OHI Engineering, Inc.
Engineers & Environmental Scientists

IMMEDIATE RESPONSE ACTION STATUS REPORT

20 KRASEMAN STREET
DARTMOUTH, MASSACHUSETTS 02748
RTN 4-27576

Prepared for:

ROCKWOOD PROPERTIES, LLC
286 UNION STREET
NEW BEDFORD, MA 02740

Prepared by:

OHI ENGINEERING, INC.
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OHI PROJECT # 19-1925

Report Date:

MARCH 15, 2019

OHI Engineering, Inc.
Engineers & Environmental Scientists

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Mansfield, MA 02048
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March 15, 2019

MassDEP – BWSC
Attention Andrew Jones
20 Riverside Drive
Lakeville, MA 02347

Re: Immediate Response Action (IRA) Status Report
20 Kraseman Street
Dartmouth, MA 02748
RTN 4-27576

Dear Mr. Jones:

On behalf of Rockwood Properties LLC. (Rockwood), the property owner, OHI Engineering, Inc. (OHI) is forwarding the enclosed IRA Plan for detected concentrations of polychlorinated biphenyls (PCBs) that are present in surface soil and an Imminent Hazard (IH) tracked under Release Tracking Number (RTN) 4-27576 at the property known as 20 Kraseman Street, in Dartmouth, Massachusetts. This document has been prepared as a voluntary measure by Rockwood to assist and support the efforts of the Massachusetts Department of Environmental Protection (MassDEP) and the Dartmouth Board of Health (BOH) with their investigations of fill material in the residential neighborhoods in the Site vicinity, known as Bliss Corner.

Sincerely,

OHI ENGINEERING, INC.

Brian G. Snow, P.G., LSP, LEP
Senior Project Manager

James R. Borrebach, P.E., L.S.P.
Principal

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1.0 SUMMARY

1.1 Purpose

In accordance with the requirements of 310 CMR 40.0425 of the Massachusetts Contingency Plan (MCP) Rockwood Properties, LLC (Rockwood) and OHI Engineering, Inc. (OHI) are submitting this Immediate Response Action (IRA) Status Report for detected concentrations of polychlorinated biphenyls (PCBs) that are present in surface soil and pose an Imminent Hazard (IH) tracked under Release Tracking Number (RTN) 4-27576 at the property known as 20 Kraseman Street, in Dartmouth, Massachusetts 02748 (the "Site"), see **Figure 1 – Site Locus**. The release is located at 41º 37' 00.120" North and 70º 56' 25.198" West or UTM coordinates 4609047 mN and 338126 mE.

At approximately 3:34 PM on December 3, 2018, the Massachusetts Department of Environmental Protection (MassDEP) was orally notified of a detection of PCBs in Site soil, which could pose an IH condition, and represented a 2-hour reporting condition. MassDEP issued Release Tracking Number (RTN) 4-27576. On January 18, 2019, OHI, on behalf of Rockwood, submitted an IRA Plan to meet MassDEP's Interim Deadline for the submission of the IRA Plan. OHI has been in contact with MassDEP on several occasions by email and telephone to discuss ongoing response actions.

The Immediate Response Action Transmittal Form (BWSC-105) is being submitted concurrently with this report electronically via eDEP.

1.2 Reason for Immediate Response Action

The IRA is being conducted to address detected concentrations of PCBs, metals and Polycyclic Aromatic Hydrocarbons (PAHs) and Metals in Urban Ash Fill observed at the Site to depths of approximately 4.5 feet. This IRA Plan has been prepared to: (1) document activities performed to date; and, (2) describe additional IRA activities to be conducted.

1.3 Background

Based on discussions with representatives of Rockwood Properties, LLC (Rockwood) in late 2018, MassDEP and the Dartmouth Board of Health (BOH) were walking the neighborhood during a Site visit of another property in the vicinity. BOH and MassDEP were investigating fill material consistent with urban ash fill material including drums at 85 McCabe Street (RTN 4-27363) discovered during the demolition and earthwork for the replacement of a single-family residence. Rockwood is not, nor has ever been an owner or operator of the 85 McCabe property. MassDEP was concerned that the surrounding area may have once been used as a landfill. MassDEP observed urban ash fill materials on 20 Kraseman owned by Rockwood, and 21 Kraseman and 31 McCabe Street, owned by Mason Realty & Development, LLC (Mason). MassDEP informally requested that Rockwood and Mason test the observed fill materials. Rockwood and Mason contracted East Coast Engineering, Inc. (East Coast) to characterize the urban ash fill soil.

Based on available draft information compiled by East Coast soil samples were collected as follows:

20 Kraseman Street:

- Soil Sample S-1 (0-3 ft) 11/19/2018
  - Volatile Organic Compounds (VOCs)
  - Semi-Volatile Organic Compounds (SVOCs)
  - RCRA-8 Metals
  - Toxicity Characteristic Leaching Procedure (TCLP) lead
  - Polychlorinated biphenyls (PCBs)
- Soil Sample S-1 (3-4 ft) 11/19/2018
  - RCRA-8 Metals
- Soil Sample S-2 (0-3 ft) 11/19/2018
  - VOCs
  - SVOCs
  - RCRA-8 Metals
  - TCLP lead
  - PCBs
- Soil Sample Composite S1 (0-3 ft)/S2 (0-3 ft) 11/19/2018
  - PCBs
  - Total Petroleum Hydrocarbons (TPH)

Reported detections of PCBs are above MassDEP Reportable Concentrations. The detection of PCBs at concentrations greater than 10 milligrams per kilogram (mg/kg) within 12 inches of the surface may represent a two-hour reporting condition to MassDEP as a potential Imminent Hazard (IH). MassDEP was notified by East Coast on December 3, 2018. MassDEP imposed an interim deadline of January 18, 2019 for the receipt of an Immediate Response Action (IRA) Plan and requested the lot be fenced. The lot was fenced by the owner in December 2018. The sampling procedures used do not differentiate concentrations of contaminants in the top 12 inches and therefore samples collected from 0-3 feet were used by East Coast to trigger the reporting requirement. The Laboratory Reports were included in the IRA Plan and are summarized in **Table 1**.

Based on OHI's preliminary review of the data, the urban ash fill is characterized by metals concentrations consistent with published background values for Urban Ash Fill. The majority of detected metals concentrations suggest metals and polycyclic aromatic hydrocarbons (PAHs) are likely exempt from reporting as due to the presence of coal, coal ash and/or wood ash. Further evaluation of existing and new site data is necessary to determine the applicability of potential exemptions and local background conditions.

OHI visited the Site with Rockwood on January 10, 2019. Based on observations of surrounding properties and neighborhood, the geomorphology of the area suggests a former wetland area was historically filled to create the neighborhoods along and around McCabe and Kraseman Streets. West of the Site and west of Grant Street, Kraseman Street terminates and restarts several times

as one progresses west to Rockdale Heights and Buttonwood Brook to the west. At each of these breaks in the street, a wooded strip with characteristics of a wetland exists.

Fill material observed by OHI is typical of Urban Ash fill material. Ash, slag, brick, and glass bottles were observed in the fill material. According to Rockwood, the Urban Ash fill material extends to a depth of approximately 4.5 feet in the Site vicinity. Based on observations of surrounding properties, Urban Ash Fill material may extend throughout the surrounding area and properties.

During OHI's visit to the Site, 20 Kraseman was fenced. Based on discussions with Mr. Medeiros, MassDEP has inspected the fence and indicated it was sufficient to mitigate the potential IH condition.

OHI contacted Andrew Jones at MassDEP on January 14, 2019 for a summary of events that lead to the sampling and reporting. Mr. Jones indicated MassDEP was contacted by the BOH to review Site conditions at 85 McCabe (now RTN 4-27363) as a result of buried waste including drums discovered in the summer of 2018. BOH also noted uncovering several newspaper (Standard Times) articles from 1939 noting dumping in the McCabe Street area. Copies of these articles were included in the IRA Plan. MassDEP walked the surrounding neighborhoods and observed site preparation activities at the subject parcels. MassDEP requested sampling of soil at the subject parcels.

OHI conducted preliminary research of the Registry of Deeds Bristol South electronic records. Based on OHI's experience with other Sites in the New Bedford area, these records are useful to document the timeframe of subdivisions and developments in the area. Historic filling activities similar to these normally precede and/or coincide with subdivisions and/or development. Based on plans available from the Registry of Deeds, house lots were divided for 20 and 21 Kraseman Street and the Rockdale Avenue end of Kraseman were laid out in a Plan of Land, December 7, 1922. A Plan and Profile for Sewer McCabe Street from Rockdale Ave. Westerly 475', 1923 was also available. Additional plans show sidewalks added to McCabe Street in or around 1955. These maps suggest filling of the subject properties occurred before or in the period around the 1920s assuming (consistent with practices of the time) sidewalks were added when established houses were already present. A plan from August 8, 1955 shows residential structures on lots on Kraseman Street. The Laurel Park Plan House Lots from August 1909 shows lot layouts west of Grant Street. Copies of several of these maps were included in the IRA Plan. While not the focus of this assessment, similar development maps were viewed on line at the Registry of Deeds for the neighborhoods to the west.

1.4 Site Address

The Site address is:

20 Kraseman Street
Dartmouth, MA 02748

The Site location is illustrated on **Figure 1 – Site Locus Map**.

1.5 Contact Information

The entity conducting the IRA is:

Rockwood Properties , LLC
Mr. Kevin Medeiros, Managing Member
286 Union Street
New Bedford, MA 02740
(508) 294-3472

The Licensed Site Professional is:

Brian G. Snow, P.G., LSP, LEP
OHI Engineering, Inc.
44 Wood Avenue
Mansfield, MA 02048
(508) 339-3929

2.0 RELEASE DESCRIPTION & PROPERTY CHARACTERISTICS

2.1 Release Description

On December 3, 2018, soil sampling data collected by East Coast at the Site was received and reviewed. The detections of PCBs which may be in surface soil constituted a potential IH condition. Christine LeBlanc of East Coast, verbally notified the MassDEP of a potential IH condition at the Site. The nature of the PCBs at the Site appears to be related to Urban Ash Fill identified at the Site and surrounding neighborhoods.

PCBs identified as Aroclor 1254 was detected in soil sample S1 (0-3ft.) at 25.9 Milligrams per Kilogram (mg/kg), in soil sample S2 (0-3ft.) at 40.7 mg/kg. PAHs and lead were also detected in excess of their respective RCS-1Reportable Concentrations. Given the nature of the Urban Ash Fill in the Site vicinity, these detections may be exempt from reporting and/or may represent regional background concentrations.

2.2 Property Characteristics

2.2.1 Property Description

Parcel identification from the City of Dartmouth Assessor was not immediately identifiable for the property and data is not current. The lot is currently owned by Rockwood.

The Site property consists of approximately 8,300 square feet in one parcel located in a predominantly residential area of Dartmouth and is surrounded by residential properties. The Site is located on the South side of Kraseman Street. The Property is zoned as GR (residential) in Dartmouth, Massachusetts. A USGS topographical site locus is provided as **Figure 1**. A Site Plan is include as **Figure 2**. A MassDEP Phase I Site Assessment Map is provided as **Figure 3**.

2.2.2 Current Uses of the Property

The construction of a single-family home is nearing completion. The Site is currently not occupied and is surrounded by fencing.

2.2.3 Owners and Occupants of the Property

The property is currently owned by the Rockwood. The property was purchased on January 10, 2018 from Robert A. Ramos. The property was reconstructed with a new single family residence by Rockwood in 2018. With the exception of the construction crews for the new residence, the property has been vacant in 2018 to present. Construction activities have ceased at the property and it is currently unoccupied. Rockwood had no ownership interest in nor operated at the parcel prior to 2018, and did not cause or contribute to the detected release in historical urban ash fill at the Site. Rockwood is an Eligible Person as outlined in MGL 21E.

2.2.4 Current Status of Property Vicinity

Properties in the immediate vicinity of the Site were visually examined from curbside and are all residential. The Site is surrounded as follows:

North – Kraseman Street and residential properties. Urban Ash Fill was observed in surface soil at in the Right of Way of Kraseman Street adjacent to the Site and at 23 Kraseman Street across the Street from the Site.

South – Urban Ash fill was observed at 21 and 31 McCabe Street properties. Urban Ash Fill was observed in the gardens of other residential properties on McCabe Street south of the Site. Based on conversations with MassDEP, private drinking water wells are located southwest of the Site on East Wordell Street. According to telephone conversations with MassDEP on January 23, 2019, water supply wells are located at #12, #17, # 21 and #144 East Wordell Street. MassDEP sampled groundwater from water supply wells along East Wordell Street and no contaminants were identified. These wells are approximately 500 feet or more from the Site. The exact location of these wells or which properties were sampled were not disclosed by MassDEP.

East – Single-family residences along Kraseman Street and Rockdale Avenue further east.

West – Single-family residences. Residential properties continue to the west and Grant Street beyond.

2.2.5 Soil and Groundwater Categories

2.2.5.1 Soil Categories

Currently the Site is under construction and fenced. Residential lots abut the Site and residential use is expected to return. Soil within three feet of the surface at the Site meets the criteria established for Soil Category S-1 as outlined in 310 CMR 40.0933 and as shown on Table 40.0933(9). RCS-1 applies to the Site.

2.2.5.2 Groundwater Categories

Groundwater is encountered in shallow excavations at the Site and is anticipated to be less than five feet from surface grade. GW-2 applies to the Site. Groundwater at the Property meets the criteria for categorization as GW-3. There are no private wells at the Site. GW-1 may apply to the Site. According to telephone conversations with MassDEP on January 23, 2019, water supply wells are located at #12, #17, # 21 and #144 East Wordell Street. The closest of these to the Site is #12 Wordell Street. This property is approximately 500 feet from the Site. MassDEP sampled groundwater from several of these drinking water wells and did not identify any contaminants. According to the DEP GIS map, drinking water supply wells are not located in the vicinity.

3.0 STATUS OF IMMEDIATE RESPONSE ACTIONS

An assessment only IRA Plan was initiated in December 2019 by East Coast. The data is discussed above. Rockwood fenced the property in December 2018. MassDEP inspected the fencing and accepted the fencing as a means for restricting access to the Site with respect to the potential IH condition. OHI also inspected the fence on January 10, 2019 and it remains in good condition. According to telephone conversations with MassDEP on March 8, 2019, the orange construction fence was in place during their visit the previous week. Rockwood is adding polyethylene sheeting to the stockpiled soil and is in the process of upgrading the fencing.

On February 5, 2019, OHI completed a series of shallow test pits at the Site to characterize the soil and fill material at the Site to depths of approximately five feet. Soil samples were collected from surface grade to one foot in depth in each test pit. Soil samples were also collected at various other depths ranging from two to four feet to characterize soil at depth. Soil samples were collected for analysis of PCBs by EPA Method 8082. Select soil samples were collected for analysis of RCRA-8 Metals, total lead, and or Extractable Petroleum Hydrocarbons (EPH).

The test pits and soil sampling locations are shown in **Figures 2**. Test Pit logs are shown in **Appendix A** and select photographs are shown in **Appendix B**. OHI conducted internet research of bottles identified during testing. Select Photographs of the bottles are included in **Appendix C**. Approximate dates on bottle production/use are shown in **Appendix C**. Laboratory results are summarized in **Table 1** and Laboratory Reports are included as **Appendix D**. Microscopy laboratory reports are included in **Appendix E**.

Four test pits (TP-12 through TP-15) were advanced at 20 Krasemen Street. The test pits were characterized by various amounts of urban ash fill material. Two soil samples (20-S-1 and 20-S-2) in the vicinity of soil samples collected by East Coast to determine concentrations in soil at depths to one foot. Groundwater was encountered at a depth of approximately four feet. Based on saturated soil from the bottom of the test pits, fill material ends at depths of approximately four to five feet.

Concentrations of PCBs identified as Aroclor 1254 were detected in soil samples from 0-1 foot at concentrations of 0.361 mg/kg to 960 mg/kg. Concentrations of PCBs in the samples collected at depths of 2-4 feet identified concentrations of PCBs below 1 mg/kg. Based on the sampling conducted to date, PCB impacts above RCS-1 and Method 1 S-1 Standards were detected in surface soil and are not detected at depth.

Based on the detection of PCBs in surface soil at the Site (up to 960 mg/kg) the soil is defined as PCB remediation waste by 40 CFR 761.3. These detections fall under the jurisdiction of the United States Environmental Protection Agency (EPA) under the Toxic Substance Control Act (TSCA). The remediation of this material will require notification/approvals from EPA as well as MassDEP under the MCP.

Lead was identified at concentrations up to 566 mg/kg, below MassDEP's published background

levels of lead in urban ash fill material. Based on sample from East Coast, the lead does not classify the soil as hazardous waste (for lead) as the Toxicity Characteristic Leaching Procedure (TCLP) was below 5 mg/L. Elevated concentrations of other metals were not detected. Extractable Petroleum Hydrocarbons (EPH) was not detected in excess of RCS-1 Standards.

Investigation proposed in the IRA Plan has been completed. As a result of the PCB impacts in surface soil, the property is to be remediated under the MCP and/or TSCA. The estimated cost of reporting, sampling, removing and disposing of surface soil (0-1 foot) impacted with PCBs in accordance with TSCA at the Site is expected to reach or exceed $150,000. Rockwood does not have the financial resources to remediate this parcel. Rockwood is submitting a Notice of Financial Inability in accordance with 310 CMR 40.0172. Actions in the immediate future will be limited to maintaining the stockpile covering and the fence.

Fill material is prevalent throughout the Bliss Corner area, which was deposited well before Rockwood took ownership of 20 Kraseman Street. Rockwood cooperated with an informal request from MassDEP to sample urban ash fill observed on the property. Rockwood did not cause or contribute to the release, is an Eligible Person, and is not responsible for fill material or contaminants outside the property boundary. Rockwood has also been in regular contact with MassDEP and is voluntarily providing this Status Report with current data well before the required reporting deadline in order to assist MassDEP and BOH with their investigation.

MassDEP is working with BOH to develop a neighborhood sampling program. According to MassDEP, a public meeting with MassDEP and BOH is scheduled for Thursday March 1, 2019 at 6:00 PM at Dartmouth High School to discuss MassDEP and BOH's preliminary investigations in the neighborhood. Data from MassDEP's pending investigations will be reviewed to determine appropriate next actions at the Site.

4.0 EVALUATION OF POTENTIAL SRM/CEP/IH CONDITIONS

Based on the detected concentrations of PCBs, an IH condition exists at the Site in the absence of fencing. The Site has been fenced with construction fencing and the soil stockpile has been covered with polyethylene sheeting. In accordance with 310 CMR 40.0321 (2)(b), the IH has been mitigated with the fence. Rockwood is in the process of upgrading the orange construction fencing on the north (Kraseman Street) and west (adjacent to 21 Kraseman Street) property lines. Fencing is already in place by abutters on the south and east property boarders. VOCs were not detected and the nature of Urban Ash Fill at the site suggest migration and/or groundwater impacts are not anticipated. Therefore, by definition under the MCP, a condition of SRM does not exist at the Site.

According to telephone conversations with MassDEP on January 23, 2019, water supply wells are located at #12, #17, # 21 and #144 East Wordell Street. MassDEP sampled groundwater from several of these drinking water wells and did not identify any contaminants. The well locations were not released publicly. Ingestion, dermal absorption, or inhalation from drinking water do not appear to be potential CEPs at this time.

5.0 REMEDIAL WASTE

No remedial waste has been generated at the Site to date. A soil stockpile exists at the Site from the foundation excavation prior to knowledge of any release.

6.0 ENVIRONMENTAL MONITORING PLAN, REQUIRED PERMITS & NOTICES

No other permits or notices are required.

OHI Engineering, Inc.
Engineers and Environmental Scientists

TABLES

Table 1
Compiled Soil Analytical Data

20 Kraseman Street

Dartmouth, MA

	S-1 GW-2	S-1 GW-3	UCLs	Background Levels	TP-12 0-1	TP-12 2-3	TP-12 3-4	TP-13 0-1	TP-13 2-3	TP-14 0-1	TP-14 2-3	TP-14 3.5-4	TP-15 0-1	TP-15 2-3	20 S1 0-1	20 S2 0-1	S1 0-3ft	S1 3-4ft	S2 0-3ft	Composite S1 0-3ft S2 0-3ft
					2/5/2019	2/5/2019	2/5/2019	2/5/2019	2/5/2019	2/5/2019	2/5/2019	2/5/2019	2/5/2019	2/5/2019	2/5/2019	2/5/2019	11/19/2018	11/19/2018	11/19/2018	11/19/2018
					OHI	OHI	OHI	OHI	OHI	OHI	OHI	OHI	OHI	OHI	OHI	OHI	ESS[1]	ESS[1]	ESS[1]	ESS[1]
					0-1'	**2-3'**	**3-4'**	**0-1'**	**2-3'**	**0-1'**	**2-3'**	**3.5-4'**	**0-1'**	**2-3'**	**0-1'**	**0-1'**	**0-3'**	**3-4'**	**0-3'**	**0-3'**
Metals EPA 6010B	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)
Arsenic, Total	20	20	500	20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**12.5**	*2.21*	**3.51**	NA
Barium, Total	1,000	1,000	10,000	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**122**	**9.82**	**72.3**	NA
Cadmium, Total	70	70	1,000	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.61**	*0.44*	**0.87**	NA
Chromium, Total	100	100	2,000	40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**7.25**	**4.65**	**6.5**	NA
Lead, Total	200	200	6,000	600	**171**	**2.80**	NA	**87.2**	*2.12*	**566**	**544**	NA	**253**	**156**	NA	NA	**139**	*4.43*	**151**	NA
Nickel, Total	600	600	10,000	30	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium, Total	400	400	7,000	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	*5.81*	*4.43*	*5.74*	NA
Silver, Total	100	100	2,000	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	*0.58*	*0.44*	**0.59**	NA
Mercury, Total	20	20	300	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.211**	*0.029*	**0.137**	NA
TCLP Metals by EPA 1311																				
Lead, TCLP (mg/Kg)	5				NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	*0.05*	NA	**0.057**	NA
VOCs EPA 8260B																				
Other 8260 VOCs					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	NA	NA
8100M Total Petroleum Hydrocarbons																				
Total Petroleum Hydrocarbons					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**52.8**
MA DEP EPH																				
n-C9 to n-C18 Aliphatic Hydrocarbons	1,000	1,000	20,000		NA	NA	NA	NA	NA	NA	NA	*10.1*	NA	NA	NA	NA	NA	NA	NA	NA
n-C19 to n-C36 Aliphatic Hydrocarbons	3,000	3,000	20,000		NA	NA	NA	NA	NA	NA	NA	**12.5**	NA	NA	NA	NA	NA	NA	NA	NA
n-C11 to n-C22 Aromatic Hydrocarbons	1,000	1,000	10,000		NA	NA	NA	NA	NA	NA	NA	*10.1*	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	20	500	10,000	1	NA	NA	NA	NA	NA	NA	NA	*0.504*	NA	NA	NA	NA	*0.908*	NA	*0.419*	NA
2-Methylnaphthalene	80	300	5,000	1	NA	NA	NA	NA	NA	NA	NA	*0.504*	NA	NA	NA	NA	*0.455*	NA	*0.419*	NA
Phenanthrene	500	500	10,000	20	NA	NA	NA	NA	NA	NA	NA	*0.504*	NA	NA	NA	NA	*0.908*	NA	*0.419*	NA
Acenaphthene	1,000	1,000	10,000	2	NA	NA	NA	NA	NA	NA	NA	*0.504*	NA	NA	NA	NA	*0.908*	NA	*0.419*	NA
Acenaphthylene	600	10	10,000	1	NA	NA	NA	NA	NA	NA	NA	*0.504*	NA	NA	NA	NA	*0.908*	NA	*0.419*	NA
Fluorene	1,000	1,000	1,000	2	NA	NA	NA	NA	NA	NA	NA	*0.504*	NA	NA	NA	NA	*0.908*	NA	*0.419*	NA
Anthracene	1,000	1,000	10,000	4	NA	NA	NA	NA	NA	NA	NA	*0.504*	NA	NA	NA	NA	*0.908*	NA	*0.419*	NA
Fluoranthene	1,000	1,000	10,000	10	NA	NA	NA	NA	NA	NA	NA	*0.504*	NA	NA	NA	NA	**0.973**	NA	*0.419*	NA
Pyrene	1,000	1,000	1,000	20	NA	NA	NA	NA	NA	NA	NA	*0.504*	NA	NA	NA	NA	**1.32**	NA	**0.596**	NA
Benzo[a]anthracene	7	7	3,000	9	NA	NA	NA	NA	NA	NA	NA	*0.504*	NA	NA	NA	NA	*0.908*	NA	*0.419*	NA
Chrysene	70	70	10,000	7	NA	NA	NA	NA	NA	NA	NA	*0.504*	NA	NA	NA	NA	**0.492**	NA	**0.225**	NA
Benzo[b]fluoranthene	7	7	3,000	8	NA	NA	NA	NA	NA	NA	NA	*0.504*	NA	NA	NA	NA	*0.908*	NA	*0.419*	NA
Benzo[k]fluoranthene	70	70	10,000	4	NA	NA	NA	NA	NA	NA	NA	*0.504*	NA	NA	NA	NA	*0.908*	NA	*0.419*	NA
Benzo[a]pyrene	2	2	300	7	NA	NA	NA	NA	NA	NA	NA	*0.504*	NA	NA	NA	NA	**0.628**	NA	**0.253**	NA
Indeno[1,2,3-c,d]pyrene	7	7	3,000	3	NA	NA	NA	NA	NA	NA	NA	*0.504*	NA	NA	NA	NA	*0.908*	NA	*0.419*	NA
Dibenzo[a,h]anthracene	0.7	0.7	300	1	NA	NA	NA	NA	NA	NA	NA	*0.504*	NA	NA	NA	NA	*0.455*	NA	*0.210*	NA
Benzo[g,h,i]perylene	1,000	1,000	10,000	3	NA	NA	NA	NA	NA	NA	NA	*0.504*	NA	NA	NA	NA	*0.908*	NA	*0.419*	NA
PCBS																				
Aroclor 1016	1	1	100		*93.4*	*0.0361*	*0.0394*	*7.67*	*0.0367*	*0.0436*	*0.0429*	*0.0522*	*0.046*	*0.0414*	*0.849*	*4.43*	*1.4*	NA	*2.4*	*1.2*
Aroclor 1221	1	1	100		*93.4*	*0.0361*	*0.0394*	*7.67*	*0.0367*	*0.0436*	*0.0429*	*0.0522*	*0.046*	*0.0414*	*0.849*	*4.43*	*1.4*	NA	*2.4*	*1.2*
Aroclor 1232	1	1	100		*93.4*	*0.0361*	*0.0394*	*7.67*	*0.0367*	*0.0436*	*0.0429*	*0.0522*	*0.046*	*0.0414*	*0.849*	*4.43*	*1.4*	NA	*2.4*	*1.2*
Aroclor 1242	1	1	100		*93.4*	*0.0361*	*0.0394*	*7.67*	*0.0367*	*0.0436*	*0.0429*	*0.0522*	*0.046*	*0.0414*	*0.849*	*4.43*	*1.4*	NA	*2.4*	*1.2*
Aroclor 1248	1	1	100		*93.4*	*0.0361*	*0.0394*	*7.67*	*0.0367*	*0.0436*	*0.0429*	*0.0522*	*0.046*	*0.0414*	*0.849*	*4.43*	*1.4*	NA	*2.4*	*1.2*
Aroclor 1254	1	1	100		**960**	**0.301**	**0.376**	**38.5**	*0.0367*	**0.657**	*0.0429*	*0.0522*	**0.361**	**0.29**	**3.33**	**30.1**	**25.9**	NA	***40.7***	**15.4**
Aroclor 1260	1	1	100		*93.4*	*0.0361*	*0.0394*	*7.67*	*0.0367*	*0.0436*	*0.0429*	*0.0522*	*0.046*	*0.0414*	*0.849*	*4.43*	*1.4*	NA	*2.4*	*1.2*
Aroclor 1262	1	1	100		*93.4*	*0.0361*	*0.0394*	*7.67*	*0.0367*	*0.0436*	*0.0429*	*0.0522*	*0.046*	*0.0414*	*0.849*	*4.43*	*1.4*	NA	*2.4*	*1.2*
Aroclor 1268	1	1	100		*93.4*	*0.0361*	*0.0394*	*7.67*	*0.0367*	*0.0436*	*0.0429*	*0.0522*	*0.046*	*0.0414*	*0.849*	*4.43*	*1.4*	NA	*2.4*	*1.2*
PCBs Total					**960**	**0.301**	**0.376**	**38.5**	*0.0367*	**0.657**	*0.0429*	*0.0522*	**0.361**	**0.29**	**3.33**	**30.1**	**25.9**	NA	***40.7***	**15.4**

mg/Kg - Miligrams per Kilogram
Units in mg/kg unless stated otherwise
PCBS - Polychlorinated Biphenyls
NA - Not Analyzed
ND - Not Detected
ESS1 Polycyclic Aromatic Hydrocarbons (PAHs) were analyzed by EPA
Background Levels - MassDEP Background Levels of PAHs and Metals in Soil: Table 1
Italics indicate the compound was not detected above the laboratory detection limit.
Bold indicates the compound was detected

Exceeds S-1 GW2/3 Standards

OHI Engineering, Inc.
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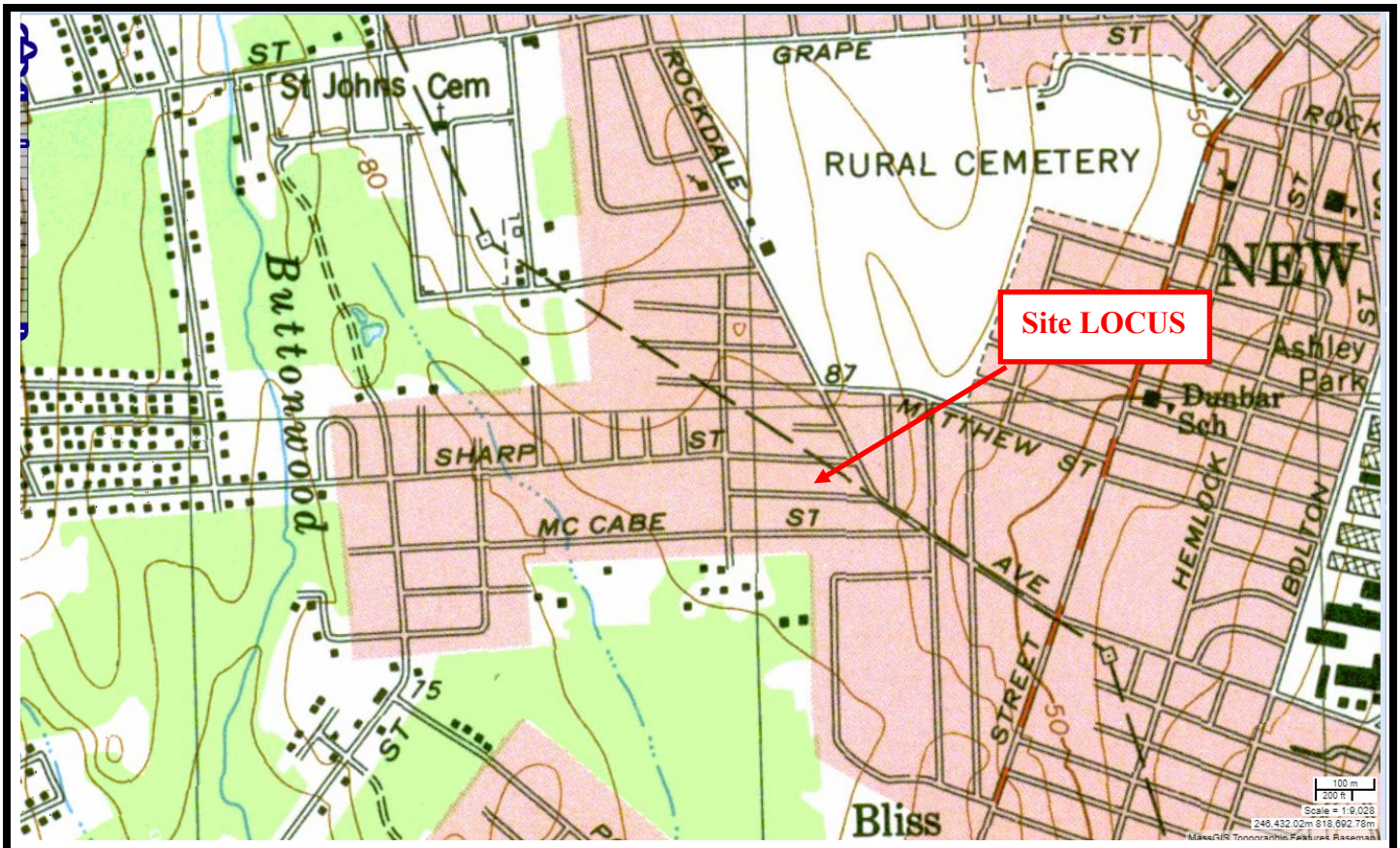
FIGURES



Site LOCUS
Figure 1

20 Kraseman Street
Dartmouth, MA

OHI
OHI Engineering, Inc.
Engineers and Environmental Scientists
44 Wood Avenue · Mansfield, MA

N
W E
S

KRASEMAN STREET

EXISTING PROPERTY LINE, TYP.

20-S1

S1

TEST PIT LOCATIONS, TYP.

TP13

TP14

TP2

EXISTING DWELLING TO BE RAZED

EXISTING FOUNDATION 28' x 48'

EXISTING FOUNDATION 28' x 48'

EXISTING DWELLING

ASSESSORS MAP 144
LOT 192
N/F
PERREIRA
15 KRASEMAN ST

ASSESSORS MAP 144
LOTS 194 & 195

TP12

ASSESSORS MAP 144
LOT 193
N/F
RAMOS PAUL D ET AL

TP15

20-S2

SOIL SAMPLE LOCATIONS, TYP.

S2

TP3

ASSESSORS MAP 144
LOT 200

ASSESSORS MAP 144
LOT 201
N/F
YU JIAN G
29 McCABE ST

EXISTING DWELLING

ENLARGED DETAIL VIEW

GRAPHIC SCALE

15 0 7.5 15 22.5 30

(IN FEET)
1 inch = 15 ft.

NOTES:

1. SITE PLAN & DETAIL SHOWN HEREON HAS BEEN DERIVED FROM AN EXISTING SITE PLAN, FOUNDATION AS-BUILT DONE BY S & K ENGINEERING, LLC., DATA FROM MASSGIS, AND A SITE VISIT PERFORMED BY THIS OFFICE. ALL LOCATIONS ARE APPROXIMATE, AND THIS PLAN SHOULD NOT BE CONSIDERED A BOUNDARY RETRACEMENT.

2. THIS FIRM HAS NOT PERFORM A SUBSURFACE UTILITY INVESTIGATION, THEREFORE DIG SAFE MUST BE NOTIFIED PRIOR TO ANY EARTH DISTURBANCE.

LEGEND:

SS-1 SOIL SAMPLE LOCATIONS OHI 02-24-2019

TP-1 TEST PIT LOCATIONS OHI 02-24-2019

PREPARED BY:
OHI Engineering, Inc.
Engineers & Environmental Scientists
44 WOOD AVENUE
MANSFIELD, MA
(508) 339-3929

NO:	REVISIONS	DATE:	BY:	CHKD:	APVD:
0	ORIGINAL	03-11-2019	BDJ	BS	JRB

PROJECT NUMBER
19-1925

PROJECT ADDRESS
McCABE STREET
KRASEMAN STREET
S. DARTMOUTH, MA

TITLE
20 KRASEMAN STREET
SITE PLAN
SHOWING SOIL SAMPLE
& TEST PIT LOCATIONS
FIGURE 2

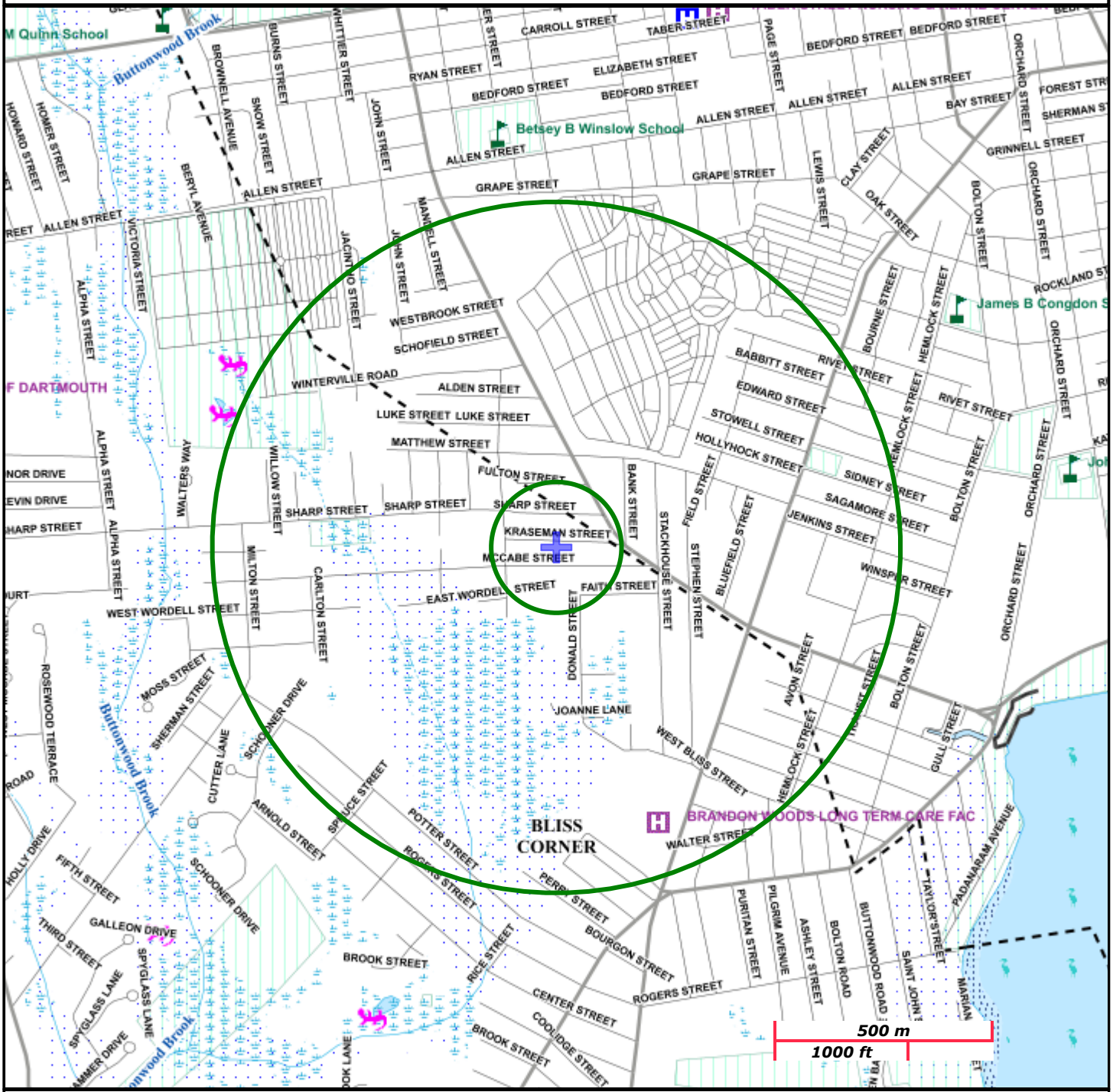
MassDEP - Bureau of Waste Site Cleanup

Phase 1 Site Assessment Map: 500 feet & 0.5 Mile Radii

Site Information:
20 KRASEMAN STREET
20 KRASEMAN STREET DARTMOUTH, MA
4-000027576
NAD83 UTM Meters:
4609047mN , 338126mE (Zone: 19)
January 18, 2019

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
Boundaries: Town, County, DEP Region; Train; Powerline; Pipeline; Aqueduct
Basins: Major, PWS; Streams: Perennial, Intermittent, Man Made Shore, Dam
Aquifers: Medium Yield, High Yield, EPA Sole Source
Non Potential Drinking Water Source Area: Medium, High (Yield)
PWS Protection Areas: Zone II, IWPA, Zone A
Hydrography: Open Water, PWS Reservoir, Tidal Flat
Wetlands: Freshwater, Saltwater, Cranberry Bog
FEMA 100yr Floodplain; Protected Open Space; ACEC
Est. Rare Wetland Wildlife Hab; Vernal Pool: Cert., Potential
Solid Waste Landfill; PWS: Com.GW,SW, Emerg., Non-Com.

OHI Engineering, Inc.
Engineers and Environmental Scientists

APPENDIX A

Test Pit Logs

SOIL TEST BORING LOG REPORT

OHI Engineering, Inc.
Engineers and Environmental Scientists

44 Wood Avenue
Mansfield, MA 02048
Voice: (508) 339-3929
Fax: (508) 339-2893

PROJECT: *Kraseman*
20 Kraseman Street
Dartmouth, MA

BORING: TP-12
WELL: No Well
SHEET: 1 of 4

CONTRACTOR:		**SIZE:**	**SAMPLER:**	**START DATE:**	2/5/2019
GEOLOGIST/ENG.:	BS & KC	**WEIGHT:**	Bucket	**FINISH DATE:**	2/5/2019
DRILL RIG:	Mini Excavator	**FALL:**		**SURFACE GRADE:**	N/A

DEPTH (FT)	PID (ppmv)	BLOW COUNTS 0 - 6"	6" - 12"	12" - 18"	18" - 24"	REC		DESCRIPTION	DIAGRAM
+1								Approximately 6 inches of frost	Area of Former Building Foundation
1								0-1' Brown Silty SAND and GRAVEL, Trace Ash Fill (coal, ash, glass, bottles, brick)	Lab Sample
2									
3								2-3' Tan Fine SAND (no fill)	Lab Sample
4								3-4.5' Brown/Grey Silty Sand, roots, organics WET (3')	Lab Sample
5								Bottom of Excavation, No Refusal	
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									

Penetration Resistance

Cohesionless Density		Cohesive Consistency	
0 - 4	very loose	0 - 2	very soft
5 - 9	loose	3 - 4	soft
10 - 29	med. dense	5 - 8	med. stiff
30 - 49	dense	9 - 15	stiff
50+	very dense	16 - 30	very stiff
		31+	hard

Terms

Proportion Definition	
trace	0% - 10%
little	10% - 20%
some	20% - 35%
and	35% - 50%

Groundwater Observations

DTW Oberserved in Spoon ≈ 10'

@ _____ ft. after _____ hours

@ _____ ft. after _____ hours

SOIL TEST BORING LOG REPORT

OHI Engineering, Inc.
Engineers and Environmental Scientists

44 Wood Avenue
Mansfield, MA 02048
Voice: (508) 339-3929
Fax: (508) 339-2893

PROJECT: *Kraseman*
20 Kraseman Street
Dartmouth, MA

BORING: TP-13
WELL: No Well
SHEET: 1 of 4

CONTRACTOR:		**SIZE:**	**SAMPLER:**	**START DATE:**	2/5/2019
GEOLOGIST/ENG.:	BS & KC	**WEIGHT:**	Bucket	**FINISH DATE:**	2/5/2019
DRILL RIG:	Mini Excavator	**FALL:**		**SURFACE GRADE:**	N/A

DEPTH (FT)	PID (ppmv)	BLOW COUNTS 0 - 6"	6" - 12"	12" - 18"	18" - 24"	REC		DESCRIPTION	DIAGRAM
+1								Approximately 6 inches of frost	
1								0-1' Tan/Brown Silty SAND and GRAVEL, some Ash Fill (coal, ash, glass, bottles, metal, brick)	Lab Sample
2									
3								2-3' Tan F to M SAND WET (4')	2-3' Lab Sample
4									
5								4-5' Black/Grey Silty SAND, organics WET	
6								Bottom of Excavation, No Refusal	
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									

Penetration Resistance

Cohesionless Density		Cohesive Consistency	
0 - 4	very loose	0 - 2	very soft
5 - 9	loose	3 - 4	soft
10 - 29	med. dense	5 - 8	med. stiff
30 - 49	dense	9 - 15	stiff
50+	very dense	16 - 30	very stiff
		31+	hard

Terms

Proportion Definition	
trace	0% - 10%
little	10% - 20%
some	20% - 35%
and	35% - 50%

Groundwater Observations

DTW Oberserved in Spoon ≈ 10'

@ _____ ft. after _____ hours

@ _____ ft. after _____ hours

SOIL TEST BORING LOG REPORT

OHI Engineering, Inc.
Engineers and Environmental Scientists

44 Wood Avenue
Mansfield, MA 02048
Voice: (508) 339-3929
Fax: (508) 339-2893

PROJECT: *Kraseman*
20 Kraseman Street
Dartmouth, MA

BORING: TP-14
WELL: No Well
SHEET: 1 of 4

CONTRACTOR:		**SIZE:**	**SAMPLER:**	**START DATE:**	2/5/2019
GEOLOGIST/ENG.:	BS & KC	**WEIGHT:**	Bucket	**FINISH DATE:**	2/5/2019
DRILL RIG:	Mini Excavator	**FALL:**		**SURFACE GRADE:**	N/A

DEPTH (FT)	PID (ppmv)	BLOW COUNTS 0 - 6"	6" - 12"	12" - 18"	18" - 24"	REC		DESCRIPTION	DIAGRAM
+1								Approximately 6 inches of frost	
1								0-1' Brown Silty SAND, roots, organics, little Ash Fill (coal, ash, glass, bottles, brick)	Lab Sample
2									
3								2-3' White Ash Fill (coal, ash, glass, bottles, brick, metal/rubber part)	2-3' Lab Sample
4								3.5-5' Black Silty SAND organics (no fill) WET (3')	3.5-4' Lab Sample
5									
6								Bottom of Excavation, No Refusal	
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									

Penetration Resistance

Cohesionless Density		Cohesive Consistency	
0 - 4	very loose	0 - 2	very soft
5 - 9	loose	3 - 4	soft
10 - 29	med. dense	5 - 8	med. stiff
30 - 49	dense	9 - 15	stiff
50+	very dense	16 - 30	very stiff
		31+	hard

Terms

Proportion Definition	
trace	0% - 10%
little	10% - 20%
some	20% - 35%
and	35% - 50%

Groundwater Observations

DTW Oberserved in Spoon ≈ 10'

@ _____ ft. after _____ hours

@ _____ ft. after _____ hours

SOIL TEST BORING LOG REPORT

OHI Engineering, Inc.
Engineers and Environmental Scientists

44 Wood Avenue
Mansfield, MA 02048
Voice: (508) 339-3929
Fax: (508) 339-2893

PROJECT:	*Kraseman*	**BORING:**	**TP-15**
	20 Kraseman Street	**WELL:**	**No Well**
	Dartmouth, MA	**SHEET:**	**1 of 4**

CONTRACTOR:		**SIZE:**	**SAMPLER:**	**START DATE:**	2/5/2019
GEOLOGIST/ENG.:	BS & KC	**WEIGHT:**	Bucket	**FINISH DATE:**	2/5/2019
DRILL RIG:	Mini Excavator	**FALL:**		**SURFACE GRADE:**	N/A

DEPTH (FT)	PID (ppmv)	BLOW COUNTS 0 - 6"	6" - 12"	12" - 18"	18" - 24"	REC		DESCRIPTION	DIAGRAM
+1								Approximately 6 inches of frost	
1								Brown Silty SAND, organics, roots, trace Ash Fill (coal, ash, glass, bottles)	Lab Sample
2									
3								2-3' Brown Silty SAND, organics, trace Ash Fill (coal, ash, glass, bottles)	2-3' Lab Sample
4									
5								4-5' Tan SAND WET	
6								Bottom of Excavation, No Refusal	
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									

Penetration Resistance

Cohesionless Density		Cohesive Consistency	
0 - 4	very loose	0 - 2	very soft
5 - 9	loose	3 - 4	soft
10 - 29	med. dense	5 - 8	med. stiff
30 - 49	dense	9 - 15	stiff
50+	very dense	16 - 30	very stiff
		31+	hard

Terms

Proportion Definition	
trace	0% - 10%
little	10% - 20%
some	20% - 35%
and	35% - 50%

Groundwater Observations

DTW Oberserved in Spoon ≈ 10'

@ _____ ft. after _____ hours

@ _____ ft. after _____ hours

OHI Engineering, Inc.
Engineers and Environmental Scientists

APPENDIX B

Photographs

Test Pit 12

Test Pit 12

Test Pit 13

Test Pit 14

Test Pit 14

Test Pit 14

	
Test Pit 15	Test Pit 15

OHI Engineering, Inc.
Engineers and Environmental Scientists

APPENDIX C

Bottle Summary and Photographs

20 Kraseman Street Bottles Identification

Test Pit	Bottle	Period
12	Old Quaker	1934-1964 https://sha.org/bottle/pdffiles/DiamondG.pdf
14	Clorox	1929-1930 https://www.thecloroxcompany.com/who-we-are/our-heritage/bottle-guide/

Test Pit 12
20 Kraseman

Test Pit 14
20 Kraseman

Test Pit 14
20 Kraseman

OHI Engineering, Inc.
Engineers and Environmental Scientists

APPENDIX D

Laboratory Reports

ANALYTICAL REPORT

Lab Number:	L1904667
Client:	OHI Engineering Incorporated 44 Wood Avenue Mansfield, MA 02048
ATTN:	Brian Snow
Phone:	(508) 339-3929
Project Name:	20 KRASEMON
Project Number:	19-1925
Report Date:	02/14/19

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: 20 KRASEMON
Project Number: 19-1925

Lab Number: L1904667
Report Date: 02/14/19

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1904667-01	TP-12 0-1	SOIL	20 KRASEMON	02/05/19 14:50	02/06/19
L1904667-02	TP-12 2-3	SOIL	20 KRASEMON	02/05/19 14:55	02/06/19
L1904667-03	TP-12 3-4	SOIL	20 KRASEMON	02/05/19 15:00	02/06/19
L1904667-04	TP-13 0-1	SOIL	20 KRASEMON	02/05/19 15:15	02/06/19
L1904667-05	TP-13 2-3	SOIL	20 KRASEMON	02/05/19 15:15	02/06/19
L1904667-06	TP-14 0-1	SOIL	20 KRASEMON	02/05/19 15:45	02/06/19
L1904667-07	TP-14 2-3	SOIL	20 KRASEMON	02/05/19 15:50	02/06/19
L1904667-08	TP-14 3.5-4	SOIL	20 KRASEMON	02/05/19 15:55	02/06/19
L1904667-09	TP-15 0-1	SOIL	20 KRASEMON	02/05/19 15:25	02/06/19
L1904667-10	TP-15 2-3	SOIL	20 KRASEMON	02/05/19 15:30	02/06/19
L1904667-11	20 S2- 0-1	SOIL	20 KRASEMON	02/05/19 16:00	02/06/19
L1904667-12	20 S1- 0-1	SOIL	20 KRASEMON	02/05/19 16:05	02/06/19

Project Name: 20 KRASEMON **Lab Number:** L1904667

Project Number: 19-1925 **Report Date:** 02/14/19

MADEP MCP Response Action Analytical Report Certification

This form provides certifications for all samples performed by MCP methods. Please refer to the Sample Results and Container Information sections of this report for specification of MCP methods used for each analysis. The following questions pertain only to MCP Analytical Methods.

An 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?	YES
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	YES
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?	YES
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?"	YES
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).	YES
E b.	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	N/A
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)?	YES

A response to questions G, H and I 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)?	NO
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	NO
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	NO

For any questions answered "No", please refer to the case narrative section on the following page(s).

Please note that sample matrix information is located in the Sample Results section of this report.

Project Name:	20 KRASEMON	**Lab Number:**	L1904667
Project Number:	19-1925	**Report Date:**	02/14/19

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	20 KRASEMON	**Lab Number:**	L1904667
Project Number:	19-1925	**Report Date:**	02/14/19

Case Narrative (continued)

MCP Related Narratives

Sample Receipt

In reference to question H:

A Matrix Spike was not submitted for the analysis of Total Metals.

PCBs

In reference to question G:

L1904667-01, -04, -11 and -12: One or more of the target analytes did not achieve the requested CAM reporting limits.

In reference to question H:

L1904667-01, -04, -11 and -12: The surrogate recoveries are below the acceptance criteria for 2,4,5,6-tetrachloro-m-xylene (0%) and decachlorobiphenyl (0%) due to the dilution required to quantitate the sample. Re-extraction was not required; therefore, the results of the original analysis are reported.

Total Metals

In reference to question I:

All samples were analyzed for a subset of MCP analytes per client request.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Michelle M. Morris

Title: Technical Director/Representative Date: 02/14/19

QC OUTLIER SUMMARY REPORT

Project Name: 20 KRASEMON
Project Number: 19-1925

Lab Number: L1904667
Report Date: 02/14/19

Method	Client ID (Native ID)	Lab ID	Parameter	QC Type	Recovery/RPD (%)	QC Limits (%)	Associated Samples	Data Quality Assessment
MCP Polychlorinated Biphenyls - Westborough Lab								
8082A	TP-12 0-1	L1904667-01 D	2,4,5,6-Tetrachloro-m-xylene (A)	Surrogate	0	30-150	-	potential low bias
8082A	TP-12 0-1	L1904667-01 D	2,4,5,6-Tetrachloro-m-xylene (B)	Surrogate	0	30-150	-	potential low bias
8082A	TP-12 0-1	L1904667-01 D	Decachlorobiphenyl (A)	Surrogate	0	30-150	-	potential low bias
8082A	TP-12 0-1	L1904667-01 D	Decachlorobiphenyl (B)	Surrogate	0	30-150	-	potential low bias
8082A	TP-13 0-1	L1904667-04 D	2,4,5,6-Tetrachloro-m-xylene (A)	Surrogate	0	30-150	-	potential low bias
8082A	TP-13 0-1	L1904667-04 D	2,4,5,6-Tetrachloro-m-xylene (B)	Surrogate	0	30-150	-	potential low bias
8082A	TP-13 0-1	L1904667-04 D	Decachlorobiphenyl (A)	Surrogate	0	30-150	-	potential low bias
8082A	TP-13 0-1	L1904667-04 D	Decachlorobiphenyl (B)	Surrogate	0	30-150	-	potential low bias
8082A	20 S2- 0-1	L1904667-11 D	2,4,5,6-Tetrachloro-m-xylene (A)	Surrogate	0	30-150	-	potential low bias
8082A	20 S2- 0-1	L1904667-11 D	2,4,5,6-Tetrachloro-m-xylene (B)	Surrogate	0	30-150	-	potential low bias
8082A	20 S2- 0-1	L1904667-11 D	Decachlorobiphenyl (A)	Surrogate	0	30-150	-	potential low bias
8082A	20 S2- 0-1	L1904667-11 D	Decachlorobiphenyl (B)	Surrogate	0	30-150	-	potential low bias
8082A	20 S1- 0-1	L1904667-12 D	2,4,5,6-Tetrachloro-m-xylene (A)	Surrogate	0	30-150	-	potential low bias
8082A	20 S1- 0-1	L1904667-12 D	2,4,5,6-Tetrachloro-m-xylene (B)	Surrogate	0	30-150	-	potential low bias
8082A	20 S1- 0-1	L1904667-12 D	Decachlorobiphenyl (A)	Surrogate	0	30-150	-	potential low bias
8082A	20 S1- 0-1	L1904667-12 D	Decachlorobiphenyl (B)	Surrogate	0	30-150	-	potential low bias

ORGANICS

PETROLEUM HYDROCARBONS

Project Name: 20 KRASEMON
Project Number: 19-1925
Lab Number: L1904667
Report Date: 02/14/19

SAMPLE RESULTS

Lab ID:	L1904667-08	Date Collected:	02/05/19 15:55
Client ID:	TP-14 3.5-4	Date Received:	02/06/19
Sample Location:	20 KRASEMON	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3546
Analytical Method:	98,EPH-04-1.1	Extraction Date:	02/08/19 22:25
Analytical Date:	02/10/19 11:52	Cleanup Method1:	EPH-04-1
Analyst:	DG	Cleanup Date1:	02/10/19
Percent Solids:	63%		

Quality Control Information

Condition of sample received:	Satisfactory
Sample Temperature upon receipt:	Received on Ice
Sample Extraction method:	Extracted Per the Method

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Extractable Petroleum Hydrocarbons - Westborough Lab						
C9-C18 Aliphatics	ND		mg/kg	10.1	--	1
C19-C36 Aliphatics	12.5		mg/kg	10.1	--	1
C11-C22 Aromatics	ND		mg/kg	10.1	--	1
C11-C22 Aromatics, Adjusted	ND		mg/kg	10.1	--	1
Naphthalene	ND		mg/kg	0.504	--	1
2-Methylnaphthalene	ND		mg/kg	0.504	--	1
Acenaphthylene	ND		mg/kg	0.504	--	1
Acenaphthene	ND		mg/kg	0.504	--	1
Fluorene	ND		mg/kg	0.504	--	1
Phenanthrene	ND		mg/kg	0.504	--	1
Anthracene	ND		mg/kg	0.504	--	1
Fluoranthene	ND		mg/kg	0.504	--	1
Pyrene	ND		mg/kg	0.504	--	1
Benzo(a)anthracene	ND		mg/kg	0.504	--	1
Chrysene	ND		mg/kg	0.504	--	1
Benzo(b)fluoranthene	ND		mg/kg	0.504	--	1
Benzo(k)fluoranthene	ND		mg/kg	0.504	--	1
Benzo(a)pyrene	ND		mg/kg	0.504	--	1
Indeno(1,2,3-cd)Pyrene	ND		mg/kg	0.504	--	1
Dibenzo(a,h)anthracene	ND		mg/kg	0.504	--	1
Benzo(ghi)perylene	ND		mg/kg	0.504	--	1

Project Name: 20 KRASEMON
Project Number: 19-1925
Lab Number: L1904667
Report Date: 02/14/19

SAMPLE RESULTS

Lab ID: L1904667-08
Client ID: TP-14 3.5-4
Sample Location: 20 KRASEMON
Date Collected: 02/05/19 15:55
Date Received: 02/06/19
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Extractable Petroleum Hydrocarbons - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	61		40-140
o-Terphenyl	62		40-140
2-Fluorobiphenyl	78		40-140
2-Bromonaphthalene	75		40-140

Project Name: 20 KRASEMON
Project Number: 19-1925

Lab Number: L1904667
Report Date: 02/14/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 98,EPH-04-1.1
Analytical Date: 02/10/19 10:49
Analyst: DG

Extraction Method: EPA 3546
Extraction Date: 02/08/19 22:25
Cleanup Method: EPH-04-1
Cleanup Date: 02/10/19

Parameter	Result	Qualifier	Units	RL	MDL
Extractable Petroleum Hydrocarbons - Westborough Lab for sample(s): 08 Batch: WG1205120-1					
C9-C18 Aliphatics	ND		mg/kg	6.37	--
C19-C36 Aliphatics	ND		mg/kg	6.37	--
C11-C22 Aromatics	ND		mg/kg	6.37	--
C11-C22 Aromatics, Adjusted	ND		mg/kg	6.37	--
Naphthalene	ND		mg/kg	0.318	--
2-Methylnaphthalene	ND		mg/kg	0.318	--
Acenaphthylene	ND		mg/kg	0.318	--
Acenaphthene	ND		mg/kg	0.318	--
Fluorene	ND		mg/kg	0.318	--
Phenanthrene	ND		mg/kg	0.318	--
Anthracene	ND		mg/kg	0.318	--
Fluoranthene	ND		mg/kg	0.318	--
Pyrene	ND		mg/kg	0.318	--
Benzo(a)anthracene	ND		mg/kg	0.318	--
Chrysene	ND		mg/kg	0.318	--
Benzo(b)fluoranthene	ND		mg/kg	0.318	--
Benzo(k)fluoranthene	ND		mg/kg	0.318	--
Benzo(a)pyrene	ND		mg/kg	0.318	--
Indeno(1,2,3-cd)Pyrene	ND		mg/kg	0.318	--
Dibenzo(a,h)anthracene	ND		mg/kg	0.318	--
Benzo(ghi)perylene	ND		mg/kg	0.318	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	56		40-140
o-Terphenyl	62		40-140
2-Fluorobiphenyl	86		40-140
2-Bromonaphthalene	83		40-140

Lab Control Sample Analysis
Batch Quality Control

Project Name: 20 KRASEMON
Project Number: 19-1925

Lab Number: L1904667
Report Date: 02/14/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Extractable Petroleum Hydrocarbons - Westborough Lab Associated sample(s): 08 Batch: WG1205120-2 WG1205120-3								
C9-C18 Aliphatics	72		78		40-140	8		25
C19-C36 Aliphatics	78		83		40-140	6		25
C11-C22 Aromatics	72		82		40-140	13		25
Naphthalene	55		70		40-140	24		25
2-Methylnaphthalene	55		69		40-140	23		25
Acenaphthylene	60		74		40-140	21		25
Acenaphthene	60		75		40-140	22		25
Fluorene	63		76		40-140	19		25
Phenanthrene	68		78		40-140	14		25
Anthracene	71		80		40-140	12		25
Fluoranthene	74		81		40-140	9		25
Pyrene	75		82		40-140	9		25
Benzo(a)anthracene	74		81		40-140	9		25
Chrysene	72		81		40-140	12		25
Benzo(b)fluoranthene	77		83		40-140	8		25
Benzo(k)fluoranthene	72		80		40-140	11		25
Benzo(a)pyrene	72		79		40-140	9		25
Indeno(1,2,3-cd)Pyrene	74		80		40-140	8		25
Dibenzo(a,h)anthracene	72		78		40-140	8		25
Benzo(ghi)perylene	66		72		40-140	9		25
Nonane (C9)	58		65		30-140	11		25
Decane (C10)	65		73		40-140	12		25
Dodecane (C12)	68		76		40-140	11		25

Lab Control Sample Analysis

Batch Quality Control

Project Name: 20 KRASEMON

Project Number: 19-1925

Lab Number: L1904667

Report Date: 02/14/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Extractable Petroleum Hydrocarbons - Westborough Lab Associated sample(s): 08 Batch: WG1205120-2 WG1205120-3								
Tetradecane (C14)	67		76		40-140	13		25
Hexadecane (C16)	70		76		40-140	8		25
Octadecane (C18)	75		80		40-140	6		25
Nonadecane (C19)	74		78		40-140	5		25
Eicosane (C20)	75		80		40-140	6		25
Docosane (C22)	74		80		40-140	8		25
Tetracosane (C24)	74		80		40-140	8		25
Hexacosane (C26)	75		81		40-140	8		25
Octacosane (C28)	76		82		40-140	8		25
Triacontane (C30)	76		82		40-140	8		25
Hexatriacontane (C36)	72		79		40-140	9		25

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Chloro-Octadecane	67		70		40-140
o-Terphenyl	69		77		40-140
2-Fluorobiphenyl	72		84		40-140
2-Bromonaphthalene	70		80		40-140
% Naphthalene Breakthrough	0		0		
% 2-Methylnaphthalene Breakthrough	0		0		

PCBS

Project Name: 20 KRASEMON
Project Number: 19-1925
Lab Number: L1904667
Report Date: 02/14/19

SAMPLE RESULTS

Lab ID: L1904667-01 D
Client ID: TP-12 0-1
Sample Location: 20 KRASEMON

Date Collected: 02/05/19 14:50
Date Received: 02/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8082A
Analytical Date: 02/14/19 02:16
Analyst: HT
Percent Solids: 86%

Extraction Method: EPA 3546
Extraction Date: 02/07/19 19:32
Cleanup Method: EPA 3665A
Cleanup Date: 02/08/19
Cleanup Method: EPA 3660B
Cleanup Date: 02/08/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
MCP Polychlorinated Biphenyls - Westborough Lab							
Aroclor 1016	ND		ug/kg	93400	--	2500	A
Aroclor 1221	ND		ug/kg	93400	--	2500	A
Aroclor 1232	ND		ug/kg	93400	--	2500	A
Aroclor 1242	ND		ug/kg	93400	--	2500	A
Aroclor 1248	ND		ug/kg	93400	--	2500	A
Aroclor 1254	960000		ug/kg	93400	--	2500	B
Aroclor 1260	ND		ug/kg	93400	--	2500	A
Aroclor 1262	ND		ug/kg	93400	--	2500	A
Aroclor 1268	ND		ug/kg	93400	--	2500	A
PCBs, Total	960000		ug/kg	93400	--	2500	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	**0**	Q	30-150	B
Decachlorobiphenyl	**0**	Q	30-150	B
2,4,5,6-Tetrachloro-m-xylene	**0**	Q	30-150	A
Decachlorobiphenyl	**0**	Q	30-150	A

Project Name: 20 KRASEMON
Project Number: 19-1925
Lab Number: L1904667
Report Date: 02/14/19

SAMPLE RESULTS

Lab ID: L1904667-02
Client ID: TP-12 2-3
Sample Location: 20 KRASEMON

Date Collected: 02/05/19 14:55
Date Received: 02/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8082A
Analytical Date: 02/13/19 00:08
Analyst: HT
Percent Solids: 89%

Extraction Method: EPA 3546
Extraction Date: 02/07/19 19:32
Cleanup Method: EPA 3665A
Cleanup Date: 02/08/19
Cleanup Method: EPA 3660B
Cleanup Date: 02/08/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
MCP Polychlorinated Biphenyls - Westborough Lab							
Aroclor 1016	ND		ug/kg	36.1	--	1	A
Aroclor 1221	ND		ug/kg	36.1	--	1	A
Aroclor 1232	ND		ug/kg	36.1	--	1	A
Aroclor 1242	ND		ug/kg	36.1	--	1	A
Aroclor 1248	ND		ug/kg	36.1	--	1	A
Aroclor 1254	301		ug/kg	36.1	--	1	B
Aroclor 1260	ND		ug/kg	36.1	--	1	A
Aroclor 1262	ND		ug/kg	36.1	--	1	A
Aroclor 1268	ND		ug/kg	36.1	--	1	A
PCBs, Total	301		ug/kg	36.1	--	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	90		30-150	B
Decachlorobiphenyl	86		30-150	B
2,4,5,6-Tetrachloro-m-xylene	89		30-150	A
Decachlorobiphenyl	65		30-150	A

Project Name: 20 KRASEMON
Project Number: 19-1925
Lab Number: L1904667
Report Date: 02/14/19

SAMPLE RESULTS

Lab ID: L1904667-03
Client ID: TP-12 3-4
Sample Location: 20 KRASEMON

Date Collected: 02/05/19 15:00
Date Received: 02/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8082A
Analytical Date: 02/13/19 00:20
Analyst: HT
Percent Solids: 80%

Extraction Method: EPA 3546
Extraction Date: 02/07/19 19:32
Cleanup Method: EPA 3665A
Cleanup Date: 02/08/19
Cleanup Method: EPA 3660B
Cleanup Date: 02/08/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
MCP Polychlorinated Biphenyls - Westborough Lab							
Aroclor 1016	ND		ug/kg	39.4	--	1	A
Aroclor 1221	ND		ug/kg	39.4	--	1	A
Aroclor 1232	ND		ug/kg	39.4	--	1	A
Aroclor 1242	ND		ug/kg	39.4	--	1	A
Aroclor 1248	ND		ug/kg	39.4	--	1	A
Aroclor 1254	376		ug/kg	39.4	--	1	B
Aroclor 1260	ND		ug/kg	39.4	--	1	A
Aroclor 1262	ND		ug/kg	39.4	--	1	A
Aroclor 1268	ND		ug/kg	39.4	--	1	A
PCBs, Total	376		ug/kg	39.4	--	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	77		30-150	B
Decachlorobiphenyl	65		30-150	B
2,4,5,6-Tetrachloro-m-xylene	73		30-150	A
Decachlorobiphenyl	48		30-150	A

Project Name: 20 KRASEMON
Project Number: 19-1925
Lab Number: L1904667
Report Date: 02/14/19

SAMPLE RESULTS

Lab ID: L1904667-04 D
Client ID: TP-13 0-1
Sample Location: 20 KRASEMON

Date Collected: 02/05/19 15:15
Date Received: 02/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8082A
Analytical Date: 02/13/19 02:17
Analyst: HT
Percent Solids: 84%

Extraction Method: EPA 3546
Extraction Date: 02/07/19 19:32
Cleanup Method: EPA 3665A
Cleanup Date: 02/08/19
Cleanup Method: EPA 3660B
Cleanup Date: 02/08/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
MCP Polychlorinated Biphenyls - Westborough Lab							
Aroclor 1016	ND		ug/kg	7670	--	200	A
Aroclor 1221	ND		ug/kg	7670	--	200	A
Aroclor 1232	ND		ug/kg	7670	--	200	A
Aroclor 1242	ND		ug/kg	7670	--	200	A
Aroclor 1248	ND		ug/kg	7670	--	200	A
Aroclor 1254	38500		ug/kg	7670	--	200	B
Aroclor 1260	ND		ug/kg	7670	--	200	A
Aroclor 1262	ND		ug/kg	7670	--	200	A
Aroclor 1268	ND		ug/kg	7670	--	200	A
PCBs, Total	38500		ug/kg	7670	--	200	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	**0**	Q	30-150	B
Decachlorobiphenyl	**0**	Q	30-150	B
2,4,5,6-Tetrachloro-m-xylene	**0**	Q	30-150	A
Decachlorobiphenyl	**0**	Q	30-150	A

Project Name: 20 KRASEMON
Project Number: 19-1925
Lab Number: L1904667
Report Date: 02/14/19

SAMPLE RESULTS

Lab ID: L1904667-05
Client ID: TP-13 2-3
Sample Location: 20 KRASEMON

Date Collected: 02/05/19 15:15
Date Received: 02/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8082A
Analytical Date: 02/13/19 00:33
Analyst: HT
Percent Solids: 89%

Extraction Method: EPA 3546
Extraction Date: 02/07/19 19:32
Cleanup Method: EPA 3665A
Cleanup Date: 02/08/19
Cleanup Method: EPA 3660B
Cleanup Date: 02/08/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
MCP Polychlorinated Biphenyls - Westborough Lab							
Aroclor 1016	ND		ug/kg	36.7	--	1	A
Aroclor 1221	ND		ug/kg	36.7	--	1	A
Aroclor 1232	ND		ug/kg	36.7	--	1	A
Aroclor 1242	ND		ug/kg	36.7	--	1	A
Aroclor 1248	ND		ug/kg	36.7	--	1	A
Aroclor 1254	ND		ug/kg	36.7	--	1	B
Aroclor 1260	ND		ug/kg	36.7	--	1	A
Aroclor 1262	ND		ug/kg	36.7	--	1	A
Aroclor 1268	ND		ug/kg	36.7	--	1	A
PCBs, Total	ND		ug/kg	36.7	--	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	76		30-150	B
Decachlorobiphenyl	66		30-150	B
2,4,5,6-Tetrachloro-m-xylene	74		30-150	A
Decachlorobiphenyl	55		30-150	A

Project Name: 20 KRASEMON
Project Number: 19-1925
Lab Number: L1904667
Report Date: 02/14/19

SAMPLE RESULTS

Lab ID: L1904667-06
Client ID: TP-14 0-1
Sample Location: 20 KRASEMON

Date Collected: 02/05/19 15:45
Date Received: 02/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8082A
Analytical Date: 02/14/19 01:39
Analyst: HT
Percent Solids: 74%

Extraction Method: EPA 3546
Extraction Date: 02/07/19 19:32
Cleanup Method: EPA 3665A
Cleanup Date: 02/08/19
Cleanup Method: EPA 3660B
Cleanup Date: 02/08/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
MCP Polychlorinated Biphenyls - Westborough Lab							
Aroclor 1016	ND		ug/kg	43.6	--	1	A
Aroclor 1221	ND		ug/kg	43.6	--	1	A
Aroclor 1232	ND		ug/kg	43.6	--	1	A
Aroclor 1242	ND		ug/kg	43.6	--	1	A
Aroclor 1248	ND		ug/kg	43.6	--	1	A
Aroclor 1254	657		ug/kg	43.6	--	1	B
Aroclor 1260	ND		ug/kg	43.6	--	1	A
Aroclor 1262	ND		ug/kg	43.6	--	1	A
Aroclor 1268	ND		ug/kg	43.6	--	1	A
PCBs, Total	657		ug/kg	43.6	--	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	56		30-150	B
Decachlorobiphenyl	84		30-150	B
2,4,5,6-Tetrachloro-m-xylene	58		30-150	A
Decachlorobiphenyl	58		30-150	A

Project Name: 20 KRASEMON
Project Number: 19-1925
Lab Number: L1904667
Report Date: 02/14/19

SAMPLE RESULTS

Lab ID: L1904667-07
Client ID: TP-14 2-3
Sample Location: 20 KRASEMON

Date Collected: 02/05/19 15:50
Date Received: 02/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8082A
Analytical Date: 02/13/19 00:46
Analyst: HT
Percent Solids: 74%

Extraction Method: EPA 3546
Extraction Date: 02/07/19 19:32
Cleanup Method: EPA 3665A
Cleanup Date: 02/08/19
Cleanup Method: EPA 3660B
Cleanup Date: 02/08/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
MCP Polychlorinated Biphenyls - Westborough Lab							
Aroclor 1016	ND		ug/kg	42.9	--	1	A
Aroclor 1221	ND		ug/kg	42.9	--	1	A
Aroclor 1232	ND		ug/kg	42.9	--	1	A
Aroclor 1242	ND		ug/kg	42.9	--	1	A
Aroclor 1248	ND		ug/kg	42.9	--	1	A
Aroclor 1254	ND		ug/kg	42.9	--	1	B
Aroclor 1260	ND		ug/kg	42.9	--	1	A
Aroclor 1262	ND		ug/kg	42.9	--	1	A
Aroclor 1268	ND		ug/kg	42.9	--	1	A
PCBs, Total	ND		ug/kg	42.9	--	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	75		30-150	B
Decachlorobiphenyl	77		30-150	B
2,4,5,6-Tetrachloro-m-xylene	74		30-150	A
Decachlorobiphenyl	59		30-150	A

Project Name: 20 KRASEMON
Project Number: 19-1925
Lab Number: L1904667
Report Date: 02/14/19

SAMPLE RESULTS

Lab ID: L1904667-08
Client ID: TP-14 3.5-4
Sample Location: 20 KRASEMON

Date Collected: 02/05/19 15:55
Date Received: 02/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8082A
Analytical Date: 02/13/19 00:59
Analyst: HT
Percent Solids: 63%

Extraction Method: EPA 3546
Extraction Date: 02/07/19 19:32
Cleanup Method: EPA 3665A
Cleanup Date: 02/08/19
Cleanup Method: EPA 3660B
Cleanup Date: 02/08/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
MCP Polychlorinated Biphenyls - Westborough Lab							
Aroclor 1016	ND		ug/kg	52.2	--	1	A
Aroclor 1221	ND		ug/kg	52.2	--	1	A
Aroclor 1232	ND		ug/kg	52.2	--	1	A
Aroclor 1242	ND		ug/kg	52.2	--	1	A
Aroclor 1248	ND		ug/kg	52.2	--	1	A
Aroclor 1254	ND		ug/kg	52.2	--	1	B
Aroclor 1260	ND		ug/kg	52.2	--	1	A
Aroclor 1262	ND		ug/kg	52.2	--	1	A
Aroclor 1268	ND		ug/kg	52.2	--	1	A
PCBs, Total	ND		ug/kg	52.2	--	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	42		30-150	B
Decachlorobiphenyl	55		30-150	B
2,4,5,6-Tetrachloro-m-xylene	39		30-150	A
Decachlorobiphenyl	44		30-150	A

Project Name: 20 KRASEMON
Project Number: 19-1925
Lab Number: L1904667
Report Date: 02/14/19

SAMPLE RESULTS

Lab ID: L1904667-09
Client ID: TP-15 0-1
Sample Location: 20 KRASEMON

Date Collected: 02/05/19 15:25
Date Received: 02/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8082A
Analytical Date: 02/13/19 01:12
Analyst: HT
Percent Solids: 71%

Extraction Method: EPA 3546
Extraction Date: 02/07/19 19:32
Cleanup Method: EPA 3665A
Cleanup Date: 02/08/19
Cleanup Method: EPA 3660B
Cleanup Date: 02/08/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
MCP Polychlorinated Biphenyls - Westborough Lab							
Aroclor 1016	ND		ug/kg	46.0	--	1	A
Aroclor 1221	ND		ug/kg	46.0	--	1	A
Aroclor 1232	ND		ug/kg	46.0	--	1	A
Aroclor 1242	ND		ug/kg	46.0	--	1	A
Aroclor 1248	ND		ug/kg	46.0	--	1	A
Aroclor 1254	361		ug/kg	46.0	--	1	B
Aroclor 1260	ND		ug/kg	46.0	--	1	A
Aroclor 1262	ND		ug/kg	46.0	--	1	A
Aroclor 1268	ND		ug/kg	46.0	--	1	A
PCBs, Total	361		ug/kg	46.0	--	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	78		30-150	B
Decachlorobiphenyl	87		30-150	B
2,4,5,6-Tetrachloro-m-xylene	78		30-150	A
Decachlorobiphenyl	68		30-150	A

Project Name: 20 KRASEMON
Project Number: 19-1925
Lab Number: L1904667
Report Date: 02/14/19

SAMPLE RESULTS

Lab ID: L1904667-10
Client ID: TP-15 2-3
Sample Location: 20 KRASEMON

Date Collected: 02/05/19 15:30
Date Received: 02/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8082A
Analytical Date: 02/13/19 01:25
Analyst: HT
Percent Solids: 78%

Extraction Method: EPA 3546
Extraction Date: 02/07/19 19:32
Cleanup Method: EPA 3665A
Cleanup Date: 02/08/19
Cleanup Method: EPA 3660B
Cleanup Date: 02/08/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
MCP Polychlorinated Biphenyls - Westborough Lab							
Aroclor 1016	ND		ug/kg	41.4	--	1	A
Aroclor 1221	ND		ug/kg	41.4	--	1	A
Aroclor 1232	ND		ug/kg	41.4	--	1	A
Aroclor 1242	ND		ug/kg	41.4	--	1	A
Aroclor 1248	ND		ug/kg	41.4	--	1	A
Aroclor 1254	290		ug/kg	41.4	--	1	B
Aroclor 1260	ND		ug/kg	41.4	--	1	A
Aroclor 1262	ND		ug/kg	41.4	--	1	A
Aroclor 1268	ND		ug/kg	41.4	--	1	A
PCBs, Total	290		ug/kg	41.4	--	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	74		30-150	B
Decachlorobiphenyl	86		30-150	B
2,4,5,6-Tetrachloro-m-xylene	75		30-150	A
Decachlorobiphenyl	65		30-150	A

Project Name: 20 KRASEMON
Project Number: 19-1925
Lab Number: L1904667
Report Date: 02/14/19

SAMPLE RESULTS

Lab ID: L1904667-11 D
Client ID: 20 S2- 0-1
Sample Location: 20 KRASEMON

Date Collected: 02/05/19 16:00
Date Received: 02/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8082A
Analytical Date: 02/14/19 02:41
Analyst: HT
Percent Solids: 71%

Extraction Method: EPA 3546
Extraction Date: 02/07/19 19:32
Cleanup Method: EPA 3665A
Cleanup Date: 02/08/19
Cleanup Method: EPA 3660B
Cleanup Date: 02/08/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
MCP Polychlorinated Biphenyls - Westborough Lab							
Aroclor 1016	ND		ug/kg	4430	--	100	A
Aroclor 1221	ND		ug/kg	4430	--	100	A
Aroclor 1232	ND		ug/kg	4430	--	100	A
Aroclor 1242	ND		ug/kg	4430	--	100	A
Aroclor 1248	ND		ug/kg	4430	--	100	A
Aroclor 1254	30100		ug/kg	4430	--	100	B
Aroclor 1260	ND		ug/kg	4430	--	100	A
Aroclor 1262	ND		ug/kg	4430	--	100	A
Aroclor 1268	ND		ug/kg	4430	--	100	A
PCBs, Total	30100		ug/kg	4430	--	100	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	**0**	Q	30-150	B
Decachlorobiphenyl	**0**	Q	30-150	B
2,4,5,6-Tetrachloro-m-xylene	**0**	Q	30-150	A
Decachlorobiphenyl	**0**	Q	30-150	A

Project Name: 20 KRASEMON
Project Number: 19-1925
Lab Number: L1904667
Report Date: 02/14/19

SAMPLE RESULTS

Lab ID: L1904667-12 D
Client ID: 20 S1- 0-1
Sample Location: 20 KRASEMON

Date Collected: 02/05/19 16:05
Date Received: 02/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8082A
Analytical Date: 02/14/19 02:29
Analyst: HT
Percent Solids: 77%

Extraction Method: EPA 3546
Extraction Date: 02/07/19 19:32
Cleanup Method: EPA 3665A
Cleanup Date: 02/08/19
Cleanup Method: EPA 3660B
Cleanup Date: 02/08/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
MCP Polychlorinated Biphenyls - Westborough Lab							
Aroclor 1016	ND		ug/kg	849	--	20	A
Aroclor 1221	ND		ug/kg	849	--	20	A
Aroclor 1232	ND		ug/kg	849	--	20	A
Aroclor 1242	ND		ug/kg	849	--	20	A
Aroclor 1248	ND		ug/kg	849	--	20	A
Aroclor 1254	3330		ug/kg	849	--	20	B
Aroclor 1260	ND		ug/kg	849	--	20	A
Aroclor 1262	ND		ug/kg	849	--	20	A
Aroclor 1268	ND		ug/kg	849	--	20	A
PCBs, Total	3330		ug/kg	849	--	20	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	**0**	Q	30-150	B
Decachlorobiphenyl	**0**	Q	30-150	B
2,4,5,6-Tetrachloro-m-xylene	**0**	Q	30-150	A
Decachlorobiphenyl	**0**	Q	30-150	A

Project Name: 20 KRASEMON
Project Number: 19-1925

Lab Number: L1904667
Report Date: 02/14/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8082A
Analytical Date: 02/12/19 18:47
Analyst: AWS

Extraction Method: EPA 3546
Extraction Date: 02/07/19 19:32
Cleanup Method: EPA 3665A
Cleanup Date: 02/08/19
Cleanup Method: EPA 3660B
Cleanup Date: 02/08/19

Parameter	Result	Qualifier	Units	RL	MDL	Column
MCP Polychlorinated Biphenyls - Westborough Lab for sample(s): 01-12 Batch: WG1204727-1						
Aroclor 1016	ND		ug/kg	32.5	--	A
Aroclor 1221	ND		ug/kg	32.5	--	A
Aroclor 1232	ND		ug/kg	32.5	--	A
Aroclor 1242	ND		ug/kg	32.5	--	A
Aroclor 1248	ND		ug/kg	32.5	--	A
Aroclor 1254	ND		ug/kg	32.5	--	A
Aroclor 1260	ND		ug/kg	32.5	--	A
Aroclor 1262	ND		ug/kg	32.5	--	A
Aroclor 1268	ND		ug/kg	32.5	--	A
PCBs, Total	ND		ug/kg	32.5	--	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	66		30-150	B
Decachlorobiphenyl	74		30-150	B
2,4,5,6-Tetrachloro-m-xylene	67		30-150	A
Decachlorobiphenyl	47		30-150	A

Lab Control Sample Analysis
Batch Quality Control

Project Name: 20 KRASEMON
Project Number: 19-1925

Lab Number: L1904667
Report Date: 02/14/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
MCP Polychlorinated Biphenyls - Westborough Lab Associated sample(s): 01-12 Batch: WG1204727-2 WG1204727-3									
Aroclor 1016	64		67		40-140	5		30	A
Aroclor 1260	46		49		40-140	6		30	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	66		68		30-150	B
Decachlorobiphenyl	74		79		30-150	B
2,4,5,6-Tetrachloro-m-xylene	66		69		30-150	A
Decachlorobiphenyl	47		50		30-150	A

METALS

Project Name: 20 KRASEMON
Lab Number: L1904667
Project Number: 19-1925
Report Date: 02/14/19

SAMPLE RESULTS

Lab ID: L1904667-01
Client ID: TP-12 0-1
Sample Location: 20 KRASEMON
Date Collected: 02/05/19 14:50
Date Received: 02/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	171		mg/kg	2.21	--	1	02/08/19 19:10	02/09/19 02:05	EPA 3050B	97,6010D	AB

Project Name: 20 KRASEMON
Lab Number: L1904667
Project Number: 19-1925
Report Date: 02/14/19

SAMPLE RESULTS

Lab ID: L1904667-02
Client ID: TP-12 2-3
Sample Location: 20 KRASEMON
Date Collected: 02/05/19 14:55
Date Received: 02/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	2.80		mg/kg	2.23	--	1	02/08/19 19:10	02/09/19 02:23	EPA 3050B	97,6010D	AB

Project Name: 20 KRASEMON
Lab Number: L1904667
Project Number: 19-1925
Report Date: 02/14/19

SAMPLE RESULTS

Lab ID: L1904667-04
Client ID: TP-13 0-1
Sample Location: 20 KRASEMON
Date Collected: 02/05/19 15:15
Date Received: 02/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	87.2		mg/kg	2.33	--	1	02/08/19 19:10	02/09/19 02:27	EPA 3050B	97,6010D	AB

Project Name: 20 KRASEMON
Lab Number: L1904667
Project Number: 19-1925
Report Date: 02/14/19

SAMPLE RESULTS

Lab ID: L1904667-05
Client ID: TP-13 2-3
Sample Location: 20 KRASEMON
Date Collected: 02/05/19 15:15
Date Received: 02/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	ND		mg/kg	2.12	--	1	02/08/19 19:10	02/09/19 02:31	EPA 3050B	97,6010D	AB

Project Name: 20 KRASEMON
Lab Number: L1904667
Project Number: 19-1925
Report Date: 02/14/19

SAMPLE RESULTS

Lab ID: L1904667-06
Client ID: TP-14 0-1
Sample Location: 20 KRASEMON
Date Collected: 02/05/19 15:45
Date Received: 02/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 74%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	566		mg/kg	2.68	--	1	02/08/19 19:10	02/09/19 02:36	EPA 3050B	97,6010D	AB

Project Name: 20 KRASEMON
Lab Number: L1904667
Project Number: 19-1925
Report Date: 02/14/19

SAMPLE RESULTS

Lab ID: L1904667-07
Client ID: TP-14 2-3
Sample Location: 20 KRASEMON
Date Collected: 02/05/19 15:50
Date Received: 02/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 74%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	544		mg/kg	2.69	--	1	02/08/19 19:10	02/09/19 02:40	EPA 3050B	97,6010D	AB

Project Name: 20 KRASEMON
Lab Number: L1904667
Project Number: 19-1925
Report Date: 02/14/19

SAMPLE RESULTS

Lab ID: L1904667-09
Client ID: TP-15 0-1
Sample Location: 20 KRASEMON
Date Collected: 02/05/19 15:25
Date Received: 02/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 71%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	253		mg/kg	2.73	--	1	02/08/19 19:10	02/09/19 02:44	EPA 3050B	97,6010D	AB

Project Name: 20 KRASEMON
Lab Number: L1904667
Project Number: 19-1925
Report Date: 02/14/19

SAMPLE RESULTS

Lab ID: L1904667-10
Client ID: TP-15 2-3
Sample Location: 20 KRASEMON
Date Collected: 02/05/19 15:30
Date Received: 02/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 78%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	156		mg/kg	2.53	--	1	02/08/19 19:10	02/09/19 02:49	EPA 3050B	97,6010D	AB

Project Name: 20 KRASEMON
Project Number: 19-1925
Lab Number: L1904667
Report Date: 02/14/19

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab for sample(s): 01-02,04-07,09-10 Batch: WG1205052-1										
Lead, Total	ND		mg/kg	2.00	--	1	02/08/19 19:10	02/09/19 00:37	97,6010D	AB

Prep Information

Digestion Method: EPA 3050B

Lab Control Sample Analysis

Batch Quality Control

Project Name: 20 KRASEMON

Project Number: 19-1925

Lab Number: L1904667

Report Date: 02/14/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Total Metals - Mansfield Lab Associated sample(s): 01-02,04-07,09-10 Batch: WG1205052-2 WG1205052-3 SRM Lot Number: D101-540								
Lead, Total	98		98		83-117	0		30

INORGANICS
&
MISCELLANEOUS

Project Name: 20 KRASEMON
Project Number: 19-1925

Lab Number: L1904667
Report Date: 02/14/19

SAMPLE RESULTS

Lab ID: L1904667-01
Client ID: TP-12 0-1
Sample Location: 20 KRASEMON

Date Collected: 02/05/19 14:50
Date Received: 02/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.7		%	0.100	NA	1	-	02/08/19 10:56	121,2540G	RI

Project Name: 20 KRASEMON
Project Number: 19-1925

Lab Number: L1904667
Report Date: 02/14/19

SAMPLE RESULTS

Lab ID: L1904667-02
Client ID: TP-12 2-3
Sample Location: 20 KRASEMON

Date Collected: 02/05/19 14:55
Date Received: 02/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.1		%	0.100	NA	1	-	02/08/19 10:56	121,2540G	RI

Project Name: 20 KRASEMON
Project Number: 19-1925

Lab Number: L1904667
Report Date: 02/14/19

SAMPLE RESULTS

Lab ID: L1904667-03
Client ID: TP-12 3-4
Sample Location: 20 KRASEMON

Date Collected: 02/05/19 15:00
Date Received: 02/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	79.7		%	0.100	NA	1	-	02/08/19 10:56	121,2540G	RI

Project Name: 20 KRASEMON
Project Number: 19-1925

Lab Number: L1904667
Report Date: 02/14/19

SAMPLE RESULTS

Lab ID: L1904667-04
Client ID: TP-13 0-1
Sample Location: 20 KRASEMON

Date Collected: 02/05/19 15:15
Date Received: 02/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.8		%	0.100	NA	1	-	02/08/19 10:56	121,2540G	RI

Project Name: 20 KRASEMON
Project Number: 19-1925

Lab Number: L1904667
Report Date: 02/14/19

SAMPLE RESULTS

Lab ID: L1904667-05
Client ID: TP-13 2-3
Sample Location: 20 KRASEMON

Date Collected: 02/05/19 15:15
Date Received: 02/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.4		%	0.100	NA	1	-	02/08/19 10:56	121,2540G	RI

Project Name: 20 KRASEMON
Project Number: 19-1925

Lab Number: L1904667
Report Date: 02/14/19

SAMPLE RESULTS

Lab ID: L1904667-06
Client ID: TP-14 0-1
Sample Location: 20 KRASEMON

Date Collected: 02/05/19 15:45
Date Received: 02/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	74.4		%	0.100	NA	1	-	02/08/19 10:56	121,2540G	RI

Project Name: 20 KRASEMON
Project Number: 19-1925

Lab Number: L1904667
Report Date: 02/14/19

SAMPLE RESULTS

Lab ID: L1904667-07
Client ID: TP-14 2-3
Sample Location: 20 KRASEMON

Date Collected: 02/05/19 15:50
Date Received: 02/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	74.1		%	0.100	NA	1	-	02/08/19 10:56	121,2540G	RI

Project Name: 20 KRASEMON
Project Number: 19-1925

Lab Number: L1904667
Report Date: 02/14/19

SAMPLE RESULTS

Lab ID: L1904667-08
Client ID: TP-14 3.5-4
Sample Location: 20 KRASEMON

Date Collected: 02/05/19 15:55
Date Received: 02/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	62.8		%	0.100	NA	1	-	02/08/19 10:56	121,2540G	RI

Project Name: 20 KRASEMON
Project Number: 19-1925

Lab Number: L1904667
Report Date: 02/14/19

SAMPLE RESULTS

Lab ID: L1904667-09
Client ID: TP-15 0-1
Sample Location: 20 KRASEMON

Date Collected: 02/05/19 15:25
Date Received: 02/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	71.0		%	0.100	NA	1	-	02/08/19 10:56	121,2540G	RI

Project Name: 20 KRASEMON
Project Number: 19-1925

Lab Number: L1904667
Report Date: 02/14/19

SAMPLE RESULTS

Lab ID: L1904667-10
Client ID: TP-15 2-3
Sample Location: 20 KRASEMON

Date Collected: 02/05/19 15:30
Date Received: 02/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	77.9		%	0.100	NA	1	-	02/08/19 10:56	121,2540G	RI

Project Name: 20 KRASEMON
Project Number: 19-1925

Lab Number: L1904667
Report Date: 02/14/19

SAMPLE RESULTS

Lab ID: L1904667-11
Client ID: 20 S2- 0-1
Sample Location: 20 KRASEMON

Date Collected: 02/05/19 16:00
Date Received: 02/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	70.6		%	0.100	NA	1	-	02/08/19 10:56	121,2540G	RI

Project Name: 20 KRASEMON
Project Number: 19-1925

Lab Number: L1904667
Report Date: 02/14/19

SAMPLE RESULTS

Lab ID: L1904667-12
Client ID: 20 S1- 0-1
Sample Location: 20 KRASEMON

Date Collected: 02/05/19 16:05
Date Received: 02/06/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	77.2		%	0.100	NA	1	-	02/08/19 10:56	121,2540G	RI

Lab Duplicate Analysis

Batch Quality Control

Project Name: 20 KRASEMON

Project Number: 19-1925

Lab Number: L1904667

Report Date: 02/14/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-12 QC Batch ID: WG1204893-1 QC Sample: L1904667-01 Client ID: TP-12 0-1						
Solids, Total	85.7	83.8	%	2		20

Project Name: 20 KRASEMON
Project Number: 19-1925

Lab Number: L1904667
Report Date: 02/14/19

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1904667-01A	Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		MCP-8082-10(365)
L1904667-01B	Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		MCP-8082-10(365)
L1904667-01C	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)
L1904667-01D	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		MCP-PB-6010T-10(180)
L1904667-02A	Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		MCP-8082-10(365)
L1904667-02B	Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		MCP-8082-10(365)
L1904667-02C	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)
L1904667-02D	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		MCP-PB-6010T-10(180)
L1904667-03A	Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		MCP-8082-10(365)
L1904667-03B	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)
L1904667-04A	Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		MCP-8082-10(365)
L1904667-04B	Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		MCP-8082-10(365)
L1904667-04C	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)
L1904667-04D	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		MCP-PB-6010T-10(180)
L1904667-05A	Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		MCP-8082-10(365)
L1904667-05B	Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		MCP-8082-10(365)
L1904667-05C	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)
L1904667-05D	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		MCP-PB-6010T-10(180)
L1904667-06A	Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		MCP-8082-10(365)
L1904667-06B	Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		MCP-8082-10(365)
L1904667-06C	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)
L1904667-06D	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		MCP-PB-6010T-10(180)
L1904667-07A	Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		MCP-8082-10(365)

*Values in parentheses indicate holding time in days

Project Name: 20 KRASEMON
Project Number: 19-1925

Lab Number: L1904667
Report Date: 02/14/19

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1904667-07B	Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		MCP-8082-10(365)
L1904667-07C	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)
L1904667-07D	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		MCP-PB-6010T-10(180)
L1904667-08A	Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		MCP-8082-10(365),EPH-DELUX-10(14)
L1904667-08B	Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		MCP-8082-10(365),EPH-DELUX-10(14)
L1904667-08C	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)
L1904667-08D	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)
L1904667-09A	Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		MCP-8082-10(365)
L1904667-09B	Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		MCP-8082-10(365)
L1904667-09C	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)
L1904667-09D	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		MCP-PB-6010T-10(180)
L1904667-10A	Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		MCP-8082-10(365)
L1904667-10B	Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		MCP-8082-10(365)
L1904667-10C	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)
L1904667-10D	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		MCP-PB-6010T-10(180)
L1904667-11A	Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		MCP-8082-10(365)
L1904667-11B	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)
L1904667-12A	Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		MCP-8082-10(365)
L1904667-12B	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)

*Values in parentheses indicate holding time in days

Project Name:	20 KRASEMON	**Lab Number:**	L1904667
Project Number:	19-1925	**Report Date:**	02/14/19

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

1	- The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total'

result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensation Product".

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

Project Name:	20 KRASEMON	**Lab Number:**	L1904667
Project Number:	19-1925	**Report Date:**	02/14/19

REFERENCES

97 EPA Test Methods (SW-846) with QC Requirements & Performance Standards for the Analysis of EPA SW-846 Methods under the Massachusetts Contingency Plan, WSC-CAM-IIA, IIB, IIIA, IIIB, IIIC, IIID, VA, VB, VC, VIA, VIB, VIIIA and VIIIB, July 2010.

98 Method for the Determination of Extractable Petroleum Hydrocarbons (EPH), MassDEP, May 2004, Revision 1.1 with QC Requirements & Performance Standards for the Analysis of EPH under the Massachusetts Contingency Plan, WSC-CAM-IVB, July 2010.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.

EPA 6860: SCM: Perchlorate

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 2

Date Rec'd in Lab: 2/6/19

ALPHA Job #: L1909667

ALPHA ANALYTICAL
8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Client Information

Client: OHI Engineering Inc
Address: 44 West Ave
Mansfield MA
Phone: 508 339 3929
Email: BShaw@OHIEngineering.com

Project Information

Project Name: 20 Krakman
Project Location: 20 Krakman
Project #: 19-1925
Project Manager: B. Shaw
ALPHA Quote #:

Report Information - Data Deliverables

X ADEx ☐ EMAIL

Billing Information

X Same as Client info PO #:

Regulatory Requirements & Project Information Requirements

X Yes ☐ No MA MCP Analytical Methods ☐ Yes ☐ No CT RCP Analytical Methods
☐ Yes ☐ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☐ No NPDES RGP
☐ Other State /Fed Program _____ Criteria _____

Turn-Around Time

X Standard ☐ RUSH (only confirmed if pre-approved)
Date Due:

Additional Project Information:

Hold Remaining Sample after analysis

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	VOC: ☐ 8260 ☐ 624 ☐ 524.2	SVOC: ☐ ABN ☐ PAH	METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15	METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13	EPH: ☐ Ranges & Targets ☐ Ranges Only	VPH: ☐ Ranges & Targets ☐ Ranges Only	☐ PCB ☐ PEST	TPH: ☐ Quant Only ☐ Fingerprint	Lead	Sample Comments	TOTAL # BOTTLES
1909667-01	TP-12 0-1		2:50p	Soil	BS/KC							X		X		4
02	TP-12 2-3		255									X		X		4
03	TP-12 3-4		300									X				4
04	TP-13 0-1		315									X		X		4
05	TP-13 2-3		3:15									X		X		4
06	TP-14 0-1		345									X		X		4
07	TP-14 2-3		350									X		X		4
08	TP-14 3.5-4		355						X			X				4
09	TP-15 0-1		325									X		X		4
10	TP-15 2-3		330									X		X		4
												A/D		A/D		
						Container Type										
						Preservative										

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
	2/6/19		2/6/19 10:27
Brenda Soto	2/6/19	Brenda Soto	2/6/19 11:10
Brenda Soto	2/6/19 11:48		2/6/19 11:48

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

CHAIN OF CUSTODY

PAGE 2 OF 2

Date Rec'd in Lab: 2/6/19

ALPHA Job #: L1904667

ALPHA ANALYTICAL
8 Walkup Drive
Westboro, MA 01581
Tel: 508-898-9220

320 Forbes Blvd
Mansfield, MA 02048
Tel: 508-822-9300

Client Information

Client: OTI Engineering Inc
Address: 44 West Ave
Mansfield MA
Phone: 508 339 3929
Email: B. Snow @ OTIengineering.com

Project Information

Project Name: 20 Kraemer
Project Location: 20 Kraemer
Project #: 19-1925
Project Manager: B. Snow
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due:

Additional Project Information:

Report Information - Data Deliverables

☒ ADEx ☒ EMAIL

Billing Information

☒ Same as Client info PO #:

Regulatory Requirements & Project Information Requirements

☒ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☐ No CT RCP Analytical Methods
☐ Yes ☐ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☐ No NPDES RGP
☐ Other State /Fed Program _____ Criteria _____

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	VOC: ☐ 8260 ☐ 624 ☐ 524.2	SVOC: ☐ ABN ☐ PAH	METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15	METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13	EPH: ☐ Ranges & Targets ☐ Ranges Only	VPH: ☐ Ranges & Targets ☐ Ranges Only	☒ PCB ☐ PEST	TPH: ☐ Quant Only ☐ Fingerprint	Sample Comments	TOTAL # BOTTLES
04667-11	20 S2 [illegible] 0-1	2/5/19	400	Soil	BS/KC							X			2
12	20 S1 - 0-1	2/5/19	405	Soil	BS/KC							X			2

SAMPLE INFO
Filtration ☐ Field ☐ Lab to do
Preservation ☐ Lab to do

Container Type												A/R														
Preservative												Ice														

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	2/6/19	[signature]	2/6/19 10:27
Brenden Soar	2/6/19 1114	Brenden Soar	2/6/19 11:10
		[signature]	2/6/19 1114

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

CERTIFICATE OF ANALYSIS

Christine LeBlanc
East Coast Engineering
147 Bakerville Road
Dartmouth, MA 02748

RE: Rockwood Homes (N/A)
ESS Laboratory Work Order Number: 1811485

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

REVIEWED
By ESS Laboratory at 6:14 pm, Dec 07, 2018

Analytical Summary
The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with TNI and relative state standards, and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.

CERTIFICATE OF ANALYSIS

Client Name: East Coast Engineering
Client Project ID: Rockwood Homes

ESS Laboratory Work Order: 1811485

SAMPLE RECEIPT

The following samples were received on November 19, 2018 for the analyses specified on the enclosed Chain of Custody Record.

To achieve CAM compliance for MCP data, ESS Laboratory has reviewed all QA/QC Requirements and Performance Standards listed in each method. Holding times and preservation have also been reviewed. All CAM requirements have been performed and achieved unless noted in the project narrative.

Each method has been set-up in the laboratory to reach required MCP standards. The methods for aqueous VOA and Soil Methanol VOA have known limitations for certain analytes. The regulatory standards may not be achieved due to these limitations. In addition, for all methods, matrix interferences, dilutions, and %Solids may elevate method reporting limits above regulatory standards. ESS Laboratory can provide, upon request, a Limit Checker (regulatory standard comparison spreadsheet) electronic deliverable which will highlight these exceedances.

Low Level VOA vials were frozen by ESS Laboratory on November 19, 2018 at 21:47.

Question I: All samples for EPH and Metals were analyzed for a subset of the required MCP list per the client's request.

Revision 1 December 7, 2018: This report has been revised to include full list SVOA per client request.

Lab Number	Sample Name	Matrix	Analysis
1811485-01	S1 0-3ft 0 Kraseman	Soil	1311, 1311/6010C, 6010C, 7471B, 8260B Low, 8270D
1811485-02	S1 3-4ft 0 Kraseman	Soil	6010C, 7471B, 8260B Low
1811485-03	S2 0-3ft 0 Kraseman	Soil	1311, 1311/6010C, 6010C, 7471B, 8270D
1811485-04	Trip Blank	Solid	8260B Low
1811485-05	Composite S1 0-3ft S2 0-3ft	Soil	8082A, 8100M

CERTIFICATE OF ANALYSIS

Client Name: East Coast Engineering
Client Project ID: Rockwood Homes

ESS Laboratory Work Order: 1811485

PROJECT NARRATIVE

5035/8260B Volatile Organic Compounds / Low Level

C8K0358-CCV1 **Continuing Calibration %Diff/Drift is above control limit (CD+).**
1,4-Dioxane (26% @ 20%), 2-Butanone (21% @ 20%), 4-Methyl-2-Pentanone (24% @ 20%), Acetone (34% @ 20%), Bromomethane (22% @ 20%), Tetrahydrofuran (28% @ 20%)

8082A Polychlorinated Biphenyls (PCB)

1811485-05 **Elevated Method Reporting Limits due to sample matrix (EL).**

1811485-05 **Surrogate recovery(ies) diluted below the MRL (SD).**
Decachlorobiphenyl (% @ 30-150%), Decachlorobiphenyl [2C] (% @ 30-150%), Tetrachloro-m-xylene (% @ 30-150%), Tetrachloro-m-xylene [2C] (% @ 30-150%)

8270D Semi-Volatile Organic Compounds

C8K0331-CCV1 **Calibration required quadratic regression (Q).**
2,4-Dinitrophenol (125% @ 80-120%), Pentachlorophenol (106% @ 80-120%)

C8K0331-CCV1 **Continuing Calibration %Diff/Drift is above control limit (CD+).**
2,4-Dinitrophenol (25% @ 20%), 4-Nitrophenol (21% @ 20%)

C8K0362-CCV1 **Analyte does not meet the Relative Response Factor (RRF) criteria in the calibration**
2,4-Dinitrophenol (136% @ 80-120%)

C8K0362-CCV1 **Calibration required quadratic regression (Q).**
2,4-Dinitrophenol (136% @ 80-120%), Pentachlorophenol (117% @ 80-120%)

C8K0362-CCV1 **Continuing Calibration %Diff/Drift is above control limit (CD+).**
2,4-Dinitrophenol (36% @ 20%)

C8K0362-CCV1 **Continuing Calibration %Diff/Drift is below control limit (CD-).**
4-Chloroaniline (26% @ 20%)

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

To ensure you are viewing the most current version of the documents below, please clear your internet cookies for www.ESSLaboratory.com. Consult your IT Support personnel for information on how to clear your internet cookies.

Definitions of Quality Control Parameters

Semivolatile Organics Internal Standard Information

Semivolatile Organics Surrogate Information

Volatile Organics Internal Standard Information

Volatile Organics Surrogate Information

EPH and VPH Alkane Lists

CERTIFICATE OF ANALYSIS

Client Name: East Coast Engineering
Client Project ID: Rockwood Homes

ESS Laboratory Work Order: 1811485

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

1010A - Flashpoint
6010C - ICP
6020A - ICP MS
7010 - Graphite Furnace
7196A - Hexavalent Chromium
7470A - Aqueous Mercury
7471B - Solid Mercury
8011 - EDB/DBCP/TCP
8015C - GRO/DRO
8081B - Pesticides
8082A - PCB
8100M - TPH
8151A - Herbicides
8260B - VOA
8270D - SVOA
8270D SIM - SVOA Low Level
9014 - Cyanide
9038 - Sulfate
9040C - Aqueous pH
9045D - Solid pH (Corrosivity)
9050A - Specific Conductance
9056A - Anions (IC)
9060A - TOC
9095B - Paint Filter
MADEP 04-1.1 - EPH
MADEP 04-2.1 - VPH

Prep Methods

3005A - Aqueous ICP Digestion
3020A - Aqueous Graphite Furnace / ICP MS Digestion
3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
3060A - Solid Hexavalent Chromium Digestion
3510C - Separatory Funnel Extraction
3520C - Liquid / Liquid Extraction
3540C - Manual Soxhlet Extraction
3541 - Automated Soxhlet Extraction
3546 - Microwave Extraction
3580A - Waste Dilution
5030B - Aqueous Purge and Trap
5030C - Aqueous Purge and Trap
5035A - Solid Purge and Trap

SW846 Reactivity Methods 7.3.3.2 (Reactive Cyanide) and 7.3.4.1 (Reactive Sulfide) have been withdrawn by EPA. These methods are reported per client request and are not NELAP accredited.

CERTIFICATE OF ANALYSIS

Client Name: East Coast Engineering
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MassDEP Analytical Protocol Certification Form

MADEP RTN: _____

This form provides certification for the following data set: **1811485-01 through 1811485-05**

Matrices: ( ) Ground Water/Surface Water (X) Soil/Sediment ( ) Drinking Water ( ) Air ( ) Other:_____

CAM Protocol (check all that apply below):

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

Affirmative responses to questions A through F are 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?	Yes (X) No ( )
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	Yes (X) No ( )
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?	Yes (X) No ( )
D	Does the laboratory report comply with all the reporting requirements specified in the CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	Yes (X) No ( )
E	VPH, EPH, APH and TO-15 only: a. Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	Yes (X) No ( )
	b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	Yes ( ) No ( )
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)?	Yes (X) No ( )

Responses to Questions G, H and I below are required for '"Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocols(s)?	Yes ( ) No (X)*
	***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.*	
H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	Yes ( ) No (X)*
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	Yes ( ) No (X)*

****All negative responses must be addressed in an attached laboratory 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: Laurel Stoddard Date: November 29, 2018

Printed Name: Laurel Stoddard Position: Laboratory Director

CERTIFICATE OF ANALYSIS

Client Name: East Coast Engineering
Client Project ID: Rockwood Homes
Client Sample ID: S1 0-3ft 0 Kraseman
Date Sampled: 11/19/18 11:10
Percent Solids: 71

ESS Laboratory Work Order: 1811485
ESS Laboratory Sample ID: 1811485-01
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Arsenic	**12.5** (2.90)		6010C		1	KJK	11/21/18 3:28	2.41	100	CK82031
Barium	**122** (2.90)		6010C		1	KJK	11/21/18 3:28	2.41	100	CK82031
Cadmium	**0.61** (0.58)		6010C		1	KJK	11/21/18 3:28	2.41	100	CK82031
Chromium	**7.25** (1.16)		6010C		1	KJK	11/21/18 3:28	2.41	100	CK82031
Lead	**139** (5.81)		6010C		1	KJK	11/21/18 3:28	2.41	100	CK82031
Mercury	**0.211** (0.022)		7471B		1	MJV	11/21/18 17:57	1.26	40	CK82032
Selenium	ND (5.81)		6010C		1	KJK	11/21/18 3:28	2.41	100	CK82031
Silver	ND (0.58)		6010C		1	KJK	11/21/18 3:28	2.41	100	CK82031

CERTIFICATE OF ANALYSIS

Client Name: East Coast Engineering
Client Project ID: Rockwood Homes
Client Sample ID: S1 0-3ft 0 Kraseman
Date Sampled: 11/19/18 11:10
Percent Solids: 71

ESS Laboratory Work Order: 1811485
ESS Laboratory Sample ID: 1811485-01
Sample Matrix: Soil
Units: mg/L

Extraction Method: 1311

1311 TCLP Metals

Analyte	Results (MRL)	MDL	Method	TCLP Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	ND (0.050)		1311/6010C		1	KJK	11/28/18 3:31	50	50	CK82741

CERTIFICATE OF ANALYSIS

Client Name: East Coast Engineering
Client Project ID: Rockwood Homes
Client Sample ID: S1 0-3ft 0 Kraseman
Date Sampled: 11/19/18 11:10
Percent Solids: 71
Initial Volume: 9.4
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1811485
ESS Laboratory Sample ID: 1811485-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
1,1,1-Trichloroethane	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
1,1,2,2-Tetrachloroethane	ND (0.0015)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
1,1,2-Trichloroethane	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
1,1-Dichloroethane	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
1,1-Dichloroethene	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
1,1-Dichloropropene	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
1,2,3-Trichlorobenzene	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
1,2,3-Trichloropropane	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
1,2,4-Trichlorobenzene	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
1,2,4-Trimethylbenzene	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
1,2-Dibromo-3-Chloropropane	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
1,2-Dibromoethane	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
1,2-Dichlorobenzene	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
1,2-Dichloroethane	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
1,2-Dichloropropane	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
1,3,5-Trimethylbenzene	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
1,3-Dichlorobenzene	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
1,3-Dichloropropane	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
1,4-Dichlorobenzene	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
1,4-Dioxane	ND (0.0745)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
2,2-Dichloropropane	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
2-Butanone	ND (0.0074)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
2-Chlorotoluene	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
2-Hexanone	ND (0.0074)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
4-Chlorotoluene	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
4-Isopropyltoluene	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
4-Methyl-2-Pentanone	ND (0.0074)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
Acetone	ND (0.0074)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
Benzene	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
Bromobenzene	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
Bromochloromethane	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009

CERTIFICATE OF ANALYSIS

Client Name: East Coast Engineering
Client Project ID: Rockwood Homes
Client Sample ID: S1 0-3ft 0 Kraseman
Date Sampled: 11/19/18 11:10
Percent Solids: 71
Initial Volume: 9.4
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1811485
ESS Laboratory Sample ID: 1811485-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Bromodichloromethane	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
Bromoform	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
Bromomethane	ND (0.0074)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
Carbon Disulfide	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
Carbon Tetrachloride	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
Chlorobenzene	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
Chloroethane	ND (0.0074)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
Chloroform	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
Chloromethane	ND (0.0074)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
cis-1,2-Dichloroethene	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
cis-1,3-Dichloropropene	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
Dibromochloromethane	ND (0.0015)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
Dibromomethane	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
Dichlorodifluoromethane	ND (0.0074)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
Diethyl Ether	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
Di-isopropyl ether	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
Ethyl tertiary-butyl ether	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
Ethylbenzene	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
Hexachlorobutadiene	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
Isopropylbenzene	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
Methyl tert-Butyl Ether	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
Methylene Chloride	ND (0.0074)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
Naphthalene	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
n-Butylbenzene	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
n-Propylbenzene	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
sec-Butylbenzene	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
Styrene	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
tert-Butylbenzene	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
Tertiary-amyl methyl ether	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
Tetrachloroethene	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
Tetrahydrofuran	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
Toluene	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009

CERTIFICATE OF ANALYSIS

Client Name: East Coast Engineering
Client Project ID: Rockwood Homes
Client Sample ID: S1 0-3ft 0 Kraseman
Date Sampled: 11/19/18 11:10
Percent Solids: 71
Initial Volume: 9.4
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1811485
ESS Laboratory Sample ID: 1811485-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
trans-1,2-Dichloroethene	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
trans-1,3-Dichloropropene	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
Trichloroethene	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
Trichlorofluoromethane	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
Vinyl Chloride	ND (0.0074)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
Xylene O	ND (0.0037)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
Xylene P,M	ND (0.0074)		8260B Low		1	11/20/18 18:32	C8K0358	CK82009
Xylenes (Total)	ND (0.0074)		8260B Low		1	11/20/18 18:32		[CALC]

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*123 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*79 %*		*70-130*
Surrogate: Dibromofluoromethane	*119 %*		*70-130*
Surrogate: Toluene-d8	*105 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: East Coast Engineering
Client Project ID: Rockwood Homes
Client Sample ID: S1 0-3ft 0 Kraseman
Date Sampled: 11/19/18 11:10
Percent Solids: 71
Initial Volume: 15.4
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1811485
ESS Laboratory Sample ID: 1811485-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 11/20/18 10:30

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,2,4-Trichlorobenzene	ND (0.908)		8270D		2	11/20/18 19:43	C8K0362	CK81914
1,2-Dichlorobenzene	ND (0.908)		8270D		2	11/20/18 19:43	C8K0362	CK81914
1,3-Dichlorobenzene	ND (0.908)		8270D		2	11/20/18 19:43	C8K0362	CK81914
1,4-Dichlorobenzene	ND (0.455)		8270D		2	11/20/18 19:43	C8K0362	CK81914
2,4,5-Trichlorophenol	ND (0.908)		8270D		2	11/20/18 19:43	C8K0362	CK81914
2,4,6-Trichlorophenol	ND (0.455)		8270D		2	11/20/18 19:43	C8K0362	CK81914
2,4-Dichlorophenol	ND (0.455)		8270D		2	11/20/18 19:43	C8K0362	CK81914
2,4-Dimethylphenol	ND (0.455)		8270D		2	11/20/18 19:43	C8K0362	CK81914
2,4-Dinitrophenol	ND (1.82)		8270D		2	11/20/18 19:43	C8K0362	CK81914
2,4-Dinitrotoluene	ND (0.455)		8270D		2	11/20/18 19:43	C8K0362	CK81914
2,6-Dinitrotoluene	ND (0.908)		8270D		2	11/20/18 19:43	C8K0362	CK81914
2-Chloronaphthalene	ND (0.908)		8270D		2	11/20/18 19:43	C8K0362	CK81914
2-Chlorophenol	ND (0.455)		8270D		2	11/20/18 19:43	C8K0362	CK81914
2-Methylnaphthalene	ND (0.455)		8270D		2	11/20/18 19:43	C8K0362	CK81914
2-Methylphenol	ND (0.908)		8270D		2	11/20/18 19:43	C8K0362	CK81914
2-Nitrophenol	ND (0.908)		8270D		2	11/20/18 19:43	C8K0362	CK81914
3,3′-Dichlorobenzidine	ND (0.908)		8270D		2	11/20/18 19:43	C8K0362	CK81914
3+4-Methylphenol	ND (1.82)		8270D		2	11/20/18 19:43	C8K0362	CK81914
4-Bromophenyl-phenylether	ND (0.908)		8270D		2	11/20/18 19:43	C8K0362	CK81914
4-Chloroaniline	ND (0.908)		8270D		2	11/20/18 19:43	C8K0362	CK81914
4-Nitrophenol	ND (4.55)		8270D		2	11/20/18 19:43	C8K0362	CK81914
Acenaphthene	ND (0.908)		8270D		2	11/20/18 19:43	C8K0362	CK81914
Acenaphthylene	ND (0.908)		8270D		2	11/20/18 19:43	C8K0362	CK81914
Acetophenone	ND (1.82)		8270D		2	11/20/18 19:43	C8K0362	CK81914
Aniline	ND (4.55)		8270D		2	11/20/18 19:43	C8K0362	CK81914
Anthracene	ND (0.908)		8270D		2	11/20/18 19:43	C8K0362	CK81914
Azobenzene	ND (0.908)		8270D		2	11/20/18 19:43	C8K0362	CK81914
Benzo(a)anthracene	ND (0.908)		8270D		2	11/20/18 19:43	C8K0362	CK81914
Benzo(a)pyrene	**0.628** (0.455)		8270D		2	11/20/18 19:43	C8K0362	CK81914
Benzo(b)fluoranthene	ND (0.908)		8270D		2	11/20/18 19:43	C8K0362	CK81914
Benzo(g,h,i)perylene	ND (0.908)		8270D		2	11/20/18 19:43	C8K0362	CK81914
Benzo(k)fluoranthene	ND (0.908)		8270D		2	11/20/18 19:43	C8K0362	CK81914

CERTIFICATE OF ANALYSIS

Client Name: East Coast Engineering
Client Project ID: Rockwood Homes
Client Sample ID: S1 0-3ft 0 Kraseman
Date Sampled: 11/19/18 11:10
Percent Solids: 71
Initial Volume: 15.4
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1811485
ESS Laboratory Sample ID: 1811485-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 11/20/18 10:30

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
bis(2-Chloroethoxy)methane	ND (0.908)		8270D		2	11/20/18 19:43	C8K0362	CK81914
bis(2-Chloroethyl)ether	ND (0.455)		8270D		2	11/20/18 19:43	C8K0362	CK81914
bis(2-chloroisopropyl)Ether	ND (0.455)		8270D		2	11/20/18 19:43	C8K0362	CK81914
bis(2-Ethylhexyl)phthalate	ND (0.908)		8270D		2	11/20/18 19:43	C8K0362	CK81914
Butylbenzylphthalate	ND (0.908)		8270D		2	11/20/18 19:43	C8K0362	CK81914
Carbazole	ND (0.908)		8270D		2	11/20/18 19:43	C8K0362	CK81914
Chrysene	**0.492** (0.455)		8270D		2	11/20/18 19:43	C8K0362	CK81914
Dibenzo(a,h)Anthracene	ND (0.455)		8270D		2	11/20/18 19:43	C8K0362	CK81914
Dibenzofuran	ND (0.908)		8270D		2	11/20/18 19:43	C8K0362	CK81914
Diethylphthalate	ND (0.908)		8270D		2	11/20/18 19:43	C8K0362	CK81914
Dimethylphthalate	ND (0.908)		8270D		2	11/20/18 19:43	C8K0362	CK81914
Di-n-butylphthalate	ND (0.908)		8270D		2	11/20/18 19:43	C8K0362	CK81914
Di-n-octylphthalate	ND (0.908)		8270D		2	11/20/18 19:43	C8K0362	CK81914
Fluoranthene	**0.973** (0.908)		8270D		2	11/20/18 19:43	C8K0362	CK81914
Fluorene	ND (0.908)		8270D		2	11/20/18 19:43	C8K0362	CK81914
Hexachlorobenzene	ND (0.455)		8270D		2	11/20/18 19:43	C8K0362	CK81914
Hexachlorobutadiene	ND (0.908)		8270D		2	11/20/18 19:43	C8K0362	CK81914
Hexachloroethane	ND (0.455)		8270D		2	11/20/18 19:43	C8K0362	CK81914
Indeno(1,2,3-cd)Pyrene	ND (0.908)		8270D		2	11/20/18 19:43	C8K0362	CK81914
Isophorone	ND (0.908)		8270D		2	11/20/18 19:43	C8K0362	CK81914
Naphthalene	ND (0.908)		8270D		2	11/20/18 19:43	C8K0362	CK81914
Nitrobenzene	ND (0.908)		8270D		2	11/20/18 19:43	C8K0362	CK81914
N-Nitrosodimethylamine	ND (0.908)		8270D		2	11/20/18 19:43	C8K0362	CK81914
Pentachlorophenol	ND (1.82)		8270D		2	11/20/18 19:43	C8K0362	CK81914
Phenanthrene	ND (0.908)		8270D		2	11/20/18 19:43	C8K0362	CK81914
Phenol	ND (0.908)		8270D		2	11/20/18 19:43	C8K0362	CK81914
Pyrene	**1.32** (0.908)		8270D		2	11/20/18 19:43	C8K0362	CK81914
Pyridine	ND (4.55)		8270D		2	11/20/18 19:43	C8K0362	CK81914

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*37 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*60 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: East Coast Engineering
Client Project ID: Rockwood Homes
Client Sample ID: S1 0-3ft 0 Kraseman
Date Sampled: 11/19/18 11:10
Percent Solids: 71
Initial Volume: 15.4
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1811485
ESS Laboratory Sample ID: 1811485-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 11/20/18 10:30

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Surrogate: 2-Chlorophenol-d4		*47 %*		*30-130*				
Surrogate: 2-Fluorobiphenyl		*52 %*		*30-130*				
Surrogate: 2-Fluorophenol		*45 %*		*30-130*				
Surrogate: Nitrobenzene-d5		*41 %*		*30-130*				
Surrogate: Phenol-d6		*49 %*		*30-130*				
Surrogate: p-Terphenyl-d14		*70 %*		*30-130*				

CERTIFICATE OF ANALYSIS

Client Name: East Coast Engineering
Client Project ID: Rockwood Homes
Client Sample ID: S1 0-3ft 0 Kraseman
Date Sampled: 11/19/18 11:10
Percent Solids: 71
Initial Volume: 100
Final Volume: 2000
Extraction Method: 1311

ESS Laboratory Work Order: 1811485
ESS Laboratory Sample ID: 1811485-01
Sample Matrix: Soil
Units: °C
Analyst: NAR
Prepared: 11/26/18 11:40

TCLP Extraction by 1311

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Batch
Temperature (Min C)	**20.4** (N/A)		1311		1	NAR	11/27/18 6:10	CK82128
Temperature (Max C)	**21.1** (N/A)		1311		1	NAR	11/27/18 6:10	CK82128
Temperature (Range)	**Temperature is not within 23 +/-2 °C.** (N/A)							

CERTIFICATE OF ANALYSIS

Client Name: East Coast Engineering
Client Project ID: Rockwood Homes
Client Sample ID: S1 3-4ft 0 Kraseman
Date Sampled: 11/19/18 11:30
Percent Solids: 88

ESS Laboratory Work Order: 1811485
ESS Laboratory Sample ID: 1811485-02
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Arsenic	ND (2.21)		6010C		1	KJK	11/21/18 3:33	2.56	100	CK82031
Barium	**9.82** (2.21)		6010C		1	KJK	11/21/18 3:33	2.56	100	CK82031
Cadmium	ND (0.44)		6010C		1	KJK	11/21/18 3:33	2.56	100	CK82031
Chromium	**4.65** (0.89)		6010C		1	KJK	11/21/18 3:33	2.56	100	CK82031
Lead	ND (4.43)		6010C		1	KJK	11/21/18 3:33	2.56	100	CK82031
Mercury	ND (0.029)		7471B		1	MJV	11/21/18 17:59	0.77	40	CK82032
Selenium	ND (4.43)		6010C		1	KJK	11/21/18 3:33	2.56	100	CK82031
Silver	ND (0.44)		6010C		1	KJK	11/21/18 3:33	2.56	100	CK82031

CERTIFICATE OF ANALYSIS

Client Name: East Coast Engineering
Client Project ID: Rockwood Homes
Client Sample ID: S1 3-4ft 0 Kraseman
Date Sampled: 11/19/18 11:30
Percent Solids: 88
Initial Volume: 9.7
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1811485
ESS Laboratory Sample ID: 1811485-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
1,1,1-Trichloroethane	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
1,1,2,2-Tetrachloroethane	ND (0.0012)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
1,1,2-Trichloroethane	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
1,1-Dichloroethane	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
1,1-Dichloroethene	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
1,1-Dichloropropene	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
1,2,3-Trichlorobenzene	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
1,2,3-Trichloropropane	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
1,2,4-Trichlorobenzene	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
1,2,4-Trimethylbenzene	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
1,2-Dibromo-3-Chloropropane	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
1,2-Dibromoethane	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
1,2-Dichlorobenzene	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
1,2-Dichloroethane	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
1,2-Dichloropropane	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
1,3,5-Trimethylbenzene	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
1,3-Dichlorobenzene	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
1,3-Dichloropropane	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
1,4-Dichlorobenzene	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
1,4-Dioxane	ND (0.0584)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
2,2-Dichloropropane	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
2-Butanone	ND (0.0058)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
2-Chlorotoluene	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
2-Hexanone	ND (0.0058)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
4-Chlorotoluene	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
4-Isopropyltoluene	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
4-Methyl-2-Pentanone	ND (0.0058)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
Acetone	ND (0.0058)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
Benzene	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
Bromobenzene	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
Bromochloromethane	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009

CERTIFICATE OF ANALYSIS

Client Name: East Coast Engineering
Client Project ID: Rockwood Homes
Client Sample ID: S1 3-4ft 0 Kraseman
Date Sampled: 11/19/18 11:30
Percent Solids: 88
Initial Volume: 9.7
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1811485
ESS Laboratory Sample ID: 1811485-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Bromodichloromethane	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
Bromoform	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
Bromomethane	ND (0.0058)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
Carbon Disulfide	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
Carbon Tetrachloride	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
Chlorobenzene	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
Chloroethane	ND (0.0058)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
Chloroform	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
Chloromethane	ND (0.0058)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
cis-1,2-Dichloroethene	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
cis-1,3-Dichloropropene	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
Dibromochloromethane	ND (0.0012)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
Dibromomethane	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
Dichlorodifluoromethane	ND (0.0058)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
Diethyl Ether	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
Di-isopropyl ether	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
Ethyl tertiary-butyl ether	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
Ethylbenzene	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
Hexachlorobutadiene	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
Isopropylbenzene	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
Methyl tert-Butyl Ether	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
Methylene Chloride	ND (0.0058)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
Naphthalene	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
n-Butylbenzene	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
n-Propylbenzene	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
sec-Butylbenzene	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
Styrene	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
tert-Butylbenzene	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
Tertiary-amyl methyl ether	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
Tetrachloroethene	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
Tetrahydrofuran	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
Toluene	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009

CERTIFICATE OF ANALYSIS

Client Name: East Coast Engineering
Client Project ID: Rockwood Homes
Client Sample ID: S1 3-4ft 0 Kraseman
Date Sampled: 11/19/18 11:30
Percent Solids: 88
Initial Volume: 9.7
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1811485
ESS Laboratory Sample ID: 1811485-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
trans-1,2-Dichloroethene	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
trans-1,3-Dichloropropene	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
Trichloroethene	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
Trichlorofluoromethane	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
Vinyl Chloride	ND (0.0058)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
Xylene O	ND (0.0029)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
Xylene P,M	ND (0.0058)		8260B Low		1	11/20/18 18:06	C8K0358	CK82009
Xylenes (Total)	ND (0.0058)		8260B Low		1	11/20/18 18:06		[CALC]

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*119 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*94 %*		*70-130*
Surrogate: Dibromofluoromethane	*115 %*		*70-130*
Surrogate: Toluene-d8	*93 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: East Coast Engineering
Client Project ID: Rockwood Homes
Client Sample ID: S2 0-3ft 0 Kraseman
Date Sampled: 11/19/18 11:00
Percent Solids: 76

ESS Laboratory Work Order: 1811485
ESS Laboratory Sample ID: 1811485-03
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Arsenic	**3.51** (2.87)		6010C		1	KJK	11/21/18 3:37	2.28	100	CK82031
Barium	**72.3** (2.87)		6010C		1	KJK	11/21/18 3:37	2.28	100	CK82031
Cadmium	**0.87** (0.57)		6010C		1	KJK	11/21/18 3:37	2.28	100	CK82031
Chromium	**6.50** (1.15)		6010C		1	KJK	11/21/18 3:37	2.28	100	CK82031
Lead	**151** (5.74)		6010C		1	KJK	11/21/18 3:37	2.28	100	CK82031
Mercury	**0.137** (0.025)		7471B		1	MJV	11/21/18 18:01	1.05	40	CK82032
Selenium	ND (5.74)		6010C		1	KJK	11/21/18 3:37	2.28	100	CK82031
Silver	**0.59** (0.57)		6010C		1	KJK	11/21/18 3:37	2.28	100	CK82031

CERTIFICATE OF ANALYSIS

Client Name: East Coast Engineering
Client Project ID: Rockwood Homes
Client Sample ID: S2 0-3ft 0 Kraseman
Date Sampled: 11/19/18 11:00
Percent Solids: 76

ESS Laboratory Work Order: 1811485
ESS Laboratory Sample ID: 1811485-03
Sample Matrix: Soil
Units: mg/L

Extraction Method: 1311

1311 TCLP Metals

Analyte	Results (MRL)	MDL	Method	TCLP Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	**0.057** (0.050)		1311/6010C		1	KJK	11/28/18 3:35	50	50	CK82741

CERTIFICATE OF ANALYSIS

Client Name: East Coast Engineering
Client Project ID: Rockwood Homes
Client Sample ID: S2 0-3ft 0 Kraseman
Date Sampled: 11/19/18 11:00
Percent Solids: 76
Initial Volume: 15.6
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1811485
ESS Laboratory Sample ID: 1811485-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 11/20/18 10:30

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,2,4-Trichlorobenzene	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
1,2-Dichlorobenzene	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
1,3-Dichlorobenzene	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
1,4-Dichlorobenzene	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
2,4,5-Trichlorophenol	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
2,4,6-Trichlorophenol	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
2,4-Dichlorophenol	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
2,4-Dimethylphenol	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
2,4-Dinitrophenol	ND (2.10)		8270D		1	11/20/18 18:33	C8K0362	CK81914
2,4-Dinitrotoluene	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
2,6-Dinitrotoluene	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
2-Chloronaphthalene	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
2-Chlorophenol	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
2-Methylnaphthalene	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
2-Methylphenol	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
2-Nitrophenol	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
3,3′-Dichlorobenzidine	ND (0.839)		8270D		1	11/20/18 18:33	C8K0362	CK81914
3+4-Methylphenol	ND (0.839)		8270D		1	11/20/18 18:33	C8K0362	CK81914
4-Bromophenyl-phenylether	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
4-Chloroaniline	ND (0.839)		8270D		1	11/20/18 18:33	C8K0362	CK81914
4-Nitrophenol	ND (2.10)		8270D		1	11/20/18 18:33	C8K0362	CK81914
Acenaphthene	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
Acenaphthylene	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
Acetophenone	ND (0.839)		8270D		1	11/20/18 18:33	C8K0362	CK81914
Aniline	ND (2.10)		8270D		1	11/20/18 18:33	C8K0362	CK81914
Anthracene	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
Azobenzene	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
Benzo(a)anthracene	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
Benzo(a)pyrene	**0.253** (0.210)		8270D		1	11/20/18 18:33	C8K0362	CK81914
Benzo(b)fluoranthene	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
Benzo(g,h,i)perylene	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
Benzo(k)fluoranthene	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914

CERTIFICATE OF ANALYSIS

Client Name: East Coast Engineering
Client Project ID: Rockwood Homes
Client Sample ID: S2 0-3ft 0 Kraseman
Date Sampled: 11/19/18 11:00
Percent Solids: 76
Initial Volume: 15.6
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1811485
ESS Laboratory Sample ID: 1811485-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 11/20/18 10:30

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
bis(2-Chloroethoxy)methane	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
bis(2-Chloroethyl)ether	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
bis(2-chloroisopropyl)Ether	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
bis(2-Ethylhexyl)phthalate	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
Butylbenzylphthalate	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
Carbazole	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
Chrysene	**0.225** (0.210)		8270D		1	11/20/18 18:33	C8K0362	CK81914
Dibenzo(a,h)Anthracene	ND (0.210)		8270D		1	11/20/18 18:33	C8K0362	CK81914
Dibenzofuran	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
Diethylphthalate	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
Dimethylphthalate	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
Di-n-butylphthalate	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
Di-n-octylphthalate	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
Fluoranthene	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
Fluorene	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
Hexachlorobenzene	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
Hexachlorobutadiene	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
Hexachloroethane	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
Indeno(1,2,3-cd)Pyrene	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
Isophorone	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
Naphthalene	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
Nitrobenzene	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
N-Nitrosodimethylamine	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
Pentachlorophenol	ND (2.10)		8270D		1	11/20/18 18:33	C8K0362	CK81914
Phenanthrene	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
Phenol	ND (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
Pyrene	**0.596** (0.419)		8270D		1	11/20/18 18:33	C8K0362	CK81914
Pyridine	ND (2.10)		8270D		1	11/20/18 18:33	C8K0362	CK81914

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*82 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*87 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: East Coast Engineering
Client Project ID: Rockwood Homes
Client Sample ID: S2 0-3ft 0 Kraseman
Date Sampled: 11/19/18 11:00
Percent Solids: 76
Initial Volume: 15.6
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1811485
ESS Laboratory Sample ID: 1811485-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 11/20/18 10:30

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Surrogate: 2-Chlorophenol-d4		*90 %*		*30-130*				
Surrogate: 2-Fluorobiphenyl		*82 %*		*30-130*				
Surrogate: 2-Fluorophenol		*90 %*		*30-130*				
Surrogate: Nitrobenzene-d5		*78 %*		*30-130*				
Surrogate: Phenol-d6		*97 %*		*30-130*				
Surrogate: p-Terphenyl-d14		*101 %*		*30-130*				

CERTIFICATE OF ANALYSIS

Client Name: East Coast Engineering
Client Project ID: Rockwood Homes
Client Sample ID: S2 0-3ft 0 Kraseman
Date Sampled: 11/19/18 11:00
Percent Solids: 76
Initial Volume: 100
Final Volume: 2000
Extraction Method: 1311

ESS Laboratory Work Order: 1811485
ESS Laboratory Sample ID: 1811485-03
Sample Matrix: Soil
Units: °C
Analyst: NAR
Prepared: 11/26/18 11:40

TCLP Extraction by 1311

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Batch
Temperature (Min C)	**20.4** (N/A)		1311		1	NAR	11/27/18 6:10	CK82128
Temperature (Max C)	**21.1** (N/A)		1311		1	NAR	11/27/18 6:10	CK82128
Temperature (Range)	**Temperature is not within 23 +/-2 °C.** (N/A)							

CERTIFICATE OF ANALYSIS

Client Name: East Coast Engineering
Client Project ID: Rockwood Homes
Client Sample ID: Trip Blank
Date Sampled: 11/19/18 00:00
Percent Solids: N/A
Initial Volume: 5
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1811485
ESS Laboratory Sample ID: 1811485-04
Sample Matrix: Solid
Units: mg/kg
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
1,1,1-Trichloroethane	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
1,1,2,2-Tetrachloroethane	ND (0.0020)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
1,1,2-Trichloroethane	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
1,1-Dichloroethane	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
1,1-Dichloroethene	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
1,1-Dichloropropene	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
1,2,3-Trichlorobenzene	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
1,2,3-Trichloropropane	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
1,2,4-Trichlorobenzene	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
1,2,4-Trimethylbenzene	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
1,2-Dibromo-3-Chloropropane	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
1,2-Dibromoethane	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
1,2-Dichlorobenzene	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
1,2-Dichloroethane	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
1,2-Dichloropropane	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
1,3,5-Trimethylbenzene	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
1,3-Dichlorobenzene	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
1,3-Dichloropropane	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
1,4-Dichlorobenzene	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
1,4-Dioxane	ND (0.100)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
2,2-Dichloropropane	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
2-Butanone	ND (0.0100)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
2-Chlorotoluene	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
2-Hexanone	ND (0.0100)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
4-Chlorotoluene	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
4-Isopropyltoluene	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
4-Methyl-2-Pentanone	ND (0.0100)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
Acetone	ND (0.0100)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
Benzene	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
Bromobenzene	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
Bromochloromethane	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009

CERTIFICATE OF ANALYSIS

Client Name: East Coast Engineering
Client Project ID: Rockwood Homes
Client Sample ID: Trip Blank
Date Sampled: 11/19/18 00:00
Percent Solids: N/A
Initial Volume: 5
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1811485
ESS Laboratory Sample ID: 1811485-04
Sample Matrix: Solid
Units: mg/kg
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Bromodichloromethane	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
Bromoform	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
Bromomethane	ND (0.0100)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
Carbon Disulfide	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
Carbon Tetrachloride	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
Chlorobenzene	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
Chloroethane	ND (0.0100)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
Chloroform	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
Chloromethane	ND (0.0100)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
cis-1,2-Dichloroethene	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
cis-1,3-Dichloropropene	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
Dibromochloromethane	ND (0.0020)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
Dibromomethane	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
Dichlorodifluoromethane	ND (0.0100)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
Diethyl Ether	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
Di-isopropyl ether	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
Ethyl tertiary-butyl ether	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
Ethylbenzene	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
Hexachlorobutadiene	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
Isopropylbenzene	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
Methyl tert-Butyl Ether	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
Methylene Chloride	ND (0.0100)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
Naphthalene	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
n-Butylbenzene	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
n-Propylbenzene	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
sec-Butylbenzene	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
Styrene	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
tert-Butylbenzene	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
Tertiary-amyl methyl ether	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
Tetrachloroethene	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
Tetrahydrofuran	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
Toluene	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009

CERTIFICATE OF ANALYSIS

Client Name: East Coast Engineering
Client Project ID: Rockwood Homes
Client Sample ID: Trip Blank
Date Sampled: 11/19/18 00:00
Percent Solids: N/A
Initial Volume: 5
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1811485
ESS Laboratory Sample ID: 1811485-04
Sample Matrix: Solid
Units: mg/kg
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
trans-1,2-Dichloroethene	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
trans-1,3-Dichloropropene	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
Trichloroethene	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
Trichlorofluoromethane	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
Vinyl Chloride	ND (0.0100)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
Xylene O	ND (0.0050)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
Xylene P,M	ND (0.0100)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009
Xylenes (Total)	ND (0.0075)		8260B Low		1	11/20/18 13:50	C8K0358	CK82009

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*113 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*94 %*		*70-130*
Surrogate: Dibromofluoromethane	*109 %*		*70-130*
Surrogate: Toluene-d8	*94 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: East Coast Engineering
Client Project ID: Rockwood Homes
Client Sample ID: Composite S1 0-3ft S2 0-3ft
Date Sampled: 11/19/18 11:56
Percent Solids: 83
Initial Volume: 19.8
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 1811485
ESS Laboratory Sample ID: 1811485-05
Sample Matrix: Soil
Units: mg/kg dry
Analyst: CAD
Prepared: 11/21/18 18:05

8082A Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (1.2)		8082A		20	11/27/18 10:22		CK82107
Aroclor 1221	ND (1.2)		8082A		20	11/27/18 10:22		CK82107
Aroclor 1232	ND (1.2)		8082A		20	11/27/18 10:22		CK82107
Aroclor 1242	ND (1.2)		8082A		20	11/27/18 10:22		CK82107
Aroclor 1248	ND (1.2)		8082A		20	11/27/18 10:22		CK82107
Aroclor 1254 [2C]	**15.4** (1.2)		8082A		20	11/27/18 10:22		CK82107
Aroclor 1260	ND (1.2)		8082A		20	11/27/18 10:22		CK82107
Aroclor 1262	ND (1.2)		8082A		20	11/27/18 10:22		CK82107
Aroclor 1268	ND (1.2)		8082A		20	11/27/18 10:22		CK82107

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	%	SD	30-150
Surrogate: Decachlorobiphenyl [2C]	%	SD	30-150
Surrogate: Tetrachloro-m-xylene	%	SD	30-150
Surrogate: Tetrachloro-m-xylene [2C]	%	SD	30-150

CERTIFICATE OF ANALYSIS

Client Name: East Coast Engineering
Client Project ID: Rockwood Homes
Client Sample ID: Composite S1 0-3ft S2 0-3ft
Date Sampled: 11/19/18 11:56
Percent Solids: 83
Initial Volume: 20.2
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1811485
ESS Laboratory Sample ID: 1811485-05
Sample Matrix: Soil
Units: mg/kg dry
Analyst: SMR
Prepared: 11/21/18 13:59

8100M Total Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Total Petroleum Hydrocarbons	**52.8** (12.0)		8100M		1	11/22/18 9:40	C8K0391	CK82116

	%Recovery	Qualifier	Limits
Surrogate: O-Terphenyl	*82 %*		*40-140*

CERTIFICATE OF ANALYSIS

Client Name: East Coast Engineering
Client Project ID: Rockwood Homes

ESS Laboratory Work Order: 1811485

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Total Metals										
Batch CK82031 - 3050B										
Blank										
Arsenic	ND	2.50	mg/kg wet							
Barium	ND	2.50	mg/kg wet							
Cadmium	ND	0.50	mg/kg wet							
Chromium	ND	1.00	mg/kg wet							
Lead	ND	5.00	mg/kg wet							
Selenium	ND	5.00	mg/kg wet							
Silver	ND	0.50	mg/kg wet							
LCS										
Arsenic	60.3	8.06	mg/kg wet	59.00		102	85-115			
Barium	251	8.06	mg/kg wet	233.0		108	83-116			
Cadmium	87.9	1.61	mg/kg wet	98.70		89	84-116			
Chromium	243	3.23	mg/kg wet	240.0		101	85-115			
Lead	262	16.1	mg/kg wet	276.0		95	84-116			
Selenium	93.6	16.1	mg/kg wet	100.0		94	86-115			
Silver	40.9	1.61	mg/kg wet	39.70		103	81-120			
LCS Dup										
Arsenic	61.8	9.43	mg/kg wet	59.00		105	85-115	3	20	
Barium	246	9.43	mg/kg wet	233.0		106	83-116	2	20	
Cadmium	89.0	1.89	mg/kg wet	98.70		90	84-116	1	20	
Chromium	243	3.77	mg/kg wet	240.0		101	85-115	0.2	20	
Lead	274	18.9	mg/kg wet	276.0		99	84-116	5	20	
Selenium	97.5	18.9	mg/kg wet	100.0		97	86-115	4	20	
Silver	41.2	1.89	mg/kg wet	39.70		104	81-120	0.7	20	
Batch CK82032 - 7471B										
Blank										
Mercury	ND	0.033	mg/kg wet							
LCS										
Mercury	3.09	0.367	mg/kg wet	4.850		64	50-103			
LCS Dup										
Mercury	3.29	0.325	mg/kg wet	4.850		68	50-103	6	20	
1311 TCLP Metals										
Batch CK82741 - 1311										
Blank										
Lead	ND	0.050	mg/L							
LCS										
Lead	0.478	0.050	mg/L	0.5000		96	80-120			
LCS Dup										
Lead	0.479	0.050	mg/L	0.5000		96	80-120	0.4	20	
5035/8260B Volatile Organic Compounds / Low Level										

CERTIFICATE OF ANALYSIS

Client Name: East Coast Engineering
Client Project ID: Rockwood Homes

ESS Laboratory Work Order: 1811485

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Low Level										
Batch CK82009 - 5035										
Blank										
1,1,1,2-Tetrachloroethane	ND	0.0050	mg/kg wet							
1,1,1-Trichloroethane	ND	0.0050	mg/kg wet							
1,1,2,2-Tetrachloroethane	ND	0.0020	mg/kg wet							
1,1,2-Trichloroethane	ND	0.0050	mg/kg wet							
1,1-Dichloroethane	ND	0.0050	mg/kg wet							
1,1-Dichloroethene	ND	0.0050	mg/kg wet							
1,1-Dichloropropene	ND	0.0050	mg/kg wet							
1,2,3-Trichlorobenzene	ND	0.0050	mg/kg wet							
1,2,3-Trichloropropane	ND	0.0050	mg/kg wet							
1,2,4-Trichlorobenzene	ND	0.0050	mg/kg wet							
1,2,4-Trimethylbenzene	ND	0.0050	mg/kg wet							
1,2-Dibromo-3-Chloropropane	ND	0.0050	mg/kg wet							
1,2-Dibromoethane	ND	0.0050	mg/kg wet							
1,2-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,2-Dichloroethane	ND	0.0050	mg/kg wet							
1,2-Dichloropropane	ND	0.0050	mg/kg wet							
1,3,5-Trimethylbenzene	ND	0.0050	mg/kg wet							
1,3-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,3-Dichloropropane	ND	0.0050	mg/kg wet							
1,4-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,4-Dioxane	ND	0.100	mg/kg wet							
2,2-Dichloropropane	ND	0.0050	mg/kg wet							
2-Butanone	ND	0.0100	mg/kg wet							
2-Chlorotoluene	ND	0.0050	mg/kg wet							
2-Hexanone	ND	0.0100	mg/kg wet							
4-Chlorotoluene	ND	0.0050	mg/kg wet							
4-Isopropyltoluene	ND	0.0050	mg/kg wet							
4-Methyl-2-Pentanone	ND	0.0100	mg/kg wet							
Acetone	ND	0.0100	mg/kg wet							
Benzene	ND	0.0050	mg/kg wet							
Bromobenzene	ND	0.0050	mg/kg wet							
Bromochloromethane	ND	0.0050	mg/kg wet							
Bromodichloromethane	ND	0.0050	mg/kg wet							
Bromoform	ND	0.0050	mg/kg wet							
Bromomethane	ND	0.0100	mg/kg wet							
Carbon Disulfide	ND	0.0050	mg/kg wet							
Carbon Tetrachloride	ND	0.0050	mg/kg wet							
Chlorobenzene	ND	0.0050	mg/kg wet							
Chloroethane	ND	0.0100	mg/kg wet							
Chloroform	ND	0.0050	mg/kg wet							
Chloromethane	ND	0.0100	mg/kg wet							
cis-1,2-Dichloroethene	ND	0.0050	mg/kg wet							
cis-1,3-Dichloropropene	ND	0.0050	mg/kg wet							
Dibromochloromethane	ND	0.0020	mg/kg wet							

CERTIFICATE OF ANALYSIS

Client Name: East Coast Engineering
Client Project ID: Rockwood Homes

ESS Laboratory Work Order: 1811485

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Low Level										
Batch CK82009 - 5035										
Dibromomethane	ND	0.0050	mg/kg wet							
Dichlorodifluoromethane	ND	0.0100	mg/kg wet							
Diethyl Ether	ND	0.0050	mg/kg wet							
Di-isopropyl ether	ND	0.0050	mg/kg wet							
Ethyl tertiary-butyl ether	ND	0.0050	mg/kg wet							
Ethylbenzene	ND	0.0050	mg/kg wet							
Hexachlorobutadiene	ND	0.0050	mg/kg wet							
Isopropylbenzene	ND	0.0050	mg/kg wet							
Methyl tert-Butyl Ether	ND	0.0050	mg/kg wet							
Methylene Chloride	ND	0.0100	mg/kg wet							
Naphthalene	ND	0.0050	mg/kg wet							
n-Butylbenzene	ND	0.0050	mg/kg wet							
n-Propylbenzene	ND	0.0050	mg/kg wet							
sec-Butylbenzene	ND	0.0050	mg/kg wet							
Styrene	ND	0.0050	mg/kg wet							
tert-Butylbenzene	ND	0.0050	mg/kg wet							
Tertiary-amyl methyl ether	ND	0.0050	mg/kg wet							
Tetrachloroethene	ND	0.0050	mg/kg wet							
Tetrahydrofuran	ND	0.0050	mg/kg wet							
Toluene	ND	0.0050	mg/kg wet							
trans-1,2-Dichloroethene	ND	0.0050	mg/kg wet							
trans-1,3-Dichloropropene	ND	0.0050	mg/kg wet							
Trichloroethene	ND	0.0050	mg/kg wet							
Trichlorofluoromethane	ND	0.0050	mg/kg wet							
Vinyl Chloride	ND	0.0100	mg/kg wet							
Xylene O	ND	0.0050	mg/kg wet							
Xylene P,M	ND	0.0100	mg/kg wet							
Surrogate: 1,2-Dichloroethane-d4	*0.0573*		mg/kg wet	*0.05000*		*115*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*0.0474*		mg/kg wet	*0.05000*		*95*	*70-130*			
Surrogate: Dibromofluoromethane	*0.0547*		mg/kg wet	*0.05000*		*109*	*70-130*			
Surrogate: Toluene-d8	*0.0471*		mg/kg wet	*0.05000*		*94*	*70-130*			
LCS										
1,1,1,2-Tetrachloroethane	0.0466	0.0050	mg/kg wet	0.05000		93	70-130			
1,1,1-Trichloroethane	0.0503	0.0050	mg/kg wet	0.05000		101	70-130			
1,1,2,2-Tetrachloroethane	0.0467	0.0020	mg/kg wet	0.05000		93	70-130			
1,1,2-Trichloroethane	0.0493	0.0050	mg/kg wet	0.05000		99	70-130			
1,1-Dichloroethane	0.0480	0.0050	mg/kg wet	0.05000		96	70-130			
1,1-Dichloroethene	0.0501	0.0050	mg/kg wet	0.05000		100	70-130			
1,1-Dichloropropene	0.0495	0.0050	mg/kg wet	0.05000		99	70-130			
1,2,3-Trichlorobenzene	0.0470	0.0050	mg/kg wet	0.05000		94	70-130			
1,2,3-Trichloropropane	0.0456	0.0050	mg/kg wet	0.05000		91	70-130			
1,2,4-Trichlorobenzene	0.0451	0.0050	mg/kg wet	0.05000		90	70-130			
1,2,4-Trimethylbenzene	0.0453	0.0050	mg/kg wet	0.05000		91	70-130			
1,2-Dibromo-3-Chloropropane	0.0472	0.0050	mg/kg wet	0.05000		94	70-130			
1,2-Dibromoethane	0.0455	0.0050	mg/kg wet	0.05000		91	70-130			

CERTIFICATE OF ANALYSIS

Client Name: East Coast Engineering
Client Project ID: Rockwood Homes

ESS Laboratory Work Order: 1811485

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Low Level										
Batch CK82009 - 5035										
1,2-Dichlorobenzene	0.0453	0.0050	mg/kg wet	0.05000		91	70-130			
1,2-Dichloroethane	0.0490	0.0050	mg/kg wet	0.05000		98	70-130			
1,2-Dichloropropane	0.0476	0.0050	mg/kg wet	0.05000		95	70-130			
1,3,5-Trimethylbenzene	0.0458	0.0050	mg/kg wet	0.05000		92	70-130			
1,3-Dichlorobenzene	0.0443	0.0050	mg/kg wet	0.05000		89	70-130			
1,3-Dichloropropane	0.0464	0.0050	mg/kg wet	0.05000		93	70-130			
1,4-Dichlorobenzene	0.0454	0.0050	mg/kg wet	0.05000		91	70-130			
1,4-Dioxane	1.03	0.100	mg/kg wet	1.000		103	70-130			
2,2-Dichloropropane	0.0509	0.0050	mg/kg wet	0.05000		102	70-130			
2-Butanone	0.253	0.0100	mg/kg wet	0.2500		101	70-130			
2-Chlorotoluene	0.0446	0.0050	mg/kg wet	0.05000		89	70-130			
2-Hexanone	0.223	0.0100	mg/kg wet	0.2500		89	70-130			
4-Chlorotoluene	0.0449	0.0050	mg/kg wet	0.05000		90	70-130			
4-Isopropyltoluene	0.0456	0.0050	mg/kg wet	0.05000		91	70-130			
4-Methyl-2-Pentanone	0.246	0.0100	mg/kg wet	0.2500		98	70-130			
Acetone	0.254	0.0100	mg/kg wet	0.2500		102	70-130			
Benzene	0.0488	0.0050	mg/kg wet	0.05000		98	70-130			
Bromobenzene	0.0452	0.0050	mg/kg wet	0.05000		90	70-130			
Bromochloromethane	0.0498	0.0050	mg/kg wet	0.05000		100	70-130			
Bromodichloromethane	0.0508	0.0050	mg/kg wet	0.05000		102	70-130			
Bromoform	0.0486	0.0050	mg/kg wet	0.05000		97	70-130			
Bromomethane	0.0553	0.0100	mg/kg wet	0.05000		111	70-130			
Carbon Disulfide	0.0527	0.0050	mg/kg wet	0.05000		105	70-130			
Carbon Tetrachloride	0.0521	0.0050	mg/kg wet	0.05000		104	70-130			
Chlorobenzene	0.0441	0.0050	mg/kg wet	0.05000		88	70-130			
Chloroethane	0.0509	0.0100	mg/kg wet	0.05000		102	70-130			
Chloroform	0.0498	0.0050	mg/kg wet	0.05000		100	70-130			
Chloromethane	0.0504	0.0100	mg/kg wet	0.05000		101	70-130			
cis-1,2-Dichloroethene	0.0505	0.0050	mg/kg wet	0.05000		101	70-130			
cis-1,3-Dichloropropene	0.0489	0.0050	mg/kg wet	0.05000		98	70-130			
Dibromochloromethane	0.0401	0.0020	mg/kg wet	0.05000		80	70-130			
Dibromomethane	0.0508	0.0050	mg/kg wet	0.05000		102	70-130			
Dichlorodifluoromethane	0.0566	0.0100	mg/kg wet	0.05000		113	70-130			
Diethyl Ether	0.0514	0.0050	mg/kg wet	0.05000		103	70-130			
Di-isopropyl ether	0.0471	0.0050	mg/kg wet	0.05000		94	70-130			
Ethyl tertiary-butyl ether	0.0439	0.0050	mg/kg wet	0.05000		88	70-130			
Ethylbenzene	0.0437	0.0050	mg/kg wet	0.05000		87	70-130			
Hexachlorobutadiene	0.0439	0.0050	mg/kg wet	0.05000		88	70-130			
Isopropylbenzene	0.0457	0.0050	mg/kg wet	0.05000		91	70-130			
Methyl tert-Butyl Ether	0.0482	0.0050	mg/kg wet	0.05000		96	70-130			
Methylene Chloride	0.0448	0.0100	mg/kg wet	0.05000		90	70-130			
Naphthalene	0.0474	0.0050	mg/kg wet	0.05000		95	70-130			
n-Butylbenzene	0.0462	0.0050	mg/kg wet	0.05000		92	70-130			
n-Propylbenzene	0.0453	0.0050	mg/kg wet	0.05000		91	70-130			
sec-Butylbenzene	0.0451	0.0050	mg/kg wet	0.05000		90	70-130			

CERTIFICATE OF ANALYSIS

Client Name: East Coast Engineering
Client Project ID: Rockwood Homes

ESS Laboratory Work Order: 1811485

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Low Level										
Batch CK82009 - 5035										
Styrene	0.0457	0.0050	mg/kg wet	0.05000		91	70-130			
tert-Butylbenzene	0.0454	0.0050	mg/kg wet	0.05000		91	70-130			
Tertiary-amyl methyl ether	0.0463	0.0050	mg/kg wet	0.05000		93	70-130			
Tetrachloroethene	0.0437	0.0050	mg/kg wet	0.05000		87	70-130			
Tetrahydrofuran	0.0500	0.0050	mg/kg wet	0.05000		100	70-130			
Toluene	0.0493	0.0050	mg/kg wet	0.05000		99	70-130			
trans-1,2-Dichloroethene	0.0474	0.0050	mg/kg wet	0.05000		95	70-130			
trans-1,3-Dichloropropene	0.0421	0.0050	mg/kg wet	0.05000		84	70-130			
Trichloroethene	0.0482	0.0050	mg/kg wet	0.05000		96	70-130			
Trichlorofluoromethane	0.0524	0.0050	mg/kg wet	0.05000		105	70-130			
Vinyl Chloride	0.0542	0.0100	mg/kg wet	0.05000		108	70-130			
Xylene O	0.0466	0.0050	mg/kg wet	0.05000		93	70-130			
Xylene P,M	0.0917	0.0100	mg/kg wet	0.1000		92	70-130			
Surrogate: 1,2-Dichloroethane-d4	*0.0490*		mg/kg wet	*0.05000*		*98*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*0.0494*		mg/kg wet	*0.05000*		*99*	*70-130*			
Surrogate: Dibromofluoromethane	*0.0514*		mg/kg wet	*0.05000*		*103*	*70-130*			
Surrogate: Toluene-d8	*0.0466*		mg/kg wet	*0.05000*		*93*	*70-130*			
LCS Dup										
1,1,1,2-Tetrachloroethane	0.0485	0.0050	mg/kg wet	0.05000		97	70-130	4	20	
1,1,1-Trichloroethane	0.0515	0.0050	mg/kg wet	0.05000		103	70-130	2	20	
1,1,2,2-Tetrachloroethane	0.0489	0.0020	mg/kg wet	0.05000		98	70-130	5	20	
1,1,2-Trichloroethane	0.0509	0.0050	mg/kg wet	0.05000		102	70-130	3	20	
1,1-Dichloroethane	0.0493	0.0050	mg/kg wet	0.05000		99	70-130	3	20	
1,1-Dichloroethene	0.0516	0.0050	mg/kg wet	0.05000		103	70-130	3	20	
1,1-Dichloropropene	0.0510	0.0050	mg/kg wet	0.05000		102	70-130	3	20	
1,2,3-Trichlorobenzene	0.0499	0.0050	mg/kg wet	0.05000		100	70-130	6	20	
1,2,3-Trichloropropane	0.0476	0.0050	mg/kg wet	0.05000		95	70-130	4	20	
1,2,4-Trichlorobenzene	0.0486	0.0050	mg/kg wet	0.05000		97	70-130	8	20	
1,2,4-Trimethylbenzene	0.0481	0.0050	mg/kg wet	0.05000		96	70-130	6	20	
1,2-Dibromo-3-Chloropropane	0.0515	0.0050	mg/kg wet	0.05000		103	70-130	9	20	
1,2-Dibromoethane	0.0483	0.0050	mg/kg wet	0.05000		97	70-130	6	20	
1,2-Dichlorobenzene	0.0484	0.0050	mg/kg wet	0.05000		97	70-130	7	20	
1,2-Dichloroethane	0.0501	0.0050	mg/kg wet	0.05000		100	70-130	2	20	
1,2-Dichloropropane	0.0491	0.0050	mg/kg wet	0.05000		98	70-130	3	20	
1,3,5-Trimethylbenzene	0.0490	0.0050	mg/kg wet	0.05000		98	70-130	7	20	
1,3-Dichlorobenzene	0.0486	0.0050	mg/kg wet	0.05000		97	70-130	9	20	
1,3-Dichloropropane	0.0480	0.0050	mg/kg wet	0.05000		96	70-130	3	20	
1,4-Dichlorobenzene	0.0473	0.0050	mg/kg wet	0.05000		95	70-130	4	20	
1,4-Dioxane	1.11	0.100	mg/kg wet	1.000		111	70-130	7	20	
2,2-Dichloropropane	0.0518	0.0050	mg/kg wet	0.05000		104	70-130	2	20	
2-Butanone	0.259	0.0100	mg/kg wet	0.2500		104	70-130	3	20	
2-Chlorotoluene	0.0470	0.0050	mg/kg wet	0.05000		94	70-130	5	20	
2-Hexanone	0.231	0.0100	mg/kg wet	0.2500		92	70-130	4	20	
4-Chlorotoluene	0.0478	0.0050	mg/kg wet	0.05000		96	70-130	6	20	
4-Isopropyltoluene	0.0488	0.0050	mg/kg wet	0.05000		98	70-130	7	20	

CERTIFICATE OF ANALYSIS

Client Name: East Coast Engineering
Client Project ID: Rockwood Homes

ESS Laboratory Work Order: 1811485

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Low Level										
Batch CK82009 - 5035										
4-Methyl-2-Pentanone	0.257	0.0100	mg/kg wet	0.2500		103	70-130	5	20	
Acetone	0.267	0.0100	mg/kg wet	0.2500		107	70-130	5	20	
Benzene	0.0498	0.0050	mg/kg wet	0.05000		100	70-130	2	20	
Bromobenzene	0.0480	0.0050	mg/kg wet	0.05000		96	70-130	6	20	
Bromochloromethane	0.0508	0.0050	mg/kg wet	0.05000		102	70-130	2	20	
Bromodichloromethane	0.0522	0.0050	mg/kg wet	0.05000		104	70-130	3	20	
Bromoform	0.0509	0.0050	mg/kg wet	0.05000		102	70-130	5	20	
Bromomethane	0.0480	0.0100	mg/kg wet	0.05000		96	70-130	14	20	
Carbon Disulfide	0.0542	0.0050	mg/kg wet	0.05000		108	70-130	3	20	
Carbon Tetrachloride	0.0532	0.0050	mg/kg wet	0.05000		106	70-130	2	20	
Chlorobenzene	0.0464	0.0050	mg/kg wet	0.05000		93	70-130	5	20	
Chloroethane	0.0519	0.0100	mg/kg wet	0.05000		104	70-130	2	20	
Chloroform	0.0508	0.0050	mg/kg wet	0.05000		102	70-130	2	20	
Chloromethane	0.0506	0.0100	mg/kg wet	0.05000		101	70-130	0.5	20	
cis-1,2-Dichloroethene	0.0517	0.0050	mg/kg wet	0.05000		103	70-130	2	20	
cis-1,3-Dichloropropene	0.0510	0.0050	mg/kg wet	0.05000		102	70-130	4	20	
Dibromochloromethane	0.0426	0.0020	mg/kg wet	0.05000		85	70-130	6	20	
Dibromomethane	0.0532	0.0050	mg/kg wet	0.05000		106	70-130	5	20	
Dichlorodifluoromethane	0.0573	0.0100	mg/kg wet	0.05000		115	70-130	1	20	
Diethyl Ether	0.0532	0.0050	mg/kg wet	0.05000		106	70-130	3	20	
Di-isopropyl ether	0.0488	0.0050	mg/kg wet	0.05000		98	70-130	3	20	
Ethyl tertiary-butyl ether	0.0454	0.0050	mg/kg wet	0.05000		91	70-130	4	20	
Ethylbenzene	0.0464	0.0050	mg/kg wet	0.05000		93	70-130	6	20	
Hexachlorobutadiene	0.0473	0.0050	mg/kg wet	0.05000		95	70-130	8	20	
Isopropylbenzene	0.0486	0.0050	mg/kg wet	0.05000		97	70-130	6	20	
Methyl tert-Butyl Ether	0.0502	0.0050	mg/kg wet	0.05000		100	70-130	4	20	
Methylene Chloride	0.0460	0.0100	mg/kg wet	0.05000		92	70-130	3	20	
Naphthalene	0.0524	0.0050	mg/kg wet	0.05000		105	70-130	10	20	
n-Butylbenzene	0.0495	0.0050	mg/kg wet	0.05000		99	70-130	7	20	
n-Propylbenzene	0.0480	0.0050	mg/kg wet	0.05000		96	70-130	6	20	
sec-Butylbenzene	0.0480	0.0050	mg/kg wet	0.05000		96	70-130	6	20	
Styrene	0.0488	0.0050	mg/kg wet	0.05000		98	70-130	7	20	
tert-Butylbenzene	0.0487	0.0050	mg/kg wet	0.05000		97	70-130	7	20	
Tertiary-amyl methyl ether	0.0481	0.0050	mg/kg wet	0.05000		96	70-130	4	20	
Tetrachloroethene	0.0456	0.0050	mg/kg wet	0.05000		91	70-130	4	20	
Tetrahydrofuran	0.0518	0.0050	mg/kg wet	0.05000		104	70-130	4	20	
Toluene	0.0507	0.0050	mg/kg wet	0.05000		101	70-130	3	20	
trans-1,2-Dichloroethene	0.0490	0.0050	mg/kg wet	0.05000		98	70-130	3	20	
trans-1,3-Dichloropropene	0.0441	0.0050	mg/kg wet	0.05000		88	70-130	5	20	
Trichloroethene	0.0489	0.0050	mg/kg wet	0.05000		98	70-130	1	20	
Trichlorofluoromethane	0.0532	0.0050	mg/kg wet	0.05000		106	70-130	2	20	
Vinyl Chloride	0.0547	0.0100	mg/kg wet	0.05000		109	70-130	1	20	
Xylene O	0.0493	0.0050	mg/kg wet	0.05000		99	70-130	6	20	
Xylene P,M	0.0969	0.0100	mg/kg wet	0.1000		97	70-130	5	20	
Surrogate: 1,2-Dichloroethane-d4	*0.0478*		mg/kg wet	*0.05000*		*96*	*70-130*			

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Low Level										
Batch CK82009 - 5035										
Surrogate: 4-Bromofluorobenzene	*0.0494*		mg/kg wet	*0.05000*		*99*	*70-130*			
Surrogate: Dibromofluoromethane	*0.0504*		mg/kg wet	*0.05000*		*101*	*70-130*			
Surrogate: Toluene-d8	*0.0463*		mg/kg wet	*0.05000*		*93*	*70-130*			
8082A Polychlorinated Biphenyls (PCB)										
Batch CK82107 - 3540C										
Blank										
Aroclor 1016	ND	0.05	mg/kg wet							
Aroclor 1016 [2C]	ND	0.05	mg/kg wet							
Aroclor 1221	ND	0.05	mg/kg wet							
Aroclor 1221 [2C]	ND	0.05	mg/kg wet							
Aroclor 1232	ND	0.05	mg/kg wet							
Aroclor 1232 [2C]	ND	0.05	mg/kg wet							
Aroclor 1242	ND	0.05	mg/kg wet							
Aroclor 1242 [2C]	ND	0.05	mg/kg wet							
Aroclor 1248	ND	0.05	mg/kg wet							
Aroclor 1248 [2C]	ND	0.05	mg/kg wet							
Aroclor 1254	ND	0.05	mg/kg wet							
Aroclor 1254 [2C]	ND	0.05	mg/kg wet							
Aroclor 1260	ND	0.05	mg/kg wet							
Aroclor 1260 [2C]	ND	0.05	mg/kg wet							
Aroclor 1262	ND	0.05	mg/kg wet							
Aroclor 1262 [2C]	ND	0.05	mg/kg wet							
Aroclor 1268	ND	0.05	mg/kg wet							
Aroclor 1268 [2C]	ND	0.05	mg/kg wet							
Surrogate: Decachlorobiphenyl	*0.0199*		mg/kg wet	*0.02500*		*80*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0189*		mg/kg wet	*0.02500*		*76*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0203*		mg/kg wet	*0.02500*		*81*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0195*		mg/kg wet	*0.02500*		*78*	*30-150*			
LCS										
Aroclor 1016	0.4	0.05	mg/kg wet	0.5000		81	40-140			
Aroclor 1016 [2C]	0.4	0.05	mg/kg wet	0.5000		85	40-140			
Aroclor 1260	0.4	0.05	mg/kg wet	0.5000		73	40-140			
Aroclor 1260 [2C]	0.4	0.05	mg/kg wet	0.5000		73	40-140			
Surrogate: Decachlorobiphenyl	*0.0195*		mg/kg wet	*0.02500*		*78*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0189*		mg/kg wet	*0.02500*		*76*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0206*		mg/kg wet	*0.02500*		*83*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0188*		mg/kg wet	*0.02500*		*75*	*30-150*			
LCS Dup										
Aroclor 1016	0.5	0.05	mg/kg wet	0.5000		90	40-140	11	30	
Aroclor 1016 [2C]	0.5	0.05	mg/kg wet	0.5000		95	40-140	11	30	
Aroclor 1260	0.4	0.05	mg/kg wet	0.5000		82	40-140	11	30	

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Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8082A Polychlorinated Biphenyls (PCB)										
Batch CK82107 - 3540C										
Aroclor 1260 [2C]	0.4	0.05	mg/kg wet	0.5000		82	40-140	12	30	
Surrogate: Decachlorobiphenyl	*0.0218*		mg/kg wet	*0.02500*		*87*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0211*		mg/kg wet	*0.02500*		*84*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0232*		mg/kg wet	*0.02500*		*93*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0210*		mg/kg wet	*0.02500*		*84*	*30-150*			
8100M Total Petroleum Hydrocarbons										
Batch CK82116 - 3546										
Blank										
Decane (C10)	ND	0.2	mg/kg wet							
Docosane (C22)	ND	0.2	mg/kg wet							
Dodecane (C12)	ND	0.2	mg/kg wet							
Eicosane (C20)	ND	0.2	mg/kg wet							
Hexacosane (C26)	ND	0.2	mg/kg wet							
Hexadecane (C16)	ND	0.2	mg/kg wet							
Hexatriacontane (C36)	ND	0.2	mg/kg wet							
Nonadecane (C19)	ND	0.2	mg/kg wet							
Nonane (C9)	ND	0.2	mg/kg wet							
Octacosane (C28)	ND	0.2	mg/kg wet							
Octadecane (C18)	ND	0.2	mg/kg wet							
Tetracosane (C24)	ND	0.2	mg/kg wet							
Tetradecane (C14)	ND	0.2	mg/kg wet							
Total Petroleum Hydrocarbons	ND	10.0	mg/kg wet							
Triacontane (C30)	ND	0.2	mg/kg wet							
Surrogate: O-Terphenyl	*4.02*		mg/kg wet	*5.000*		*80*	*40-140*			
LCS										
Decane (C10)	1.6	0.2	mg/kg wet	2.500		64	40-140			
Docosane (C22)	2.2	0.2	mg/kg wet	2.500		86	40-140			
Dodecane (C12)	1.8	0.2	mg/kg wet	2.500		71	40-140			
Eicosane (C20)	2.1	0.2	mg/kg wet	2.500		86	40-140			
Hexacosane (C26)	2.2	0.2	mg/kg wet	2.500		87	40-140			
Hexadecane (C16)	2.0	0.2	mg/kg wet	2.500		79	40-140			
Hexatriacontane (C36)	2.3	0.2	mg/kg wet	2.500		93	40-140			
Nonadecane (C19)	2.3	0.2	mg/kg wet	2.500		92	40-140			
Nonane (C9)	1.5	0.2	mg/kg wet	2.500		60	30-140			
Octacosane (C28)	2.2	0.2	mg/kg wet	2.500		87	40-140			
Octadecane (C18)	2.1	0.2	mg/kg wet	2.500		83	40-140			
Tetracosane (C24)	2.2	0.2	mg/kg wet	2.500		87	40-140			
Tetradecane (C14)	1.9	0.2	mg/kg wet	2.500		76	40-140			
Total Petroleum Hydrocarbons	29.6	10.0	mg/kg wet	35.00		85	40-140			
Triacontane (C30)	2.2	0.2	mg/kg wet	2.500		87	40-140			
Surrogate: O-Terphenyl	*4.20*		mg/kg wet	*5.000*		*84*	*40-140*			

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8100M Total Petroleum Hydrocarbons										
Batch CK82116 - 3546										
LCS Dup										
Decane (C10)	1.8	0.2	mg/kg wet	2.500		74	40-140	14	25	
Docosane (C22)	2.3	0.2	mg/kg wet	2.500		92	40-140	6	25	
Dodecane (C12)	2.1	0.2	mg/kg wet	2.500		83	40-140	16	25	
Eicosane (C20)	2.3	0.2	mg/kg wet	2.500		92	40-140	7	25	
Hexacosane (C26)	2.3	0.2	mg/kg wet	2.500		92	40-140	6	25	
Hexadecane (C16)	2.2	0.2	mg/kg wet	2.500		89	40-140	11	25	
Hexatriacontane (C36)	2.5	0.2	mg/kg wet	2.500		99	40-140	5	25	
Nonadecane (C19)	2.5	0.2	mg/kg wet	2.500		100	40-140	8	25	
Nonane (C9)	1.7	0.2	mg/kg wet	2.500		68	30-140	13	25	
Octacosane (C28)	2.3	0.2	mg/kg wet	2.500		92	40-140	6	25	
Octadecane (C18)	2.2	0.2	mg/kg wet	2.500		90	40-140	8	25	
Tetracosane (C24)	2.3	0.2	mg/kg wet	2.500		93	40-140	7	25	
Tetradecane (C14)	2.1	0.2	mg/kg wet	2.500		85	40-140	12	25	
Total Petroleum Hydrocarbons	32.1	10.0	mg/kg wet	35.00		92	40-140	8	25	
Triacontane (C30)	2.3	0.2	mg/kg wet	2.500		92	40-140	6	25	
Surrogate: O-Terphenyl	*4.38*		mg/kg wet	*5.000*		*88*	*40-140*			
8270D Semi-Volatile Organic Compounds										
Batch CK81914 - 3546										
Blank										
1,2,4-Trichlorobenzene	ND	0.333	mg/kg wet							
1,2-Dichlorobenzene	ND	0.333	mg/kg wet							
1,3-Dichlorobenzene	ND	0.333	mg/kg wet							
1,4-Dichlorobenzene	ND	0.167	mg/kg wet							
2,4,5-Trichlorophenol	ND	0.333	mg/kg wet							
2,4,6-Trichlorophenol	ND	0.167	mg/kg wet							
2,4-Dichlorophenol	ND	0.167	mg/kg wet							
2,4-Dimethylphenol	ND	0.167	mg/kg wet							
2,4-Dinitrophenol	ND	0.667	mg/kg wet							
2,4-Dinitrotoluene	ND	0.167	mg/kg wet							
2,6-Dinitrotoluene	ND	0.333	mg/kg wet							
2-Chloronaphthalene	ND	0.333	mg/kg wet							
2-Chlorophenol	ND	0.167	mg/kg wet							
2-Methylnaphthalene	ND	0.167	mg/kg wet							
2-Methylphenol	ND	0.333	mg/kg wet							
2-Nitrophenol	ND	0.333	mg/kg wet							
3,3´-Dichlorobenzidine	ND	0.333	mg/kg wet							
3+4-Methylphenol	ND	0.667	mg/kg wet							
4-Bromophenyl-phenylether	ND	0.333	mg/kg wet							
4-Chloroaniline	ND	0.333	mg/kg wet							
4-Nitrophenol	ND	1.67	mg/kg wet							

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Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8270D Semi-Volatile Organic Compounds										
Batch CK81914 - 3546										
Acenaphthene	ND	0.333	mg/kg wet							
Acenaphthylene	ND	0.333	mg/kg wet							
Acetophenone	ND	0.667	mg/kg wet							
Aniline	ND	1.67	mg/kg wet							
Anthracene	ND	0.333	mg/kg wet							
Azobenzene	ND	0.333	mg/kg wet							
Benzo(a)anthracene	ND	0.333	mg/kg wet							
Benzo(a)pyrene	ND	0.167	mg/kg wet							
Benzo(b)fluoranthene	ND	0.333	mg/kg wet							
Benzo(g,h,i)perylene	ND	0.333	mg/kg wet							
Benzo(k)fluoranthene	ND	0.333	mg/kg wet							
bis(2-Chloroethoxy)methane	ND	0.333	mg/kg wet							
bis(2-Chloroethyl)ether	ND	0.167	mg/kg wet							
bis(2-chloroisopropyl)Ether	ND	0.167	mg/kg wet							
bis(2-Ethylhexyl)phthalate	ND	0.333	mg/kg wet							
Butylbenzylphthalate	ND	0.333	mg/kg wet							
Carbazole	ND	0.333	mg/kg wet							
Chrysene	ND	0.167	mg/kg wet							
Dibenzo(a,h)Anthracene	ND	0.167	mg/kg wet							
Dibenzofuran	ND	0.333	mg/kg wet							
Diethylphthalate	ND	0.333	mg/kg wet							
Dimethylphthalate	ND	0.333	mg/kg wet							
Di-n-butylphthalate	ND	0.333	mg/kg wet							
Di-n-octylphthalate	ND	0.333	mg/kg wet							
Fluoranthene	ND	0.333	mg/kg wet							
Fluorene	ND	0.333	mg/kg wet							
Hexachlorobenzene	ND	0.167	mg/kg wet							
Hexachlorobutadiene	ND	0.333	mg/kg wet							
Hexachloroethane	ND	0.167	mg/kg wet							
Indeno(1,2,3-cd)Pyrene	ND	0.333	mg/kg wet							
Isophorone	ND	0.333	mg/kg wet							
Naphthalene	ND	0.333	mg/kg wet							
Nitrobenzene	ND	0.333	mg/kg wet							
N-Nitrosodimethylamine	ND	0.333	mg/kg wet							
Pentachlorophenol	ND	0.667	mg/kg wet							
Phenanthrene	ND	0.333	mg/kg wet							
Phenol	ND	0.333	mg/kg wet							
Pyrene	ND	0.333	mg/kg wet							
Pyridine	ND	1.67	mg/kg wet							
Surrogate: 1,2-Dichlorobenzene-d4	*2.05*		mg/kg wet	*3.333*		*61*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*3.29*		mg/kg wet	*5.000*		*66*	*30-130*			
Surrogate: 2-Chlorophenol-d4	*3.30*		mg/kg wet	*5.000*		*66*	*30-130*			
Surrogate: 2-Fluorobiphenyl	*2.05*		mg/kg wet	*3.333*		*61*	*30-130*			
Surrogate: 2-Fluorophenol	*3.24*		mg/kg wet	*5.000*		*65*	*30-130*			
Surrogate: Nitrobenzene-d5	*2.31*		mg/kg wet	*3.333*		*69*	*30-130*			
Surrogate: Phenol-d6	*3.59*		mg/kg wet	*5.000*		*72*	*30-130*			

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Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8270D Semi-Volatile Organic Compounds										
Batch CK81914 - 3546										
Surrogate: p-Terphenyl-d14	*2.96*		mg/kg wet	*3.333*		*89*	*30-130*			
LCS										
1,2,4-Trichlorobenzene	1.77	0.333	mg/kg wet	3.333		53	40-140			
1,2-Dichlorobenzene	1.72	0.333	mg/kg wet	3.333		52	40-140			
1,3-Dichlorobenzene	1.68	0.333	mg/kg wet	3.333		50	40-140			
1,4-Dichlorobenzene	1.68	0.333	mg/kg wet	3.333		50	40-140			
2,4,5-Trichlorophenol	2.25	0.333	mg/kg wet	3.333		67	30-130			
2,4,6-Trichlorophenol	2.11	0.333	mg/kg wet	3.333		63	30-130			
2,4-Dichlorophenol	2.17	0.333	mg/kg wet	3.333		65	30-130			
2,4-Dimethylphenol	2.16	0.333	mg/kg wet	3.333		65	30-130			
2,4-Dinitrophenol	3.02	0.667	mg/kg wet	3.333		91	30-130			
2,4-Dinitrotoluene	2.59	0.333	mg/kg wet	3.333		78	40-140			
2,6-Dinitrotoluene	2.33	0.333	mg/kg wet	3.333		70	40-140			
2-Chloronaphthalene	1.85	0.333	mg/kg wet	3.333		55	40-140			
2-Chlorophenol	1.92	0.333	mg/kg wet	3.333		58	30-130			
2-Methylnaphthalene	1.98	0.333	mg/kg wet	3.333		59	40-140			
2-Methylphenol	2.06	0.333	mg/kg wet	3.333		62	30-130			
2-Nitrophenol	1.95	0.333	mg/kg wet	3.333		58	30-130			
3,3´-Dichlorobenzidine	2.16	0.333	mg/kg wet	3.333		65	40-140			
3+4-Methylphenol	4.61	0.667	mg/kg wet	6.667		69	30-130			
4-Bromophenyl-phenylether	2.02	0.333	mg/kg wet	3.333		61	40-140			
4-Chloroaniline	1.73	0.333	mg/kg wet	3.333		52	40-140			
4-Nitrophenol	3.01	1.67	mg/kg wet	3.333		90	30-130			
Acenaphthene	2.03	0.333	mg/kg wet	3.333		61	40-140			
Acenaphthylene	1.93	0.333	mg/kg wet	3.333		58	40-140			
Acetophenone	2.41	0.667	mg/kg wet	3.333		72	40-140			
Aniline	1.89	1.67	mg/kg wet	3.333		57	40-140			
Anthracene	2.23	0.333	mg/kg wet	3.333		67	40-140			
Azobenzene	2.27	0.333	mg/kg wet	3.333		68	40-140			
Benzo(a)anthracene	2.26	0.333	mg/kg wet	3.333		68	40-140			
Benzo(a)pyrene	2.26	0.167	mg/kg wet	3.333		68	40-140			
Benzo(b)fluoranthene	2.42	0.333	mg/kg wet	3.333		73	40-140			
Benzo(g,h,i)perylene	2.04	0.333	mg/kg wet	3.333		61	40-140			
Benzo(k)fluoranthene	2.16	0.333	mg/kg wet	3.333		65	40-140			
bis(2-Chloroethoxy)methane	2.02	0.333	mg/kg wet	3.333		61	40-140			
bis(2-Chloroethyl)ether	1.82	0.333	mg/kg wet	3.333		55	40-140			
bis(2-chloroisopropyl)Ether	1.79	0.333	mg/kg wet	3.333		54	40-140			
bis(2-Ethylhexyl)phthalate	2.26	0.333	mg/kg wet	3.333		68	40-140			
Butylbenzylphthalate	2.27	0.333	mg/kg wet	3.333		68	40-140			
Carbazole	2.43	0.333	mg/kg wet	3.333		73	40-140			
Chrysene	2.16	0.167	mg/kg wet	3.333		65	40-140			
Dibenzo(a,h)Anthracene	2.08	0.167	mg/kg wet	3.333		62	40-140			
Dibenzofuran	2.12	0.333	mg/kg wet	3.333		64	40-140			
Diethylphthalate	2.59	0.333	mg/kg wet	3.333		78	40-140			

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8270D Semi-Volatile Organic Compounds										
Batch CK81914 - 3546										
Dimethylphthalate	2.29	0.333	mg/kg wet	3.333		69	40-140			
Di-n-butylphthalate	2.56	0.333	mg/kg wet	3.333		77	40-140			
Di-n-octylphthalate	2.34	0.333	mg/kg wet	3.333		70	40-140			
Fluoranthene	2.37	0.333	mg/kg wet	3.333		71	40-140			
Fluorene	2.33	0.333	mg/kg wet	3.333		70	40-140			
Hexachlorobenzene	2.05	0.333	mg/kg wet	3.333		61	40-140			
Hexachlorobutadiene	1.78	0.333	mg/kg wet	3.333		53	40-140			
Hexachloroethane	1.75	0.333	mg/kg wet	3.333		53	40-140			
Indeno(1,2,3-cd)Pyrene	2.10	0.333	mg/kg wet	3.333		63	40-140			
Isophorone	2.01	0.333	mg/kg wet	3.333		60	40-140			
Naphthalene	1.86	0.333	mg/kg wet	3.333		56	40-140			
Nitrobenzene	1.99	0.333	mg/kg wet	3.333		60	40-140			
N-Nitrosodimethylamine	1.80	0.333	mg/kg wet	3.333		54	40-140			
Pentachlorophenol	2.53	0.667	mg/kg wet	3.333		76	30-130			
Phenanthrene	2.13	0.333	mg/kg wet	3.333		64	40-140			
Phenol	2.09	0.333	mg/kg wet	3.333		63	30-130			
Pyrene	2.34	0.333	mg/kg wet	3.333		70	40-140			
Pyridine	1.72	1.67	mg/kg wet	3.333		52	40-140			
Surrogate: 1,2-Dichlorobenzene-d4	*2.21*		mg/kg wet	*3.333*		*66*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*4.05*		mg/kg wet	*5.000*		*81*	*30-130*			
Surrogate: 2-Chlorophenol-d4	*3.68*		mg/kg wet	*5.000*		*74*	*30-130*			
Surrogate: 2-Fluorobiphenyl	*2.34*		mg/kg wet	*3.333*		*70*	*30-130*			
Surrogate: 2-Fluorophenol	*3.54*		mg/kg wet	*5.000*		*71*	*30-130*			
Surrogate: Nitrobenzene-d5	*2.63*		mg/kg wet	*3.333*		*79*	*30-130*			
Surrogate: Phenol-d6	*3.98*		mg/kg wet	*5.000*		*80*	*30-130*			
Surrogate: p-Terphenyl-d14	*2.96*		mg/kg wet	*3.333*		*89*	*30-130*			
LCS Dup										
1,2,4-Trichlorobenzene	1.67	0.333	mg/kg wet	3.333		50	40-140	6	30	
1,2-Dichlorobenzene	1.68	0.333	mg/kg wet	3.333		50	40-140	2	30	
1,3-Dichlorobenzene	1.67	0.333	mg/kg wet	3.333		50	40-140	0.5	30	
1,4-Dichlorobenzene	1.68	0.333	mg/kg wet	3.333		50	40-140	0.06	30	
2,4,5-Trichlorophenol	2.04	0.333	mg/kg wet	3.333		61	30-130	10	30	
2,4,6-Trichlorophenol	1.94	0.333	mg/kg wet	3.333		58	30-130	8	30	
2,4-Dichlorophenol	1.96	0.333	mg/kg wet	3.333		59	30-130	11	30	
2,4-Dimethylphenol	1.96	0.333	mg/kg wet	3.333		59	30-130	10	30	
2,4-Dinitrophenol	2.75	0.667	mg/kg wet	3.333		83	30-130	9	30	
2,4-Dinitrotoluene	2.39	0.333	mg/kg wet	3.333		72	40-140	8	30	
2,6-Dinitrotoluene	2.11	0.333	mg/kg wet	3.333		63	40-140	10	30	
2-Chloronaphthalene	1.73	0.333	mg/kg wet	3.333		52	40-140	7	30	
2-Chlorophenol	1.80	0.333	mg/kg wet	3.333		54	30-130	6	30	
2-Methylnaphthalene	1.78	0.333	mg/kg wet	3.333		53	40-140	11	30	
2-Methylphenol	1.86	0.333	mg/kg wet	3.333		56	30-130	10	30	
2-Nitrophenol	1.78	0.333	mg/kg wet	3.333		53	30-130	9	30	
3,3´-Dichlorobenzidine	2.14	0.333	mg/kg wet	3.333		64	40-140	0.9	30	
3+4-Methylphenol	4.13	0.667	mg/kg wet	6.667		62	30-130	11	30	

CERTIFICATE OF ANALYSIS

Client Name: East Coast Engineering
Client Project ID: Rockwood Homes

ESS Laboratory Work Order: 1811485

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8270D Semi-Volatile Organic Compounds										
Batch CK81914 - 3546										
4-Bromophenyl-phenylether	1.92	0.333	mg/kg wet	3.333		58	40-140	5	30	
4-Chloroaniline	1.52	0.333	mg/kg wet	3.333		46	40-140	13	30	
4-Nitrophenol	2.76	1.67	mg/kg wet	3.333		83	30-130	8	30	
Acenaphthene	1.85	0.333	mg/kg wet	3.333		56	40-140	9	30	
Acenaphthylene	1.78	0.333	mg/kg wet	3.333		53	40-140	9	30	
Acetophenone	2.20	0.667	mg/kg wet	3.333		66	40-140	9	30	
Aniline	1.72	1.67	mg/kg wet	3.333		52	40-140	9	30	
Anthracene	2.15	0.333	mg/kg wet	3.333		65	40-140	4	30	
Azobenzene	2.17	0.333	mg/kg wet	3.333		65	40-140	4	30	
Benzo(a)anthracene	2.21	0.333	mg/kg wet	3.333		66	40-140	2	30	
Benzo(a)pyrene	2.19	0.167	mg/kg wet	3.333		66	40-140	3	30	
Benzo(b)fluoranthene	2.41	0.333	mg/kg wet	3.333		72	40-140	0.6	30	
Benzo(g,h,i)perylene	2.03	0.333	mg/kg wet	3.333		61	40-140	0.5	30	
Benzo(k)fluoranthene	2.10	0.333	mg/kg wet	3.333		63	40-140	3	30	
bis(2-Chloroethoxy)methane	1.86	0.333	mg/kg wet	3.333		56	40-140	8	30	
bis(2-Chloroethyl)ether	1.73	0.333	mg/kg wet	3.333		52	40-140	5	30	
bis(2-chloroisopropyl)Ether	1.69	0.333	mg/kg wet	3.333		51	40-140	5	30	
bis(2-Ethylhexyl)phthalate	2.25	0.333	mg/kg wet	3.333		67	40-140	0.8	30	
Butylbenzylphthalate	2.22	0.333	mg/kg wet	3.333		67	40-140	2	30	
Carbazole	2.39	0.333	mg/kg wet	3.333		72	40-140	2	30	
Chrysene	2.12	0.167	mg/kg wet	3.333		64	40-140	2	30	
Dibenzo(a,h)Anthracene	2.06	0.167	mg/kg wet	3.333		62	40-140	0.9	30	
Dibenzofuran	1.92	0.333	mg/kg wet	3.333		58	40-140	10	30	
Diethylphthalate	2.36	0.333	mg/kg wet	3.333		71	40-140	9	30	
Dimethylphthalate	2.09	0.333	mg/kg wet	3.333		63	40-140	9	30	
Di-n-butylphthalate	2.54	0.333	mg/kg wet	3.333		76	40-140	0.8	30	
Di-n-octylphthalate	2.32	0.333	mg/kg wet	3.333		70	40-140	0.8	30	
Fluoranthene	2.38	0.333	mg/kg wet	3.333		72	40-140	0.5	30	
Fluorene	2.10	0.333	mg/kg wet	3.333		63	40-140	10	30	
Hexachlorobenzene	1.97	0.333	mg/kg wet	3.333		59	40-140	4	30	
Hexachlorobutadiene	1.70	0.333	mg/kg wet	3.333		51	40-140	5	30	
Hexachloroethane	1.74	0.333	mg/kg wet	3.333		52	40-140	0.9	30	
Indeno(1,2,3-cd)Pyrene	2.09	0.333	mg/kg wet	3.333		63	40-140	0.7	30	
Isophorone	1.85	0.333	mg/kg wet	3.333		55	40-140	9	30	
Naphthalene	1.73	0.333	mg/kg wet	3.333		52	40-140	7	30	
Nitrobenzene	1.87	0.333	mg/kg wet	3.333		56	40-140	6	30	
N-Nitrosodimethylamine	1.85	0.333	mg/kg wet	3.333		55	40-140	3	30	
Pentachlorophenol	2.43	0.667	mg/kg wet	3.333		73	30-130	4	30	
Phenanthrene	2.05	0.333	mg/kg wet	3.333		62	40-140	4	30	
Phenol	1.90	0.333	mg/kg wet	3.333		57	30-130	10	30	
Pyrene	2.22	0.333	mg/kg wet	3.333		67	40-140	5	30	
Pyridine	1.64	1.67	mg/kg wet	3.333		49	40-140	5	30	
Surrogate: 1,2-Dichlorobenzene-d4	*2.08*		mg/kg wet	*3.333*		*62*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*3.75*		mg/kg wet	*5.000*		*75*	*30-130*			
Surrogate: 2-Chlorophenol-d4	*3.32*		mg/kg wet	*5.000*		*66*	*30-130*			

CERTIFICATE OF ANALYSIS

Client Name: East Coast Engineering
Client Project ID: Rockwood Homes

ESS Laboratory Work Order: 1811485

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8270D Semi-Volatile Organic Compounds										
Batch CK81914 - 3546										
Surrogate: 2-Fluorobiphenyl	*2.14*		mg/kg wet	*3.333*		*64*	*30-130*			
Surrogate: 2-Fluorophenol	*3.27*		mg/kg wet	*5.000*		*65*	*30-130*			
Surrogate: Nitrobenzene-d5	*2.37*		mg/kg wet	*3.333*		*71*	*30-130*			
Surrogate: Phenol-d6	*3.52*		mg/kg wet	*5.000*		*70*	*30-130*			
Surrogate: p-Terphenyl-d14	*2.71*		mg/kg wet	*3.333*		*81*	*30-130*			

CERTIFICATE OF ANALYSIS

Client Name: East Coast Engineering
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Notes and Definitions

Z18	Temperature is not within 23 +/-2 ºC.
U	Analyte included in the analysis, but not detected
SD	Surrogate recovery(ies) diluted below the MRL (SD).
RRF	Analyte does not meet the Relative Response Factor (RRF) criteria in the calibration
Q	Calibration required quadratic regression (Q).
EL	Elevated Method Reporting Limits due to sample matrix (EL).
D	Diluted.
CD+	Continuing Calibration %Diff/Drift is above control limit (CD+).
CD-	Continuing Calibration %Diff/Drift is below control limit (CD-).
ND	Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
DL	Detection Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.
NR	No Recovery
[CALC]	Calculated Analyte
SUB	Subcontracted analysis; see attached report
RL	Reporting Limit
EDL	Estimated Detection Limit
MF	Membrane Filtration
MPN	Most Probably Number
TNTC	Too numerous to Count
CFU	Colony Forming Units

CERTIFICATE OF ANALYSIS

Client Name: East Coast Engineering
Client Project ID: Rockwood Homes

ESS Laboratory Work Order: 1811485

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Rhode Island Potable and Non Potable Water: LAI00179
http://www.health.ri.gov/find/labs/analytical/ESS.pdf

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750
http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutofStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI00002
http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/partners/labCert.shtml

Massachusetts Potable and Non Potable Water: M-RI002
http://public.dep.state.ma.us/Labcert/Labcert.aspx

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424
http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313
http://www.wadsworth.org/labcert/elap/comm.html

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006
http://datamine2.state.nj.us/DEP_OPRA/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752
http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx

ESS Laboratory Sample and Cooler Receipt Checklist

Client: East Coast Engineering - KPB/MM

Shipped/Delivered Via: Client

ESS Project ID: 1811485
Date Received: 11/19/2018
Project Due Date: 11/28/2018
Days for Project: 5 Day

1. Air bill manifest present? No
   Air No.: NA
2. Were custody seals present? No
3. Is radiation count <100 CPM? Yes
4. Is a Cooler Present? Yes
   Temp: 1.1 Iced with: Ice
5. Was COC signed and dated by client? Yes
6. Does COC match bottles? Yes
7. Is COC complete and correct? Yes
8. Were samples received intact? Yes
9. **Were labs informed about short holds & rushes?** Yes / No / NA
10. Were any analyses received outside of hold time? Yes / No

11. Any Subcontracting needed? Yes / No
    ESS Sample IDs:
    Analysis:
    TAT:
12. Were VOAs received? Yes / No
    a. Air bubbles in aqueous VOAs? Yes / No
    b. Does methanol cover soil completely? Yes / No / NA

13. Are the samples properly preserved? Yes / No
    a. If metals preserved upon receipt: Date: Time: By:
    b. Low Level VOA vials frozen: Date: Time: By:

Sample Receiving Notes:

Added sample 5 Comp of 498 1-2

14. Was there a need to contact Project Manager? Yes / No
    a. Was there a need to contact the client? Yes / No
    Who was contacted? Date: Time: By:

Sample Number	Container ID	Proper Container	Air Bubbles Present	Sufficient Volume	Container Type	Preservative	Record pH (Cyanide and 608 Pesticides)
01	291543	Yes	NA	Yes	VOA Vial - Methanol	MeOH	
01	291548	Yes	NA	Yes	VOA Vial - Other	Other	
01	291549	Yes	NA	Yes	VOA Vial - Other	Other	
01	291552	Yes	NA	Yes	8 oz. Jar - Unpres	NP	
01	291554	Yes	NA	Yes	2 oz. Jar - Unpres	NP	
02	291542	Yes	NA	Yes	VOA Vial - Methanol	MeOH	
02	291546	Yes	NA	Yes	VOA Vial - Other	Other	
02	291547	Yes	NA	Yes	VOA Vial - Other	Other	
02	291551	Yes	NA	Yes	8 oz. Jar - Unpres	NP	
02	291553	Yes	NA	Yes	2 oz. Jar - Unpres	NP	
03	291550	Yes	NA	Yes	8 oz. Jar - Unpres	NP	
04	291541	Yes	NA	Yes	VOA Vial - Methanol	MeOH	
04	291544	Yes	NA	Yes	VOA Vial - Other	Other	
05	291593	Yes	NA	Yes	8 oz. Jar - Unpres	NP	

2nd Review
Are barcode labels on correct containers? Yes / No
Are all necessary stickers attached? Yes / No

Completed By: Date & Time: 11/20/18 1730
Reviewed By: Date & Time: 11/20/18 1735
Delivered By: 11/20/18 1735

ESS Laboratory
Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston RI 02910
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

ESS Lab # 611455

Turn Time: Rush

Regulatory State: MA

Reporting Limits: MCP S1 soil standards

Is this project for any of the following?: ○CT RCP ●MA MCP ○RGP

Electonic Deliverables: ☐Limit Checker ☐Standard Excel ☐Other (Please Specify →)

Company Name: East Coast ENG.
Contact Person: Christine LeBlanc
City: Dartmouth State: MA
Telephone Number: 508-189-0089
FAX Number:
Project #:
Project Name: Rockwood Homes
Address: ~~[illegible]~~ Ø Kraseman St. Dart.
Zip Code: 02748 PO #:
Email Address: cleblanc@eastcoastengineering.com

ESS Lab ID	Collection Date	Collection Time	Sample Type	Sample Matrix	Sample ID	Analysis: PCBs	Metals	VOC 8260	PAHs 8270	TPH	%SOLIDS
1	11/9/18	11:10	Grab	Soil	S1 0-3' (Ø Kraseman)		✓	✓	✓		✓
2	11/9/18	11:30	Grab	Soil	S1 3-4' (Ø Kraseman)		✓	✓			✓
3	11/9/18	11:00	Grab	Soil	S2 0-3' (Ø KRASEMAN)		✓		✓		
~~4~~	11/9/18	11:10	~~Discrete Comp~~	Soil	S1 ~~[illegible]~~ (0-3') (Ø Kraseman	✓				✓	
~~5~~	11/9/18	11:00	~~Composite~~	~~Soil~~	~~S2 (0-3') Ø Kraseman~~	~~✓~~			~~✓~~	CEP 11/9/18	
4	11/9/18	11:50	Discrete	Soil	S2 (0-3') Ø Kraseman	✓			✓		
					Trip blank n 11/9/18						

Container Type: AC-Air Cassette AG-Amber Glass B-BOD Bottle C-Cubitainer G - Glass O-Other P-Poly S-Sterile V-Vial
Container Volume: 1-100 mL 2-2.5 gal 3-250 mL 4-300 mL 5-500 mL 6-1L 7-VOA 8-2 oz 9-4 oz 10-8 oz 11-Other*
Preservation Code: 1-Non Preserved 2-HCl 3-H2SO4 4-HNO3 5-NaOH 6-Methanol 7-Na2S2O3 8-ZnAce, NaOH 9-NH4Cl 10-DI H2O 11-Ascorbic Acid 12-Other*
Number of Containers per Sample:

Laboratory Use Only
Cooler Present: N/A
Seals Intact: N/A
Cooler Temperature: °C

Sampled by :

Comments: Please specify "Other" preservative and containers types in this space
Metals: As, BA, Cd, Cr, Pb, Hg, Se, Ag
~~Composite S1(0-3') & S2(0-3') for PCB and TPH; Hold Discrete Samples~~ CEP
~~Composite S1(0-3') & S2 (0-3') for PAH & TPH; Hold Discrete~~

Relinquished by: (Signature, Date & Time)	Received By: (Signature, Date & Time)	Relinquished By: (Signature, Date & Time)	Received By: (Signature, Date & Time)
11/9/18 1458	11/9/18 1458		
Relinquished by: (Signature, Date & Time)	Received By: (Signature, Date & Time)	Relinquished By: (Signature, Date & Time)	Received By: (Signature, Date & Time)

OHI Engineering, Inc.
Engineers and Environmental Scientists

END OF REPORT

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