Pathway specific
LADE - Lifetime Average Daily Exposure	chemical specific	µg/m <sup>3</sup>	
HQ - Hazard Quotient	chemical specific	dimensionless	Pathway specific (ing =ingestion, derm=dermal, inh=inhalation)
RfD - Reference Dose	chemical specific	mg/kg-day	see Table RS-7
ADD - Average Daily Dose	chemical specific	mg/kg-day	Pathway specific
ADE - Average Daily Exposure	chemical specific	mg/m <sup>3</sup>	
EPC - Exposure Point Concentration	chemical specific	mg/kg	
PUF - Plant Uptake Factor	chemical specific	(mg/mg)(mg/mg) <sup>-1</sup>	See Table RS-7; $(mg_{OHM}/mg_{plant})/(mg_{OHM}/mg_{soil})^{-1}$
IR <sub>(1-2)</sub> - Soil Ingestion Rate for age group 1-2	100	mg/day	MADEP. 2002. Technical Update: Calculation of an Enhanced Soil Ingestion Rate. ( <a href="http://www.mass.gov/dep/ors/orspubs.htm">http://www.mass.gov/dep/ors/orspubs.htm</a> )
IR <sub>(1-8)</sub> - Soil Ingestion Rate for age group 1-8	100	mg/day	Ibid
IR <sub>(8-15)</sub> - Soil Ingestion Rate for age group 8-15	50	mg/day	Ibid
IR <sub>(15-31)</sub> - Soil Ingestion Rate for age group 15-31	50	mg/day	Ibid
PIR <sub>(1-2)</sub> = Produce Ingestion Rate for age group 1-2	10,900	mg/day	see Table RS-6
PIR <sub>(1-8)</sub> = Produce Ingestion Rate for age group 1-8	12,099	mg/day	see Table RS-6
PIR <sub>(8-15)</sub> = Produce Ingestion Rate for age group 8-15	17,809	mg/day	Ibid
PIR <sub>(15-31)</sub> = Produce Ingestion Rate for age group 15-31	24,420	mg/day	Ibid
RAF <sub>c</sub> - Relative Absorption Factor for Cancer Effects	chemical specific	dimensionless	
EF <sub>subchronic</sub> - Exposure Frequency for subchronic ingestion or dermal exposure	0.714	event/day	5 days/week
EF <sub>chronic</sub> - Exposure Frequency for chronic ingestion or dermal exposure	0.412	event/day	5 days/week, 30 weeks/year
EF <sub>cancer</sub> - Exposure Frequency for cancer, ingestion or dermal exposure	0.412	event/day	5 days/week, 30 weeks/year
EF <sub>produce</sub> - Exposure Frequency for produce ingestion, cancer and noncancer	1.00	event/day	
ED - Exposure Duration	1	day/event	
EP <sub>(1-2)</sub> - Exposure Period for age group 1-2	0.577	years	30 weeks
EP <sub>(1-8)</sub> - Exposure Period for age group 1-8	7	years	
EP <sub>(8-15)</sub> - Exposure Period for age group 8-15	7	years	
EP <sub>(15-31)</sub> - Exposure Period for age group 15-31	16	years	
BW <sub>(1-2)</sub> - Body Weight for age group 1-2	10.7	kg	U.S. EPA. 1997. Exposure Factors Handbook. Table 7-7, females.
BW <sub>(1-8)</sub> - Body Weight for age group 1-8	17.0	kg	Ibid
BW <sub>(8-15)</sub> - Body Weight for age group 8-15	39.9	kg	Ibid
BW <sub>(15-31)</sub> - Body Weight for age group 15-31	58.7	kg	Ibid
AP <sub>subchronic</sub> - Averaging Period for subchronic noncancer	0.577	years	30 weeks
AP <sub>chronic</sub> - Averaging Period for chronic noncancer	7	years	
AP <sub>cancer</sub> - Averaging Period for lifetime	70	years	
SA <sub>(1-2)</sub> - Surface Area for age group 1-2	1670	cm <sup>2</sup> / day	50th percentile of face (1/3 head), forearms, hands, lower legs, and feet for females MADEP. 1995. Guidance for Disposal Site Risk Characterization. Appendix Table B-2.
SA <sub>(1-8)</sub> - Surface Area for age group 1-8	2431	cm <sup>2</sup> / day	Ibid
SA <sub>(8-15)</sub> - Surface Area for age group 8-15	4427	cm <sup>2</sup> / day	Ibid
SA <sub>(15-31)</sub> - Surface Area for age group 15-31	5653	cm <sup>2</sup> / day	Ibid
SAF <sub>(1-2)</sub> - Surface Adherence Factor for age group 1-2	0.35	mg/cm <sup>2</sup>	All SAFs developed for ShortForm according to procedure outlined in MA DEP Technical
SAF <sub>(1-8)</sub> - Surface Adherence Factor for age group 1-8	0.35	mg/cm <sup>2</sup>	Update:Weighted Skin-Soil Adherence Factors, April 2002
SAF <sub>(8-15)</sub> - Surface Adherence Factor for age group 8-15	0.14	mg/cm <sup>2</sup>	
SAF <sub>(15-31)</sub> - Surface Adherence Factor for age group 15-31	0.13	mg/cm <sup>2</sup>	

## Resident - Soil: Table RS-7 Homegrown Produce Ingestion Rate

Vlookup Versionv0315

Data on mean produce ingestion rates (wet weight, ww) in the Northeast was obtained from the 1994-1996 Continuing Survey of Food Intakes by Individuals (USDA). Data for both genders were used for children under 6, while data for males was used for individuals 6 and older. The mean ingestion rates presented in the survey represent the arithmetic average of all individuals surveyed, regardless of whether or not they had consumed the produce item (e.g., an individual that did not consume the produce item was assigned a rate of 0 g/day). To determine the mean ingestion rate for individuals who ate each produce item, the ingestion rate for all individuals (consumers and nonconsumers) was divided by the percentage of individuals who ate the item (Table RS-7A). These mean ingestion rates for the produce consumers were summed to determine the total produce ingestion rate for each age-group and converted to dry weight assuming the produce items were all 90% water.

To convert mean ingestion rates for the age-groups studied in the survey to age-groups used in risk calculations, each age-group ingestion rate from the survey (i.e., 1 - 2 year olds, 3 - 5 year olds, 6 - 11 year olds, 12 - 19 year olds, and 20 - 39 year olds) was weighted according to the number of years spent in the risk calculation age group (i.e., 1 - 8 year olds, 8 - 15 year olds, and 15 - 31 year olds) (Table RS-7B). It was assumed that 25% of produce ingested was home-grown (Table RS-7C).

**Table RS-7**

Age-groups studied in survey	White Potatoes		Dark-green vegetables		Deep-yellow vegetables			
	Ingestion Rate for All g/d (ww)	% of individuals that consumed item.	Ingestion Rate for Consumers g/d (ww)	Ingestion Rate for All g/d (ww)	% of individuals that consumed item.	Ingestion Rate for Consumers g/d (ww)	Ingestion Rate for All g/d (ww)	% of individuals that consumed item.
1-2	28	40.3	69.5	6	10.1	59.4	5	12.7
3-5	30	37.1	80.9	5	6.5	76.9	7	12.7
6-11	47	44.2	106.3	6	9.1	65.9	2	8.5
12-19	59	40.3	146.4	2	2.3	87.0	11	15.8
20-39	76	45.1	168.5	25	14.7	170.1	4	5.7

Age-groups studied in survey	Tomatoes		Lettuce		Green Beans			
	Ingestion Rate for All g/d (ww)	% of individuals that consumed item.	Ingestion Rate for Consumers g/d (ww)	Ingestion Rate for All g/d (ww)	% of individuals that consumed item.	Ingestion Rate for Consumers g/d (ww)	Ingestion Rate for All g/d (ww)	% of individuals that consumed item.
1-2	10	27.9	35.8	1	6	16.7	7	12.1
3-5	10	37.1	27.0	4	14	28.6	3	5.7
6-11	20	42	47.6	8	14.9	53.7	1	2
12-19	29	45.2	64.2	19	28.7	66.2	2	2.4
20-39	48	50.9	94.3	18	29.6	60.8	4	3.7

Table RS-7a (continued)

Age-groups studied in survey	Corn, Green peas, Lima beans			Melons, berries			Totals	
	Ingestion Rate for All g/d (ww)	% of individuals that consumed item.	Ingestion Rate for Consumers g/d (ww)	Ingestion Rate for All g/d (ww)	% of individuals that consumed item.	Ingestion Rate for Consumers g/d (ww)	Wet Weight WWI g/day	Totals Dry Weight DWI g/day
1-2	12	15	80.0	7	9	77.8	436.4	43.6
3-5	14	21.7	64.5	14	11.6	120.7	506.3	50.6
6-11	9	13.6	66.2	5	5.9	84.7	498.0	49.8
12-19	14	9.9	141.4	17	5	340.0	998.1	99.8
20-39	12	7.3	164.4	6	4.5	133.3	969.7	97.0

Table RS-7B

Age-groups studied in survey	Years spent in age-group 1-8 year old	Years spent in age-group 8-15 year old	Years spent in age-group 15-31 year old
1-2	2		
3-5	3		
6-11	2	4	
12-19		3	4
20-39			12
	7	7	16

Table RS-7C

	Produce Intake, dry weight				
	Child 1-2 years g/day	Child 1-8 years g/day	Child 8-15 years g/day	Adult 15-31 g/day	
	All Produce:	43.6	48.4	71.2	97.7
	Homegrown:	10.9	12.1	17.8	24.4

**Resident - Soil: Table RS-8**  
**Chemical-Specific Data**

Vlookup Versionv0315

Oil or Hazardous Material	CSF (mg/kg-day) <sup>-1</sup>	RAF <sub>c-ing</sub>	RAF <sub>c-derm</sub>	RAF <sub>c-prod</sub>	Chronic RfD mg/kg-day	Subchronic RfD mg/kg-day	Chronic RAF <sub>nc-ing</sub>	Chronic RAF <sub>nc-derm</sub>	Subchronic RAF <sub>nc-ing</sub>	Subchronic RAF <sub>nc-derm</sub>	RAF <sub>nc-prod</sub>	PUF
ALIPHATICS C9 to C19					1.0E-01	1.0E+00	1	0.2	1	0.2		
ALIPHATICS C19 to C11 to ACENAPHTHENE					2.0E+00	6.0E+00	1	0.2	1	0.2		
AROMATICS C11 to ACENAPHTHYLENE					3.0E-02	3.0E-01	0.3	0.1	0.3	0.1		
ANTHRACENE					6.0E-02	2.0E-01	0.3	0.1	0.3	0.1		
BENZO(a)ANTHRACENE	1.0E-01	0.30	0.02		3.0E-04	3.0E-04	0.3	0.02	0.3	0.02		
BENZO(a)PYRENE	1.0E+00	0.30	0.02		3.0E-04	3.0E-04	0.3	0.02	0.3	0.02		
BENZO(b)FLUORANTHENE	1.0E-01	0.30	0.02		3.0E-04	3.0E-04	0.3	0.02	0.3	0.02		
BENZO(g,h,i)PERYLENE					3.0E-04	3.0E-04	0.3	0.1	0.3	0.1		
CHRYSENE	1.0E-03	0.30	0.02		3.0E-04	3.0E-04	0.3	0.02	0.3	0.02		
DIBENZO(a,h)ANTHRACENE	1.0E+00	0.30	0.02		3.0E-04	3.0E-04	0.3	0.02	0.3	0.02		
FLUORANTHENE					4.0E-02	1.0E-01	0.3	0.1	0.3	0.1		
FLUORENE					4.0E-02	4.0E-01	0.3	0.1	0.3	0.1		
INDENO(1,2,3-cd)PYRENE	1.0E-01	0.30	0.02		3.0E-04	3.0E-04	0.3	0.02	0.3	0.02		
METHYLNAPHTHALENE					4.0E-03	4.0E-03	0.3	0.1	0.3	0.1		
NAPHTHALENE					2.0E-02	2.0E-01	0.3	0.1	0.3	0.1		
PHENANTHRENE					3.0E-04	3.0E-04	0.3	0.1	0.3	0.1		
PYRENE					3.0E-02	3.0E-01	0.3	0.1	0.3	0.1		
AROMATICS C9 to C11 to TOLUENE					3.0E-02	3.0E-01	1	0.2	1	0.2		
MERCURY					8.0E-02	8.0E-01	1	0.03	1	0.03		
SELENIUM					3.0E-04	3.0E-04	0.5	0.1	0.5	0.1		
THALLIUM					5.0E-03	5.0E-03	1	0.01	1	0.01		
ZINC					8.0E-05	8.0E-04	1	0.01	1	0.01		
POLYCHLORINATED BI	2.0E+00	1.00	0.10	1.00	3.0E-01	3.0E-01	1	0.1	1	0.1	1	1.5
					2.0E-05	5.0E-05	1	0.1	1	0.1	1	0.84

## Resident - Soil: Table RS-9

### Cyanide Calculations

The soil cyanide concentration limit set to protect a child resident against an acute, potentially lethal one-time dose of cyanide from incidental ingestion of contaminated soil is 100 mg/kg soil. This is the concentration of available cyanide in soil below which acute human health effects would not be expected following a one-time exposure. This soil concentration is calculated using the equation below with a pica-type soil ingestion of 1000 mg<sub>soil</sub> and an available cyanide dose limit of 0.01 mg/kg<sub>body weight</sub>.

MassDEP's guidance on evaluating the risk from a one-time cyanide dose considers cyanide's potentially lethal effects as well as information on cyanide metabolism:

Cyanides are detoxified rapidly by the body, and a large acute dose which overwhelms the detoxification mechanism is potentially more toxic than the same dose distributed over a period of hours. (*MassDEP Background Documentation for the Development of an Available Cyanide Benchmark Concentration*, originally dated October 1992, Modified August 1998)

Assessment of a potential one-time dose requires an estimate of the maximum soil concentration the receptor could contact at any one time. The average soil concentration within a typical exposure area will underestimate the potential one-time dose. Therefore, to assess the acute risk of a one-time potentially lethal dose, the EPC for cyanide should be a conservative estimate of the maximum soil concentration.

**The residential soil concentration limit to protect against adverse effects from an acute (one-time) exposure to cyanide is 100 mg/kg.**

#### Concentration Calculation for Cyanide

$$\text{Concentration} = \frac{\text{HQ} \times \text{Acute Dose Limit} \times \text{BW}}{\text{IR} \times \text{RAF} \times \text{Conversion Factor}}$$

Parameter	Value	Units
HQ (Hazard Quotient)	1	(unitless)
Acute Dose Limit	0.01	mg avail. CN/ kg BW
BW (Body Weight) 1-2	10.7	kg
IR (1-time reasonable max)	1000	mg
Conversion Factor	1.0E-06	kg soil / mg soil
RAF	1	(unitless)

The toxicological basis for estimating an allowable one-time dose is documented in MassDEP's 1992 *Background Documentation for the Development of an "Available Cyanide" Benchmark Concentration*, which is published at: <http://www.mass.gov/eea/docs/dep/toxics/stypes/dscyanide.pdf>

**Attachment D**

**Risk Calculation Spreadsheets, Exposure and Risk Estimates Associated with Exposures,  
Construction/Utility Worker, Soil and Groundwater**

## Method 3 Risk Assessment for Chemicals in Soil - Construction Worker Shortform 2012 (sf12cw)

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**Exp** Table CW-4: Definitions and exposure factors

**Chem** Table CW-5: Chemical-specific data

**Cyanide** Table CW-6: Cyanide Calculations

Spreadsheets designed by Andrew Friedmann, MassDEP

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**Construction Worker - Soil: Table CW-1**  
**Exposure Point Concentration (EPC) and Risk**  
**Based on Construction Worker 18-25 years of age**

ShortForm Version 10-12  
 Vlookup Version v0315

$$\text{ELCR (all chemicals)} = 3.2\text{E}-08$$

$$\text{HI (all chemicals)} = 6.5\text{E}-01$$

**\*\*Do not insert or delete any rows\*\***

Click on empty cell below and select OHM using arrow.

Oil or Hazardous	Material (OHM)	EPC (mg/kg)	ELCR		ELCR		ELCR <sub>total</sub>	Subchronic				HQ <sub>total</sub>
			ingestion	dermal	inhalation GI	pulmonary		HQ <sub>ing</sub>	HQ <sub>derm</sub>	HQ <sub>inh-GI</sub>	HQ <sub>inh</sub>	
ALIPHATICS	C9 to C18	1.8E+01						2.2E-05	4.5E-05	5.7E-07	1.1E-06	6.9E-05
ALIPHATICS	C19 to C36	1.9E+03						4.0E-04	8.0E-04	1.0E-05		1.2E-03
AROMATICS	C11 to C22	2.7E+02						3.4E-04	1.1E-03	8.7E-06	2.0E-05	1.5E-03
ACENAPHTHENE		4.3E-01						7.9E-07	2.6E-06	2.0E-08	7.9E-03	7.9E-03
ACENAPHTHYLENE		1.4E-01						1.7E-04	5.7E-04	4.4E-06	2.6E-03	3.3E-03
ANTHRACENE		9.9E-01						3.6E-07	1.2E-06	9.5E-09	1.8E-02	1.8E-02
BENZO(a)ANTHRACENE		2.0E+00	5.2E-10	3.5E-10	1.3E-11	3.1E-11	9.1E-10	2.4E-03	1.6E-03	6.3E-05	3.7E-02	4.1E-02
BENZO(a)PYRENE		1.9E+00	5.1E-09	3.4E-09	1.3E-10	3.1E-10	8.9E-09	2.4E-03	1.6E-03	6.1E-05	3.6E-02	4.0E-02
BENZO(b)FLUORANTHENE		2.3E+00	6.1E-10	4.1E-10	1.6E-11	3.7E-11	1.1E-09	2.8E-03	1.9E-03	7.4E-05	4.3E-02	4.8E-02
BENZO(g,h,i)PERYLENE		9.0E-01						1.1E-03	3.7E-03	2.9E-05	1.7E-02	2.2E-02
CHRYSENE		8.5E-01	2.2E-12	1.5E-12	5.8E-14	1.4E-13	3.9E-12	1.0E-03	7.0E-04	2.7E-05	1.6E-02	1.8E-02
DIBENZO(a,h)ANTHRACENE		2.3E+00	6.0E-09	4.1E-09	1.6E-10	3.7E-10	1.1E-08	2.8E-03	1.9E-03	7.3E-05	4.3E-02	4.8E-02
FLUORANTHENE		2.9E-01						1.1E-06	3.6E-06	2.8E-08	5.4E-03	5.4E-03
FLUORENE		4.5E+00						4.2E-06	1.4E-05	1.1E-07	8.4E-02	8.4E-02
INDENO(1,2,3-cd)PYRENE		5.5E-01	1.4E-10	9.7E-11	3.7E-12	8.7E-12	2.5E-10	6.7E-04	4.5E-04	1.7E-05	1.0E-02	1.1E-02
METHYLNAPHTHALENE, 2-		1.0E+00						9.3E-05	3.1E-04	2.4E-06	1.9E-02	1.9E-02
NAPHTHALENE		6.1E-01						1.1E-06	3.8E-06	2.9E-08	7.6E-06	1.3E-05
PHENANTHRENE		2.8E-01						3.5E-04	1.2E-03	9.1E-06	5.3E-03	6.8E-03
PYRENE		4.2E+00						5.2E-06	1.7E-05	1.3E-07	7.8E-02	7.8E-02
AROMATICS	C9 to C10	1.5E+01						6.2E-05	1.2E-04	1.6E-06	1.1E-06	1.9E-04
TOLUENE		6.2E-02						9.5E-08	2.9E-08	2.5E-09	4.6E-10	1.3E-07
MERCURY		1.7E+01						3.5E-02	7.0E-02	9.0E-04	2.1E-03	1.1E-01
SELENIUM		6.8E-01						1.7E-04	1.7E-05	4.3E-06	8.4E-06	2.0E-04
THALLIUM		1.6E+01						2.5E-02	2.5E-03	6.4E-04	4.3E-02	7.0E-02
ZINC		1.9E+02						7.8E-04	7.9E-04	2.0E-05	5.1E-03	6.6E-03
POLYCHLORINATED BIPHENYLS (PCBs)		2.7E-01	4.8E-09	4.8E-09	1.2E-10	7.3E-12	9.8E-09	6.7E-03	6.8E-03	1.7E-04	5.1E-04	1.4E-02

## Construction Worker - Soil: Table CW-2

### Equations to Calculate Cancer Risk for Construction Worker

Vlookup Version v0315

#### Cancer Risk from Ingestion

$$ELCR_{ing} = LADD_{ing} * CSF_{oral}$$

$$LADD_{ing} = \frac{EPC * IR * RAF_{c-ing} * EF * ED_{ing} * EP * C1}{BW * AP_{lifetime}}$$

#### Cancer Risk from Dermal Absorption

$$ELCR_{derm} = LADD_{derm} * CSF_{oral}$$

$$LADD_{derm} = \frac{EPC * SA * AF * RAF_{c-derm} * EF * ED_{derm} * EP * C1}{BW * AP_{lifetime}}$$

#### Cancer Risk from Particulate Inhalation - Gastrointestinal Absorption

$$ELCR_{inh-GI} = LADD_{inh-GI} * CSF_{oral}$$

$$LADD_{inh-GI} = \frac{EPC * RCAF_{inh-gi} * PM_{10} * VR_{work} * RAF_{c-ing} * EF * ED_{inh} * EP * C2 * C3 * C4}{BW * AP_{lifetime}}$$

#### Cancer Risk from Particulate Inhalation - Pulmonary Absorption

$$ELCR_{inh} = LADD_{inh} * CSF_{inhalation}$$

$$LADD = \frac{EPC * RCAF_{inh} * PM_{10} * VR_{work} * RAF_{c-inh} * EF * ED_{inh} * EP * C2 * C3 * C4}{BW * AP_{lifetime}}$$

Parameter	Value	Units
CSF	OHM-specific	(mg/kg-day) <sup>-1</sup>
LADD	age/OHM-specific	mg/kg-day
EPC	OHM-specific	mg/kg
IR	100	mg/day
RAF <sub>c-ing</sub>	OHM-specific	dimensionless
RAF <sub>c-derm</sub>	OHM-specific	dimensionless
RAF <sub>c-inh</sub>	OHM-specific	dimensionless
EF	0.714	event/day
ED <sub>ing &amp; derm</sub>	1	day/event
ED <sub>inh</sub>	0.333	day/event
EP	182	days
C1	1.0E-06	kg/mg
C2	1.0E-09	kg/µg
C3	1440	min/days
C4	1.0E-03	m <sup>3</sup> /L
BW	58.0	kg
AP <sub>(lifetime)</sub>	25,550	days
VR <sub>work</sub>	60	L/min
AF	0.29	mg/cm <sup>2</sup>
SA	3473	cm <sup>2</sup> /day
RCAF <sub>inh-gi</sub>	1.5	dimensionless
RCAF <sub>inh</sub>	0.5	dimensionless
PM <sub>10</sub>	60	µg/m <sup>3</sup>

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## Construction Worker - Soil: Table CW-3

### Equations to Calculate Noncancer Risk for Construction Worker

Vlookup Version v0315

#### Noncancer Risk from Ingestion

$$HQ_{ing} = \frac{ADD_{ing}}{RfD_{oral-subchronic}}$$

$$ADD_{ing} = \frac{EPC * IR * RAF_{nc-ing} * EF * ED_{ing} * EP * C1}{BW * AP_{noncancer}}$$

#### Noncancer Risk from Dermal Absorption

$$HQ_{derm} = \frac{ADD_{derm}}{RfD_{oral-subchronic}}$$

$$ADD_{dermal} = \frac{EPC * SA * AF * RAF_{nc-derm} * EF * ED_{dermal} * EP * C1}{BW * AP_{noncancer}}$$

#### Noncancer Risk from Particulate Inhalation - Gastrointestinal Absorption

$$HQ_{inh-GI} = \frac{ADD_{inh-GI}}{RfD_{oral-subchronic}}$$

$$ADD_{inh-GI} = \frac{EPC * RCAF_{inh-gi} * PM_{10} * VR_{work} * RAF_{nc-ing} * EF * ED_{inh} * EP * C2 * C3 * C4}{BW * AP_{noncancer}}$$

#### Noncancer Risk from Particulate Inhalation - Pulmonary Absorption

$$HQ_{inh} = \frac{ADD}{RfD_{inhalation-subchronic}}$$

$$ADD_{inh} = \frac{EPC_{soil} * RCAF_{inh} * PM_{10} * VR_{work} * RAF_{nc-inh} * EF * ED_{inh} * EP * C2 * C3 * C4}{BW * AP_{noncancer}}$$

Parameter	Value	Units
RfD	OHM-specific	mg/kg-day
ADD	OHM-specific	mg/kg-day
EPC	OHM-specific	mg/kg
IR	100	mg/day
RAF <sub>nc-ing</sub>	OHM-specific	dimensionless
RAF <sub>nc-derm</sub>	OHM-specific	dimensionless
RAF <sub>nc-inh</sub>	OHM-specific	dimensionless
EF	0.714	event/day
ED <sub>ing &amp; derm</sub>	1	day/event
ED <sub>inh</sub>	0.333	day/event
EP	182	days
C1	1.0E-06	kg/mg
C2	1.0E-09	kg/µg
C3	1440	min/days
C4	1.0E-03	m <sup>3</sup> /L
BW	58.0	kg
AP <sub>noncancer</sub>	182	days
VR <sub>work</sub>	60	L/min
AF	0.29	mg/cm <sup>2</sup>
SA	3473	cm <sup>2</sup> /day
RCAF <sub>inh-gi</sub>	1.5	dimensionless
RCAF <sub>inh</sub>	0.5	dimensionless
PM10	60	µg/m <sup>3</sup>

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## Construction Worker - Soil: Table CW-4 Definitions and Exposure Factors

Vlookup Version v0315

Parameter	Value	Units	Notes
ELCR - Excess Lifetime Cancer Risk	chemical specific	dimensionless	Pathway specific (ing =ingestion, derm=dermal, inh=inhalation)
HI - Hazard Index	chemical specific	dimensionless	Pathway specific (ing =ingestion, derm=dermal, inh=inhalation)
CSF - Cancer Slope Factor	chemical specific	(mg/kg-day) <sup>-1</sup>	see Table CW-5.
RfD - Reference Dose	chemical specific	mg/kg-day	see Table CW-5.
LADD - Lifetime Average Daily Dose	chemical specific	mg/kg-day	Pathway specific. See Table CW-2.
ADD - Average Daily Dose	chemical specific	mg/kg-day	Pathway specific. See Table CW-3.
EPC - Exposure Point Concentration	chemical specific	mg/kg	see Table CW-1.
IR - Soil Ingestion Rate	100	mg/day	MADEP. 2002. Technical Update: Calculation of an Enhanced Soil Ingestion Rate. ( <a href="http://www.mass.gov/dep/ors/orspubs.htm">http://www.mass.gov/dep/ors/orspubs.htm</a> ).
RAF <sub>c</sub> - Relative Absorption Factor for Cancer Effects	chemical specific	dimensionless	Pathway specific - see Table CW-5.
RAF <sub>nc</sub> - Relative Absorption Factor for Noncancer Effects	chemical specific	dimensionless	Pathway specific - see Table CW-5.
EF - Exposure Frequency	0.714	event/day	5 events (days) / 7 events (days) in a week; MADEP 1995 Guidance for Disposal Site Risk Characterization pg B-38.
ED <sub>ing,derm</sub> - Exposure Duration for ingestion or dermal exposure	1	day/event	
ED <sub>inh</sub> - Exposure Duration for inhalation exposure	0.333	day/event	Represents 8 hours / event.
EP - Exposure Period	182	days	6 months; MADEP 1995 Guidance for Disposal Site Risk Characterization.
BW - Body Weight	58.0	kg	U.S. EPA. 1997. Exposure Factors Handbook. Table 7-7, Females, ages 18 - 25.
AP <sub>(lifetime)</sub> - Averaging Period for lifetime	25,550	days	Represents 70 years
AP <sub>(noncancer)</sub> - Averaging Period for noncancer	182	days	6 months; MADEP 1995 Guidance for Disposal Site Risk Characterization.
AF - Adherence Factor	0.29	mg/cm <sup>2</sup>	MA DEP. 2002 Technical Update: Weighted Skin-Soil Adherence Factors. ( <a href="http://www.mass.gov/dep/ors/orspubs.htm">http://www.mass.gov/dep/ors/orspubs.htm</a> )
VR <sub>work</sub> - Ventilation Rate during work (heavy exertion)	60	L/min	Table B-4 MADEP 1995 Guidance for Disposal Site Risk Characterization.
SA - Surface Area	3473	cm <sup>2</sup> /day	MADEP. 1995. Guidance for Disposal Site Risk Characterization. 50th percentile for females. Appendix Table B-2.
IFAF <sub>inh-gi</sub> - Ingestion Fraction Adjustment Factor, gastrointestinal	1.5	dimensionless	MADEP 2007. Characterization of Risks Due to Inhalation of Particulates by Construction Workers
IFAF <sub>inh</sub> - Inhalation Fraction Adjustment Factor, inhalation	0.5	dimensionless	MADEP 2002. Characterization of Risks Due to Inhalation of Particulates by Construction Workers
PM10 - Concentration of PM <sub>10</sub>	60	µg/m <sup>3</sup>	MADEP 1995 Guidance for Disposal Site Risk Characterization pg B-11

**Construction Worker - Soil: Table CW-5**  
**Chemical-Specific Data**

Vlookup Version v0315

Oil or Hazardous Material	Oral CSF (mg/kg-day) <sup>-1</sup>	RAF <sub>c-ing</sub>	RAF <sub>c-derm</sub>	RAF <sub>c-inh</sub>	Inhalation CSF (mg/kg-day) <sup>-1</sup>	Subchronic Oral RfD mg/kg-day	Subchronic RAF <sub>nc-ing</sub>	Subchronic RAF <sub>nc-derm</sub>	Subchronic RAF <sub>nc-inh</sub>	Subchronic Inhalation RfD
ALIPHATICS C9 to C18						1.0E+00	1	0.2	1	1.7E-01
ALIPHATICS C19 to C36						6.0E+00	1	0.2		
AROMATICS C11 to C22						3.0E-01	0.3	0.1	1	1.4E-01
ACENAPHTHENE						2.0E-01	0.3	0.1	1	5.7E-07
ACENAPHTHYLENE						3.0E-04	0.3	0.1	1	5.7E-07
ANTHRACENE						1.0E+00	0.3	0.1	1	5.7E-07
BENZO(a)ANTHRACENE	1.0E-01	0.3	0.02	1	2.1E-01	3.0E-04	0.3	0.02	1	5.7E-07
BENZO(a)PYRENE	1.0E+00	0.3	0.02	1	2.1E+00	3.0E-04	0.3	0.02	1	5.7E-07
BENZO(b)FLUORANTHENE	1.0E-01	0.3	0.02	1	2.1E-01	3.0E-04	0.3	0.02	1	5.7E-07
BENZO(g,h,i)PERYLENE						3.0E-04	0.3	0.1	1	5.7E-07
CHRYSENE	1.0E-03	0.3	0.02	1	2.1E-03	3.0E-04	0.3	0.02	1	5.7E-07
DIBENZO(a,h)ANTHRACENE	1.0E+00	0.3	0.02	1	2.1E+00	3.0E-04	0.3	0.02	1	5.7E-07
FLUORANTHENE						1.0E-01	0.3	0.1	1	5.7E-07
FLUORENE						4.0E-01	0.3	0.1	1	5.7E-07
INDENO(1,2,3-cd)PYRENE	1.0E-01	0.3	0.02	1	2.1E-01	3.0E-04	0.3	0.02	1	5.7E-07
METHYLNAPHTHALENE, 2-						4.0E-03	0.3	0.1	1	5.7E-07
NAPHTHALENE						2.0E-01	0.3	0.1	1	8.6E-04
PHENANTHRENE						3.0E-04	0.3	0.1	1	5.7E-07
PYRENE						3.0E-01	0.3	0.1	1	5.7E-07
AROMATICS C9 to C10						3.0E-01	1	0.2	1	1.4E-01
TOLUENE						8.0E-01	1	0.03	1	1.4E+00
MERCURY						3.0E-04	0.5	0.1	1	8.6E-05
SELENIUM						5.0E-03	1	0.01	1	8.6E-04
THALLIUM						8.0E-04	1	0.01	1	4.0E-06
ZINC						3.0E-01	1	0.1	1	4.0E-04
POLYCHLORINATED BIPHENYLS (PCBs)	2.0E+00	1	0.1	1	3.5E-01	5.0E-05	1	0.1	1	5.7E-06

## Construction Worker - Soil: Table CW-6 Cyanide Calculations

The soil cyanide concentration limit set to protect a construction worker against an acute, potentially lethal one-time dose of cyanide from incidental ingestion of contaminated soil is 12,000 mg/kg<sub>soil</sub>. This is the concentration of available cyanide in soil below which acute human health effects would not be expected following a one-time exposure. This soil concentration is calculated using the equation below with a one-time soil ingestion estimate of 50 mg<sub>soil</sub> and an available cyanide dose limit of 0.01 mg/kg<sub>body weight</sub>.

MassDEP's guidance on evaluating the risk from a one-time cyanide dose considers cyanide's potentially lethal effects as well as information on cyanide metabolism:

Cyanides are detoxified rapidly by the body, and a large acute dose which overwhelms the detoxification mechanism is potentially more toxic than the same dose distributed over a period of hours. (*MassDEP Background Documentation for the Development of an Available Cyanide Benchmark Concentration*, originally dated October 1992, Modified August 1998)

Assessment of a potential one-time dose requires an estimate of the maximum soil concentration the trespasser could contact at any one time. The average soil concentration within a typical exposure area will underestimate the potential one-time dose. Therefore, to assess the acute risk of a one-time potentially lethal dose, the EPC for cyanide should be a conservative estimate of the maximum concentration.

The construction worker soil concentration limit to protect against adverse effects from an acute (one-time) exposure to cyanide is 12,000 mg/kg.

### Acute Concentration Calculation for Cyanide

$$\text{Concentration} = \frac{\text{HQ} \times \text{Acute Dose Limit} \times \text{BW}}{\text{IR} \times \text{RAF} \times \text{Conversion Factor}}$$

Parameter	Value	Units
HQ (Hazard Quotient)	1	(unitless)
Acute Dose Limit	0.01	mg avail. CN/ kg BW
BW (Body Weight) <sub>11-12</sub>	58	kg
IR (1-time reasonable max)	50	mg
Conversion Factor	1.0E-06	kg soil / mg soil
RAF	1	(unitless)

The toxicological basis for estimating an allowable one-time dose is documented in MassDEP's 1992 *Background Documentation for the Development of an "Available Cyanide" Benchmark Concentration*, which is published at: <http://www.mass.gov/eea/docs/dep/toxics/stypes/dscyanide.pdf>

## **Method 3 Risk Assessment for Chemicals in Groundwater - Construction Worker**

### **Index**

**Tab**

**EPCs** Table CWGW-1: Select chemicals and enter Exposure Point Concentrations (EPCs). Associated risks are shown to the right.

**C Eq** Table CWGW-2: Equations to calculate cancer risks.

**NC Eq** Table CWGW-3: Equations to calculate noncancer risks.

**Exp** Table CWGW-4: Definitions and exposure factors.

**Chem** Table CWGW-5: Chemical-specific data.

**Construction Worker - Groundwater: Table CWGW-1**  
**Exposure Point Concentration (EPC) and Risk**  
**Based on Construction Worker 18-25 years of age**

Vlookup Version v1012

**\*\*Do not insert or delete any rows\*\***

Click on empty cell below and select OHM using arrow.

$$\text{ELCR (all chemicals)} = 2\text{E}-08$$

$$\text{HI (all chemicals)} = 7\text{E}-02$$

Oil or Hazardous	EPC (mg/L)	ELCR dermal	ELCR <sub>total</sub>	Subchronic	
				HQ <sub>derm</sub>	HQ <sub>total</sub>
Aliphatics C9 to C18	7.5E-02			1.7E-04	1.7E-04
Aliphatics C19 to C36	2.6E+00				
Aromatics C11 to C22	5.8E-01			2.7E-03	2.7E-03
Benzo(a)anthracene	3.5E-03	6.2E-10	6.2E-10	2.9E-03	2.9E-03
Benzo(a)pyrene	4.9E-03	1.2E-08	1.2E-08	5.8E-03	5.8E-03
Benzo(b)fluoranthene	5.7E-03	1.5E-09	1.5E-09	6.9E-03	6.9E-03
Benzo(g,h,i)perylene	3.9E-03			3.2E-02	3.2E-02
Benzo(k)fluoranthene	2.2E-03	5.2E-11	5.2E-11	2.4E-03	2.4E-03
Chrysene	6.7E-03	1.2E-11	1.2E-11	5.5E-03	5.5E-03
Fluoranthene	9.1E-03			5.4E-05	5.4E-05
Naphthalene	4.9E-03			3.1E-06	3.1E-06
Phenanthrene	8.6E-03			1.1E-02	1.1E-02
Pyrene	1.1E-02			2.8E-05	2.8E-05
Arsenic	6.5E-02	5.7E-10	5.7E-10	1.8E-04	1.8E-04
Nickel	8.6E-03			4.7E-07	4.7E-07
Zinc	3.4E-01			1.8E-06	1.8E-06

## Construction Worker - Dermal Contact with Groundwater: Table CWGW-2 Equations to Calculate Cancer Risk for Construction Worker

Vlookup Version v1012

### Cancer Risk from Dermal Absorption

$$ELCR_{derm} = LADD_{derm} * CSF_{oral}$$

$$LADD_{derm} = \frac{EPC * SA * RAF_{c-derm} * EF * ED_{dermal} * EP * C1 * Kp}{BW * AP_{lifetime}}$$

Parameter	Value	Units
RfD	OHM-specific	mg/kg-day
ADD	OHM-specific	mg/kg-day
EPC	OHM-specific	mg/L
RAF <sub>c-derm</sub>	OHM-specific	dimensionless
Kp	OHM-specific	cm/hour
EF	0.714	event/day
ED <sub>derm</sub>	1.0	hours/event
EP	182	days
C1	1.0E-03	1 liter/1000 cm <sup>3</sup>
BW	58.0	kg
AP <sub>lifetime</sub>	25,550	days
SA	2206	cm <sup>2</sup>

## Construction Worker - Dermal Contact with Groundwater: Table CWGW-3 Equations to Calculate Noncancer Risk for Construction Worker

Vlookup Version v1012

### Noncancer Risk from Dermal Absorption

$$HQ_{\text{derm}} = \frac{ADD_{\text{derm}}}{RfD_{\text{oral-subchronic}}}$$

$$ADD_{\text{dermal}} = \frac{EPC * SA * RAF_{\text{nc-derm}} * EF * ED_{\text{dermal}} * EP * C1 * Kp}{BW * AP_{\text{noncancer}}}$$

Parameter	Value	Units
RfD	OHM-specific	mg/kg-day
ADD	OHM-specific	mg/kg-day
EPC	OHM-specific	mg/L
RAF <sub>nc-derm</sub>	OHM-specific	dimensionless
Kp	OHM-specific	cm/hour
EF	0.714	event/day
ED <sub>derm</sub>	1.0	hours/event
EP	182	days
C1	1.0E-03	1 liter/1000 cm <sup>3</sup>
BW	58.0	kg
AP <sub>noncancer</sub>	182	days
SA	2206	cm <sup>2</sup>

## Construction Worker - Dermal Contact with Groundwater: Table CWGW-4 Definitions and Exposure Factors

Vlookup Version v1012

Parameter	Value	Units	Notes
ELCR - Excess Lifetime Cancer Risk	chemical specific	dimensionless	Pathway specific (ing =ingestion, derm=dermal, inh=inhalation)
HI - Hazard Index	chemical specific	dimensionless	Pathway specific (ing =ingestion, derm=dermal, inh=inhalation)
CSF - Cancer Slope Factor	chemical specific	(mg/kg-day) <sup>-1</sup>	see Table CWGW-5.
RfD - Reference Dose	chemical specific	mg/kg-day	see Table CWGW-5.
LADD - Lifetime Average Daily Dose	chemical specific	mg/kg-day	Pathway specific. See Table CWGW-2.
ADD - Average Daily Dose	chemical specific	mg/kg-day	Pathway specific. See Table CWGW-3.
EPC - Exposure Point Concentration	chemical specific	mg/L	see Table CWGW-1.
RAF <sub>c</sub> - Relative Absorption Factor for Cancer Effects	chemical specific	dimensionless	Pathway specific - see Table CWGW-5.
RAF <sub>nc</sub> - Relative Absorption Factor for Noncancer Effects	chemical specific	dimensionless	Pathway specific - see Table CWGW-5.
EF - Exposure Frequency	0.714	event/day	130 events / 182 days (or 5 days per week; MADEP 1995 Guidance for Disposal Site Risk Characterization pg B-38.
ED <sub>derm</sub> - Exposure Duration for dermal exposure	1	hours/event	
EP - Exposure Period	182	days	6 months; MADEP 1995 Guidance for Disposal Site Risk Characterization.
BW - Body Weight	58.0	kg	U.S. EPA. 1997. Exposure Factors Handbook. Table 7-7, Females, ages 18 - 25.
AP <sub>(lifetime)</sub> - Averaging Period for lifetime	25,550	days	Represents 70 years
AP <sub>(noncancer)</sub> - Averaging Period for noncancer	182	days	6 months; MADEP 1995 Guidance for Disposal Site Risk Characterization.
SA - Surface Area	2206	cm <sup>2</sup> /day	MADEP. 1995. Guidance for Disposal Site Risk Characterization. 50th percentile for males and females. Appendix Table B-2. forearms, hands

**Construction Worker - Groundwater: Table CWGW-5**  
**Chemical-Specific Data**

Oil or Hazardous Material		Oral CSF (mg/kg-day) <sup>-1</sup>	Kp	RAF <sub>c-derm</sub>	Subchronic Oral RfD mg/kg-day	Subchronic RAF <sub>nc-derm</sub>
ALIPHATICS	C5 to C8	0.16604			4.0E-01	0.2
ALIPHATICS	C19 to C36				6.0E+00	0.2
AROMATICS	C11 to C22	0.52408			3.0E-01	0.1
Benzo(a)anthracene		1.0E-01	0.45583	0.02	3.0E-04	0.02
Benzo(a)pyrene		1.0E+00	0.65283	0.02	3.0E-04	0.02
Benzo(b)fluoranthene		1.0E-01	0.67298	0.02	3.0E-04	0.02
Benzo(g,h,i)perylene			0.89331		3.0E-04	0.1
Benzo(k)fluoranthene		1.0E-02	0.61433	0.02	3.0E-04	0.02
Chrysene		1.0E-03	0.45583	0.02	3.0E-04	0.02
Fluoranthene			0.21667		1.0E-01	0.1
Naphthalene			0.04584		2.0E-01	0.1
Phenanthrene			0.14022		3.0E-04	0.1
Pyrene			0.27631		3.0E-01	0.1
Arsenic		1.5E+00	0.001	0.03	3.0E-04	0.03
Nickel			0.0002		2.0E-02	0.2
Zinc			0.0006		3.0E-01	0.1

**Attachment E**

**Best Management Practices**

## Attachment E

### **Best Management Practices for Non-commercial Gardening at Disposal Sites**

This property is part of a disposal site that has been assessed and determined to meet the requirements of a Permanent Solution with Conditions under the Massachusetts Contingency Plan (MCP), 310 CMR 40.0000, where the Conditions include the recommendation of Best Management Practices ("BMPs") for gardening to reduce the potential risks from exposure to contaminated soil that remains on the site.

While the property has been determined to be safe for unrestricted use, including residential use, there are residual levels of contaminants remaining in the soil. Gardeners should consider implementing BMPs to further reduce potential exposure to material in the soil, regardless of the contaminant levels remaining. Implementing BMPs such as those suggested below will allow safer gardening in a wider range of site conditions. Not every BMP is necessary for every single site, but a combination of BMPs appropriate for your particular site will help reduce the potential for additional exposure.

#### **Construct Physical Controls and Improve Soil Conditions**

Actions to minimize contact (covering the soil) and reduce contaminant levels (such as amending the soil) will further reduce potential risks. Many good gardening practices, like adding compost and soil amendments, improve the soil while reducing the amount of contaminants and exposure to them. Recommendations include:

- Build your garden away from areas known or suspected to be contaminated. In addition to areas where residual contamination may be present, as identified by the disposal site assessment, other sources of contamination can include painted structures (particularly older buildings that may have been painted with lead paint), roads and rail lines.
- Build a hedge or fence to reduce windblown contamination from mobile sources and busy streets.
- Cover existing soil and walkways with mulch, landscape fabric, stones, or bricks.
- Use mulch in your garden beds to reduce dust and soil splash back, reduce weed establishment, regulate soil temperature and moisture, and add organic matter.
- Use soil amendments (such as lime and compost) to maintain neutral pH and add organic matter to improve soil structure.

- Not all amendments are the same; be sure to choose the right amendments for your soil - amendments that improve conditions at one garden may not work well in others.
- Keep in mind that each amendment type will have different application amounts and techniques (e.g., rototilling), and may need to be maintained and reapplied (e.g., annually).
- Be sure to work with your local or state regulatory agency, and ask if your municipality provides free compost or mulch. Obtain compost only from a reputable source that can provide information regarding the quality and type of feedstock used to generate the compost.
- Add topsoil or clean fill from a reputable source that can provide information regarding the quality of the topsoil or fill to ensure the soil is safe for handling by children or gardeners of all ages and for food production.
- Build raised beds or container gardens.
  - Raised beds can be made by simply mounding soil into windows or by building containers.
  - Raised beds help improve water drainage in heavy clay soils or low-lying areas. They also create accessible gardening locations for many users and allow for more precise soil management.
  - Foot traffic should not be necessary in the bed, so the soil does not become compacted and soil preparation in the coming years is minimized.
  - Place a water permeable fabric cover or geotextile as the bottom layer of your raised bed to further reduce exposure to soils of concern.
  - Sided beds can be made from wood, synthetic wood, stone, concrete block, brick or naturally rot-resistant woods such as cedar and redwood. Avoid using chemical-treated lumber for the raised bed because chemicals used in the treated wood could make their way into the soils and plants.

### **Minimize Ongoing Contact with or Ingestion of Soil**

Actions to further reduce contact with soil during and after gardening activities can also minimize potential risks from any contaminants remaining in the soil.

- Do not use plants grown in contaminated soil for compost.
- Work in the garden when soil is moist or damp to minimize creation of dust.

- Avoid “double-digging” to decrease likelihood of moving deep soils to the surface.
- Wear gloves, long sleeves and pants while gardening to prevent skin exposure;
- Remove gardening shoes and garments before entering the home, and wash gardening clothes separately from other clothing.
- Wash hands after gardening.
- Wash all vegetables thoroughly.

#### **For More Information**

These recommended BMPs are consistent with federal, state and local guidance on urban gardening in general. MassDEP has additional information available online at:

<http://www.mass.gov/eea/agencies/massdep/cleanup/regulations/gardening-best-management-practices-at-disposal-sites.html>

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***APPENDIX G***

***PCB Waste Disposal Documents***

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Massachusetts Department of Environmental Protection  
Bureau of Waste Site Cleanup

BWSC 112

Release Tracking Number

2 - 19956

**BILL OF LADING (pursuant to 310 CMR 40.0030)**

**A. LOCATION OF SITE OR DISPOSAL SITE WHERE REMEDIATION WASTE WAS GENERATED:**

1. Release Name/Location Aid: INDUSTRIAL PROPERTY

2. Street Address: 179 BROOK STREET

3. City/Town: CLINTON

4. Zip Code: \_\_\_\_\_

5. Check here if the disposal site that is the source of the release is Tier Classified. Check the current Tier Classification Category.  
 a. Tier I     b. Tier II     c. Tier II

**B. THIS FORM IS BEING USED TO: (check one: B1-B4):**

1. Submit a Bill of Lading (BOL) to transport Remediation Waste to Temporary Storage or a Receiving Facility.

Response Actions associated with this BOL (check all that apply):

- a. Immediate Response Action (IRA)                       c. Comprehensive Response Actions  
 b. Release Abatement Measure (RAM)                   f. Limited Removal Action (LRA): (must be  
 c. Downgradient Property Status (DPS)                retained pursuant to 310 CMR 40.0034(6); can't be  
 d. Utility Release Abatement Measure (URAM)       submitted via eDEP)  
 g. Other \_\_\_\_\_

2. Submit an Attestation of Completion of Shipment to Temporary Storage (Sections C, F and J are not required):

3. Submit an Attestation of Completion of Shipment to a Receiving Facility (Sections C, F and J are not required):

4. Certify that Remediation Waste Was Not Shipped, and the Bill of Lading is Void. (Sections C, D, E, and F are not required)

5. Date Bill of Lading submitted to the Department: 12/2/2016                      b. cDEP Transaction ID: 886035  
(mm/dd/yyyy) \_\_\_\_\_

6. Period of Generation Associated with this Bill of Lading                      12/5/2016                      to 12/9/2016  
(mm/dd/yyyy) \_\_\_\_\_                      (mm/dd/yyyy) \_\_\_\_\_

(All sections of this transmittal form must be filled out unless otherwise noted above)

The Bill of Lading is not considered complete until the Attestation of Completion of Shipment is received by the Department.

**C. DESCRIPTION OF WASTE AND WASTE SOURCE:**

1. Contaminated Media/Debris (check all that apply):

- a. Soil     b. Groundwater     c. Surface Water     d. Sediment     e. Vegetation or Organic Debris  
 f. Demolition/Construction Waste     g. Inorganic Absorbent Materials     h. Other: \_\_\_\_\_

2. Uncontainerized Waste (check all that apply):

- a. Inorganic Absorbent Materials     b. Other: \_\_\_\_\_



Massachusetts Department of Environmental Protection  
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**C. DESCRIPTION OF WASTE AND WASTE SOURCE (cont.):**

3. Containerized Waste (check all that apply):

- a. Tank Bottoms/Sludges       b. Containers       c. Drums       d. Engineered Impoundments  
 e. Other: \_\_\_\_\_

4. Estimated Quantity: \_\_\_\_\_  Tons       Cu. Yds.       Gallons

5. Contaminant Source (check one):

- a. Transportation Accident       b. Underground Storage Tank       c. Brownfields Redevelopment  
 d. Other: \_\_\_\_\_

6. Type of Contaminant (check all that apply):

- a. Gasoline       b. Diesel Fuel       c. #2 Fuel Oil       d. #4 Fuel Oil       e. #6 Fuel Oil       f. Jet Fuel  
 g. Waste Oil       h. Kerosene       i. Chlorinated Solvents       j. Urban Fill       k. Other: \_\_\_\_\_

7. Constituents of Concern (check all that apply):

- a. As       b. Cd       c. Cr       d. Pb       e. Hg       f. EPH/TPH       g. VPH  
 h. PCBs       i. VOCs       j. SVOCs       k. Other: \_\_\_\_\_

8. If applicable, check the box for the Reportable Concentration Category of the site:

- a. RCS-1       b. RCS-2       c. RCGW-1       d. RCGW-2

9. Remediation Waste Characterization Documentation (check at least one):

- a. Site History Information       b. Sampling Analytical Methods and Procedures       c. Laboratory Data  
 d. Field Screening Data       e. Characterization Documentation previously submitted to the Department  
i. Date submitted: \_\_\_\_\_ ii. Type of Documentation: \_\_\_\_\_  
(mm/dd/yyyy) \_\_\_\_\_

**D. TRANSPORTER OR COMMON CARRIER INFORMATION:**

1. Transporter/Common Carrier Name: NEDT
2. Contact First Name: MICHAEL      3. Last Name: ROBERTSON
4. Street: 83 GILMORE DRIVE      5. Title: PRESIDENT
6. City/Town: SUTTON      7. State: MA      8. Zip Code: 015900000
9. Telephone: 8667691621      10. Ext: \_\_\_\_\_      11. Email: mrobertson@nedtinc.com



Massachusetts Department of Environmental Protection  
Bureau of Waste Site Cleanup

BILL OF LADING (pursuant to 310 CMR 40.0030)

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**E. RECEIVING FACILITY/TEMPORARY STORAGE LOCATION:**

1. Operator/Facility Name: WASTE MANAGEMENT OF NH (TREE)  
2. Contact First Name: ELLEN 3. Last Name: BELLIO  
4. Street: 90 ROCHESTER NECK ROAD 5. Title: WASTE APPROVALS MANAGER  
6. City/Town: ROCHESTER 7. State: NH 8. Zip Code: 038397065  
9. Telephone: 8009634776 10. Ext: \_\_\_\_\_ 11. Email: ebellio@wm.com

12. Type of facility: (check one)

a. Temporary Storage      i. Period of Temporary Storage      to  
(mm/dd/yyyy)      (mm/dd/yyyy)

ii. Reason for Temporary Storage:

b. Asphalt Batch/Hot Mix     c. Landfill/Disposal     d. Landfill/Structural Fill     e. Landfill/Daily Cover  
 f. Asphalt Batch/Cold Mix     g. Thermal Processing     h. Incinerator     i. Other: \_\_\_\_\_

13. Division of Hazardous Waste/Class A Permit Number:

14. Division of Solid Waste Permit Number: DES-SW-SP-95-001

15. EPA Identification Number:

**F. LSP SIGNATURE AND STAMP:**

I attest under the pains and penalties of perjury that I have personally examined and am familiar with this submittal form, including any and all documents accompanying this submittal. In my professional opinion and judgment based upon application of (i) the standard of care in 309 CMR 4.02(1), (ii) the applicable provisions of 309 CMR 4.02(2) and (3), and 309 CMR 4.03(2), and (iii) the provisions of 309 CMR 4.03(3), to the best of my knowledge, information and belief, the assessment action(s) undertaken to characterize the Remediation Waste which is (are) the subject of this submittal for acceptance at the facility identified in this submittal comply with applicable provisions of 310 CMR 40.0000, and such facility is permitted to accept Remediation Waste having the characteristics described in this submittal.

I am aware that significant penalties may result, including, but not limited to, possible fines and imprisonment, if I submit information which I know to be false, inaccurate or materially incomplete.

1. LSP #:

2. First Name:

3. Last Name:

4. Telephone:

5. Ext:

6. Email:

7. Signature:

9. LSP Stamp:

8. Date:

(mm/dd/yyyy)



Massachusetts Department of Environmental Protection  
Bureau of Waste Site Cleanup

**BILL OF LADING (pursuant to 310 CMR 40.0030)**

**BWSC 112**

Release Tracking Number  
2 - 19956

**G. PERSON SUBMITTING BILL OF LADING:**

1. Check all that apply:     a. change in contact name     b. change of address     c. change in the person undertaking response actions
2. Name of Organization: THE KELLY CO INC
3. Contact First Name: JJ                  4. Last Name: KELLY
5. Street: 27 JOHNSON ROAD                  6. Title: \_\_\_\_\_
7. City/Town: STERLING                  8. State: MA                  9. Zip Code: 015640000
10. Telephone: 9788704447                  11. Ext: \_\_\_\_\_
12. Email: jikelly123@aol.com

**H. RELATIONSHIP TO SITE OF PERSON SUBMITTING BILL OF LADING:**

Check here to change relationship

1. RP or PRP     a. Owner     b. Operator     c. Generator     d. Transporter

e. Other RP or PRP    Specify: \_\_\_\_\_

2. Fiduciary, Secured Lender or Municipality with Exempt Status (as defined by M.G.L. c. 21E, s. 2)

3. Agency or Public Utility on a Right of Way (as defined by M.G.L. c. 21E, s. 5(j))

4. Any Other Person Undertaking Response Actions:    Specify Relationship: \_\_\_\_\_

**I REQUIRED ATTACHMENT AND SUBMITTALS:**

1. Check here if the Response Action(s) on which this opinion is based, if any, are (were) subject to any order(s), permit(s) and/or approvals issued by DEP or EPA. If the box is checked, you must attach a statement identifying the applicable provisions thereof.
2. Check here if any non-updatable information provided on this form is incorrect, e.g. Release Address/Location Aid. Send corrections to [BWSC.eDEP@state.ma.us](mailto:BWSC.eDEP@state.ma.us)
3. Click here to certify that the LSP Opinion containing the material facts, data, and other information is attached.

**J. CERTIFICATION OF PERSON SUBMITTING BILL OF LADING:**

1.1. \_\_\_\_\_, attest under the pains and penalties of perjury (i) that I have personally examined and am familiar with the information contained in this submittal, including any and all documents accompanying this transmittal form, (ii) that, based on my inquiry of those individuals immediately responsible for obtaining the information, the material information contained in this submittal is, to the best of my knowledge and belief, true, accurate and complete, and (iii) that I am fully authorized to make this attestation on behalf of the entity legally responsible for this submittal. I/the person or entity on whose behalf this submittal is made am/is aware that there are significant penalties, including, but not limited to, possible fines and imprisonment, for willfully submitting false, inaccurate, or incomplete information.

2. By: \_\_\_\_\_                  3. Title: \_\_\_\_\_

4. For: THE KELLY CO INC                  5. Date: \_\_\_\_\_  
(Name of person or entity recorded in Section G)                  (mm/dd/yyyy)



Massachusetts Department of Environmental Protection  
Bureau of Waste Site Cleanup

**BILL OF LADING (pursuant to 310 CMR 40.0030)**

**BWSC 112**

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**2 - 19956**

**J. CERTIFICATION OF PERSON SUBMITTING BILL OF LADING (cont.):**

6. Check here if the address of the person providing certification is different from address recorded in Section G.

7. Street: \_\_\_\_\_

8. City/Town: \_\_\_\_\_ 9. State: \_\_\_\_\_ 10. Zip Code: \_\_\_\_\_

11. Telephone: \_\_\_\_\_ 12. Ext: \_\_\_\_\_ 13. Email: \_\_\_\_\_

**YOU ARE SUBJECT TO AN ANNUAL COMPLIANCE ASSURANCE FEE OF UP TO \$10,000 PER BILLABLE YEAR FOR THIS DISPOSAL SITE. YOU MUST LEGIBLY COMPLETE ALL RELEVANT SECTIONS OF THIS FORM OR DEP MAY RETURN THE DOCUMENT AS INCOMPLETE. IF YOU SUBMIT AN INCOMPLETE FORM, YOU MAY BE PENALIZED FOR MISSING A REQUIRED DEADLINE.**

Date Stamp (MassDEP USE ONLY):

Received by DEP on 2/16/2017 2:37:30 PM



Massachusetts Department of Environmental Protection  
Bureau of Waste Site Cleanup

BWSC 112A

BILL OF LADING (pursuant to 310 CMR 40.0030)

SUMMARY OF SHIPMENT SHEET 1 OF 1

Release Tracking Number

2 - 19956

A. SUMMARY OF SHIPMENT (To be filled out by the receiving facility upon receipt of Remediation Waste):

1. Date of Shipment: (mm/dd/yyyy)	2. Date of Receipt: (mm/dd/yyyy)	3. Number of Loads Shipped:	4. Daily Volume Shipped: <input type="checkbox"/> yds <sup>3</sup> <input checked="" type="checkbox"/> tons <input type="checkbox"/> gats
12/7/2016	12/7/2016	1	13.80
12/8/2016	12/8/2017	1	16.81
1/26/2017	2/14/2017	1	0.81
5. Totals Recorded on this Summary of Shipment Sheet:	3	31.42	



Massachusetts Department of Environmental Protection  
Bureau of Waste Site Cleanup

BWSC 112B

Release Tracking Number

2

- 19956

**BILL OF LADING (pursuant to 310 CMR 40.0030)**  
**SUMMARY SHEET SIGNATURE PAGE**

---

**A. ACKNOWLEDGEMENT OF RECEIPT OF REMEDIATION WASTE AT RECEIVING FACILITY OR TEMPORARY STORAGE:**

1. I, ROBERT S MAGNUSSON, attest under the pains and penalties or perjury (i) that I have personally examined and am familiar with the information contained in this submittal, including any and all documents accompanying this transmittal form, (ii) that, based on my inquiry of those individuals immediately responsible for obtaining the information, the material information contained in this submittal is, to the best of my knowledge and belief, true, accurate and complete, and (iii) that I am fully authorized to make this attestation on behalf of the entity legally responsible for this submittal. I/the person or entity on whose behalf this submittal is made am/is aware that there are significant penalties, including, but not limited to, possible fines and imprisonment, for willfully submitting false, inaccurate, or incomplete information.

2. By: ROBERT S MAGNUSSON 3. Title: SENIOR DISTRICT MANAGER

4. For: WASTE MANAGEMENT OF NH (TREE) 5. Date: 2/16/2017  
(mm/dd/yyyy)

6. Date of Final Shipment associated with this Bill of lading: 2/14/2017  
(mm/dd/yyyy)

---

**B. ACKNOWLEDGEMENT OF SHIPMENT AND RECEIPT OF REMEDIATION WASTE BY PERSON CONDUCTING RESPONSE ACTIONS ASSOCIATED WITH THIS BILL OF LADING:**

1. I, J.J. KELLY, attest under the pains and penalties or perjury (i) that I have personally examined and am familiar with the information contained in this submittal, including any and all documents accompanying this transmittal form, (ii) that, based on my inquiry of those individuals immediately responsible for obtaining the information, the material information contained in this submittal is, to the best of my knowledge and belief, true, accurate and complete, and (iii) that I am fully authorized to make this attestation on behalf of the entity legally responsible for this submittal. I/the person or entity on whose behalf this submittal is made am/is aware that there are significant penalties, including, but not limited to, possible fines and imprisonment, for willfully submitting false, inaccurate, or incomplete information.

2. By: J.J. KELLY 3. Title: PRESIDENT - THE KELLY CO., INC.

4. For: THE KELLY CO INC 5. Date: 2/15/2017  
(Name of person or entity recorded in Section G)  
(mm/dd/yyyy)

6. Check here if the address of the person providing certification is different from address recorded in BWSC112 Section G.

7. Street: \_\_\_\_\_

8. City/Town: \_\_\_\_\_ 9. State: \_\_\_\_\_ 10. Zip Code: \_\_\_\_\_

11. Telephone: \_\_\_\_\_ 12. Ext: \_\_\_\_\_ 13. Email: \_\_\_\_\_

14. Check here if attaching optional supporting documentation such as copies of Load Information Summary Sheets

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

CCN222702

Form Approved, OMB No. 2050-0039

GENERATOR	UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator ID Number M P 9 7 8 8 7 0 4 4 4 7	2. Page 1 of 1	3. Emergency Response Phone 800-424-9300	4. Manifest Tracking Number <b>003260039 GBF</b>	
	5. Generator's Name and Mailing Address <b>The Kelly Company, Inc.</b> 27 Johnson Road Sterling, MA 01564		Generator's Site Address (if different than mailing address) 179 Brook Street Clinton, MA 01510			
	Generator's Phone: J.J. Kelly 978-870-4447					
	6. Transporter 1 Company Name <b>TCI of NY, LLC</b>		U.S. EPA ID Number <b>N Y R 0 0 0 2 1 1 5 4 0</b>			
	7. Transporter 2 Company Name <b>SJ Transportation Co., Inc.</b>		U.S. EPA ID Number <b>N J D 0 7 1 6 2 9 9 7 6</b>			
	8. Designated Facility Name and Site Address <b>TCI of Alabama, LLC</b> 101 Parkway East Pell City, AL 35125		U.S. EPA ID Number			
	Facility's Phone: 205-338-9997					
	9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))  1. RQ UN2315 Polychlorinated Biphenyls LIQUID 9, PGIII 50-499PPM PCB OIL IN TRANSFORMER	10. Containers No. 1	11. Total Quantity Type CM 648	12. Unit WL/Vol. K	13. Waste Codes <b>MA02</b>
		2.				
	3.					
	4.					
14. Special Handling Instructions and Additional Information  Dike and contain in case of spill. ERG-171 Emergency Contact: CHEMREC 24 Hours Time In: 8:00 Time Out: 9:30AM Broker: Cushing, Jammallo & Wheeler, Inc. Quote: 160800QN Rev						
15. GENERATOR/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.		Signature _____ Month Day Year Michael Bloom "Agent for the kelly co." 12/6/16				
16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S.		Port of entry/exit _____ Data leaving U.S.: _____				
Transporter signature (for exports only):						
17. Transporter Acknowledgment of Receipt of Materials  Transporter 1 Printed/Typed Name <b>William Sultan II</b> Signature <b>William Sultan II</b> Month Day Year <b>12/05/16</b> Transporter 2 Printed/Typed Name <b>Mike Bergstrom</b> Signature <b>M. Bergstrom</b> Month Day Year <b>12/14/16</b>						
18. Discrepancy						
18a. Discrepancy Indication Space		<input type="checkbox"/> Quantity	<input type="checkbox"/> Type	<input type="checkbox"/> Residue	<input type="checkbox"/> Partial Rejection	<input type="checkbox"/> Full Rejection
Manifest Reference Number:						
18b. Alternate Facility (or Generator)		U.S. EPA ID Number				
Facility's Phone:						
18c. Signature of Alternate Facility (or Generator)		Month Day Year				
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)						
1.	2.	3.	4.			
H141						
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a						
Printed/Typed Name <b>MICHAEL STRAGGERS</b>		Signature <b>Michael J. Stagg</b>		Month Day Year <b>12/15/16</b>		

TCI OF ALABAMA, LLC

Receiving Report for Shipment 165301

Generator: THE KELLY COMPANY, INC.

Pickup Date: 12/6/16

EPA ID#: MP9788704447

Manifest Doc#: 003260039GBF

ITEM #	GEN REF#	SERIAL #	TYPE	SIZE	PCB (ppm)	RFS DATE	GALS	LBS	KG'S
001		65097	PADMOUNT	100	110	12/6/16	183.0	6,260	2,845
QUANTITY = (1 )									
			PCB CONTAMINATED FLUID IN ELECTRICAL EQUIPMENT	100		Totals	183.0	6,260	2,845 ..

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

<b>UNIFORM HAZARDOUS WASTE MANIFEST</b>		1. Generator ID Number <b>M P 9 7 8 8 7 0 4 4 4 7</b>	2. Page 1 of <b>1</b>	3. Emergency Response Phone <b>800 698-1865</b>	4. Manifest Tracking Number <b>016972703 JJK</b>	
Generator's Site Address (if different than mailing address)						
5. Generator's Name and Mailing Address <b>The Kelly Company, Inc. 179 Brook Street Clinton MA 01510</b>		U.S. EPA ID Number <b>MAC 3 0 0 0 0 8 0 5 9</b>				
Generator's Phone: <b>9 7 8 8 7 0 - 4 4 4 7</b>		U.S. EPA ID Number <b>MAC 3 0 0 0 9 8 3 9</b>				
6. Transporter 1 Company Name <b>New England Disposal Technologies, Inc.</b>		U.S. EPA ID Number <b>VTR 0 0 0 5 1 7 0 5 2</b>				
7. Transporter 2 Company Name <b>ENPRO Services Inc</b>		U.S. EPA ID Number <b>MA02 VT02</b>				
8. Designated Facility Name and Site Address <b>ENPRO Services of Vermont, Inc. 54 Avenue D Williston VT 05495</b>		U.S. EPA ID Number <b>5 K</b>				
Facility's Phone: <b>802 860-1200</b>						
<b>GENERATOR</b>	9a. HM	9b. U.S. DOT Description (Including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any)) <b>1. RQ UN2315, Polychlorinated biphenyls, liquid 9. PGII</b>	10. Containers No. <b>1</b> Type <b>DM</b>	11. Total Quantity <b>5</b>	12. Unit Wt./Vol. <b>K</b>	
	2.					
	3.					
	4.					
14. Special Handling Instructions and Additional Information <b>Job# 01-18787</b>		<b>1378481 VT-0117-24445 Fuel Oil / Water ERG#171 Unique Drum # 12617 Out of Service Date: 01-26-17</b>				
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.						
Generator's/Offeror's Printed/Typed Name <b>JOSEPH M. JAMMELL</b>		Signature <b>X</b>		Month <b>01</b>	Day <b>26</b>	Year <b>17</b>
INT'L		16. International Shipments <input checked="" type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S.		Port of entry/exit: _____ Date leaving U.S.: _____		
TRANSPORTER		17. Transporter Acknowledgment of Receipt of Materials Transporter 1 Printed/Typed Name <b>Shawn McCall</b>		Signature <b>lll</b>		
DESIGNATED FACILITY		Transporter 2 Printed/Typed Name <b>Mike Seven</b>		Signature <b>2012017</b>		
18. Discrepancy		<input type="checkbox"/> Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection				
18a. Discrepancy Indication Space		Manifest Reference Number: _____				
18b. Alternate Facility (or Generator) Facility's Phone: _____		U.S. EPA ID Number Month <b>1</b> Day <b>1</b> Year <b>17</b>				
18c. Signature of Alternate Facility (or Generator) Printed/Typed Name <b>Jeff Frederick</b>		Signature <b>HJ Frederick</b>				
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)						
1. <b>1144</b>		2. _____		3. _____		
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a Printed/Typed Name <b>Jeff Frederick</b>		Signature <b>HJ Frederick</b>		Month <b>01</b> Day <b>31</b> Year <b>17</b>		

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***APPENDIX H***

***Public Notification Documentation***

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# CUSHING, JAMMALLO & WHEELER, INC.

February 15, 2017

File: 5812D

Mr. Michael Ward  
Town Administrator  
Town Hall  
242 Church Street  
Clinton, Massachusetts 01510

Stephen Lipka, Chairman  
Board of Health  
Town Hall  
242 Church Street  
Clinton, Massachusetts 01510

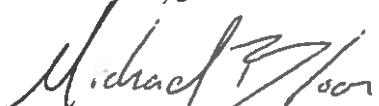
**RE: *Self-Implementing Procedure Completion Report, Immediate Response Action Completion Report & Permanent Solution Statement with Conditions (No Activity and Use Limitation Required)***  
***PCBs in Soil***  
***179 Brook Street***  
***Clinton, Massachusetts***  
***MA DEP Release Tracking No. 2-19956***

Dear Mr. Ward and Mr. Lipka;

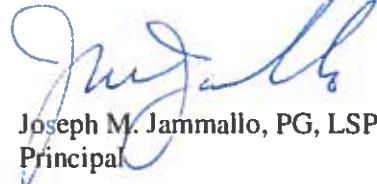
In accordance with the Massachusetts Contingency Plan (MCP) [(310 CMR 40.1403(3)(c) and (f)] and on behalf of the Kelly Company, Inc., the purpose of this letter is to notify your office that a Self-Implementing Procedure (SIP) Completion Report, Immediate Response Action (IRA) Completion Report and Permanent Solution (PS) Statement with Conditions has been submitted to the Massachusetts Department of Environmental Protection (MA DEP) and the United States Environmental Protection Agency (US EPA) for the above-referenced property. The property has been listed by the MA DEP as Release Tracking Number (RTN) 2-19957 associated with the detection of polychlorinated biphenyls (PCBs) in soil which constituted an Imminent Hazard (IH) under the MCP (310 CMR 40.0320), the source of which was determined to be a PCB containing pad-mounted transformer formerly utilized at the site (removed during IRA activities). As discussed in detail in the enclosed report, the IH condition has been remediated, and the Condition of the PS Statement is the implementation of Best Management Practices (BMPs) for potential future residential gardening at the site. A copy of the SIP Completion Report, IRA Completion Report and PS Statement with Conditions is included on the enclosed compact disk (CD), and may be viewed at the MA DEP Central Regional Office located in Worcester, Massachusetts, or online via eDEP under the aforementioned RTN.

Please do not hesitate to contact us if you should have any questions.

Very Truly Yours,  
CUSHING, JAMMALLO & WHEELER, INC.



Michael L. Bloom  
Project Manager



Joseph M. Jammallo, PG, LSP  
Principal

464 High Street  
Clinton, MA 01510  
Tel. 978.368.6320

C: The Kelly Company;  
MADEP, Central Regional Office, Bureau of Waste Site Cleanup

Enclosures:

SIP Completion Report, IRA Completion Report and PS Statement with Conditions on  
CD

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**APPENDIX I**

*Photographic Logs*

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Photo 1: 5/18/2016. View looking southeast at former PCB containing transformer prior to removal/remediation.



Photo 2: 12/6/2016. View looking east at southern portion of excavation area prior to removal of PCB containing transformer.

## Photographic Log



Photo 3: 12/6/2016. View looking southwest at PCB containing transformer during removal.



Photo 4: 12/6/2016. View looking northeast at central portion of excavation area following the removal of PCB containing transformer and pad.

## Photographic Log



Photo 5: 12/6/2016. View looking southeast at southern extent of excavation area (prior to additional excavation conducted 12/15/2016).



Photo 6: 12/6/2016. View looking northeast at central portion of excavation area showing electrical conduits and building foundation wall.

## Photographic Log



Photo 7: 12/6/2016. View looking northeast at northernmost area of excavation (prior to additional excavation conducted 12/15/2016).



Photo 8: 12/6/2016. View looking south at completed excavation area (prior to additional excavation conducted 12/15/2016).

## Photographic Log



Photo 9: 12/15/2016. View looking north at additional soil excavation activities at northern sidewall of excavation area (A9 North SW Sample Area).



Photo 10: 12/15/2016. View looking southeast at additional excavation activities at base of excavation (B-1 Bot Sample Area).

## Photographic Log