**TARGETED BROWNFIELDS ASSESSMENT REPORT**

**FORMER L&M SERVICE STATION**
**925 MASSACHUSETTS AVENUE**
**LUNENBURG, MASSACHUSETTS**

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**TABLE OF CONTENTS**
**TARGETED BROWNFIELDS ASSESSMENT**
**FORMER L&M SERVICE STATION**
**LUNENBURG, MASSACHUSETTS**

**SECTION** **PAGE**


**EXECUTIVE SUMMARY ..... 1**

**1.0 INTRODUCTION ..... 4**
1.1 Work Assignment and Report Purpose ..... 4
1.2 Report Organization ..... 4
1.3 Site Background ..... 5
1.3.1 Site Location and Description ..... 5
1.3.2 Site History ..... 5
1.4 Previous Investigations ..... 6

**2.0 TARGETED BROWNFIELDS ASSESSMENT INVESTIGATION ..... 6**
2.1 Field Investigations and Technical Approach ..... 6
2.2 Groundwater Sampling ..... 7
2.3 UST Removal ..... 10
2.4 Soil Boring Advancement and Monitoring Well Installation ..... 13
2.5 Monitoring Well Elevation and Groundwater Elevation Survey ..... 15
2.6 Hydraulic Lift, Floor Drain Holding Tank Removal, and Floor Drain Closure ..... 16

**3.0 SUMMARY OF TBA SAMPLING RESULTS ..... 16**
3.1 Applicable MCP Soil and Groundwater Categories ..... 17
3.2 Soil Sample Results ..... 18
3.2.1 Summary of VPH Sample Results ..... 18
3.2.2 Summary of EPH Sample Results ..... 19
3.2.3 Summary of PCB Sample Results ..... 19
3.2.4 Summary of Metals Sample Results ..... 19
3.3 Groundwater Sample Results ..... 19
3.3.1 Summary of VPH Sample Results ..... 20
3.3.2 Summary of EPH Sample Results ..... 20
3.3.3 Summary of Dissolved Metals Sample Results ..... 20
3.4 Data Validation ..... 20

**4.0 NATURE AND EXTENT OF CONTAMINATION ..... 21**
4.1 Nature and Extent of Soil Contamination ..... 21
4.2 Nature and Extent of Groundwater Contamination ..... 22

**5.0 WASTE DISPOSAL SUMMARY ..... 22**

**6.0 ANALYSIS OF BROWNFIELDS CLEANUP ALTERNATIVES ..... 23**
6.1 In Situ Remedial Alternatives ..... 25
6.1.1 Monitored Natural Attenuation ..... 25
6.1.2 Enhanced Aerobic Bioremediation ..... 25
6.1.3 Chemical Oxidation ..... 25
6.2 Evaluation of Remedial Alternatives ..... 26

**TABLE OF CONTENTS (cont.)**
**TARGETED BROWNFIELDS ASSESSMENT**
**FORMER L&M SERVICE STATION**
**LUNENBURG, MASSACHUSETTS**

**SECTION** **PAGE**


6.2.1 Alternative 1: Monitored Natural Attenuation ..... 26
6.2.2 Alternative 2: Enhanced Aerobic Bioremediation..... 27
6.2.3 Alternative 3: In Situ Chemical Oxidation ..... 29
6.3 Remedial Alternative Recommendation ..... 30

**7.0 SUMMARY AND CONCLUSIONS ..... 31**

**8.0 REFERENCES ..... 34**


**TABLES**

**NUMBER**


2-1 Summary of Groundwater Geochemical Parameters
2-2 Summary of Groundwater Elevation Data
3-1 Soil Sample Analytical Results
3-2 Groundwater Sample Analytical Results
6-1 Summary of Historical Soil Sample Results
6-2 Summary of Exposure Point Concentrations and Contaminant of Concern Statistics
6-3 Analysis of Brownfields Cleanup Alternatives Screening Matrix
6-4 Cost Estimate – Remedial Alternative 1 Monitored Natural Attenuation
6-5 Cost Estimate – Remedial Alternative 2 Enhanced Aerobic Bioremediation
6-6 Cost Estimate – Remedial Alternative 3 In Situ Chemical Oxidation


**FIGURES**

**NUMBER**


1 Site Locus
2 Site Plan
3A Groundwater Elevation and Contours May-June 2023
3B Groundwater Elevation and Contours October 2023
3C Groundwater Elevation and Contours April 2024
3D Groundwater Elevation and Contours July 2024
3E Groundwater Elevation and Contours October 2024
4 MassDEP Priority Resource Map
5 VPH Concentrations in MW-106


**APPENDICES**


A Photograph Log
B Low Flow Groundwater Sampling Logs
C Soil Boring Logs
D Data Validation Memos
E Waste Disposal Documentation

## EXECUTIVE SUMMARY

KGSNE JV II, LLC (KGSNE) completed a Targeted Brownfields Assessment (TBA) at Former L&M Service Station located in Lunenburg, Massachusetts (the Site). The Site consists of one parcel of land (0.191 acres) located at 925 Massachusetts Avenue, in Lunenburg, Massachusetts. The Site is occupied by one building that was formerly used as an automobile service station. The Town of Lunenburg (the Town) is the current owner of the property having completed a tax-taking foreclosure from the former owner of L&M Service Center, Inc. in August 2022. The Site has reportedly operated as a gasoline and automotive repair facility since approximately 1918.

KGSNE completed initial TBA investigation activities in May, June, and October 2023. The TBA investigations included the following:

- Removal of four underground storage tanks (USTs) that included two 10,000-gallon gasoline USTs, one 3,000-gallon diesel fuel UST, and one 500-gallon heating oil UST.
- Removal of a floor drain holding tank and closure of two floor drains.
- Removal of a hydraulic lift.
- Installation of three new groundwater monitoring wells and collection of groundwater samples from previously existing and newly installed wells.
- Collection of soil and groundwater samples from UST excavations.

KGSNE remobilized to the site in April 2024 to install two additional groundwater monitoring wells. One near the northwest property line and one to replace MW-102 that was lost during UST excavation activities. Following monitoring well installation, groundwater samples were collected from all nine wells. KGSNE also mobilized to the site in July, October, and December 2024 for collection of additional groundwater samples. The purpose of the additional monitoring events is to provide additional data for site characterization and evaluate seasonal trends in groundwater contamination.

The soil and groundwater samples collected during TBA investigations were analyzed for a combination of volatile organic compounds (VOCs), extractable petroleum hydrocarbons (EPH) (plus target polynuclear aromatic hydrocarbons [PAHs]), volatile petroleum hydrocarbons (VPH) (plus target VOCs), polychlorinated biphenyls (PCBs), and Massachusetts Contingency Plan (MCP)-14 metals analysis.

KGSNE performed groundwater sampling at the Site in May, June, and October 2023 and July, October, and December 2024. Laboratory analysis of groundwater samples collected from location UST-01 detected concentrations of C9-C10 aromatic hydrocarbons above the MCP Method 1 GW-2 standard. Concentrations of C9-C10 and C9-C12 VPH exceeded the MCP Method 1 GW-2 standard in samples collected from MW-102 and MW-106. Low concentrations of EPH compounds were detected in several groundwater samples; however, none of the concentrations exceeded the MCP Method 1 GW-2 and GW-3 standards. Concentrations of lead were detected above the MCP GW-3 standard in groundwater samples collected from UST-01, MW-101, and MW-103. The sample collected from MW-103 could not be field filtered due to limited water volume in the well on the day of sampling. There were no other metals detected at concentrations that exceed the MCP Method 1 GW-3 groundwater standards.

Concentrations of C5-C8 and C9-C10 hydrocarbon fractions were detected above the MCP Method 1 S-1/GW-2 and S-1/GW-3 standards in the soil sample and corresponding field duplicate collected from MW-106 from 10 to 15 feet bgs. There were no other VPH compounds detected above MCP Method 1 standards in any soil sample collected during the TBA investigation.

Concentrations of EPH C11-C22 hydrocarbon fractions were detected above the MCP method 1 S-1/GW-2 and S-1/GW-3 standards in soil sample HYDLIFT which was collected from the hydraulic lift excavation. The remaining EPH concentrations detected in TBA soil samples did not exceed the applicable MCP Method 1 soil standards.

Arsenic was detected in soil samples UST-01, UST-02 (and corresponding field duplicate), MW-107, and MW-108 at concentrations that exceed the MCP Method 1 S-1 standard. There were no other concentrations of metals detected that exceed MCP Method 1 soil standards.

The 2023 KGSNE TBA soil data and 2020 soil data collected by BETA Group, Inc. (BETA) were used to calculate exposure point concentrations (EPCs) for the Site related contaminants of concern (COCs). The EPCs are the mathematical average of COCs detected at the Site (1/2 detection limit values were used for COCs that were non-detect). All the EPCs for the Site COCs are less than their respective MCP Method 1 Risk Characterization standards. However, 30 percent of the samples in the data set contain arsenic at concentrations that exceed the MCP Method 1 Risk Characterization S-1 soil standard. The MCP states that to use the average

concentration as an EPC, 75 percent of the data points must be equal to or less than the applicable standard or risk-based concentration limit [310 CMR 40.0926(3)(b)(1)]. Therefore, additional evaluations are required to determine if there is a site-specific source of arsenic, or if it is attributable to a natural background condition.

Concentrations of VPH that exceed the MCP Method 1 GW-2 standard were detected in the groundwater samples collected from the UST-01 excavation and monitoring wells MW-102 and MW-106 and could pose significant risks to human health under future site redevelopment and future use activities at the Site.

KGSNE prepared an Analysis of Brownfields Cleanup Alternatives (ABCA) that describes potential remedial alternatives to achieve a condition of No Significant Risk and a Permanent Solution under the MCP (310 CMR 40.1000). Some petroleum source material was removed during the 2023 TBA UST removal activities. The removal of source material may have resulted in reduced VPH concentrations in groundwater. Concentrations of C9-C10 aromatic hydrocarbons and C9-C12 aliphatic hydrocarbons generally exhibited downward concentration trends from October 2023 through December 2024 suggesting that natural attenuation may be occurring. However, additional groundwater monitoring should be performed to further evaluate this trend. If it is determined that Remedial Alternative 1 – Monitored Natural Attenuation (MNA) is not occurring, Remedial Alternative 2 – Enhanced Aerobic Bioremediation can be initiated to help accelerate the Site cleanup process.

## 1.0 INTRODUCTION

This Targeted Brownfields Assessment (TBA) Report was prepared by KGSNE JV II, LLC (KGSNE) for the U.S. Environmental Protection Agency (EPA) under Contract No. 68HE0122D0001, Task Order No. 68HE0122F0044. This report presents the findings from field investigations conducted at the Former L&M Service Station property located at 925 Massachusetts Avenue, Lunenburg, Massachusetts (the Site). A Site Locus Map is included as Figure 1. A Site Plan depicting pertinent site features is included as Figure 2.

### 1.1 Work Assignment and Report Purpose

This TBA report is based on environmental data collected by KGSNE during multiple field mobilizations completed in 2023 and 2024. The overall objective of the TBA is to characterize the nature and extent of contamination in soil and groundwater at the Site; and estimate the potential human health risks posed by hazardous substances at the Site. Specific objectives of this TBA were to:

- Compile and evaluate available Site data and obtain soil and groundwater data required to characterize current Site conditions;
- Evaluate if soil and groundwater have been impacted by releases of petroleum hydrocarbons from underground storage tanks (USTs);
- Where possible, delineate the extent of contamination in Site soil and groundwater; and
- Evaluate risks posed by contamination using published state and federal risk-based regulatory standards.

### 1.2 Report Organization

This TBA report is organized as follows:

- Section 1 provides a description of the Site.
- Section 2 presents details of TBA investigations.
- Section 3 presents laboratory analytical results.
- Section 4 summarizes the current nature and extent of contamination.
- Section 5 summarizes the waste generated during the TBA investigation and summarizes the disposition of the generated waste.

- Section 6 presents cleanup options and approximate cost estimates.
- Section 7 presents conclusions and recommendations.

## 1.3 Site Background

This section describes the physical characteristics of the Site and surrounding area, as well as the operational history and environmental history of the Site.

### 1.3.1 Site Location and Description

The Site consists of one approximate 0.19-acre parcel of land located at 925 Massachusetts Avenue, in Lunenburg, Massachusetts. The Site is completed by a 1,792 square-foot, one-story building that was formerly used as an automobile service station.

Residences and commercial businesses are located in the general area of the Site. Residences abut the Site to the west and the Town post office abuts the Site to the east. A wetland area abuts the Site to the north. A residential neighborhood abuts the Site to the south across Massachusetts Ave.

### 1.3.2 Site History

The Site is currently owned by the Town after completing a tax foreclosure from the former owner L&M Service Center, Inc. in August 2022. The Site has reportedly operated as a gasoline and repair facility since approximately 1918. Available records indicated the presence of two 10,000-gallon gasoline underground storage tanks (USTs), one 4,000-gallon diesel fuel UST, and one 500-gallon heating oil UST at the Site. Additional historical USTs include three gasoline USTs and one waste oil UST that were reportedly removed from the Site in the 1980s. The Site is currently managed by the Massachusetts Department of Environmental Protection (MassDEP) under release tracking number (RTN) 2-16390. The Site is currently Tier Classified as a Tier 1D Site which indicates it is in default status and out of compliance with the Massachusetts Contingency Plan (MCP) (310 CMR 40.0000). Historical investigations have identified concentrations of petroleum hydrocarbons in soil and groundwater at concentrations that exceed applicable MCP standards.

## 1.4 Previous Investigations

According to a Phase II Environmental Site Assessment (ESA) prepared by BETA Group, Inc. (BETA) dated November 19, 2020 (BETA, 2020), laboratory analysis of soil and groundwater samples during previous investigations have detected concentrations of volatile organic compounds (VOCs), extractable petroleum hydrocarbons (EPH), volatile petroleum hydrocarbons (VPH), polychlorinated biphenyls (PCBs) and metals at concentrations that exceed applicable MCP reporting standards. Concentrations of VOCs, VPH, and EPH are associated with releases from historical USTs and are the contaminants of concern (COCs) for this TBA. Concentrations of PCBs detected in exceedance of MCP reporting standards were identified in soil samples collected B-103 from 12 to 15 feet below grade surface (bgs). The source of PCB contamination is currently unknown.

# 2.0 TARGETED BROWNFIELDS ASSESSMENT INVESTIGATION

This section describes the environmental investigations performed by KGSNE as part of the TBA. The TBA investigation included the collection of soil and groundwater samples for laboratory analysis. Descriptions of investigation methods and observations are presented in the sections that follow.

## 2.1 Field Investigations and Technical Approach

KGSNE performed TBA investigations throughout 2023 and 2024 to evaluate the presence of contamination in soil and groundwater at the Site. The TBA investigation was performed in accordance with the EPA-approved Field Task Work Plan/Quality Assurance Project Plan Addendum (FWTP/QAPPA) prepared by KGSNE in May 2023 (KGSNE, 2023). Photographs from TBA field investigations are included in Appendix A.

Soil and groundwater samples were submitted to Eurofins Laboratory of North Kingstown, Rhode Island (Eurofins) for laboratory analysis of VPH, EPH, MCP-14 metals, and PCBs. Soil characterization samples for waste disposal were analyzed for VOCs, semi-volatile organic compounds (SVOCs), PCBs, Pesticides, Resource Conservation and Recovery Act Metals, total petroleum hydrocarbons (TPH), specific conductivity, flashpoint, reactivity, corrosivity, and TCLP metals.

## 2.2 Groundwater Sampling

KGSNE performed groundwater sampling at the Site in May 2023, June 2023, October 2023, April 2024, July 2024, October 2024, and December 2024. KGSNE employed the USEPA Region I Low Flow/Low Stress methods to collect groundwater samples from the monitoring wells. KGSNE installed dedicated polyethylene tubing with the intake located approximately two feet off the bottom of the well screen to collect groundwater samples from each well. KGSNE purged monitoring wells using a peristaltic pump. Well drawdown was gauged during purging with an electronic water level probe.

KGSNE used a YSI multi-parameter meter equipped with a flow-through cell and a Geotech turbidity meter to monitor purge water for stabilization of field indicator parameters while purging each well. Both the YSI and turbidity units were calibrated in accordance with manufacturer specifications prior to the start of groundwater sampling activities. Field parameters were monitored at 5-minute intervals until the following stabilization criteria were met for three consecutive readings:

- Temperature did not vary by more than 3 percent;
- Specific conductance did not vary by more than 3 percent;
- pH did not vary by more than 0.1;
- Oxidation-reduction potential (ORP) did not vary by greater than 10 millivolts;
- Dissolved oxygen did not vary by more than 10 percent or greater than 0.5 mg/L; and
- Turbidity measured less than five nephelometric turbidity units (NTUs) or did not vary by more than 10 percent.

KGSNE filled laboratory-supplied sample bottles directly from the pump discharge line (groundwater monitoring equipment and associated tubing was disconnected to collect samples). Samples were placed on ice in a cooler, logged on a chain-of-custody form, and delivered to the laboratory under chain-of-custody protocol via courier. Samples were sent to Eurofins of North Kingstown, Rhode Island. Groundwater samples were submitted for laboratory analysis of VPH, EPH, and MCP-14 Metals (dissolved). A table summarizing groundwater geochemical parameters measured at the time of sample collection during groundwater sampling events is included as Table 2-1. Low flow sampling logs for all sampling rounds are included in Appendix B. Additional details discussing groundwater sampling activities are provided in the sections that follow.

**May 2023**

On May 17, 2023, KGSNE collected groundwater elevation data and groundwater samples from monitoring wells MW-101, MW-103, MW-104, and MW-105. However, KGSNE personnel were unable to locate monitoring well MW-103 due to heavy vegetative cover behind the building.

**June 2023**

During the UST removal activities (Section 2.3) KGSNE was able to locate MW-103. On June 2, 2023, KGSNE returned to the Site to collect a groundwater sample. KGSNE initiated well purging using USEPA Region 1 Low Flow/Low Stress Methods; however, the well went dry before the first round of water quality readings could be completed. The well was allowed to recharge and then a groundwater sample was collected for laboratory analysis of VPH, EPH, and MCP metals. The well contained insufficient water volume to field filter the metal sample; therefore, the sample was submitted for total metals and not dissolved metals.

**October 2023**

On October 26, 2023, KGSNE mobilized to the site and collected Site wide groundwater elevation data and collected groundwater samples from newly installed monitoring wells B/MW-106, B/MW-107, and B/MW-108. Monitoring well B/MW-102 was not measured during the synoptic round as it could not be located. It was likely destroyed during excavation of the USTs. Groundwater samples were submitted to Eurofins of North Kingstown, Rhode Island for laboratory analysis of VPH, EPH, and MCP-14 Metals (dissolved).

**April 2024**

On April 23, 2024, KGSNE mobilized to the Site to collect groundwater samples. Prior to collecting groundwater samples, a synoptic round of groundwater elevation measurements was conducted. Groundwater samples were collected from all nine wells using USEPA Region I Low Flow/Low Stress methods. Samples were sent to Eurofins of North Kingstown, Rhode Island for laboratory analysis of VPH, EPH, and MCP dissolved metals.

**July 2024**

On July 25 and July 26, 2024, KGSNE mobilized to the Site to collect groundwater samples. KGSNE completed a synoptic round of all wells. MW-108 was not included because it could not be located at the time of the synoptic round. During field measurements, the oil interface probe detected approximately 0.2 feet of non-aqueous phase liquid (NAPL) in MW-106. The product had a petroleum-like odor and was dark brown in color. KGSNE did not sample MW-106 during this event due to the NAPL presence. KGSNE noted a petroleum-like odor in MW-109 but observed no free phase product. Approximately six feet of the dedicated tubing for MW-102R was covered in a black substance that exhibited a petroleum-like odor. Groundwater samples were collected from all nine wells using USEPA Region I Low Flow/Low Stress methods. Samples were sent to Eurofins of North Kingstown, Rhode Island for laboratory analysis of VPH, EPH, and MCP dissolved Metals. Both MW-103 and MW-101 went dry before sampling could be completed. Both wells were left to recharge overnight to allow for maximum sample volume. The MW-103 sample was analyzed for VPH only and the MW-101 sample was analyzed for VPH and EPH due to insufficient water volume in the wells.

**October 2024**

On October 15 and October 16, 2024, KGSNE mobilized to the Site to collect groundwater samples. Prior to collecting groundwater samples, a synoptic round of groundwater elevation measurements was conducted. B/MW-103 was dry during the synoptic round. Groundwater samples were collected from eight of the nine wells using USEPA Region I Low Flow/Low Stress methods. Samples were sent for laboratory analysis of VPH, EPH, and MCP dissolved Metals. KGSNE could not collect a sample from B/MW-103 since it was dry during the duration of the sampling round. B/MW-101 and B/MW-105 were pumped dry and were left to recharge. B/MW-105 was left to recharge for approximately twenty minutes before there was enough volume to sample. B/MW-101 was left to recharge overnight. KGSNE returned to the site on October 16 to collect grab samples. B/MW-105 was collected for all analyses. The groundwater sample collected from B/MW-101 was only submitted for laboratory analysis of VPH due to lack of water and poor well recharge. All samples were sent to Eurofins of North Kingstown, Rhode Island for analysis.

**December 2024**

On December 10 and December 11, 2024, KGSNE mobilized to the Site to collect groundwater samples. Prior to collecting groundwater samples, a synoptic round of groundwater elevation measurements was conducted. B/MW-103 was dry during the synoptic round. KGSNE collected groundwater samples from eight of the nine wells using USEPA Region I Low Flow/Low Stress methods. Samples were sent for laboratory analysis of VPH, EPH, and MCP dissolved Metals. KGSNE could not collect a sample from B/MW-103 because it was dry for the duration of the sampling round. B/MW-105 was pumped dry on December 10 and left to recharge overnight. KGSNE returned to the site on December 11 to collect a grab sample. All samples were sent to Eurofins of North Kingstown, Rhode Island for analysis.

## 2.3 UST Removal

From May 22, through May 30, 2023, KGSNE oversaw the removal of two 10,000-gallon gasoline tanks (UST-01 and UST-02), one 4,000-gallon diesel tank (UST-03) and one 500-gallon heating oil tank (UST-04). Tank removal was completed by Strategic Environmental Services (SES) of Nottingham, New Hampshire. The approximate locations of the USTs are shown on Figure 2.

On May 23, 2023, SES excavated soil to the top of UST-01 and UST-02. A hole was cut into the top of each tank to remove the remaining gasoline product. Both gasoline USTs were observed to have a fiberglass lining. During the excavation for UST-01, broken feed lines that ran to the former pump island were discovered and contained a mixture of residual gasoline and water. The fuel/water mixture from the feed lines was transferred to a 55-gallon drum. Soil staining was noted beneath the former feed lines and a strong petroleum odor was noted. Soil samples were collected for soil headspace screening for total VOCs using a photoionization detector (PID). The PID headspace readings of soil samples collected from around the feed line ranted from 115 parts per million by volume (ppmv) to 1,054 ppmv. KGSNE observed a small crack one on of the joints in the feed line while uncovering UST-02. Soil underlying the cracked joint was slightly discolored and a strong petroleum odor was noted. Residual fuel existed in one of the feed lines connected to UST-02 and approximately 1 gallon of fluid was transferred to a 55-gallon drum after the lines were removed. The PID readings greater than 100 ppmv detected within 10 feet of the UST and greater than 2 feet in depth triggered a 72-hour MCP reporting condition [310 CMR 40.0313(2)]. KGSNE notified the Town's Licensed Site Professional (LSP) who in turn notified the MassDEP.

On May 24, 2023, Dino Dellechiaie from MassDEP approved the following Immediate Response Actions (IRA):

- Excavation of up to 300 cubic yards of soil;
- Evaluation of nearby utilities and evaluate lower explosive limit (LEL) conditions; and
- Determine if any private wells are located within 500 feet of the Site.

KGSNE screened nearby storm drains and catch basins with a PID for the presence of petroleum vapors. There were no PID readings detected above 0.0 noted at any location. Town of Lunenberg personnel confirmed that there are no private wells located within 500 feet of the Site. Additional IRA reporting will be performed by the Town's LSP and submitted to MassDEP separate from this TBA.

On May 24, 2023, SES removed a combined 400 gallons of gasoline and water mixture from the two 10,000-gallon tanks and transferred the liquids into tote containers for temporary storage at the Site while the disposal facility profiles were being reviewed by the disposal facility. SES personnel cleaned each of the gasoline tanks with a pressure washer, squeegees, and sorbent pads. Confined space entry was required for UST-01 to remove the fiberglass that lined the inside after it became detached from the tank sidewalls when cutting the hole in the top of the tank.

On May 24, 2023, SES excavated to the top of UST-03 and cut a hole in the top of the UST to remove residual diesel fuel and sludge from the bottom of the tank. Similar to the gasoline USTs, there was an apparent leak at one of the feed line joints that extended to the former fuel dispenser. Approximately one gallon of residual fluids was removed from the feed line and transferred to a 55-gallon drum. SES entered UST-03 using confined space entry procedures to clean the tank with a pressure washer, a squeegee and sorbent pads. Approximately 125 gallons of diesel fuel mixed with water and 30 gallons of sludge were removed from tank bottom. Material was transferred totes and a drum while disposal facility profile review was conducted.

On May 25, 2023, SES initiated removal of UST-01 and 02 by excavating soil from along the sidewalls of each UST. Excavated soils generally consisted of sand and gravel with little silt. Groundwater was encountered during the excavation at approximately 9 feet below grade surface (bgs). Excavation of soils continued until both gasoline USTs were completely exposed and could

be removed from the excavation. A representative of the Lunenburg Fire Department was present to observe the UST removal and inspect the condition of the USTs. Both USTs were observed to be in good condition with the exception of some minor corrosion and surficial pitting. Photographs of the UST removals are included in Appendix A. There were no holes or cracks observed on either of the gasoline USTs. Both tanks measured approximately 28 feet long by 9 feet in diameter. The approximate limits of each excavation were 30 feet long by 10 feet wide and 13 feet in depth. There were no deadmen, pads, straps or turn buckles observed upon removal. The feed and return lines were removed at the time of UST removal.

After the USTs were removed from the excavation, KGSNE conducted field screening for total VOCs using an Ion Science Tiger photoionization detector calibrated to an isobutylene gas standard. Soils were screened using the headspace screening method in accordance with the FTWP/QAPPA. PID headspace screening results from the UST graves ranged from 0.4 ppmv to 12.1 ppmv. KGSNE collected one composite soil sample from each UST excavation. The composite sample was generated by collecting soil from along each side wall and the excavation bottom and homogenized to generate the sample aliquot. Samples were analyzed for laboratory analysis for VPH, EPH and MCP-14 metals. KGSNE also collected a grab groundwater sample from each gasoline UST grave using a bailer. The groundwater samples were submitted for laboratory analysis for VPH, EPH and dissolved MCP-14 metals. The gasoline USTs were transported off site by Assured Collision of Walpole, Massachusetts for recycling. A combination of excavated soil and clean off site backfill material was used to backfill the gasoline UST excavations. Native and offsite soil was used to backfill the excavations. Offsite soil was supplied by Powell Stone and Gravel. KGSNE screened excavated soils with a PID prior to placement back into the excavation. Soil with headspace readings of 20 ppmv or less was reused as backfill material. Soils with headspace readings of greater than 20 ppmv were stockpiled for characterization and off-site disposal. A layer of poly was placed in the excavation to segregate the excavated material from the clean off site backfill material.

On May 25, 2023, SES removed UST-03. Lunenberg Fire Department personnel were present to observe the UST removal and tank condition. The UST was observed to be in relatively good condition with minor corrosion and pitting noted. KGSNE collected soil samples from the excavation bottom and sidewalls and performed headspace screening using the PID. The soil headspace screening values from Tank 3 excavation ranged from 19 ppmv to 26 ppmv. KGSNE collected one composite soil sample from the UST grave. The composite sample was generated

by collecting soil from along each side wall and the excavation bottom and homogenized to generate the sample aliquot. Samples were submitted for laboratory analysis of VPH, EPH and MCP-14 metals. Groundwater was not encountered in the UST-03 excavation; there for no groundwater sample was collected. KGSNE also collected a soil sample from beneath the former pumping island where the fuel dispensers were located.

On May 26, 2023, SES performed a confined space entry into UST-03 to remove 30 gallons of sludge from the bottom of the tank. UST-03 measured 24 feet in length and 5 feet in diameter. The excavation dimensions were 15 feet in length by 20 feet in width by 8 feet in depth. There were no pads, straps, turnbuckles or deadmen present upon removal. The feed and return lines were removed. KGSNE screened excavated soils with a PID prior to placement back into the excavation. Soil with headspace readings of 20 ppmv or less was reused as backfill material. Soils with headspace readings of greater than 20 ppmv were stockpiled for characterization and off-site disposal. A layer of poly was placed in the excavation to segregate the excavated material from the clean off site backfill material. Tank 3 was removed from the site by Assured Collision and transported to their facility in Walpole, Massachusetts for recycling.

On May 30, 2023, SES uncovered UST-04. A hole was cut into the top to remove 30 gallons of sludge and oil/water mixture. Lunenberg Fire Department personnel were onsite during the removal activities. KGSNE observed the UST to be in poor condition upon removal including two approximately 1-inch diameter holes near the tank bottom, extensive pitting and corrosion, and some exterior staining. The tank measured 5.5 feet in length and 4 feet in diameter. The excavation extents were 9 feet long by 11 feet wide by 6 feet deep. Groundwater was encountered during the excavation; however, there was insufficient volume to collect a groundwater sample. A composite soil sample was collected from the tank grave using the same procedures as the other USTs. Excavation backfilling was performed consistent with the other UST excavations.

On May 31, 2023, SES transferred UST-04 offsite to Assured Collision in Walpole for recycling.

### 2.4 Soil Boring Advancement and Monitoring Well Installation

On October 12, 2023, Geosearch, Inc. advanced 3 additional soil borings to approximately 20 feet below grade surface (bgs). Soil borings were advanced using a 7822 DT Geoprobe drilling rig via a direct-push technique. KGSNE visually classified soils in the field using the Modified

Burmister Classification System and used a PID to field screen soil samples for the presence of VOCs. One soil sample was collected from each boring based on the highest detection of VOCs. If low PID readings were present, samples were collected where the top of groundwater was observed. The goal of the additional soil borings and monitoring wells was to assess soil and groundwater conditions around and beneath the former USTs.

On April 12, 2024, Geosearch, Inc. advanced 2 additional soil borings to approximately 20 feet below grade surface (bgs). Soil borings were advanced using a 7822 DT Geoprobe drilling rig via a direct-push technique. KGSNE visually classified soils in the field using the Modified Burmister Classification System and used a PID to field screen soil samples for the presence of VOCs. Boring MW-102R was installed as a replacement for B/MW-102 which was destroyed during UST excavation activities. Boring MW-109 was installed at the edge of the property to further delineate the extent of the VPH contamination on Site. One sample was collected from MW-109 based on the observed groundwater table. A summary of the maximum PID measurements from each boring is presented below.

| Soil Boring | Maximum PID Measurement (ppmv) | Soil Sample Depth (ft bgs) |
|---|---|---|
| MW-102R | 1251 | 15-20 |
| B-MW-106 | 486.8 | 10-15 |
| B-MW-107 | 44.4 | 10-15 |
| B-MW-108 | None >0 | 15-18 |
| MW-109 | None >0 | 13-15 |

Notes:
ppmv – parts per million volume

Soil samples from the October 2023 and April 2024 sampling events were submitted to Eurofins Laboratory of North Kingstown, Rhode Island for laboratory analysis of VPH, EPH, and MCP-14 metals. Boring logs and monitoring well construction details are included in Appendix C. Complete laboratory analytical reports are included with the Data Validation Memos in Appendix D

Each soil boring was completed as 2-inch-diameter monitoring wells set at 20 feet bgs. Each well was constructed using a 10-foot 10-slot Schedule 40 polyvinyl chloride (PVC) screen and a 10-foot blank PVC riser. The wells were surrounded by No. 0 filter sand in the uppermost 2-feet above the top of the screen, then sealed with approximately 1-foot of bentonite, and finished with

filter sand to 1-foot bgs. The monitoring wells were completed with a 4-inch diameter steel road box protective casing into a 6-inch-thick concrete pad to secure the monitoring well head.

KGSNE observed groundwater between 11 and 15 feet bgs during boring advancement. Following the installation, KGSNE developed the monitoring wells using a submersible pump to purge groundwater. Water levels measured prior to development were between 7 and 10 feet bgs. Groundwater was purged until visually clear. Monitoring well MW-108 had poor recovery and went dry after approximately 2.2 gallons of groundwater was purged. KGSNE used a surge block and foot valve to manually develop the well, resulting in about 36.5 gallons removed from the well. KGSNE purged approximately 40 gallons of water from monitoring wells MW-106 and MW-107 and approximately 15 gallons of water from MW-102R and MW-109.

## 2.5 Monitoring Well Elevation and Groundwater Elevation Survey

On May 31, 2023, KGSNE surveyed the five monitoring wells for elevation data using a laser level. Reference point elevations of the monitoring wells (top of PVC) were surveyed relative to an arbitrary benchmark elevation of 100 feet (front, right corner of the sidewalk in front of the garage on the property).

On October 12, 2023, KGSNE surveyed the three newly installed monitoring wells for elevation data using a laser level. Measurements were documented from two reference points including the top of PVC and top of well casing. Each were surveyed relative to a benchmark elevation of 98.38 feet in reference to MW-104.

On April 12, 2024, KGSNE surveyed the two newly installed monitoring wells for elevation data using a laser level. Reference point elevations of the monitoring wells (top of PVC) were surveyed relative to a benchmark elevation of 98.6 feet in reference to MW-106. A summary of monitoring well and groundwater elevation data from each sampling event is presented in Table 2-2 using the top of PVC as the measuring point.

The survey information was used in conjunction with groundwater depth information collected during groundwater sampling activities to determine groundwater elevations and create the groundwater contour maps included as Figure 3A (May-June 2023), Figure 3B (October 2023), Figure 3C (April 2024), Figure 3D (July 2024), and Figure 3E (October 2024). Groundwater elevations for December 2024 were several feel lower than earlier in the year due to a prolonged

dry weather period resulting in distorted groundwater elevation contours; therefore, a figure was not included presenting the December 2024 groundwater elevation data. Based on the information gathered during the TBA investigation and local topography groundwater was determined to flow north/northeast towards the wetland area located approximately 250 feet north of the site.

### 2.6 Hydraulic Lift, Floor Drain Holding Tank Removal, and Floor Drain Closure

From October 30 through November 3, 2023, KGSNE oversaw SES perform the removal of the hydraulic lift and floor drain holding tank and closure of two floor drains.

SES removed the above ground features of the hydraulic lift before excavating approximately 8 ft through the concrete floor to disassemble the remaining lift structure. The excavation into the concrete floor allowed for access to the hydraulic fluid holding tank under the lift. Prior to removing the hydraulic fluid holding tank, the top was cut open, and the remaining hydraulic fluid and sludge were transferred to a 55-gallon drum for characterization for off-site disposal. KGNSE collected one composite soil sample from the excavation bottom and sidewalls. The sample was submitted to Eurofins for laboratory analysis of VPH, EPH, metals, and PCBs.

KGSNE initiated removal of the floor drain holding tank by pumping down approximately 250 gallons of standing water into a storage tote then removing the remaining sludge. KGNSE collected one composite soil sample from the excavation bottom and sidewalls. The sample was submitted to Eurofins for laboratory analysis of VPH, EPH, and metals.

SES closed two floor drains located in the concrete floor in the former automobile service portion of the building. Floor drains were abandoned by blocking the floor drains 12 to 18 inches into the pipe and sealed at the floor grade using neat Portland cement.

## 3.0 SUMMARY OF TBA SAMPLING RESULTS

KGSNE performed a review of the sampling data generated during the TBA investigation by comparing the concentrations of analytes detected in the laboratory results to applicable MCP Method 1 Risk Characterization Standards. This comparison is intended to support a preliminary evaluation of potential risks associated with contamination and to determine the need for remedial actions or use limitations to facilitate Site reuse or redevelopment.

## 3.1 Applicable MCP Soil and Groundwater Categories

The MCP soil categories are selected based on potential human exposure considering the accessibility of soils, the frequency and intensity of use, and whether children are present. The Site is currently zoned as Commercial (C) and is currently completed by a vacant building. Portions of the Site soils are considered accessible since asphalt was removed to facilitate the removal of the USTs. Under current use, children and adults are seldom present; therefore, the current frequency of use and intensity of use is considered low. Based on current accessibility and frequency and intensity of use, soil at the Disposal Site is categorized as S-2 and S-3, as defined in the MCP 310 CMR 40.0933. However, KGSNE assumes that the Site will be redeveloped in the future and has conservatively included the S-1 standards (the MCPs most conservative Method 1 soil standards) as part of our data review.

The current and future use of groundwater determines their applicable categories. These categories are used, in turn, to identify applicable Method 1 groundwater and/or soil standards that are used to evaluate risk. MassDEP has established three categories for groundwater, which may apply to a specified volume of groundwater at a Site or to an aquifer taken as a whole. These groundwater categories were established to identify groundwater associated with the following three distinct types of exposures:

- GW-1 applies to groundwater that is used as a drinking water source or is otherwise assumed to be a potential source of drinking water.
- GW-2 applies to groundwater considered to be a potential source of vapors that could migrate through the subsurface and concentrate in indoor air of onsite buildings.
- GW-3 applies to groundwater that is assumed to discharge to surface water (all groundwater in the Commonwealth meets this criteria).

Based upon the MassDEP Priority Resource Map (Figure 4), the Disposal Site is not located within 500 feet of a Current Drinking Water Source Area or Potential Drinking Water Source Area. Public water serves the Site and all properties within 500 feet of the Disposal Site. Therefore, Groundwater Category GW-1 does not currently apply to the Site.

Groundwater beneath the Site was potentially encountered at approximately 7-13 feet bgs during drilling activities. Even though there are no occupied buildings currently located on the Site, KGSNE has conservatively applied category GW-2 to groundwater beneath the Site.

All groundwater in the Commonwealth is categorized as GW-3, which assumes that Site groundwater will ultimately migrate and discharge to a surface water body. There are wetlands and an unnamed surface water body located approximately 200 feet north of the Site. Based on groundwater elevation data collected by KGSNE during TBA investigations, groundwater beneath the Site flows to the northeast. Therefore, groundwater at the Site is also categorized as GW-3.

## 3.2 Soil Sample Results

The table below presents a summary of the soil samples collected during KSGNE TBA investigations.

| Sample Type/Number of Samples | Laboratory Analyses | Locations on Site |
|---|---|---|
| Composite/5 | VPH, EPH, and MCP Metals | Total of four composite samples, one collected from each UST excavation sidewalls and bottom.<br>One composite soil sample collected from the floor drain holding tank excavation. |
| Composite/1 | VPH, EPH, MCP Metals, and PCBs. | Composite sample collected from the hydraulic lift excavation. |
| Discrete Depths/3 | VPH, EPH, and MCP Metals | Discrete/targeted depth sample intervals based on PID screening and visual observations during drilling for monitoring well installation. |

A summary of laboratory analytical results for samples collected during the TBA investigation are presented below. Soil sample results are summarized in Table 3-1. Laboratory analytical reports are included with the Data Validation Memos in Appendix D.

### 3.2.1 Summary of VPH Sample Results

Concentrations of VPH compounds were detected in every soil sample except for UST-04 and HYDLIFT. Concentrations of C5-C8 and C9-C10 hydrocarbon fractions were detected above the MCP Method 1 S-1/GW-2 and S-1/GW-3 standards in the soil sample and corresponding field duplicate collected from MW-106 from 10 to 15 feet bgs. However, the concentrations do not

exceed the MCP S-2 and S-3 soil standards. There were no other VPH compounds detected above MCP Method 1 standards in any sample collected during the TBA investigation.

### 3.2.2 Summary of EPH Sample Results

Concentrations of C11-C22 hydrocarbon fractions were detected above the MCP method 1 S-1/GW-2 and S-1/GW-3 standards in soil sample HYDLIFT which was collected from the hydraulic lift excavation. However, the concentrations do not exceed the MCP S-2 and S-3 standards. The remaining EPH concentrations detected in TBA soil samples did not exceed the applicable MCP Method 1 soil standards.

### 3.2.3 Summary of PCB Sample Results

The only sample analyzed for PCBs was the hydraulic lift excavation soil sample (HYDLIFT). PCBs were not detected above the laboratory reporting limits.

### 3.2.4 Summary of Metals Sample Results

Arsenic was detected in soil samples UST-01, UST-02 (and corresponding field duplicate), MW-107, and MW-108 at concentrations that exceed the MCP Method 1 S-1 and S-2 soil standards. However, the detected concentrations do not exceed the S-3 soil standards. There were no other concentrations of metals detected that exceed any of the MCP Method 1 soil standards.

## 3.3 Groundwater Sample Results

The sections below present the laboratory analytical results of groundwater samples collected during TBA investigation activities. KGSNE submitted groundwater samples collected from monitoring wells for laboratory analysis of VPH, EPH and Dissolved MCP Metals.

As part of a long-term monitoring plan, all viable monitoring wells on site were sampled seasonally throughout 2023 and 2024. The collected samples were sent for laboratory analysis of VPH, EPH, and dissolved metals. Groundwater analytical results are compared to the MCP Method 1 standards for groundwater characterized as GW-2 and GW-3. Groundwater sampling data is summarized on Table 3-2. Copies of laboratory data reports are included with the Data Validation Memos in Appendix D.

### 3.3.1 Summary of VPH Sample Results

In 2023, laboratory analysis of groundwater samples collected from location UST-01 detected concentrations of C9-C10 aromatic hydrocarbons above the MCP Method 1 GW-2 standard. Concentrations of C9-C10 and C9-C12 VPH concentrations exceeded the MCP Method 1 standards for GW-2 in sample MW-106.

In 2024, laboratory analysis of groundwater samples collected from MW-102R detected concentrations of C9-C10 aromatics, C9-C12 aliphatics; m,p-Xylene, and xylene (total) were above the MCP Method 1 GW-2 standard. Concentrations of C9-C10 aromatics and C9-C12 aliphatics exceeded the MCP Method 1 standards for GW-2 in sample MW-106. Concentrations of VPH did not exceed the MCP Method 1 GW-3 standard in any sample collected during the TBA investigation.

### 3.3.2 Summary of EPH Sample Results

Low concentrations of EPH compounds were detected in groundwater samples collected from UST-01 and UST-02 excavations, MW-102R, MW-106, MW-107, and MW-109. However, none of the concentrations exceed the MCP Method 1 GW-2 and GW-3 standards.

### 3.3.3 Summary of Dissolved Metals Sample Results

Concentrations of lead were detected above the MCP GW-3 standard in groundwater samples collected from UST-01, MW-101 (May 2023, April and December 2024) and MW-103 in June 2023. The sample collected from MW-103 could not be field filtered due to limited water volume in the well on the day of sampling and was analyzed for total metals. There were no other metals detected at concentrations that exceed the MCP Method 1 GW-3 groundwater standards.

## 3.4 Data Validation

KGSNE performed a Tier 1 Stage 2A data validation in accordance with the *EPA New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures* (EPA, 2020); *USEPA's National Functional Guidelines for Inorganic Superfund Methods Data Review* (EPA, 2017a); *USEPA's National Functional*

*Guidelines for Superfund Organic Methods Data Review* (EPA, 2017b); the Massachusetts Department of Environmental Protection's (MassDEP) current Compendium of Quality Control Requirements and Performance Standards for Selected Analytical Protocols (referred to as the Compendium of Analytical Methods) (July, 2010 and updated periodically), and the Program QAPP and the FTWP/QAPPA for the TBA. Data validation was performed on the soil and groundwater and QA/QC samples collected during the TBA. Tier 1 Stage 2A data validation evaluates completeness of the data, holding time and sample preservation compliance, laboratory and field blank results, surrogate recoveries, laboratory control sample results, matrix spike results, laboratory duplicates, serial dilution results, field duplicate precision, dual analytical column precision for PCBs, and percent solids content of the samples. Reporting limits are also evaluated for compliance with site-specific PALs. Results of QA/QC samples were evaluated, and qualification of the data was performed. Limitations and qualification of the data were noted and explained in the data review memorandum provided in Appendix D.

## 4.0 NATURE AND EXTENT OF CONTAMINATION

A summary of the nature and extent of contamination identified in soil and groundwater beneath the Site is provided in the sections that follow.

### 4.1 Nature and Extent of Soil Contamination

During excavation activities, KGSNE screened soil samples using an Ion Science Tiger PID calibrated to a 100 ppm isobutylene standard. KGSNE used a correction factor of 0.54 to report screening values in terms of benzene in accordance with the MCP reporting conditions. Elevated PID readings were noted in soil in the excavations around USTs 1, 2 and 3. During the UST removal process clean soil was segregated from contaminated soil. The concentrations of VPH that exceed applicable MCP Method 1 soil standards were limited to the soil sample collected from soil boring MW-106 (located in the former location of UST 01) in a soil sample collected from 10-15 feet bgs. Concentrations of EPH that exceed applicable MCP Method 1 soil standards were limited to the soil sample collected from the hydraulic lift excavation from approximately 6 to 8 feet bgs. Concentrations of VPH and EPH were detected in several other sample locations throughout the Site; however, they were relatively low and below the applicable MCP Method 1 soil standards. The concentrations of VPH and EPH detected during TBA investigations are likely associated with historical petroleum releases that occurred from historical USTs, UST piping and

feed lines to the dispensing island, or small discrete surface spills that occurred during regular historical fueling activities.

Concentrations of arsenic were detected above applicable MCP Method 1 soil standards in soil samples collected from the excavations for UST-01, UST-02, MW-107, and MW-108. Arsenic contamination is not typically associated with releases of gasoline or diesel fuel. The concentrations of arsenic detected during TBA investigations are consistent with the concentrations detected during historical investigations. The concentrations of arsenic detected at the Site may be associated with natural background conditions.

Historical investigations detected concentrations of PCBs above MCP reporting standards in soil samples collected B-103 from 12 to 15 feet bgs. Concentrations of PCBs were not detected above the laboratory reporting limit in the composite soil sample collected from the hydraulic lift excavation. PCB contamination is limited to location B-103 and the source of PCB contamination is currently unknown.

### 4.2 Nature and Extent of Groundwater Contamination

Concentrations of VPH were detected above applicable MCP Method 1 groundwater standards in the groundwater samples collected from the excavation of UST-01 and monitoring wells MW-106 and MW-102/102R. The concentrations of VPH detected in this portion of the Site are likely attributed to releases of gasoline from historical USTs and/or the feed lines to the dispensing island.

Concentrations of dissolved lead were detected above the applicable MCP Method 1 groundwater standard (GW-3) in groundwater samples collected from the excavation of UST-01 and monitoring well MW-101. Concentrations of total lead were detected above MCP Method 1 groundwater standard in the groundwater sample collected from MW-103 (there was insufficient well volume to field filter the sample). The source of the lead detected in Site groundwater samples is unknown. However, it may be attributable to naturally occurring concentrations of leachable lead.

## 5.0 WASTE DISPOSAL SUMMARY

The table below summarizes the waste generated for disposal during the TBA investigations. Copies of waste manifests are included in Appendix F.

| Waste Profile | Bulk/ Drum | Quantity | Facility | Manifest |
|---|---|---|---|---|
| Gas/Water Mixture | Totes | 400 gallons | Norlite<br>Cohoes, NY | 23-0165-NOR-01 |
| Hydraulic Oil Impacted Pads | Drums | 3 Drums | EMI<br>South Portland, ME | 024331073JJK |
| Hydraulic Oil Impacted Soil from Lift | Drums | 1 Drum | EMI<br>South Portland, ME | 024331073JJK |
| Floor Drain Holding Tank Sludge | Drums | 7 Drums | EMI<br>South Portland, ME | 024331073JJK |
| Floor Drain Holding Tank Oily Liquids | Bulk | 250 Gallons | EMI<br>South Portland, ME | 007378403GBF |
| Concrete Block Debris stained with Motor Oil | Roll Off | 15 Tons | EMI<br>South Portland, ME | 23-0165-01 |
| Hydraulic Oil from Lift | Drum | 1 Drum | EMI<br>South Portland, ME | 024331073JJK |
| Motor Oil (Abandoned Drum) | Drum | 1 Drum | EMI<br>South Portland, ME | 024331073JJK |
| Fuel Oil, Water <5% | TP | 125 Gallons | Tradebe<br>Bridgeport, CT | 020790255JJK |
| Petroleum Impacted Absorbents from UST Cleaning | Drum | 2 Drums | Tradebe,<br>Newington, NH | 016608463FLE |
| Petroleum Soils | Bulk | 117.69 Tons | Ondricks<br>Chicopee, MA | BOLs in eDEP |

## 6.0 ANALYSIS OF BROWNFIELDS CLEANUP ALTERNATIVES

KGSNE evaluated soil and groundwater data collected during TBA investigations (Table 3-1 and Table 3-2, respectively) and historical soil sample results from BETA's 2020 Phase II ESA report (Table 6-1) to generate a list of contaminants of concern (COCs) that may require remediation to achieve site closure under the MCP. The following compounds are considered at the Site:

- Napthalene;
- PCBs (Aroclor 1260);
- Arsenic;
- Lead;
- C11-C22 Aromatic Hydrocarbons;
- C19-C36 Aliphatic Hydrocarbons;
- C5-C8 Aliphatic Hydrocarbons;
- C9-C10 Aromatic Hydrocarbons; and
- C9-C12 Aromatic Hydrocarbons.

The 2023 TBA soil data and 2020 BETA soil data were used to calculate exposure point concentrations for the above COCs. The EPCs are the mathematical average of COCs detected at the Site (1/2 detection limit values were used for COCs that were non-detect). All the EPCs for the Site COCs are less than their respective MCP Method 1 Risk Characterization standards. However, 30 percent of the samples in the data set contain arsenic at concentrations that exceed the MCP Method 1 Risk Characterization S-1 soil standard. The MCP states that to use the average concentration as an EPC, 75 percent of the data points must be equal to or less than the applicable standard or risk-based concentration limit [310 CMR 40.0926(3)(b)(1)]. Therefore, additional evaluations are required to determine if there is a site-specific source of arsenic, or if it is attributable to a natural background condition. A summary of EPC and Site COC statistics are presented in Table 6-2.

Concentrations of VPH that exceed the MCP Method 1 GW-2 standard were detected in the groundwater samples collected from the UST-01 excavation and monitoring wells MW-106 and MW-102/102R and could pose significant risks to human health under future site redevelopment and future use activities at the Site. Additional response actions will be required to achieve a condition of No Significant Risk and a Permanent Solution under the MCP. Any response actions implemented at the Site will require a site-specific risk assessment to determine if a condition of “No Significant Risk” exists at the Site, and to identify which environmental media must be remediated in order to achieve a condition of No Significant Risk. The risk assessment will evaluate the risks residual contamination at the Site pose to human health, welfare, environment, and public safety. The risk assessment will be performed in accordance with either MCP Method 1 (310 CMR 40.0970) or Method 3 Risk Characterization (310 CMR 40.0990) methods.

The following sections present an analysis of brownfield cleanup alternatives (ABCA) that describe potential remedial alternatives to achieve a condition of No Significant Risk and a Permanent Solution under the MCP (310 CMR 40.1000). The remedial alternatives presented below provide a range of potential cleanup strategies that include in situ (in place) remediation of contaminated soil and groundwater and monitored natural attenuation whereby contaminants are broken down into harmless by-products through natural processes.

## 6.1 In Situ Remedial Alternatives

A summary of in situ remedial alternatives is presented in the sections that follow. In situ remediation is often a cost-effective alternative to excavation and off-site disposal where the volume of contaminated soil is large and/or a significant volume of contaminated soil is located below the water table where dewatering/treatment and excavation “in the wet” will be required to completely remove contaminated material.

### 6.1.1 Monitored Natural Attenuation

Monitored natural attenuation (MNA) involves long-term monitoring of physical, chemical, and biological process that, under favorable conditions, will naturally (i.e. no human involvement) reduce the mass, toxicity, mobility, volume, or concentration of contaminants in soil and/or groundwater. However, MNA remedial alternatives have the potential to significantly prolong the period of time required to achieve cleanup goals.

### 6.1.2 Enhanced Aerobic Bioremediation

Aerobic bioremediation is a process by which naturally occurring microorganisms degrade organic contaminants into carbon dioxide and water. For these processes to occur there must be sufficient oxygen, otherwise aerobic function ceases. Under this alternative, aerobic bioremediation is accomplished by introducing oxygen to the subsurface soil and groundwater, typically by injecting oxygen rich solutions like Oxygen Release Compound (ORC®). Solutions like ORC® slowly release oxygen into the surrounding soil and groundwater to boost the aerobic function of naturally occurring microorganisms. ORC®-type solutions are typically applied through the use of direct push drilling and injected at specifically calculated horizontal and vertical locations. Several applications may be required to achieve cleanup goals. Enhanced bioremediation has proven effective in treating most non-chlorinated VOCs, including gasoline-related petroleum hydrocarbons.

### 6.1.3 Chemical Oxidation

Using this remedial alternative, direct chemical oxidation of petroleum hydrocarbons is accomplished by introducing an oxidizer (catalyzed hydrogen peroxide, sodium persulfate, or similar) that acts to break down petroleum hydrocarbons. High percentage oxidant solutions (up

to 50% is common) are applied to the targeted subsurface area through direct injection distribution system. Following the oxidant solution application, a catalyst (iron, sodium persulfate, or similar depending on the selected oxidant) is applied to the targeted subsurface area creating a reagent solution. Injections of reagent solutions can produce vigorous chemical reactions known to produce gas and steam. Follow-up injection applications and collection of soil and groundwater samples would be required to document the achievement of cleanup goals. Several applications of reagent may be required to achieve cleanup goals.

## 6.2 Evaluation of Remedial Alternatives

The following subsections provide an analysis of cleanup alternatives with preliminary order-of-magnitude cost estimates for each alternative. The evaluation presented below assumes regulatory acceptance of the remedial approach and a MCP Method 1 or Method 3 risk assessment demonstrating that the residual concentrations of contaminants after remediation are protective of human health, the environment, and public welfare. To evaluate a range of potential remedial alternatives, Nobis evaluated the effectiveness, implementability, cleanup time, resiliency to climate change, and overall cost estimates for three potential remedial scenarios. Cost estimates do not include construction costs for redevelopment of the property, only preparation of the property for redevelopment. An initial screening of cleanup alternatives is presented in Table 6-3. Cost estimate details are summarized in Tables 6-4, 6-5, and 6-6.

The following is a tabular summary of the alternatives considered in this TBA Report.

| Alternative Number | Remedial Alternative Type | Estimated Remedial Cost Range |
|---|---|---|
| 1 | Monitored Natural Attenuation | $30,000 - $50,000 |
| 2 | Enhanced Aerobic Bioremediation | $95,000-$125,000 |
| 3 | In Situ Chemical Oxidation | $125,000-$220,000 |

### 6.2.1 Alternative 1: Monitored Natural Attenuation

**Remedial Alternative Description**

Excavation of UST-01 and removal of some petroleum impacted soil during UST removal activities removed some petroleum source material that was impacting the groundwater around MW-106 and MW-102/102R. However, concentrations of VPH in groundwater at MW-106 and MW-102/102R still exceed the applicable MCP Method 1 groundwater standards. Under this

alternative, long-term monitoring of physical chemical, and biological process will be required until cleanup goals are achieved.

**Effectiveness**

This alternative would not be protective of human health because it is not likely to reduce risk in the short term and has the potential to prolong the period of time required to achieve cleanup goals. There would be minimal short-term impacts to the community since only limited action would be taken to reduce contaminant levels. The long-term effectiveness of this alternative would be dependent upon the rate at which natural degradation of contaminants occurs.

**Implementability**

This alternative is technically and administratively feasible. However, the time frame for remediation could be extremely long, therefore this remedial alternative may limit site redevelopment options.

**Resiliency to Climate Change**

This alternative would be the least resilient to climate change factors, since there would be less reduction of contaminant levels and no opportunity for improvements in flood storage or stormwater management.

**Cost Estimate**

The costs for Alternative 1 are typically less than Alternatives 2 and 3. However, based on the results of the effectiveness, implementability, and resiliency to climate change analysis, this alternative may not be optimal as a stand-alone remedial alternative. However, Alternative 1 may be economical as a complement to an active treatment alternative if further contaminant reduction is required after treatment or removal of source material. The estimated cost range for Alternative 1 would be $30,000-$50,000 assuming 3 years of quarterly MNA groundwater sampling. A summary of estimated remedial costs for Alternative 1 is presented in Table 6-4.

### 6.2.2 Alternative 2: Enhanced Aerobic Bioremediation

**Remedial Alternative Description**

Under this alternative, a solution like ORC® would be applied through the use of direct push drilling and injected at specifically calculated horizontal and vertical locations. Based on the low

dissolved oxygen values (generally less than 0.5 mg/l) observed at MW-106 during low flow sampling, reducing conditions may be present at the site. Additional site-specific soil and groundwater data would need to be collected and used to determine the amount of ORC® required to achieve favorable geochemical conditions that would lead to aerobic bioremediation. Several applications may be required to achieve cleanup goals. Confirmatory soil and groundwater sampling would need to be performed to evaluate the effectiveness of this alternative. Additional long-term groundwater monitoring may be required to monitor for contaminant rebound following completion of the remedial alternative.

**Effectiveness**

This alternative would be protective of human health and the environment. Contaminant reduction would be accomplished through treatment of soil and groundwater, resulting in reduction of toxicity, mobility, and volume of contamination. Short-term impacts to the community would be low, as there would be no excavation of soil or transportation of contaminated soils over public roadways. The long-term effectiveness would be moderate to high, depending upon subsurface conditions, with the possibility of persistent contamination or contaminant rebound if site conditions are not optimal for the delivery of the treatment reagent.

**Implementability**

This alternative would be easily implementable from a technical and administrative standpoint, however there would be some barriers to implementation including geochemical conditions in the subsurface that might limit the effectiveness of the chemical/biological reactions necessary to achieve contaminant degradation, and the need for additional site-specific soil and groundwater data in order to develop an injection plan. Several applications of treatment reagent may be required to achieve cleanup goals, therefore the time frame for remediation is estimated to be six months to one year. The oxygen enhancement technology has been proven effective at reducing petroleum contaminant mass at sites similar in nature to this site, and the required resources are available from a limited number of vendors.

**Resiliency to Climate Change**

As above, the treatment of contamination would be accomplished without modifying the site grades or infiltration capacity of site soils, therefore this alternative would provide resiliency against rising sea levels, changing flood zones, and higher groundwater tables. However, since

no excavation or site work would be performed, there is less opportunity to include flood storage or stormwater controls into the remedial plan.

**Cost Estimate**

The estimated cost range for Alternative 2 would be $95,000 to $125,000. A summary of estimated remedial costs for Alternative 2 is presented in Table 6-5.

### 6.2.3 Alternative 3: In Situ Chemical Oxidation

Remedial Alternative Description

Under this alternative, a chemical oxidant would be injected into subsurface soil and groundwater in the approximately 600 square foot area. This alternative would require the construction of approximately five to 10 temporary injection wells to apply the selected oxidant. Similar to Alternative 1, site specific data collected during TBA investigations suggest that reducing conditions may be present at the Site. Additional site-specific soil and groundwater data would need to be collected and used to develop bench scale tests to determine the oxidant demand of Site soils. The oxidant demand of soils determines the amount of oxidant that will need to be applied to achieve cleanup goals. Therefore, higher levels of oxidant demand lead to increased remediation costs.

**Effectiveness**

This alternative would be protective of human health and the environment. Contaminant reduction would be accomplished through treatment of soil and groundwater, resulting in reduction of toxicity, mobility, and volume of contamination. Short-term impacts to the community would be low, as there would be no excavation of soil or transportation of contaminated soils over public roadways. The long-term effectiveness would be moderate to high, depending upon subsurface conditions, with the possibility of persistent contamination or contaminant rebound if site conditions are not optimal for the delivery of the treatment reagent or amenable to the chemical reactions that form the basis of this technology.

**Implementability**

This alternative would be easily implementable from a technical and administrative standpoint, however there would be some barriers to implementation including geochemical conditions in the subsurface that might limit the effectiveness of the chemical reactions necessary to achieve

contaminant degradation, and the need for additional site-specific soil and groundwater data in order to develop an injection plan. Several applications of treatment reagent may be required to achieve cleanup goals, therefore the time frame for remediation is estimated to be six months to one year. This technology has been proven effective at reducing petroleum contaminant mass at sites similar in nature to this site, and the required resources are available from several vendors.

**Resiliency to Climate Change**

As above, the treatment of contamination would be accomplished without modifying the site grades or infiltration capacity of site soils, therefore this alternative would provide resiliency against rising sea levels, changing flood zones, and higher groundwater tables. However, since no excavation or site work would be performed, there is less opportunity to include flood storage or stormwater controls into the remedial plan.

The estimated cost range of Alternative 3 would be $125,000 to $250,000. A summary of estimated remedial costs for Alternative 3 is presented in Table 6-6.

## 6.3 Remedial Alternative Recommendation

Nobis recommends a combination of implementation of Remedial Alternative 1 – Monitored Natural Attenuation and Remedial Alternative 2 – Enhanced Aerobic Bioremediation. This recommendation is based on the following factors:

- Some petroleum source material was removed during the 2023 TBA UST removal activities. The removal of source material may result in reduced VPH concentrations in groundwater. A summary of VPH concentrations that exceeded MCP GW-2 standards in MW-106 is presented in Figure 5. Concentrations of C9-C10 aromatic hydrocarbons and C9-C12 aliphatic hydrocarbons generally exhibited downward concentration trends from October 2023 through December 2024 suggesting that natural attenuation may be occurring. However, additional groundwater monitoring should be performed to further evaluate this trend. If it is determined that natural attenuation is not occurring, Remedial Alternative 2 can be initiated to help accelerate the Site cleanup process.

- The combination of Remedial Alternatives will be protective of human health and the environment.

- The location of impacted soils is readily accessible for a drill rig to collect characterization samples and perform inject a solution like ORC®.

- Enhanced bioremediation has proven effective in treating most non-chlorinated VOCs, including gasoline-related petroleum hydrocarbons.

- If MNA is occurring at the Site, Remedial Alternative 1 can be completed in a relatively short time frame and in a cost-effective manner.

## 7.0 SUMMARY AND CONCLUSIONS

The following is a summary of the information and conclusions presented in this TBA Report:

- The Site consists of an approximate 0.19-acre parcel of land located at 925 Massachusetts Avenue, in Lunenburg, Massachusetts. The Site is completed by a 1,792 square-foot, one-story building that was formerly used as an automobile service station. Residences and commercial businesses are located in the general area of the Site.

- The Site is currently owned by the Town after completing a tax foreclosure from the former owner L&M Service Center, Inc. in August 2022. The Site has reportedly operated as a gasoline and repair facility since approximately 1918.

- The Site is currently Tier Classified as a Tier 1D Site which indicates it is in default status and out of compliance with the MCP. Historical investigations have identified concentrations of petroleum hydrocarbons in soil and groundwater at concentrations that exceed applicable MCP standards.

- KGSNE performed TBA investigations from May 2023 to December 2024 to evaluate the presence of contamination in soil and groundwater at the Site.

- KGSNE performed groundwater sampling at the Site in May, June, and October 2023. Laboratory analysis of groundwater samples collected from location UST-01 detected concentrations of C9-C10 aromatic hydrocarbons above the MCP Method 1 GW-2

standard. Concentrations of C9-C10 and C9-C12 VPH exceeded the MCP Method 1 GW-2 standard in sample MW-106. Concentrations of VPH did not exceed the MCP Method 1 GW-3 standard in any sample collected during the TBA investigation. Low concentrations of EPH compounds were detected in several groundwater samples; however, none of the concentrations exceeded the MCP Method 1 GW-2 and GW-3 standards. Concentrations of lead were detected above the MCP GW-3 standard in groundwater samples collected from UST-01, MW-101, and MW-103.

- From May 22, through May 30, 2023, KGSNE oversaw the removal of two 10,000-gallon gasoline tanks (UST-01 and UST-02), one 4,000-gallon diesel tank (UST-03) and one 500-gallon heating oil tank (UST-04). KGSNE observed the gasoline and diesel USTs to be in good condition with the exception of some minor corrosion and pitting. KGSNE observed the fuel oil UST to be in poor condition and noted two approximately 1-inch diameter holes near the tank bottom, extensive pitting and corrosion, and some exterior staining.

- On October 12, 2023, KGSNE oversaw the advancement of 3 soil borings to approximately 20 feet below grade surface (bgs). Each soil boring was completed as 2-inch-diameter monitoring well set at 20 feet bgs.

- Based on the information gathered during the TBA investigation groundwater was determined to flow north towards the wetland area located approximately 250 feet north of the site.

- From October 30 through November 3, 2023, KGSNE oversaw SES perform the removal of the hydraulic lift and floor drain holding tank and closure of two floor drains. Floor drains were abandoned by blocking the floor drains 12 to 18 inches into the pipe and sealed at the floor grade using neat Portland cement.

- Concentrations of C5-C8 and C9-C10 hydrocarbon fractions were detected above the MCP Method 1 S-1/GW-2 and S-1/GW-3 standards in the soil sample and corresponding field duplicate collected from MW-106 from 10 to 15 feet bgs. There were no other VPH compounds detected above MCP Method 1 standards in any soil sample collected during the TBA investigation.

- Concentrations of C11-C22 hydrocarbon fractions were detected above the MCP method 1 S-1/GW-2 and S-1/GW-3 standards in soil sample HYDLIFT which was collected from the hydraulic lift excavation. The remaining EPH concentrations detected in TBA soil samples did not exceed the applicable MCP Method 1 soil standards.

- Arsenic was detected in soil samples UST-01, UST-02 (and corresponding field duplicate), MW-107, and MW-108 at concentrations that exceed the MCP Method 1 S-1 standard. There were no other concentrations of metals detected that exceed MCP Method 1 soil standards.

- Laboratory analysis of groundwater samples collected from location UST-01 detected concentrations of C9-C10 aromatic hydrocarbons above the MCP Method 1 GW-2 standard. Concentrations of C9-C10 and C9-C12 VPH exceeded the MCP Method 1 GW-2 standard in sample MW-106 and MW102/102R. Concentrations of VPH did not exceed the MCP Method 1 GW-3 standard in any sample collected during the TBA investigation. Low concentrations of EPH compounds were detected in several groundwater samples; however, none of the concentrations exceeded the MCP Method 1 GW-2 and GW-3 standards. Concentrations of lead were detected above the MCP GW-3 standard in groundwater samples collected from UST-01, MW-101, and MW-103.

- The removal of source material may result in reduced VPH concentrations in groundwater. A summary of VPH concentrations that exceeded MCP GW-2 standards in MW-106 is presented in Figure 5. Concentrations of C9-C10 aromatic hydrocarbons and C9-C12 aliphatic hydrocarbons generally exhibited downward concentration trends from October 2023 through December 2024 suggesting that natural attenuation may be occurring. However, additional groundwater monitoring should be performed to further evaluate this trend.

## 8.0 REFERENCES

BETA Group, Inc. 2020. Phase II Environmental Site Assessment. November 19.

EPA, 2020. Region 1 – EPA New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures. EQADR-Supplement 2. September.

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# TABLES

**Table 2-1**
**Summary of Geochemical Parameters**
**Former L and M Service Station**
**Lunenburg, Massachusetts**

| | May-June 2023 Sampling Event | | | | | |
|---|---|---|---|---|---|---|
| **Monitoring Well** | **Temp (°C)** | **Spec. Cond. (µs/cm)** | **pH (SU)** | **ORP (mV)** | **DO (mg/L)** | **Turbidity (NTU)** |
| B/MW-101 | 11.1 | 2177 | 5.85 | 172.3 | 0.22 | 2.33 |
| B/MW-102 | 11.5 | 1825 | 6.47 | -68.3 | 0.05 | 2.81 |
| B/MW-102R | N/A | N/A | N/A | N/A | N/A | N/A |
| B/MW-103[1] | 11.9 | 1646 | 6.34 | 133.7 | 2.72 | N/A |
| B/MW-104 | 12.5 | 2399 | 6.44 | 11.9 | 0.07 | 24.8 |
| B/MW-105 | 11.6 | 4053 | 6.26 | 11 | 0.2 | 7.25 |
| B/MW-106 | N/A | N/A | N/A | N/A | N/A | N/A |
| B/MW-107 | N/A | N/A | N/A | N/A | N/A | N/A |
| B/MW-108 | N/A | N/A | N/A | N/A | N/A | N/A |
| B/MW-109 | N/A | N/A | N/A | N/A | N/A | N/A |

| | October 2023 Sampling Event | | | | | |
|---|---|---|---|---|---|---|
| **Monitoring Well** | **Temp (°C)** | **Spec. Cond. (µs/cm)** | **pH (SU)** | **ORP (mV)** | **DO (mg/L)** | **Turbidity (NTU)** |
| B/MW-101 | N/A | N/A | N/A | N/A | N/A | N/A |
| B/MW-102 | N/A | N/A | N/A | N/A | N/A | N/A |
| B/MW-102R | N/A | N/A | N/A | N/A | N/A | N/A |
| B/MW-103 | N/A | N/A | N/A | N/A | N/A | N/A |
| B/MW-104 | N/A | N/A | N/A | N/A | N/A | N/A |
| B/MW-105 | N/A | N/A | N/A | N/A | N/A | N/A |
| B/MW-106 | 16.9 | 590 | 6.5 | 135 | 0.31 | 2.91 |
| B/MW-107 | 16.8 | 502 | 6.56 | -91.2 | 0.12 | 0.74 |
| B/MW-108 | 15.59 | 2745 | 6.34 | 110.3 | 0.79 | 4.04 |
| B/MW-109 | N/A | N/A | N/A | N/A | N/A | N/A |

| | April 2024 Sampling Event | | | | | |
|---|---|---|---|---|---|---|
| **Monitoring Well** | **Temp (°C)** | **Spec. Cond. (µs/cm)** | **pH (SU)** | **ORP (mV)** | **DO (mg/L)** | **Turbidity (NTU)** |
| B/MW-101 | 10.23 | 1721 | 5.92 | -45.1 | 3.72 | 6.22 |
| B/MW-102 | N/A | N/A | N/A | N/A | N/A | N/A |
| B/MW-102R | 12.05 | 1764 | 6.69 | -225.2 | 3.33 | 5.15 |
| B/MW-103 | 9.25 | 438 | 6.51 | 46.5 | 3.44 | 27.2 |
| B/MW-104 | 11.71 | 796 | 6.61 | -44.8 | 1.94 | 11.6 |
| B/MW-105 | 11.78 | 2983 | 6.33 | -41.8 | 0.26 | 3.25 |
| B/MW-106 | 11.67 | 559 | 6.71 | -69.9 | 0.14 | 3.18 |
| B/MW-107 | 11.34 | 283 | 6.5 | -55.8 | 0.05 | 12.4 |
| B/MW-108 | 11.7 | 1899 | 6.56 | -36.8 | 2.94 | 3.63 |
| B/MW-109 | 10.94 | 665 | 6.76 | -219.8 | 0.43 | 11.2 |

| | July 2024 Sampling Event | | | | | |
|---|---|---|---|---|---|---|
| **Monitoring Well** | **Temp (°C)** | **Spec. Cond. (µs/cm)** | **pH (SU)** | **ORP (mV)** | **DO (mg/L)** | **Turbidity (NTU)** |
| B/MW-101[1] | 15.86 | 633 | 6.1 | -279.2 | 0.33 | 22.5 |
| B/MW-102 | N/A | N/A | N/A | N/A | N/A | N/A |
| B/MW-102R[2] | 14.2 | 2159 | 6.67 | -124.8 | 0.09 | 3.84 |
| B/MW-103 | * | * | * | * | * | * |
| B/MW-104 | 15.47 | 2084 | 6.33 | -0.7 | 0.62 | 12.5 |
| B/MW-105 | 15.16 | 3202 | 6.26 | -269.3 | 0.12 | 12.1 |

**Table 2-1**
**Summary of Geochemical Parameters**
**Former L and M Service Station**
**Lunenburg, Massachusetts**

| | | | | | | |
|---|---|---|---|---|---|---|
| B/MW-106 | N/A | N/A | N/A | N/A | N/A | N/A |
| B/MW-107 | 16.1 | 392 | 6.54 | -266.6 | 0.11 | 4.38 |
| B/MW-108[3] | 15.2 | 1696 | 6.31 | 122.7 | 1.27 | 7.61 |
| B/MW-109 | 13.59 | 1648 | 6.5 | -260.9 | 0.16 | 4.91 |

| | October 2024 Sampling Event | | | | | |
|---|---|---|---|---|---|---|
| **Monitoring Well** | **Temp (°C)** | **Spec. Cond. (µs/cm)** | **pH (SU)** | **ORP (mV)** | **DO (mg/L)** | **Turbidity (NTU)** |
| B/MW-101[1] | 13.4 | 349.8 | 5.83 | 312 | 0.16 | 14.6 |
| B/MW-102 | N/A | N/A | N/A | N/A | N/A | N/A |
| B/MW-102R | 14.5 | 2226 | 6.67 | 73 | 0.15 | 0.42 |
| B/MW-103 | * | * | * | * | * | * |
| B/MW-104 | 14.8 | 1924 | 6.29 | 294.2 | 5.9 | 12.1 |
| B/MW-105[1] | 15.1 | 2933 | 6.24 | 409.7 | 6.46 | 8.58 |
| B/MW-106 | 14.6 | 1263 | 6.34 | 99.2 | 0.13 | 3.32 |
| B/MW-107 | 15.4 | 386 | 6.52 | 122.7 | 0.94 | 3.82 |
| B/MW-108 | 14.7 | 2643 | 6.35 | 384.9 | 0.41 | 1.07 |
| B/MW-109 | 13.8 | 1130 | 6.34 | 173.5 | 0.14 | 1.46 |

| | December 2024 Sampling Event | | | | | |
|---|---|---|---|---|---|---|
| **Monitoring Well** | **Temp (°C)** | **Spec. Cond. (µs/cm)** | **pH (SU)** | **ORP (mV)** | **DO (mg/L)** | **Turbidity (NTU)** |
| B/MW-101[1] | 11.3 | 1055 | 5.86 | 147.9 | 6.19 | 44.2 |
| B/MW-102 | N/A | N/A | N/A | N/A | N/A | N/A |
| B/MW-102R | 13.1 | 2386 | 6.63 | -87.6 | 0.48 | 1.07 |
| B/MW-103 | * | * | * | * | * | * |
| B/MW-104 | 11.5 | 1187 | 6.15 | 141 | 3.3 | 45.7 |
| B/MW-105[1] | 11.4 | 2798 | 6.26 | 62 | 1.31 | 44.6 |
| B/MW-106 | 13.8 | 1006 | 6.49 | -86.8 | 0 | 2.91 |
| B/MW-107 | 13.5 | 449.2 | 6.3 | -34 | 1.53 | 2.5 |
| B/MW-108 | 11.2 | 2419 | 6.34 | 91.4 | 1.27 | 3.68 |
| B/MW-109 | 12.8 | 980 | 6.48 | -72.6 | 0.45 | 4.06 |

Notes:
1. Well goes dry before sampling, last reading taken
2. Well was stable besides turbidity
3. Geochemical parameters were not stable after two hour time limit.
*Well was dry during sampling round
N/A: well was destroyed or not installed at the time of sampling round

**Table 2-2**
**Summary of Groundwater Elevation Data**
**Former L and M Service Station**
**Lunenburg, MA**

| Well ID | Measuring Point Elevation | Depth to Water May-June 2023 | Groundwater Elevation May-June 2023 | Depth to Water October 2023 | Groundwater Elevation October 2023 | Depth to Water April 2024 | Grounwater Elevation April 2024 | Depth to Water July 2024 | Groundwater Elevation July 2024 | Depth to Water October 2024 | Groundwater Elevation October 2024 | Depth to Water December 2024 | Groundwater Elevation December 2024 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | |
| B/MW-101 | 99.24 | 11.39 | 87.85 | 11.75 | 87.49 | 10.31 | 88.93 | 14.26 | 84.98 | 15.15 | 84.09 | 13.21 | 86.03 |
| B/MW-102 | 99.04 | 11.36 | 87.68 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-102R | 99.42 | -- | -- | -- | -- | 10.36 | 89.06 | 13.28 | 86.14 | 14.77 | 84.65 | 15.13 | 84.29 |
| B/MW-103 | 99.49 | 13.31 | 86.18 | 13.45 | 86.04 | 12.59 | 86.9 | 16.28 | 83.21 | -- | -- | -- | -- |
| B/MW-104 | 98.38 | 9 | 89.38 | 8.95 | 89.43 | 7.88 | 90.5 | 11.6 | 86.78 | 13.24 | 85.14 | 13.58 | 84.8 |
| B/MW-105 | 98.84 | 10.05 | 88.79 | 10.16 | 88.68 | 9.34 | 89.5 | 12.3 | 86.54 | 14.73 | 84.11 | 15.17 | 83.67 |
| MW-106 | 98.6 | -- | -- | 9.97 | 88.63 | 9.37 | 89.23 | 12.37 | 86.23 | 13.9 | 84.7 | 14.32 | 84.28 |
| MW-107 | 98.08 | -- | -- | 8.18 | 89.9 | 7.47 | 90.61 | 10.46 | 87.62 | 12.2 | 85.88 | 11.79 | 86.29 |
| MW-108 | 98.67 | -- | -- | 9.15 | 89.52 | 8.56 | 90.11 | 11.31 | 87.36 | 13.66 | 85.01 | 14.09 | 84.58 |
| MW-109 | 99.34 | -- | -- | -- | -- | 10.31 | 89.03 | 13.2 | 86.14 | 14.65 | 84.69 | 15.01 | 84.33 |

Notes:
-- Well was dry or not available for measurement

**Table 3-1**
**Summary of Soil Sample Analytical Results**
**Former L and M Service Station**
**Lunenburg, MA**

| Location | | | | | | | | LM-SO-UST02 | HOLDTANK | HYDLIFT | LM-SO-PI | LM-SO-UST01 | LM-SO-UST02 | LM-SO-UST03 | LM-SO-UST04 | MW-106 | | MW-107 | MW-108 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Depth Interval** | | | | | | | | 9 - 12 ft | 4 - 10 ft | 6 - 8 ft | 2 - 6 ft | 9 - 12 ft | 9 - 12 ft | 5 - 8 ft | 6 - 9 ft | 10-15 ft | 10 - 15 ft | 10-15 ft | 15-18 ft |
| **Sample Date** | | | | | | | | 05/25/2023 | 11/01/2023 | 10/31/2023 | 05/25/2023 | 05/25/2023 | 05/25/2023 | 05/25/2023 | 05/30/2023 | 10/12/2023 | 10/12/2023 | 10/12/2023 | 10/12/2023 |
| **Sample Type** | | | | | | | | FD | N | N | N | N | N | N | N | N | FD | N | N |
| **Chemical/Sample ID** | **Units** | **MA S-1/GW-2** | **MA S-1/GW-3** | **MA S-2/GW-2** | **MA S-2/GW-3** | **MA S-3/GW-2** | **MA S-3/GW-3** | **SO-FD-01** | **HOLDTANK-0410** | **HYDLIFT-0608** | **LM-SO-PI-052523** | **LM-SO-UST01-052523** | **LM-SO-UST02-052523** | **LM-SO-UST03-052523** | **LM-SO-UST04-053023** | **SO-B/MW-106-1015** | **SO-FD01-101223** | **SO-B/MW-107-1015** | **SO-B/MW-108-1518** |
| **Pesticides/PCBs** | | | | | | | | | | | | | | | | | | | |
| Aroclor 1016 | ug/kg | 1,000 | 1,000 | 4,000 | 4,000 | 4,000 | 4,000 | NA | NA | 21 U | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Aroclor 1221 | ug/kg | 1,000 | 1,000 | 4,000 | 4,000 | 4,000 | 4,000 | NA | NA | 21 U | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Aroclor 1232 | ug/kg | 1,000 | 1,000 | 4,000 | 4,000 | 4,000 | 4,000 | NA | NA | 21 U | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Aroclor 1242 | ug/kg | 1,000 | 1,000 | 4,000 | 4,000 | 4,000 | 4,000 | NA | NA | 21 U | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Aroclor 1248 | ug/kg | 1,000 | 1,000 | 4,000 | 4,000 | 4,000 | 4,000 | NA | NA | 21 U | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Aroclor 1254 | ug/kg | 1,000 | 1,000 | 4,000 | 4,000 | 4,000 | 4,000 | NA | NA | 21 U | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Aroclor 1260 | ug/kg | 1,000 | 1,000 | 4,000 | 4,000 | 4,000 | 4,000 | NA | NA | 21 U | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Aroclor 1262 | ug/kg | 1,000 | 1,000 | 4,000 | 4,000 | 4,000 | 4,000 | NA | NA | 21 U | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Aroclor 1268 | ug/kg | 1,000 | 1,000 | 4,000 | 4,000 | 4,000 | 4,000 | NA | NA | 21 U | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| **Metals** | | | | | | | | | | | | | | | | | | | |
| Antimony | mg/kg | 20 | 20 | 30 | 30 | 30 | 30 | **1.7 J** | **1.6 J** | **0.54 J** | **0.94 J** | **1.3 J** | **1.5 J** | **0.81 J** | 8.6 UJ | **1 J** | **0.95 J** | **0.93 J** | **1.2 J** |
| Arsenic | mg/kg | 20 | 20 | 20 | 20 | 50 | 50 | **53** | **4.6** | **4.1** | **16** | **21** | **52** | **12** | **4.5** | **8.9** | **3.7** | **23** | **27** |
| Barium | mg/kg | 1,000 | 1,000 | 3,000 | 3,000 | 5,000 | 5,000 | **57 J** | **49** | **19** | **44** | **50 J** | **54 J** | **66 J** | **35** | **54** | **56** | **29** | **34** |
| Beryllium | mg/kg | 90 | 90 | 200 | 200 | 200 | 200 | **0.3 J** | 0.52 U | 0.52 U | **0.24 J** | **0.33 J** | **0.26 J** | **0.42 J** | 0.86 U | 0.46 U | 0.49 U | 0.46 U | 0.56 U |
| Cadmium | mg/kg | 70 | 70 | 100 | 100 | 100 | 100 | 0.54 U | **0.073 J** | 0.52 U | **0.034 J** | 0.54 U | 0.62 U | 0.51 U | 0.86 UJ | 0.46 U | 0.49 U | **0.027 J** | **0.035 J** |
| Chromium | mg/kg | 100 | 100 | 200 | 200 | 200 | 200 | **34** | **16** | **9.5** | **20** | **27** | **34** | **27** | **10** | **20** | **17** | **18** | **21** |
| Lead | mg/kg | 200 | 200 | 600 | 600 | 600 | 600 | **47** | **14** | **7** | **60** | **28** | **29** | **32** | **56** | **7.2** | **2.9** | **12** | **17** |
| Mercury | mg/kg | 20 | 20 | 30 | 30 | 30 | 30 | **0.012 J** | **0.013 J** | 0.066 U | **0.062** | **0.025 J** | 0.054 U | **0.069** | **0.04 J** | 0.04 U | **0.03 J** | **0.023 J** | 0.032 U |
| Nickel | mg/kg | 600 | 600 | 1,000 | 1,000 | 1,000 | 1,000 | **24** | **9.6** | **7.4** | **16** | **20** | **23** | **19** | **8.2 J-** | **14** | **13** | **12** | **14** |
| Selenium | mg/kg | 400 | 400 | 700 | 700 | 700 | 700 | 1.6 U | 1.6 U | 1.6 U | 1.4 U | 1.6 U | 1.8 U | 1.5 U | 2.6 UJ | 1.4 U | 1.5 U | 1.4 U | 1.7 U |
| Silver | mg/kg | 100 | 100 | 200 | 200 | 200 | 200 | 1.6 U | 1.6 U | 1.6 U | 1.4 U | 1.6 U | 1.8 U | 1.5 U | 2.6 U | 1.4 U | 1.5 U | 1.4 U | 1.7 U |
| Thallium | mg/kg | 8 | 8 | 60 | 60 | 80 | 80 | 3.2 U | 3.1 U | 3.1 U | 2.8 U | 3.2 U | 3.7 U | 3.1 U | 5.2 U | 2.8 U | 2.9 U | 2.8 U | 3.4 U |
| Vanadium | mg/kg | 400 | 400 | 700 | 700 | 700 | 700 | **27** | **25** | **7.5** | **17** | **21** | **25** | **22** | **11** | **18** | **13** | **14** | **17** |
| Zinc | mg/kg | 1,000 | 1,000 | 3,000 | 3,000 | 5,000 | 5,000 | **86 J** | **31** | **33** | **150** | **64 J** | **150 J** | **47 J** | **36 J-** | **22** | **14** | **56** | **79** |
| **EPH** | | | | | | | | | | | | | | | | | | | |
| 2-Methylnaphthalene | mg/kg | 80 | 300 | 80 | 500 | 80 | 500 | 0.4 U | **3.5** | 0.35 U | 0.35 U | 0.36 U | 0.4 U | 0.34 U | **4.8** | **1.8** | **6.3** | 0.39 U | 0.38 U |
| Acenaphthene | mg/kg | 1,000 | 1,000 | 3,000 | 3,000 | 5,000 | 5,000 | 0.4 U | 0.36 U | 0.35 U | 0.35 U | 0.36 U | 0.4 U | 0.34 U | 0.36 U | 1 U | 1.1 U | 0.39 U | 0.38 U |
| Acenaphthylene | mg/kg | 600 | 10 | 600 | 10 | 600 | 10 | 0.4 U | 0.36 U | 0.35 U | 0.35 U | 0.36 U | 0.4 U | 0.34 U | 0.36 U | 1 U | 1.1 U | 0.39 U | 0.38 U |
| Anthracene | mg/kg | 1,000 | 1,000 | 3,000 | 3,000 | 5,000 | 5,000 | 0.4 U | 0.36 U | 0.35 U | 0.35 U | 0.36 U | 0.4 U | 0.34 U | 0.36 U | 1 U | 1.1 U | 0.39 U | 0.38 U |
| Benzo(a)anthracene | mg/kg | 7 | 7 | 40 | 40 | 300 | 300 | 0.4 U | 0.36 U | 0.35 U | 0.35 U | 0.36 U | 0.4 U | 0.34 U | 0.36 U | 1 U | 1.1 U | 0.39 U | 0.38 U |
| Benzo(a)pyrene | mg/kg | 2 | 2 | 7 | 7 | 30 | 30 | 0.4 U | 0.36 U | 0.35 U | 0.35 U | 0.36 U | 0.4 U | 0.34 U | 0.36 U | 1 U | **2** | 0.39 U | 0.38 U |
| Benzo(b)fluoranthene | mg/kg | 7 | 7 | 40 | 40 | 300 | 300 | 0.4 U | 0.36 U | 0.35 U | 0.35 U | 0.36 U | 0.4 U | 0.34 U | 0.36 U | 1 U | 1.1 U | 0.39 U | 0.38 U |
| Benzo(g,h,i)perylene | mg/kg | 1,000 | 1,000 | 3,000 | 3,000 | 5,000 | 5,000 | 0.4 U | 0.36 U | 0.35 U | 0.35 U | 0.36 U | 0.4 U | 0.34 U | 0.36 U | 1 U | 1.1 U | 0.39 U | 0.38 U |
| Benzo(k)fluoranthene | mg/kg | 70 | 70 | 400 | 400 | 3,000 | 3,000 | 0.4 U | 0.36 U | 0.35 U | 0.35 U | 0.36 U | 0.4 U | 0.34 U | 0.36 U | 1 U | 1.1 U | 0.39 U | 0.38 U |
| C11-C22 Aromatics | mg/kg | 1,000 | 1,000 | 3,000 | 3,000 | 5,000 | 5,000 | 8 U | **310** | **1,500** | **33** | **12** | 8 U | **12** | **250** | **47** | **140** | **11** | 7.6 U |
| C11-C22 Aromatics (adjusted) | mg/kg | 1,000 | 1,000 | 3,000 | 3,000 | 5,000 | 5,000 | 8 U | **310** | **1,500** | **32** | **11** | 8 U | **11** | **240** | **44** | **130** | **11** | 7.6 U |
| C19-C36 Aliphatics | mg/kg | 3,000 | 3,000 | 5,000 | 5,000 | 5,000 | 5,000 | 8 UJ | **380** | **880** | **58** | **16 J** | 8 UJ | **19 J** | **96** | **130** | **360** | **32** | **12** |
| C9-C18 Aliphatics | mg/kg | 1,000 | 1,000 | 3,000 | 3,000 | 5,000 | 5,000 | 8 U | **51** | **52** | 7.1 U | 7.2 U | 8 U | 6.9 U | **240** | **60** | **93** | 7.7 U | 7.6 U |
| Chrysene | mg/kg | 70 | 70 | 400 | 400 | 3,000 | 3,000 | 0.4 U | 0.36 U | 0.35 U | 0.35 U | 0.36 U | 0.4 U | 0.34 U | 0.36 U | 1 U | 1.1 U | 0.39 U | 0.38 U |
| Dibenz(a,h)anthracene | mg/kg | 0.7 | 0.7 | 4 | 4 | 30 | 30 | 0.4 U | 0.36 U | 0.35 U | 0.35 U | 0.36 U | 0.4 U | 0.34 U | 0.36 U | 1 U | 1.1 U | 0.39 U | 0.38 U |
| Fluoranthene | mg/kg | 1,000 | 1,000 | 3,000 | 3,000 | 5,000 | 5,000 | **0.45** | 0.36 U | 0.35 U | **0.44** | **0.63** | **0.44** | **0.64** | **0.54** | 1 U | 1.1 U | 0.39 U | 0.38 U |
| Fluorene | mg/kg | 1,000 | 1,000 | 3,000 | 3,000 | 5,000 | 5,000 | 0.4 U | 0.36 U | 0.35 U | 0.35 U | 0.36 U | 0.4 U | 0.34 U | **0.69** | 1 U | 1.1 U | 0.39 U | 0.38 U |
| Indeno(1,2,3-cd)pyrene | mg/kg | 7 | 7 | 40 | 40 | 300 | 300 | 0.4 U | 0.36 U | 0.35 U | 0.35 U | 0.36 U | 0.4 U | 0.34 U | 0.36 U | 1 U | 1.1 U | 0.39 U | 0.38 U |
| Naphthalene | mg/kg | 20 | 500 | 20 | 1,000 | 20 | 3,000 | 0.4 U | **1.3** | 0.35 U | 0.35 U | 0.36 U | 0.4 U | 0.34 U | **0.48** | **1.7** | **5.2** | 0.39 U | 0.38 U |
| Phenanthrene | mg/kg | 500 | 500 | 1,000 | 1,000 | 3,000 | 3,000 | 0.4 U | **0.53** | 0.35 U | 0.35 U | 0.36 U | 0.4 U | 0.34 U | **0.46** | 1 U | 1.1 U | 0.39 U | 0.38 U |
| Pyrene | mg/kg | 1,000 | 1,000 | 3,000 | 3,000 | 5,000 | 5,000 | 0.4 U | 0.36 U | 0.35 U | 0.35 U | 0.36 U | 0.4 U | 0.34 U | 0.36 U | 1 U | 1.1 U | 0.39 U | 0.38 U |
| **VPH** | | | | | | | | | | | | | | | | | | | |
| Benzene | mg/kg | 40 | 40 | 200 | 200 | 400 | 1,000 | 0.016 U | 0.26 U | 0.33 U | **0.013 J** | 0.013 U | 0.018 U | 0.015 U | 0.08 U | **0.59** | 1.5 U | 0.15 U | 0.13 U |
| C5-C8 Aliphatics (adjusted) | mg/kg | 100 | 100 | 500 | 500 | 500 | 500 | 0.079 U | **15** | 6.6 U | **0.34** | **0.2** | 0.091 U | 0.073 U | 1.6 U | **340** | **500** | **3.6** | **4.3** |
| C9-C10 Aromatics | mg/kg | 100 | 100 | 500 | 500 | 500 | 500 | **0.019 J** | **76** | 6.6 U | **0.17** | **0.3** | **0.034 J** | **0.024 J** | 1.6 U | **210** | **460** | **16** | **18** |
| C9-C12 Aliphatics (adjusted) | mg/kg | 1,000 | 1,000 | 3,000 | 3,000 | 5,000 | 5,000 | 0.079 U | **78** | 6.6 U | **0.11** | **0.29** | 0.091 U | 0.073 U | 1.6 U | **150** | 300 U | **9.8** | **8.6** |
| Ethylbenzene | mg/kg | 500 | 500 | 1,000 | 1,000 | 1,000 | 3,000 | 0.016 U | **0.45** | 0.33 U | **0.013 J** | **0.0069 J** | **0.0049 J** | 0.015 U | 0.08 U | **12** | **14** | 0.15 U | **0.18** |
| m,p-Xylene | mg/kg | 100 | 500 | 100 | 1,000 | 100 | 3,000 | **0.01 J** | **1.2** | 0.66 U | **0.051** | **0.02 J** | **0.016 J** | **0.0066 J** | 0.16 U | **51** | **60** | 0.29 U | **0.54** |
| Methyl tert-butyl ether | mg/kg | 100 | 100 | 100 | 500 | 100 | 500 | **0.053 J+** | 0.053 U | 0.066 U | **0.088 J+** | 0.013 U | **0.057 J+** | 0.015 U | 0.016 U | **0.23** | 0.3 U | **0.31** | **0.34** |
| Naphthalene | mg/kg | 20 | 500 | 20 | 1,000 | 20 | 3,000 | 0.016 U | **6.4** | 1.3 U | 0.014 U | **0.012 J** | 0.018 U | 0.015 U | 0.32 U | **3.6** | **6.9** | 0.58 U | 0.52 U |
| o-Xylene | mg/kg | 100 | 500 | 100 | 1,000 | 100 | 3,000 | **0.0066 J** | **1.2** | 0.33 U | **0.032** | **0.0048 J** | **0.0091 J** | **0.0043 J** | 0.08 U | **4.6** | **4.7** | **0.17** | **0.24** |
| Toluene | mg/kg | 500 | 500 | 1,000 | 1,000 | 2,000 | 3,000 | **0.011 J** | **0.28** | 0.33 U | **0.04** | **0.0082 J** | **0.016 J** | **0.0056 J** | 0.08 U | **1.3** | 1.5 U | 0.15 U | 0.13 U |
| Xylene (total) | mg/kg | 100 | 500 | 100 | 1,000 | 100 | 3,000 | NA | **2.4** | 0.99 U | NA | NA | NA | NA | 0.24 U | **55** | **65** | 0.44 U | **0.78** |

**Notes:**
Color= PAL Exceeded
Bold=Detected
NA=Not Analyzed
=-- PAL not established for this chemica

**Table 3-2**
**Summary of Groundwater Analytical Results**
**Former L and M Service Station**
**Lunenburg, MA**

| Location | | | | | LM-GW-UST01 | LM-GW-UST02 | MW-101 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Depth Interval | | | | | Not Specified | Not Specified | Not Specified | | | | |
| Sample Date | | | | | 05/25/2023 | 05/25/2023 | 05/17/2023 | 04/23/2024 | 07/26/2024 | 10/16/2024 | 12/11/2024 |
| Sample Type | | | | | N | N | N | N | N | N | N |
| Chemical/Sample ID | CAS Number | Units | MA GW-2 2024 | MA GW-3 2024 | LM-GW-UST01-052523 | LM-GW-UST02-052523 | LM-GW-B/MW101-051723 | GW-MW101-042324 | GW-MW101-072624 | GW-B/MW101-101624 | GW-MW101-121124 |
| **Metals** | | | | | | | | | | | |
| Antimony | 7440-36-0 | mg/L | -- | 8 | NA | NA | NA | NA | NA | NA | NA |
| Arsenic | 7440-38-2 | mg/L | -- | 0.9 | NA | NA | NA | NA | NA | NA | NA |
| Barium | 7440-39-3 | mg/L | -- | 50 | NA | NA | NA | NA | NA | NA | NA |
| Beryllium | 7440-41-7 | mg/L | -- | 0.2 | NA | NA | NA | NA | NA | NA | NA |
| Cadmium | 7440-43-9 | mg/L | -- | 0.008 | NA | NA | NA | NA | NA | NA | NA |
| Chromium | 7440-47-3 | mg/L | -- | 0.3 | NA | NA | NA | NA | NA | NA | NA |
| Lead | 7439-92-1 | mg/L | -- | 0.01 | NA | NA | NA | NA | NA | NA | NA |
| Mercury | 7439-97-6 | mg/L | -- | 0.02 | NA | NA | NA | NA | NA | NA | NA |
| Nickel | 7440-02-0 | mg/L | -- | 0.2 | NA | NA | NA | NA | NA | NA | NA |
| Selenium | 7782-49-2 | mg/L | -- | 0.05 | NA | NA | NA | NA | NA | NA | NA |
| Silver | 7440-22-4 | mg/L | -- | 0.007 | NA | NA | NA | NA | NA | NA | NA |
| Thallium | 7440-28-0 | mg/L | -- | 3 | NA | NA | NA | NA | NA | NA | NA |
| Vanadium | 7440-62-2 | mg/L | -- | 4 | NA | NA | NA | NA | NA | NA | NA |
| Zinc | 7440-66-6 | mg/L | -- | 0.9 | NA | NA | NA | NA | NA | NA | NA |
| **Dissolved Metals** | | | | | | | | | | | |
| Antimony | 7440-36-0 | mg/L | -- | 8 | **0.0051 J** | **0.0039 J** | **0.0028** | **0.0031 J** | NA | NA | **0.0038 J** |
| Arsenic | 7440-38-2 | mg/L | -- | 0.9 | **0.032** | **0.011** | 0.004 U | 0.004 U | NA | NA | **0.02** |
| Barium | 7440-39-3 | mg/L | -- | 50 | **0.056** | **0.049** | **0.28** | **0.21 J** | NA | NA | **0.25** |
| Beryllium | 7440-41-7 | mg/L | -- | 0.2 | 0.002 U | 0.002 U | 0.002 U | 0.002 U | NA | NA | 0.002 U |
| Cadmium | 7440-43-9 | mg/L | -- | 0.008 | 0.0025 U | **0.00045 J** | **0.0011** | **0.00069 J** | NA | NA | **0.001 J** |
| Chromium | 7440-47-3 | mg/L | -- | 0.3 | 0.005 U | 0.005 U | 0.005 U | 0.005 U | NA | NA | **0.0042 J** |
| Lead | 7439-92-1 | mg/L | -- | 0.01 | **0.013** | **0.0085** | **0.06** | **0.036 J** | NA | NA | **0.047** |
| Mercury | 7439-97-6 | mg/L | -- | 0.02 | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | NA | NA | 0.0002 U |
| Nickel | 7440-02-0 | mg/L | -- | 0.2 | **0.011** | **0.01** | **0.0069** | **0.0052 J** | NA | NA | **0.0071** |
| Selenium | 7782-49-2 | mg/L | -- | 0.05 | 0.015 U | 0.015 U | 0.015 U | 0.015 U | NA | NA | 0.015 U |
| Silver | 7440-22-4 | mg/L | -- | 0.007 | 0.005 U | 0.005 U | 0.005 U | 0.005 U | NA | NA | 0.005 U |
| Thallium | 7440-28-0 | mg/L | -- | 3 | **0.0022 J** | 0.005 U | 0.005 U | 0.005 U | NA | NA | **0.0032 J** |
| Vanadium | 7440-62-2 | mg/L | -- | 4 | **0.0037 J** | **0.0022 J** | 0.005 U | 0.005 U | NA | NA | 0.005 U |
| Zinc | 7440-66-6 | mg/L | -- | 0.9 | **0.033 J+** | **0.042 J+** | **0.2** | **0.19 J** | NA | NA | **0.36** |

Notes:
Color=PAL Exceeded
Bold=Detected
NA=Not Analyzed
-- PAL not established for this chemical
J=Value is estimated

**Table 3-2**
**Summary of Groundwater Analytical Results**
**Former L and M Service Station**
**Lunenburg, MA**

| Location | | | | | LM-GW-UST01 | LM-GW-UST02 | MW-101 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Depth Interval | | | | | Not Specified | Not Specified | Not Specified | | | | |
| Sample Date | | | | | 05/25/2023 | 05/25/2023 | 05/17/2023 | 04/23/2024 | 07/26/2024 | 10/16/2024 | 12/11/2024 |
| Sample Type | | | | | N | N | N | N | N | N | N |
| Chemical/Sample ID | CAS Number | Units | MA GW-2 2024 | MA GW-3 2024 | LM-GW-UST01-052523 | LM-GW-UST02-052523 | LM-GW-B/MW101-051723 | GW-MW101-042324 | GW-MW101-072624 | GW-B/MW101-101624 | GW-MW101-121124 |
| **EPH** | | | | | | | | | | | |
| 2-Methylnaphthalene | 91-57-6 | ug/L | 2,000 | 20,000 | **46** | **5.9** | 1 UJ | 1 UJ | 1 UJ | NA | 0.98 U |
| Acenaphthene | 83-32-9 | ug/L | -- | 10,000 | 1.1 U | 1.1 U | 1 UJ | 1 U | 1 U | NA | 0.98 U |
| Acenaphthylene | 208-96-8 | ug/L | 10,000 | 40 | 1.1 U | 1.1 U | 1 UJ | 1 UJ | 1 U | NA | 0.98 U |
| Anthracene | 120-12-7 | ug/L | -- | 30 | 1.1 U | 1.1 U | 1 U | 1 U | 1 U | NA | 0.98 U |
| Benzo(a)anthracene | 56-55-3 | ug/L | -- | 1,000 | **0.15 J** | 1.1 U | 1 U | 1 U | 1 U | NA | **0.16 J** |
| Benzo(a)pyrene | 50-32-8 | ug/L | -- | 500 | **0.17 J** | 0.22 U | 0.2 U | 0.2 U | 0.2 U | NA | **0.19 J** |
| Benzo(b)fluoranthene | 205-99-2 | ug/L | -- | 400 | **0.19 J** | 1.1 U | 1 U | 1 U | 1 U | NA | **0.2 J** |
| Benzo(g,h,i)perylene | 191-24-2 | ug/L | -- | 20 | **0.3 J** | 1.1 U | 1 U | 1 U | 1 U | NA | 0.98 U |
| Benzo(k)fluoranthene | 207-08-9 | ug/L | -- | 100 | 1.1 U | 1.1 U | 1 U | 1 U | 1 U | NA | 0.98 U |
| C11-C22 Aromatics | C11-C22-AR | ug/L | 50,000 | 5,000 | **290** | 110 U | 100 U | 100 U | **140** | NA | 98 U |
| C11-C22 Aromatics (adjusted) | STL00203 | ug/L | 50,000 | 5,000 | **180** | 110 U | 100 U | 100 U | **140** | NA | 98 U |
| C19-C36 Aliphatics | C19-C36-AL | ug/L | -- | 50,000 | **110 J-** | 110 U | 100 U | 100 U | **360** | NA | **150** |
| C9-C18 Aliphatics | C9-C18-AL | ug/L | 5,000 | 50,000 | **230 J-** | 110 U | 100 U | 100 U | 100 U | NA | 98 U |
| Chrysene | 218-01-9 | ug/L | -- | 70 | **0.19 J** | 1.1 U | 1 U | 1 U | 1 U | NA | 0.98 U |
| Dibenz(a,h)anthracene | 53-70-3 | ug/L | -- | 40 | 0.53 U | 0.56 U | 0.5 U | 0.5 U | 0.5 U | NA | 0.49 U |
| Fluoranthene | 206-44-0 | ug/L | -- | 200 | **0.27 J** | 1.1 U | 1 U | 1 U | 1 U | NA | 0.98 U |
| Fluorene | 86-73-7 | ug/L | -- | 40 | 1.1 U | 1.1 U | 1 U | 1 UJ | 1 U | NA | 0.98 U |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | ug/L | -- | 100 | 0.53 U | 0.56 U | 0.5 U | 0.5 U | 0.5 U | NA | 0.49 U |
| Naphthalene | 91-20-3 | ug/L | 700 | 20,000 | **60** | **17** | 1 UJ | 1 UJ | 1 UJ | NA | 0.98 UJ |
| Phenanthrene | 85-01-8 | ug/L | -- | 10,000 | 1.1 U | 1.1 U | 1 U | 1 U | 1 U | NA | 0.98 U |
| Pyrene | 129-00-0 | ug/L | -- | 20 | **0.23 J** | 1.1 U | 1 U | 1 U | **0.2 J** | NA | 0.98 U |
| **VPH** | | | | | | | | | | | |
| Benzene | 71-43-2 | ug/L | 1,000 | 10,000 | **13** | **76** | 5 U | 5 U | 5 U | 5 U | 5 U |
| C5-C8 Aliphatics (adjusted) | STL00041 | ug/L | 3,000 | 50,000 | 1,000 U | 2,000 U | 100 U | 100 U | 100 U | 100 U | 100 U |
| C9-C10 Aromatics | C9-C10-AR | ug/L | 4,000 | 50,000 | **4,400** | **890** | 100 UJ | 100 U | 100 U | 100 U | 100 U |
| C9-C12 Aliphatics (adjusted) | STL00106 | ug/L | 5,000 | 50,000 | **3,600** | 2,000 U | 100 U | 100 U | 100 U | 100 U | 100 U |
| Ethylbenzene | 100-41-4 | ug/L | 20,000 | 5,000 | **120** | **170** | 5 U | 5 U | 5 U | 5 U | 5 U |
| m,p-Xylene | 179601-23-1 | ug/L | 3,000 | 5,000 | **720** | **570** | 10 U | 10 U | 10 U | 10 U | 10 U |
| Methyl tert-butyl ether | 1634-04-4 | ug/L | 50,000 | 50,000 | **810** | **2,300** | 5 U | 5 U | 5 U | 5 U | 5 UJ |
| Naphthalene | 91-20-3 | ug/L | 700 | 20,000 | **120** | **62** | 5 U | 5 UJ | 5 U | 5 U | 5 U |
| o-Xylene | 95-47-6 | ug/L | 3,000 | 5,000 | **87** | **280** | 5 U | 5 U | 5 U | 5 U | 5 U |
| Toluene | 108-88-3 | ug/L | 50,000 | 40,000 | **170** | **680** | 5 U | 5 U | 5 U | 5 U | 5 U |
| Xylene (total) | 1330-20-7 | ug/L | 3,000 | 5,000 | **880** | **850** | 15 U | 15 U | 15 U | 15 U | 15 U |

Notes:
Color=PAL Exceeded
Bold=Detected
NA=Not Analyzed
-- PAL not established for this chemical
J=Value is estimated

**Table 3-2**
**Summary of Groundwater Analytical Results**
**Former L and M Service Station**
**Lunenburg, MA**

| Location | | | | | MW-102/102R | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Depth Interval | | | | | Not Specified | | | | | | | |
| Sample Date | | | | | 05/17/2023 | | 04/23/2024 | 07/25/2024 | | 10/16/2024 | 12/10/2024 | |
| Sample Type | | | | | N | FD | N | N | FD | N | N | FD |
| Chemical/Sample ID | CAS Number | Units | MA GW-2 2024 | MA GW-3 2024 | LM-GW-B/MW102-051723 | LM-FD-051723 | GW-MW102R-042324 | GW-MW102R-072524 | FD-01-072524 | GW-MW102R-101624 | GW-MW102R-121024 | FD-01-121024 |
| **Metals** | | | | | | | | | | | | |
| Antimony | 7440-36-0 | mg/L | -- | 8 | NA | NA | NA | NA | NA | NA | NA | NA |
| Arsenic | 7440-38-2 | mg/L | -- | 0.9 | NA | NA | NA | NA | NA | NA | NA | NA |
| Barium | 7440-39-3 | mg/L | -- | 50 | NA | NA | NA | NA | NA | NA | NA | NA |
| Beryllium | 7440-41-7 | mg/L | -- | 0.2 | NA | NA | NA | NA | NA | NA | NA | NA |
| Cadmium | 7440-43-9 | mg/L | -- | 0.008 | NA | NA | NA | NA | NA | NA | NA | NA |
| Chromium | 7440-47-3 | mg/L | -- | 0.3 | NA | NA | NA | NA | NA | NA | NA | NA |
| Lead | 7439-92-1 | mg/L | -- | 0.01 | NA | NA | NA | NA | NA | NA | NA | NA |
| Mercury | 7439-97-6 | mg/L | -- | 0.02 | NA | NA | NA | NA | NA | NA | NA | NA |
| Nickel | 7440-02-0 | mg/L | -- | 0.2 | NA | NA | NA | NA | NA | NA | NA | NA |
| Selenium | 7782-49-2 | mg/L | -- | 0.05 | NA | NA | NA | NA | NA | NA | NA | NA |
| Silver | 7440-22-4 | mg/L | -- | 0.007 | NA | NA | NA | NA | NA | NA | NA | NA |
| Thallium | 7440-28-0 | mg/L | -- | 3 | NA | NA | NA | NA | NA | NA | NA | NA |
| Vanadium | 7440-62-2 | mg/L | -- | 4 | NA | NA | NA | NA | NA | NA | NA | NA |
| Zinc | 7440-66-6 | mg/L | -- | 0.9 | NA | NA | NA | NA | NA | NA | NA | NA |
| **Dissolved Metals** | | | | | | | | | | | | |
| Antimony | 7440-36-0 | mg/L | -- | 8 | **0.0049** | **0.0051** | **0.002 J** | **0.0019 J** | **0.0023 J** | 0.006 U | **0.0027 J** | **0.0033 J** |
| Arsenic | 7440-38-2 | mg/L | -- | 0.9 | **0.025** | **0.026** | **0.021 J** | **0.063** | **0.072** | **0.04** | **0.063** | **0.069** |
| Barium | 7440-39-3 | mg/L | -- | 50 | **0.12** | **0.12** | **0.17 J** | **0.12** | **0.13** | **0.14** | **0.079** | **0.078** |
| Beryllium | 7440-41-7 | mg/L | -- | 0.2 | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Cadmium | 7440-43-9 | mg/L | -- | 0.008 | 0.0025 U | 0.0025 U | **0.00067 J** | **0.00049 J** | **0.00058 J** | 0.0025 U | 0.0025 U | 0.0025 U |
| Chromium | 7440-47-3 | mg/L | -- | 0.3 | 0.005 U | 0.005 U | **0.0018 J** | **0.0013 J** | **0.0016 J** | **0.017** | **0.0026 J** | **0.0031 J** |
| Lead | 7439-92-1 | mg/L | -- | 0.01 | 0.0075 U | 0.0075 U | 0.0075 U | 0.0075 U | 0.0075 U | 0.0075 U | 0.0075 U | 0.0075 U |
| Mercury | 7439-97-6 | mg/L | -- | 0.02 | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U |
| Nickel | 7440-02-0 | mg/L | -- | 0.2 | **0.0024** | **0.0027** | **0.0029 J** | **0.0038 J** | **0.0044 J** | **0.0053** | **0.0033 J** | **0.0046 J** |
| Selenium | 7782-49-2 | mg/L | -- | 0.05 | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U |
| Silver | 7440-22-4 | mg/L | -- | 0.007 | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Thallium | 7440-28-0 | mg/L | -- | 3 | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Vanadium | 7440-62-2 | mg/L | -- | 4 | 0.005 U | 0.005 U | **0.0014 J** | **0.0013 J** | **0.0017 J** | 0.005 U | **0.0013 J** | **0.0012 J** |
| Zinc | 7440-66-6 | mg/L | -- | 0.9 | **0.0021** | **0.0035** | **0.044 J** | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |

Notes:
Color=PAL Exceeded
Bold=Detected
NA=Not Analyzed
-- PAL not established for this chemical
J=Value is estimated

**Table 3-2**
**Summary of Groundwater Analytical Results**
**Former L and M Service Station**
**Lunenburg, MA**

| Location | | | | | MW-102/102R | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Depth Interval | | | | | Not Specified | | | | | | | |
| Sample Date | | | | | 05/17/2023 | | 04/23/2024 | 07/25/2024 | | 10/16/2024 | 12/10/2024 | |
| Sample Type | | | | | N | FD | N | N | FD | N | N | FD |
| Chemical/Sample ID | CAS Number | Units | MA GW-2 2024 | MA GW-3 2024 | LM-GW-B/MW102-051723 | LM-FD-051723 | GW-MW102R-042324 | GW-MW102R-072524 | FD-01-072524 | GW-MW102R-101624 | GW-MW102R-121024 | FD-01-121024 |
| **EPH** | | | | | | | | | | | | |
| 2-Methylnaphthalene | 91-57-6 | ug/L | 2,000 | 20,000 | **2.3 J** | **2.8 J** | **32 J** | **13 J** | **7.3 J** | **37** | **8.8 J-** | **6.8** |
| Acenaphthene | 83-32-9 | ug/L | -- | 10,000 | 1 UJ | 1 UJ | **0.22 J** | 1.1 U | 1.1 U | **0.4 J** | R | 1 U |
| Acenaphthylene | 208-96-8 | ug/L | 10,000 | 40 | 1 UJ | 1 UJ | 1 UJ | 1.1 U | 1.1 U | 0.98 U | R | 1 U |
| Anthracene | 120-12-7 | ug/L | -- | 30 | 1 U | 1 U | 1 U | 1.1 U | 1.1 U | 0.98 U | R | 1 U |
| Benzo(a)anthracene | 56-55-3 | ug/L | -- | 1,000 | 1 U | 1 U | 1 U | 1.1 U | 1.1 U | 0.98 U | R | 1 U |
| Benzo(a)pyrene | 50-32-8 | ug/L | -- | 500 | 0.2 U | 0.2 U | 0.2 U | 0.22 U | 0.21 U | 0.2 U | R | 0.2 U |
| Benzo(b)fluoranthene | 205-99-2 | ug/L | -- | 400 | 1 U | 1 U | 1 U | 1.1 U | 1.1 U | 0.98 U | R | 1 U |
| Benzo(g,h,i)perylene | 191-24-2 | ug/L | -- | 20 | 1 U | 1 U | 1 U | 1.1 U | 1.1 U | 0.98 U | R | 1 U |
| Benzo(k)fluoranthene | 207-08-9 | ug/L | -- | 100 | 1 U | 1 U | 1 U | 1.1 U | 1.1 U | 0.98 U | R | 1 U |
| C11-C22 Aromatics | C11-C22-AR | ug/L | 50,000 | 5,000 | **100** | **110** | **300** | **200** | **190** | **320** | **140 J-** | **150** |
| C11-C22 Aromatics (adjusted) | STL00203 | ug/L | 50,000 | 5,000 | 100 U | 100 U | **150** | **140** | **150** | **160** | R | **110** |
| C19-C36 Aliphatics | C19-C36-AL | ug/L | -- | 50,000 | 100 U | 100 U | 100 U | 110 U | 110 U | 98 U | R | 100 U |
| C9-C18 Aliphatics | C9-C18-AL | ug/L | 5,000 | 50,000 | 100 U | 100 U | 100 U | **110** | **120** | **480** | **300 J-** | **120** |
| Chrysene | 218-01-9 | ug/L | -- | 70 | 1 U | 1 U | 1 U | 1.1 U | 1.1 U | 0.98 U | R | 1 U |
| Dibenz(a,h)anthracene | 53-70-3 | ug/L | -- | 40 | 0.5 U | 0.5 U | 0.5 U | 0.56 U | 0.53 U | 0.49 U | R | 0.5 U |
| Fluoranthene | 206-44-0 | ug/L | -- | 200 | 1 U | 1 U | 1 U | 1.1 U | 1.1 U | 0.98 U | R | 1 U |
| Fluorene | 86-73-7 | ug/L | -- | 40 | 1 U | 1 U | **0.4 J** | 1.1 U | 1.1 U | **0.59 J** | R | 1 U |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | ug/L | -- | 100 | 0.5 U | 0.5 U | 0.5 U | 0.56 U | 0.53 U | 0.49 U | R | 0.5 U |
| Naphthalene | 91-20-3 | ug/L | 700 | 20,000 | **28 J** | **33 J** | **130 J** | **87 J** | **28 J** | **140** | **47 J** | **34 J** |
| Phenanthrene | 85-01-8 | ug/L | -- | 10,000 | 1 U | 1 U | **0.4 J** | 1.1 U | 1.1 U | **0.34 J** | R | 1 U |
| Pyrene | 129-00-0 | ug/L | -- | 20 | 1 U | 1 U | 1 U | 1.1 U | 1.1 U | 0.98 U | R | 1 U |
| **VPH** | | | | | | | | | | | | |
| Benzene | 71-43-2 | ug/L | 1,000 | 10,000 | **12** | **12** | **120** | **25** | **29** | **150** | **41** | **45** |
| C5-C8 Aliphatics (adjusted) | STL00041 | ug/L | 3,000 | 50,000 | **560** | **600** | **1,200** | **530** | **540** | **2,000** | **530** | **520** |
| C9-C10 Aromatics | C9-C10-AR | ug/L | 4,000 | 50,000 | **2,000 J** | **2,000 J** | **4,600** | **1,200** | **1,200** | **4,100** | **1,200** | **1,200** |
| C9-C12 Aliphatics (adjusted) | STL00106 | ug/L | 5,000 | 50,000 | **3,000** | **3,000** | **14,000** | **3,800** | **3,200** | **11,000** | **2,600** | **3,800** |
| Ethylbenzene | 100-41-4 | ug/L | 20,000 | 5,000 | **490** | **500** | **1,300** | **220** | **240** | **730** | **180** | **190** |
| m,p-Xylene | 179601-23-1 | ug/L | 3,000 | 5,000 | **1,400** | **1,500** | **4,400** | **740** | **810** | **2,100** | **520** | **510** |
| Methyl tert-butyl ether | 1634-04-4 | ug/L | 50,000 | 50,000 | 5 U | 5 U | **86** | **190** | **190** | **100** | **170 J** | **120 J** |
| Naphthalene | 91-20-3 | ug/L | 700 | 20,000 | **77** | **76** | **300 J** | **77** | **94** | **350** | **110** | **100** |
| o-Xylene | 95-47-6 | ug/L | 3,000 | 5,000 | 5 U | 5 U | **57** | 10 U | **10** | 50 U | **7.5** | **7.4** |
| Toluene | 108-88-3 | ug/L | 50,000 | 40,000 | 5 U | 5 U | 50 U | 10 U | 10 U | 50 U | **6** | **6.6** |
| Xylene (total) | 1330-20-7 | ug/L | 3,000 | 5,000 | **1,400** | **1,500** | **4,400** | **740** | **830** | **2,100** | **500** | **480** |

Notes:
Color=PAL Exceeded
Bold=Detected
NA=Not Analyzed
-- PAL not established for this chemical
J=Value is estimated

**Table 3-2**
**Summary of Groundwater Analytical Results**
**Former L and M Service Station**
**Lunenburg, MA**

| Location | | | | | MW-103 | | | MW-104 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Depth Interval | | | | | Not Specified | | | Not Specified | | | | |
| Sample Date | | | | | 06/02/2023 | 04/23/2024 | 07/25/2024 | 05/17/2023 | 04/23/2024 | 07/25/2024 | 10/15/2024 | 12/10/2024 |
| Sample Type | | | | | N | N | N | N | N | N | N | N |
| Chemical/Sample ID | CAS Number | Units | MA GW-2 2024 | MA GW-3 2024 | LM-GW-MW103-060223 | GW-MW103-042324 | GW-MW103-072524 | LM-GW-B/MW104-051723 | GW-MW104-042324 | GW-MW104-072524 | GW-B/MW104-101524 | GW-MW104-121024 |
| **Metals** | | | | | | | | | | | | |
| Antimony | 7440-36-0 | mg/L | -- | 8 | **0.005** | NA | NA | NA | NA | NA | NA | NA |
| Arsenic | 7440-38-2 | mg/L | -- | 0.9 | **0.0035** | NA | NA | NA | NA | NA | NA | NA |
| Barium | 7440-39-3 | mg/L | -- | 50 | **0.24** | NA | NA | NA | NA | NA | NA | NA |
| Beryllium | 7440-41-7 | mg/L | -- | 0.2 | 0.002 U | NA | NA | NA | NA | NA | NA | NA |
| Cadmium | 7440-43-9 | mg/L | -- | 0.008 | **0.0012** | NA | NA | NA | NA | NA | NA | NA |
| Chromium | 7440-47-3 | mg/L | -- | 0.3 | **0.024** | NA | NA | NA | NA | NA | NA | NA |
| Lead | 7439-92-1 | mg/L | -- | 0.01 | **0.041** | NA | NA | NA | NA | NA | NA | NA |
| Mercury | 7439-97-6 | mg/L | -- | 0.02 | 0.0002 U | NA | NA | NA | NA | NA | NA | NA |
| Nickel | 7440-02-0 | mg/L | -- | 0.2 | **0.02** | NA | NA | NA | NA | NA | NA | NA |
| Selenium | 7782-49-2 | mg/L | -- | 0.05 | 0.015 U | NA | NA | NA | NA | NA | NA | NA |
| Silver | 7440-22-4 | mg/L | -- | 0.007 | 0.005 U | NA | NA | NA | NA | NA | NA | NA |
| Thallium | 7440-28-0 | mg/L | -- | 3 | 0.005 U | NA | NA | NA | NA | NA | NA | NA |
| Vanadium | 7440-62-2 | mg/L | -- | 4 | **0.019** | NA | NA | NA | NA | NA | NA | NA |
| Zinc | 7440-66-6 | mg/L | -- | 0.9 | **0.48** | NA | NA | NA | NA | NA | NA | NA |
| **Dissolved Metals** | | | | | | | | | | | | |
| Antimony | 7440-36-0 | mg/L | -- | 8 | NA | 0.006 U | NA | **0.0053** | **0.0047 J** | **0.0024 J** | **0.0021 J** | **0.0042 J** |
| Arsenic | 7440-38-2 | mg/L | -- | 0.9 | NA | 0.004 U | NA | **0.0081** | **0.0054 J** | **0.0088** | **0.008** | 0.004 U |
| Barium | 7440-39-3 | mg/L | -- | 50 | NA | **0.053 J** | NA | **0.069** | **0.028 J** | **0.14** | **0.093** | **0.045** |
| Beryllium | 7440-41-7 | mg/L | -- | 0.2 | NA | 0.002 U | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Cadmium | 7440-43-9 | mg/L | -- | 0.008 | NA | **0.00059 J** | NA | 0.0025 U | **0.00069 J** | **0.0015 J** | **0.00066 J** | **0.00085 J** |
| Chromium | 7440-47-3 | mg/L | -- | 0.3 | NA | 0.005 U | NA | 0.005 U | 0.005 U | 0.005 U | 0.005 U | **0.0038 J** |
| Lead | 7439-92-1 | mg/L | -- | 0.01 | NA | 0.0075 U | NA | 0.0075 U | 0.0075 U | 0.0075 U | 0.0075 U | 0.0075 U |
| Mercury | 7439-97-6 | mg/L | -- | 0.02 | NA | 0.0002 U | NA | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U |
| Nickel | 7440-02-0 | mg/L | -- | 0.2 | NA | **0.0024 J** | NA | **0.015** | **0.01 J** | **0.023** | **0.018** | **0.018** |
| Selenium | 7782-49-2 | mg/L | -- | 0.05 | NA | 0.015 U | NA | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U |
| Silver | 7440-22-4 | mg/L | -- | 0.007 | NA | 0.005 U | NA | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Thallium | 7440-28-0 | mg/L | -- | 3 | NA | 0.005 U | NA | **0.0027** | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Vanadium | 7440-62-2 | mg/L | -- | 4 | NA | 0.005 U | NA | 0.005 U | 0.005 U | 0.005 U | **0.0022 J** | 0.005 U |
| Zinc | 7440-66-6 | mg/L | -- | 0.9 | NA | **0.23 J** | NA | **0.14** | **0.23 J** | **0.12** | **0.11** | **0.23** |

Notes:
Color=PAL Exceeded
Bold=Detected
NA=Not Analyzed
-- PAL not established for this chemical
J=Value is estimated

**Table 3-2**
**Summary of Groundwater Analytical Results**
**Former L and M Service Station**
**Lunenburg, MA**

| Location | | | | | MW-103 | | | MW-104 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Depth Interval | | | | | Not Specified | | | Not Specified | | | | |
| Sample Date | | | | | 06/02/2023 | 04/23/2024 | 07/25/2024 | 05/17/2023 | 04/23/2024 | 07/25/2024 | 10/15/2024 | 12/10/2024 |
| Sample Type | | | | | N | N | N | N | N | N | N | N |
| Chemical/Sample ID | CAS Number | Units | MA GW-2 2024 | MA GW-3 2024 | LM-GW-MW103-060223 | GW-MW103-042324 | GW-MW103-072524 | LM-GW-B/MW104-051723 | GW-MW104-042324 | GW-MW104-072524 | GW-B/MW104-101524 | GW-MW104-121024 |
| **EPH** | | | | | | | | | | | | |
| 2-Methylnaphthalene | 91-57-6 | ug/L | 2,000 | 20,000 | 1.1 U | 1 UJ | NA | 1 UJ | 1.1 UJ | 1.1 UJ | 1 U | 0.95 U |
| Acenaphthene | 83-32-9 | ug/L | -- | 10,000 | 1.1 U | 1 U | NA | 1 UJ | 1.1 U | 1.1 U | 1 U | 0.95 U |
| Acenaphthylene | 208-96-8 | ug/L | 10,000 | 40 | 1.1 U | 1 UJ | NA | 1 UJ | 1.1 UJ | 1.1 U | 1 U | 0.95 U |
| Anthracene | 120-12-7 | ug/L | -- | 30 | 1.1 U | 1 U | NA | 1 U | 1.1 U | 1.1 U | 1 U | 0.95 U |
| Benzo(a)anthracene | 56-55-3 | ug/L | -- | 1,000 | 1.1 U | 1 U | NA | 1 U | 1.1 U | 1.1 U | 1 U | 0.95 U |
| Benzo(a)pyrene | 50-32-8 | ug/L | -- | 500 | 0.21 U | 0.2 U | NA | 0.2 U | 0.21 U | 0.21 U | **0.17 J** | 0.19 U |
| Benzo(b)fluoranthene | 205-99-2 | ug/L | -- | 400 | 1.1 U | 1 U | NA | 1 U | 1.1 U | 1.1 U | 1 U | 0.95 U |
| Benzo(g,h,i)perylene | 191-24-2 | ug/L | -- | 20 | 1.1 U | 1 U | NA | 1 U | 1.1 U | 1.1 U | 1 U | 0.95 U |
| Benzo(k)fluoranthene | 207-08-9 | ug/L | -- | 100 | 1.1 U | 1 U | NA | 1 U | 1.1 U | 1.1 U | 1 U | 0.95 U |
| C11-C22 Aromatics | C11-C22-AR | ug/L | 50,000 | 5,000 | 110 U | 100 U | NA | 100 U | 110 U | 110 U | 100 U | 95 U |
| C11-C22 Aromatics (adjusted) | STL00203 | ug/L | 50,000 | 5,000 | 110 U | 100 U | NA | 100 U | 110 U | 110 U | 100 U | 95 U |
| C19-C36 Aliphatics | C19-C36-AL | ug/L | -- | 50,000 | 110 UJ | 100 U | NA | 100 U | 110 U | 110 U | 100 U | 95 U |
| C9-C18 Aliphatics | C9-C18-AL | ug/L | 5,000 | 50,000 | 110 UJ | 100 U | NA | 100 U | 110 U | 110 U | 100 U | 95 U |
| Chrysene | 218-01-9 | ug/L | -- | 70 | 1.1 U | 1 U | NA | 1 U | 1.1 U | 1.1 U | 1 U | 0.95 U |
| Dibenz(a,h)anthracene | 53-70-3 | ug/L | -- | 40 | 0.53 U | 0.5 U | NA | 0.5 U | 0.53 U | 0.53 U | 0.5 U | 0.48 U |
| Fluoranthene | 206-44-0 | ug/L | -- | 200 | 1.1 U | 1 U | NA | 1 U | 1.1 U | 1.1 U | 1 U | 0.95 U |
| Fluorene | 86-73-7 | ug/L | -- | 40 | 1.1 U | 1 UJ | NA | 1 U | 1.1 UJ | 1.1 U | 1 U | 0.95 U |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | ug/L | -- | 100 | 0.53 U | 0.5 U | NA | 0.5 U | 0.53 U | 0.53 U | 0.5 U | 0.48 U |
| Naphthalene | 91-20-3 | ug/L | 700 | 20,000 | 1.1 U | 1 UJ | NA | 1 UJ | 1.1 UJ | 1.1 UJ | 1 U | 0.95 UJ |
| Phenanthrene | 85-01-8 | ug/L | -- | 10,000 | 1.1 U | 1 U | NA | 1 U | 1.1 U | 1.1 U | 1 U | 0.95 U |
| Pyrene | 129-00-0 | ug/L | -- | 20 | 1.1 U | 1 U | NA | 1 U | 1.1 U | 1.1 U | 1 U | 0.95 U |
| **VPH** | | | | | | | | | | | | |
| Benzene | 71-43-2 | ug/L | 1,000 | 10,000 | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| C5-C8 Aliphatics (adjusted) | STL00041 | ug/L | 3,000 | 50,000 | 100 U | 100 U | 100 U | 100 U | 100 U | 100 U | 100 U | 100 U |
| C9-C10 Aromatics | C9-C10-AR | ug/L | 4,000 | 50,000 | 100 U | 100 U | 100 U | 100 UJ | 100 U | 100 U | 100 U | 100 U |
| C9-C12 Aliphatics (adjusted) | STL00106 | ug/L | 5,000 | 50,000 | 100 U | 100 U | 100 U | 100 U | 100 U | 100 U | 100 U | 100 U |
| Ethylbenzene | 100-41-4 | ug/L | 20,000 | 5,000 | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| m,p-Xylene | 179601-23-1 | ug/L | 3,000 | 5,000 | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Methyl tert-butyl ether | 1634-04-4 | ug/L | 50,000 | 50,000 | 5 U | 5 U | 5 U | 5 U | 5 U | **7** | **5.6** | 5 UJ |
| Naphthalene | 91-20-3 | ug/L | 700 | 20,000 | 5 U | 5 UJ | 5 U | 5 U | 5 UJ | 5 U | 5 U | 5 U |
| o-Xylene | 95-47-6 | ug/L | 3,000 | 5,000 | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Toluene | 108-88-3 | ug/L | 50,000 | 40,000 | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Xylene (total) | 1330-20-7 | ug/L | 3,000 | 5,000 | 15 U | 15 U | 15 U | 15 U | 15 U | 15 U | 15 U | 15 U |

Notes:
Color=PAL Exceeded
Bold=Detected
NA=Not Analyzed
-- PAL not established for this chemical
J=Value is estimated

**Table 3-2**
**Summary of Groundwater Analytical Results**
**Former L and M Service Station**
**Lunenburg, MA**

| Location | | | | | MW-105 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Depth Interval | | | | | Not Specified | | | | | | |
| Sample Date | | | | | 05/17/2023 | 04/23/2024 | | 07/25/2024 | 10/15/2024 | | 12/11/2024 |
| Sample Type | | | | | N | N | FD | N | N | FD | N |
| Chemical/Sample ID | CAS Number | Units | MA GW-2 2024 | MA GW-3 2024 | LM-GW-B/MW105-051723 | GW-MW105-042324 | FD-01-042324 | GW-MW105-072524 | GW-B/MW105-101524 | GW-FD01 | GW-MW105-121124 |
| **Metals** | | | | | | | | | | | |
| Antimony | 7440-36-0 | mg/L | -- | 8 | NA | NA | NA | NA | NA | NA | NA |
| Arsenic | 7440-38-2 | mg/L | -- | 0.9 | NA | NA | NA | NA | NA | NA | NA |
| Barium | 7440-39-3 | mg/L | -- | 50 | NA | NA | NA | NA | NA | NA | NA |
| Beryllium | 7440-41-7 | mg/L | -- | 0.2 | NA | NA | NA | NA | NA | NA | NA |
| Cadmium | 7440-43-9 | mg/L | -- | 0.008 | NA | NA | NA | NA | NA | NA | NA |
| Chromium | 7440-47-3 | mg/L | -- | 0.3 | NA | NA | NA | NA | NA | NA | NA |
| Lead | 7439-92-1 | mg/L | -- | 0.01 | NA | NA | NA | NA | NA | NA | NA |
| Mercury | 7439-97-6 | mg/L | -- | 0.02 | NA | NA | NA | NA | NA | NA | NA |
| Nickel | 7440-02-0 | mg/L | -- | 0.2 | NA | NA | NA | NA | NA | NA | NA |
| Selenium | 7782-49-2 | mg/L | -- | 0.05 | NA | NA | NA | NA | NA | NA | NA |
| Silver | 7440-22-4 | mg/L | -- | 0.007 | NA | NA | NA | NA | NA | NA | NA |
| Thallium | 7440-28-0 | mg/L | -- | 3 | NA | NA | NA | NA | NA | NA | NA |
| Vanadium | 7440-62-2 | mg/L | -- | 4 | NA | NA | NA | NA | NA | NA | NA |
| Zinc | 7440-66-6 | mg/L | -- | 0.9 | NA | NA | NA | NA | NA | NA | NA |
| **Dissolved Metals** | | | | | | | | | | | |
| Antimony | 7440-36-0 | mg/L | -- | 8 | **0.0045** | **0.0051 J** | **0.0037 J** | 0.006 U | 0.006 U | 0.006 U | 0.006 U |
| Arsenic | 7440-38-2 | mg/L | -- | 0.9 | 0.004 U | 0.004 U | 0.004 U | 0.004 U | **0.004** | **0.011** | 0.004 U |
| Barium | 7440-39-3 | mg/L | -- | 50 | **0.23** | **0.14 J** | **0.14 J** | **0.16** | **0.2** | **0.098** | **0.1** |
| Beryllium | 7440-41-7 | mg/L | -- | 0.2 | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Cadmium | 7440-43-9 | mg/L | -- | 0.008 | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | **0.00057 J** | 0.0025 U |
| Chromium | 7440-47-3 | mg/L | -- | 0.3 | 0.005 U | 0.005 U | 0.005 U | 0.005 U | **0.0029 J** | **0.0015 J** | **0.0047 J** |
| Lead | 7439-92-1 | mg/L | -- | 0.01 | 0.0075 U | 0.0075 U | 0.0075 U | 0.0075 U | 0.0075 U | 0.0075 U | 0.0075 U |
| Mercury | 7439-97-6 | mg/L | -- | 0.02 | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U |
| Nickel | 7440-02-0 | mg/L | -- | 0.2 | **0.0009** | **0.0021 J** | **0.0014 J** | **0.0009 J** | **0.0029 J** | **0.019** | **0.0032 J** |
| Selenium | 7782-49-2 | mg/L | -- | 0.05 | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U |
| Silver | 7440-22-4 | mg/L | -- | 0.007 | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Thallium | 7440-28-0 | mg/L | -- | 3 | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | **0.0027 J** |
| Vanadium | 7440-62-2 | mg/L | -- | 4 | 0.005 U | 0.005 U | 0.005 U | 0.005 U | **0.0047 J** | **0.0026 J** | 0.005 U |
| Zinc | 7440-66-6 | mg/L | -- | 0.9 | **0.0026** | **0.053 J** | **0.051 J** | **0.0039 J** | **0.013** | **0.084** | **0.0092** |

Notes:
Color=PAL Exceeded
Bold=Detected
NA=Not Analyzed
-- PAL not established for this chemical
J=Value is estimated

**Table 3-2**
**Summary of Groundwater Analytical Results**
**Former L and M Service Station**
**Lunenburg, MA**

| Location | | | | | MW-105 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Depth Interval | | | | | Not Specified | | | | | | |
| Sample Date | | | | | 05/17/2023 | 04/23/2024 | | 07/25/2024 | 10/15/2024 | | 12/11/2024 |
| Sample Type | | | | | N | N | FD | N | N | FD | N |
| Chemical/Sample ID | CAS Number | Units | MA GW-2 2024 | MA GW-3 2024 | LM-GW-B/MW105-051723 | GW-MW105-042324 | FD-01-042324 | GW-MW105-072524 | GW-B/MW105-101524 | GW-FD01 | GW-MW105-121124 |
| **EPH** | | | | | | | | | | | |
| 2-Methylnaphthalene | 91-57-6 | ug/L | 2,000 | 20,000 | 0.95 UJ | 1 U | 1 U | 0.95 UJ | 1 U | 1 U | 1 U |
| Acenaphthene | 83-32-9 | ug/L | -- | 10,000 | 0.95 UJ | 1 U | 1 U | 0.95 U | 1 U | 1 U | 1 U |
| Acenaphthylene | 208-96-8 | ug/L | 10,000 | 40 | 0.95 UJ | 1 UJ | 1 UJ | 0.95 U | 1 U | 1 U | 1 U |
| Anthracene | 120-12-7 | ug/L | -- | 30 | 0.95 U | 1 U | 1 U | 0.95 U | 1 U | 1 U | 1 U |
| Benzo(a)anthracene | 56-55-3 | ug/L | -- | 1,000 | 0.95 U | 1 U | 1 U | 0.95 U | 1 U | 1 U | 1 U |
| Benzo(a)pyrene | 50-32-8 | ug/L | -- | 500 | 0.19 U | 0.2 U | 0.2 U | 0.19 U | 0.2 U | 0.2 U | 0.2 U |
| Benzo(b)fluoranthene | 205-99-2 | ug/L | -- | 400 | 0.95 U | 1 U | 1 U | 0.95 U | 1 U | 1 U | 1 U |
| Benzo(g,h,i)perylene | 191-24-2 | ug/L | -- | 20 | 0.95 U | 1 U | 1 U | 0.95 U | 1 U | 1 U | 1 U |
| Benzo(k)fluoranthene | 207-08-9 | ug/L | -- | 100 | 0.95 U | 1 U | 1 U | 0.95 U | 1 U | 1 U | 1 U |
| C11-C22 Aromatics | C11-C22-AR | ug/L | 50,000 | 5,000 | 95 U | 100 U | 100 U | **98** | 100 U | 100 U | 100 U |
| C11-C22 Aromatics (adjusted) | STL00203 | ug/L | 50,000 | 5,000 | 95 U | 100 U | 100 U | **98** | 100 U | 100 U | 100 U |
| C19-C36 Aliphatics | C19-C36-AL | ug/L | -- | 50,000 | 95 U | 100 U | 100 U | 95 U | 100 U | 100 U | 100 U |
| C9-C18 Aliphatics | C9-C18-AL | ug/L | 5,000 | 50,000 | 95 U | 100 U | 100 U | 95 U | 100 U | 100 U | 100 U |
| Chrysene | 218-01-9 | ug/L | -- | 70 | 0.95 U | 1 U | 1 U | 0.95 U | 1 U | 1 U | 1 U |
| Dibenz(a,h)anthracene | 53-70-3 | ug/L | -- | 40 | 0.48 U | 0.5 U | 0.5 U | 0.48 U | 0.5 U | 0.5 U | 0.5 U |
| Fluoranthene | 206-44-0 | ug/L | -- | 200 | 0.95 U | 1 U | 1 U | 0.95 U | 1 U | 1 U | 1 U |
| Fluorene | 86-73-7 | ug/L | -- | 40 | 0.95 U | 1 U | 1 U | 0.95 U | 1 U | 1 U | 1 U |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | ug/L | -- | 100 | 0.48 U | 0.5 U | 0.5 U | 0.48 U | 0.5 U | 0.5 U | 0.5 U |
| Naphthalene | 91-20-3 | ug/L | 700 | 20,000 | 0.95 UJ | 1 U | 1 U | 0.95 UJ | 1 U | 1 U | 1 UJ |
| Phenanthrene | 85-01-8 | ug/L | -- | 10,000 | 0.95 U | 1 U | 1 U | 0.95 U | 1 U | 1 U | 1 U |
| Pyrene | 129-00-0 | ug/L | -- | 20 | 0.95 U | 1 U | 1 U | 0.95 U | 1 U | 1 U | 1 U |
| **VPH** | | | | | | | | | | | |
| Benzene | 71-43-2 | ug/L | 1,000 | 10,000 | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| C5-C8 Aliphatics (adjusted) | STL00041 | ug/L | 3,000 | 50,000 | 100 U | 100 U | 100 U | 100 U | 100 U | 100 U | 100 U |
| C9-C10 Aromatics | C9-C10-AR | ug/L | 4,000 | 50,000 | 100 UJ | 100 U | 100 U | 100 U | 100 U | 100 U | 100 U |
| C9-C12 Aliphatics (adjusted) | STL00106 | ug/L | 5,000 | 50,000 | 100 U | 100 U | 100 U | 100 U | 100 U | 100 U | 100 U |
| Ethylbenzene | 100-41-4 | ug/L | 20,000 | 5,000 | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| m,p-Xylene | 179601-23-1 | ug/L | 3,000 | 5,000 | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Methyl tert-butyl ether | 1634-04-4 | ug/L | 50,000 | 50,000 | 5 U | 5 U | 5 U | 5 U | 5 U | **5.8** | 5 UJ |
| Naphthalene | 91-20-3 | ug/L | 700 | 20,000 | 5 U | 5 UJ | 5 UJ | 5 U | 5 U | 5 U | 5 U |
| o-Xylene | 95-47-6 | ug/L | 3,000 | 5,000 | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Toluene | 108-88-3 | ug/L | 50,000 | 40,000 | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Xylene (total) | 1330-20-7 | ug/L | 3,000 | 5,000 | 15 U | 15 U | 15 U | 15 U | 15 U | 15 U | 15 U |

Notes:
Color=PAL Exceeded
Bold=Detected
NA=Not Analyzed
-- PAL not established for this chemical
J=Value is estimated

**Table 3-2**
**Summary of Groundwater Analytical Results**
**Former L and M Service Station**
**Lunenburg, MA**

| Location | | | | | MW-106 | | | | MW-107 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Depth Interval | | | | | Not Specified | | | | Not Specified | | | | | |
| Sample Date | | | | | 10/26/2023 | 04/23/2024 | 10/16/2024 | 12/10/2024 | 10/26/2023 | | 04/23/2024 | 07/25/2024 | 10/16/2024 | 12/10/2024 |
| Sample Type | | | | | N | N | N | N | N | FD | N | N | N | N |
| Chemical/Sample ID | CAS Number | Units | MA GW-2 2024 | MA GW-3 2024 | LM-MW106-102623 | GW-MW106-042324 | GW-MW106-101624 | GW-MW106-121024 | LM-MW107-102623 | LM-FD01-102623 | GW-MW107-042324 | GW-MW107-072524 | GW-MW107-101624 | GW-MW107-121024 |
| **Metals** | | | | | | | | | | | | | | |
| Antimony | 7440-36-0 | mg/L | -- | 8 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Arsenic | 7440-38-2 | mg/L | -- | 0.9 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Barium | 7440-39-3 | mg/L | -- | 50 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Beryllium | 7440-41-7 | mg/L | -- | 0.2 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Cadmium | 7440-43-9 | mg/L | -- | 0.008 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Chromium | 7440-47-3 | mg/L | -- | 0.3 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Lead | 7439-92-1 | mg/L | -- | 0.01 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Mercury | 7439-97-6 | mg/L | -- | 0.02 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Nickel | 7440-02-0 | mg/L | -- | 0.2 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Selenium | 7782-49-2 | mg/L | -- | 0.05 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Silver | 7440-22-4 | mg/L | -- | 0.007 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Thallium | 7440-28-0 | mg/L | -- | 3 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Vanadium | 7440-62-2 | mg/L | -- | 4 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Zinc | 7440-66-6 | mg/L | -- | 0.9 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| **Dissolved Metals** | | | | | | | | | | | | | | |
| Antimony | 7440-36-0 | mg/L | -- | 8 | 0.006 U | **0.0017 J** | 0.006 U | **0.0018 J** | 0.006 U | 0.006 U | 0.006 U | **0.0018 J** | 0.006 U | **0.0045 J** |
| Arsenic | 7440-38-2 | mg/L | -- | 0.9 | **0.044** | **0.029 J** | **0.054** | **0.041** | **0.065** | **0.066** | **0.038 J** | **0.043** | **0.072** | **0.015** |
| Barium | 7440-39-3 | mg/L | -- | 50 | **0.054** | **0.033 J** | **0.084** | **0.039** | **0.05** | **0.05** | **0.023 J** | **0.029** | **0.041** | **0.038** |
| Beryllium | 7440-41-7 | mg/L | -- | 0.2 | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | **0.00039 J** | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Cadmium | 7440-43-9 | mg/L | -- | 0.008 | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U |
| Chromium | 7440-47-3 | mg/L | -- | 0.3 | 0.005 U | 0.005 U | **0.011** | **0.0018 J** | 0.005 U | 0.005 U | 0.005 U | 0.005 U | **0.012** | **0.0041 J** |
| Lead | 7439-92-1 | mg/L | -- | 0.01 | 0.0075 U | 0.0075 U | 0.0075 U | 0.0075 U | 0.0075 U | 0.0075 U | 0.0075 U | 0.0075 U | 0.0075 U | 0.0075 U |
| Mercury | 7439-97-6 | mg/L | -- | 0.02 | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U |
| Nickel | 7440-02-0 | mg/L | -- | 0.2 | 0.005 U | **0.0021 J** | **0.0023 J** | **0.0025 J** | **0.0026 J** | **0.0031 J** | **0.0044 J** | **0.0021 J** | **0.0023 J** | **0.0069** |
| Selenium | 7782-49-2 | mg/L | -- | 0.05 | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U |
| Silver | 7440-22-4 | mg/L | -- | 0.007 | 0.01 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Thallium | 7440-28-0 | mg/L | -- | 3 | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | **0.0028 J** |
| Vanadium | 7440-62-2 | mg/L | -- | 4 | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Zinc | 7440-66-6 | mg/L | -- | 0.9 | 0.025 U | **0.046 J** | 0.005 U | **0.002 J** | 0.025 U | 0.025 U | **0.051 J** | 0.005 U | 0.005 U | **0.0067** |

Notes:
Color=PAL Exceeded
Bold=Detected
NA=Not Analyzed
-- PAL not established for this chemical
J=Value is estimated

**Table 3-2**
**Summary of Groundwater Analytical Results**
**Former L and M Service Station**
**Lunenburg, MA**

| Location | | | | | MW-106 | | | | MW-107 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Depth Interval | | | | | Not Specified | | | | Not Specified | | | | | |
| Sample Date | | | | | 10/26/2023 | 04/23/2024 | 10/16/2024 | 12/10/2024 | 10/26/2023 | | 04/23/2024 | 07/25/2024 | 10/16/2024 | 12/10/2024 |
| Sample Type | | | | | N | N | N | N | N | FD | N | N | N | N |
| Chemical/Sample ID | CAS Number | Units | MA GW-2 2024 | MA GW-3 2024 | LM-MW106-102623 | GW-MW106-042324 | GW-MW106-101624 | GW-MW106-121024 | LM-MW107-102623 | LM-FD01-102623 | GW-MW107-042324 | GW-MW107-072524 | GW-MW107-101624 | GW-MW107-121024 |
| **EPH** | | | | | | | | | | | | | | |
| 2-Methylnaphthalene | 91-57-6 | ug/L | 2,000 | 20,000 | **54** | **44** | **20** | **13** | **1.2** | **1.4** | **0.77 J** | 0.95 UJ | 1 U | 1 U |
| Acenaphthene | 83-32-9 | ug/L | -- | 10,000 | **0.2 J** | 1 U | 1 U | 1.1 U | 1 U | 1 U | 1 U | 0.95 U | 1 U | 1 U |
| Acenaphthylene | 208-96-8 | ug/L | 10,000 | 40 | 1 U | 1 UJ | 1 U | 1.1 U | 1 U | 1 U | 1 UJ | 0.95 U | 1 U | 1 U |
| Anthracene | 120-12-7 | ug/L | -- | 30 | 1 U | 1 U | 1 U | 1.1 U | 1 U | 1 U | 1 U | 0.95 U | 1 U | 1 U |
| Benzo(a)anthracene | 56-55-3 | ug/L | -- | 1,000 | 1 U | 1 U | 1 U | 1.1 U | 1 U | 1 U | 1 U | 0.95 U | 1 U | 1 U |
| Benzo(a)pyrene | 50-32-8 | ug/L | -- | 500 | 0.2 U | 0.2 U | 0.2 U | 0.21 U | 0.2 U | 0.2 U | 0.2 U | 0.19 U | 0.2 U | 0.2 U |
| Benzo(b)fluoranthene | 205-99-2 | ug/L | -- | 400 | 1 U | 1 U | 1 U | 1.1 U | 1 U | 1 U | 1 U | 0.95 U | 1 U | 1 U |
| Benzo(g,h,i)perylene | 191-24-2 | ug/L | -- | 20 | 1 U | 1 U | 1 U | 1.1 U | 1 U | 1 U | 1 U | 0.95 U | 1 U | 1 U |
| Benzo(k)fluoranthene | 207-08-9 | ug/L | -- | 100 | 1 U | 1 U | 1 U | 1.1 U | 1 U | 1 U | 1 U | 0.95 U | 1 U | 1 U |
| C11-C22 Aromatics | C11-C22-AR | ug/L | 50,000 | 5,000 | **400** | **190** | **130** | **130** | **120** | **130** | 100 U | 95 U | 100 U | 100 U |
| C11-C22 Aromatics (adjusted) | STL00203 | ug/L | 50,000 | 5,000 | **230** | **110** | 100 U | 110 U | **110** | **120** | 100 U | 95 U | 100 U | 100 U |
| C19-C36 Aliphatics | C19-C36-AL | ug/L | -- | 50,000 | 100 U | 100 U | 100 U | 110 U | 100 U | 100 U | 100 U | 95 U | 100 U | 100 U |
| C9-C18 Aliphatics | C9-C18-AL | ug/L | 5,000 | 50,000 | **290** | **730** | **340** | **160** | 100 U | 100 U | 100 U | 95 U | 100 U | 100 U |
| Chrysene | 218-01-9 | ug/L | -- | 70 | 1 U | 1 U | 1 U | 1.1 U | 1 U | 1 U | 1 U | 0.95 U | 1 U | 1 U |
| Dibenz(a,h)anthracene | 53-70-3 | ug/L | -- | 40 | 0.5 U | 0.5 U | 0.5 U | 0.53 U | 0.5 U | 0.5 U | 0.5 U | 0.48 U | 0.5 U | 0.5 U |
| Fluoranthene | 206-44-0 | ug/L | -- | 200 | **0.16 J** | **0.21 J** | **0.16 J** | 1.1 U | 1 U | 1 U | 1 U | 0.95 U | 1 U | 1 U |
| Fluorene | 86-73-7 | ug/L | -- | 40 | 1 U | 1 U | 1 U | 1.1 U | 1 U | 1 U | 1 U | 0.95 U | 1 U | 1 U |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | ug/L | -- | 100 | 0.5 U | 0.5 U | 0.5 U | 0.53 U | 0.5 U | 0.5 U | 0.5 U | 0.48 U | 0.5 U | 0.5 U |
| Naphthalene | 91-20-3 | ug/L | 700 | 20,000 | **90** | **40** | **51** | **37 J** | **8.1** | **9.1** | **3.9** | **0.45 J** | 1 U | 1 UJ |
| Phenanthrene | 85-01-8 | ug/L | -- | 10,000 | **0.43 J** | **0.42 J** | **0.29 J** | 1.1 U | 1 U | 1 U | 1 U | 0.95 U | 1 U | 1 U |
| Pyrene | 129-00-0 | ug/L | -- | 20 | 1 U | **0.15 J** | 1 U | 1.1 U | 1 U | 1 U | 1 U | 0.95 U | 1 U | 1 U |
| **VPH** | | | | | | | | | | | | | | |
| Benzene | 71-43-2 | ug/L | 1,000 | 10,000 | **61** | 50 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| C5-C8 Aliphatics (adjusted) | STL00041 | ug/L | 3,000 | 50,000 | 2,500 U | **1,500** | **1,100** | **360** | 100 U | 100 U | 100 U | 100 U | 100 U | 100 U |
| C9-C10 Aromatics | C9-C10-AR | ug/L | 4,000 | 50,000 | **9,100 J** | **5,100** | **2,700** | **2,000** | **210 J** | **230 J** | **170 J+** | 100 U | 100 U | 100 U |
| C9-C12 Aliphatics (adjusted) | STL00106 | ug/L | 5,000 | 50,000 | **11,000** | **5,300** | **7,900** | **4,100** | **500** | 500 U | **270** | 100 U | 100 U | 100 U |
| Ethylbenzene | 100-41-4 | ug/L | 20,000 | 5,000 | **650** | **300** | **390** | **120** | **61** | **64** | **46** | **7.7** | 5 U | 5 U |
| m,p-Xylene | 179601-23-1 | ug/L | 3,000 | 5,000 | **1,600** | **460** | **1,000** | **310** | **110** | **110** | **51** | 10 U | 10 U | 10 U |
| Methyl tert-butyl ether | 1634-04-4 | ug/L | 50,000 | 50,000 | **2,300 J** | **170** | **110** | **290 J** | **790 J** | **570 J** | **6.1** | 5 U | 5 U | 5 UJ |
| Naphthalene | 91-20-3 | ug/L | 700 | 20,000 | **210** | **120 J** | **98** | **37** | **14** | **17** | **9.3 J** | 5 U | 5 U | 5 U |
| o-Xylene | 95-47-6 | ug/L | 3,000 | 5,000 | **18** | 50 U | **12** | 5 U | **46** | **42** | 5 U | 5 U | 5 U | 5 U |
| Toluene | 108-88-3 | ug/L | 50,000 | 40,000 | 5 U | 50 U | 5 U | 5 U | **79** | **67** | 5 U | 5 U | 5 U | 5 U |
| Xylene (total) | 1330-20-7 | ug/L | 3,000 | 5,000 | **1,600** | **460** | **620** | **310** | **160** | **150** | **51** | 15 U | 15 U | 15 U |

Notes:
Color=PAL Exceeded
Bold=Detected
NA=Not Analyzed
-- PAL not established for this chemical
J=Value is estimated

**Table 3-2**
**Summary of Groundwater Analytical Results**
**Former L and M Service Station**
**Lunenburg, MA**

| Location | | | | | MW-108 | | | | | MW-109 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Depth Interval | | | | | Not Specified | | | | | Not Specified | | | |
| Sample Date | | | | | 10/26/2023 | 04/23/2024 | 07/26/2024 | 10/15/2024 | 12/10/2024 | 04/23/2024 | 07/26/2024 | 10/15/2024 | 12/10/2024 |
| Sample Type | | | | | N | N | N | N | N | N | N | N | N |
| Chemical/Sample ID | CAS Number | Units | MA GW-2 2024 | MA GW-3 2024 | LM-MW108-102623 | GW-MW108-042324 | GW-MW108-072624 | GW-MW108-101524 | GW-MW108-121024 | GW-MW109-042324 | GW-MW109-072624 | GW-MW109-101524 | GW-MW109-121024 |
| **Metals** | | | | | | | | | | | | | |
| Antimony | 7440-36-0 | mg/L | -- | 8 | NA | NA | 0.006 U | NA | NA | NA | NA | NA | NA |
| Arsenic | 7440-38-2 | mg/L | -- | 0.9 | NA | NA | 0.004 U | NA | NA | NA | NA | NA | NA |
| Barium | 7440-39-3 | mg/L | -- | 50 | NA | NA | **0.088** | NA | NA | NA | NA | NA | NA |
| Beryllium | 7440-41-7 | mg/L | -- | 0.2 | NA | NA | 0.002 U | NA | NA | NA | NA | NA | NA |
| Cadmium | 7440-43-9 | mg/L | -- | 0.008 | NA | NA | 0.0025 U | NA | NA | NA | NA | NA | NA |
| Chromium | 7440-47-3 | mg/L | -- | 0.3 | NA | NA | 0.005 U | NA | NA | NA | NA | NA | NA |
| Lead | 7439-92-1 | mg/L | -- | 0.01 | NA | NA | 0.0075 U | NA | NA | NA | NA | NA | NA |
| Mercury | 7439-97-6 | mg/L | -- | 0.02 | NA | NA | 0.0002 U | NA | NA | NA | NA | NA | NA |
| Nickel | 7440-02-0 | mg/L | -- | 0.2 | NA | NA | **0.0026 J** | NA | NA | NA | NA | NA | NA |
| Selenium | 7782-49-2 | mg/L | -- | 0.05 | NA | NA | 0.015 U | NA | NA | NA | NA | NA | NA |
| Silver | 7440-22-4 | mg/L | -- | 0.007 | NA | NA | 0.005 U | NA | NA | NA | NA | NA | NA |
| Thallium | 7440-28-0 | mg/L | -- | 3 | NA | NA | **0.0021 J** | NA | NA | NA | NA | NA | NA |
| Vanadium | 7440-62-2 | mg/L | -- | 4 | NA | NA | 0.005 U | NA | NA | NA | NA | NA | NA |
| Zinc | 7440-66-6 | mg/L | -- | 0.9 | NA | NA | **0.0096** | NA | NA | NA | NA | NA | NA |
| **Dissolved Metals** | | | | | | | | | | | | | |
| Antimony | 7440-36-0 | mg/L | -- | 8 | **0.0019 J** | **0.0039 J** | NA | 0.006 U | **0.003 J** | **0.0027 J** | 0.006 U | 0.006 U | **0.002 J** |
| Arsenic | 7440-38-2 | mg/L | -- | 0.9 | 0.004 U | 0.004 U | NA | **0.0016 J** | 0.004 U | **0.032 J** | **0.041** | **0.032** | **0.049** |
| Barium | 7440-39-3 | mg/L | -- | 50 | **0.14** | **0.12 J** | NA | **0.13** | **0.084** | **0.028 J** | **0.043** | **0.046** | **0.026** |
| Beryllium | 7440-41-7 | mg/L | -- | 0.2 | 0.002 U | 0.002 U | NA | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Cadmium | 7440-43-9 | mg/L | -- | 0.008 | 0.0025 U | 0.0025 U | NA | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U |
| Chromium | 7440-47-3 | mg/L | -- | 0.3 | 0.005 U | 0.005 U | NA | 0.005 U | **0.0019 J** | 0.005 U | 0.005 U | **0.0033 J** | **0.0022 J** |
| Lead | 7439-92-1 | mg/L | -- | 0.01 | 0.0075 U | 0.0075 U | NA | 0.0075 U | 0.0075 U | 0.0075 U | 0.0075 U | 0.0075 U | 0.0075 U |
| Mercury | 7439-97-6 | mg/L | -- | 0.02 | 0.0002 U | 0.0002 U | NA | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U |
| Nickel | 7440-02-0 | mg/L | -- | 0.2 | **0.0045 J** | **0.0014 J** | NA | **0.0016 J** | **0.0016 J** | **0.0017 J** | **0.0022 J** | **0.0034 J** | **0.0026 J** |
| Selenium | 7782-49-2 | mg/L | -- | 0.05 | 0.015 U | 0.015 U | NA | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U |
| Silver | 7440-22-4 | mg/L | -- | 0.007 | **0.0012 J** | 0.005 U | NA | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Thallium | 7440-28-0 | mg/L | -- | 3 | **0.0026 J** | 0.005 U | NA | 0.005 U | **0.0022 J** | **0.0027 J** | 0.005 U | 0.005 U | **0.0031 J** |
| Vanadium | 7440-62-2 | mg/L | -- | 4 | 0.005 U | 0.005 U | NA | **0.0011 J** | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Zinc | 7440-66-6 | mg/L | -- | 0.9 | 0.025 U | **0.045 J** | NA | 0.005 U | **0.0031 J** | **0.042 J** | 0.005 U | **0.0018 J** | **0.0027 J** |

Notes:
Color=PAL Exceeded
Bold=Detected
NA=Not Analyzed
-- PAL not established for this chemical
J=Value is estimated

**Table 3-2**
**Summary of Groundwater Analytical Results**
**Former L and M Service Station**
**Lunenburg, MA**

| Location | | | | | MW-108 | | | | | MW-109 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Depth Interval | | | | | Not Specified | | | | | Not Specified | | | |
| Sample Date | | | | | 10/26/2023 | 04/23/2024 | 07/26/2024 | 10/15/2024 | 12/10/2024 | 04/23/2024 | 07/26/2024 | 10/15/2024 | 12/10/2024 |
| Sample Type | | | | | N | N | N | N | N | N | N | N | N |
| Chemical/Sample ID | CAS Number | Units | MA GW-2 2024 | MA GW-3 2024 | LM-MW108-102623 | GW-MW108-042324 | GW-MW108-072624 | GW-MW108-101524 | GW-MW108-121024 | GW-MW109-042324 | GW-MW109-072624 | GW-MW109-101524 | GW-MW109-121024 |
| **EPH** | | | | | | | | | | | | | |
| 2-Methylnaphthalene | 91-57-6 | ug/L | 2,000 | 20,000 | 1 U | 1 U | 1.1 UJ | 0.95 U | 1 U | **28** | **51 J** | **7.7** | **19** |
| Acenaphthene | 83-32-9 | ug/L | -- | 10,000 | 1 U | 1 U | 1.1 U | 0.95 U | 1 U | 1 U | 0.95 U | 0.95 U | 1 U |
| Acenaphthylene | 208-96-8 | ug/L | 10,000 | 40 | 1 U | 1 UJ | 1.1 U | 0.95 U | 1 U | 1 UJ | 0.95 U | 0.95 U | 1 U |
| Anthracene | 120-12-7 | ug/L | -- | 30 | 1 U | 1 U | 1.1 U | 0.95 U | 1 U | 1 U | 0.95 U | 0.95 U | 1 U |
| Benzo(a)anthracene | 56-55-3 | ug/L | -- | 1,000 | 1 U | 1 U | 1.1 U | 0.95 U | 1 U | 1 U | 0.95 U | 0.95 U | 1 U |
| Benzo(a)pyrene | 50-32-8 | ug/L | -- | 500 | 0.2 U | 0.2 U | 0.22 U | 0.19 U | 0.2 U | 0.2 U | 0.19 U | 0.19 U | 0.2 U |
| Benzo(b)fluoranthene | 205-99-2 | ug/L | -- | 400 | 1 U | 1 U | 1.1 U | 0.95 U | 1 U | 1 U | 0.95 U | 0.95 U | 1 U |
| Benzo(g,h,i)perylene | 191-24-2 | ug/L | -- | 20 | 1 U | 1 U | 1.1 U | 0.95 U | 1 U | 1 U | 0.95 U | 0.95 U | 1 U |
| Benzo(k)fluoranthene | 207-08-9 | ug/L | -- | 100 | 1 U | 1 U | 1.1 U | 0.95 U | 1 U | 1 U | 0.95 U | 0.95 U | 1 U |
| C11-C22 Aromatics | C11-C22-AR | ug/L | 50,000 | 5,000 | 100 U | 100 U | **120** | 95 U | 100 U | **200** | **350** | **140** | **200** |
| C11-C22 Aromatics (adjusted) | STL00203 | ug/L | 50,000 | 5,000 | 100 U | 100 U | **120** | 95 U | 100 U | **130** | **240** | **110** | **110** |
| C19-C36 Aliphatics | C19-C36-AL | ug/L | -- | 50,000 | 100 U | 100 U | 110 U | 95 U | 100 U | 100 U | 95 U | 95 U | 100 U |
| C9-C18 Aliphatics | C9-C18-AL | ug/L | 5,000 | 50,000 | 100 U | 100 U | 110 U | 95 U | 100 U | **360** | **430** | **360** | **320** |
| Chrysene | 218-01-9 | ug/L | -- | 70 | 1 U | 1 U | 1.1 U | 0.95 U | 1 U | 1 U | 0.95 U | 0.95 U | 1 U |
| Dibenz(a,h)anthracene | 53-70-3 | ug/L | -- | 40 | 0.5 U | 0.5 U | 0.56 U | 0.48 U | 0.5 U | 0.5 U | 0.48 U | 0.48 U | 0.5 U |
| Fluoranthene | 206-44-0 | ug/L | -- | 200 | 1 U | 1 U | 1.1 U | 0.95 U | 1 U | 1 U | 0.95 U | 0.95 U | 1 U |
| Fluorene | 86-73-7 | ug/L | -- | 40 | 1 U | 1 U | 1.1 U | 0.95 U | 1 U | 1 U | 0.95 U | 0.95 U | 1 U |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | ug/L | -- | 100 | 0.5 U | 0.5 U | 0.56 U | 0.48 U | 0.5 U | 0.5 U | 0.48 U | 0.48 U | 0.5 U |
| Naphthalene | 91-20-3 | ug/L | 700 | 20,000 | 1 U | 1 U | 1.1 UJ | 0.95 U | 1 UJ | **36** | **150 J** | **35** | **76 J** |
| Phenanthrene | 85-01-8 | ug/L | -- | 10,000 | 1 U | 1 U | 1.1 U | 0.95 U | 1 U | 1 U | 0.95 U | 0.95 U | 1 U |
| Pyrene | 129-00-0 | ug/L | -- | 20 | 1 U | 1 U | 1.1 U | 0.95 U | 1 U | 1 U | 0.95 U | 0.95 U | 1 U |
| **VPH** | | | | | | | | | | | | | |
| Benzene | 71-43-2 | ug/L | 1,000 | 10,000 | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 10 U | 5 U | 5 U |
| C5-C8 Aliphatics (adjusted) | STL00041 | ug/L | 3,000 | 50,000 | 100 U | 100 U | 100 U | 100 U | 100 U | **110** | 200 U | 100 U | **260** |
| C9-C10 Aromatics | C9-C10-AR | ug/L | 4,000 | 50,000 | 100 UJ | 100 U | 100 U | 100 U | 100 U | **2,300** | **3,000** | **2,100** | **2,800** |
| C9-C12 Aliphatics (adjusted) | STL00106 | ug/L | 5,000 | 50,000 | 100 U | 100 U | 100 U | 100 U | 100 U | **2,400** | **3,700** | **3,700** | 5,000 U |
| Ethylbenzene | 100-41-4 | ug/L | 20,000 | 5,000 | 5 U | 5 U | 5 U | 5 U | 5 U | **100** | **97** | **98** | **300** |
| m,p-Xylene | 179601-23-1 | ug/L | 3,000 | 5,000 | 10 U | 10 U | 10 U | 10 U | 10 U | **200** | **290** | **220** | **1,200** |
| Methyl tert-butyl ether | 1634-04-4 | ug/L | 50,000 | 50,000 | 5 UJ | 5 U | 5 U | 5 U | 5 UJ | **100** | **45** | **130** | **300 J** |
| Naphthalene | 91-20-3 | ug/L | 700 | 20,000 | 5 U | 5 UJ | 5 U | 5 U | 5 U | **120 J** | **130** | **59** | **130** |
| o-Xylene | 95-47-6 | ug/L | 3,000 | 5,000 | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 10 U | 5 U | 5 U |
| Toluene | 108-88-3 | ug/L | 50,000 | 40,000 | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 10 U | 5 U | 5 U |
| Xylene (total) | 1330-20-7 | ug/L | 3,000 | 5,000 | 15 U | 15 U | 15 U | 15 U | 15 U | **200** | **290** | **220** | **690** |

Notes:
Color=PAL Exceeded
Bold=Detected
NA=Not Analyzed
-- PAL not established for this chemical
J=Value is estimated

**Table 6-1**
**Summary of Historical Soil Sample Results**
**Former L and M Service Station**
**Lunenburg, MA**

| Sub-Unit or Sub-Area | | | | | | | | | Not Specified | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | | | | | | | | | B-101 | B-102 | B-103 | B-104 | B-105 | B-106 | B-107 | B-108 |
| Depth Interval | | | | | | | | | 15 - 18 ft | 13 - 15 ft | 13 - 15 ft | 10 - 12 ft | 12.5 - 17.5 ft | 12.5 - 15 ft | 8 - 10 ft | 15 - 17.5 ft |
| Sample Date | | | | | | | | | 08/06/2020 | 08/06/2020 | 08/06/2020 | 08/06/2020 | 08/06/2020 | 08/06/2020 | 08/06/2020 | 08/06/2020 |
| Sample Type | | | | | | | | | N | N | N | N | N | N | N | N |
| Chemical/Sample ID | CAS Number | Units | MA S-1/GW-2 | MA S-1/GW-3 | MA S-2/GW-2 | MA S-2/GW-3 | MA S-3/GW-2 | MA S-3/GW-3 | B-101 15-18 | B-102 13-15 | B-103 13-15 | B-104 10-12 | B-105 12.5-17.5 | B-106 12.5-15 | B-107 8-10 | B-108 15-17.5 |
| **Volatiles** | | | | | | | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | 630-20-6 | ug/kg | 100 | 80,000 | 100 | 400,000 | 100 | 500,000 | 28 U | 610 U | 0.54 U | 0.39 U | 120 U | 29 U | 26 U | 0.38 U |
| 1,1,1-Trichloroethane | 71-55-6 | ug/kg | 500,000 | 500,000 | 600,000 | 1,000,000 | 600,000 | 3,000,000 | 28 U | 610 U | 0.54 U | 0.39 U | 120 U | 29 U | 26 U | 0.38 U |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | ug/kg | 20 | 10,000 | 20 | 50,000 | 20 | 400,000 | 28 U | 610 U | 0.54 U | 0.39 U | 120 U | 29 U | 26 U | 0.38 U |
| 1,1,2-Trichloroethane | 79-00-5 | ug/kg | 2,000 | 40,000 | 2,000 | 200,000 | 2,000 | 500,000 | 57 U | 1,200 U | 1.1 U | 0.79 U | 240 U | 57 U | 53 U | 0.75 U |
| 1,1-Dichloroethane | 75-34-3 | ug/kg | 9,000 | 500,000 | 9,000 | 1,000,000 | 9,000 | 1,000,000 | 57 U | 1,200 U | 1.1 U | 0.79 U | 240 U | 57 U | 53 U | 0.75 U |
| 1,1-Dichloroethene | 75-35-4 | ug/kg | 40,000 | 500,000 | 40,000 | 1,000,000 | 40,000 | 3,000,000 | 57 U | 1,200 U | 1.1 U | 0.79 U | 240 U | 57 U | 53 U | 0.75 U |
| 1,1-Dichloropropene | 563-58-6 | ug/kg | -- | -- | -- | -- | -- | -- | 28 U | 610 U | 0.54 U | 0.39 U | 120 U | 29 U | 26 U | 0.38 U |
| 1,2,3-Trichlorobenzene | 87-61-6 | ug/kg | -- | -- | -- | -- | -- | -- | 110 U | 2,400 U | 2.2 U | 1.6 U | 480 U | 110 U | 100 U | 1.5 U |
| 1,2,3-Trichloropropane | 96-18-4 | ug/kg | -- | -- | -- | -- | -- | -- | 110 U | 2,400 U | 2.2 U | 1.6 U | 480 U | 110 U | 100 U | 1.5 U |
| 1,2,4-Trichlorobenzene | 120-82-1 | ug/kg | 6,000 | 700,000 | 6,000 | 3,000,000 | 6,000 | 5,000,000 | 110 U | 2,400 U | 2.2 U | 1.6 U | 480 U | 110 U | 100 U | 1.5 U |
| 1,2,4-Trimethylbenzene | 95-63-6 | ug/kg | -- | -- | -- | -- | -- | -- | **1,200** | **350,000** | **11** | 1.6 U | **92,000** | **14,000** | **2,200** | 1.5 U |
| 1,2-Dibromo-3-chloropropane | 96-12-8 | ug/kg | -- | -- | -- | -- | -- | -- | 170 U | 3,600 U | 3.2 U | 2.4 U | 720 U | 170 U | 160 U | 2.2 U |
| 1,2-Dibromoethane | 106-93-4 | ug/kg | 100 | 1,000 | 100 | 5,000 | 100 | 40,000 | 57 U | 1,200 U | 1.1 U | 0.79 U | 240 U | 57 U | 53 U | 0.75 U |
| 1,2-Dichlorobenzene | 95-50-1 | ug/kg | 100,000 | 300,000 | 100,000 | 300,000 | 100,000 | 300,000 | 110 U | 2,400 U | 2.2 U | 1.6 U | 480 U | 110 U | 100 U | 1.5 U |
| 1,2-Dichloroethane | 107-06-2 | ug/kg | 100 | 20,000 | 100 | 100,000 | 100 | 300,000 | 57 U | 1,200 U | 1.1 U | 0.79 U | 240 U | 57 U | 53 U | 0.75 U |
| 1,2-Dichloroethene (total) | 540-59-0 | ug/kg | -- | -- | -- | -- | -- | -- | 57 U | 1,200 U | 1.1 U | 0.79 U | 240 U | 57 U | 53 U | 0.75 U |
| 1,2-Dichloropropane | 78-87-5 | ug/kg | 100 | 30,000 | 100 | 100,000 | 100 | 1,000,000 | 57 U | 1,200 U | 1.1 U | 0.79 U | 240 U | 57 U | 53 U | 0.75 U |
| 1,3,5-Trimethylbenzene | 108-67-8 | ug/kg | -- | -- | -- | -- | -- | -- | **430** | **72,000** | 2.2 U | 1.6 U | **29,000** | **2,000** | **1,100** | 1.5 U |
| 1,3-Dichlorobenzene | 541-73-1 | ug/kg | 100,000 | 100,000 | 200,000 | 500,000 | 200,000 | 500,000 | 110 U | 2,400 U | 2.2 U | 1.6 U | 480 U | 110 U | 100 U | 1.5 U |
| 1,3-Dichloropropane | 142-28-9 | ug/kg | -- | -- | -- | -- | -- | -- | 110 U | 2,400 U | 2.2 U | 1.6 U | 480 U | 110 U | 100 U | 1.5 U |
| 1,3-Dichloropropene | 542-75-6 | ug/kg | 400 | 20,000 | 400 | 90,000 | 400 | 100,000 | 28 U | 610 U | 0.54 U | 0.39 U | 120 U | 29 U | 26 U | 0.38 U |
| 1,4-Dichlorobenzene | 106-46-7 | ug/kg | 1,000 | 80,000 | 1,000 | 400,000 | 1,000 | 2,000,000 | 110 U | 2,400 U | 2.2 U | 1.6 U | 480 U | 110 U | 100 U | 1.5 U |
| 1,4-Dioxane | 123-91-1 | ug/kg | 6,000 | 20,000 | 6,000 | 90,000 | 6,000 | 500,000 | 4,600 U | 97,000 U | 86 U | 63 U | 19,000 U | 4,600 U | 4,200 U | 60 U |
| 2,2-Dichloropropane | 594-20-7 | ug/kg | -- | -- | -- | -- | -- | -- | 110 U | 2,400 U | 2.2 U | 1.6 U | 480 U | 110 U | 100 U | 1.5 U |
| 2-Butanone | 78-93-3 | ug/kg | 50,000 | 400,000 | 50,000 | 400,000 | 50,000 | 400,000 | 570 U | 12,000 U | **40** | 7.9 U | 2,400 U | 570 U | 530 U | 7.5 U |
| 2-Chlorotoluene | 95-49-8 | ug/kg | -- | -- | -- | -- | -- | -- | 110 U | 2,400 U | 2.2 U | 1.6 U | 480 U | 110 U | 100 U | 1.5 U |
| 2-Hexanone | 591-78-6 | ug/kg | -- | -- | -- | -- | -- | -- | 570 U | 12,000 U | 11 U | 7.9 U | 2,400 U | 570 U | 530 U | 7.5 U |
| 4-Chlorotoluene | 106-43-4 | ug/kg | -- | -- | -- | -- | -- | -- | 110 U | 2,400 U | 2.2 U | 1.6 U | 480 U | 110 U | 100 U | 1.5 U |
| 4-Isopropyltoluene | 99-87-6 | ug/kg | -- | -- | -- | -- | -- | -- | **70** | **5,700** | 1.1 U | 0.79 U | **940** | **120** | **150** | 0.75 U |
| 4-Methyl-2-pentanone | 108-10-1 | ug/kg | 50,000 | 400,000 | 50,000 | 400,000 | 50,000 | 400,000 | 570 U | 12,000 U | 11 U | 7.9 U | 2,400 U | 570 U | 530 U | 7.5 U |
| Acetone | 67-64-1 | ug/kg | 50,000 | 400,000 | 50,000 | 400,000 | 50,000 | 400,000 | 570 U | 12,000 U | **180** | **31** | 2,400 U | 570 U | **770** | 19 U |
| Benzene | 71-43-2 | ug/kg | 40,000 | 40,000 | 200,000 | 200,000 | 400,000 | 1,000,000 | 28 U | 610 U | **5.2** | 0.39 U | 120 U | **320** | **550** | 0.38 U |
| Bromobenzene | 108-86-1 | ug/kg | -- | -- | -- | -- | -- | -- | 110 U | 2,400 U | 2.2 U | 1.6 U | 480 U | 110 U | 100 U | 1.5 U |
| Bromochloromethane | 74-97-5 | ug/kg | -- | -- | -- | -- | -- | -- | 110 U | 2,400 U | 2.2 U | 1.6 U | 480 U | 110 U | 100 U | 1.5 U |
| Bromodichloromethane | 75-27-4 | ug/kg | 100 | 30,000 | 100 | 100,000 | 100 | 500,000 | 28 U | 610 U | 0.54 U | 0.39 U | 120 U | 29 U | 26 U | 0.38 U |
| Bromoform | 75-25-2 | ug/kg | 1,000 | 300,000 | 1,000 | 800,000 | 1,000 | 800,000 | 230 U | 4,900 U | 4.3 U | 3.2 U | 960 U | 230 U | 210 U | 3 U |
| Bromomethane | 74-83-9 | ug/kg | 500 | 30,000 | 500 | 30,000 | 500 | 30,000 | 110 U | 2,400 U | 2.2 U | 1.6 U | 480 U | 110 U | 100 U | 1.5 U |
| Carbon disulfide | 75-15-0 | ug/kg | -- | -- | -- | -- | -- | -- | 570 U | 12,000 U | 11 U | 7.9 U | 2,400 U | 570 U | 530 U | 7.5 U |
| Carbon tetrachloride | 56-23-5 | ug/kg | 5,000 | 30,000 | 5,000 | 100,000 | 5,000 | 1,000,000 | 57 U | 1,200 U | 1.1 U | 0.79 U | 240 U | 57 U | 53 U | 0.75 U |
| Chlorobenzene | 108-90-7 | ug/kg | 3,000 | 100,000 | 3,000 | 100,000 | 3,000 | 100,000 | 28 U | 610 U | 0.54 U | 0.39 U | 120 U | 29 U | 26 U | 0.38 U |
| Chloroethane | 75-00-3 | ug/kg | -- | -- | -- | -- | -- | -- | 110 U | 2,400 U | 2.2 U | 1.6 U | 480 U | 110 U | 100 U | 1.5 U |
| Chloroform | 67-66-3 | ug/kg | 200 | 500,000 | 200 | 1,000,000 | 200 | 1,000,000 | 86 U | 1,800 U | 1.6 U | 1.2 U | 360 U | 86 U | 79 U | 1.1 U |
| Chloromethane | 74-87-3 | ug/kg | -- | -- | -- | -- | -- | -- | 230 U | 4,900 U | 4.3 U | 3.2 U | 960 U | 230 U | 210 U | 3 U |

**Table 6-1**
**Summary of Historical Soil Sample Results**
**Former L and M Service Station**
**Lunenburg, MA**

| Sub-Unit or Sub-Area | | | | | | | | | Not Specified | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | | | | | | | | | B-101 | B-102 | B-103 | B-104 | B-105 | B-106 | B-107 | B-108 |
| Depth Interval | | | | | | | | | 15 - 18 ft | 13 - 15 ft | 13 - 15 ft | 10 - 12 ft | 12.5 - 17.5 ft | 12.5 - 15 ft | 8 - 10 ft | 15 - 17.5 ft |
| Sample Date | | | | | | | | | 08/06/2020 | 08/06/2020 | 08/06/2020 | 08/06/2020 | 08/06/2020 | 08/06/2020 | 08/06/2020 | 08/06/2020 |
| Sample Type | | | | | | | | | N | N | N | N | N | N | N | N |
| Chemical/Sample ID | CAS Number | Units | MA S-1/GW-2 | MA S-1/GW-3 | MA S-2/GW-2 | MA S-2/GW-3 | MA S-3/GW-2 | MA S-3/GW-3 | B-101 15-18 | B-102 13-15 | B-103 13-15 | B-104 10-12 | B-105 12.5-17.5 | B-106 12.5-15 | B-107 8-10 | B-108 15-17.5 |
| cis-1,2-Dichloroethene | 156-59-2 | ug/kg | 100 | 100,000 | 100 | 500,000 | 100 | 500,000 | 57 U | 1,200 U | 1.1 U | 0.79 U | 240 U | 57 U | 53 U | 0.75 U |
| cis-1,3-Dichloropropene | 10061-01-5 | ug/kg | -- | -- | -- | -- | -- | -- | 28 U | 610 U | 0.54 U | 0.39 U | 120 U | 29 U | 26 U | 0.38 U |
| Dibromochloromethane | 124-48-1 | ug/kg | 30 | 20,000 | 30 | 100,000 | 30 | 500,000 | 57 U | 1,200 U | 1.1 U | 0.79 U | 240 U | 57 U | 53 U | 0.75 U |
| Dibromomethane | 74-95-3 | ug/kg | -- | -- | -- | -- | -- | -- | 110 U | 2,400 U | 2.2 U | 1.6 U | 480 U | 110 U | 100 U | 1.5 U |
| Dichlorodifluoromethane | 75-71-8 | ug/kg | -- | -- | -- | -- | -- | -- | 570 U | 12,000 U | 11 U | 7.9 U | 2,400 U | 570 U | 530 U | 7.5 U |
| Diethyl ether | 60-29-7 | ug/kg | -- | -- | -- | -- | -- | -- | 110 U | 2,400 U | 2.2 U | 1.6 U | 480 U | 110 U | 100 U | 1.5 U |
| Diisopropyl Ether | 108-20-3 | ug/kg | -- | -- | -- | -- | -- | -- | 110 U | 2,400 U | 2.2 U | 1.6 U | 480 U | 110 U | 100 U | 1.5 U |
| Ethylbenzene | 100-41-4 | ug/kg | 500,000 | 500,000 | 1,000,000 | 1,000,000 | 1,000,000 | 3,000,000 | 57 U | **3,700** | **1.5** | 0.79 U | **10,000** | **110** | **700** | 0.75 U |
| Hexachlorobutadiene | 87-68-3 | ug/kg | 30,000 | 30,000 | 100,000 | 100,000 | 100,000 | 100,000 | 230 U | 4,900 U | 4.3 U | 3.2 U | 960 U | 230 U | 210 U | 3 U |
| Isopropylbenzene | 98-82-8 | ug/kg | -- | -- | -- | -- | -- | -- | **62** | **10,000** | 1.1 U | 0.79 U | **3,300** | **790** | **110** | 0.75 U |
| m,p-Xylene | 179601-23-1 | ug/kg | 100,000 | 500,000 | 100,000 | 1,000,000 | 100,000 | 3,000,000 | **170** | **61,000** | **19** | 1.6 U | **67,000** | **12,000** | **2,600** | 1.5 U |
| Methyl tert-butyl ether | 1634-04-4 | ug/kg | 100,000 | 100,000 | 100,000 | 500,000 | 100,000 | 500,000 | 110 U | 2,400 U | **34** | 1.6 U | 480 U | **140** | 100 U | 1.5 U |
| Methylene chloride | 75-09-2 | ug/kg | 4,000 | 400,000 | 4,000 | 700,000 | 4,000 | 700,000 | 280 U | 6,100 U | 5.4 U | 3.9 U | 1,200 U | 290 U | 260 U | 3.8 U |
| Naphthalene | 91-20-3 | ug/kg | 20,000 | 500,000 | 20,000 | 1,000,000 | 20,000 | 3,000,000 | 230 U | **63,000** | 4.3 U | 3.2 U | **19,000** | **1,400** | **880** | 3 U |
| n-Butylbenzene | 104-51-8 | ug/kg | -- | -- | -- | -- | -- | -- | **170** | **21,000** | 1.1 U | 0.79 U | **4,400** | **170** | **98** | 0.75 U |
| n-Propylbenzene | 103-65-1 | ug/kg | -- | -- | -- | -- | -- | -- | **190** | **38,000** | 1.1 U | 0.79 U | **11,000** | **1,900** | **220** | 0.75 U |
| o-Xylene | 95-47-6 | ug/kg | 100,000 | 500,000 | 100,000 | 1,000,000 | 100,000 | 3,000,000 | **150** | 1,200 U | **2.3** | 0.79 U | **12,000** | **68** | **1,000** | 0.75 U |
| sec-Butylbenzene | 135-98-8 | ug/kg | -- | -- | -- | -- | -- | -- | **66** | **8,200** | 1.1 U | 0.79 U | **1,500** | **140** | **89** | 0.75 U |
| Styrene | 100-42-5 | ug/kg | 4,000 | 70,000 | 4,000 | 300,000 | 4,000 | 2,000,000 | 57 U | 1,200 U | 1.1 U | 0.79 U | 240 U | 57 U | 53 U | 0.75 U |
| tert-Amyl methyl ether | 994-05-8 | ug/kg | -- | -- | -- | -- | -- | -- | 110 U | 2,400 U | **3.8** | 1.6 U | 480 U | 110 U | 100 U | 1.5 U |
| Tert-Butyl Ethyl Ether | 637-92-3 | ug/kg | -- | -- | -- | -- | -- | -- | 110 U | 2,400 U | 2.2 U | 1.6 U | 480 U | 110 U | 100 U | 1.5 U |
| tert-Butylbenzene | 98-06-6 | ug/kg | -- | -- | -- | -- | -- | -- | 110 U | 2,400 U | 2.2 U | 1.6 U | 480 U | 110 U | 100 U | 1.5 U |
| Tetrachloroethene | 127-18-4 | ug/kg | 10,000 | 30,000 | 10,000 | 200,000 | 10,000 | 1,000,000 | 28 U | 610 U | 0.54 U | 0.39 U | 120 U | 29 U | 26 U | 0.38 U |
| Tetrahydrofuran | 109-99-9 | ug/kg | -- | -- | -- | -- | -- | -- | 230 U | 4,900 U | 4.3 U | 3.2 U | 960 U | 230 U | 210 U | 3 U |
| Toluene | 108-88-3 | ug/kg | 500,000 | 500,000 | 1,000,000 | 1,000,000 | 2,000,000 | 3,000,000 | 57 U | 1,200 U | **19** | 0.79 U | 240 U | 57 U | **520** | 0.75 U |
| trans-1,2-Dichloroethene | 156-60-5 | ug/kg | 1,000 | 500,000 | 1,000 | 1,000,000 | 1,000 | 3,000,000 | 86 U | 1,800 U | 1.6 U | 1.2 U | 360 U | 86 U | 79 U | 1.1 U |
| trans-1,3-Dichloropropene | 10061-02-6 | ug/kg | -- | -- | -- | -- | -- | -- | 57 U | 1,200 U | 1.1 U | 0.79 U | 240 U | 57 U | 53 U | 0.75 U |
| Trichloroethene | 79-01-6 | ug/kg | 300 | 30,000 | 300 | 60,000 | 300 | 60,000 | 28 U | 610 U | 0.54 U | 0.39 U | 120 U | 29 U | 26 U | 0.38 U |
| Trichlorofluoromethane | 75-69-4 | ug/kg | -- | -- | -- | -- | -- | -- | 230 U | 4,900 U | 4.3 U | 3.2 U | 960 U | 230 U | 210 U | 3 U |
| Vinyl chloride | 75-01-4 | ug/kg | 700 | 1,000 | 700 | 7,000 | 700 | 60,000 | 57 U | 1,200 U | 1.1 U | 0.79 U | 240 U | 57 U | 53 U | 0.75 U |
| Xylene (total) | 1330-20-7 | ug/kg | 100,000 | 500,000 | 100,000 | 1,000,000 | 100,000 | 3,000,000 | **320** | **61,000** | **21** | 0.79 U | **79,000** | **12,000** | **3,600** | 0.75 U |
| **Pesticides/PCBs** | | | | | | | | | | | | | | | | |
| Aroclor 1016 | 12674-11-2 | ug/kg | 1,000 | 1,000 | 4,000 | 4,000 | 4,000 | 4,000 | 189 U | 38.3 U | 802 U | 37.6 U | 36.2 U | 41.5 U | 730 U | 35.8 U |
| Aroclor 1221 | 11104-28-2 | ug/kg | 1,000 | 1,000 | 4,000 | 4,000 | 4,000 | 4,000 | 189 U | 38.3 U | 802 U | 37.6 U | 36.2 U | 41.5 U | 730 U | 35.8 U |
| Aroclor 1232 | 11141-16-5 | ug/kg | 1,000 | 1,000 | 4,000 | 4,000 | 4,000 | 4,000 | 189 U | 38.3 U | 802 U | 37.6 U | 36.2 U | 41.5 U | 730 U | 35.8 U |
| Aroclor 1242 | 53469-21-9 | ug/kg | 1,000 | 1,000 | 4,000 | 4,000 | 4,000 | 4,000 | 189 U | 38.3 U | 802 U | 37.6 U | 36.2 U | 41.5 U | 730 U | 35.8 U |
| Aroclor 1248 | 12672-29-6 | ug/kg | 1,000 | 1,000 | 4,000 | 4,000 | 4,000 | 4,000 | 189 U | **200** | 802 U | 37.6 U | 36.2 U | 41.5 U | 730 U | 35.8 U |
| Aroclor 1254 | 11097-69-1 | ug/kg | 1,000 | 1,000 | 4,000 | 4,000 | 4,000 | 4,000 | 189 U | **105** | 802 U | 37.6 U | 36.2 U | 41.5 U | 730 U | 35.8 U |
| Aroclor 1260 | 11096-82-5 | ug/kg | 1,000 | 1,000 | 4,000 | 4,000 | 4,000 | 4,000 | 189 U | **132** | **3,980** | 37.6 U | 36.2 U | **155** | 730 U | 35.8 U |
| Aroclor 1262 | 37324-23-5 | ug/kg | 1,000 | 1,000 | 4,000 | 4,000 | 4,000 | 4,000 | 189 U | 38.3 U | 802 U | 37.6 U | 36.2 U | 41.5 U | 730 U | 35.8 U |
| Aroclor 1268 | 11100-14-4 | ug/kg | 1,000 | 1,000 | 4,000 | 4,000 | 4,000 | 4,000 | 189 U | 38.3 U | 802 U | 37.6 U | 36.2 U | 41.5 U | 730 U | 35.8 U |
| Aroclor, Total | AROCLORTOT | ug/kg | 1,000 | 1,000 | 4,000 | 4,000 | 4,000 | 4,000 | 189 U | **437** | **3,980** | 37.6 U | 36.2 U | **155** | 730 U | 35.8 U |
| **Metals** | | | | | | | | | | | | | | | | |
| Antimony | 7440-36-0 | mg/kg | 20 | 20 | 30 | 30 | 30 | 30 | 2.28 U | 2.26 U | 2.43 U | 2.24 U | 2.22 U | 2.43 U | **9.01** | 2.13 U |
| Arsenic | 7440-38-2 | mg/kg | 20 | 20 | 20 | 20 | 50 | 50 | **11.3** | **6.26** | **10.8** | **7.91** | **6.19** | **14.5** | **49.6** | **7.08** |
| Beryllium | 7440-41-7 | mg/kg | 90 | 90 | 200 | 200 | 200 | 200 | **0.511** | **0.602** | **0.394** | **0.986** | **0.484** | **0.573** | **0.364** | **0.634** |
| Cadmium | 7440-43-9 | mg/kg | 70 | 70 | 100 | 100 | 100 | 100 | 0.456 U | 0.453 U | **2** | 0.448 U | 0.444 U | 0.485 U | **1.57** | 0.426 U |
| Chromium | 7440-47-3 | mg/kg | 100 | 100 | 200 | 200 | 200 | 200 | **26.3** | **31.5** | **26.1** | **47.8** | **35.1** | **31.1** | **20.8** | **22.7** |

**Table 6-1**
**Summary of Historical Soil Sample Results**
**Former L and M Service Station**
**Lunenburg, MA**

| Sub-Unit or Sub-Area | | | | | | | | | Not Specified | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Location** | | | | | | | | | **B-101** | **B-102** | **B-103** | **B-104** | **B-105** | **B-106** | **B-107** | **B-108** |
| **Depth Interval** | | | | | | | | | **15 - 18 ft** | **13 - 15 ft** | **13 - 15 ft** | **10 - 12 ft** | **12.5 - 17.5 ft** | **12.5 - 15 ft** | **8 - 10 ft** | **15 - 17.5 ft** |
| **Sample Date** | | | | | | | | | **08/06/2020** | **08/06/2020** | **08/06/2020** | **08/06/2020** | **08/06/2020** | **08/06/2020** | **08/06/2020** | **08/06/2020** |
| **Sample Type** | | | | | | | | | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** |
| **Chemical/Sample ID** | **CAS Number** | **Units** | **MA S-1/GW-2** | **MA S-1/GW-3** | **MA S-2/GW-2** | **MA S-2/GW-3** | **MA S-3/GW-2** | **MA S-3/GW-3** | **B-101 15-18** | **B-102 13-15** | **B-103 13-15** | **B-104 10-12** | **B-105 12.5-17.5** | **B-106 12.5-15** | **B-107 8-10** | **B-108 15-17.5** |
| Copper | 7440-50-8 | mg/kg | -- | -- | -- | -- | -- | -- | **8.32** | **7.6** | **23.8** | **14.8** | **9.45** | **5.8** | **982** | **7.94** |
| Lead | 7439-92-1 | mg/kg | 200 | 200 | 600 | 600 | 600 | 600 | **31.1** | **40.4** | **169** | **5.68** | **12.9** | **108** | **477** | **3.66** |
| Mercury | 7439-97-6 | mg/kg | 20 | 20 | 30 | 30 | 30 | 30 | 0.085 U | 0.087 U | 0.089 U | 0.083 U | 0.082 U | 0.092 U | **2.92** | 0.08 U |
| Nickel | 7440-02-0 | mg/kg | 600 | 600 | 1,000 | 1,000 | 1,000 | 1,000 | **15.8** | **17.4** | **15.1** | **31.4** | **22.6** | **14.1** | **17.4** | **15.8** |
| Selenium | 7782-49-2 | mg/kg | 400 | 400 | 700 | 700 | 700 | 700 | 2.28 U | 2.26 U | 2.43 U | 2.24 U | 2.22 U | 2.43 U | **11.5** | 2.13 U |
| Silver | 7440-22-4 | mg/kg | 100 | 100 | 200 | 200 | 200 | 200 | 0.456 U | 0.453 U | 0.487 U | 0.448 U | 0.444 U | 0.485 U | 0.428 U | 0.426 U |
| Thallium | 7440-28-0 | mg/kg | 8 | 8 | 60 | 60 | 80 | 80 | 2.28 U | 2.26 U | 2.43 U | 2.24 U | 2.22 U | 2.43 U | 2.14 U | 2.13 U |
| Zinc | 7440-66-6 | mg/kg | 1,000 | 1,000 | 3,000 | 3,000 | 5,000 | 5,000 | **48.1** | **39.6** | **60.9** | **38.5** | **48.2** | **34.6** | **501** | **21.6** |
| **General Chemistry** | | | | | | | | | | | | | | | | |
| Total Solids | TSOLIDS | % | -- | -- | -- | -- | -- | -- | **85.5** | **85.3** | **81.3** | **87.7** | **88.8** | **79.3** | **90.6** | **90.9** |
| **EPH** | | | | | | | | | | | | | | | | |
| 2-Methylnaphthalene | 91-57-6 | mg/kg | 80 | 300 | 80 | 500 | 80 | 500 | 1.93 U | **15.6** | 2.04 U | 0.375 U | **0.54** | **0.972** | 7.18 U | 0.352 U |
| Acenaphthene | 83-32-9 | mg/kg | 1,000 | 1,000 | 3,000 | 3,000 | 5,000 | 5,000 | 1.93 U | 0.752 U | 2.04 U | 0.375 U | 0.374 U | 0.813 U | 7.18 U | 0.352 U |
| Acenaphthylene | 208-96-8 | mg/kg | 600 | 10 | 600 | 10 | 600 | 10 | 1.93 U | 0.752 U | 2.04 U | 0.375 U | 0.374 U | 0.813 U | 7.18 U | 0.352 U |
| Anthracene | 120-12-7 | mg/kg | 1,000 | 1,000 | 3,000 | 3,000 | 5,000 | 5,000 | 1.93 U | 0.752 U | 2.04 U | 0.375 U | 0.374 U | 0.813 U | 7.18 U | 0.352 U |
| Benzo(a)anthracene | 56-55-3 | mg/kg | 7 | 7 | 40 | 40 | 300 | 300 | 1.93 U | 0.752 U | 2.04 U | 0.375 U | 0.374 U | 0.813 U | 7.18 U | 0.352 U |
| Benzo(a)pyrene | 50-32-8 | mg/kg | 2 | 2 | 7 | 7 | 30 | 30 | 1.93 U | 0.752 U | 2.04 U | 0.375 U | 0.374 U | 0.813 U | 7.18 U | 0.352 U |
| Benzo(b)fluoranthene | 205-99-2 | mg/kg | 7 | 7 | 40 | 40 | 300 | 300 | 1.93 U | 0.752 U | 2.04 U | 0.375 U | 0.374 U | 0.813 U | 7.18 U | 0.352 U |
| Benzo(g,h,i)perylene | 191-24-2 | mg/kg | 1,000 | 1,000 | 3,000 | 3,000 | 5,000 | 5,000 | 1.93 U | 0.752 U | 2.04 U | 0.375 U | 0.374 U | 0.813 U | 7.18 U | 0.352 U |
| Benzo(k)fluoranthene | 207-08-9 | mg/kg | 70 | 70 | 400 | 400 | 3,000 | 3,000 | 1.93 U | 0.752 U | 2.04 U | 0.375 U | 0.374 U | 0.813 U | 7.18 U | 0.352 U |
| C11-C22 Aromatics | C11-C22-AR | mg/kg | 1,000 | 1,000 | 3,000 | 3,000 | 5,000 | 5,000 | **570** | **382** | **1,060** | 7.51 U | **20.8** | **294** | **6,620** | 7.05 U |
| C11-C22 Aromatics (adjusted) | STL00203 | mg/kg | 1,000 | 1,000 | 3,000 | 3,000 | 5,000 | 5,000 | **568** | **366** | **1,060** | 7.51 U | **18.7** | **292** | **6,620** | 7.05 U |
| C19-C36 Aliphatics | C19-C36-AL | mg/kg | 3,000 | 3,000 | 5,000 | 5,000 | 5,000 | 5,000 | **5,540** | **1,740** | **3,130** | 7.51 U | **23** | **2,320** | **21,200** | 7.05 U |
| C9-C18 Aliphatics | C9-C18-AL | mg/kg | 1,000 | 1,000 | 3,000 | 3,000 | 5,000 | 5,000 | **160** | **606** | **70.4** | 7.51 U | **15.8** | **118** | **672** | 7.05 U |
| Chrysene | 218-01-9 | mg/kg | 70 | 70 | 400 | 400 | 3,000 | 3,000 | 1.93 U | 0.752 U | 2.04 U | 0.375 U | 0.374 U | 0.813 U | 7.18 U | 0.352 U |
| Dibenz(a,h)anthracene | 53-70-3 | mg/kg | 0.7 | 0.7 | 4 | 4 | 30 | 30 | 1.93 U | 0.752 U | 2.04 U | 0.375 U | 0.374 U | 0.813 U | 7.18 U | 0.352 U |
| Fluoranthene | 206-44-0 | mg/kg | 1,000 | 1,000 | 3,000 | 3,000 | 5,000 | 5,000 | 1.93 U | 0.752 U | 2.04 U | 0.375 U | 0.374 U | 0.813 U | 7.18 U | 0.352 U |
| Fluorene | 86-73-7 | mg/kg | 1,000 | 1,000 | 3,000 | 3,000 | 5,000 | 5,000 | 1.93 U | 0.752 U | 2.04 U | 0.375 U | 0.374 U | 0.813 U | 7.18 U | 0.352 U |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | mg/kg | 7 | 7 | 40 | 40 | 300 | 300 | 1.93 U | 0.752 U | 2.04 U | 0.375 U | 0.374 U | 0.813 U | 7.18 U | 0.352 U |
| Naphthalene | 91-20-3 | mg/kg | 20 | 500 | 20 | 1,000 | 20 | 3,000 | **2.06** | 0.752 U | 2.04 U | 0.375 U | **1.5** | **1.41** | 7.18 U | 0.352 U |
| Phenanthrene | 85-01-8 | mg/kg | 500 | 500 | 1,000 | 1,000 | 3,000 | 3,000 | 1.93 U | 0.752 U | 2.04 U | 0.375 U | 0.374 U | 0.813 U | 7.18 U | 0.352 U |
| Pyrene | 129-00-0 | mg/kg | 1,000 | 1,000 | 3,000 | 3,000 | 5,000 | 5,000 | 1.93 U | 0.752 U | 2.04 U | 0.375 U | 0.374 U | 0.813 U | **7.26** | 0.352 U |
| **VPH** | | | | | | | | | | | | | | | | |
| Benzene | 71-43-2 | mg/kg | 40 | 40 | 200 | 200 | 400 | 1,000 | 0.114 U | 1.22 U | **0.171** | 0.094 U | **0.745** | **0.414** | **0.643** | 0.088 U |
| C5-C8 Aliphatics | C5-C8-AL | mg/kg | 100 | 100 | 500 | 500 | 500 | 500 | **7.32** | **467** | 7.22 U | 4.68 U | **208** | **16.8** | **37.2** | 4.4 U |
| C5-C8 Aliphatics (adjusted) | STL00041 | mg/kg | 100 | 100 | 500 | 500 | 500 | 500 | **7.32** | **467** | 7.22 U | 4.68 U | **207** | **16.2** | **35.7** | 4.4 U |
| C9-C10 Aromatics | C9-C10-AR | mg/kg | 100 | 100 | 500 | 500 | 500 | 500 | **45.8** | **1,220** | **9.13** | 4.68 U | **416** | **36.9** | **35.8** | 4.4 U |
| C9-C12 Aliphatics | C9-C12-AL | mg/kg | 1,000 | 1,000 | 3,000 | 3,000 | 5,000 | 5,000 | **52.4** | **1,570** | **10.5** | 4.68 U | **608** | **47.3** | **51.6** | 4.4 U |
| C9-C12 Aliphatics (adjusted) | STL00106 | mg/kg | 1,000 | 1,000 | 3,000 | 3,000 | 5,000 | 5,000 | **6.19** | **290** | 7.22 U | 4.68 U | **109** | 5.74 U | **11.1** | 4.4 U |
| Ethylbenzene | 100-41-4 | mg/kg | 500 | 500 | 1,000 | 1,000 | 1,000 | 3,000 | 0.114 U | 1.22 U | 0.144 U | 0.094 U | **14.1** | 0.115 U | **0.862** | 0.088 U |
| m,p-Xylene | 179601-23-1 | mg/kg | 100 | 500 | 100 | 1,000 | 100 | 3,000 | **0.149** | **51.4** | **1.34** | 0.094 U | **57.7** | **10.8** | **2.7** | 0.088 U |
| Methyl tert-butyl ether | 1634-04-4 | mg/kg | 100 | 100 | 100 | 500 | 100 | 500 | 0.057 U | 0.608 U | **0.144** | 0.047 U | 0.239 U | **0.203** | **0.288** | 0.044 U |
| Naphthalene | 91-20-3 | mg/kg | 20 | 500 | 20 | 1,000 | 20 | 3,000 | **0.366** | **47.8** | **0.386** | 0.187 U | **17.2** | **1.28** | **0.71** | 0.176 U |
| o-Xylene | 95-47-6 | mg/kg | 100 | 500 | 100 | 1,000 | 100 | 3,000 | **0.225** | **9.07** | **0.148** | 0.094 U | **11.3** | 0.115 U | **1.05** | 0.088 U |
| Toluene | 108-88-3 | mg/kg | 500 | 500 | 1,000 | 1,000 | 2,000 | 3,000 | 0.114 U | 1.22 U | **1.03** | 0.094 U | 0.478 U | 0.115 U | **0.572** | 0.088 U |

**Notes:**
Color= PAL Exceeded
Bold=Detected
NA=Not Analyzed
=-- PAL not established for this chemica
Historical results from a Phase II Environmental Site Assessment prepared by Beta Group, Inc. dated November 19, 2002.

**Table 6-2**
**Summary of Exposure Point Concentrations and**
**Contaminant of Concern Statistics**
**Former L and M Service Station**
**Lunenburg, MA**

| Chemical | Units | Detects | Analyzed | Detect Frequency | Detect Percent | Exposure Point Concentration (NDs as 1/2 RL) | Max (NDs as Zero) | Max Location | Max Detect | Detect Range | MCP Method 1 S-1/GW-2 Standard | S-1/GW-2 Standard Exceedances | Percent of S-1/GW-2 Exceedances |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Volatiles** | | | | | | | | | | | | | |
| Naphthalene | ug/kg | 4 | 10 | 4/10 | 40 | 8440 | 63000 | B-102 | 63000 | 880 - 63000 | 20000 | 1 | 10% |
| **Semivolatiles** | | | | | | | | | | | | | |
| Naphthalene | ug/kg | 0 | 2 | 0/2 | 0 | 52.8 | 0 | | | | 20000 | 0 | 0% |
| **Pesticides/PCBs** | | | | | | | | | | | | | |
| Aroclor 1260 | ug/kg | 3 | 11 | 3/11 | 27.3 | 439 | 3980 | B-103 | 3980 | 132 - 3980 | 1000 | 1 | 9% |
| **Metals** | | | | | | | | | | | | | |
| Arsenic | mg/kg | 20 | 20 | 20/20 | 100 | 16.2 | 52 | LM-SO-UST02 | 52 | 4.1 - 52 | 20 | 6 | **30%** |
| Lead | mg/kg | 20 | 20 | 20/20 | 100 | 57.9 | 477 | B-107 | 477 | 3.66 - 477 | 200 | 1 | 5% |
| **EPH** | | | | | | | | | | | | | |
| C11-C22 Aromatics | mg/kg | 14 | 18 | 14/18 | 77.8 | 624 | 6620 | B-107 | 6620 | 11 - 6620 | 1000 | 3 | 17% |
| C11-C22 Aromatics (adjusted) | mg/kg | 14 | 18 | 14/18 | 77.8 | 621 | 6620 | B-107 | 6620 | 11 - 6620 | 1000 | 3 | 17% |
| C19-C36 Aliphatics | mg/kg | 15 | 18 | 15/18 | 83.3 | 1990 | 21200 | B-107 | 21200 | 12 - 21200 | 3000 | 3 | 17% |
| Naphthalene | mg/kg | 6 | 18 | 6/18 | 33.3 | 1.03 | 5.2 | MW-106 | 5.2 | 0.48 - 5.2 | 20 | 0 | 0% |
| **VPH** | | | | | | | | | | | | | |
| C5-C8 Aliphatics (adjusted) | mg/kg | 11 | 18 | 11/18 | 61.1 | 70.5 | 500 | MW-106 | 500 | 0.2 - 500 | 100 | 3 | 17% |
| C9-C10 Aromatics | mg/kg | 14 | 18 | 14/18 | 77.8 | 130 | 1220 | B-102 | 1220 | 0.024 - 1220 | 100 | 3 | 17% |
| C9-C12 Aliphatics | mg/kg | 6 | 8 | 6/8 | 75 | 293 | 1570 | B-102 | 1570 | 10.5 - 1570 | 1000 | 1 | 13% |
| C9-C12 Aliphatics (adjusted) | mg/kg | 10 | 18 | 10/18 | 55.6 | 37.7 | 290 | B-102 | 290 | 0.11 - 290 | 1000 | 0 | 0% |
| Naphthalene | mg/kg | 9 | 18 | 9/18 | 50 | 4.59 | 47.8 | B-102 | 47.8 | 0.012 - 47.8 | 20 | 1 | 6% |

Notes:
EPH = Extractable Petroleum Hydrocarbons
VPH = Volatile Petroleum Hydrocarbons
RL = Laboratory Reporting Limit
**Bold/Shaded** = Percentage of exceedances above the applicable Method 1 standard exceeds the 75/25 "rule" in 310 CMR 40.926(3)(b)(1).

**Table 6-3**
**Analysis of Brownfield Cleanup Alternatives Screening Matrix**
**Former L and M Service Station**
**Lunenburg, Massachusetts**

| Remedial Alternative | Remedial Technology | Description | Evaluation Criteria | | | | | Summary |
|---|---|---|---|---|---|---|---|---|
| | | | Effectiveness | Implementability | Cleanup Time | Resiliency to Climate Change | Overall Cost | |
| Alternative 1 - Monitored Natural Attenuation | Monitored Natural Attenuation | Long-term monitoring of physical, chemical, and biological process that, under favorable conditions, will naturally (i.e. no human involvement) reduce the mass, toxicity, mobility, volume, or concentration of contaminants in soil and/or groundwater. | Low-Medium | High | Low | Low | Medium | The long-term effectiveness of this alternative would be dependent upon the rate at which natural degradation of contaminants occurs. This alternative is feasible but the time frame for remediation is unknown due to the limited temporal data available for the Site. Therefore this remedial alternative may limit site redevelopment options in the near term. |
| Alternative 2 - Enhanced Aerobic Bioremediation | Enhanced Aerobic Bioremediation | Aerobic bioremediation is accomplished by introducing oxygen to the subsurface soil and groundwater, typically by injecting oxygen rich solutions like Oxygen Release Compound (ORC®). Solutions like ORC® slowly release oxygen into the surrounding soil and groundwater to boost the aerobic function of naturally occurring microorganisms. | High | Medium | Medium | Medium | High | The long-term effectiveness of this alternative is dependent on subsurface conditions, with the possibility of persistent contamination or contaminant rebound if site conditions are not optimal for the delivery of the treatment reagent. Several applications of treatment reagent may be required to achieve cleanup goals. |
| Alternative 3 - Chemical Oxidation | In-Situ Chemical Oxidation | Direct chemical oxidation of petroleum hydrocarbons is accomplished by introducing an oxidizer (catalyzed hydrogen peroxide, sodium persulfate, or similar) that acts to break down petroleum hydrocarbons. High percentage oxidant solutions (up to 50% is common) are applied to the targeted subsurface area through direct injection distribution system. Following the oxidant solution application, a catalyst (iron, sodium persulfate, or similar depending on the selected oxidant) is applied to the targeted subsurface area creating a reagent solution. | High | High | Medium | Medium | High | The long-term effectiveness of this alternative is dependent on subsurface conditions, with the possibility of persistent contamination or contaminant rebound if site conditions are not optimal for the delivery of the treatment reagent or amenable to the chemical reactions that form the basis of this technology. Several applications of treatment reagent may be required to achieve cleanup goals. |

**Table 6-4**
**Cost Estimate - Remedial Alternative 1**
**Monitored Natural Attenuation**
**Former L and M Service Station**
**Lunenburg, MA**

| Activity Description | Estimated Costs |
|---|---|
| LSP Consulting Services and MCP Reporting: Groundwater Sampling, Laboratory Analysis of Ground Water Samples, Phased MCP Status Reports, and Permanent Solution Statement (Closure Report). | $30,000 - $50,000 |
| **Total Project Costs** | **$30,000 - $50,000** |

**Note:**
Costs are order of magnitude estimates based on 3 years of quarterly MNA groundwater sampling and experience with similar projects.

**Table 6-5**
**Cost Estimate - Remedial Alternative 2**
**Enhanced Aerobic Bioremediation**
**Former L and M Service Station**
**Lunenburg, MA**

| Activity Description | Estimated Costs |
|---|---|
| LSP Services (MCP Reporting, Oversight of ORC Injections, Direct Push Drilling Services, Laboratory Analytical Services) | $70,000 - $85,000 |
| Bioremediation Remediation Subcontractor Costs | $20,000 - $30,000 |
| Site Restoration | $5,000 - $10,000 |
| **Total Project Costs** | **$95,000 - $125,000** |

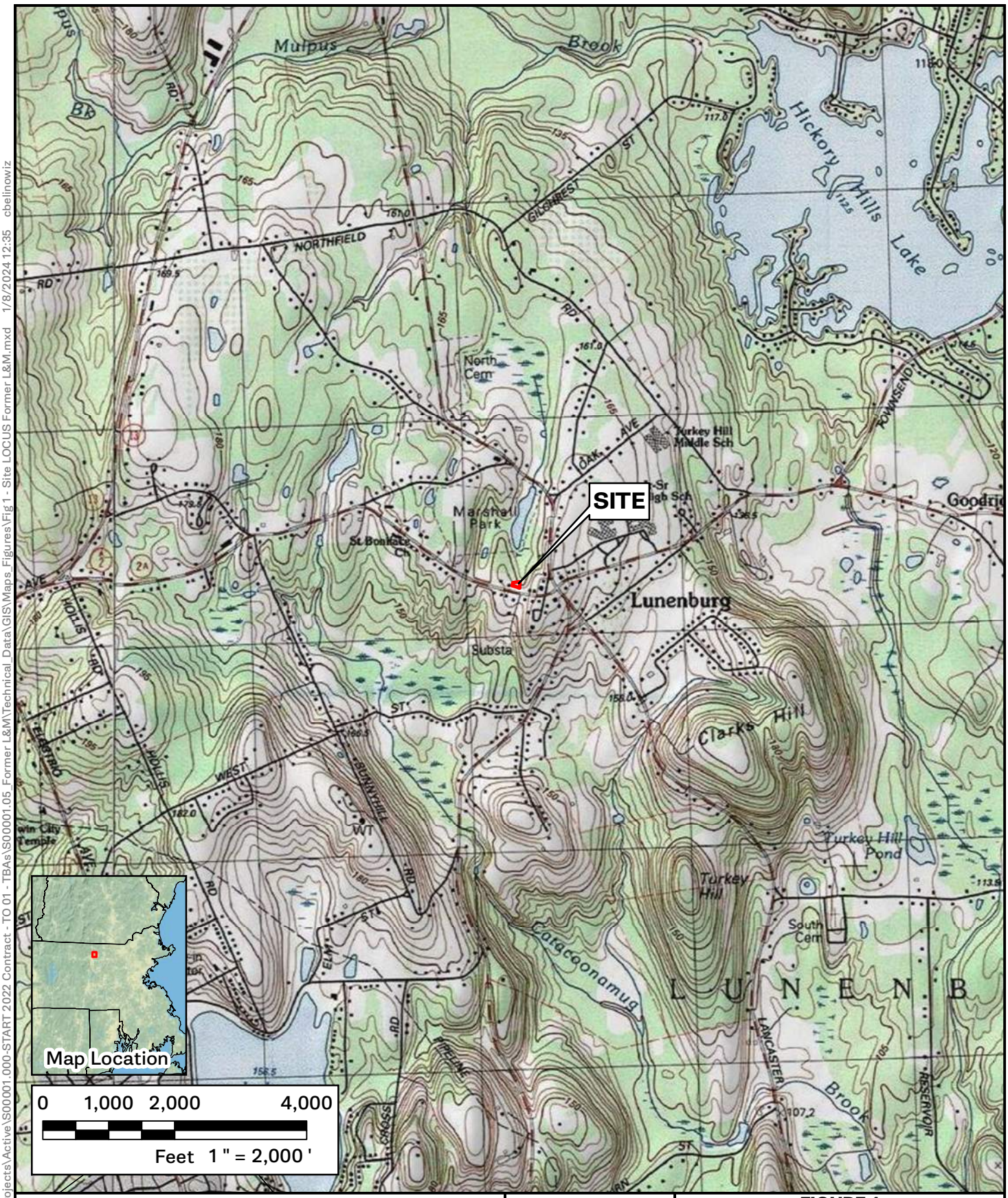
**Note:**
Costs are order of magnitude estimates based on experience with similar projects.

**Table 6-6**
**Cost Estimate - Remedial Alternative 3**
**In Situ Chemical Oxidation**
**Former L and M Service Station**
**Lunenburg, MA**

| Activity Description | Estimated Costs |
|---|---|
| LSP Services (MCP Reporting, Installation of Temporary Injection Wells, ISCO Remediation Oversight, Laboratory Analytical Services) | $50,000 - $90,000 |
| ISCO Remediation Subcontractor Costs (Bench Scale Testing and ISCO Applications) | $70,000-$120,000 |
| Site Restoration | $5,000 - $10,000 |
| **Total Project Costs** | **$125,000-$220,000** |

**Note:**
Costs are order of magnitude estimates based on experience with similar projects.

# FIGURES




USGS Topographic Map
USGS Quadrangle 7.5
Revised 1983

N

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**FIGURE 1**

SITE LOCUS
FORMER L & M SERVICE STATION
925 MASSACHUSETTS AVE
LUNENBERG, MA

| | |
|---|---|
| PREPARED BY: CB | CHECKED BY: AR |
| PROJECT NO. S00001.005 | DATE: JANUARY 2024 |

\\nobis.local\shares\Projects\Active\S00001.000-START 2022 Contract - TO 01 - TBAs\S00001.05_Former L&M\Technical_Data\GIS\Maps_Figures\Fig1 - Site LOCUS Former L&M.mxd 1/8/2024 12:35 cbelinowiz




Notes:

1. Locations of site features depicted hereon are approximate and given for illustrative purposes only.

2. (UST-01) - Sample ID label taken after excavation activities.

## Legend

- Building
- Septic Tank
- Underground Storage Tank

### Historic Sample Locations

- Monitoring Well
- Boring

0 7.5 15 30

Feet
1 inch = 17 feet

N

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**FIGURE 2**

SITE PLAN
FORMER L & M SERVICE STATION
925 MASSACHUSETTS AVE
LUNENBERG, MA

| PREPARED BY: CB | CHECKED BY: AR |
|---|---|
| PROJECT NO. S00001.005 | DATE: JANUARY 2024 |

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*URXQGZDWHU &RQWRXUV

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6XEMHFW 3URSHUW\

Building

Septic Tank

Underground Storage Tank

" Monitoring Well

" Boring Location

0 7.5 15 30

Feet

1 inch equals 15 feet

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GROUNDWATER CONTOURS MAY-JUNE 2023
FORMER L & M SERVICE STATION
925 MASSACHUSETTS AVE
LUNENBERG, MA

| PREPARED BY: TF | CHECKED BY: AR |
|---|---|
| PROJECT NO. S00001.005 | DATE: FEBRUARY 2025 |

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6XEMHFW 3URSHUW\

Building

Septic Tank

Underground Storage Tank

" Monitoring Well

" Boring Location

0 7.5 15 30

Feet

1 inch equals 15 feet

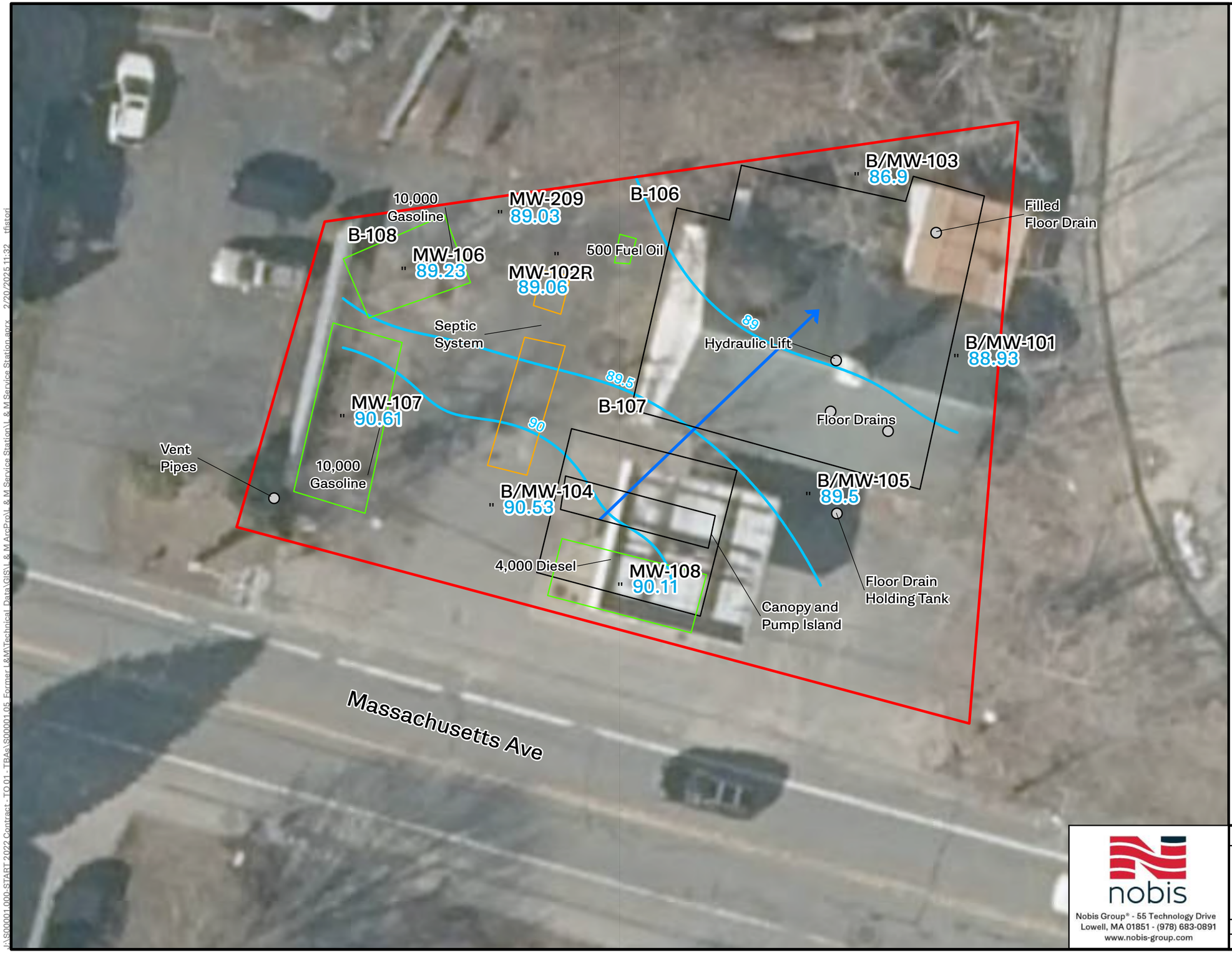
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GROUNDWATER CONTOURS OCTOBER 2023
FORMER L & M SERVICE STATION
925 MASSACHUSETTS AVE
LUNENBERG, MA

| PREPARED BY: TF | CHECKED BY: AR |
|---|---|
| PROJECT NO. S00001.005 | DATE: FEBRUARY 2025 |




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8QGHUJURXQG 6WRUDJH 7

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1 inch equals 15 feet

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GROUNDWATER CONTOURS APRIL 2024
FORMER L & M SERVICE STATION
925 MASSACHUSETTS AVE
LUNENBERG, MA

| PREPARED BY: TF | CHECKED BY: AR |
|---|---|
| PROJECT NO. S00001.005 | DATE: FEBRUARY 2025 |

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‡ ‰ ‡ • †

*URXQGZDWHU &RQWRXUV

*URXQGZDWHU )ORZ 'LUHFWLR

Building

Septic Tank

Underground Storage Tank

6XEMHFW 3URSHUW\

" Monitoring Well

" Boring Location

0 7.5 15 30

Feet

1 inch equals 15 feet

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GROUNDWATER CONTOURS JULY 2024
FORMER L & M SERVICE STATION
925 MASSACHUSETTS AVE
LUNENBERG, MA

| PREPARED BY: TF | CHECKED BY: AR |
|---|---|
| PROJECT NO. S00001.005 | DATE: FEBRUARY 2025 |

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6XEMHFW 3URSHUW\

Building

Septic Tank

Underground Storage Tank

" Monitoring Well

" Boring Location

0 7.5 15 30

Feet

1 inch equals 15 feet

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GROUNDWATER CONTOURS OCTOBER 2024
FORMER L & M SERVICE STATION
925 MASSACHUSETTS AVE
LUNENBERG, MA

| PREPARED BY: TF | CHECKED BY: AR |
|---|---|
| PROJECT NO. S00001.005 | DATE: FEBRUARY 2025 |

J:\S00001.000-START 2022 Contract - TO 01 - TRA\S00001.05 Former L&M Service Station\L & M Service Station.aprx 2/20/2025 11:37 tfistori

# MassDEP - Bureau of Waste Site Cleanup

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

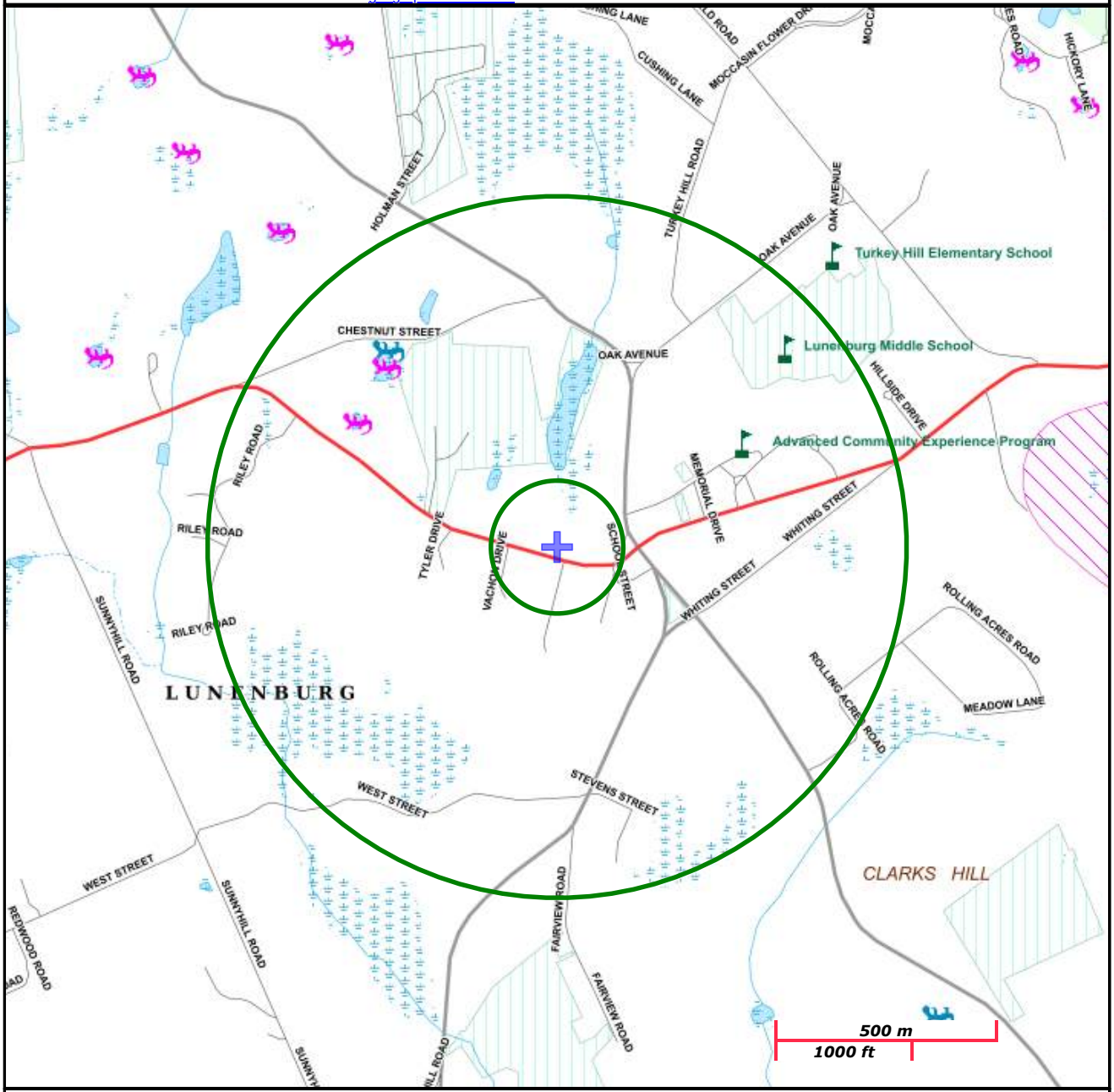
**Site Information:**

925 MASSACHUSETTS AVENUE LUNENBURG, MA
2-000002230

**NAD83 UTM Meters:**
4719453mN , 276277mE (Zone: 19)
February 17, 2025

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: https://www.mass.gov/orgs/massgis-bureau-of-geographic-information

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

NHESP Pri-Hab of Rare Species; Vernal Pool: Cert., Potential

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

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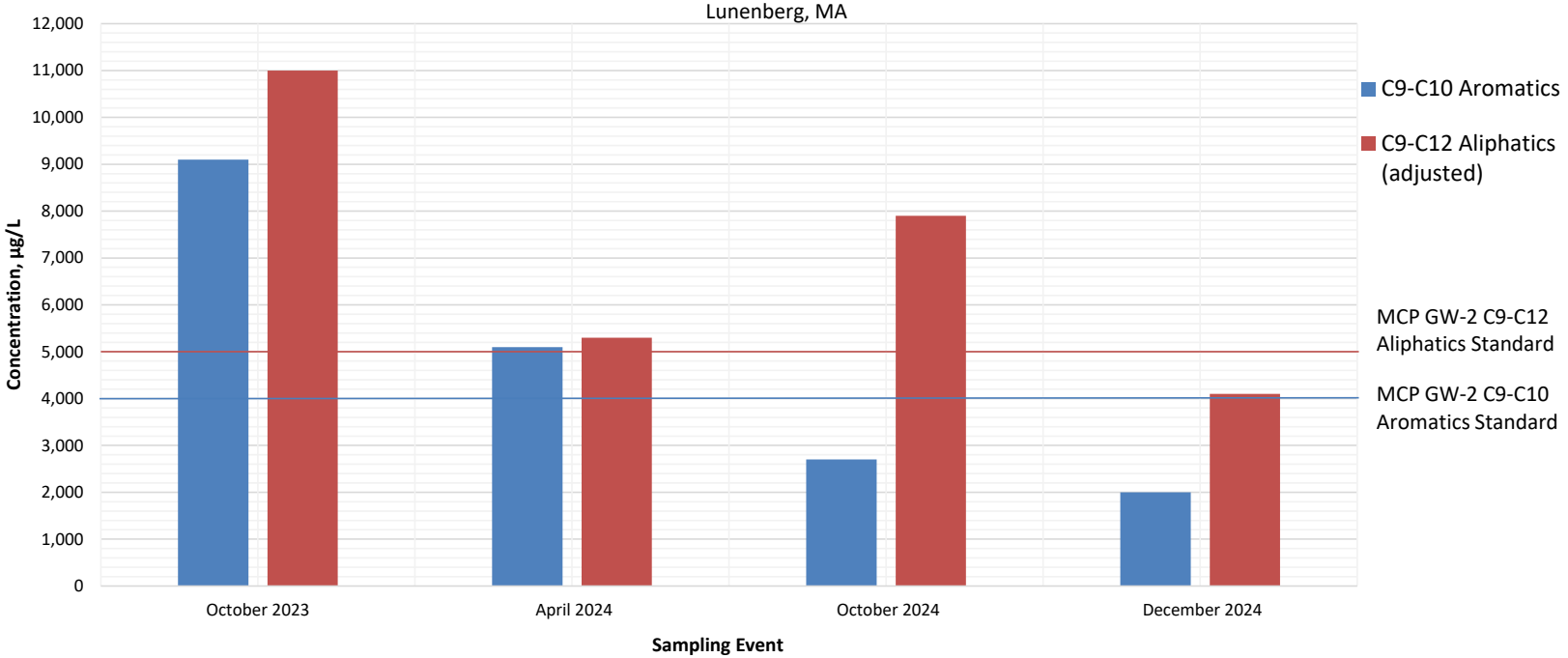
**FIGURE 4**

MassDEP PRIORITY RESOURCE MAP
FORMER L & M SERVICE STATION
925 MASSACHUSETTS AVE
LUNENBURG, MA

| PREPARED BY: TF | CHECKED BY: AR |
|---|---|
| PROJECT NO. S00001.005 | DATE: FEBRUARY 2025 |

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Figure 5
VPH Concentrations in MW-106
2023-2024 Sampling Events
Former L and M Service Station
Lunenberg, MA




Notes:
MW-106 was not sampled during the July 2024 sampling event.
µg/L = micrograms per liter

# APPENDIX A

**APPENDIX A**
**PHOTOGRAPH LOG**
**FORMER L&M SERVICE STATION**
**LUNENBURG, MA**



Photo 1. Pump island in the center of the site after concrete was removed (May 2023).




Photo 2. Canopy hanging over pump island after it was demolished (May 2023).

**APPENDIX A**
**PHOTOGRAPH LOG**
**FORMER L&M SERVICE STATION**
**LUNENBURG, MA**



Photo 3. Petroleum impacted soil from one of the 10,000-gallon gasoline USTs (May 2023).




Photo 4. Removal of the sump located between the two 10,000-gallon gasoline USTs. (May 2023).

**APPENDIX A**
**PHOTOGRAPH LOG**
**FORMER L&M SERVICE STATION**
**LUNENBURG, MA**



Photo 5. Gasoline UST-01 as it was being uncovered in preparation for removal (May 2023).



Photo 6. Gasoline UST-01 and 02 during removal (May 2023).

**APPENDIX A**
**PHOTOGRAPH LOG**
**FORMER L&M SERVICE STATION**
**LUNENBURG, MA**




Photo 7. Gasoline UST-01 as it is being removed from the ground (May 2023).




Photo 8. One gasoline UST after removal. Large holes occurred during removal from the excavator bucket (May 2023).

**APPENDIX A**
**PHOTOGRAPH LOG**
**FORMER L&M SERVICE STATION**
**LUNENBURG, MA**



Photo 9. A gasoline UST being loaded out for disposal (May 2023).



Photo 10. Diesel fuel UST following removal (May 2023).

**APPENDIX A**
**PHOTOGRAPH LOG**
**FORMER L&M SERVICE STATION**
**LUNENBURG, MA**




Photo 11. The second gasoline UST as it was loaded out for disposal (May 2023).




Photo 12. Pitting and corrosion on the diesel fuel UST (May 2023).



Photo 13. Corrosion and pitting on one of the gasoline USTs after removal (May 2023).




Photo 14. Diesel fuel UST being loaded out for disposal (May 2023).

**APPENDIX A**
**PHOTOGRAPH LOG**
**FORMER L&M SERVICE STATION**
**LUNENBURG, MA**



Photo 15. Well B/MW-103 found behind the building on site (May 2023).



Photo 16. Heating oil UST following removal (May 2023).



Photo 17. Pitting, corrosion, and hole in heating oil UST (May 2023).



Photo 18. Photograph of the on-site building after UST removal and pump island demolition (May 2023).

**APPENDIX A**
**PHOTOGRAPH LOG**
**FORMER L&M SERVICE STATION**
**LUNENBURG, MA**



Photo 19. Liquid and sludge waste from the UST cleaning process (June 2023).



Photo 20. Concrete from during excavation, staged for disposal (June 2023).

**APPENDIX A**
**PHOTOGRAPH LOG**
**FORMER L&M SERVICE STATION**
**LUNENBURG, MA**



Photo 21. Stockpile from excavated soil during UST removal (August 2023).



Photo 22. Subsurface soils during drilling at MW-106 (October 2023).

**APPENDIX A**
**PHOTOGRAPH LOG**
**FORMER L&M SERVICE STATION**
**LUNENBURG, MA**




Photo 23. Subsurface soil during drilling at MW-107 (October 2023).



Photo 24. Hydraulic lift located inside the garage building (October 2023).

**APPENDIX A**
**PHOTOGRAPH LOG**
**FORMER L&M SERVICE STATION**
**LUNENBURG, MA**



Photo 25. Hydraulic lift removal (October 2023).



Photo 26. Removal of floor drain holding tank liquids (October 2023).

**APPENDIX A**
**PHOTOGRAPH LOG**
**FORMER L&M SERVICE STATION**
**LUNENBURG, MA**



Photo 27. Hydraulic lift removal (October 2023).



Photo 28. Hydraulic lift removal (October 2023).

**APPENDIX A**
**PHOTOGRAPH LOG**
**FORMER L&M SERVICE STATION**
**LUNENBURG, MA**




Photo 29. Hydraulic lift removal (October 2023).



Photo 30. Hydraulic lift load out for disposal (October 2023).



Photo 31. Sludge waste from holding tank removal containerized for disposal (October 2023).



Photo 32. Excavation of holding tank during removal (October 2023).



Photo 33. Excavation of holding tank sludge during removal (October 2023).



Photo 34. Backfilling the holding tank excavation (October 2023).

# APPENDIX B

# Low-Flow Field Log

Site Name: Former L&M
Job Number: S00001.005
Sampler: P. Moran

Date: 5/17/2023



Well ID: B/MW-101
Sample ID: LM-GW-BMW101-051723
Reviewed By:

Measurement Reference Point (MP): pvc (PVC, Casing, Ground, etc.)
Depth to GW: 11.39 (ft from MP)
Depth to Bottom: 19.43 (ft from MP)
Pump Intake Depth: 18 (ft from MP)
Well depth as installed: 20 (ft bgs)
Screen interval (range): 10 - 20 (ft bgs)

Purging start time: 11:40
Parameter stabalization (Y/N): Y
Two hour time limit reached (Y/N): N
Sample time: 12:45
Total volume purged (gals): 2.5
Time at purge completion: 1:10

Equipment Vendor: US Environmental
Pump Type: Peri
Turbidity Meter: Geotech
Serial #: 17061367
Multimeter: YSI Pro Quatro
Serial #: 21k103657

Notes (Initial PID reading, SOP deviations, etc.):

Lab Analyses:
QC Info (Duplicate, MS/MSD)

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cmc | | mV | mg/L | NTU | | |
| | | 168 | | -11.39 | -11.39 | | | | | | | | |
| 1145 | | 168 | 11.46 | 11.46 | 0.07 | 12.60 | 2088 | 5.95 | 157.9 | 0.32 | 37 | | |
| 1155 | | 168 | 11.51 | 0.05 | 0.12 | 11.40 | 2091 | 5.92 | 171.9 | 0.48 | 27.1 | | |
| 1200 | | 168 | 11.52 | 0.01 | 0.13 | 12.10 | 2098 | 5.90 | 172.4 | 0.32 | 13.5 | | Not Stable |
| 1205 | | 168 | 11.54 | 0.02 | 0.15 | 11.40 | 2110 | 5.90 | 174.5 | 0.31 | 12.8 | | Not Stable |
| 1210 | | 168 | 11.55 | 0.01 | 0.16 | 10.90 | 2109 | 5.89 | 175.8 | 0.27 | 13 | | Not Stable |
| 1215 | | 168 | 11.55 | 0.00 | 0.16 | 11.80 | 2116 | 5.88 | 173.9 | 0.25 | 10.3 | | Not Stable |
| 1220 | | 168 | 11.56 | 0.01 | 0.17 | 11.60 | 2113 | 5.86 | 173.6 | 0.24 | 6.14 | | Not Stable |
| 1225 | | 168 | 11.57 | 0.01 | 0.18 | 11.20 | 2139 | 5.86 | 173.7 | 0.23 | 5.11 | | Not Stable |
| 1230 | | 168 | 11.57 | 0.00 | 0.18 | 10.80 | 2148 | 5.86 | 173.8 | 0.23 | 4.09 | | Not Stable |
| 1235 | | 168 | 11.58 | 0.01 | 0.19 | 11.10 | 2168 | 5.85 | 173.2 | 0.22 | 3.97 | | Not Stable |
| 1240 | | 168 | 11.58 | 0.00 | 0.19 | 11.10 | 2177 | 5.85 | 172.3 | 0.22 | 2.33 | | Stable |
| | | | | | | | | | | | | | |
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# Low-Flow Field Log

Site Name: Former L&M
Job Number: S00001.005
Sampler: B. Fortier

Date: 5/17/2023



Well ID: B/MW-102
Sample ID: LM-GW-B/MW102-051723
Reviewed By: B. Fortier

Measurement Reference Point (MP): PVC (PVC, Casing, Ground, etc.)
Depth to GW: 11.36 (ft from MP)
Depth to Bottom: 19.56 (ft from MP)
Pump Intake Depth: 18 (ft from MP)
Well depth as installed: 20 (ft bgs)
Screen interval (range): 10-20 (ft bgs)

Purging start time: 11:50
Parameter stabalization (Y/N): Y
Two hour time limit reached (Y/N): N
Sample time: 12:40
Total volume purged (gals): 2.5
Time at purge completion: 13:05

Equipment Vendor: US Environmental
Pump Type: Peristaltic
Turbidity Meter: Geotech
Serial #: 19062110
Multimeter: YSI ProQuatro
Serial #: 22F103523

Notes (Initial PID reading, SOP deviations, etc.):

Lab Analyses: VPH, EPH, dissolved metals
QC Info (Duplicate, MS/MSD): FD @ 8:00

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cmc | | mV | mg/L | NTU | | |
| 11:50 | | 210 | 11.36 | 0.00 | 0.00 | | | | | | | | |
| 12:00 | | 210 | 12.02 | 0.66 | 0.66 | 11.50 | 1313 | 6.39 | -44 | 0.39 | 10.3 | | |
| 12:05 | | 210 | 12.04 | 0.02 | 0.68 | 11.30 | 1544 | 6.43 | -53.2 | 0.15 | 8.42 | | |
| 12:10 | | 210 | 12.02 | -0.02 | 0.66 | 11.40 | 1651 | 6.44 | -57.5 | 0.12 | 5.65 | | Not Stable |
| 12:15 | | 210 | 12.02 | 0.00 | 0.66 | 11.50 | 1714 | 6.45 | -60.3 | 0.10 | 5.30 | | Not Stable |
| 12:20 | | 210 | 12.02 | 0.00 | 0.66 | 11.50 | 1767 | 6.46 | -63.2 | 0.07 | 6.50 | | Not Stable |
| 12:25 | | 210 | 12.02 | 0.00 | 0.66 | 11.50 | 1794 | 6.46 | -64.9 | 0.05 | 3.81 | | Not Stable |
| 12:30 | | 210 | 12.02 | 0.00 | 0.66 | 11.40 | 1817 | 6.46 | -66.3 | 0.05 | 3.52 | | Not Stable |
| 12:35 | | 210 | 12.02 | 0.00 | 0.66 | 11.50 | 1825 | 6.47 | -68.3 | 0.05 | 2.81 | Visible sheen and petroleum smell | Stable |
| | | | | | | | | | | | | | |
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# Low-Flow Field Log

Site Name: Former L&M
Job Number: S00001.005
Sampler: P. Moran

Date: 5/17/2023



Well ID: B/MW-105
Sample ID: LM-GW-BMW105-051723
Reviewed By:

Measurement Reference Point (MP): pvc (PVC, Casing, Ground, etc.)
Depth to GW: 10.05 (ft from MP)
Depth to Bottom: 19.36 (ft from MP)
Pump Intake Depth: 18 (ft from MP)
Well depth as installed: 20 (ft bgs)
Screen interval (range): 5 - 20 (ft bgs)

Purging start time: 9:10
Parameter stabalization (Y/N): Y
Two hour time limit reached (Y/N): N
Sample time: 10:40
Total volume purged (gals): 2.5
Time at purge completion: 11:00

Equipment Vendor: US environmental
Pump Type: Peri
Turbidity Meter: Geotech
Serial #: 17061367
Multimeter: YSI Pro Quatro
Serial #: 21k103657

Notes (Initial PID reading, SOP deviations, etc.):

Lab Analyses:
QC Info (Duplicate, MS/MSD)

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cmc | | mV | mg/L | NTU | | |
| | | | | -10.05 | -10.05 | | | | | | | | |
| 917 | | 188 | 11.50 | 11.50 | 1.45 | 11.60 | 4213 | 6.24 | 130.5 | 1.56 | 58.7 | | |
| 922 | | 188 | 11.61 | 0.11 | 1.56 | 11.70 | 4208 | 6.24 | 132.8 | 0.51 | 61.3 | | |
| 927 | | 188 | 11.78 | 0.17 | 1.73 | 11.70 | 4187 | 6.24 | 134.1 | 0.36 | 60.1 | | Not Stable |
| 932 | | 188 | 11.90 | 0.12 | 1.85 | 11.60 | 4164 | 6.24 | 134.2 | 0.30 | 42.7 | | Not Stable |
| 937 | | 188 | 12.05 | 0.15 | 2.00 | 11.60 | 4169 | 6.24 | 117.6 | 0.27 | 68 | | Not Stable |
| 942 | | 188 | 12.10 | 0.05 | 2.05 | 11.60 | 4102 | 6.26 | 67 | 0.26 | 52.4 | | Not Stable |
| 947 | | 188 | 12.15 | 0.05 | 2.10 | 11.60 | 4123 | 6.26 | 44.7 | 0.24 | 38.6 | | Not Stable |
| 952 | | 188 | 12.20 | 0.05 | 2.15 | 11.50 | 4128 | 6.25 | 39.9 | 0.23 | 35.1 | | Not Stable |
| 957 | | 188 | 12.22 | 0.02 | 2.17 | 11.50 | 4099 | 6.25 | 32.4 | 0.21 | 18.1 | | Not Stable |
| 1002 | | 188 | 12.28 | 0.06 | 2.23 | 11.50 | 4097 | 6.26 | 16.6 | 0.22 | 14.3 | | Not Stable |
| 1010 | | 188 | 12.32 | 0.04 | 2.27 | 11.50 | 4089 | 6.26 | 7.7 | 0.22 | 13.7 | | Not Stable |
| 1015 | | 188 | 12.35 | 0.03 | 2.30 | 11.50 | 4076 | 6.26 | 6 | 0.21 | 9.39 | | Not Stable |
| 1020 | | 188 | 12.40 | 0.05 | 2.35 | 11.50 | 4063 | 6.26 | 5.3 | 0.21 | 6.07 | | Not Stable |
| 1025 | | 188 | 12.41 | 0.01 | 2.36 | 11.50 | 4067 | 6.26 | 6.8 | 0.21 | 7.08 | | Not Stable |
| 1030 | | 188 | 12.43 | 0.02 | 2.38 | 11.60 | 4044 | 6.26 | 8.9 | 0.20 | 7.51 | | Not Stable |
| 1035 | | 188 | 12.46 | 0.03 | 2.41 | 11.60 | 4053 | 6.26 | 11 | 0.20 | 7.25 | | Stable |

# Low-Flow Field Log

Site Name: Former L&M
Job Number: S00001.005
Sampler: B. Fortier

Date: 5/17/2023



Well ID: B/MW-104
Sample ID: LM-GW-B/MW104-051723
Reviewed By: B. Fortier

Measurement Reference Point (MP): PVC (PVC, Casing, Ground, etc.)
Depth to GW: 9.00 (ft from MP)
Depth to Bottom: 19.61 (ft from MP)
Pump Intake Depth: 18 (ft from MP)
Well depth as installed: 20 (ft bgs)
Screen interval (range): 5-20 (ft bgs)

Purging start time: 9:35
Parameter stabalization (Y/N): Y
Two hour time limit reached (Y/N): N
Sample time: 10:45
Total volume purged (gals): 2.5
Time at purge completion: 11:45

Equipment Vendor: US Environmental
Pump Type: Peristaltic

Turbidity Meter: Geotech
Serial #: 19062110

Multimeter: YSI ProQuatro
Serial #: 22F103523

Notes (Initial PID reading, SOP deviations, etc.):

Lab Analyses: VPH, EPH, dissolved metals
QC Info (Duplicate, MS/MSD): MS/MSD

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cmc | | mV | mg/L | NTU | | |
| 9:35 | | 180 | 9.00 | 0.00 | 0.00 | | | | | | | | |
| 9:40 | | 180 | 9.69 | 0.69 | 0.69 | 12.20 | 2500 | 6.61 | 20.2 | 1.19 | 263 | some orange iron flocc | |
| 9:50 | | 180 | 10.30 | 0.61 | 1.30 | 11.80 | 2499 | 6.41 | 18.6 | 0.28 | 162 | | |
| 9:55 | | 180 | 10.99 | 0.69 | 1.99 | 11.70 | 2500 | 6.40 | 14.8 | 0.21 | 110 | | Not Stable |
| 10:10 | | 180 | 11.75 | 0.76 | 2.75 | 12.30 | 2525 | 6.29 | 20.4 | 0.34 | 144 | | Not Stable |
| 10:15 | | 140 | 11.84 | 0.09 | 2.84 | 12.50 | 2501 | 6.39 | 16.3 | 0.25 | 32.6 | | Not Stable |
| 10:20 | | 140 | 11.97 | 0.13 | 2.97 | 12.60 | 2449 | 6.45 | 15.9 | 0.16 | 26.8 | | Not Stable |
| 10:25 | | 140 | 11.95 | -0.02 | 2.95 | 12.50 | 2445 | 6.45 | 16.0 | 0.21 | 90 | | Not Stable |
| 10:30 | | 140 | 11.95 | 0.00 | 2.95 | 12.40 | 2431 | 6.45 | 17.0 | 0.16 | 25 | | Not Stable |
| 10:35 | | 140 | 11.90 | -0.05 | 2.90 | 12.70 | 2416 | 6.36 | 14.7 | 0.15 | 25.3 | | Not Stable |
| 10:40 | | 140 | 11.90 | 0.00 | 2.90 | 12.50 | 2399 | 6.44 | 11.9 | 0.07 | 24.8 | | Stable |
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# Low-Flow Field Log

Date: 6/1/2023

Page: 1 of

**Site Name:** Former L& M
**Job Number:** S00001.005/400
**Sampler:** S. Stone

**Well ID:** **MW-103**
**Sample ID:** LM-GW-MW103-060223
**Reviewed By:**

Measurement Reference Point (MP): PVC (PVC, Casing, Ground, etc.)
Depth to GW: 13.31 (ft from MP)
Depth to Bottom: 16.85 (ft from MP)
Pump Intake Depth: (ft from MP)
Well depth as installed: (ft bgs)
Screen interval (range): (ft bgs)

Purging start time: 13:30
Parameter stabalization (Y/N): N
Two hour time limit reached (Y/N): N
Sample time: 8:35
Total volume purged (gals): 0.25
Time at purge completion: 13:45

Equipment Vendor: US Environmental
Pump Type: Peristaltic

Turbidity Meter: Lamotte 2020T
Serial #: #3070-3522

Multimeter: YSI Pro DSS Display
Serial #: #21F103693

Notes (Initial PID reading, SOP deviations, etc.):

Lab Analyses:
QC Info (Duplicate, MS/MSD)

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cmc | | mV | mg/L | NTU | | |
| | | | | -13.31 | -13.31 | | | | | | | | |
| 1335 | | | 15.90 | 15.90 | 2.59 | 11.90 | 1646 | 6.34 | 133.7 | 2.72 | | | |
| 1345 | | | | | | | | | | | | Went dry before first turbidity reading | |
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SOP No: SA-003 Draft Revision: 4

# Low-Flow Field Log

Date: 10/26/2023



**Site Name:** Former L&M
**Job Number:** S00001.05
**Sampler:** C. Belinowiz

**Well ID:** **B/MW-106**
**Sample ID:** LM-MW106-102623
**Reviewed By:** S. Stone

Measurement Reference Point (MP): pvc (PVC, Casing, Ground, etc.)
Depth to GW: 9.97 (ft from MP)
Depth to Bottom: 19.55 (ft from MP)
Pump Intake Depth: 19 (ft from MP)
Well depth as installed: 20 (ft bgs)
Screen interval (range): 10-20 (ft bgs)

Purging start time: 13:05
Parameter stabalization (Y/N): y
Two hour time limit reached (Y/N): n
Sample time: 13:35
Total volume purged (gals): 2
Time at purge completion: 13:30

Equipment Vendor: U.S Environmental
Pump Type: Peristatic

Turbidity Meter: Geotech
Serial #: 17111537

Multimeter: YSI
Serial #: 09E101042

Notes (Initial PID reading, SOP deviations, etc.):

Lab Analyses: VPH, EPH, Dissolved Metals
QC Info (Duplicate, MS/MSD)

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cmc | | mV | mg/L | NTU | | |
| | | | | -9.97 | -9.97 | | | | | | | | |
| 1305 | | 200 | 9.97 | 9.97 | 0.00 | 17.04 | 589 | 6.50 | 105.8 | 0.28 | 12.5 | Strong Petroleum Smell | |
| 1310 | | | 10.12 | 0.15 | 0.15 | 17.07 | 590 | 6.50 | 121.7 | 0.34 | 7.96 | | |
| 1315 | | | 10.12 | 0.00 | 0.15 | 16.95 | 590 | 6.50 | 125 | 0.34 | 5.94 | | Not Stable |
| 1320 | | | 10.13 | 0.01 | 0.16 | 16.92 | 590 | 6.50 | 125.6 | 0.33 | 3.84 | | Not Stable |
| 1325 | | | 10.15 | 0.02 | 0.18 | 16.95 | 590 | 6.50 | 133.6 | 0.34 | 4.36 | | Not Stable |
| 1330 | | | 10.15 | 0.00 | 0.18 | 16.90 | 590 | 6.50 | 135 | 0.31 | 2.91 | | Stable |
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# Low-Flow Field Log

Date: 10/26/2023



**Site Name:** Former L&M
**Job Number:** S00001.05
**Sampler:** C. Belinowiz

**Well ID:** B/MW-107
**Sample ID:** LM-MW107-102623
**Reviewed By:** S. Stone

Measurement Reference Point (MP): PVC (PVC, Casing, Ground, etc.)
Depth to GW: 8.18 (ft from MP)
Depth to Bottom: 19.58 (ft from MP)
Pump Intake Depth: 19 (ft from MP)
Well depth as installed: 20 (ft bgs)
Screen interval (range): 10-20 (ft bgs)

Purging start time: 11:20
Parameter stabalization (Y/N): Y
Two hour time limit reached (Y/N): N
Sample time: 12:00
Total volume purged (gals): 2
Time at purge completion: 11:55

Equipment Vendor: U.S Environmental
Pump Type: Peristatic

Turbidity Meter: Geotech
Serial #: 17111537

Multimeter: YSI
Serial #: 09E101042

Notes (Initial PID reading, SOP deviations, etc.):

Lab Analyses: EPH, VPH, MCP 14- Dissolved Metals
QC Info (Duplicate, MS/MSD): field dup

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cmc | | mV | mg/L | NTU | | |
| | | | | -8.18 | -8.18 | | | | | | | | |
| 1125 | | 140 | 8.35 | 8.35 | 0.17 | 17.06 | 436 | 6.60 | -77.5 | 0.22 | 3.31 | | |
| 1130 | | | 8.33 | -0.02 | 0.15 | 16.98 | 453 | 6.56 | -73.1 | 0.22 | 3.85 | | |
| 1135 | | | 8.34 | 0.01 | 0.16 | 16.90 | 475 | 6.54 | -64.4 | 0.19 | 2.62 | | Not Stable |
| 11:40 | | | 8.33 | -0.01 | 0.15 | 16.92 | 488 | 6.54 | -76.7 | 0.17 | 0.88 | | Not Stable |
| 11:45 | | | 8.34 | 0.01 | 0.16 | 17.00 | 498 | 6.55 | -83.7 | 0.14 | 0.08 | | Not Stable |
| 11:50 | | | 8.35 | 0.01 | 0.17 | 16.91 | 502 | 6.55 | -87.4 | 0.13 | 0.02 | | Not Stable |
| 1155 | | | 8.34 | -0.01 | 0.16 | 16.80 | 502 | 6.56 | -91.2 | 0.12 | 0.74 | | Stable |
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# Low-Flow Field Log

Date: 10/26/2023



**Site Name:** Former L&M
**Job Number:** S00001.05
**Sampler:** C. Belinowiz

**Well ID:** **B/MW-108**
**Sample ID:** LM-MW108-102623
**Reviewed By:** S. Stone

Measurement Reference Point (MP): pvc (PVC, Casing, Ground, etc.)
Depth to GW: 9.15 (ft from MP)
Depth to Bottom: 19.52 (ft from MP)
Pump Intake Depth: 19 (ft from MP)
Well depth as installed: 20 (ft bgs)
Screen interval (range): 10-20 (ft bgs)

Purging start time: 8:45
Parameter stabalization (Y/N): y
Two hour time limit reached (Y/N): n
Sample time: 10:05
Total volume purged (gals): 4
Time at purge completion: 10:00

Equipment Vendor: U.S Environmental
Pump Type: Peristatic

Turbidity Meter: Geotech
Serial #: 17111537

Multimeter: YSI
Serial #: 09E101042

Notes (Initial PID reading, SOP deviations, etc.):

Lab Analyses: EPH, VPH, MCP-14 Dissolved Metals
QC Info (Duplicate, MS/MSD): MS/MSD

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cmc | | mV | mg/L | NTU | | |
| | | | | -9.15 | -9.15 | | | | | | | | |
| 845 | | 186 | 9.61 | 9.61 | 0.46 | 15.73 | 2656 | 6.43 | 94 | 0.91 | 32.1 | | |
| 850 | | | 10.00 | 0.39 | 0.85 | 15.67 | 2667 | 6.38 | 94.4 | 0.63 | 12.4 | | |
| 900 | | | 10.09 | 0.09 | 0.94 | 15.63 | 2710 | 6.35 | 102.1 | 0.55 | 7.74 | | Not Stable |
| 905 | | | 10.02 | -0.07 | 0.87 | 15.60 | 2728 | 6.34 | 105.2 | 0.65 | 7.89 | | Not Stable |
| 910 | | | 10.10 | 0.08 | 0.95 | 15.57 | 2734 | 6.34 | 104.3 | 0.65 | 8.2 | | Not Stable |
| 915 | | | 10.10 | 0.00 | 0.95 | 15.59 | 2722 | 6.34 | 102 | 0.65 | 20.9 | | Not Stable |
| 920 | | | 10.11 | 0.01 | 0.96 | 15.59 | 2730 | 6.34 | 99 | 0.64 | 16 | | Not Stable |
| 925 | | | 10.15 | 0.04 | 1.00 | 15.57 | 2733 | 6.34 | 99.4 | 0.66 | 14.1 | | Not Stable |
| 930 | | | 10.19 | 0.04 | 1.04 | 15.57 | 2738 | 6.34 | 99.6 | 0.68 | 24.8 | | Not Stable |
| 935 | | | 10.19 | 0.00 | 1.04 | 15.57 | 2735 | 6.34 | 101.3 | 0.70 | 12.9 | | Not Stable |
| 940 | | | 10.18 | -0.01 | 1.03 | 15.58 | 2747 | 6.33 | 102.4 | 0.73 | 8.99 | | Not Stable |
| 945 | | | 10.19 | 0.01 | 1.04 | 15.58 | 2745 | 6.34 | 103.4 | 0.76 | 7.87 | | Not Stable |
| 950 | | | 10.19 | 0.00 | 1.04 | 15.59 | 2743 | 6.33 | 105.7 | 0.77 | 4.73 | | Not Stable |
| 955 | | | 10.19 | 0.00 | 1.04 | 15.59 | 2743 | 6.34 | 107.4 | 0.77 | 4.33 | | Not Stable |
| 1000 | | | 10.19 | 0.00 | 1.04 | 15.59 | 2745 | 6.34 | 110.3 | 0.79 | 4.04 | | Stable |
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# Low-Flow Field Log

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|---|---|---|---|
| **Site Name:** | Former L&M | Date: | 4/23/2024 |
| **Job Number:** | S00001.005 | **Well ID:** | **MW-103** |
| **Sampler:** | P. Moran | **Sample ID:** | GW-MW103-042324 |
| | | **Reviewed By:** | S. Stone |



| | | | |
|---|---|---|---|
| Measurement Reference Point (MP): | PVC (PVC, Casing, Ground, etc.) | Purging start time: | 8:30 |
| Depth to GW: | 12.57 (ft from MP) | Parameter stabalization (Y/N): | Y |
| Depth to Bottom: | 19.75 (ft from MP) | Two hour time limit reached (Y/N): | N |
| Pump Intake Depth: | 15.75 (ft from MP) | Sample time: | 10:20 |
| Well depth as installed: | 20 (ft bgs) | Total volume purged (gals): | 4 |
| Screen interval (range): | 10-20 (ft bgs) | Time at purge completion: | 10:15 |

| | | | | | |
|---|---|---|---|---|---|
| Equipment Vendor: | U.S. Environmental | Turbidity Meter: | Geotech | Multimeter: | YSI 556 |
| Pump Type: | Peristaltic Pump | Serial #: | 19112479 | Serial #: | 11M100009 |

Notes (Initial PID reading, SOP deviations, etc.):

Lab Analyses: VPH, EPH, MCP Metals (dissolved)

QC Info (Duplicate, MS/MSD)

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cmc | | mV | mg/L | NTU | | |
| 835 | | 144 | 12.77 | 0.20 | 0.20 | | | | | | | | |
| 840 | | 120 | 12.98 | 0.21 | 0.41 | 8.72 | 534 | 6.48 | 159.9 | 2.10 | 90.8 | | |
| 845 | | | 13.10 | 0.12 | 0.53 | 8.71 | 519 | 6.46 | 163.4 | 1.30 | 59.1 | | |
| 850 | | | 13.32 | 0.22 | 0.75 | 8.66 | 501 | 6.43 | 157 | 0.78 | 27.7 | | Not Stable |
| 855 | | | 13.33 | 0.01 | 0.76 | 8.60 | 495 | 6.43 | 136.9 | 0.48 | 13.2 | | Not Stable |
| 900 | | 132 | 13.47 | 0.14 | 0.90 | 8.68 | 495 | 6.42 | 128 | 0.44 | 14.6 | | Not Stable |
| 905 | | | 13.61 | 0.14 | 1.04 | 8.72 | 498 | 6.42 | 118.7 | 0.43 | 11.7 | | Not Stable |
| 910 | | | 13.77 | 0.16 | 1.20 | 8.73 | 500 | 6.43 | 115 | 0.43 | 8.29 | | Not Stable |
| 915 | | | 13.88 | 0.11 | 1.31 | 8.77 | 504 | 6.43 | 120.3 | 0.41 | 7.02 | | Not Stable |
| 920 | | | 14.00 | 0.12 | 1.43 | 8.86 | 506 | 6.43 | 116.6 | 3.05 | 4.56 | | Not Stable |
| 925 | | 126 | 14.07 | 0.07 | 1.50 | 8.86 | 504 | 6.44 | 108.6 | 3.22 | 23.7 | | Not Stable |
| 930 | | | 14.15 | 0.08 | 1.58 | 8.88 | 501 | 6.45 | 80.5 | 3.10 | 19.1 | | Not Stable |
| 935 | | | 14.27 | 0.12 | 1.70 | 8.95 | 497 | 6.46 | 72.3 | 3.20 | 12.5 | | Not Stable |
| 940 | | | 14.41 | 0.14 | 1.84 | 9.00 | 493 | 6.46 | 68 | 3.24 | 22.1 | | Not Stable |
| 945 | | | 14.56 | 0.15 | 1.99 | 9.00 | 486 | 6.47 | 65.5 | 3.20 | 16.7 | | Not Stable |
| 950 | | | 14.71 | 0.15 | 2.14 | 9.05 | 477 | 6.48 | 63.2 | 3.36 | 16.1 | | Not Stable |
| 955 | | | 14.82 | 0.11 | 2.25 | 9.12 | 467 | 6.49 | 59.6 | 3.41 | 20.7 | | Not Stable |

# Low-Flow Field Log

Date: 4/23/2024



**Site Name:** Former L&M
**Job Number:** S00001.005
**Sampler:** P. Moran

**Well ID:** **MW-103**
**Sample ID:** GW-MW103-042324
**Reviewed By:** S. Stone

Measurement Reference Point (MP): PVC (PVC, Casing, Ground, etc.)
Depth to GW: 12.57 (ft from MP)
Depth to Bottom: 19.75 (ft from MP)
Pump Intake Depth: 15.75 (ft from MP)
Well depth as installed: 20 (ft bgs)
Screen interval (range): 10-20 (ft bgs)

Purging start time: 8:30
Parameter stabalization (Y/N): Y
Two hour time limit reached (Y/N): N
Sample time: 10:20
Total volume purged (gals): 4
Time at purge completion: 10:15

Equipment Vendor: U.S. Environmental
Pump Type: Peristaltic Pump

Turbidity Meter: Geotech
Serial #: 19112479

Multimeter: YSI 556
Serial #: 11M100009

Notes (Initial PID reading, SOP deviations, etc.):

Lab Analyses: VPH, EPH, MCP Metals (dissolved)
QC Info (Duplicate, MS/MSD)

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cm | | mV | mg/L | NTU | | |
| 1000 | | 126 | 14.94 | 0.12 | 2.37 | 9.12 | 459 | 6.49 | 58 | 3.46 | 25.6 | | Not Stable |
| 1005 | | | 15.06 | 0.12 | 2.49 | 9.19 | 450 | 6.50 | 55.1 | 3.56 | 28.6 | | Not Stable |
| 1010 | | | 15.16 | 0.10 | 2.59 | 9.16 | 443 | 6.50 | 50.8 | 3.51 | 26.7 | | Not Stable |
| 1015 | | | 15.26 | 0.10 | 2.69 | 9.25 | 438 | 6.51 | 46.5 | 3.44 | 27.2 | | Stable |
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# Low-Flow Field Log

Date: 4/23/2024



**Site Name:** Former L&M
**Job Number:** S00001.05
**Sampler:** C. Belinowiz

**Well ID:** **MW-105**
**Sample ID:** GW-MW105-042324
**Reviewed By:** S. Stone

Measurement Reference Point (MP): PVC (PVC, Casing, Ground, etc.)
Depth to GW: 9.35 (ft from MP)
Depth to Bottom: 20 (ft from MP)
Pump Intake Depth: 19 (ft from MP)
Well depth as installed: 20 (ft bgs)
Screen interval (range): 10-20 (ft bgs)

Purging start time: 8:30
Parameter stabalization (Y/N): Y
Two hour time limit reached (Y/N): N
Sample time: 10:20
Total volume purged (gals): 5
Time at purge completion: 10:15

Equipment Vendor: U.S. Environmental
Pump Type: Peristaltic Pump
Turbidity Meter: Geotech
Serial #: 3550-1245
Multimeter: YSI 556
Serial #: 13D101140

Notes (Initial PID reading, SOP deviations, etc.):

Lab Analyses: VPH, EPH, MCP Metals (dissolved)
QC Info (Duplicate, MS/MSD): FD-01

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cmc | | mV | mg/L | NTU | | |
| 835 | | 180 | 10.25 | 0.90 | 0.90 | | | | | | | pump will not go below 180 | |
| 840 | | | 10.50 | 0.25 | 1.15 | 11.13 | 3184 | 6.29 | -41.7 | 8.44 | 53.4 | | |
| 845 | | | 10.76 | 0.26 | 1.41 | 11.07 | 3199 | 6.32 | -42.4 | 7.36 | 35.1 | | |
| 850 | | | 11.70 | 0.94 | 2.35 | 11.16 | 3189 | 6.33 | -42.9 | 6.74 | 30.9 | | Not Stable |
| 855 | | | 11.73 | 0.03 | 2.38 | 11.31 | 3130 | 6.33 | -43 | 6.41 | 29.9 | | Not Stable |
| 900 | | | 11.73 | 0.00 | 2.38 | 11.25 | 3033 | 6.35 | -43.1 | 6.14 | 32.7 | | Not Stable |
| 905 | | | 11.73 | 0.00 | 2.38 | 11.32 | 2924 | 6.37 | -43.3 | 6.36 | 23 | | Not Stable |
| 910 | | | 11.82 | 0.09 | 2.47 | 11.37 | 2892 | 6.37 | -43.4 | 6.37 | 21.2 | | Not Stable |
| 915 | | | 11.82 | 0.00 | 2.47 | 11.30 | 2873 | 6.37 | -43.4 | 6.37 | 10.8 | | Not Stable |
| 920 | | | 11.81 | -0.01 | 2.46 | 11.36 | 2890 | 6.37 | -43.4 | 3.92 | 9.47 | | Not Stable |
| 925 | | | 11.98 | 0.17 | 2.63 | 11.32 | 2904 | 6.37 | -43.4 | 1.89 | 7.4 | | Not Stable |
| 930 | | | 11.85 | -0.13 | 2.50 | 11.54 | 2900 | 6.36 | -43.2 | 1.52 | 7.83 | | Not Stable |
| 935 | | | 11.70 | -0.15 | 2.35 | 11.57 | 2957 | 6.35 | -43.1 | 1.26 | 8.43 | | Not Stable |
| 940 | | | 11.65 | -0.05 | 2.30 | 11.55 | 2978 | 6.35 | -42.8 | 0.40 | 7.46 | | Not Stable |
| 945 | | | 11.65 | 0.00 | 2.30 | 11.51 | 2990 | 6.34 | -42.4 | 0.29 | 6.43 | | Not Stable |
| 950 | | | 11.68 | 0.03 | 2.33 | 11.52 | 2984 | 6.34 | -42.3 | 0.29 | 6.78 | | Not Stable |
| 955 | | | 11.68 | 0.00 | 2.33 | 11.54 | 2970 | 6.34 | -42.2 | 0.29 | 4.74 | | Not Stable |

# Low-Flow Field Log

Date: 4/23/2024



**Site Name:** Former L&M
**Job Number:** S00001.05
**Sampler:** C. Belinowiz

**Well ID:** **MW-105**
**Sample ID:** GW-MW105-042324
**Reviewed By:** S. Stone

Measurement Reference Point (MP): PVC (PVC, Casing, Ground, etc.)
Depth to GW: 9.35 (ft from MP)
Depth to Bottom: 20 (ft from MP)
Pump Intake Depth: 19 (ft from MP)
Well depth as installed: 20 (ft bgs)
Screen interval (range): 10-20 (ft bgs)

Purging start time: 8:30
Parameter stabalization (Y/N): Y
Two hour time limit reached (Y/N): N
Sample time: 10:20
Total volume purged (gals): 5
Time at purge completion: 10:15

Equipment Vendor: U.S. Environmental
Pump Type: Peristaltic Pump
Turbidity Meter: Geotech
Serial #: 3550-1245
Multimeter: YSI 556
Serial #: 13D101140

Notes (Initial PID reading, SOP deviations, etc.):

Lab Analyses: VPH, EPH, MCP Metals (dissolved)
QC Info (Duplicate, MS/MSD): FD-01

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cm | | mV | mg/L | NTU | | |
| 1000 | | | 11.74 | 0.06 | 2.39 | 11.58 | 2967 | 6.34 | -42.1 | 0.24 | 5.99 | | Not Stable |
| 1005 | | | 11.74 | 0.00 | 2.39 | 11.56 | 2971 | 6.34 | -41.9 | 0.32 | 4.69 | | Not Stable |
| 1010 | | | 11.68 | -0.06 | 2.33 | 11.60 | 2976 | 6.33 | -41.8 | 0.26 | 3.54 | | Not Stable |
| 1015 | | | 11.68 | 0.00 | 2.33 | 11.78 | 2983 | 6.33 | -41.8 | 0.26 | 3.25 | | Stable |
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# Low-Flow Field Log

Date: 4/23/2024



**Site Name:** Former L&M
**Job Number:** S00001.05
**Sampler:** C. Belinowiz

**Well ID:** **MW-107**
**Sample ID:** GW-MW107-042324
**Reviewed By:** S. Stone

Measurement Reference Point (MP): PVC (PVC, Casing, Ground, etc.)
Depth to GW: 7.47 (ft from MP)
Depth to Bottom: 19.58 (ft from MP)
Pump Intake Depth: 18.58 (ft from MP)
Well depth as installed: 20 (ft bgs)
Screen interval (range): 10-20 (ft bgs)

Purging start time: 13:55
Parameter stabalization (Y/N): Y
Two hour time limit reached (Y/N): N
Sample time: 14:40
Total volume purged (gals): 2
Time at purge completion: 14:35

Equipment Vendor: U.S. Environmental
Pump Type: Peristaltic Pump
Turbidity Meter: Geotech
Serial #: 3550-1245
Multimeter: YSI 556
Serial #: 13D101140

Notes (Initial PID reading, SOP deviations, etc.):

Lab Analyses: VPH plus target VOCs, EPH plus target PAHs, MCP Metals (dissolved)
QC Info (Duplicate, MS/MSD)

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cmc | | mV | mg/L | NTU | | |
| 1355 | | 200 | 7.60 | 0.13 | 0.13 | | | | | | | | |
| 1400 | | | 7.60 | 0.00 | 0.13 | 11.49 | 261 | 6.44 | -46.2 | 0.17 | 16 | | |
| 1405 | | | 7.60 | 0.00 | 0.13 | 11.31 | 261 | 6.45 | -50.6 | 0.12 | 18.7 | | |
| 1410 | | | 7.61 | 0.01 | 0.14 | 11.36 | 266 | 6.47 | -54.2 | 0.09 | 20.5 | | Not Stable |
| 1415 | | | 7.62 | 0.01 | 0.15 | 11.22 | 270 | 6.48 | -55.8 | 0.07 | 16.4 | | Not Stable |
| 1420 | | | 7.68 | 0.06 | 0.21 | 11.11 | 276 | 6.47 | -55.9 | 0.07 | 13.7 | | Not Stable |
| 1425 | | | 7.65 | -0.03 | 0.18 | 11.22 | 278 | 6.50 | -55.8 | 0.07 | 13.1 | | Not Stable |
| 1430 | | | 7.65 | 0.00 | 0.18 | 11.34 | 283 | 6.50 | -55.8 | 0.05 | 12.4 | | Stable |
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# Low-Flow Field Log

Date: 4/23/2024



**Site Name:** Former L&M
**Job Number:** S00001.005
**Sampler:** P. Moran

**Well ID:** **MW-102R**
**Sample ID:** GW-MW102R-042324
**Reviewed By:** S. Stone

Measurement Reference Point (MP): PVC (PVC, Casing, Ground, etc.)
Depth to GW: 10.32 (ft from MP)
Depth to Bottom: 19.7 (ft from MP)
Pump Intake Depth: 18.7 (ft from MP)
Well depth as installed: 20 (ft bgs)
Screen interval (range): 10-20 (ft bgs)

Purging start time: 11:00
Parameter stabalization (Y/N): Y
Two hour time limit reached (Y/N): N
Sample time: 12:30
Total volume purged (gals): 4
Time at purge completion: 12:25

Equipment Vendor: U.S. Environmental
Pump Type: Peristaltic Pump
Turbidity Meter: Geotech
Serial #: 19112479
Multimeter: YSI 556
Serial #: 11M100009

Notes (Initial PID reading, SOP deviations, etc.):

Lab Analyses: VPH, EPH, MCP Metals (dissolved)
QC Info (Duplicate, MS/MSD)

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cmc | | mV | mg/L | NTU | | |
| 1105 | | 130 | 10.68 | 0.36 | 0.36 | | | | | | | | |
| 1110 | | 140 | 10.75 | 0.07 | 0.43 | 11.98 | 1513 | 6.72 | -238.2 | 5.50 | 17.6 | | |
| 1115 | | | 10.74 | -0.01 | 0.42 | 12.16 | 1517 | 6.72 | -244.4 | 5.00 | 10.9 | | |
| 1120 | | | 10.75 | 0.01 | 0.43 | 12.14 | 1520 | 6.73 | -242.1 | 5.03 | 11.6 | | Not Stable |
| 1125 | | | 10.76 | 0.01 | 0.44 | 12.25 | 1517 | 6.73 | -243.2 | 5.01 | 9.37 | | Not Stable |
| 1130 | | | 10.76 | 0.00 | 0.44 | 12.23 | 1520 | 6.72 | -242.2 | 4.50 | 8.98 | | Not Stable |
| 1135 | | | 10.72 | -0.04 | 0.40 | 12.36 | 1545 | 6.73 | -238.2 | 4.98 | 7.58 | | Not Stable |
| 1140 | | | 10.71 | -0.01 | 0.39 | 12.48 | 1574 | 6.72 | -230.7 | 4.47 | 5.53 | | Not Stable |
| 1145 | | 150 | 10.76 | 0.05 | 0.44 | 12.06 | 1595 | 6.72 | -234.5 | 4.44 | 8.69 | | Not Stable |
| 1150 | | | 10.81 | 0.05 | 0.49 | 12.00 | 1646 | 6.72 | -234.7 | 4.09 | 5.92 | | Not Stable |
| 1155 | | | 10.85 | 0.04 | 0.53 | 12.01 | 1674 | 6.72 | -232 | 3.89 | 6.4 | | Not Stable |
| 1200 | | | 10.86 | 0.01 | 0.54 | 12.19 | 1695 | 6.71 | -233.4 | 3.89 | 4.99 | | Not Stable |
| 1205 | | | 10.86 | 0.00 | 0.54 | 12.20 | 1713 | 6.71 | -231.6 | 3.75 | 5.44 | | Not Stable |
| 1210 | | | 10.85 | -0.01 | 0.53 | 12.18 | 1726 | 6.70 | -231.1 | 3.72 | 6.39 | | Not Stable |
| 1215 | | | 10.85 | 0.00 | 0.53 | 12.22 | 1745 | 6.71 | -231.1 | 3.59 | 5.01 | | Not Stable |
| 1220 | | 186 | 10.86 | 0.01 | 0.54 | 12.14 | 1766 | 6.70 | -227.3 | 3.55 | 5.43 | | Not Stable |
| 1225 | | | 10.90 | 0.04 | 0.58 | 12.05 | 1764 | 6.69 | -225.2 | 3.33 | 5.15 | | Stable |

# Low-Flow Field Log

Date: 4/23/2024



**Site Name:** Former L&M
**Job Number:** S00001.005
**Sampler:** P. Moran

**Well ID:** **MW-101**
**Sample ID:** GW-MW101-042324
**Reviewed By:** S. Stone

Measurement Reference Point (MP): PVC (PVC, Casing, Ground, etc.)
Depth to GW: 10.26 (ft from MP)
Depth to Bottom: 19.7 (ft from MP)
Pump Intake Depth: 18.7 (ft from MP)
Well depth as installed: 20 (ft bgs)
Screen interval (range): 10-20 (ft bgs)

Purging start time: 15:05
Parameter stabalization (Y/N): Y
Two hour time limit reached (Y/N): N
Sample time: 16:20
Total volume purged (gals): 3
Time at purge completion: 16:15

Equipment Vendor: U.S. Environmental
Pump Type: Peristaltic Pump

Turbidity Meter: Geotech
Serial #: 19112479

Multimeter: YSI 556
Serial #: 11M100009

Notes (Initial PID reading, SOP deviations, etc.):

Lab Analyses: VPH, EPH, MCP Metals (dissolved)
QC Info (Duplicate, MS/MSD)

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cmc | | mV | mg/L | NTU | | |
| 1510 | | 150 | 10.40 | 0.14 | 0.14 | | | | | | | | |
| 1515 | | | 10.40 | 0.00 | 0.14 | 10.72 | 1604 | 5.98 | -116.6 | 6.33 | 26.9 | | |
| 1520 | | | 10.40 | 0.00 | 0.14 | 10.64 | 1620 | 5.97 | -108.3 | 5.82 | 24.1 | | |
| 1525 | | | 10.40 | 0.00 | 0.14 | 10.60 | 1634 | 5.96 | -100 | 6.20 | 20.5 | | Not Stable |
| 1530 | | | 10.40 | 0.00 | 0.14 | 10.52 | 1641 | 5.96 | -93.4 | 5.91 | 17.4 | | Not Stable |
| 1535 | | | 10.40 | 0.00 | 0.14 | 10.35 | 1659 | 5.95 | -85.9 | 5.56 | 14 | | Not Stable |
| 1540 | | | 10.40 | 0.00 | 0.14 | 10.39 | 1677 | 5.94 | -81.7 | 5.21 | 10.8 | | Not Stable |
| 1545 | | | 10.41 | 0.01 | 0.15 | 10.25 | 1685 | 5.93 | -73.8 | 4.98 | 11.3 | | Not Stable |
| 1550 | | | 10.41 | 0.00 | 0.15 | 10.36 | 1697 | 5.93 | -68.9 | 4.68 | 7.75 | | Not Stable |
| 1555 | | | 10.41 | 0.00 | 0.15 | 10.29 | 1701 | 5.93 | -64.7 | 4.56 | 8.79 | | Not Stable |
| 1600 | | | 10.41 | 0.00 | 0.15 | 10.26 | 1710 | 5.93 | -56.2 | 4.27 | 5.62 | | Not Stable |
| 1605 | | | 10.42 | 0.01 | 0.16 | 10.27 | 1715 | 5.93 | -52.8 | 4.08 | 6.35 | | Not Stable |
| 1610 | | | 10.42 | 0.00 | 0.16 | 10.20 | 1720 | 5.93 | -50.8 | 3.88 | 6.1 | | Not Stable |
| 1615 | | | 10.42 | 0.00 | 0.16 | 10.23 | 1721 | 5.92 | -45.1 | 3.72 | 6.22 | | Stable |
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# Low-Flow Field Log

Date: 4/23/2024



**Site Name:** Former L&M
**Job Number:** S00001.05
**Sampler:** C. Belinowiz

**Well ID:** **MW-104**
**Sample ID:** GW-MW104-042324
**Reviewed By:** S. Stone

Measurement Reference Point (MP): PVC (PVC, Casing, Ground, etc.)
Depth to GW: 7.81 (ft from MP)
Depth to Bottom: 20 (ft from MP)
Pump Intake Depth: 19 (ft from MP)
Well depth as installed: 20 (ft bgs)
Screen interval (range): 10-20 (ft bgs)

Purging start time: 12:30
Parameter stabalization (Y/N): Y
Two hour time limit reached (Y/N): N
Sample time: 13:35
Total volume purged (gals): 4
Time at purge completion: 13:30

Equipment Vendor: U.S. Environmental
Pump Type: Peristaltic Pump
Turbidity Meter: Geotech
Serial #: 3550-1245
Multimeter: YSI 556
Serial #: 13D101140

Notes (Initial PID reading, SOP deviations, etc.):

Lab Analyses: VPH, EPH, MCP Metals (dissolved)
QC Info (Duplicate, MS/MSD)

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cmc | | mV | mg/L | NTU | | |
| 1235 | | 200 | 8.10 | 0.29 | 0.29 | | | | | | | | |
| 1240 | | | 9.01 | 0.91 | 1.20 | 11.52 | 760 | 6.61 | -47.7 | 0.40 | 34.3 | | |
| 1245 | | | 9.51 | 0.50 | 1.70 | 11.60 | 759 | 6.62 | -47.6 | 0.52 | 40.5 | | |
| 1250 | | | 9.71 | 0.20 | 1.90 | 11.66 | 763 | 6.60 | -48.3 | 0.77 | 39.7 | | Not Stable |
| 1255 | | | 9.81 | 0.10 | 2.00 | 11.77 | 764 | 6.61 | -47.5 | 0.85 | 35.5 | | Not Stable |
| 1300 | | | 9.96 | 0.15 | 2.15 | 11.69 | 764 | 6.62 | -47.5 | 1.05 | 35.5 | | Not Stable |
| 1305 | | | 10.43 | 0.47 | 2.62 | 11.85 | 764 | 6.64 | -48 | 1.24 | 34.4 | | Not Stable |
| 1310 | | | 10.59 | 0.16 | 2.78 | 11.95 | 769 | 6.63 | -49.3 | 1.65 | 18.7 | | Not Stable |
| 1315 | | | 10.61 | 0.02 | 2.80 | 11.69 | 780 | 6.60 | -47 | 1.78 | 11.7 | | Not Stable |
| 1320 | | | 10.78 | 0.17 | 2.97 | 11.82 | 788 | 6.60 | -46.1 | 1.88 | 11.5 | | Not Stable |
| 1325 | | | 10.63 | -0.15 | 2.82 | 11.71 | 796 | 6.61 | -44.8 | 1.94 | 11.6 | | Stable |
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# Low-Flow Field Log

Date: 4/23/2024



**Site Name:** Former L&M
**Job Number:** S00001.05
**Sampler:** C. Belinowiz

**Well ID:** **MW-106**
**Sample ID:** GW-MW106-042324
**Reviewed By:** S. Stone

Measurement Reference Point (MP): PVC (PVC, Casing, Ground, etc.)
Depth to GW: 9.35 (ft from MP)
Depth to Bottom: 19.55 (ft from MP)
Pump Intake Depth: 18.55 (ft from MP)
Well depth as installed: 20 (ft bgs)
Screen interval (range): 10-20 (ft bgs)

Purging start time: 15:00
Parameter stabalization (Y/N): Y
Two hour time limit reached (Y/N): N
Sample time: 16:20
Total volume purged (gals): 4.5
Time at purge completion: 16:15

Equipment Vendor: U.S. Environmental
Pump Type: Peristaltic Pump

Turbidity Meter: Geotech
Serial #: 3550-1245

Multimeter: YSI 556
Serial #: 13D101140

Notes (Initial PID reading, SOP deviations, etc.): Slight petroleum odor

Lab Analyses: EPH, VPH, MCP-14 Dissolved Metals
QC Info (Duplicate, MS/MSD):

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cmc | | mV | mg/L | NTU | | |
| 1505 | | 200 | 10.05 | 0.70 | 0.70 | | | | | | | | |
| 1510 | | | 9.90 | -0.15 | 0.55 | 12.10 | 418 | 6.69 | -68.4 | 0.15 | 11.8 | | |
| 1515 | | | 9.90 | 0.00 | 0.55 | 12.20 | 428 | 6.71 | -71.9 | 0.17 | 8.3 | | |
| 1520 | | | 9.90 | 0.00 | 0.55 | 12.26 | 444 | 6.72 | -75.1 | 0.10 | 10.9 | | Not Stable |
| 1525 | | | 9.90 | 0.00 | 0.55 | 11.98 | 465 | 6.71 | -72.5 | 0.08 | 11.3 | | Not Stable |
| 1530 | | | 10.00 | 0.10 | 0.65 | 11.74 | 485 | 6.71 | -71.9 | 0.07 | 10.5 | | Not Stable |
| 1535 | | | 10.05 | 0.05 | 0.70 | 11.55 | 507 | 6.71 | -71.6 | 0.07 | 6.23 | | Not Stable |
| 1540 | | | 10.10 | 0.05 | 0.75 | 11.63 | 516 | 6.71 | -71.5 | 0.07 | 3.22 | | Not Stable |
| 1545 | | | 10.05 | -0.05 | 0.70 | 11.65 | 536 | 6.70 | -71.1 | 0.08 | 2.73 | | Not Stable |
| 1550 | | | 10.10 | 0.05 | 0.75 | 11.49 | 539 | 6.70 | -70.8 | 0.10 | 1.36 | | Not Stable |
| 1555 | | | 10.10 | 0.00 | 0.75 | 11.85 | 550 | 6.70 | -71.2 | 0.11 | 1.07 | | Not Stable |
| 1600 | | | 10.10 | 0.00 | 0.75 | 11.47 | 552 | 6.71 | -70.2 | 0.12 | 1.01 | | Not Stable |
| 1605 | | | 10.10 | 0.00 | 0.75 | 11.55 | 555 | 6.71 | -69.9 | 0.12 | 1.38 | | Not Stable |
| 1610 | | | 10.00 | -0.10 | 0.65 | 11.67 | 559 | 6.71 | -69.9 | 0.14 | 3.18 | | Stable |
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# Low-Flow Field Log

Date: 4/23/2024



**Site Name:** Former L&M
**Job Number:** S00001.05
**Sampler:** C. Belinowiz

**Well ID:** **MW-108**
**Sample ID:** GW-MW108-042324
**Reviewed By:** S. Stone

Measurement Reference Point (MP): PVC (PVC, Casing, Ground, etc.)
Depth to GW: 8.4 (ft from MP)
Depth to Bottom: 19.52 (ft from MP)
Pump Intake Depth: 18.52 (ft from MP)
Well depth as installed: 20 (ft bgs)
Screen interval (range): 10-20 (ft bgs)

Purging start time: 11:00
Parameter stabalization (Y/N): Y
Two hour time limit reached (Y/N): N
Sample time: 12:00
Total volume purged (gals): 1.5
Time at purge completion: 11:50

Equipment Vendor: U.S. Environmental
Pump Type: Peristaltic Pump

Turbidity Meter: Geotech
Serial #: 3550-1245

Multimeter: YSI 556
Serial #: 13D101140

Notes (Initial PID reading, SOP deviations, etc.):

Lab Analyses: VPH plus target VOCs, EPH plus target PAHs, MCP Metals (dissolved)
QC Info (Duplicate, MS/MSD): MS/MSD

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cmc | | mV | mg/L | NTU | | |
| 1105 | | 200 | 8.65 | 0.25 | 0.25 | | | | | | | | |
| 1115 | | | 8.95 | 0.30 | 0.55 | 11.72 | 1800 | 6.62 | -37.4 | 3.24 | 34.1 | air bubbles in tubing due to hole. pump off to change tubing then back on | |
| 1120 | | | 9.18 | 0.23 | 0.78 | 11.45 | 1820 | 6.60 | -37.2 | 3.19 | 18.6 | | |
| 1125 | | | 9.22 | 0.04 | 0.82 | 11.77 | 1875 | 6.59 | -37.1 | 2.92 | 12 | | Not Stable |
| 1130 | | | 9.18 | -0.04 | 0.78 | 11.86 | 1907 | 6.58 | -37 | 2.87 | 8.27 | | Not Stable |
| 1135 | | | 9.10 | -0.08 | 0.70 | 11.74 | 1910 | 6.57 | -37 | 2.82 | 3.49 | | Not Stable |
| 1140 | | | 9.21 | 0.11 | 0.81 | 11.85 | 1893 | 6.58 | -36.8 | 3.09 | 2.42 | | Not Stable |
| 1145 | | | 9.25 | 0.04 | 0.85 | 11.70 | 1899 | 6.56 | -36.8 | 2.94 | 3.63 | | Stable |
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# Low-Flow Field Log

Date: 4/23/2024



**Site Name:** Former L&M
**Job Number:** S00001.005
**Sampler:** P. Moran

**Well ID:** **MW-109**
**Sample ID:** GW-MW109-042324
**Reviewed By:** S. Stone

Measurement Reference Point (MP): PVC (PVC, Casing, Ground, etc.)
Depth to GW: 10.26 (ft from MP)
Depth to Bottom: 19.58 (ft from MP)
Pump Intake Depth: 18.58 (ft from MP)
Well depth as installed: 20 (ft bgs)
Screen interval (range): 10-20 (ft bgs)

Purging start time: 13:10
Parameter stabalization (Y/N): Y
Two hour time limit reached (Y/N): N
Sample time: 14:30
Total volume purged (gals): 4
Time at purge completion: 14:25

Equipment Vendor: U.S. Environmental
Pump Type: Peristaltic Pump

Turbidity Meter: Geotech
Serial #: 19112479

Multimeter: YSI 556
Serial #: 11M100009

Notes (Initial PID reading, SOP deviations, etc.):

Lab Analyses: VPH, EPH, MCP Metals (dissolved)
QC Info (Duplicate, MS/MSD)

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cmc | | mV | mg/L | NTU | | |
| 1315 | | 196 | 10.31 | 0.05 | 0.05 | | | | | | | | |
| 1320 | | | 10.31 | 0.00 | 0.05 | 11.50 | 795 | 6.75 | -202.7 | 1.11 | 124 | | |
| 1325 | | 210 | 10.31 | 0.00 | 0.05 | 11.10 | 672 | 6.76 | -211.8 | 0.84 | 41.3 | | |
| 1330 | | | 10.31 | 0.00 | 0.05 | 11.05 | 653 | 6.76 | -212 | 0.79 | 27.3 | | Not Stable |
| 1335 | | | 10.31 | 0.00 | 0.05 | 10.94 | 657 | 6.76 | -210.7 | 0.73 | 26.2 | | Not Stable |
| 1340 | | | 10.31 | 0.00 | 0.05 | 11.09 | 664 | 6.76 | -212.5 | 0.69 | 19.2 | | Not Stable |
| 1345 | | | 10.31 | 0.00 | 0.05 | 10.90 | 665 | 6.76 | -214.8 | 0.64 | 16.2 | | Not Stable |
| 1350 | | | 10.31 | 0.00 | 0.05 | 10.95 | 672 | 6.76 | -215.9 | 0.61 | 13.9 | | Not Stable |
| 1355 | | | 10.31 | 0.00 | 0.05 | 10.90 | 671 | 6.76 | -218 | 0.55 | 12.8 | | Not Stable |
| 1400 | | | 10.31 | 0.00 | 0.05 | 10.96 | 667 | 6.76 | -218.7 | 0.52 | 11.5 | | Not Stable |
| 1405 | | | 10.31 | 0.00 | 0.05 | 11.03 | 670 | 6.77 | -220.7 | 0.53 | 9.62 | | Not Stable |
| 1410 | | | 10.31 | 0.00 | 0.05 | 11.05 | 673 | 6.77 | -220.3 | 0.56 | 10 | | Not Stable |
| 1415 | | | 10.31 | 0.00 | 0.05 | 11.10 | 667 | 6.76 | -219.7 | 0.49 | 10.4 | | Not Stable |
| 1420 | | | 10.31 | 0.00 | 0.05 | 11.07 | 663 | 6.76 | -220 | 0.49 | 11.3 | | Not Stable |
| 1425 | | | 10.31 | 0.00 | 0.05 | 10.94 | 665 | 6.76 | -219.8 | 0.43 | 11.2 | | Stable |
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# Low-Flow Field Log

Date: 7/25/2024



**Site Name:** Former L&M
**Job Number:** S00001.005
**Sampler:** P. Moran

**Well ID:** **B/MW-103**
**Sample ID:** GW-MW103-072524
**Reviewed By:** S. Stone

Measurement Reference Point (MP): PVC (PVC, Casing, Ground, etc.)
Depth to GW: 16.27 (ft from MP)
Depth to Bottom: 16.8 (ft from MP)
Pump Intake Depth: 16.4 (ft from MP)
Well depth as installed: (ft bgs)
Screen interval (range): (ft bgs)

Purging start time: 9:35
Parameter stabalization (Y/N): N
Two hour time limit reached (Y/N): N
Sample time: 10:00
Total volume purged (gals): 0
Time at purge completion: 9:40

Equipment Vendor: US Environmental
Pump Type: Peri

Turbidity Meter: Geotech
Serial #: 18091867

Multimeter: YSI 556
Serial #: 13D101140

Notes (Initial PID reading, SOP deviations, etc.): Not enough volume for EPH or Metals analysis

Lab Analyses: VPH

QC Info (Duplicate, MS/MSD)

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cmc | | mV | mg/L | NTU | | |
| 940 | | 120 | | -16.27 | -16.27 | | | | | | | well pumped dry | |
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SOP No: SA-003 Draft Revision: 4

# Low-Flow Field Log

Date: 7/25/2024



**Site Name:** Former L&M
**Job Number:** S00001.05
**Sampler:** S. Stone

**Well ID:** B/MW-102R
**Sample ID:** GW-MW102R-072524
**Reviewed By:** S. Stone

Measurement Reference Point (MP): PVC (PVC, Casing, Ground, etc.)
Depth to GW: 6.44 (ft from MP)
Depth to Bottom: 19.6 (ft from MP)
Pump Intake Depth: 19 (ft from MP)
Well depth as installed: 20 (ft bgs)
Screen interval (range): 10-20 bgs (ft bgs)

Purging start time: 12:40
Parameter stabalization (Y/N): y
Two hour time limit reached (Y/N): n
Sample time: 14:30
Total volume purged (gals): 4
Time at purge completion: 14:25

Equipment Vendor: US Environmental
Pump Type: Peri

Turbidity Meter: Geotech
Serial #: 23074858

Multimeter: YSI 556 MPS
Serial #: 14A103442

Notes (Initial PID reading, SOP deviations, etc.):

Lab Analyses: EPH, VPH, MCP-14 Metals (dissolved)
QC Info (Duplicate, MS/MSD)

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cmc | | mV | mg/L | NTU | | |
| 1245 | | 160 | 13.80 | 7.36 | 7.36 | | | | | | | petroleum odor and blacksolid | |
| 1255 | | | 13.91 | 0.11 | 7.47 | 14.40 | 2330 | 6.64 | -107.4 | 0.28 | 8.46 | | |
| 1300 | | | 13.96 | 0.05 | 7.52 | 14.22 | 2375 | 6.64 | -110.1 | 0.25 | 4.18 | | |
| 1305 | | | 13.96 | 0.00 | 7.52 | 14.74 | 1971 | 6.65 | -110.9 | 0.24 | 11.1 | | Not Stable |
| 1310 | | | 13.90 | -0.06 | 7.46 | 14.45 | 2060 | 6.65 | -113.6 | 0.19 | 4.84 | | Not Stable |
| 1325 | | | 13.90 | 0.00 | 7.46 | 14.33 | 2143 | 6.66 | -116.2 | 0.15 | 7.21 | | Not Stable |
| 1330 | | | 13.91 | 0.01 | 7.47 | 14.26 | 2147 | 6.66 | -117.9 | 0.14 | 7.69 | sheen | Not Stable |
| 1335 | | | 13.92 | 0.01 | 7.48 | 14.36 | 2154 | 6.65 | -118.9 | 0.12 | 6.45 | | Not Stable |
| 1340 | | | 13.92 | 0.00 | 7.48 | 14.43 | 2162 | 6.65 | -119.7 | 0.11 | 7.51 | | Not Stable |
| 1345 | | | 13.91 | -0.01 | 7.47 | 14.45 | 2165 | 6.66 | -120.6 | 0.12 | 5.2 | | Not Stable |
| 1350 | | | 13.92 | 0.01 | 7.48 | 14.19 | 2151 | 6.66 | -121.3 | 0.11 | 2.75 | | Not Stable |
| 1355 | | | 13.92 | 0.00 | 7.48 | 14.23 | 2161 | 6.67 | -121.9 | 0.10 | 5.97 | | Not Stable |
| 1405 | | | 13.93 | 0.01 | 7.49 | 14.44 | 2174 | 6.67 | -123.5 | 0.10 | 5.41 | | Not Stable |
| 1415 | | | 13.95 | 0.02 | 7.51 | 14.20 | 2159 | 6.67 | -124.8 | 0.09 | 3.84 | stable besides turbidity | Not Stable |
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# Low-Flow Field Log

Date: 7/25/2024



**Site Name:** Former L&M
**Job Number:** S00001.005
**Sampler:** P. Moran

**Well ID:** **MW-107**
**Sample ID:** GW-MW107-072524
**Reviewed By:** S. Stone

| | | | |
|---|---|---|---|
| Measurement Reference Point (MP): | PVC (PVC, Casing, Ground, etc.) | Purging start time: | 10:05 |
| Depth to GW: | 10.47 (ft from MP) | Parameter stabalization (Y/N): | Y |
| Depth to Bottom: | 19.5 (ft from MP) | Two hour time limit reached (Y/N): | N |
| Pump Intake Depth: | 18.5 (ft from MP) | Sample time: | 10:50 |
| Well depth as installed: | 20 (ft bgs) | Total volume purged (gals): | 1.5 |
| Screen interval (range): | 10-20 bgs (ft bgs) | Time at purge completion: | 10:47 |

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|---|---|---|---|---|---|
| Equipment Vendor: | US Environmental | Turbidity Meter: | Geotech | Multimeter: | YSI 556 |
| Pump Type: | Peri | Serial #: | 18091867 | Serial #: | 13D101140 |

Notes (Initial PID reading, SOP deviations, etc.):

Lab Analyses: EPH, VPH, MCP-14 Metals (dissolved)

QC Info (Duplicate, MS/MSD): MS/MSD

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cmc | | mV | mg/L | NTU | | |
| 1010 | | 150 | 10.53 | 0.06 | 0.06 | | | | | | | | |
| 1015 | | 150 | 10.54 | 0.01 | 0.07 | 16.00 | 384 | 6.47 | -260.6 | 0.16 | 8.93 | | |
| 1020 | | 150 | 10.54 | 0.00 | 0.07 | 16.17 | 383 | 6.46 | -263.4 | 0.21 | 14.2 | | |
| 1025 | | 150 | 10.55 | 0.01 | 0.08 | 16.22 | 387 | 6.51 | -258.1 | 0.14 | 11.9 | | Not Stable |
| 1035 | | 150 | 10.55 | 0.00 | 0.08 | 16.15 | 391 | 6.53 | -265.8 | 0.13 | 4.86 | | Not Stable |
| 1040 | | 150 | 10.55 | 0.00 | 0.08 | 16.11 | 393 | 6.54 | -267.2 | 0.12 | 4.22 | | Not Stable |
| 1045 | | 150 | 10.55 | 0.00 | 0.08 | 16.10 | 392 | 6.54 | -266.6 | 0.11 | 4.38 | | Stable |
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# Low-Flow Field Log

Date: 7/25/2024



**Site Name:** Former L&M
**Job Number:** S00001.005
**Sampler:** P. Moran

**Well ID:** **B/MW-105**
**Sample ID:** GW-MW105-072524
**Reviewed By:**

Measurement Reference Point (MP): PVC (PVC, Casing, Ground, etc.)
Depth to GW: 12.25 (ft from MP)
Depth to Bottom: 19.4 (ft from MP)
Pump Intake Depth: 18 (ft from MP)
Well depth as installed: 20 (ft bgs)
Screen interval (range): 10-20 bgs (ft bgs)

Purging start time: 12:05
Parameter stabalization (Y/N): Y
Two hour time limit reached (Y/N): N
Sample time: 13:20
Total volume purged (gals): 3
Time at purge completion: 13:13

Equipment Vendor: US Environmental
Pump Type: Peri
Turbidity Meter: Geotech
Serial #: 18091867
Multimeter: YSI 556
Serial #: 13D101140

Notes (Initial PID reading, SOP deviations, etc.):

Lab Analyses: EPH, VPH, MCP-14 Metals (dissolved)
QC Info (Duplicate, MS/MSD)

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cmc | | mV | mg/L | NTU | | |
| 1210 | | 160 | 12.77 | 0.52 | 0.52 | | | | | | | | |
| 1215 | | 160 | 13.02 | 0.25 | 0.77 | 15.33 | 3455 | 6.22 | -266.5 | 0.12 | 176 | | |
| 1225 | | 160 | 13.33 | 0.31 | 1.08 | 15.47 | 3363 | 6.23 | -272.5 | 0.12 | 28.2 | | |
| 1230 | | 160 | 13.50 | 0.17 | 1.25 | 15.69 | 3215 | 6.25 | -273.4 | 0.12 | 18.2 | | Not Stable |
| 1245 | | 160 | 14.00 | 0.50 | 1.75 | 15.26 | 3090 | 6.26 | -273.9 | 0.11 | 8.41 | | Not Stable |
| 1250 | | 160 | 14.14 | 0.14 | 1.89 | 15.44 | 3132 | 6.26 | -272.9 | 0.11 | 6.54 | | Not Stable |
| 1255 | | 160 | 14.24 | 0.10 | 1.99 | 15.20 | 3142 | 6.26 | -271.7 | 0.12 | 5.85 | | Not Stable |
| 1300 | | 160 | 14.30 | 0.06 | 2.05 | 15.26 | 3154 | 6.26 | -270.8 | 0.12 | 11.5 | | Not Stable |
| 1305 | | 160 | 14.35 | 0.05 | 2.10 | 15.26 | 3168 | 6.26 | -269.2 | 0.12 | 11.3 | | Not Stable |
| 1310 | | 160 | 14.37 | 0.02 | 2.12 | 15.16 | 3202 | 6.26 | -269.3 | 0.12 | 12.1 | | Stable |
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# Low-Flow Field Log

Date: 7/25/2024



**Site Name:** Former L&M
**Job Number:** S00001.05
**Sampler:** S. Stone

**Well ID:** **BMW-104**
**Sample ID:** GW-MW104-072524
**Reviewed By:**

Measurement Reference Point (MP): PVC (PVC, Casing, Ground, etc.)
Depth to GW: 11.6 (ft from MP)
Depth to Bottom: 19.71 (ft from MP)
Pump Intake Depth: (ft from MP)
Well depth as installed: (ft bgs)
Screen interval (range): (ft bgs)

Purging start time: 9:25
Parameter stabalization (Y/N): y
Two hour time limit reached (Y/N): n
Sample time: 11:30
Total volume purged (gals): 4.75
Time at purge completion: 11:25

Equipment Vendor: US Environmental
Pump Type: Peri
Turbidity Meter: Geotech
Serial #: 23074858
Multimeter: YSI 556 MPS
Serial #: 14A103442

Notes (Initial PID reading, SOP deviations, etc.):

Lab Analyses: EPH, VPH, MCP-14 Metals (dissolved)
QC Info (Duplicate, MS/MSD)

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cmc | | mV | mg/L | NTU | | |
| 925 | | | 13.01 | 1.41 | 1.41 | | | | | | | | |
| 930 | | 148 | 13.80 | 0.79 | 2.20 | 14.82 | 2231 | 6.30 | -31.8 | 1.05 | 138 | | |
| 940 | | | 13.90 | 0.10 | 2.30 | 15.56 | 2243 | 6.32 | -33.7 | 0.79 | 123 | | |
| 950 | | | 14.20 | 0.30 | 2.60 | 15.58 | 2237 | 6.34 | -32.5 | 0.31 | 38.6 | | Not Stable |
| 955 | | | 14.16 | -0.04 | 2.56 | 15.90 | 2264 | 6.33 | -32.2 | 0.30 | 103 | | Not Stable |
| 1000 | | 116 | 14.12 | -0.04 | 2.52 | 15.84 | 2254 | 6.34 | -32.3 | 0.25 | 35.2 | | Not Stable |
| 1005 | | | 14.06 | -0.06 | 2.46 | 15.85 | 2256 | 6.35 | -30.1 | 0.24 | 29.9 | | Not Stable |
| 1010 | | | 14.03 | -0.03 | 2.43 | 15.86 | 2251 | 6.35 | -28.8 | 0.22 | 28.2 | | Not Stable |
| 1015 | | | 13.99 | -0.04 | 2.39 | 15.85 | 2243 | 6.35 | -26.8 | 0.23 | 22.4 | | Not Stable |
| 1020 | | | 14.24 | 0.25 | 2.64 | 15.70 | 2224 | 6.34 | -25.5 | 0.22 | 20.2 | | Not Stable |
| 1030 | | | 14.44 | 0.20 | 2.84 | 15.60 | 2133 | 6.35 | -19.3 | 0.43 | 20.9 | | Not Stable |
| 1035 | | | 14.49 | 0.05 | 2.89 | 15.64 | 2117 | 6.34 | -15.8 | 0.52 | 24.8 | | Not Stable |
| 1040 | | | 14.57 | 0.08 | 2.97 | 15.47 | 2098 | 6.34 | -12.1 | 0.65 | 24.9 | | Not Stable |
| 1045 | | | 14.61 | 0.04 | 3.01 | 15.36 | 2100 | 6.34 | -10.6 | 0.56 | 20 | | Not Stable |
| 1050 | | | 14.62 | 0.01 | 3.02 | 15.31 | 2094 | 6.34 | -8 | 0.57 | 15.8 | | Not Stable |
| 1055 | | | 14.69 | 0.07 | 3.09 | 15.42 | 2100 | 6.34 | -6.7 | 0.55 | 17.8 | | Not Stable |
| 1100 | | | 14.70 | 0.01 | 3.10 | 15.44 | 2097 | 6.34 | -4.9 | 0.56 | 16.5 | | Not Stable |

# Low-Flow Field Log

Date: 7/25/2024



**Site Name:** Former L&M
**Job Number:** S00001.05
**Sampler:** S. Stone

**Well ID:** **BMW-104**
**Sample ID:** GW-MW104-072524
**Reviewed By:** 0

Measurement Reference Point (MP): PVC (PVC, Casing, Ground, etc.)
Depth to GW: 11.6 (ft from MP)
Depth to Bottom: 19.71 (ft from MP)
Pump Intake Depth: 0 (ft from MP)
Well depth as installed: 0 (ft bgs)
Screen interval (range): 0 (ft bgs)

Purging start time: 9:25
Parameter stabalization (Y/N): y
Two hour time limit reached (Y/N): n
Sample time: 11:30
Total volume purged (gals): 4.75
Time at purge completion: 11:25

Equipment Vendor: US Environmental
Pump Type: Peri

Turbidity Meter: Geotech
Serial #: 23074858

Multimeter: YSI 556 MPS
Serial #: 14A103442

Notes (Initial PID reading, SOP deviations, etc.): 0

Lab Analyses: EPH, VPH, MCP-14 Metals (dissolved)
QC Info (Duplicate, MS/MSD): 0

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cm | | mV | mg/L | NTU | | |
| 1105 | | | 14.70 | 0.00 | 3.10 | 15.36 | 2083 | 6.34 | -3.6 | 0.59 | 15.8 | | Not Stable |
| 1110 | | | 14.71 | 0.01 | 3.11 | 15.43 | 2091 | 6.34 | -2.4 | 0.59 | 13.7 | | Not Stable |
| 1115 | | | 14.73 | 0.02 | 3.13 | 15.50 | 2084 | 6.33 | -0.6 | 0.62 | 13.7 | | Not Stable |
| 1120 | | | 14.73 | 0.00 | 3.13 | 15.47 | 2084 | 6.33 | -0.7 | 0.62 | 12.5 | | Stable |
| 1125 | | | | | | | | | | | | | |
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# Low-Flow Field Log

Date: 7/26/2024



**Site Name:** Former L&M
**Job Number:** S00001.05
**Sampler:** S. Stone

**Well ID:** **MW-108**
**Sample ID:** GW-MW108-072624
**Reviewed By:** S. Stone

Measurement Reference Point (MP): PVC (PVC, Casing, Ground, etc.)
Depth to GW: 11.31 (ft from MP)
Depth to Bottom: 19.52 (ft from MP)
Pump Intake Depth: 19 (ft from MP)
Well depth as installed: 20 (ft bgs)
Screen interval (range): 10-20 bgs (ft bgs)

Purging start time: 9:05
Parameter stabalization (Y/N): n
Two hour time limit reached (Y/N): y
Sample time: 11:10
Total volume purged (gals): 5
Time at purge completion: 11:05

Equipment Vendor: U.S. Environmental
Pump Type: 14A103442

Turbidity Meter: Geotech
Serial #: 23074858

Multimeter: YSI 556 MPS
Serial #: 14A103442

Notes (Initial PID reading, SOP deviations, etc.):

Lab Analyses: EPH, VPH, MCP-14 Metals (dissolved)
QC Info (Duplicate, MS/MSD)

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cmc | | mV | mg/L | NTU | | |
| 905 | | | 11.39 | 0.08 | 0.08 | | | | | | | | |
| 910 | | 224 | 11.81 | 0.42 | 0.50 | 14.80 | 1579 | 6.34 | 124.7 | 1.66 | 72 | | |
| 915 | | 156 | 12.01 | 0.20 | 0.70 | 14.50 | 1489 | 6.34 | 124.3 | 1.66 | 54 | | |
| 920 | | | 11.89 | -0.12 | 0.58 | 14.93 | 1561 | 6.34 | 123.6 | 1.41 | 42.4 | | Not Stable |
| 925 | | | 11.86 | -0.03 | 0.55 | 14.86 | 1616 | 6.34 | 123.5 | 1.30 | 32.3 | | Not Stable |
| 930 | | | 11.86 | 0.00 | 0.55 | 14.86 | 1657 | 6.34 | 124.1 | 1.21 | 23.9 | | Not Stable |
| 935 | | | 11.86 | 0.00 | 0.55 | 14.84 | 1681 | 6.35 | 125.2 | 1.13 | 18.6 | | Not Stable |
| 940 | | | 11.87 | 0.01 | 0.56 | 14.90 | 1712 | 6.36 | 125.6 | 1.08 | 14 | | Not Stable |
| 945 | | | 11.90 | 0.03 | 0.59 | 14.98 | 1703 | 6.34 | 124.9 | 1.04 | 13.4 | | Not Stable |
| 950 | | | 11.92 | 0.02 | 0.61 | 15.11 | 1697 | 6.34 | 122.8 | 1.00 | 10.9 | | Not Stable |
| 955 | | | 11.94 | 0.02 | 0.63 | 15.10 | 1699 | 6.33 | 121.6 | 0.99 | 9.74 | | Not Stable |
| 1000 | | | 11.94 | 0.00 | 0.63 | 15.16 | 1688 | 6.33 | 120.5 | 1.00 | 11.7 | | Not Stable |
| 1005 | | | 11.94 | 0.00 | 0.63 | 15.25 | 1694 | 6.32 | 119.6 | 1.00 | 7.57 | | Not Stable |
| 1010 | | | 11.94 | 0.00 | 0.63 | 15.22 | 1682 | 6.32 | 118.7 | 1.00 | 10.4 | | Not Stable |
| 1015 | | | 11.95 | 0.01 | 0.64 | 15.24 | 1672 | 6.32 | 117.9 | 1.01 | 8.5 | | Not Stable |
| 1020 | | | 11.95 | 0.00 | 0.64 | 15.32 | 1679 | 6.32 | 117.3 | 1.01 | 6.6 | | Not Stable |
| 1025 | | | 11.95 | 0.00 | 0.64 | 15.09 | 1664 | 6.32 | 119.4 | 1.02 | 7.42 | | Not Stable |

# Low-Flow Field Log

Date: 7/26/2024



**Site Name:** Former L&M
**Job Number:** S00001.05
**Sampler:** S. Stone

**Well ID:** **MW-108**
**Sample ID:** GW-MW108-072624
**Reviewed By:** S. Stone

Measurement Reference Point (MP): PVC (PVC, Casing, Ground, etc.)
Depth to GW: 11.31 (ft from MP)
Depth to Bottom: 19.52 (ft from MP)
Pump Intake Depth: 19 (ft from MP)
Well depth as installed: 20 (ft bgs)
Screen interval (range): 10-20 bgs (ft bgs)

Purging start time: 9:05
Parameter stabalization (Y/N): n
Two hour time limit reached (Y/N): y
Sample time: 11:10
Total volume purged (gals): 5
Time at purge completion: 11:05

Equipment Vendor: U.S. Environmental
Pump Type: 14A103442

Turbidity Meter: Geotech
Serial #: 23074858

Multimeter: YSI 556 MPS
Serial #: 14A103442

Notes (Initial PID reading, SOP deviations, etc.): 0

Lab Analyses: EPH, VPH, MCP-14 Metals (dissolved)
QC Info (Duplicate, MS/MSD): 0

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cm | | mV | mg/L | NTU | | |
| 1030 | | | 11.95 | 0.00 | 0.64 | 15.12 | 1674 | 6.31 | 120.5 | 1.01 | 8.41 | | Not Stable |
| 1035 | | | 11.96 | 0.01 | 0.65 | 15.20 | 1674 | 6.31 | 121.1 | 1..04 | 7.37 | | Not Stable |
| 1040 | | | 11.95 | -0.01 | 0.64 | 15.13 | 1670 | 6.31 | 121.9 | 1.02 | 7.4 | | Not Stable |
| 1045 | | | 11.95 | 0.00 | 0.64 | 15.25 | 1683 | 6.31 | 122.3 | 1.02 | 8.77 | | Not Stable |
| 1050 | | | 11.97 | 0.02 | 0.66 | 15.17 | 1685 | 6.31 | 122.7 | 1.04 | 7.3 | | Not Stable |
| 1055 | | | 11.97 | 0.00 | 0.66 | 15.17 | 1698 | 6.31 | 122.9 | 1.08 | 6.71 | | Not Stable |
| 1100 | | | 11.98 | 0.01 | 0.67 | 15.12 | 1682 | 6.31 | 122.7 | 1.19 | 8.6 | | Not Stable |
| 1105 | | | 11.98 | 0.00 | 0.67 | 15.20 | 1696 | 6.31 | 122.7 | 1.27 | 7.61 | | Not Stable |
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SOP No: SA-003 Draft Revision: 4

# Low-Flow Field Log

Date: 7/26/2024



**Site Name:** Former L&M
**Job Number:** S00001.005
**Sampler:** P. Moran

**Well ID:** **MW-109**
**Sample ID:** GW-MW109-072624
**Reviewed By:** S. Stone

Measurement Reference Point (MP): PVC (PVC, Casing, Ground, etc.)
Depth to GW: 13.28 (ft from MP)
Depth to Bottom: 19.5 (ft from MP)
Pump Intake Depth: 18.5 (ft from MP)
Well depth as installed: 20 (ft bgs)
Screen interval (range): 10-20 bgs (ft bgs)

Purging start time: 10:15
Parameter stabalization (Y/N): Y
Two hour time limit reached (Y/N): N
Sample time: 11:00
Total volume purged (gals): 1.5
Time at purge completion: 10:52

Equipment Vendor: US Environmental
Pump Type: Peri

Turbidity Meter: Geotech
Serial #: 18091867

Multimeter: YSI 556
Serial #: 13D101140

Notes (Initial PID reading, SOP deviations, etc.):

Lab Analyses: EPH, VPH, MCP-14 Metals (dissolved)
QC Info (Duplicate, MS/MSD)

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cmc | | mV | mg/L | NTU | | |
| 1020 | | 146 | 13.31 | 0.03 | 0.03 | | | | | | | | |
| 1025 | | 146 | 13.30 | -0.01 | 0.02 | 13.82 | 2333 | 6.47 | -261.9 | 0.36 | 11.6 | | |
| 1030 | | 146 | 13.31 | 0.01 | 0.03 | 13.80 | 1772 | 6.53 | -265.9 | 0.28 | 8.59 | | |
| 1035 | | 146 | 13.31 | 0.00 | 0.03 | 13.74 | 1689 | 6.49 | -264.3 | 0.22 | 5.86 | | Not Stable |
| 1040 | | 146 | 13.31 | 0.00 | 0.03 | 13.71 | 1678 | 6.46 | -258.5 | 0.20 | 4.88 | | Not Stable |
| 1045 | | 146 | 13.31 | 0.00 | 0.03 | 13.47 | 1655 | 6.48 | -260.7 | 0.17 | 3.86 | | Not Stable |
| 1050 | | 170 | 13.31 | 0.00 | 0.03 | 13.59 | 1648 | 6.50 | -260.9 | 0.16 | 4.91 | | Stable |
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# Low-Flow Field Log

Date: 7/26/2024



**Site Name:** Former L&M
**Job Number:** S00001.005
**Sampler:** P. Moran

**Well ID:** **MW-101**
**Sample ID:** GW-MW101-072624
**Reviewed By:** S. Stone

Measurement Reference Point (MP): PVC (PVC, Casing, Ground, etc.)
Depth to GW: 13.08 (ft from MP)
Depth to Bottom: 19.5 (ft from MP)
Pump Intake Depth: 19 (ft from MP)
Well depth as installed: 20 (ft bgs)
Screen interval (range): 10-20 bgs (ft bgs)

Purging start time: 9:00
Parameter stabalization (Y/N): N
Two hour time limit reached (Y/N): N
Sample time: 12:30
Total volume purged (gals): 1
Time at purge completion: 9:43

Equipment Vendor: US Environmental
Pump Type: Peri
Turbidity Meter: Geotech
Serial #: 18091867
Multimeter: YSI 556
Serial #: 13D101140

Notes (Initial PID reading, SOP deviations, etc.): Not enough volume for metals analysis

Lab Analyses: EPH, VPH
QC Info (Duplicate, MS/MSD)

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cmc | | mV | mg/L | NTU | | |
| 905 | | 174 | 13.50 | 0.42 | 0.42 | | | | | | | | |
| 910 | | 174 | 14.80 | 1.30 | 1.72 | 14.99 | 473 | 5.88 | -246.2 | 0.79 | 59.5 | | |
| 915 | | 128 | 14.35 | -0.45 | 1.27 | 15.85 | 404 | 5.84 | -259.2 | 0.67 | 48.3 | | |
| 920 | | 128 | 15.90 | 1.55 | 2.82 | 15.91 | 404 | 5.96 | -269.9 | 0.57 | 39.7 | | Not Stable |
| 925 | | 128 | 16.50 | 0.60 | 3.42 | 15.91 | 496 | 6.04 | -273.7 | 0.44 | 33.1 | | Not Stable |
| 930 | | 128 | 17.21 | 0.71 | 4.13 | 15.55 | 542 | 6.07 | -270.2 | 0.37 | 27.4 | | Not Stable |
| 935 | | 128 | 17.95 | 0.74 | 4.87 | 15.51 | 582 | 6.08 | -277.2 | 0.33 | 23.3 | | Not Stable |
| 940 | | 80 | 18.55 | 0.60 | 5.47 | 15.86 | 633 | 6.10 | -279.2 | 0.33 | 22.5 | well pumped dry | Not Stable |
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# Low-Flow Field Log

Date: 10/15/2024



**Site Name:** Former L&M
**Job Number:** S00001.005
**Sampler:** P. Moran

**Well ID:** **B/MW-104**
**Sample ID:** GW-BMW104-101524
**Reviewed By:** P. Moran

Measurement Reference Point (MP): PVC (PVC, Casing, Ground, etc.)
Depth to GW: 13.24 (ft from MP)
Depth to Bottom: 19.71 (ft from MP)
Pump Intake Depth: 18.7 (ft from MP)
Well depth as installed: 20 (ft bgs)
Screen interval (range): 20-10 (ft bgs)

Purging start time: 11:30
Parameter stabalization (Y/N): Y
Two hour time limit reached (Y/N): N
Sample time: 12:15
Total volume purged (gals): 1.5
Time at purge completion: 12:12

Equipment Vendor: US Environmental
Pump Type: Peri
Turbidity Meter: Geotech
Serial #: 23054682
Multimeter: YSI Pro Quatro
Serial #: 20K101585

Notes (Initial PID reading, SOP deviations, etc.):

Lab Analyses: EPH, VPH, MCP-14 Metals (dissolved)
QC Info (Duplicate, MS/MSD): FD-01

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cmc | | mV | mg/L | NTU | | |
| 1135 | | 136 | 14.09 | 0.85 | 0.85 | | | | | | | | |
| 1140 | | 136 | 14.99 | 0.90 | 1.75 | 14.90 | 1870 | 6.26 | 330.5 | 6.97 | 22.1 | | |
| 1145 | | 136 | 15.40 | 0.41 | 2.16 | 14.90 | 1855 | 6.26 | 326.1 | 6.77 | 28.3 | | |
| 1150 | | 136 | 15.90 | 0.50 | 2.66 | 14.90 | 1855 | 6.27 | 321 | 6.58 | 26.2 | | Not Stable |
| 1155 | | 136 | 16.24 | 0.34 | 3.00 | 14.90 | 1867 | 6.28 | 314.3 | 6.40 | 18.6 | | Not Stable |
| 1200 | | 136 | 16.52 | 0.28 | 3.28 | 14.90 | 1892 | 6.28 | 303.3 | 6.25 | 12.1 | | Not Stable |
| 1205 | | 136 | 16.70 | 0.18 | 3.46 | 14.80 | 1908 | 6.28 | 297.1 | 6.03 | 12.2 | | Not Stable |
| 1210 | | 136 | 16.83 | 0.13 | 3.59 | 14.80 | 1924 | 6.29 | 294.2 | 5.90 | 12.1 | | Stable |
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# Low-Flow Field Log

Date: 10/15/2024



**Site Name:** Former L&M
**Job Number:** S00001.005
**Sampler:** P. Moran

**Well ID:** **B/MW-105**
**Sample ID:** GW-BMW105-101524
**Reviewed By:** P. Moran

Measurement Reference Point (MP): PVC (PVC, Casing, Ground, etc.)
Depth to GW: 14.73 (ft from MP)
Depth to Bottom: 19.4 (ft from MP)
Pump Intake Depth: 18 (ft from MP)
Well depth as installed: 20 (ft bgs)
Screen interval (range): 20-10 (ft bgs)

Purging start time: 12:50
Parameter stabalization (Y/N): N
Two hour time limit reached (Y/N): N
Sample time: 14:00
Total volume purged (gals): 1.5
Time at purge completion: 13:42

Equipment Vendor: US Environmental
Pump Type: Peri
Turbidity Meter: Geotech
Serial #: 23054682
Multimeter: YSI Pro Quatro
Serial #: 20K101585

Notes (Initial PID reading, SOP deviations, etc.):

Lab Analyses: VPH, EPH, MCP-14 Metals
QC Info (Duplicate, MS/MSD)

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cmc | | mV | mg/L | NTU | | |
| 1255 | | 134 | 15.55 | 0.82 | 0.82 | | | | | | | | |
| 1300 | | 134 | 15.98 | 0.43 | 1.25 | 14.80 | 3127 | 6.24 | 379 | 7.70 | 16.1 | | |
| 1305 | | 134 | 16.43 | 0.45 | 1.70 | 14.90 | 3126 | 6.25 | 388.3 | 7.47 | 15.4 | | |
| 1310 | | 134 | 16.90 | 0.47 | 2.17 | 15.00 | 3109 | 6.27 | 392.4 | 7.27 | 24.3 | | Not Stable |
| 1315 | | 134 | 17.34 | 0.44 | 2.61 | 15.10 | 3067 | 6.28 | 394.8 | 7.11 | 21.9 | | Not Stable |
| 1320 | | 134 | 17.75 | 0.41 | 3.02 | 15.00 | 2974 | 6.28 | 397.7 | 6.95 | 18.2 | | Not Stable |
| 1325 | | 134 | 18.13 | 0.38 | 3.40 | 15.10 | 2943 | 6.27 | 399.7 | 6.74 | 11.8 | | Not Stable |
| 1330 | | 134 | 18.50 | 0.37 | 3.77 | 15.10 | 2941 | 6.24 | 406.9 | 6.63 | 12.4 | | Not Stable |
| 1335 | | 134 | 18.88 | 0.38 | 4.15 | 15.10 | 2933 | 6.24 | 409.7 | 6.46 | 8.58 | | Not Stable |
| 1340 | | 134 | | | | | | | | | | well pumped dry | |
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# Low-Flow Field Log

Date: 10/15/2024



**Site Name:** Former L&M
**Job Number:** S00001.005
**Sampler:** P. Moran

**Well ID:** **MW-108**
**Sample ID:** GW-MW108-101524
**Reviewed By:** P. Moran

Measurement Reference Point (MP): PVC (PVC, Casing, Ground, etc.)
Depth to GW: 13.66 (ft from MP)
Depth to Bottom: 19.52 (ft from MP)
Pump Intake Depth: 18.5 (ft from MP)
Well depth as installed: 20 (ft bgs)
Screen interval (range): 20-10 (ft bgs)

Purging start time: 9:45
Parameter stabalization (Y/N): Y
Two hour time limit reached (Y/N): N
Sample time: 10:45
Total volume purged (gals): 2.5
Time at purge completion: 10:42

Equipment Vendor: US Environmental
Pump Type: Peri
Turbidity Meter: Geotech
Serial #: 23054682
Multimeter: YSI Pro Quatro
Serial #: 20K101585

Notes (Initial PID reading, SOP deviations, etc.):

Lab Analyses: VPH, EPH, MCP-14 Metals (dissolved)
QC Info (Duplicate, MS/MSD): MS/MSD

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cmc | | mV | mg/L | NTU | | |
| 950 | | 132 | 14.06 | 0.40 | 0.40 | | | | | | | | |
| 955 | | 132 | 14.14 | 0.08 | 0.48 | 14.70 | 2625 | 6.34 | 370.7 | 1.30 | 10.7 | | |
| 1000 | | 132 | 14.20 | 0.06 | 0.54 | 14.60 | 2618 | 6.33 | 376.5 | 0.78 | 9.43 | | |
| 1005 | | 132 | 14.20 | 0.00 | 0.54 | 14.80 | 2626 | 6.34 | 377.3 | 0.75 | 2.83 | | Not Stable |
| 1010 | | 132 | 14.20 | 0.00 | 0.54 | 14.60 | 2631 | 6.33 | 381.9 | 1.06 | 4.46 | | Not Stable |
| 1015 | | 132 | 14.20 | 0.00 | 0.54 | 14.60 | 2640 | 6.34 | 382 | 0.88 | 4.14 | | Not Stable |
| 1020 | | 132 | 14.20 | 0.00 | 0.54 | 14.60 | 2643 | 6.33 | 385.5 | 0.71 | 4.92 | | Not Stable |
| 1025 | | 132 | 14.20 | 0.00 | 0.54 | 14.60 | 2644 | 6.32 | 287.1 | 0.79 | 3.09 | | Not Stable |
| 1030 | | 132 | 14.20 | 0.00 | 0.54 | 14.60 | 2644 | 6.34 | 385.9 | 0.45 | 0.07 | | Not Stable |
| 1035 | | 132 | 14.20 | 0.00 | 0.54 | 14.70 | 2648 | 6.34 | 385 | 0.48 | 2.24 | | Not Stable |
| 1040 | | 132 | 14.20 | 0.00 | 0.54 | 14.70 | 2643 | 6.35 | 384.9 | 0.41 | 1.07 | | Stable |
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# Low-Flow Field Log

Date: 10/15/2024



**Site Name:** Former L&M
**Job Number:** S00001.005
**Sampler:** P. Moran

**Well ID:** **MW-109**
**Sample ID:** GW-MW109-101524
**Reviewed By:** P. Moran

Measurement Reference Point (MP): PVC (PVC, Casing, Ground, etc.)
Depth to GW: 14.65 (ft from MP)
Depth to Bottom: 19.58 (ft from MP)
Pump Intake Depth: 18.5 (ft from MP)
Well depth as installed: 20 (ft bgs)
Screen interval (range): 20-10 (ft bgs)

Purging start time: 14:30
Parameter stabalization (Y/N): Y
Two hour time limit reached (Y/N): N
Sample time: 15:20
Total volume purged (gals): 1
Time at purge completion: 15:16

Equipment Vendor: US Environmental
Pump Type: Peri
Turbidity Meter: Geotech
Serial #: 23054682
Multimeter: YSI Pro Quatro
Serial #: 20K101585

Notes (Initial PID reading, SOP deviations, etc.):

Lab Analyses: VPH, EPH, MCP-14 Metals (dissolved)
QC Info (Duplicate, MS/MSD)

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cmc | | mV | mg/L | NTU | | |
| 1435 | | 112 | 14.66 | 0.01 | 0.01 | | | | | | | | |
| 1440 | | 120 | 14.66 | 0.00 | 0.01 | 13.60 | 1914 | 6.31 | 240 | 0.50 | 11.2 | | |
| 1445 | | 120 | 14.66 | 0.00 | 0.01 | 13.60 | 1708 | 6.30 | 207.9 | 0.30 | 9.27 | | |
| 1450 | | 120 | 14.66 | 0.00 | 0.01 | 13.70 | 1315 | 6.30 | 190 | 0.19 | 6.34 | | Not Stable |
| 1455 | | 120 | 14.66 | 0.00 | 0.01 | 13.70 | 1205 | 6.31 | 181.6 | 0.15 | 2.93 | | Not Stable |
| 1400 | | 120 | 14.66 | 0.00 | 0.01 | 13.70 | 1182 | 6.31 | 179.7 | 0.15 | 0.63 | | Not Stable |
| 1405 | | 120 | 14.66 | 0.00 | 0.01 | 13.80 | 1146 | 6.33 | 176.1 | 0.14 | 2.28 | | Not Stable |
| 1410 | | 120 | 14.66 | 0.00 | 0.01 | 13.80 | 1141 | 6.34 | 176.4 | 0.12 | 2.75 | | Not Stable |
| 1415 | | 120 | 14.66 | 0.00 | 0.01 | 13.80 | 1130 | 6.34 | 173.5 | 0.14 | 1.46 | | Stable |
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# Low-Flow Field Log

Date: 10/16/2024



**Site Name:** Former L&M
**Job Number:** S00001.005
**Sampler:** P. Moran

**Well ID:** B/MW-101
**Sample ID:** GW-BMW101-101624
**Reviewed By:** P. Moran

Measurement Reference Point (MP): PVC (PVC, Casing, Ground, etc.)
Depth to GW: 16.1 (ft from MP)
Depth to Bottom: 19.5 (ft from MP)
Pump Intake Depth: 19 (ft from MP)
Well depth as installed: 20 (ft bgs)
Screen interval (range): 20-10 (ft bgs)

Purging start time: 8:10
Parameter stabalization (Y/N): N
Two hour time limit reached (Y/N): N
Sample time: 9:50
Total volume purged (gals): 0.2
Time at purge completion: 8:28

Equipment Vendor: US Environmental
Pump Type: Peri
Turbidity Meter: Geotech
Serial #: 23054682
Multimeter: YSI Pro Quatro
Serial #: 20K101585

Notes (Initial PID reading, SOP deviations, etc.):

Lab Analyses: VPH, EPH
QC Info (Duplicate, MS/MSD)

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cmc | | mV | mg/L | NTU | | |
| 815 | | 132 | 16.90 | 0.80 | 0.80 | | | | | | | | |
| 820 | | 132 | 17.66 | 0.76 | 1.56 | 13.50 | 345 | 5.79 | 339.5 | 0.19 | 17.3 | | |
| 825 | | 132 | 18.41 | 0.75 | 2.31 | 13.40 | 349.8 | 5.83 | 312 | 0.16 | 14.6 | | |
| 830 | | 132 | | | | | | | | | | well pumped dry | |
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SOP No: SA-003 Draft Revision: 4

# Low-Flow Field Log

Date: 10/16/2024



**Site Name:** Former L&M
**Job Number:** S00001.005
**Sampler:** P. Moran

**Well ID:** **MW-102R**
**Sample ID:** GW-MW102R-101624
**Reviewed By:** P. Moran

Measurement Reference Point (MP): PVC (PVC, Casing, Ground, etc.)
Depth to GW: 14.8 (ft from MP)
Depth to Bottom: 19.7 (ft from MP)
Pump Intake Depth: 18.7 (ft from MP)
Well depth as installed: 20 (ft bgs)
Screen interval (range): 20-10 (ft bgs)

Purging start time: 11:25
Parameter stabalization (Y/N): Y
Two hour time limit reached (Y/N): N
Sample time: 11:50
Total volume purged (gals): 0.5
Time at purge completion: 11:46

Equipment Vendor: US Environmental
Pump Type: Peri
Turbidity Meter: Geotech
Serial #: 23054682
Multimeter: YSI Pro Quatro
Serial #: 20K101585

Notes (Initial PID reading, SOP deviations, etc.):

Lab Analyses: VPH, EPH, MCP-14 Metals (dissolved)
QC Info (Duplicate, MS/MSD)

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cmc | | mV | mg/L | NTU | | |
| 1130 | | 156 | 15.21 | 0.41 | 0.41 | | | | | | | | |
| 1135 | | 156 | 15.30 | 0.09 | 0.50 | 14.40 | 2164 | 6.67 | 73.1 | 0.18 | 1.29 | | |
| 1140 | | 156 | 15.31 | 0.01 | 0.51 | 14.40 | 2177 | 6.67 | 72.8 | 0.17 | 1.96 | | |
| 1145 | | 156 | 15.34 | 0.03 | 0.54 | 14.50 | 2226 | 6.67 | 73 | 0.15 | 0.42 | | Stable |
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# Low-Flow Field Log

Date: 10/16/2024



**Site Name:** Former L&M
**Job Number:** S00001.005
**Sampler:** P. Moran

**Well ID:** **MW-107**
**Sample ID:** GW-MW107-101624
**Reviewed By:** P. Moran

Measurement Reference Point (MP): PVC (PVC, Casing, Ground, etc.)
Depth to GW: 12.23 (ft from MP)
Depth to Bottom: 19.58 (ft from MP)
Pump Intake Depth: 18.5 (ft from MP)
Well depth as installed: 20 (ft bgs)
Screen interval (range): 20-10 (ft bgs)

Purging start time: 8:50
Parameter stabalization (Y/N): Y
Two hour time limit reached (Y/N): N
Sample time: 9:35
Total volume purged (gals): 1
Time at purge completion: 9:32

Equipment Vendor: US Environmental
Pump Type: Peri
Turbidity Meter: Geotech
Serial #: 23054682
Multimeter: YSI Pro Quatro
Serial #: 20K101585

Notes (Initial PID reading, SOP deviations, etc.):

Lab Analyses: VPH, EPH, MCP-14 Metals (dissolved)
QC Info (Duplicate, MS/MSD)

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cmc | | mV | mg/L | NTU | | |
| 855 | | 114 | 12.31 | 0.08 | 0.08 | | | | | | | | |
| 900 | | 114 | 12.33 | 0.02 | 0.10 | 14.80 | 384 | 6.51 | 136.5 | 0.18 | 16.4 | | |
| 905 | | 132 | 12.35 | 0.02 | 0.12 | 15.10 | 379.5 | 6.50 | 135 | 0.20 | 8.94 | | |
| 910 | | 132 | 12.37 | 0.02 | 0.14 | 15.20 | 379 | 6.49 | 134.1 | 0.29 | 17.5 | | Not Stable |
| 915 | | 132 | 12.39 | 0.02 | 0.16 | 15.20 | 380.1 | 6.50 | 131 | 0.98 | 11.4 | | Not Stable |
| 920 | | 132 | 12.41 | 0.02 | 0.18 | 15.30 | 381 | 6.50 | 127.8 | 0.98 | 4.73 | | Not Stable |
| 925 | | 132 | 12.42 | 0.01 | 0.19 | 15.40 | 388 | 6.52 | 124.1 | 0.95 | 4.6 | | Not Stable |
| 930 | | 132 | 12.44 | 0.02 | 0.21 | 15.40 | 386 | 6.52 | 122.7 | 0.94 | 3.82 | | Stable |
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# Low-Flow Field Log

Date: 10/16/2024



**Site Name:** Former L&M
**Job Number:** S00001.005
**Sampler:** P. Moran

**Well ID:** **MW-106**
**Sample ID:** GW-MW106-101624
**Reviewed By:** P. Moran

Measurement Reference Point (MP): PVC (PVC, Casing, Ground, etc.)
Depth to GW: 13.9 (ft from MP)
Depth to Bottom: 19.55 (ft from MP)
Pump Intake Depth: 18.5 (ft from MP)
Well depth as installed: 20 (ft bgs)
Screen interval (range): 20-10 (ft bgs)

Purging start time: 10:10
Parameter stabalization (Y/N): Y
Two hour time limit reached (Y/N): N
Sample time: 10:50
Total volume purged (gals): 1
Time at purge completion: 10:47

Equipment Vendor: US Environmental
Pump Type: Peri
Turbidity Meter: Geotech
Serial #: 23054682
Multimeter: YSI Pro Quatro
Serial #: 20K101585

Notes (Initial PID reading, SOP deviations, etc.): Strong petroleum odor

Lab Analyses: VPH, EPH, MCP-14 Metals (dissolved)
QC Info (Duplicate, MS/MSD)

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cmc | | mV | mg/L | NTU | | |
| 1015 | | 140 | 14.11 | 0.21 | 0.21 | | | | | | | | |
| 1020 | | 140 | 14.14 | 0.03 | 0.24 | 14.70 | 1032 | 6.33 | 104.4 | 0.22 | 4.66 | | |
| 1025 | | 140 | 14.16 | 0.02 | 0.26 | 14.70 | 1112 | 6.33 | 102.5 | 0.19 | 4.63 | | |
| 1030 | | 140 | 14.16 | 0.00 | 0.26 | 14.70 | 1175 | 6.34 | 101.3 | 0.19 | 4.29 | | Not Stable |
| 1035 | | 140 | 14.18 | 0.02 | 0.28 | 14.60 | 1228 | 6.34 | 100.5 | 0.16 | 4.26 | | Not Stable |
| 1040 | | 140 | 14.16 | -0.02 | 0.26 | 14.60 | 1265 | 6.35 | 99.9 | 0.16 | 2.29 | | Not Stable |
| 1045 | | 140 | 14.16 | 0.00 | 0.26 | 14.60 | 1263 | 6.34 | 99.2 | 0.13 | 3.32 | | Stable |
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# Low-Flow Field Log

Date: 12/10/2024



**Site Name:** Former L&M
**Job Number:** S00001.005/200
**Sampler:** S. Stone

**Well ID:** **MW-102R**
**Sample ID:** GW-MW102R-121024
**Reviewed By:** S. Stone

Measurement Reference Point (MP): PVC (PVC, Casing, Ground, etc.)
Depth to GW: 15.13 (ft from MP)
Depth to Bottom: 19.84 (ft from MP)
Pump Intake Depth: 19 (ft from MP)
Well depth as installed: 20 (ft bgs)
Screen interval (range): 10- 20 bgs (ft bgs)

Purging start time: 9:20
Parameter stabalization (Y/N): y
Two hour time limit reached (Y/N): n
Sample time: 10:35
Total volume purged (gals): 3.75
Time at purge completion: 10:25

Equipment Vendor: US Environmental
Pump Type: peri

Turbidity Meter: Geotech
Serial #: 22043967

Multimeter: YSI Pro Quatro
Serial #: 10E100336

Notes (Initial PID reading, SOP deviations, etc.):

Lab Analyses: EPH, VPH, Dissolved MCP-14 Metals
QC Info (Duplicate, MS/MSD)

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cmc | | mV | mg/L | NTU | | |
| 925 | | | 15.75 | 0.62 | 0.62 | | | | | | | | |
| 930 | | 284 | 15.83 | 0.08 | 0.70 | 13.30 | 2195 | 6.66 | -76.4 | 0.87 | 15.6 | black in color,smells like sewer,slight sheen | |
| 935 | | 180 | 15.75 | -0.08 | 0.62 | 12.90 | 2241 | 6.66 | -78.6 | 0.84 | 8.97 | | |
| 945 | | | 15.74 | -0.01 | 0.61 | 13.10 | 2339 | 6.64 | -82.6 | 0.72 | 6.98 | | Not Stable |
| 955 | | | 15.74 | 0.00 | 0.61 | 13.10 | 2357 | 6.64 | -83.7 | 0.65 | 4.38 | | Not Stable |
| 1000 | | | 15.74 | 0.00 | 0.61 | 13.20 | 2368 | 6.63 | -84.5 | 0.62 | 3.59 | | Not Stable |
| 1005 | | | 15.74 | 0.00 | 0.61 | 13.00 | 2379 | 6.64 | -84.8 | 0.58 | 4.4 | | Not Stable |
| 1010 | | | 15.74 | 0.00 | 0.61 | 13.10 | 2389 | 6.63 | -86 | 0.53 | 2.88 | | Not Stable |
| 1015 | | | 15.74 | 0.00 | 0.61 | 13.20 | 2388 | 6.63 | -86.5 | 0.50 | 1.56 | | Not Stable |
| | | | 15.74 | 0.00 | 0.61 | 13.10 | 2386 | 6.63 | -87.6 | 0.48 | 1.07 | | Stable |
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# Low-Flow Field Log

Date: 12/10/2024



**Site Name:** Former L&M
**Job Number:** S00001.005/0200
**Sampler:** P. Moran

**Well ID:** **MW-104**
**Sample ID:** GW-MW104-121024
**Reviewed By:** S. Stone

Measurement Reference Point (MP): PVC (PVC, Casing, Ground, etc.)
Depth to GW: 13.58 (ft from MP)
Depth to Bottom: 19.79 (ft from MP)
Pump Intake Depth: 18.5 (ft from MP)
Well depth as installed: 20 (ft bgs)
Screen interval (range): 10-20 bgs (ft bgs)

Purging start time: 14:25
Parameter stabalization (Y/N): Y
Two hour time limit reached (Y/N): N
Sample time: 15:05
Total volume purged (gals): 1
Time at purge completion: 15:02

Equipment Vendor: US Environmental
Pump Type: Peri
Turbidity Meter: Geotech
Serial #: 22043967
Multimeter: YSI Pro Quatro
Serial #: 10E100336

Notes (Initial PID reading, SOP deviations, etc.):

Lab Analyses: EPH, VPH, Dissolved MCP-14 Metals
QC Info (Duplicate, MS/MSD): None

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cmc | | mV | mg/L | NTU | | |
| 1430 | | 108 | 14.35 | 0.77 | 0.77 | | | | | | | | |
| 1435 | | 108 | 14.91 | 0.56 | 1.33 | 11.90 | 1147 | 6.21 | 143.7 | 3.94 | 72.2 | | |
| 1440 | | 84 | 15.25 | 0.34 | 1.67 | 11.00 | 1166 | 6.19 | 144.6 | 4.09 | 65.1 | | |
| 1445 | | 84 | 15.50 | 0.25 | 1.92 | 11.60 | 1164 | 6.18 | 143.8 | 3.84 | 59 | | Not Stable |
| 1450 | | 84 | 15.71 | 0.21 | 2.13 | 11.20 | 1184 | 6.16 | 143.3 | 3.37 | 47.3 | | Not Stable |
| 1455 | | 84 | 15.90 | 0.19 | 2.32 | 11.40 | 1177 | 6.16 | 142.4 | 3.40 | 44.7 | | Not Stable |
| 1500 | | 84 | 16.10 | 0.20 | 2.52 | 11.50 | 1187 | 6.15 | 141 | 3.30 | 45.7 | | Stable |
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# Low-Flow Field Log

Date: 12/10/2024



**Site Name:** Former L&M
**Job Number:** S00001.005/200
**Sampler:** S. Stone

**Well ID:** **MW-106**
**Sample ID:** GW-MW106-121024
**Reviewed By:** S. Stone

Measurement Reference Point (MP): PVC (PVC, Casing, Ground, etc.)
Depth to GW: 14.48 (ft from MP)
Depth to Bottom: 19.62 (ft from MP)
Pump Intake Depth: 19 (ft from MP)
Well depth as installed: 20 (ft bgs)
Screen interval (range): 10-20 bgs (ft bgs)

Purging start time: 12:55
Parameter stabalization (Y/N): y
Two hour time limit reached (Y/N): n
Sample time: 14:10
Total volume purged (gals): 4
Time at purge completion: 14:05

Equipment Vendor: US Environmental
Pump Type: Peri
Turbidity Meter: Geotech
Serial #: 22043967
Multimeter: YSI Pro Quatro
Serial #: 10E100336

Notes (Initial PID reading, SOP deviations, etc.):

Lab Analyses: EPH, VPH, MCP-14 Dissolved Metals
QC Info (Duplicate, MS/MSD)

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cmc | | mV | mg/L | NTU | | |
| 1320 | | 164 | 14.55 | 0.07 | 0.07 | | | | | | | | |
| 1325 | | 204 | 14.56 | 0.01 | 0.08 | 13.40 | 957 | 6.47 | -80 | -0.01 | 3.08 | | |
| 1330 | | | 14.59 | 0.03 | 0.11 | 13.70 | 954 | 6.47 | -80.9 | -0.02 | 3.13 | | |
| 1335 | | | 14.61 | 0.02 | 0.13 | 13.70 | 995 | 6.48 | -82.2 | -0.02 | 4.81 | | Not Stable |
| 1340 | | | 14.62 | 0.01 | 0.14 | 13.70 | 1000 | 6.48 | -83.6 | -0.02 | 5.31 | | Not Stable |
| 1345 | | | 14.61 | -0.01 | 0.13 | 13.70 | 1004 | 6.49 | -84.9 | -0.02 | 2.78 | | Not Stable |
| 1355 | | | 14.62 | 0.01 | 0.14 | 13.60 | 1004 | 6.49 | -86 | -0.03 | 1.03 | | Not Stable |
| 1400 | | | 14.60 | -0.02 | 0.12 | 13.80 | 1006 | 6.49 | -86.8 | -0.03 | 2.91 | sewer smell | Stable |
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# Low-Flow Field Log

Date: 12/10/2024



**Site Name:** Former L&M
**Job Number:** S00001.005/0200
**Sampler:** S. Stone

**Well ID:** **MW-107**
**Sample ID:** GW-MW107-121024
**Reviewed By:** S. Stone

Measurement Reference Point (MP): PVC (PVC, Casing, Ground, etc.)
Depth to GW: 11.75 (ft from MP)
Depth to Bottom: 19.63 (ft from MP)
Pump Intake Depth: 18.5 (ft from MP)
Well depth as installed: 20 (ft bgs)
Screen interval (range): 10-20 bgs (ft bgs)

Purging start time: 14:35
Parameter stabalization (Y/N): Y
Two hour time limit reached (Y/N): N
Sample time: 15:50
Total volume purged (gals): 3
Time at purge completion: 15:46

Equipment Vendor: US Environmental
Pump Type: Peri
Turbidity Meter: Geotech
Serial #: 22043967
Multimeter: YSI Pro Quatro
Serial #: 21K103657

Notes (Initial PID reading, SOP deviations, etc.):

Lab Analyses: EPH, VPH, Dissolved MCP-14 Metals
QC Info (Duplicate, MS/MSD): None

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cmc | | mV | mg/L | NTU | | |
| 1440 | | 212 | 12.03 | 0.28 | 0.28 | | | | | | | | |
| 1445 | | 120 | 11.95 | -0.08 | 0.20 | 13.80 | 449.5 | 6.33 | -41 | 1.69 | 18.5 | | |
| 1450 | | | 11.94 | -0.01 | 0.19 | 13.20 | 440.2 | 6.32 | -39.3 | 1.56 | 19.5 | | |
| 1455 | | | 11.94 | 0.00 | 0.19 | 13.10 | 447 | 6.31 | -37.3 | 1.71 | 15.5 | | Not Stable |
| 1500 | | | 11.94 | 0.00 | 0.19 | 13.30 | 445.3 | 6.31 | -37.1 | 1.65 | 10.5 | | Not Stable |
| 1505 | | | 11.94 | 0.00 | 0.19 | 13.20 | 442.8 | 6.31 | -37.7 | 1.39 | 6.66 | | Not Stable |
| 1510 | | | 11.95 | 0.01 | 0.20 | 13.30 | 435.6 | 6.32 | -39.2 | 1.15 | 6.39 | | Not Stable |
| 1520 | | | 11.95 | 0.00 | 0.20 | 13.50 | 444.7 | 6.31 | -37.2 | 1.53 | 3.04 | | Not Stable |
| 1525 | | | 11.98 | 0.03 | 0.23 | 13.50 | 446.1 | 6.30 | -36.8 | 1.52 | 2.68 | | Not Stable |
| 1530 | | | 12.00 | 0.02 | 0.25 | 13.40 | 437.2 | 6.31 | -36.7 | 1.32 | 3.97 | | Not Stable |
| 1535 | | | 12.00 | 0.00 | 0.25 | 13.40 | 446.9 | 6.30 | -35.7 | 1.50 | 1.76 | | Not Stable |
| 1540 | | | 12.00 | 0.00 | 0.25 | 13.40 | 445.2 | 6.30 | -35.2 | 1.46 | 2.63 | | Not Stable |
| 1545 | | | 12.00 | 0.00 | 0.25 | 13.50 | 449.2 | 6.30 | -34 | 1.53 | 2.5 | | Stable |
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# Low-Flow Field Log

Date: 12/10/2024



**Site Name:** Former L&M
**Job Number:** S00001.005/0200
**Sampler:** P. Moran

**Well ID:** **MW-108**
**Sample ID:** GW-MW108-121024
**Reviewed By:** S. Stone

Measurement Reference Point (MP): PVC (PVC, Casing, Ground, etc.)
Depth to GW: 14.09 (ft from MP)
Depth to Bottom: 19.64 (ft from MP)
Pump Intake Depth: 18 (ft from MP)
Well depth as installed: 20 (ft bgs)
Screen interval (range): 10-20 bgs (ft bgs)

Purging start time: 11:10
Parameter stabalization (Y/N): Y
Two hour time limit reached (Y/N): N
Sample time: 12:10
Total volume purged (gals): 1.5
Time at purge completion: 12:07

Equipment Vendor: US Environmental
Pump Type: Peri
Turbidity Meter: Geotech
Serial #: 22043967
Multimeter: YSI Pro Quatro
Serial #: 10E100336

Notes (Initial PID reading, SOP deviations, etc.):

Lab Analyses: EPH, VPH, Dissolved MCP-14 Metals
QC Info (Duplicate, MS/MSD): MS/MSD

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cmc | | mV | mg/L | NTU | | |
| 1115 | | 90 | 14.28 | 0.19 | 0.19 | | | | | | | | |
| 1120 | | 90 | 14.35 | 0.07 | 0.26 | 10.90 | 2381 | 6.35 | 88.2 | 1.35 | 44.2 | | |
| 1125 | | 90 | 14.40 | 0.05 | 0.31 | 11.20 | 2386 | 6.35 | 87.2 | 1.25 | 44.2 | | |
| 1130 | | 90 | 14.41 | 0.01 | 0.32 | 11.10 | 2400 | 6.35 | 87.1 | 1.60 | 34.1 | | Not Stable |
| 1135 | | 90 | 14.43 | 0.02 | 0.34 | 11.20 | 2397 | 6.35 | 87.5 | 1.48 | 25.6 | | Not Stable |
| 1140 | | 90 | 14.44 | 0.01 | 0.35 | 11.40 | 2405 | 6.34 | 88.1 | 1.40 | 19 | | Not Stable |
| 1145 | | 90 | 14.45 | 0.01 | 0.36 | 11.50 | 2400 | 6.34 | 88.7 | 1.32 | 16 | | Not Stable |
| 1150 | | 90 | 14.45 | 0.00 | 0.36 | 11.90 | 2382 | 6.34 | 89.1 | 1.30 | 10.3 | | Not Stable |
| 1155 | | 90 | 14.45 | 0.00 | 0.36 | 11.40 | 2402 | 6.34 | 89.7 | 1.29 | 4.6 | | Not Stable |
| 1200 | | 90 | 14.45 | 0.00 | 0.36 | 11.30 | 2419 | 6.34 | 90.3 | 1.32 | 4.14 | | Not Stable |
| 1205 | | 90 | 14.45 | 0.00 | 0.36 | 11.20 | 2419 | 6.34 | 91.4 | 1.27 | 3.68 | | Stable |
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# Low-Flow Field Log

Date: 12/10/2024



**Site Name:** Former L&M
**Job Number:** S00001.005/200
**Sampler:** S. Stone

**Well ID:** **MW-109**
**Sample ID:** GW-MW109-121024
**Reviewed By:** S. Stone

Measurement Reference Point (MP): PVC (PVC, Casing, Ground, etc.)
Depth to GW: 15.01 (ft from MP)
Depth to Bottom: 19.8 (ft from MP)
Pump Intake Depth: 19 (ft from MP)
Well depth as installed: 20 (ft bgs)
Screen interval (range): 10-20 bgs (ft bgs)

Purging start time: 11:22
Parameter stabalization (Y/N): y
Two hour time limit reached (Y/N): n
Sample time: 12:30
Total volume purged (gals): 3
Time at purge completion: 12:25

Equipment Vendor: US Environmental
Pump Type: peri

Turbidity Meter: Geotech
Serial #: 22043967

Multimeter: YSI Pro Quatro
Serial #: 10E100336

Notes (Initial PID reading, SOP deviations, etc.):

Lab Analyses: EPH, VPH, MCP-14 Metals (dissolved)
QC Info (Duplicate, MS/MSD)

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cmc | | mV | mg/L | NTU | | |
| 1125 | | 200 | 15.09 | 0.08 | 0.08 | | | | | | | | |
| 1130 | | 152 | 15.10 | 0.01 | 0.09 | 12.70 | 1039 | 6.44 | -66.8 | 0.76 | 14.9 | | |
| 1140 | | | 15.05 | -0.05 | 0.04 | 12.60 | 1047 | 6.44 | -67 | 0.71 | 9.57 | | |
| 1145 | | | 15.05 | 0.00 | 0.04 | 12.60 | 1041 | 6.46 | -67.5 | 0.63 | 8.24 | | Not Stable |
| 1150 | | | 15.05 | 0.00 | 0.04 | 12.70 | 1020 | 6.45 | -68.1 | 0.62 | 7.05 | slight sewer smell | Not Stable |
| 1155 | | | 15.05 | 0.00 | 0.04 | 12.70 | 1024 | 6.46 | -68.7 | 0.55 | 6.55 | | Not Stable |
| 1200 | | | 15.05 | 0.00 | 0.04 | 12.70 | 1020 | 6.47 | -69.4 | 0.52 | 6.91 | | Not Stable |
| 1210 | | | 15.05 | 0.00 | 0.04 | 12.90 | 982 | 6.48 | -71.4 | 0.47 | 3.94 | | Not Stable |
| 1215 | | | 15.05 | 0.00 | 0.04 | 12.60 | 989 | 6.48 | -71.5 | 0.48 | 2.1 | | Not Stable |
| 1220 | | | 15.05 | 0.00 | 0.04 | 12.80 | 980 | 6.48 | -72.6 | 0.45 | 4.06 | | Stable |
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# Low-Flow Field Log

Date: 12/10/2024



**Site Name:** Former L&M
**Job Number:** S00001.005/0200
**Sampler:** S. Stone

**Well ID:** **MW-105**
**Sample ID:** GW-MW105-121124
**Reviewed By:** S. Stone

Measurement Reference Point (MP): PVC (PVC, Casing, Ground, etc.)
Depth to GW: 15.17 (ft from MP)
Depth to Bottom: 19.69 (ft from MP)
Pump Intake Depth: 18.5 (ft from MP)
Well depth as installed: 20 (ft bgs)
Screen interval (range): 10-20 bgs (ft bgs)

Purging start time: 10:05
Parameter stabalization (Y/N): N
Two hour time limit reached (Y/N): N
Sample time: 12/11/2024 8:30
Total volume purged (gals): 0.5
Time at purge completion: 10:45

Equipment Vendor: US Environmental
Pump Type: Peri

Turbidity Meter: Geotech
Serial #: 22043967

Multimeter: YSI Pro Quatro
Serial #: 10E100336

Notes (Initial PID reading, SOP deviations, etc.):

Lab Analyses: EPH, VPH, Dissolved MCP-14 Metals
QC Info (Duplicate, MS/MSD): None

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cmc | | mV | mg/L | NTU | | |
| 1015 | | 92 | 16.05 | 0.88 | 0.88 | | | | | | | | |
| 1020 | | 92 | 16.47 | 0.42 | 1.30 | 11.40 | 2751 | 6.34 | 32.5 | 0.41 | 55.1 | | |
| 1025 | | 92 | 16.91 | 0.44 | 1.74 | 11.40 | 2732 | 6.33 | 39.1 | 0.68 | 51.3 | | |
| 1030 | | 92 | 17.38 | 0.47 | 2.21 | 11.30 | 2768 | 6.30 | 47.7 | 1.05 | 47.1 | | Not Stable |
| 1035 | | 92 | 17.82 | 0.44 | 2.65 | 11.50 | 2766 | 6.28 | 55.3 | 1.10 | 44.2 | | Not Stable |
| 1040 | | 92 | 18.24 | 0.42 | 3.07 | 11.40 | 2798 | 6.26 | 62 | 1.31 | 44.6 | | Not Stable |
| 1045 | | 92 | 18.55 | 0.31 | 3.38 | | | | | | | well pumped dry | |
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# Low-Flow Field Log

Date: 12/10/2024



**Site Name:** Former L&M
**Job Number:** S00001.005/0200
**Sampler:** P. Moran

**Well ID:** **MW-101**
**Sample ID:** GW-MW101-121124
**Reviewed By:** S. Stone

Measurement Reference Point (MP): PVC (PVC, Casing, Ground, etc.)
Depth to GW: 13.21 (ft from MP)
Depth to Bottom: 19.61 (ft from MP)
Pump Intake Depth: 18.5 (ft from MP)
Well depth as installed: 20 (ft bgs)
Screen interval (range): 10-20 bgs (ft bgs)

Purging start time: 13:25
Parameter stabalization (Y/N): N
Two hour time limit reached (Y/N): N
Sample time: 12/11/2024 8:20
Total volume purged (gals): 1
Time at purge completion: 14:07

Equipment Vendor: US Environmental
Pump Type: Peri
Turbidity Meter: Geotech
Serial #: 22043967
Multimeter: YSI Pro Quatro
Serial #: 10E100336

Notes (Initial PID reading, SOP deviations, etc.):

Lab Analyses: EPH, VPH, Dissolved MCP-14 Metals
QC Info (Duplicate, MS/MSD): None

| Clock Time | Bladder Pump Discharge/ Refill | Purge Rate | Depth to Water | Draw down | Cum. Draw down | Temp ±3% | Spec. Cond. ±3% | pH ±0.1 | ORP ±10 | DO ±10% if >0.5 mg/L | Turbidity ±10% if >5 NTU | Comments/Gas Pressure/Observations | Stability Calculator (auto) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HHMM | sec./sec. or setting | ml/min | ft. below MP | ft. | ft. | oC | µS/cmc | | mV | mg/L | NTU | | |
| 1330 | | 130 | 13.90 | 0.69 | 0.69 | | | | | | | | |
| 1335 | | 130 | 14.60 | 0.70 | 1.39 | 11.10 | 1198 | 5.71 | 132.5 | 7.15 | 51.5 | | |
| 1340 | | 130 | 15.12 | 0.52 | 1.91 | 10.90 | 1155 | 5.71 | 137.8 | 7.12 | 46.6 | | |
| 1345 | | 130 | 15.85 | 0.73 | 2.64 | 11.60 | 1164 | 5.71 | 142.5 | 6.92 | 41.1 | | Not Stable |
| 1350 | | 130 | 16.50 | 0.65 | 3.29 | 11.40 | 1144 | 5.78 | 145.3 | 6.76 | 44.2 | | Not Stable |
| 1355 | | 130 | 17.25 | 0.75 | 4.04 | 11.30 | 1093 | 5.85 | 147.6 | 6.52 | 44.2 | | Not Stable |
| 1400 | | 130 | 17.70 | 0.45 | 4.49 | 11.40 | 1059 | 5.88 | 149.3 | 6.30 | 44.2 | | Not Stable |
| 1405 | | 130 | 18.23 | 0.53 | 5.02 | 11.30 | 1055 | 5.86 | 147.9 | 6.19 | 44.2 | | Not Stable |
| 1410 | | 130 | | | | | | | | | | well pumped dry | |
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# APPENDIX C

# BORING LOG

Project: Former L&M

Location: Lunenburg, MA

Nobis Project No.: S00001.005

Boring No.: **MW - 106**

Boring Location:

Checked by:

Date Start: October 12, 2023

Date Finish: October 12, 2023

Contractor: Geosearch, Inc.

Driller: E. Belsky

Nobis Rep.: C. Odell

Rig Type / Model: Geoprobe / 7822 DT

Hammer Type: N/A

Hammer Hoist: N/A

Ground Surface Elev.:

Datum:

| | Drilling Method | Sampler |
|---|---|---|
| Type | Geoprobe | Macro-Core Liners |
| Size ID (in.) | N/A | 1.75 x 60 |
| Advancement | Direct Push | Push |

Groundwater Observations

| Date | Time | Depth Below Ground (ft.) | Depth of Casing (ft.) | Depth to Bottom of Hole (ft.) | Stabilization Time |
|---|---|---|---|---|---|
| ▼ 10/12/23 | 00:00 | 15 | | | |

| Depth (ft.) | Sample Type & No. | Rec (in.) | Depth (ft.) | Blows/ 6 in. | PID (ppm) | Ground Water | Graphic | Stratum Elev. / Depth (ft.) | Sample Description and Remarks (Classification System: Modified Burmister) |
|---|---|---|---|---|---|---|---|---|---|
| 1 | S1 | 18 | 0-5 | | 0 | | | | S-1A (12"): Light Brown, fine to coarse SAND, little fine to coarse Gravel, trace Silt. Dry.<br>S-1B (2"): Dark Brown, fine to coarse SAND, trace fine Gravel, trace Silt. Dry.<br>S-1C (2"): Light Brown, fine to coarse SAND, little fine to coarse Gravel, trace Silt. Dry. |
| 6 | S2 | 17 | 5-10 | | 0 | | | | S-2A (7"): Light Brown, fine to coarse SAND, little fine to coarse Gravel, trace Silt. Dry.<br>S-2B (6"): Dark Brown, fine to coarse SAND, little fine to coarse Gravel, trace Silt. Dry.<br>S-2C (2"): White, fine to coarse SAND, trace fine Gravel, trace Silt. Dry.<br>S-2D (2"): Dark Brown, fine to coarse SAND, little fine to coarse Gravel, trace Silt. Dry. |
| 11 | S3 | 30 | 10-15 | | 143.3 | | | SAND | S-3A (8"): Dark Brown, fine to medium SAND. Strong Petroleum Odor.<br>S-3B (12"): Black, fine SAND, little Clayey Silt. Dry. Strong Petroleum Odor.<br>S-3C (10"): Dark gray, fine SAND, little Silt, trace Clay. Dry. Strong Petroleum Odor. |
| 16 | S4 | 52 | 15-20 | | 56.3 | ▼ | | | S-4A (21"): Black, fine SAND, some Silt. Wet. Strong Petroleum Odor.<br>S-4B (14"): Gray, fine to coarse SAND, trace Silt. Wet. Strong Petroleum Odor.<br>S-4C (17"): Light brown, fine to coarse SAND, trace Silt. Moist. Strong Petroleum Odor. |
| 21 | | | | | | | | | Boring terminated at 20 feet. |

WELL DETAIL: Concrete road box; Filter Sand; Bentonite chips; Filter sand; 0.010 inch slotted PVC

| Soil | Percentage | Non-Soil |
|---|---|---|
| trace | 5 - 10 | very few |
| little | 10 - 20 | few |
| some | 20 - 35 | several |
| and | 35 - 50 | numerous |

NOTES:

1) Observed a strong petroleum ordor at S3 and S4
2) Sample SO-BMW106-1015 collected at 8:50. Associated with FD01-101223.

Soil descriptions, and lithology, are based on visual classifications and should be considered approximate. Stratification lines are approximate boundaries between stratums; transitions may be gradual.



BOREHOLE LOG - NOBIS GINT DATA TEMPLATE OCT 7 2011.GDT - 4/15/24 09:19 - J:\S00001.000-START 2022 CONTRACT - TO 01 - TBASIS\00001.05_FORMER L&M\TECHNICAL_DATA\GINT\FORMER L&M BORING LOGS.GPJ

# BORING LOG

Project: Former L&M

Location: Lunenburg, MA

Nobis Project No.: S00001.005

Boring No.: **MW - 107**

Boring Location:

Checked by:

Date Start: October 12, 2023

Date Finish: October 12, 2023

Contractor: Geosearch, Inc.

Driller: E. Belsky

Nobis Rep.: C. Odell

Rig Type / Model: Geoprobe / 7822 DT

Hammer Type: N/A

Hammer Hoist: N/A

Ground Surface Elev.:

Datum:

| | Drilling Method | Sampler |
|---|---|---|
| Type | Geoprobe | Macro-Core Liners |
| Size ID (in.) | N/A | 1.75 x 60 |
| Advancement | Direct Push | Push |

Groundwater Observations

| Date | Time | Depth Below Ground (ft.) | Depth of Casing (ft.) | Depth to Bottom of Hole (ft.) | Stabilization Time |
|---|---|---|---|---|---|
| ▼ 10/12/23 | 00:00 | 11 | | | |
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| Depth (ft.) | SAMPLE INFORMATION Type & No. | Rec (in.) | Depth (ft.) | Blows/ 6 in. | PID (ppm) | Ground Water | LITHOLOGY Graphic | Stratum Elev. / Depth (ft.) | SAMPLE DESCRIPTION AND REMARKS (Classification System: Modified Burmister) | WELL DETAIL | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | S1 | 29 | 0-10 | | 1.7 | | | | S-1A (3"): Light brown, fine SAND, some fine to coarse Gravel. Dry.<br>S-1B (26"): Light brown, fine to coarse SAND, trace Silt. Dry. | Concrete road box | |
| 2 | | | | | 0.3 | | | | | | |
| 3 | | | | | | | | | | | |
| 4 | | | | | | | | | | | |
| 5 | | | | | | | | | | Filter Sand | |
| 6 | | | | | | | | | | | |
| 7 | | | | | | | | SAND | | | |
| 8 | | | | | | | | | | | |
| 9 | | | | | | | | | | Bentonite chips | |
| 10 | | | | | | | | | | | |
| 11 | S2 | 37 | 10-15 | | 44.4<br>2 | ▼ | | | S-2A (5"): Brown, fine to medium SAND, trace Silt. Dry.<br>S-2B (7"): Brown, fine to medium SAND, trace Silt. Wet. | | |
| 12 | | | | | | | | | S-2C (8"): Brown, coarse SAND, trace Silt. Wet. | | |
| 13 | | | | | | | | | S-2D (11"): Black, fine to coarse GRAVEL, little fine to coarse Sand. Wet. | | |
| 14 | | | | | | | | GRAVEL | | | |
| 15 | | | | | | | | | | Filter sand | |
| 16 | S3 | 59 | 15-20 | | 0.4 | | | | S-3A (11"): Black, coarse SAND, trace fine Gravel, trace Silt. Moist. | 0.010 inch slotted PVC | |
| 17 | | | | | | | | | S-3B (25"): Black, fine SAND, little Silt, trace Clay. Dry. | | |
| 18 | | | | | | | | SAND | | | |
| 19 | | | | | | | | | S-3C (17"): Black, fine to coarse SAND, trace Silt. Moist. | | |
| 20 | | | | | | | | CLAYEY SILT | S-3D (5"): Black, Clayey SILT. Dry.<br>Boring terminated at 20 feet. | | |
| 21 | | | | | | | | | | | |

| Soil | Percentage | Non-Soil |
|---|---|---|
| trace | 5 - 10 | very few |
| little | 10 - 20 | few |
| some | 20 - 35 | several |
| and | 35 - 50 | numerous |

NOTES:

1) Sample SO-BMW107-1015 collecteda at 9:30. Associated with MS/MSD.

Soil descriptions, and lithology, are based on visual classifications and should be considered approximate. Stratification lines are approximate boundaries between stratums; transitions may be gradual.



BOREHOLE LOG - NOBIS GINT DATA TEMPLATE OCT 7 2011.GDT - 4/15/24 09:19 - J:\S00001.000-START 2022 CONTRACT - TO 01 - TBASIS\00001.05_FORMER L&M\TECHNICAL_DATA\GINT\FORMER L&M BORING LOGS.GPJ

# BORING LOG

nobis

Project: Former L&M

Location: Lunenburg, MA

Nobis Project No.: S00001.005

Boring No.: **MW - 108**

Boring Location:

Checked by:

Date Start: October 12, 2023

Date Finish: October 12, 2023

Contractor: Geosearch, Inc.

Driller: E. Belsky

Nobis Rep.: C. Odell

Rig Type / Model: Geoprobe / 7822 DT

Hammer Type: N/A

Hammer Hoist: N/A

Ground Surface Elev.:

Datum:

| | Drilling Method | Sampler |
|---|---|---|
| Type | Geoprobe | Macro-Core Liners |
| Size ID (in.) | N/A | 1.75 x 60 |
| Advancement | Direct Push | Push |

Groundwater Observations

| Date | Time | Depth Below Ground (ft.) | Depth of Casing (ft.) | Depth to Bottom of Hole (ft.) | Stabilization Time |
|---|---|---|---|---|---|
| ▼ 10/12/23 | 00:00 | 15 | | | |
| | | | | | |
| | | | | | |
| | | | | | |

| Depth (ft.) | SAMPLE INFORMATION Type & No. | Rec (in.) | Depth (ft.) | Blows/ 6 in. | PID (ppm) | Ground Water | LITHOLOGY Graphic | Stratum Elev. / Depth (ft.) | SAMPLE DESCRIPTION AND REMARKS (Classification System: Modified Burmister) | WELL DETAIL | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | S1 | 18 | 0-10 | | 0.4 | | | | S-1A (18"): Light brown, fine to coarse SAND, trace fine Gravel, trace Silt. Dry. | Concrete road box | |
| 2 | | | | | 0.4 | | | | | | |
| 3 | | | | | | | | | | | |
| 4 | | | | | | | | | | | |
| 5 | | | | | | | | SAND | | Filter Sand | |
| 6 | | | | | | | | | | | |
| 7 | | | | | | | | | | | |
| 8 | | | | | | | | | | | |
| 9 | | | | | | | | | | Bentonite chips | |
| 10 | | | | | | | | | | | |
| 11 | S2 | 34 | 10-15 | | 0.3 | | | CLAYEY SILT | S-2A (6"): Dark brown, Clayey SILT. Moist. | | |
| 12 | | | | | | | | | S-2B (10"): Brown, CLAY & SILT. Moist. | | |
| 13 | | | | | | | | | S-2C (11"): Light brown, fine to medium SAND, trace fine Gravel, trace Silt. Dry. | | |
| 14 | | | | | | | | | S-2D (7"): Brown, fine to medium SAND, little fine to coarse Gravel, trace Silt. Dry. | | |
| 15 | | | | | | ▼ | | | | Filter sand | |
| 16 | S3 | 46 | 15-20 | | 0.2 | | | SAND | S-3A (18"): Light brown, fine to coarse SAND, trace Silt. Wet. | 0.010 inch slotted PVC | |
| 17 | | | | | | | | | S-3B (8"): Light brown, fine to coarse SAND, trace Silt. Moist. | | |
| 18 | | | | | | | | | S-3C (9"): Light brown, fine to coarse SAND, trace fine Gravel, trace Silt. Wet. | | |
| 19 | | | | | | | | | S-3D (9"): Light brown, fine to coarse SAND, trace fine Gravel, trace Silt. Moist. | | |
| 20 | | | | | | | | | | | |
| 21 | | | | | | | | | Boring terminated at 20 feet. | | |

| Soil | Percentage | Non-Soil |
|---|---|---|
| trace | 5 - 10 | very few |
| little | 10 - 20 | few |
| some | 20 - 35 | several |
| and | 35 - 50 | numerous |

NOTES:

1) Sample SO-BMW108-1518 collected at 10:10.

Soil descriptions, and lithology, are based on visual classifications and should be considered approximate. Stratification lines are approximate boundaries between stratums; transitions may be gradual.



BOREHOLE LOG - NOBIS GINT DATA TEMPLATE OCT 7 2011.GDT - 4/15/24 09:19 - J:\S00001.000-START 2022 CONTRACT - TO 01 - TBAS\S00001.05_FORMER L&M\TECHNICAL_DATA\GINT\FORMER L&M BORING LOGS.GPJ

# BORING LOG

Project: Former L&M

Location: Lunenburg, MA

Nobis Project No.: S00001.005

Boring No.: **MW-102R**

Boring Location:

Checked by:

Date Start: April 12, 2024

Date Finish: April 12, 2024

Contractor: Geosearch, Inc.

Driller: Brian H.

Nobis Rep.: C. Belinowiz

Rig Type / Model: Geoprobe / 7822 DT

Hammer Type: N/A

Hammer Hoist: N/A

Ground Surface Elev.:

Datum:

| | Drilling Method | Sampler |
|---|---|---|
| Type | Geoprobe | Macro-Core Liners |
| Size ID (in.) | N/A | 1.75 x 60 |
| Advancement | Direct Push | Push |

Groundwater Observations

| Date | Time | Depth Below Ground (ft.) | Depth of Casing (ft.) | Depth to Bottom of Hole (ft.) | Stabilization Time |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

| Depth (ft.) | SAMPLE INFORMATION Type & No. | Rec (in.) | Depth (ft.) | Blows/ 6 in. | PID (ppm) | Ground Water | LITHOLOGY Graphic | Stratum Elev. / Depth (ft.) | SAMPLE DESCRIPTION AND REMARKS (Classification System: Modified Burmister) |
|---|---|---|---|---|---|---|---|---|---|
| 1 | S1 | 22 | 0-5 | | 0 | | | | S-1A (22"): Tan, fine to coarse SAND, little coarse Gravel. Dry. |
| 6 | S2 | 36 | 5-10 | | 0 | | | | S-2A (26"): Dark gray, fine to coarse SAND and fine Gravel. Dry. |
| 8 | | | | | | | | | S-2B (10"): Black, fine SAND, trace Silt, few organic matter, moderate petroleum odor. Dry. |
| 11 | S3 | 48 | 10-15 | | 1229 | | | SAND | S-3A (48"): Gray, fine to medium SAND, trace Silt, strong petroleum odor. Wet. |
| 12 | | | | | 1072 | | | | |
| 16 | S4 | 42 | 15-20 | | 1251 | | | | S-4A (42"): Gray, fine to coarse SAND, little Gravel, trace Silt, moderate petroleum odor. |
| 21 | | | | | 9.2 | | | | Boring terminated at 20 feet. |

WELL DETAIL

- Concrete road box
- Filter Sand
- Bentonite chips
- Filter sand
- 0.010 inch slotted PVC

NOTES

| Soil | Percentage | Non-Soil |
|---|---|---|
| trace | 5 - 10 | very few |
| little | 10 - 20 | few |
| some | 20 - 35 | several |
| and | 35 - 50 | numerous |

NOTES:

Soil descriptions, and lithology, are based on visual classifications and should be considered approximate. Stratification lines are approximate boundaries between stratums; transitions may be gradual.



BOREHOLE LOG - NOBIS GINT DATA TEMPLATE OCT 7 2011.GDT - 4/15/24 09:19 - J:\S00001.000-START 2022 CONTRACT - TO 01 - TBAS\S00001.05_FORMER L&M\TECHNICAL_DATA\GINT\FORMER L&M BORING LOGS.GPJ

# BORING LOG

Project: Former L&M

Location: Lunenburg, MA

Nobis Project No.: S00001.005

Boring No.: **MW-109**

Boring Location:

Checked by:

Date Start: April 12, 2024

Date Finish: April 12, 2024

Contractor: Geosearch, Inc.

Driller: Brian H.

Nobis Rep.: C. Belinowiz

Rig Type / Model: Geoprobe / 7822 DT

Hammer Type: N/A

Hammer Hoist: N/A

Ground Surface Elev.:

Datum:

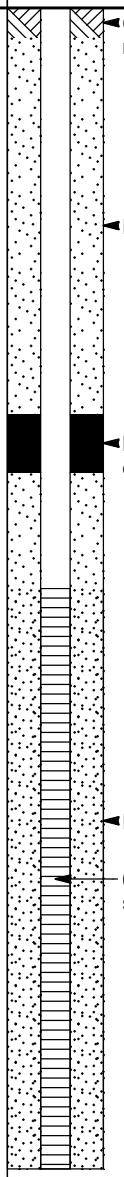
| | Drilling Method | Sampler |
|---|---|---|
| Type | Geoprobe | Macro-Core Liners |
| Size ID (in.) | N/A | 1.75 x 60 |
| Advancement | Direct Push | Push |

Groundwater Observations

| Date | Time | Depth Below Ground (ft.) | Depth of Casing (ft.) | Depth to Bottom of Hole (ft.) | Stabilization Time |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

| Depth (ft.) | SAMPLE INFORMATION Type & No. | Rec (in.) | Depth (ft.) | Blows/ 6 in. | PID (ppm) | Ground Water | LITHOLOGY Graphic | Stratum Elev. / Depth (ft.) | SAMPLE DESCRIPTION AND REMARKS (Classification System: Modified Burmister) |
|---|---|---|---|---|---|---|---|---|---|
| | S1 | 24 | 0-5 | | 0 | | | | S-1A (24"): Brown, fine to coarse SAND, some coarse Gravel. Dry. |
| 1 | | | | | | | | | |
| 2 | | | | | | | | | |
| 3 | | | | | | | | | |
| 4 | | | | | | | | | |
| 5 | | | | | | | | | |
| | S2 | 42 | 5-10 | | 0 | | | | S-2A (20"): Light brown, fine to coarse SAND, trace coarse Gravel. Dry. |
| 6 | | | | | | | | | |
| 7 | | | | | | | | | S-2B (22"): Black, fine to medium SAND, trace fine Gravel. Moist. |
| 8 | | | | | | | | | |
| 9 | | | | | | | | | |
| 10 | | | | | | | | GRAVELLY SNAD | |
| | S3 | 38 | 10-15 | | 0 | | | | S-3A (20"): Light brown, fine to medium SAND, trace fine Gravel, trace Silt. Moist. |
| 11 | | | | | | | | | |
| 12 | | | | | | | | | S-3B (18"): Gray, coarse SAND, trace Silt, slight petroleum odor. Wet. |
| 13 | | | | | | | | | |
| 14 | | | | | | | | | |
| 15 | | | | | | | | | |
| | S4 | 60 | 15-20 | | 0 | | | | S-4A (45"): Gray, coarse SAND, slight petroleum odor. Wet. |
| 16 | | | | | | | | | |
| 17 | | | | | | | | | |
| 18 | | | | | | | | | |
| 19 | | | | | | | | | |
| 20 | | | | | | | | | S-4B (15"): Tan, fine to coarse SAND, trace Silt. Wet. |
| | | | | | 0 | | | | Boring terminated at 20 feet. |
| 21 | | | | | | | | | |

WELL DETAIL




NOTES

| Soil | Percentage | Non-Soil |
|---|---|---|
| trace | 5 - 10 | very few |
| little | 10 - 20 | few |
| some | 20 - 35 | several |
| and | 35 - 50 | numerous |

NOTES:

1) Sample SO-MW109-1315 collected at 8:30.

Soil descriptions, and lithology, are based on visual classifications and should be considered approximate. Stratification lines are approximate boundaries between stratums; transitions may be gradual.



BOREHOLE LOG - NOBIS GINT DATA TEMPLATE OCT 7 2011.GDT - 4/15/24 09:19 - J:\S00001.000-START 2022 CONTRACT - TO 01 - TBAS\S00001.05_FORMER L&M\TECHNICAL_DATA\GINT\FORMER L&M BORING LOGS.GPJ

# APPENDIX D

October 2, 2023
Nobis File No. S00001.05

Ms. Katy Deng
USEPA – Region 1
Land, Chemicals, and Redevelopment Division
5 Post Office Square, Suite 100
Boston, MA 02109-3912

Re: USEPA Contract No. 68HE0122D0001
USEPA Task Order No. 68HE0122F0044
Targeted Brownfields Assessment (TBA)
Former L&M Service Station Site
Lunenburg, Massachusetts
Sample Delivery Group (SDG) No. 620115501
Eurofins New England, North Kingstown, RI

Tier 1 Stage 2A Organic and Inorganic Data Review:

Volatile Petroleum Hydrocarbons (VPH by MassDEP-VPH), Extractable Petroleum Hydrocarbons (EPH by MassDEP-EPH), Massachusetts Contingency Plan (MCP) Metals (MCP-14 Metals by 6020B/7470A)

5/Groundwater Samples: LM-GW-B/MW105-051723, LM-GW-B/MW102-051723, LM-FD-051723, LM-GW-B/MW101-051723, LM-GW-B/MW104-051723
1/Field Duplicate Pair: LM-GW-B/MW102-051723 / LM-FD-051723
1/Aqueous Trip Blank: LM-TB-051723

Dear Ms. Deng:

Nobis Group (Nobis), under a USEPA contract as a subcontractor to KGSNE JV, LLC, performed a Tier 1 Stage 2A manual data review (S2AVM) on the organic and inorganic analytical data for the samples listed above. The samples were collected by Nobis at the Former L&M Service Station Site located in Lunenburg, Massachusetts on May 17, 2023. The samples were analyzed for VPHs by MassDEP-VPH, EPHs by MassDEP-EPH, and MCP-14 Metals by EPA Methods 6010D/7470A by Eurofins New England in North Kingstown, RI.

The Tier 1 Stage 2A manual data review was performed in accordance with the Region 1 - EPA New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures (September 2020); USEPA's National Functional Guidelines for Organic Superfund Methods Data Review (November 2020); USEPA's National Functional Guidelines for Inorganic Superfund Methods Data Review (November 2020); the Program Quality Assurance Project Plan (Program QAPP) dated October 2022, and the Quality Assurance Project Plan Addendum (QAPPA) (May 2023) for the Former L&M Service Station Site, which appends the October 2022 Program QAPP.

The data were evaluated based on the following parameters:

* • Overall Evaluation of Data and Potential Usability Issues
* • Data Completeness
* • Preservation and Technical Holding Times



Nobis Group®
585 Middlesex Street
Lowell, MA 01851
T (978) 683-0891

| | | |
|---|---|---|
| * | • | Blanks |
| * | • | Surrogates (organic analyses only) |
| NA | • | Internal Standards |
| | • | Matrix Spike Analysis |
| * | • | Laboratory Duplicates |
| * | • | Laboratory Control Samples (LCS) |
| * | • | Field Duplicates |
| * | • | ICP Serial Dilutions (metals only) |
| NA | • | Performance Evaluation (PE) Samples |
| NA | • | Target Analyte Identification |
| * | • | Reported Quantitation Limits |

* All criteria were met for this parameter or did not require qualification.
NA – Not applicable.

**Overall Evaluation of Data and Potential Usability Issues**

The site sampling objectives are:

- Characterize in-situ soil based on AOCs identified by Fuss & O'Neill in November 2020 Phase I for the presence of possible site-related contamination.
- Evaluate groundwater elevation.
- Evaluate presence/absence of groundwater contamination related to site.

The data meet the project quality criteria and can be used without restriction except as summarized below. The attachments provide details and supporting documentation.

**MassDEP-VPH:**
Results were qualified for MS/MSD recoveries.

**MassDEP-EPH:**
Results were qualified for MS/MSD recoveries.

**MCP-14 Metals and Mercury:**
Qualification of the data was not required.

Please contact Linda Terzis at lterzis@nobis-group.com should you have any questions or comments regarding this information.

Sincerely,

NOBIS GROUP®

Linda Terzis
Data Validator

Gary Glennon
Data Validator

Tables: Data Summary Tables – Tier 1 Stage 2A (S2AVM) Validated Data
Data Qualification Actions Table

Attachments: Data Review Checklist
Support Documentation
COC

cc: Denis McGrath (Nobis Group)
Adam Roy (Nobis Group)

# DATA SUMMARY TABLE

| **Analysis** | | EPH in Groundwater | | | | |
|---|---|---|---|---|---|---|
| **Lab Sample ID** | | 620-11550-1 | 620-11550-2 | 620-11550-3 | 620-11550-4 | 620-11550-5 |
| **Field Sample ID** | | LM-GW-B/MW105-051723 | LM-GW-B/MW102-051723 | LM-FD-051723 | LM-GW-B/MW101-051723 | LM-GW-B/MW104-051723 |
| **Sample Type** | | N | N | FD | N | N |
| **Parent Sample ID** | | | | LM-GW-B/MW102-051723 | | |
| **Sample Date** | **Units** | 05/17/23 | 05/17/23 | 05/17/23 | 05/17/23 | 05/17/23 |
| 2-Methylnaphthalene | ug/L | 0.95 UJ | 2.3 J | 2.8 J | 1 UJ | 1 UJ |
| Acenaphthene | ug/L | 0.95 UJ | 1 UJ | 1 UJ | 1 UJ | 1 UJ |
| Acenaphthylene | ug/L | 0.95 UJ | 1 UJ | 1 UJ | 1 UJ | 1 UJ |
| Anthracene | ug/L | 0.95 U | 1 U | 1 U | 1 U | 1 U |
| Benzo(a)anthracene | ug/L | 0.95 U | 1 U | 1 U | 1 U | 1 U |
| Benzo(a)pyrene | ug/L | 0.19 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| Benzo(b)fluoranthene | ug/L | 0.95 U | 1 U | 1 U | 1 U | 1 U |
| Benzo(g,h,i)perylene | ug/L | 0.95 U | 1 U | 1 U | 1 U | 1 U |
| Benzo(k)fluoranthene | ug/L | 0.95 U | 1 U | 1 U | 1 U | 1 U |
| C11-C22 Aromatics | ug/L | 95 U | 100 | 110 | 100 U | 100 U |
| C11-C22 Aromatics (adjusted) | ug/L | 95 U | 100 U | 100 U | 100 U | 100 U |
| C19-C36 Aliphatics | ug/L | 95 U | 100 U | 100 U | 100 U | 100 U |
| C9-C18 Aliphatics | ug/L | 95 U | 100 U | 100 U | 100 U | 100 U |
| Chrysene | ug/L | 0.95 U | 1 U | 1 U | 1 U | 1 U |
| Dibenz(a,h)anthracene | ug/L | 0.48 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Fluoranthene | ug/L | 0.95 U | 1 U | 1 U | 1 U | 1 U |
| Fluorene | ug/L | 0.95 U | 1 U | 1 U | 1 U | 1 U |
| Indeno(1,2,3-cd)pyrene | ug/L | 0.48 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Naphthalene | ug/L | 0.95 UJ | 28 J | 33 J | 1 UJ | 1 UJ |
| Phenanthrene | ug/L | 0.95 U | 1 U | 1 U | 1 U | 1 U |
| Pyrene | ug/L | 0.95 U | 1 U | 1 U | 1 U | 1 U |

## DATA SUMMARY TABLE

| **Analysis** | | Dissolved Metals in Groundwater | | | | |
|---|---|---|---|---|---|---|
| **Lab Sample ID** | | 620-11550-1 | 620-11550-2 | 620-11550-3 | 620-11550-4 | 620-11550-5 |
| **Field Sample ID** | | LM-GW-B/MW105-051723 | LM-GW-B/MW102-051723 | LM-FD-051723 | LM-GW-B/MW101-051723 | LM-GW-B/MW104-051723 |
| **Sample Type** | | N | N | FD | N | N |
| **Parent Sample ID** | | | | LM-GW-B/MW102-051723 | | |
| **Sample Date** | **Units** | 05/17/23 | 05/17/23 | 05/17/23 | 05/17/23 | 05/17/23 |
| Antimony | mg/L | 0.0045 | 0.0049 | 0.0051 | 0.0028 | 0.0053 |
| Arsenic | mg/L | 0.004 U | 0.025 | 0.026 | 0.004 U | 0.0081 |
| Barium | mg/L | 0.23 | 0.12 | 0.12 | 0.28 | 0.069 |
| Beryllium | mg/L | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Cadmium | mg/L | 0.0025 U | 0.0025 U | 0.0025 U | 0.0011 | 0.0025 U |
| Chromium | mg/L | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Lead | mg/L | 0.0075 U | 0.0075 U | 0.0075 U | 0.06 | 0.0075 U |
| Mercury | mg/L | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U |
| Nickel | mg/L | 0.0009 | 0.0024 | 0.0027 | 0.0069 | 0.015 |
| Selenium | mg/L | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U |
| Silver | mg/L | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Thallium | mg/L | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.0027 |
| Vanadium | mg/L | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Zinc | mg/L | 0.0026 | 0.0021 | 0.0035 | 0.2 | 0.14 |

# DATA SUMMARY TABLE

| **Analysis** | | VPH in Groundwater | | | | |
|---|---|---|---|---|---|---|
| **Lab Sample ID** | | 620-11550-1 | 620-11550-2 | 620-11550-3 | 620-11550-4 | 620-11550-5 |
| **Field Sample ID** | | LM-GW-B/MW105-051723 | LM-GW-B/MW102-051723 | LM-FD-051723 | LM-GW-B/MW101-051723 | LM-GW-B/MW104-051723 |
| **Sample Type** | | N | N | FD | N | N |
| **Parent Sample ID** | | | | LM-GW-B/MW102-051723 | | |
| **Sample Date** | **Units** | 05/17/23 | 05/17/23 | 05/17/23 | 05/17/23 | 05/17/23 |
| Benzene | ug/L | 5 U | 12 | 12 | 5 U | 5 U |
| C5-C8 Aliphatics (adjusted) | ug/L | 100 U | 560 | 600 | 100 U | 100 U |
| C5-C8 Aliphatics (unadjusted) | ug/L | 100 UJ | 580 J | 610 J | 100 UJ | 100 UJ |
| C9-C10 Aromatics | ug/L | 100 UJ | 2000 J | 2000 J | 100 UJ | 100 UJ |
| C9-C12 Aliphatics (adjusted) | ug/L | 100 U | 3000 | 3000 | 100 U | 100 U |
| C9-C12 Aliphatics (unadjusted) | ug/L | 100 UJ | 6800 J | 7000 J | 100 UJ | 100 UJ |
| Ethylbenzene | ug/L | 5 U | 490 | 500 | 5 U | 5 U |
| m,p-Xylene | ug/L | 10 U | 1400 | 1500 | 10 U | 10 U |
| Methyl tert-butyl ether | ug/L | 5 U | 5 U | 5 U | 5 U | 5 U |
| Naphthalene | ug/L | 5 U | 77 | 76 | 5 U | 5 U |
| o-Xylene | ug/L | 5 U | 5 U | 5 U | 5 U | 5 U |
| Toluene | ug/L | 5 U | 5 U | 5 U | 5 U | 5 U |
| Xylene (total) | ug/L | 15 U | 1400 | 1500 | 15 U | 15 U |

# DATA SUMMARY TABLE

| **Analysis** | | VPH in Water Quality Control Matrix |
|---|---|---|
| **Lab Sample ID** | | 620-11550-6 |
| **Field Sample ID** | | LM-TB-051723 |
| **Sample Type** | | TB |
| **Parent Sample ID** | | |
| **Sample Date** | **Units** | 05/17/23 |
| Benzene | ug/L | 5 U |
| C5-C8 Aliphatics (adjusted) | ug/L | 100 U |
| C5-C8 Aliphatics (unadjusted) | ug/L | 100 U |
| C9-C10 Aromatics | ug/L | 100 U |
| C9-C12 Aliphatics (adjusted) | ug/L | 100 U |
| C9-C12 Aliphatics (unadjusted) | ug/L | 100 U |
| Ethylbenzene | ug/L | 5 U |
| m,p-Xylene | ug/L | 10 U |
| Methyl tert-butyl ether | ug/L | 5 U |
| Naphthalene | ug/L | 5 U |
| o-Xylene | ug/L | 5 U |
| Toluene | ug/L | 5 U |
| Xylene (total) | ug/L | 15 U |

**Data Review Qualification Actions**
**Former L&M Service Station**
**SDG 620115501**

| Parameter | Analyte | Samples | Evaluation Criteria | Action Needed | Comments |
|---|---|---|---|---|---|
| **MassDEP-VPH** | | | | | |
| | C9-C10 aromatics, C5-C8 aliphatics (unadjusted), C9-C12 aliphatics (unadjusted) | LM-GW-B/MW105-051723, LM-GW-B/MW102-051723, LM-FD-051723, LM-GW-B/MW101-051723, LM-GW-B/MW104-051723 | MS/MSD recovery | J / UJ | |
| **MassDEP-EPH** | | | | | |
| | Naphthalene, 2-methylnaphthalene, acenaphthene, acenaphthylene | LM-GW-B/MW105-051723, LM-GW-B/MW102-051723, LM-FD-051723, LM-GW-B/MW101-051723, LM-GW-B/MW104-051723 | MS/MSD recovery | J / UJ | |
| **MCP-14 Metals / Mercury** | | | | | |
| | Qualification of the data was not required. | | | | |

**Tier 1/Stage 2A Data Review Checklist**

**Project:** Former L&M Service Station, Lunenburg, Massachusetts
Targeted Brownfields Assessment (TBA)
**Project #:** S00001.05
**Case#:** NA
**Date:** 09/07/2023
**Methods:** Volatile Petroleum Hydrocarbons (VPH) (MassDEP-VPH)
Extractable Petroleum Hydrocarbons (EPH) (MassDEP-EPH)
Massachusetts Contingency Plan (MCP) Metals (MCP-14 Metals by 6010D/7470A)

**Laboratory:** Eurofins New England Laboratory, North Kingstown, RI
**SDG:** 620115501
**Reviewer:** Linda Terzis

1. **Case Narrative and Data Package Completeness (COC and Analyte List Review)**
Five (5) groundwater samples, including one field duplicate sample, were listed on the COC for SDG 620115501. One trip blank sample was also included on the COC. The samples were collected on 05/17/2023 and received at the Eurofins New England Laboratory on 05/18/2023 at 2.8 °C.

| Sample ID | Laboratory ID | Analyses |
|---|---|---|
| LM-GW-B/MW105-051723 | 620-11550-1 | MassDEP-VPH, MassDEP-EPH, MCP-14 Metals/Mercury |
| LM-GW-B/MW102-051723 | 620-11550-2 | |
| LM-FD-051723 | 620-11550-3 | |
| LM-GW-B/MW101-051723 | 620-11550-4 | |
| LM-GW-B/MW104-051723 | 620-11550-5 | |
| LM-TB-051723 | 620-11550-6 | MassDEP-VPH |

The data were evaluated using the site-specific Quality Assurance Project Plan Addendum (QAPPA) (dated May 2023) and the Program QAPP (dated October 2022). Both were prepared by KGSNE, LLC. The QAPPA appends and incorporates by reference the procedures and quality control measures detailed in the Program QAPP (October 2022). Therefore, site data for this SDG were evaluated using both the QAPPA of May 2023 and the Program QAPP dated October 2022. The Massachusetts Compendium of Analytical Methods (CAM) and/or SW-846 Methods were used to perform the analyses. Therefore, site data were also evaluated using CAM quality control (QC) limits, where applicable.

The analyte lists reported by the laboratory were compared to the required analyte lists per Table 4 (groundwater) in the QAPPA (May 2023) for the site. Results for all requested analytes were reported and no inconsistencies were noted.

2. **Holding Time and Sample Preservation Compliance**

Receipt temperatures are acceptable (≤ 6°), as specified in the QAPPA (May 2023).

MassDEP-VPH: Holding time criteria (analyzed within 14 days) met.



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585 Middlesex Street
Lowell, MA 01851
T (978) 683-0891

MassDEP-EPH: Holding time criteria (extracted within 14 days and analyzed within 40 days of extraction) met.

MCP-14 Metals/Mercury: Holding time criteria (analyzed within 28 days for mercury; within 180 days for all other analytes) were met.

**3. Calibration Issues**

Not assessed for S2AVM data review.

**4. Laboratory and Field Blanks**

MassDEP-VPH: Results for the VPH laboratory method blanks and the trip blank (LM-TB-051723) were non-detect. No blank actions are required.

MassDEP-EPH: Results for the EPH laboratory method blanks were non-detect. No blank actions are required.

MCP-14 Metals/Mercury: Results for the metals and mercury laboratory method blanks are non-detect. No blank actions are required.

An equipment blank was not submitted with the samples of this SDG. No actions are required.

**5. Interference Check Sample (metals only)**

Not assessed for S2AVM data review.

**6. Surrogates**

The Program QAPP (October 2022) was used to evaluate site data for surrogate recovery. If no Program QAPP-specific recovery limits were available for a surrogate, the MCP CAM recovery limits were used.

MassDEP-VPH: Percent surrogate recoveries for the samples were within the Program QAPP limits of 70-130%. No actions are required.

MassDEP-EPH: Percent surrogate recoveries for the samples were within the Program QAPP limits of 40-140%. No actions are required.

MCP-14 Metals/Mercury: Not applicable for this analysis.

**7. Laboratory Control Samples**

MassDEP-VPH: The percent recoveries in the VPH LCS/LCSD pairs met the Program QAPP recovery limits of 70-130% and RPDs ≤ 25%. No actions are required.

MassDEP-EPH: The percent recoveries in the EPH LCS/LCSD pairs met the Program QAPP recovery limits of 40-140% and RPD limits of ≤ 25% except for the RPD for naphthalene in LCS/LCSD pair 620-22911/4-B and 5B, where the RPD exceeded 25% (32%). This LCS pair is associated with sample LM-GW-B/MW104-051723 (620-11550-5). Naphthalene was not detected in the sample. Based on the National Functional Guidelines (NFGs, 2020) for SVOCs, the naphthalene result in the sample is accepted unqualified. No actions are required.

MCP-14 Metals/Mercury: Percent recoveries and RPDs for all metals and mercury LCS/LCSD analyses were within the QAPP limits of 80-120% and ≤ 20%, respectively. No actions are required.

**8. Matrix Spikes**

Based on the Region I EPA New England Environmental Data Review Supplement (Region I Supplement, 2020), MS/MSD qualifications are applied to all field samples with similar matrix, unless otherwise noted.

MassDEP-VPH: MS/MSD analyses were performed on sample LM-GW-B/MW104-051723 (620-11550-5). Recoveries and RPDs met the Program QAPP limits of 70-130% recovery and ≤ 50% RPD except for the recoveries of C9-C10 aromatics, which was reported as spiked but not detected in both the MS and MSD analyses, and the recoveries of C5-C8 aliphatics (unadjusted) and C9-C12 aliphatics (unadjusted), which were also reported as spiked, but with results > spiking level. Percent recoveries were not calculated by the laboratory for these ranges. Results for the parent sample were all non-detect. The laboratory's case narrative indicates the recovery failures are due to the way the entire baseline is integrated for samples versus for QC samples (sum of peaks). Professional judgement was used to qualify detected and non-detect results for C9-C10 aromatics, C5-C8 aliphatics (unadjusted), and C9-C12 aliphatics (unadjusted) as estimated (J/UJ) in all groundwater samples due to baseline integration preventing calculation of meaningful recoveries for these ranges. LCS/LCSD recoveries are acceptable as noted above.

MassDEP-EPH: MS/MSD analyses were performed on sample LM-GW-B/MW104-051723 (620-11550-5). Recoveries for naphthalene, 2-methylnaphthalene, acenaphthene, and acenaphthylene were below the QAPP limits of 40-140% in the MS and/or MSD analyses. Results for these compounds were non-detect in the parent sample. Based on the NFGs (2020) for SVOCs, detected and non-detect results for these compounds are qualified as estimated (J/UJ) in all groundwater samples due to the low MS and/or MSD recoveries. RPDs met the QAPP limits of ≤ 50%.

The laboratory indicated that the MS/MSD samples for the analyses of C9-C18 aliphatics, C19-36 aliphatics, and C11-C22 aromatics (adjusted and unadjusted) were inadvertently spiked at an incorrect spiking level resulting in low recoveries. The laboratory did not calculate percent recoveries for these hydrocarbon ranges. Results of the MS/MSD analyses for these ranges were not used to evaluate the samples of this SDG since recoveries were not meaningful. No actions are taken.

MCP-14 Metals/Mercury: MS/MSD analyses for MCP-14 metals and mercury were performed on sample LM-GW-B/MW104-051723 (620-11550-5). Recoveries and RPDs met the Program QAPP limits of 75-125% recovery and ≤ 20% RPD. No actions are required.

**9. Laboratory Duplicates (metals only)**

MCP-14 Metals/Mercury: Laboratory duplicate analysis was performed on sample LM-GW-B/MW104-051723 (620-11550-5). The QAPP duplicate criterion (≤ 20% RPD) was met for all detected analytes. Mercury results were non-detect for both the sample and duplicate analyses. Laboratory duplicate precision is acceptable and no actions are required.

10. **Serial Dilution (metals only)**

    MCP-14 Metals/Mercury: A serial dilution analysis was not performed for this SDG. The Massachusetts CAM requires a serial dilution analysis on samples used for MS/MSD analyses where analytes are detected at > 50x RL. MS/MSD analyses were performed on sample LM-GW-B/MW104-051723 (620-11550-5). Detected analyte results were < 50x RL in this sample and no actions are required.

11. **Field Duplicate Precision**

    Acceptable field duplicate precision is an RPD of ≤ 30% for results > 5x RL and an absolute difference < 2x RL for results < 5x RL, based on the EPA Region I Supplement (2020).

    Based on the Region I Supplement (2020), qualifications are applied to all field samples with similar matrix, unless otherwise indicated.

    Field duplicate pair LM-GW-B/MW102-051723 (620-11550-2) / LM-FD-051723 (620-11550-3) is associated with the groundwater samples of this SDG.

    Field duplicate precision criteria were met for the VPH, EPH, and metals analytical parameters and no actions are required.

12. **Internal Standards**

    Not assessed for S2AVM data review.

13. **Dual Column Precision (PCBs only)**

    Not applicable for this SDG.

14. **Performance Evaluation Samples**

    Performance Evaluation (PE) samples were not included in this SDG.

15. **Reporting Limits**

    RLs for non-detect results for VPH, EPH, and metals/mercury analyses met the project action levels (PALs) for the site.

16. **Other**

    EPA Region I Supplement (2020) criterion for percent solids content (> 30%) not applicable for groundwater samples.

    Overall bias is considered indeterminate when cumulative nonconformances do not show a consistent bias or in cases of the presence of conflicting high and low biases.

**Field Duplicate Evaluation**

**SDG: 620115501 VPH**

| Analyte | Original Result (ug/L) | Qual | Duplicate Result (ug/L) | Qual | RPD ≤ 30% | Abs Diff | Comment |
|---|---|---|---|---|---|---|---|
| **Sample ID** | **LM-GW-B/MW102-051723** | | **LM-FD-051723** | | | | |
| | **620-11550-2** | | **620-11550-3** | | | | |
| Benzene | 12 | | 12 | | 0.00 | 0.0 | Ok - abs diff < 2x RL |
| C5-C8 Aliphatics (adjusted) | 560 | | 600 | | 6.90 | | Ok - RPD < 30% |
| C5-C8 Aliphatics (unadjusted) | 580 | | 610 | | 5.04 | | Ok - RPD < 30% |
| C9-C10 Aromatics | 2000 | | 2000 | | 0.00 | 0.0 | Ok - abs diff < 2x RL |
| C9-C12 Aliphatics (adjusted) | 3000 | | 3000 | | 0.00 | 0.00 | Ok - abs diff < 2x RL |
| C9-C12 Aliphatics (unadjusted) | 6800 | | 7000 | | 2.90 | | Ok - RPD < 30% |
| Ethylbenzene | 490 | | 500 | | 2.02 | | Ok - RPD < 30% |
| m,p-Xylene | 1400 | | 1500 | | 6.90 | | Ok - RPD < 30% |
| Methyl tert-butyl ether | 5 | U | 5 | U | 0.00 | | Ok - both ND |
| Naphthalene | 77 | | 76 | | -1.31 | | Ok - RPD < 30% |
| o-Xylene | 5 | U | 5 | U | 0.00 | | Ok - both ND |
| Toluene | 5 | U | 5 | U | 0.00 | | Ok - both ND |

**Field Duplicate Evaluation**

**SDG: 620115501 EPH**

| Analyte | Original Result (ug/L) | Qual | Duplicate Result (ugL) | Qual | RPD ≤ 30% | Abs Diff | Comment |
|---|---|---|---|---|---|---|---|
| **Sample ID** | **LM-GW-B/MW102-051723** | | **LM-FD-051723** | | | | |
| | **620-11550-2** | | **620-11550-3** | | | | |
| 2-Methylnaphthalene | 2.3 | | 2.8 | | 19.61 | 0.50 | Ok - abs diff < 2x RL |
| Acenaphthene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Acenaphthylene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Anthracene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Benzo(a)anthracene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Benzo(a)pyrene | 0.2 | U | 0.2 | U | 0.00 | | Ok - both ND |
| Benzo(b)fluoranthene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Benzo(g,h,i)perylene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Benzo(k)fluoranthene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| C11-C22 Aromatics | 100 | | 110 | | 9.52 | 10 | Ok - abs diff < 2x RL |
| C11-C22 Aromatics (adjusted) | 100 | U | 100 | U | 0.00 | | Ok - both ND |
| C19-C36 Aliphatics | 100 | U | 100 | U | 0.00 | | Ok - both ND |
| C9-C18 Aliphatics | 100 | U | 100 | U | 0.00 | | Ok - both ND |
| Chrysene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Dibenz(a,h)anthracene | 0.5 | U | 0.5 | U | 0.00 | | Ok - both ND |
| Fluoranthene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Fluorene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Indeno(1,2,3-cd)pyrene | 0.5 | U | 0.5 | U | 0.00 | | Ok - both ND |
| Naphthalene | 28 | | 33 | | 16.39 | | Ok - RPD < 30% |
| Phenanthrene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Pyrene | 1 | U | 1 | U | 0.00 | | Ok - both ND |

**Field Duplicate Evaluation**

**SDG: 620115501 METALS**

| Analyte | Original Result (mg/L) | Qual | Duplicate Result (mg/L) | Qual | RPD ≤ 30% | Abs Diff | Comment |
|---|---|---|---|---|---|---|---|
| **Sample ID** | **LM-GW-B/MW102-051723** | | **LM-FD-051723** | | | | |
| | **620-11550-2** | | **620-11550-3** | | | | |
| Antimony | 0.0049 | | 0.0051 | | 4.0 | 0.0002 | Ok - abs diff < 2x RL |
| Arsenic | 0.025 | | 0.026 | | 3.9 | | Ok - RPD < 30% |
| Barium | 0.12 | | 0.12 | | 0.0 | | Ok - RPD < 30% |
| Beryllium | 0.002 | U | 0.002 | U | 0.0 | | Ok - both ND |
| Cadmium | 0.0025 | U | 0.0025 | U | 0.0 | | Ok - both ND |
| Chromium | 0.005 | U | 0.005 | U | 0.0 | | Ok - both ND |
| Lead | 0.0075 | U | 0.0075 | U | 0.0 | | Ok - both ND |
| Mercury | 0.0002 | U | 0.0002 | U | 0.0 | | Ok - both ND |
| Nickel | 0.0024 | | 0.0027 | | 11.8 | 0.0003 | Ok - abs diff < 2x RL |
| Selenium | 0.015 | U | 0.015 | U | 0.0 | | Ok - both ND |
| Silver | 0.005 | U | 0.005 | U | 0.0 | | Ok - both ND |
| Thallium | 0.005 | U | 0.005 | U | 0.0 | | Ok - both ND |
| Vanadium | 0.005 | U | 0.005 | U | 0.0 | | Ok - both ND |
| Zinc | 0.0021 | | 0.0035 | | 50.0 | 0.0014 | Ok - abs diff < 2x RL |

11550

620-11550 Chain of Custody

Testing

Page 1 of 2

# CHAIN OF CUSTODY RECORD


☐ Almgren Drive
Agawam, MA 01001
(413) 789-9018

☐ 46 Camp Avenue
N Kingstown, RI 02852
(401) 732-3400


**Special Handling:**

☐ TAT - Date Needed: Standard

All TATs subject to laboratory approval
Min 24-hr notification needed for rushes
Samples disposed after 30 days unless otherwise instructed.

Report To: aroy@nobis-group com
Adam Roy
Telephone #:
Project Mgr:

Invoice To: ap@nobis-group com
P O No:
Quote #:

Project No: S00001 005/400
Site Name: Former L&M
Location: Lunenburg State: MA
Sampler(s): B Fortier (978) 399-9651

F=Field Filtered 1=$Na_2S2O_3$ 2=HCl 3=$H_2SO_4$ 4=$HNO_3$ 5=NaOH 6=Ascorbic Acid
7=CH3OH 8=$NaHSO_4$ 9=Deionized Water 10=$H_3PO_4$ 11= 12=

DW=Drinking Water GW=Groundwater SW=Surface Water WW=Waste Water
O=Oil SO=Soil SL=Sludge A=Indoor/Ambient Air SG=Soil Gas
X1= X2= X3=

G= Grab C=Compsite

List Preservative Code below:

| Lab ID: | Sample ID: | Date: | Time: | Type | Matrix | Containers: # of VOA Vials | # of Amber Glass | # of Clear Glass | # of Plastic | Analysis: VPH MassDEP | EPH MassDEP | MCP 14 Dissolved Metals 6010/7471 | | | | | | Check if chlorinated | QA/QC Reporting Notes: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | 2 | 2 | 4 | | | | | | | |
| 01 | LM-GW-B/MW105-051723 | 5/17/2023 | 10 55 AM | G | GW | 3 | 2 | | 1 | x | x | x | | | | | | ☐ | Metals are field filtered |
| 02 | LM-GW-B/MW102-051723 | 5/17/2023 | 12 40 PM | G | GW | 3 | 2 | | 1 | x | x | x | | | | | | ☐ | Metals are field filtered |
| 03 | LM-FD-051723 | 5/17/2023 | 8 00 AM | G | GW | 3 | 2 | | 1 | x | x | x | | | | | | ☐ | Metals are field filtered |
| 04 | LM-GW-B/MW101-051723 | 5/17/2023 | 1 00 PM | G | GW | 3 | 2 | | 1 | x | x | x | | | | | | ☐ | Metals are field filtered |
| 05 | LM-GW-B/MW104-051723 | 5/17/2023 | 10 45 AM | G | GW | 9 | 6 | | 3 | x | x | x | | | | | | ☐ | MS/MSD, Metals are field filtered |
| 06 | LM-TB-051723 | 5/17/2023 | 2 00 PM | G | GW | 2 | | | | x | | | | | | | | ☐ | |
| | | | | | | | | | | | | | | | | | | ☐ | |
| | | | | | | | | | | | | | | | | | | ☐ | |
| | | | | | | | | | | | | | | | | | | ☐ | |
| | | | | | | | | | | | | | | | | | | ☐ | |

QA/QC Reporting Level
☐ Level I ☐ Level II
☐ Level III ☐ Level IV
☐ Other
State-specific reporting standards
MA MCP

| Relinquished by: | Received by: | Date: | Time: |
|---|---|---|---|
| | | 5/17/23 | 17:10 |
| | | 5/18/23 | 16:31 |

Temp °C
Observed: 2.5
Correction Factor: -0.2
Corrected: 2.3
IR ID #: 6

☑ EDD format: Equis EDD
☑ E-mail to: aroy@nobis-group com

Condition upon receipt: Custody Seals. ☐ Present ☐ Intact ☐ Broken
☐ Ambient ☐ Iced ☑ Refrigerated ☐ DI VOA Frozen ☐ Soil Jar Frozen

5/30/2023

# ANALYTICAL REPORT

## PREPARED FOR

Attn: Adam Roy
Nobis Engineering, Inc.
585 Middlesex Street
Lowell, Massachusetts 01851

Generated 5/30/2023 5:38:08 PM

## JOB DESCRIPTION

Former L&M - Lunenburg MA

## JOB NUMBER

620-11550-1

Eurofins New England
646 Camp Ave
North Kingstown RI 02852

See page two for job notes and contact information.



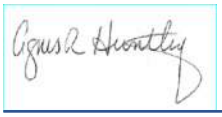
my EOL

## Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northeast, LLC Project Manager.

## Authorization



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Authorized for release by
Agnes Huntley, Project Manager
Agnes.Huntley@et.eurofinsus.com
(401)372-3482

# Table of Contents

Cover Page . . . . . 1
Table of Contents . . . . . 3
Definitions/Glossary . . . . . 4
State Forms . . . . . 5
MCP Checklist . . . . . 5
Case Narrative . . . . . 6
Detection Summary . . . . . 7
Client Sample Results . . . . . 9
Surrogate Summary . . . . . 20
QC Sample Results . . . . . 22
QC Association Summary . . . . . 35
Lab Chronicle . . . . . 39
Certification Summary . . . . . 41
Method Summary . . . . . 43
Sample Summary . . . . . 44
Chain of Custody . . . . . 45
Receipt Checklists . . . . . 46

# Definitions/Glossary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11550-1

## Qualifiers

### GC/MS Semi VOA

| Qualifier | Qualifier Description |
|---|---|
| *1 | LCS/LCSD RPD exceeds control limits. |
| F1 | MS and/or MSD recovery exceeds control limits. |

## Glossary

| Abbreviation | These commonly used abbreviations may or may not be present in this report. |
|---|---|
| ¤ | Listed under the "D" column to designate that the result is reported on a dry weight basis |
| %R | Percent Recovery |
| CFL | Contains Free Liquid |
| CFU | Colony Forming Unit |
| CNF | Contains No Free Liquid |
| DER | Duplicate Error Ratio (normalized absolute difference) |
| Dil Fac | Dilution Factor |
| DL | Detection Limit (DoD/DOE) |
| DL, RA, RE, IN | Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample |
| DLC | Decision Level Concentration (Radiochemistry) |
| EDL | Estimated Detection Limit (Dioxin) |
| LOD | Limit of Detection (DoD/DOE) |
| LOQ | Limit of Quantitation (DoD/DOE) |
| MCL | EPA recommended "Maximum Contaminant Level" |
| MDA | Minimum Detectable Activity (Radiochemistry) |
| MDC | Minimum Detectable Concentration (Radiochemistry) |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| MPN | Most Probable Number |
| MQL | Method Quantitation Limit |
| NC | Not Calculated |
| ND | Not Detected at the reporting limit (or MDL or EDL if shown) |
| NEG | Negative / Absent |
| POS | Positive / Present |
| PQL | Practical Quantitation Limit |
| PRES | Presumptive |
| QC | Quality Control |
| RER | Relative Error Ratio (Radiochemistry) |
| RL | Reporting Limit or Requested Limit (Radiochemistry) |
| RPD | Relative Percent Difference, a measure of the relative difference between two points |
| TEF | Toxicity Equivalent Factor (Dioxin) |
| TEQ | Toxicity Equivalent Quotient (Dioxin) |
| TNTC | Too Numerous To Count |

# MassDEP Analytical Protocol Certfication Form

Laboratory Name: Eurofins New England | Project #: 620-11550-1

Project Location: Former L&M - Lunenburg MA | RTN:

**This Form provides certifications for the following data set: list Laboratory Sample ID Number(s):**
620-11550-1 through 620-11550-6

Matrices: ☑ Groundwater/Surface Water ☐ Soil/Sediment ☐ Drinking Water ☐ Air ☐ Other:

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

| | | | | | |
|---|---|---|---|---|---|
| 8260 VOC CAM II A ☐ | 7470/7471 Hg CAM III B ☑ | MassDEP VPH (GC/PID/FID) CAM IV A ☑ | 8082 PCB CAM V A ☐ | 9014 Total Cyanide/PAC CAM VI A ☐ | 6860 Perchlorate CAM VIII B ☐ |
| 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 ☐ |
| 6010 Metals CAM III A ☑ | 6020 Metals CAM III D ☐ | MassDEP EPH CAM IV B ☑ | 8151 Herbicides CAM V C ☐ | 8330 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 ☐ No |
| **B** | Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed? | ☑ Yes ☐ 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 ☐ No |
| **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 ☐ No |
| **E** | VPH, EPH, APH, and TO-15 only<br>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).<br>b. APH and TO-15 Methods only: Was the complete analyte list reported for each method? | ☑ Yes ☐ No<br>☐ 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 ☐ 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 protocol(s)? | ☑ Yes ☐ No[1] |

***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[1] |
| **I** | Were results reported for the complete analyte list specified in the selected CAM protocol(s)? | ☑ Yes ☐ No[1] |

*1 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, is accurate and complete.***

**Signature:** Agnes R Huntley **Position:** Project Manager

**Printed Name:** Agnes Huntley **Date:** 05/30/2023

## Job ID: 620-11550-1

### Laboratory: Eurofins New England

**Narrative**

**Job Narrative**
**620-11550-1**

**Receipt**
The samples were received on 5/18/2023 4:31 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.8º C.

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

**GC/MS Semi VOA**
Method EPH: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 620-22911 and 620-22956 and analytical batch 620-23053 recovered outside control limits for the following analytes: Naphthalene. The individual percent recoveries are within acceptance limits.

Method EPH: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 620-22769 and 620-22824 and analytical batch 620-22894 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory sample control duplicate (LCS/LCSD) precision was within acceptance limits.

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

**GC VOA**
Method MAVPH2.1: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for analytical batch 620-22877 were outside control limits for the following ranges: C9-C10 Aromatics, C5-C8 Aliphatics (unadjusted), C9-C12 Aliphatics (unadjusted). This is due to the summation of peaks including baseline for client samples.The associated laboratory control sample (LCS) recovery is within acceptance limits; therefor, the data have been reported and qualified.

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

**GC Semi VOA**
Method MAEPH2.1: The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision for preparation batch 620-22769 and 620-22824 and analytical batch 620-22850 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory sample control duplicate (LCS/LCSD) precision was within acceptance limits.

Method MAEPH2.1: The matrix spike and matrix spike duplicate were inadvertently spiked at the EPH MS spike amount, resulting in a low recovery.

LM-GW-B/MW104-051723 (620-11550-5[MS]) and LM-GW-B/MW104-051723 (620-11550-5[MSD])

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

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

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

# Detection Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11550-1

## Client Sample ID: LM-GW-B/MW105-051723 — Lab Sample ID: 620-11550-1

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.0045 | | 0.0060 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |
| Barium | 0.23 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Nickel | 0.00090 | | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |
| Zinc | 0.0026 | | 0.025 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |

## Client Sample ID: LM-GW-B/MW102-051723 — Lab Sample ID: 620-11550-2

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | 28 | | 1.0 | 0.23 | ug/L | 1 | | EPH | Total/NA |
| 2-Methylnaphthalene | 2.3 | | 1.0 | 0.29 | ug/L | 1 | | EPH | Total/NA |
| C5-C8 Aliphatics (adjusted) | 560 | | 100 | 100 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C5-C8 Aliphatics (unadjusted) | 580 | | 100 | 100 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Benzene | 12 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Naphthalene | 77 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (adjusted) - DL | 3000 | | 1000 | 1000 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| C9-C10 Aromatics - DL | 2000 | | 1000 | 1000 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (unadjusted) - DL | 6800 | | 1000 | 1000 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| Ethylbenzene - DL | 490 | | 50 | 50 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| m,p-Xylene - DL | 1400 | | 100 | 100 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| Xylenes, Total - DL | 1400 | | 150 | 150 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| C11-C22 Aromatics | 100 | | 100 | 100 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| Antimony | 0.0049 | | 0.0060 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |
| Arsenic | 0.025 | | 0.0040 | 0.0014 | mg/L | 1 | | 6010D | Dissolved |
| Barium | 0.12 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Nickel | 0.0024 | | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |
| Zinc | 0.0021 | | 0.025 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |

## Client Sample ID: LM-FD-051723 — Lab Sample ID: 620-11550-3

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | 33 | | 1.0 | 0.23 | ug/L | 1 | | EPH | Total/NA |
| 2-Methylnaphthalene | 2.8 | | 1.0 | 0.29 | ug/L | 1 | | EPH | Total/NA |
| C5-C8 Aliphatics (adjusted) | 600 | | 100 | 100 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C5-C8 Aliphatics (unadjusted) | 610 | | 100 | 100 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Benzene | 12 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Naphthalene | 76 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (adjusted) - DL | 3000 | | 1000 | 1000 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| C9-C10 Aromatics - DL | 2000 | | 1000 | 1000 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (unadjusted) - DL | 7000 | | 1000 | 1000 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| Ethylbenzene - DL | 500 | | 50 | 50 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| m,p-Xylene - DL | 1500 | | 100 | 100 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| Xylenes, Total - DL | 1500 | | 150 | 150 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| C11-C22 Aromatics | 110 | | 100 | 100 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| Antimony | 0.0051 | | 0.0060 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |
| Arsenic | 0.026 | | 0.0040 | 0.0014 | mg/L | 1 | | 6010D | Dissolved |
| Barium | 0.12 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Nickel | 0.0027 | | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |
| Zinc | 0.0035 | | 0.025 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |

This Detection Summary does not include radiochemical test results.

# Detection Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11550-1

## Client Sample ID: LM-GW-B/MW101-051723 — Lab Sample ID: 620-11550-4

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.0028 | | 0.0060 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |
| Barium | 0.28 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Cadmium | 0.0011 | | 0.0025 | 0.00036 | mg/L | 1 | | 6010D | Dissolved |
| Lead | 0.060 | | 0.0075 | 0.0062 | mg/L | 1 | | 6010D | Dissolved |
| Nickel | 0.0069 | | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |
| Zinc | 0.20 | | 0.025 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |

## Client Sample ID: LM-GW-B/MW104-051723 — Lab Sample ID: 620-11550-5

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.0053 | | 0.0060 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |
| Arsenic | 0.0081 | | 0.0040 | 0.0014 | mg/L | 1 | | 6010D | Dissolved |
| Barium | 0.069 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Nickel | 0.015 | | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |
| Thallium | 0.0027 | | 0.0050 | 0.0021 | mg/L | 1 | | 6010D | Dissolved |
| Zinc | 0.14 | | 0.025 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |

## Client Sample ID: LM-TB-051723 — Lab Sample ID: 620-11550-6

No Detections.

This Detection Summary does not include radiochemical test results.

## Client Sample ID: LM-GW-B/MW105-051723 Lab Sample ID: 620-11550-1

**Date Collected: 05/17/23 10:55** **Matrix: Water**
**Date Received: 05/18/23 16:31**

### Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 0.95 | 0.22 | ug/L | | 05/19/23 09:53 | 05/23/23 11:56 | 1 |
| 2-Methylnaphthalene | ND | | 0.95 | 0.28 | ug/L | | 05/19/23 09:53 | 05/23/23 11:56 | 1 |
| Acenaphthylene | ND | | 0.95 | 0.37 | ug/L | | 05/19/23 09:53 | 05/23/23 11:56 | 1 |
| Acenaphthene | ND | | 0.95 | 0.18 | ug/L | | 05/19/23 09:53 | 05/23/23 11:56 | 1 |
| Fluorene | ND | | 0.95 | 0.37 | ug/L | | 05/19/23 09:53 | 05/23/23 11:56 | 1 |
| Phenanthrene | ND | | 0.95 | 0.16 | ug/L | | 05/19/23 09:53 | 05/23/23 11:56 | 1 |
| Anthracene | ND | | 0.95 | 0.15 | ug/L | | 05/19/23 09:53 | 05/23/23 11:56 | 1 |
| Fluoranthene | ND | | 0.95 | 0.14 | ug/L | | 05/19/23 09:53 | 05/23/23 11:56 | 1 |
| Pyrene | ND | | 0.95 | 0.14 | ug/L | | 05/19/23 09:53 | 05/23/23 11:56 | 1 |
| Benzo[a]anthracene | ND | | 0.95 | 0.067 | ug/L | | 05/19/23 09:53 | 05/23/23 11:56 | 1 |
| Chrysene | ND | | 0.95 | 0.13 | ug/L | | 05/19/23 09:53 | 05/23/23 11:56 | 1 |
| Benzo[b]fluoranthene | ND | | 0.95 | 0.14 | ug/L | | 05/19/23 09:53 | 05/23/23 11:56 | 1 |
| Benzo[k]fluoranthene | ND | | 0.95 | 0.23 | ug/L | | 05/19/23 09:53 | 05/23/23 11:56 | 1 |
| Benzo[a]pyrene | ND | | 0.19 | 0.15 | ug/L | | 05/19/23 09:53 | 05/23/23 11:56 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.48 | 0.44 | ug/L | | 05/19/23 09:53 | 05/23/23 11:56 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.48 | 0.20 | ug/L | | 05/19/23 09:53 | 05/23/23 11:56 | 1 |
| Benzo[g,h,i]perylene | ND | | 0.95 | 0.16 | ug/L | | 05/19/23 09:53 | 05/23/23 11:56 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *72* | | *40 - 140* | *05/19/23 09:53* | *05/23/23 11:56* | *1* |
| *2-Fluorobiphenyl (Surr)* | *97* | | *40 - 140* | *05/19/23 09:53* | *05/23/23 11:56* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 05/23/23 20:34 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 05/23/23 20:34 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 05/23/23 20:34 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 05/23/23 20:34 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 05/23/23 20:34 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 05/23/23 20:34 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 05/23/23 20:34 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 05/23/23 20:34 | 1 |
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 05/23/23 20:34 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 05/23/23 20:34 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 05/23/23 20:34 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 05/23/23 20:34 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 05/23/23 20:34 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *95* | | *70 - 130* | | *05/23/23 20:34* | *1* |
| *2,5-Dibromotoluene (pid)* | *96* | | *70 - 130* | | *05/23/23 20:34* | *1* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 95 | 95 | ug/L | | 05/19/23 09:53 | 05/22/23 21:10 | 1 |
| C19-C36 Aliphatics | ND | | 95 | 95 | ug/L | | 05/19/23 09:53 | 05/22/23 21:10 | 1 |
| C11-C22 Aromatics | ND | | 95 | 95 | ug/L | | 05/19/23 09:53 | 05/22/23 21:10 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 95 | 95 | ug/L | | 05/19/23 09:53 | 05/22/23 21:10 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *53* | | *40 - 140* | *05/19/23 09:53* | *05/22/23 21:10* | *1* |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11550-1

**Client Sample ID: LM-GW-B/MW105-051723**
**Date Collected: 05/17/23 10:55**
**Date Received: 05/18/23 16:31**

**Lab Sample ID: 620-11550-1**
**Matrix: Water**

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *59* | | *40 - 140* | *05/19/23 09:53* | *05/22/23 21:10* | *1* |
| *2-Fluorobiphenyl (Surr)* | *85* | | *40 - 140* | *05/19/23 09:53* | *05/22/23 21:10* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Antimony** | **0.0045** | | 0.0060 | 0.0016 | mg/L | | 05/19/23 09:48 | 05/22/23 13:52 | 1 |
| Arsenic | ND | | 0.0040 | 0.0014 | mg/L | | 05/19/23 09:48 | 05/22/23 13:52 | 1 |
| **Barium** | **0.23** | | 0.0050 | 0.00070 | mg/L | | 05/19/23 09:48 | 05/22/23 13:52 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 05/19/23 09:48 | 05/22/23 13:52 | 1 |
| Cadmium | ND | | 0.0025 | 0.00036 | mg/L | | 05/19/23 09:48 | 05/22/23 13:52 | 1 |
| Chromium | ND | | 0.0050 | 0.00093 | mg/L | | 05/19/23 09:48 | 05/22/23 13:52 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 05/19/23 09:48 | 05/22/23 13:52 | 1 |
| **Nickel** | **0.00090** | | 0.0050 | 0.00087 | mg/L | | 05/19/23 09:48 | 05/22/23 13:52 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 05/19/23 09:48 | 05/22/23 13:52 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 05/19/23 09:48 | 05/22/23 13:52 | 1 |
| Thallium | ND | | 0.0050 | 0.0021 | mg/L | | 05/19/23 09:48 | 05/22/23 13:52 | 1 |
| Vanadium | ND | | 0.0050 | 0.0011 | mg/L | | 05/19/23 09:48 | 05/22/23 13:52 | 1 |
| **Zinc** | **0.0026** | | 0.025 | 0.0016 | mg/L | | 05/19/23 09:48 | 05/22/23 13:52 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 05/19/23 10:03 | 05/19/23 15:12 | 1 |

## Client Sample ID: LM-GW-B/MW102-051723

**Date Collected: 05/17/23 12:40**
**Date Received: 05/18/23 16:31**

**Lab Sample ID: 620-11550-2**
**Matrix: Water**

### Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Naphthalene** | **28** | | 1.0 | 0.23 | ug/L | | 05/19/23 09:53 | 05/23/23 12:19 | 1 |
| **2-Methylnaphthalene** | **2.3** | | 1.0 | 0.29 | ug/L | | 05/19/23 09:53 | 05/23/23 12:19 | 1 |
| Acenaphthylene | ND | | 1.0 | 0.39 | ug/L | | 05/19/23 09:53 | 05/23/23 12:19 | 1 |
| Acenaphthene | ND | | 1.0 | 0.19 | ug/L | | 05/19/23 09:53 | 05/23/23 12:19 | 1 |
| Fluorene | ND | | 1.0 | 0.39 | ug/L | | 05/19/23 09:53 | 05/23/23 12:19 | 1 |
| Phenanthrene | ND | | 1.0 | 0.17 | ug/L | | 05/19/23 09:53 | 05/23/23 12:19 | 1 |
| Anthracene | ND | | 1.0 | 0.15 | ug/L | | 05/19/23 09:53 | 05/23/23 12:19 | 1 |
| Fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 05/19/23 09:53 | 05/23/23 12:19 | 1 |
| Pyrene | ND | | 1.0 | 0.14 | ug/L | | 05/19/23 09:53 | 05/23/23 12:19 | 1 |
| Benzo[a]anthracene | ND | | 1.0 | 0.070 | ug/L | | 05/19/23 09:53 | 05/23/23 12:19 | 1 |
| Chrysene | ND | | 1.0 | 0.14 | ug/L | | 05/19/23 09:53 | 05/23/23 12:19 | 1 |
| Benzo[b]fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 05/19/23 09:53 | 05/23/23 12:19 | 1 |
| Benzo[k]fluoranthene | ND | | 1.0 | 0.24 | ug/L | | 05/19/23 09:53 | 05/23/23 12:19 | 1 |
| Benzo[a]pyrene | ND | | 0.20 | 0.16 | ug/L | | 05/19/23 09:53 | 05/23/23 12:19 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.50 | 0.46 | ug/L | | 05/19/23 09:53 | 05/23/23 12:19 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.50 | 0.21 | ug/L | | 05/19/23 09:53 | 05/23/23 12:19 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.0 | 0.17 | ug/L | | 05/19/23 09:53 | 05/23/23 12:19 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *73* | | *40 - 140* | *05/19/23 09:53* | *05/23/23 12:19* | *1* |
| *2-Fluorobiphenyl (Surr)* | *88* | | *40 - 140* | *05/19/23 09:53* | *05/23/23 12:19* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C5-C8 Aliphatics (adjusted)** | **560** | | 100 | 100 | ug/L | | | 05/24/23 03:36 | 1 |
| **C5-C8 Aliphatics (unadjusted)** | **580** | | 100 | 100 | ug/L | | | 05/24/23 03:36 | 1 |
| **Benzene** | **12** | | 5.0 | 5.0 | ug/L | | | 05/24/23 03:36 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 05/24/23 03:36 | 1 |
| **Naphthalene** | **77** | | 5.0 | 5.0 | ug/L | | | 05/24/23 03:36 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 05/24/23 03:36 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 05/24/23 03:36 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *113* | | *70 - 130* | | *05/24/23 03:36* | *1* |
| *2,5-Dibromotoluene (pid)* | *107* | | *70 - 130* | | *05/24/23 03:36* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) - DL

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C9-C12 Aliphatics (adjusted)** | **3000** | | 1000 | 1000 | ug/L | | | 05/24/23 15:00 | 10 |
| **C9-C10 Aromatics** | **2000** | | 1000 | 1000 | ug/L | | | 05/24/23 15:00 | 10 |
| **C9-C12 Aliphatics (unadjusted)** | **6800** | | 1000 | 1000 | ug/L | | | 05/24/23 15:00 | 10 |
| **Ethylbenzene** | **490** | | 50 | 50 | ug/L | | | 05/24/23 15:00 | 10 |
| **m,p-Xylene** | **1400** | | 100 | 100 | ug/L | | | 05/24/23 15:00 | 10 |
| **Xylenes, Total** | **1400** | | 150 | 150 | ug/L | | | 05/24/23 15:00 | 10 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *99* | | *70 - 130* | | *05/24/23 15:00* | *10* |
| *2,5-Dibromotoluene (pid)* | *98* | | *70 - 130* | | *05/24/23 15:00* | *10* |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11550-1

## Client Sample ID: LM-GW-B/MW102-051723

**Lab Sample ID: 620-11550-2**

**Date Collected: 05/17/23 12:40**

**Matrix: Water**

**Date Received: 05/18/23 16:31**

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 100 | 100 | ug/L | | 05/19/23 09:53 | 05/22/23 21:39 | 1 |
| C19-C36 Aliphatics | ND | | 100 | 100 | ug/L | | 05/19/23 09:53 | 05/22/23 21:39 | 1 |
| **C11-C22 Aromatics** | **100** | | 100 | 100 | ug/L | | 05/19/23 09:53 | 05/22/23 21:39 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 100 | 100 | ug/L | | 05/19/23 09:53 | 05/22/23 21:39 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *56* | | *40 - 140* | *05/19/23 09:53* | *05/22/23 21:39* | *1* |
| *o-Terphenyl (Surr)* | *62* | | *40 - 140* | *05/19/23 09:53* | *05/22/23 21:39* | *1* |
| *2-Fluorobiphenyl (Surr)* | *79* | | *40 - 140* | *05/19/23 09:53* | *05/22/23 21:39* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Antimony** | **0.0049** | | 0.0060 | 0.0016 | mg/L | | 05/19/23 09:48 | 05/22/23 13:58 | 1 |
| **Arsenic** | **0.025** | | 0.0040 | 0.0014 | mg/L | | 05/19/23 09:48 | 05/22/23 13:58 | 1 |
| **Barium** | **0.12** | | 0.0050 | 0.00070 | mg/L | | 05/19/23 09:48 | 05/22/23 13:58 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 05/19/23 09:48 | 05/22/23 13:58 | 1 |
| Cadmium | ND | | 0.0025 | 0.00036 | mg/L | | 05/19/23 09:48 | 05/22/23 13:58 | 1 |
| Chromium | ND | | 0.0050 | 0.00093 | mg/L | | 05/19/23 09:48 | 05/22/23 13:58 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 05/19/23 09:48 | 05/22/23 13:58 | 1 |
| **Nickel** | **0.0024** | | 0.0050 | 0.00087 | mg/L | | 05/19/23 09:48 | 05/22/23 13:58 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 05/19/23 09:48 | 05/22/23 13:58 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 05/19/23 09:48 | 05/22/23 13:58 | 1 |
| Thallium | ND | | 0.0050 | 0.0021 | mg/L | | 05/19/23 09:48 | 05/22/23 13:58 | 1 |
| Vanadium | ND | | 0.0050 | 0.0011 | mg/L | | 05/19/23 09:48 | 05/22/23 13:58 | 1 |
| **Zinc** | **0.0021** | | 0.025 | 0.0016 | mg/L | | 05/19/23 09:48 | 05/22/23 13:58 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 05/19/23 10:03 | 05/19/23 15:14 | 1 |

## Client Sample ID: LM-FD-051723

**Date Collected: 05/17/23 08:00**
**Date Received: 05/18/23 16:31**

## Lab Sample ID: 620-11550-3

**Matrix: Water**

### Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Naphthalene** | **33** | | 1.0 | 0.23 | ug/L | | 05/19/23 09:53 | 05/23/23 12:42 | 1 |
| **2-Methylnaphthalene** | **2.8** | | 1.0 | 0.29 | ug/L | | 05/19/23 09:53 | 05/23/23 12:42 | 1 |
| Acenaphthylene | ND | | 1.0 | 0.39 | ug/L | | 05/19/23 09:53 | 05/23/23 12:42 | 1 |
| Acenaphthene | ND | | 1.0 | 0.19 | ug/L | | 05/19/23 09:53 | 05/23/23 12:42 | 1 |
| Fluorene | ND | | 1.0 | 0.39 | ug/L | | 05/19/23 09:53 | 05/23/23 12:42 | 1 |
| Phenanthrene | ND | | 1.0 | 0.17 | ug/L | | 05/19/23 09:53 | 05/23/23 12:42 | 1 |
| Anthracene | ND | | 1.0 | 0.15 | ug/L | | 05/19/23 09:53 | 05/23/23 12:42 | 1 |
| Fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 05/19/23 09:53 | 05/23/23 12:42 | 1 |
| Pyrene | ND | | 1.0 | 0.14 | ug/L | | 05/19/23 09:53 | 05/23/23 12:42 | 1 |
| Benzo[a]anthracene | ND | | 1.0 | 0.070 | ug/L | | 05/19/23 09:53 | 05/23/23 12:42 | 1 |
| Chrysene | ND | | 1.0 | 0.14 | ug/L | | 05/19/23 09:53 | 05/23/23 12:42 | 1 |
| Benzo[b]fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 05/19/23 09:53 | 05/23/23 12:42 | 1 |
| Benzo[k]fluoranthene | ND | | 1.0 | 0.24 | ug/L | | 05/19/23 09:53 | 05/23/23 12:42 | 1 |
| Benzo[a]pyrene | ND | | 0.20 | 0.16 | ug/L | | 05/19/23 09:53 | 05/23/23 12:42 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.50 | 0.46 | ug/L | | 05/19/23 09:53 | 05/23/23 12:42 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.50 | 0.21 | ug/L | | 05/19/23 09:53 | 05/23/23 12:42 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.0 | 0.17 | ug/L | | 05/19/23 09:53 | 05/23/23 12:42 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *62* | | *40 - 140* | *05/19/23 09:53* | *05/23/23 12:42* | *1* |
| *2-Fluorobiphenyl (Surr)* | *101* | | *40 - 140* | *05/19/23 09:53* | *05/23/23 12:42* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C5-C8 Aliphatics (adjusted)** | **600** | | 100 | 100 | ug/L | | | 05/24/23 03:01 | 1 |
| **C5-C8 Aliphatics (unadjusted)** | **610** | | 100 | 100 | ug/L | | | 05/24/23 03:01 | 1 |
| **Benzene** | **12** | | 5.0 | 5.0 | ug/L | | | 05/24/23 03:01 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 05/24/23 03:01 | 1 |
| **Naphthalene** | **76** | | 5.0 | 5.0 | ug/L | | | 05/24/23 03:01 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 05/24/23 03:01 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 05/24/23 03:01 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *112* | | *70 - 130* | | *05/24/23 03:01* | *1* |
| *2,5-Dibromotoluene (pid)* | *111* | | *70 - 130* | | *05/24/23 03:01* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) - DL

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C9-C12 Aliphatics (adjusted)** | **3000** | | 1000 | 1000 | ug/L | | | 05/24/23 15:35 | 10 |
| **C9-C10 Aromatics** | **2000** | | 1000 | 1000 | ug/L | | | 05/24/23 15:35 | 10 |
| **C9-C12 Aliphatics (unadjusted)** | **7000** | | 1000 | 1000 | ug/L | | | 05/24/23 15:35 | 10 |
| **Ethylbenzene** | **500** | | 50 | 50 | ug/L | | | 05/24/23 15:35 | 10 |
| **m,p-Xylene** | **1500** | | 100 | 100 | ug/L | | | 05/24/23 15:35 | 10 |
| **Xylenes, Total** | **1500** | | 150 | 150 | ug/L | | | 05/24/23 15:35 | 10 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *101* | | *70 - 130* | | *05/24/23 15:35* | *10* |
| *2,5-Dibromotoluene (pid)* | *99* | | *70 - 130* | | *05/24/23 15:35* | *10* |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11550-1

## Client Sample ID: LM-FD-051723

**Date Collected: 05/17/23 08:00**
**Date Received: 05/18/23 16:31**

## Lab Sample ID: 620-11550-3

**Matrix: Water**

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 100 | 100 | ug/L | | 05/19/23 09:53 | 05/22/23 22:09 | 1 |
| C19-C36 Aliphatics | ND | | 100 | 100 | ug/L | | 05/19/23 09:53 | 05/22/23 22:09 | 1 |
| **C11-C22 Aromatics** | **110** | | 100 | 100 | ug/L | | 05/19/23 09:53 | 05/22/23 22:09 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 100 | 100 | ug/L | | 05/19/23 09:53 | 05/22/23 22:09 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *50* | | *40 - 140* | *05/19/23 09:53* | *05/22/23 22:09* | *1* |
| *o-Terphenyl (Surr)* | *51* | | *40 - 140* | *05/19/23 09:53* | *05/22/23 22:09* | *1* |
| *2-Fluorobiphenyl (Surr)* | *79* | | *40 - 140* | *05/19/23 09:53* | *05/22/23 22:09* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Antimony** | **0.0051** | | 0.0060 | 0.0016 | mg/L | | 05/19/23 09:48 | 05/22/23 14:04 | 1 |
| **Arsenic** | **0.026** | | 0.0040 | 0.0014 | mg/L | | 05/19/23 09:48 | 05/22/23 14:04 | 1 |
| **Barium** | **0.12** | | 0.0050 | 0.00070 | mg/L | | 05/19/23 09:48 | 05/22/23 14:04 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 05/19/23 09:48 | 05/22/23 14:04 | 1 |
| Cadmium | ND | | 0.0025 | 0.00036 | mg/L | | 05/19/23 09:48 | 05/22/23 14:04 | 1 |
| Chromium | ND | | 0.0050 | 0.00093 | mg/L | | 05/19/23 09:48 | 05/22/23 14:04 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 05/19/23 09:48 | 05/22/23 14:04 | 1 |
| **Nickel** | **0.0027** | | 0.0050 | 0.00087 | mg/L | | 05/19/23 09:48 | 05/22/23 14:04 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 05/19/23 09:48 | 05/22/23 14:04 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 05/19/23 09:48 | 05/22/23 14:04 | 1 |
| Thallium | ND | | 0.0050 | 0.0021 | mg/L | | 05/19/23 09:48 | 05/22/23 14:04 | 1 |
| Vanadium | ND | | 0.0050 | 0.0011 | mg/L | | 05/19/23 09:48 | 05/22/23 14:04 | 1 |
| **Zinc** | **0.0035** | | 0.025 | 0.0016 | mg/L | | 05/19/23 09:48 | 05/22/23 14:04 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 05/19/23 10:03 | 05/19/23 15:16 | 1 |

**Client Sample ID: LM-GW-B/MW101-051723**
**Date Collected: 05/17/23 13:00**
**Date Received: 05/18/23 16:31**

**Lab Sample ID: 620-11550-4**
**Matrix: Water**

## Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 1.0 | 0.23 | ug/L | | 05/19/23 09:53 | 05/24/23 09:51 | 1 |
| 2-Methylnaphthalene | ND | | 1.0 | 0.29 | ug/L | | 05/19/23 09:53 | 05/24/23 09:51 | 1 |
| Acenaphthylene | ND | | 1.0 | 0.39 | ug/L | | 05/19/23 09:53 | 05/24/23 09:51 | 1 |
| Acenaphthene | ND | | 1.0 | 0.19 | ug/L | | 05/19/23 09:53 | 05/24/23 09:51 | 1 |
| Fluorene | ND | | 1.0 | 0.39 | ug/L | | 05/19/23 09:53 | 05/24/23 09:51 | 1 |
| Phenanthrene | ND | | 1.0 | 0.17 | ug/L | | 05/19/23 09:53 | 05/24/23 09:51 | 1 |
| Anthracene | ND | | 1.0 | 0.15 | ug/L | | 05/19/23 09:53 | 05/24/23 09:51 | 1 |
| Fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 05/19/23 09:53 | 05/24/23 09:51 | 1 |
| Pyrene | ND | | 1.0 | 0.14 | ug/L | | 05/19/23 09:53 | 05/24/23 09:51 | 1 |
| Benzo[a]anthracene | ND | | 1.0 | 0.070 | ug/L | | 05/19/23 09:53 | 05/24/23 09:51 | 1 |
| Chrysene | ND | | 1.0 | 0.14 | ug/L | | 05/19/23 09:53 | 05/24/23 09:51 | 1 |
| Benzo[b]fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 05/19/23 09:53 | 05/24/23 09:51 | 1 |
| Benzo[k]fluoranthene | ND | | 1.0 | 0.24 | ug/L | | 05/19/23 09:53 | 05/24/23 09:51 | 1 |
| Benzo[a]pyrene | ND | | 0.20 | 0.16 | ug/L | | 05/19/23 09:53 | 05/24/23 09:51 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.50 | 0.46 | ug/L | | 05/19/23 09:53 | 05/24/23 09:51 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.50 | 0.21 | ug/L | | 05/19/23 09:53 | 05/24/23 09:51 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.0 | 0.17 | ug/L | | 05/19/23 09:53 | 05/24/23 09:51 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *49* | | *40 - 140* | *05/19/23 09:53* | *05/24/23 09:51* | *1* |
| *2-Fluorobiphenyl (Surr)* | *72* | | *40 - 140* | *05/19/23 09:53* | *05/24/23 09:51* | *1* |

## Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 05/23/23 21:10 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 05/23/23 21:10 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 05/23/23 21:10 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 05/23/23 21:10 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 05/23/23 21:10 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 05/23/23 21:10 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 05/23/23 21:10 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 05/23/23 21:10 | 1 |
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 05/23/23 21:10 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 05/23/23 21:10 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 05/23/23 21:10 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 05/23/23 21:10 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 05/23/23 21:10 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *98* | | *70 - 130* | | *05/23/23 21:10* | *1* |
| *2,5-Dibromotoluene (pid)* | *101* | | *70 - 130* | | *05/23/23 21:10* | *1* |

## Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 100 | 100 | ug/L | | 05/19/23 09:53 | 05/23/23 17:01 | 1 |
| C19-C36 Aliphatics | ND | | 100 | 100 | ug/L | | 05/19/23 09:53 | 05/23/23 17:01 | 1 |
| C11-C22 Aromatics | ND | | 100 | 100 | ug/L | | 05/19/23 09:53 | 05/23/23 17:01 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 100 | 100 | ug/L | | 05/19/23 09:53 | 05/23/23 17:01 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *41* | | *40 - 140* | *05/19/23 09:53* | *05/23/23 17:01* | *1* |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11550-1

## Client Sample ID: LM-GW-B/MW101-051723

**Lab Sample ID: 620-11550-4**

**Date Collected: 05/17/23 13:00**

**Matrix: Water**

**Date Received: 05/18/23 16:31**

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *40* | | *40 - 140* | *05/19/23 09:53* | *05/23/23 17:01* | *1* |
| *2-Fluorobiphenyl (Surr)* | *60* | | *40 - 140* | *05/19/23 09:53* | *05/23/23 17:01* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Antimony** | **0.0028** | | 0.0060 | 0.0016 | mg/L | | 05/19/23 09:48 | 05/22/23 14:10 | 1 |
| Arsenic | ND | | 0.0040 | 0.0014 | mg/L | | 05/19/23 09:48 | 05/22/23 14:10 | 1 |
| **Barium** | **0.28** | | 0.0050 | 0.00070 | mg/L | | 05/19/23 09:48 | 05/22/23 14:10 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 05/19/23 09:48 | 05/22/23 14:10 | 1 |
| **Cadmium** | **0.0011** | | 0.0025 | 0.00036 | mg/L | | 05/19/23 09:48 | 05/22/23 14:10 | 1 |
| Chromium | ND | | 0.0050 | 0.00093 | mg/L | | 05/19/23 09:48 | 05/22/23 14:10 | 1 |
| **Lead** | **0.060** | | 0.0075 | 0.0062 | mg/L | | 05/19/23 09:48 | 05/22/23 14:10 | 1 |
| **Nickel** | **0.0069** | | 0.0050 | 0.00087 | mg/L | | 05/19/23 09:48 | 05/22/23 14:10 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 05/19/23 09:48 | 05/22/23 14:10 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 05/19/23 09:48 | 05/22/23 14:10 | 1 |
| Thallium | ND | | 0.0050 | 0.0021 | mg/L | | 05/19/23 09:48 | 05/22/23 14:10 | 1 |
| Vanadium | ND | | 0.0050 | 0.0011 | mg/L | | 05/19/23 09:48 | 05/22/23 14:10 | 1 |
| **Zinc** | **0.20** | | 0.025 | 0.0016 | mg/L | | 05/19/23 09:48 | 05/22/23 14:10 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 05/19/23 10:03 | 05/19/23 15:18 | 1 |

## Client Sample ID: LM-GW-B/MW104-051723

**Date Collected: 05/17/23 10:45**
**Date Received: 05/18/23 16:31**

## Lab Sample ID: 620-11550-5

**Matrix: Water**

### Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | F1 *1 | 1.0 | 0.23 | ug/L | | 05/24/23 11:41 | 05/30/23 12:54 | 1 |
| 2-Methylnaphthalene | ND | F1 | 1.0 | 0.29 | ug/L | | 05/24/23 11:41 | 05/30/23 12:54 | 1 |
| Acenaphthylene | ND | F1 | 1.0 | 0.39 | ug/L | | 05/24/23 11:41 | 05/30/23 12:54 | 1 |
| Acenaphthene | ND | F1 | 1.0 | 0.19 | ug/L | | 05/24/23 11:41 | 05/30/23 12:54 | 1 |
| Fluorene | ND | | 1.0 | 0.39 | ug/L | | 05/24/23 11:41 | 05/30/23 12:54 | 1 |
| Phenanthrene | ND | | 1.0 | 0.17 | ug/L | | 05/24/23 11:41 | 05/30/23 12:54 | 1 |
| Anthracene | ND | | 1.0 | 0.15 | ug/L | | 05/24/23 11:41 | 05/30/23 12:54 | 1 |
| Fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 05/24/23 11:41 | 05/30/23 12:54 | 1 |
| Pyrene | ND | | 1.0 | 0.14 | ug/L | | 05/24/23 11:41 | 05/30/23 12:54 | 1 |
| Benzo[a]anthracene | ND | | 1.0 | 0.070 | ug/L | | 05/24/23 11:41 | 05/30/23 12:54 | 1 |
| Chrysene | ND | | 1.0 | 0.14 | ug/L | | 05/24/23 11:41 | 05/30/23 12:54 | 1 |
| Benzo[b]fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 05/24/23 11:41 | 05/30/23 12:54 | 1 |
| Benzo[k]fluoranthene | ND | | 1.0 | 0.24 | ug/L | | 05/24/23 11:41 | 05/30/23 12:54 | 1 |
| Benzo[a]pyrene | ND | | 0.20 | 0.16 | ug/L | | 05/24/23 11:41 | 05/30/23 12:54 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.50 | 0.46 | ug/L | | 05/24/23 11:41 | 05/30/23 12:54 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.50 | 0.21 | ug/L | | 05/24/23 11:41 | 05/30/23 12:54 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.0 | 0.17 | ug/L | | 05/24/23 11:41 | 05/30/23 12:54 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *74* | | *40 - 140* | *05/24/23 11:41* | *05/30/23 12:54* | *1* |
| *2-Fluorobiphenyl (Surr)* | *98* | | *40 - 140* | *05/24/23 11:41* | *05/30/23 12:54* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 05/23/23 18:48 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 05/23/23 18:48 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 05/23/23 18:48 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 05/23/23 18:48 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 05/23/23 18:48 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 05/23/23 18:48 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 05/23/23 18:48 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 05/23/23 18:48 | 1 |
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 05/23/23 18:48 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 05/23/23 18:48 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 05/23/23 18:48 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 05/23/23 18:48 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 05/23/23 18:48 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *95* | | *70 - 130* | | *05/23/23 18:48* | *1* |
| *2,5-Dibromotoluene (pid)* | *96* | | *70 - 130* | | *05/23/23 18:48* | *1* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 100 | 100 | ug/L | | 05/24/23 11:41 | 05/25/23 14:11 | 1 |
| C19-C36 Aliphatics | ND | | 100 | 100 | ug/L | | 05/24/23 11:41 | 05/25/23 14:11 | 1 |
| C11-C22 Aromatics | ND | | 100 | 100 | ug/L | | 05/24/23 11:41 | 05/25/23 14:11 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 100 | 100 | ug/L | | 05/24/23 11:41 | 05/25/23 14:11 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *65* | | *40 - 140* | *05/24/23 11:41* | *05/25/23 14:11* | *1* |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11550-1

**Client Sample ID: LM-GW-B/MW104-051723**
**Date Collected: 05/17/23 10:45**
**Date Received: 05/18/23 16:31**

**Lab Sample ID: 620-11550-5**
**Matrix: Water**

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *71* | | *40 - 140* | *05/24/23 11:41* | *05/25/23 14:11* | *1* |
| *2-Fluorobiphenyl (Surr)* | *95* | | *40 - 140* | *05/24/23 11:41* | *05/25/23 14:11* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Antimony** | **0.0053** | | 0.0060 | 0.0016 | mg/L | | 05/19/23 09:48 | 05/22/23 12:58 | 1 |
| **Arsenic** | **0.0081** | | 0.0040 | 0.0014 | mg/L | | 05/19/23 09:48 | 05/22/23 12:58 | 1 |
| **Barium** | **0.069** | | 0.0050 | 0.00070 | mg/L | | 05/19/23 09:48 | 05/22/23 12:58 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 05/19/23 09:48 | 05/22/23 12:58 | 1 |
| Cadmium | ND | | 0.0025 | 0.00036 | mg/L | | 05/19/23 09:48 | 05/22/23 12:58 | 1 |
| Chromium | ND | | 0.0050 | 0.00093 | mg/L | | 05/19/23 09:48 | 05/22/23 12:58 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 05/19/23 09:48 | 05/22/23 12:58 | 1 |
| **Nickel** | **0.015** | | 0.0050 | 0.00087 | mg/L | | 05/19/23 09:48 | 05/22/23 12:58 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 05/19/23 09:48 | 05/22/23 12:58 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 05/19/23 09:48 | 05/22/23 12:58 | 1 |
| **Thallium** | **0.0027** | | 0.0050 | 0.0021 | mg/L | | 05/19/23 09:48 | 05/22/23 12:58 | 1 |
| Vanadium | ND | | 0.0050 | 0.0011 | mg/L | | 05/19/23 09:48 | 05/22/23 12:58 | 1 |
| **Zinc** | **0.14** | | 0.025 | 0.0016 | mg/L | | 05/19/23 09:48 | 05/22/23 12:58 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 05/19/23 10:03 | 05/19/23 15:25 | 1 |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11550-1

**Client Sample ID: LM-TB-051723**
**Date Collected: 05/17/23 14:00**
**Date Received: 05/18/23 16:31**

**Lab Sample ID: 620-11550-6**
**Matrix: Water**

**Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)**

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 05/23/23 17:03 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 05/23/23 17:03 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 05/23/23 17:03 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 05/23/23 17:03 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 05/23/23 17:03 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 05/23/23 17:03 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 05/23/23 17:03 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 05/23/23 17:03 | 1 |
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 05/23/23 17:03 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 05/23/23 17:03 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 05/23/23 17:03 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 05/23/23 17:03 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 05/23/23 17:03 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *91* | | *70 - 130* | | *05/23/23 17:03* | *1* |
| *2,5-Dibromotoluene (pid)* | *92* | | *70 - 130* | | *05/23/23 17:03* | *1* |

# Surrogate Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11550-1

## Method: EPH - Extractable Petroleum Hydrocarbons (GC/MS)

**Matrix: Water**

**Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) | |
|---|---|---|---|
| Lab Sample ID | Client Sample ID | OTPH (40-140) | FBP (40-140) |
| 620-11550-1 | LM-GW-B/MW105-051723 | 72 | 97 |
| 620-11550-2 | LM-GW-B/MW102-051723 | 73 | 88 |
| 620-11550-3 | LM-FD-051723 | 62 | 101 |
| 620-11550-4 | LM-GW-B/MW101-051723 | 49 | 72 |
| 620-11550-5 | LM-GW-B/MW104-051723 | 74 | 98 |
| 620-11550-5 MS | LM-GW-B/MW104-051723 | 59 | 94 |
| 620-11550-5 MSD | LM-GW-B/MW104-051723 | 72 | 100 |
| LCS 620-22769/4-B | Lab Control Sample | 89 | 99 |
| LCS 620-22911/4-B | Lab Control Sample | 74 | 99 |
| LCSD 620-22769/5-B | Lab Control Sample Dup | 89 | 99 |
| LCSD 620-22911/5-B | Lab Control Sample Dup | 73 | 102 |
| MB 620-22769/1-B | Method Blank | 54 | 67 |
| MB 620-22911/1-B | Method Blank | 68 | 93 |

**Surrogate Legend**

OTPH = o-Terphenyl (Surr)
FBP = 2-Fluorobiphenyl (Surr)

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

**Matrix: Water**

**Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) | |
|---|---|---|---|
| Lab Sample ID | Client Sample ID | 25DBTf1 (70-130) | 25DBTp1 (70-130) |
| 620-11550-1 | LM-GW-B/MW105-051723 | 95 | 96 |
| 620-11550-2 | LM-GW-B/MW102-051723 | 113 | 107 |
| 620-11550-2 - DL | LM-GW-B/MW102-051723 | 99 | 98 |
| 620-11550-3 | LM-FD-051723 | 112 | 111 |
| 620-11550-3 - DL | LM-FD-051723 | 101 | 99 |
| 620-11550-4 | LM-GW-B/MW101-051723 | 98 | 101 |
| 620-11550-5 | LM-GW-B/MW104-051723 | 95 | 96 |
| 620-11550-5 MS | LM-GW-B/MW104-051723 | 93 | 95 |
| 620-11550-5 MSD | LM-GW-B/MW104-051723 | 95 | 96 |
| 620-11550-6 | LM-TB-051723 | 91 | 92 |
| LCS 620-22877/3 | Lab Control Sample | 97 | 99 |
| LCS 620-22907/3 | Lab Control Sample | 100 | 100 |
| LCSD 620-22877/4 | Lab Control Sample Dup | 97 | 99 |
| LCSD 620-22907/4 | Lab Control Sample Dup | 100 | 100 |
| MB 620-22877/5 | Method Blank | 97 | 99 |
| MB 620-22907/5 | Method Blank | 100 | 100 |

**Surrogate Legend**

25DBTf = 2,5-Dibromotoluene (fid)
25DBTp = 2,5-Dibromotoluene (pid)

# Surrogate Summary

Client: Nobis Engineering, Inc. Job ID: 620-11550-1
Project/Site: Former L&M - Lunenburg MA

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

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

| | | Percent Surrogate Recovery (Acceptance Limits) | | |
|---|---|---|---|---|
| Lab Sample ID | Client Sample ID | 1COD1 (40-140) | OTPH1 (40-140) | FBP1 (40-140) |
| 620-11550-1 | LM-GW-B/MW105-051723 | 53 | 59 | 85 |
| 620-11550-2 | LM-GW-B/MW102-051723 | 56 | 62 | 79 |
| 620-11550-3 | LM-FD-051723 | 50 | 51 | 79 |
| 620-11550-4 | LM-GW-B/MW101-051723 | 41 | 40 | 60 |
| 620-11550-5 | LM-GW-B/MW104-051723 | 65 | 71 | 95 |
| 620-11550-5 MS | LM-GW-B/MW104-051723 | 50 | 49 | 78 |
| 620-11550-5 MSD | LM-GW-B/MW104-051723 | 55 | 52 | 78 |
| LCS 620-22769/2-B | Lab Control Sample | 69 | 66 | 81 |
| LCS 620-22911/2-B | Lab Control Sample | 68 | 66 | 96 |
| LCSD 620-22769/3-B | Lab Control Sample Dup | 65 | 64 | 84 |
| LCSD 620-22911/3-B | Lab Control Sample Dup | 69 | 65 | 94 |
| MB 620-22769/1-B | Method Blank | 56 | 47 | 63 |
| MB 620-22911/1-B | Method Blank | 62 | 63 | 88 |

**Surrogate Legend**

1COD = 1-Chlorooctadecane (Surr)
OTPH = o-Terphenyl (Surr)
FBP = 2-Fluorobiphenyl (Surr)

## Method: EPH - Extractable Petroleum Hydrocarbons (GC/MS)

**Lab Sample ID: MB 620-22769/1-B**
**Matrix: Water**
**Analysis Batch: 22859**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 22769**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 1.0 | 0.23 | ug/L | | 05/19/23 09:53 | 05/23/23 10:48 | 1 |
| 2-Methylnaphthalene | ND | | 1.0 | 0.29 | ug/L | | 05/19/23 09:53 | 05/23/23 10:48 | 1 |
| Acenaphthylene | ND | | 1.0 | 0.39 | ug/L | | 05/19/23 09:53 | 05/23/23 10:48 | 1 |
| Acenaphthene | ND | | 1.0 | 0.19 | ug/L | | 05/19/23 09:53 | 05/23/23 10:48 | 1 |
| Fluorene | ND | | 1.0 | 0.39 | ug/L | | 05/19/23 09:53 | 05/23/23 10:48 | 1 |
| Phenanthrene | ND | | 1.0 | 0.17 | ug/L | | 05/19/23 09:53 | 05/23/23 10:48 | 1 |
| Anthracene | ND | | 1.0 | 0.15 | ug/L | | 05/19/23 09:53 | 05/23/23 10:48 | 1 |
| Fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 05/19/23 09:53 | 05/23/23 10:48 | 1 |
| Pyrene | ND | | 1.0 | 0.14 | ug/L | | 05/19/23 09:53 | 05/23/23 10:48 | 1 |
| Benzo[a]anthracene | ND | | 1.0 | 0.070 | ug/L | | 05/19/23 09:53 | 05/23/23 10:48 | 1 |
| Chrysene | ND | | 1.0 | 0.14 | ug/L | | 05/19/23 09:53 | 05/23/23 10:48 | 1 |
| Benzo[b]fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 05/19/23 09:53 | 05/23/23 10:48 | 1 |
| Benzo[k]fluoranthene | ND | | 1.0 | 0.24 | ug/L | | 05/19/23 09:53 | 05/23/23 10:48 | 1 |
| Benzo[a]pyrene | ND | | 0.20 | 0.16 | ug/L | | 05/19/23 09:53 | 05/23/23 10:48 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.50 | 0.46 | ug/L | | 05/19/23 09:53 | 05/23/23 10:48 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.50 | 0.21 | ug/L | | 05/19/23 09:53 | 05/23/23 10:48 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.0 | 0.17 | ug/L | | 05/19/23 09:53 | 05/23/23 10:48 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *54* | | *40 - 140* | *05/19/23 09:53* | *05/23/23 10:48* | *1* |
| *2-Fluorobiphenyl (Surr)* | *67* | | *40 - 140* | *05/19/23 09:53* | *05/23/23 10:48* | *1* |

**Lab Sample ID: LCS 620-22769/4-B**
**Matrix: Water**
**Analysis Batch: 22859**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 22769**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Naphthalene | 5.00 | 2.52 | | ug/L | | 50 | 40 - 140 |
| 2-Methylnaphthalene | 5.00 | 2.50 | | ug/L | | 50 | 40 - 140 |
| Acenaphthylene | 5.00 | 2.51 | | ug/L | | 50 | 40 - 140 |
| Acenaphthene | 5.00 | 2.52 | | ug/L | | 50 | 40 - 140 |
| Fluorene | 5.00 | 2.60 | | ug/L | | 52 | 40 - 140 |
| Phenanthrene | 5.00 | 2.94 | | ug/L | | 59 | 40 - 140 |
| Anthracene | 5.00 | 2.84 | | ug/L | | 57 | 40 - 140 |
| Fluoranthene | 5.00 | 3.62 | | ug/L | | 72 | 40 - 140 |
| Pyrene | 5.00 | 3.53 | | ug/L | | 71 | 40 - 140 |
| Benzo[a]anthracene | 5.00 | 3.28 | | ug/L | | 66 | 40 - 140 |
| Chrysene | 5.00 | 3.41 | | ug/L | | 68 | 40 - 140 |
| Benzo[b]fluoranthene | 5.00 | 3.27 | | ug/L | | 65 | 40 - 140 |
| Benzo[k]fluoranthene | 5.00 | 4.04 | | ug/L | | 81 | 40 - 140 |
| Benzo[a]pyrene | 5.00 | 3.18 | | ug/L | | 64 | 40 - 140 |
| Indeno[1,2,3-cd]pyrene | 5.00 | 3.14 | | ug/L | | 63 | 40 - 140 |
| Dibenz(a,h)anthracene | 5.00 | 3.19 | | ug/L | | 64 | 40 - 140 |
| Benzo[g,h,i]perylene | 5.00 | 3.65 | | ug/L | | 73 | 40 - 140 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl (Surr)* | *89* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *99* | | *40 - 140* |

## Method: EPH - Extractable Petroleum Hydrocarbons (GC/MS)

**Lab Sample ID: LCSD 620-22769/5-B**
**Matrix: Water**
**Analysis Batch: 22859**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 22769**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | | | 5.00 | 2.44 | | ug/L | | 49 | 40 - 140 | 3 | 25 |
| 2-Methylnaphthalene | | | 5.00 | 2.40 | | ug/L | | 48 | 40 - 140 | 4 | 25 |
| Acenaphthylene | | | 5.00 | 2.49 | | ug/L | | 50 | 40 - 140 | 1 | 25 |
| Acenaphthene | | | 5.00 | 2.55 | | ug/L | | 51 | 40 - 140 | 1 | 25 |
| Fluorene | | | 5.00 | 2.64 | | ug/L | | 53 | 40 - 140 | 2 | 25 |
| Phenanthrene | | | 5.00 | 2.89 | | ug/L | | 58 | 40 - 140 | 2 | 25 |
| Anthracene | | | 5.00 | 3.00 | | ug/L | | 60 | 40 - 140 | 5 | 25 |
| Fluoranthene | | | 5.00 | 3.65 | | ug/L | | 73 | 40 - 140 | 1 | 25 |
| Pyrene | | | 5.00 | 3.58 | | ug/L | | 72 | 40 - 140 | 1 | 25 |
| Benzo[a]anthracene | | | 5.00 | 3.37 | | ug/L | | 67 | 40 - 140 | 3 | 25 |
| Chrysene | | | 5.00 | 3.29 | | ug/L | | 66 | 40 - 140 | 4 | 25 |
| Benzo[b]fluoranthene | | | 5.00 | 3.65 | | ug/L | | 73 | 40 - 140 | 11 | 25 |
| Benzo[k]fluoranthene | | | 5.00 | 3.75 | | ug/L | | 75 | 40 - 140 | 8 | 25 |
| Benzo[a]pyrene | | | 5.00 | 3.21 | | ug/L | | 64 | 40 - 140 | 1 | 25 |
| Indeno[1,2,3-cd]pyrene | | | 5.00 | 3.22 | | ug/L | | 64 | 40 - 140 | 2 | 25 |
| Dibenz(a,h)anthracene | | | 5.00 | 3.26 | | ug/L | | 65 | 40 - 140 | 2 | 25 |
| Benzo[g,h,i]perylene | | | 5.00 | 3.75 | | ug/L | | 75 | 40 - 140 | 3 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl (Surr)* | *89* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *99* | | *40 - 140* |

**Lab Sample ID: 620-11550-5 MS**
**Matrix: Water**
**Analysis Batch: 22894**

**Client Sample ID: LM-GW-B/MW104-051723**
**Prep Type: Total/NA**
**Prep Batch: 22769**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | F1 *1 | 5.00 | 1.79 | F1 | ug/L | | 36 | 40 - 140 |
| 2-Methylnaphthalene | ND | F1 | 5.00 | 1.88 | F1 | ug/L | | 38 | 40 - 140 |
| Acenaphthylene | ND | F1 | 5.00 | 1.89 | F1 | ug/L | | 38 | 40 - 140 |
| Acenaphthene | ND | F1 | 5.00 | 2.13 | | ug/L | | 43 | 40 - 140 |
| Fluorene | ND | | 5.00 | 2.15 | | ug/L | | 43 | 40 - 140 |
| Phenanthrene | ND | | 5.00 | 2.47 | | ug/L | | 49 | 40 - 140 |
| Anthracene | ND | | 5.00 | 2.64 | | ug/L | | 53 | 40 - 140 |
| Fluoranthene | ND | | 5.00 | 3.03 | | ug/L | | 61 | 40 - 140 |
| Pyrene | ND | | 5.00 | 2.98 | | ug/L | | 60 | 40 - 140 |
| Benzo[a]anthracene | ND | | 5.00 | 2.69 | | ug/L | | 54 | 40 - 140 |
| Chrysene | ND | | 5.00 | 2.92 | | ug/L | | 58 | 40 - 140 |
| Benzo[b]fluoranthene | ND | | 5.00 | 2.41 | | ug/L | | 48 | 40 - 140 |
| Benzo[k]fluoranthene | ND | | 5.00 | 3.39 | | ug/L | | 68 | 40 - 140 |
| Benzo[a]pyrene | ND | | 5.00 | 2.45 | | ug/L | | 49 | 40 - 140 |
| Indeno[1,2,3-cd]pyrene | ND | | 5.00 | 2.35 | | ug/L | | 47 | 40 - 140 |
| Dibenz(a,h)anthracene | ND | | 5.00 | 2.46 | | ug/L | | 49 | 40 - 140 |
| Benzo[g,h,i]perylene | ND | | 5.00 | 2.67 | | ug/L | | 53 | 40 - 140 |

| *Surrogate* | *MS %Recovery* | *MS Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl (Surr)* | *59* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *94* | | *40 - 140* |

## Method: EPH - Extractable Petroleum Hydrocarbons (GC/MS)

**Lab Sample ID: 620-11550-5 MSD**
**Matrix: Water**
**Analysis Batch: 22894**

**Client Sample ID: LM-GW-B/MW104-051723**
**Prep Type: Total/NA**
**Prep Batch: 22769**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | F1 *1 | 5.00 | 1.30 | F1 | ug/L | | 26 | 40 - 140 | 32 | 50 |
| 2-Methylnaphthalene | ND | F1 | 5.00 | 1.23 | F1 | ug/L | | 25 | 40 - 140 | 42 | 50 |
| Acenaphthylene | ND | F1 | 5.00 | 1.81 | F1 | ug/L | | 36 | 40 - 140 | 5 | 50 |
| Acenaphthene | ND | F1 | 5.00 | 1.90 | F1 | ug/L | | 38 | 40 - 140 | 11 | 50 |
| Fluorene | ND | | 5.00 | 2.14 | | ug/L | | 43 | 40 - 140 | 1 | 50 |
| Phenanthrene | ND | | 5.00 | 2.75 | | ug/L | | 55 | 40 - 140 | 11 | 50 |
| Anthracene | ND | | 5.00 | 2.77 | | ug/L | | 55 | 40 - 140 | 5 | 50 |
| Fluoranthene | ND | | 5.00 | 3.32 | | ug/L | | 66 | 40 - 140 | 9 | 50 |
| Pyrene | ND | | 5.00 | 3.30 | | ug/L | | 66 | 40 - 140 | 10 | 50 |
| Benzo[a]anthracene | ND | | 5.00 | 2.99 | | ug/L | | 60 | 40 - 140 | 10 | 50 |
| Chrysene | ND | | 5.00 | 3.26 | | ug/L | | 65 | 40 - 140 | 11 | 50 |
| Benzo[b]fluoranthene | ND | | 5.00 | 3.11 | | ug/L | | 62 | 40 - 140 | 25 | 50 |
| Benzo[k]fluoranthene | ND | | 5.00 | 3.43 | | ug/L | | 69 | 40 - 140 | 1 | 50 |
| Benzo[a]pyrene | ND | | 5.00 | 2.80 | | ug/L | | 56 | 40 - 140 | 13 | 50 |
| Indeno[1,2,3-cd]pyrene | ND | | 5.00 | 2.73 | | ug/L | | 55 | 40 - 140 | 15 | 50 |
| Dibenz(a,h)anthracene | ND | | 5.00 | 2.73 | | ug/L | | 55 | 40 - 140 | 10 | 50 |
| Benzo[g,h,i]perylene | ND | | 5.00 | 3.04 | | ug/L | | 61 | 40 - 140 | 13 | 50 |

| *Surrogate* | *MSD %Recovery* | *MSD Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl (Surr)* | *72* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *100* | | *40 - 140* |

**Lab Sample ID: MB 620-22911/1-B**
**Matrix: Water**
**Analysis Batch: 23053**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 22911**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 1.0 | 0.23 | ug/L | | 05/24/23 11:41 | 05/30/23 11:46 | 1 |
| 2-Methylnaphthalene | ND | | 1.0 | 0.29 | ug/L | | 05/24/23 11:41 | 05/30/23 11:46 | 1 |
| Acenaphthylene | ND | | 1.0 | 0.39 | ug/L | | 05/24/23 11:41 | 05/30/23 11:46 | 1 |
| Acenaphthene | ND | | 1.0 | 0.19 | ug/L | | 05/24/23 11:41 | 05/30/23 11:46 | 1 |
| Fluorene | ND | | 1.0 | 0.39 | ug/L | | 05/24/23 11:41 | 05/30/23 11:46 | 1 |
| Phenanthrene | ND | | 1.0 | 0.17 | ug/L | | 05/24/23 11:41 | 05/30/23 11:46 | 1 |
| Anthracene | ND | | 1.0 | 0.15 | ug/L | | 05/24/23 11:41 | 05/30/23 11:46 | 1 |
| Fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 05/24/23 11:41 | 05/30/23 11:46 | 1 |
| Pyrene | ND | | 1.0 | 0.14 | ug/L | | 05/24/23 11:41 | 05/30/23 11:46 | 1 |
| Benzo[a]anthracene | ND | | 1.0 | 0.070 | ug/L | | 05/24/23 11:41 | 05/30/23 11:46 | 1 |
| Chrysene | ND | | 1.0 | 0.14 | ug/L | | 05/24/23 11:41 | 05/30/23 11:46 | 1 |
| Benzo[b]fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 05/24/23 11:41 | 05/30/23 11:46 | 1 |
| Benzo[k]fluoranthene | ND | | 1.0 | 0.24 | ug/L | | 05/24/23 11:41 | 05/30/23 11:46 | 1 |
| Benzo[a]pyrene | ND | | 0.20 | 0.16 | ug/L | | 05/24/23 11:41 | 05/30/23 11:46 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.50 | 0.46 | ug/L | | 05/24/23 11:41 | 05/30/23 11:46 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.50 | 0.21 | ug/L | | 05/24/23 11:41 | 05/30/23 11:46 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.0 | 0.17 | ug/L | | 05/24/23 11:41 | 05/30/23 11:46 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *68* | | *40 - 140* | *05/24/23 11:41* | *05/30/23 11:46* | *1* |
| *2-Fluorobiphenyl (Surr)* | *93* | | *40 - 140* | *05/24/23 11:41* | *05/30/23 11:46* | *1* |

## Method: EPH - Extractable Petroleum Hydrocarbons (GC/MS)

**Lab Sample ID: LCS 620-22911/4-B**
**Matrix: Water**
**Analysis Batch: 23053**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 22911**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | | | 5.00 | 2.26 | | ug/L | | 45 | 40 - 140 | | |
| 2-Methylnaphthalene | | | 5.00 | 2.55 | | ug/L | | 51 | 40 - 140 | | |
| Acenaphthylene | | | 5.00 | 3.08 | | ug/L | | 62 | 40 - 140 | | |
| Acenaphthene | | | 5.00 | 2.79 | | ug/L | | 56 | 40 - 140 | | |
| Fluorene | | | 5.00 | 3.02 | | ug/L | | 60 | 40 - 140 | | |
| Phenanthrene | | | 5.00 | 2.95 | | ug/L | | 59 | 40 - 140 | | |
| Anthracene | | | 5.00 | 2.93 | | ug/L | | 59 | 40 - 140 | | |
| Fluoranthene | | | 5.00 | 3.54 | | ug/L | | 71 | 40 - 140 | | |
| Pyrene | | | 5.00 | 3.54 | | ug/L | | 71 | 40 - 140 | | |
| Benzo[a]anthracene | | | 5.00 | 3.10 | | ug/L | | 62 | 40 - 140 | | |
| Chrysene | | | 5.00 | 3.05 | | ug/L | | 61 | 40 - 140 | | |
| Benzo[b]fluoranthene | | | 5.00 | 3.51 | | ug/L | | 70 | 40 - 140 | | |
| Benzo[k]fluoranthene | | | 5.00 | 3.35 | | ug/L | | 67 | 40 - 140 | | |
| Benzo[a]pyrene | | | 5.00 | 2.92 | | ug/L | | 58 | 40 - 140 | | |
| Indeno[1,2,3-cd]pyrene | | | 5.00 | 3.14 | | ug/L | | 63 | 40 - 140 | | |
| Dibenz(a,h)anthracene | | | 5.00 | 3.12 | | ug/L | | 62 | 40 - 140 | | |
| Benzo[g,h,i]perylene | | | 5.00 | 3.70 | | ug/L | | 74 | 40 - 140 | | |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl (Surr)* | *74* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *99* | | *40 - 140* |

**Lab Sample ID: LCSD 620-22911/5-B**
**Matrix: Water**
**Analysis Batch: 23053**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 22911**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | | | 5.00 | 3.11 | *1 | ug/L | | 62 | 40 - 140 | 32 | 25 |
| 2-Methylnaphthalene | | | 5.00 | 3.08 | | ug/L | | 62 | 40 - 140 | 19 | 25 |
| Acenaphthylene | | | 5.00 | 3.23 | | ug/L | | 65 | 40 - 140 | 5 | 25 |
| Acenaphthene | | | 5.00 | 3.18 | | ug/L | | 64 | 40 - 140 | 13 | 25 |
| Fluorene | | | 5.00 | 3.05 | | ug/L | | 61 | 40 - 140 | 1 | 25 |
| Phenanthrene | | | 5.00 | 2.98 | | ug/L | | 60 | 40 - 140 | 1 | 25 |
| Anthracene | | | 5.00 | 2.88 | | ug/L | | 58 | 40 - 140 | 2 | 25 |
| Fluoranthene | | | 5.00 | 3.38 | | ug/L | | 68 | 40 - 140 | 5 | 25 |
| Pyrene | | | 5.00 | 3.35 | | ug/L | | 67 | 40 - 140 | 6 | 25 |
| Benzo[a]anthracene | | | 5.00 | 3.13 | | ug/L | | 63 | 40 - 140 | 1 | 25 |
| Chrysene | | | 5.00 | 3.24 | | ug/L | | 65 | 40 - 140 | 6 | 25 |
| Benzo[b]fluoranthene | | | 5.00 | 3.48 | | ug/L | | 70 | 40 - 140 | 1 | 25 |
| Benzo[k]fluoranthene | | | 5.00 | 3.95 | | ug/L | | 79 | 40 - 140 | 16 | 25 |
| Benzo[a]pyrene | | | 5.00 | 3.14 | | ug/L | | 63 | 40 - 140 | 7 | 25 |
| Indeno[1,2,3-cd]pyrene | | | 5.00 | 3.32 | | ug/L | | 66 | 40 - 140 | 5 | 25 |
| Dibenz(a,h)anthracene | | | 5.00 | 3.36 | | ug/L | | 67 | 40 - 140 | 7 | 25 |
| Benzo[g,h,i]perylene | | | 5.00 | 3.86 | | ug/L | | 77 | 40 - 140 | 4 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl (Surr)* | *73* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *102* | | *40 - 140* |

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

**Lab Sample ID: MB 620-22877/5**
**Matrix: Water**
**Analysis Batch: 22877**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 05/23/23 14:54 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 05/23/23 14:54 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 05/23/23 14:54 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 05/23/23 14:54 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 05/23/23 14:54 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 05/23/23 14:54 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 05/23/23 14:54 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 05/23/23 14:54 | 1 |
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 05/23/23 14:54 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 05/23/23 14:54 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 05/23/23 14:54 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 05/23/23 14:54 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 05/23/23 14:54 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *97* | | *70 - 130* | | *05/23/23 14:54* | *1* |
| *2,5-Dibromotoluene (pid)* | *99* | | *70 - 130* | | *05/23/23 14:54* | *1* |

**Lab Sample ID: LCS 620-22877/3**
**Matrix: Water**
**Analysis Batch: 22877**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | 20.0 | ND | | ug/L | | 110 | 70 - 130 |
| C5-C8 Aliphatics (unadjusted) | 60.0 | ND | | ug/L | | 99 | 70 - 130 |
| C9-C12 Aliphatics (unadjusted) | 60.0 | ND | | ug/L | | 100 | 70 - 130 |
| Benzene | 20.0 | 20.3 | | ug/L | | 102 | 70 - 130 |
| Ethylbenzene | 20.0 | 21.4 | | ug/L | | 107 | 70 - 130 |
| Methyl tert-butyl ether | 20.0 | 20.2 | | ug/L | | 101 | 70 - 130 |
| Naphthalene | 20.0 | 21.3 | | ug/L | | 107 | 70 - 130 |
| Toluene | 20.0 | 21.2 | | ug/L | | 106 | 70 - 130 |
| m,p-Xylene | 40.0 | 44.0 | | ug/L | | 110 | 70 - 130 |
| o-Xylene | 20.0 | 22.0 | | ug/L | | 110 | 70 - 130 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *97* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *99* | | *70 - 130* |

**Lab Sample ID: LCSD 620-22877/4**
**Matrix: Water**
**Analysis Batch: 22877**

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

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | 20.0 | ND | | ug/L | | 107 | 70 - 130 | 3 | 25 |
| C5-C8 Aliphatics (unadjusted) | 60.0 | ND | | ug/L | | 98 | 70 - 130 | 2 | 25 |
| C9-C12 Aliphatics (unadjusted) | 60.0 | ND | | ug/L | | 96 | 70 - 130 | 3 | 25 |
| Benzene | 20.0 | 19.7 | | ug/L | | 99 | 70 - 130 | 3 | 25 |
| Ethylbenzene | 20.0 | 20.9 | | ug/L | | 104 | 70 - 130 | 3 | 25 |

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: LCSD 620-22877/4**
**Matrix: Water**
**Analysis Batch: 22877**

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

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Methyl tert-butyl ether | | | 20.0 | 19.9 | | ug/L | | 100 | 70 - 130 | 1 | 25 |
| Naphthalene | | | 20.0 | 21.5 | | ug/L | | 108 | 70 - 130 | 1 | 25 |
| Toluene | | | 20.0 | 20.4 | | ug/L | | 102 | 70 - 130 | 4 | 25 |
| m,p-Xylene | | | 40.0 | 42.7 | | ug/L | | 107 | 70 - 130 | 3 | 25 |
| o-Xylene | | | 20.0 | 21.6 | | ug/L | | 108 | 70 - 130 | 2 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *97* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *99* | | *70 - 130* |

**Lab Sample ID: 620-11550-5 MS**
**Matrix: Water**
**Analysis Batch: 22877**

**Client Sample ID: LM-GW-B/MW104-051723**
**Prep Type: Total/NA**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | ND | | 20.3 | ND | | ug/L | | NC | 70 - 130 | | |
| C5-C8 Aliphatics (unadjusted) | ND | | 61.0 | 137 | | ug/L | | NC | 70 - 130 | | |
| C9-C12 Aliphatics (unadjusted) | ND | | 61.0 | 277 | | ug/L | | NC | 70 - 130 | | |
| Benzene | ND | | 20.3 | 20.8 | | ug/L | | 102 | 70 - 130 | | |
| Ethylbenzene | ND | | 20.3 | 22.1 | | ug/L | | 109 | 70 - 130 | | |
| Methyl tert-butyl ether | ND | | 20.3 | 19.9 | | ug/L | | 98 | 70 - 130 | | |
| Naphthalene | ND | | 20.3 | 20.4 | | ug/L | | 100 | 70 - 130 | | |
| Toluene | ND | | 20.3 | 21.5 | | ug/L | | 106 | 70 - 130 | | |
| m,p-Xylene | ND | | 40.7 | 45.0 | | ug/L | | 111 | 70 - 130 | | |
| o-Xylene | ND | | 20.3 | 22.3 | | ug/L | | 109 | 70 - 130 | | |

| *Surrogate* | *MS %Recovery* | *MS Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *93* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *95* | | *70 - 130* |

**Lab Sample ID: 620-11550-5 MSD**
**Matrix: Water**
**Analysis Batch: 22877**

**Client Sample ID: LM-GW-B/MW104-051723**
**Prep Type: Total/NA**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | ND | | 20.3 | ND | | ug/L | | NC | 70 - 130 | NC | 30 |
| C5-C8 Aliphatics (unadjusted) | ND | | 61.0 | 149 | | ug/L | | NC | 70 - 130 | 9 | 30 |
| C9-C12 Aliphatics (unadjusted) | ND | | 61.0 | 303 | | ug/L | | NC | 70 - 130 | 9 | 30 |
| Benzene | ND | | 20.3 | 23.0 | | ug/L | | 113 | 70 - 130 | 10 | 30 |
| Ethylbenzene | ND | | 20.3 | 24.4 | | ug/L | | 120 | 70 - 130 | 10 | 30 |
| Methyl tert-butyl ether | ND | | 20.3 | 22.0 | | ug/L | | 108 | 70 - 130 | 10 | 30 |
| Naphthalene | ND | | 20.3 | 22.9 | | ug/L | | 113 | 70 - 130 | 12 | 30 |
| Toluene | ND | | 20.3 | 23.7 | | ug/L | | 117 | 70 - 130 | 10 | 30 |
| m,p-Xylene | ND | | 40.7 | 50.1 | | ug/L | | 123 | 70 - 130 | 11 | 30 |
| o-Xylene | ND | | 20.3 | 24.7 | | ug/L | | 121 | 70 - 130 | 10 | 30 |

| *Surrogate* | *MSD %Recovery* | *MSD Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *95* | | *70 - 130* |

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: 620-11550-5 MSD**
**Matrix: Water**
**Analysis Batch: 22877**

**Client Sample ID: LM-GW-B/MW104-051723**
**Prep Type: Total/NA**

| *Surrogate* | *MSD %Recovery* | *MSD Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (pid)* | *96* | | *70 - 130* |

**Lab Sample ID: MB 620-22907/5**
**Matrix: Water**
**Analysis Batch: 22907**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 05/24/23 13:14 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 05/24/23 13:14 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 05/24/23 13:14 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 05/24/23 13:14 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 05/24/23 13:14 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 05/24/23 13:14 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 05/24/23 13:14 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 05/24/23 13:14 | 1 |
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 05/24/23 13:14 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 05/24/23 13:14 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 05/24/23 13:14 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 05/24/23 13:14 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 05/24/23 13:14 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *100* | | *70 - 130* | | *05/24/23 13:14* | *1* |
| *2,5-Dibromotoluene (pid)* | *100* | | *70 - 130* | | *05/24/23 13:14* | *1* |

**Lab Sample ID: LCS 620-22907/3**
**Matrix: Water**
**Analysis Batch: 22907**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | 20.0 | ND | | ug/L | | 109 | 70 - 130 |
| C5-C8 Aliphatics (unadjusted) | 60.0 | ND | | ug/L | | 97 | 70 - 130 |
| C9-C12 Aliphatics (unadjusted) | 60.0 | ND | | ug/L | | 97 | 70 - 130 |
| Benzene | 20.0 | 19.7 | | ug/L | | 99 | 70 - 130 |
| Ethylbenzene | 20.0 | 20.9 | | ug/L | | 105 | 70 - 130 |
| Methyl tert-butyl ether | 20.0 | 19.9 | | ug/L | | 100 | 70 - 130 |
| Naphthalene | 20.0 | 21.3 | | ug/L | | 107 | 70 - 130 |
| Toluene | 20.0 | 20.2 | | ug/L | | 101 | 70 - 130 |
| m,p-Xylene | 40.0 | 42.9 | | ug/L | | 107 | 70 - 130 |
| o-Xylene | 20.0 | 21.6 | | ug/L | | 108 | 70 - 130 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *100* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *100* | | *70 - 130* |

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: LCSD 620-22907/4**
**Matrix: Water**
**Analysis Batch: 22907**

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

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | | | 20.0 | ND | | ug/L | | 111 | 70 - 130 | 2 | 25 |
| C5-C8 Aliphatics (unadjusted) | | | 60.0 | ND | | ug/L | | 97 | 70 - 130 | 0 | 25 |
| C9-C12 Aliphatics (unadjusted) | | | 60.0 | ND | | ug/L | | 97 | 70 - 130 | 0 | 25 |
| Benzene | | | 20.0 | 19.7 | | ug/L | | 98 | 70 - 130 | 0 | 25 |
| Ethylbenzene | | | 20.0 | 21.2 | | ug/L | | 106 | 70 - 130 | 1 | 25 |
| Methyl tert-butyl ether | | | 20.0 | 20.3 | | ug/L | | 102 | 70 - 130 | 2 | 25 |
| Naphthalene | | | 20.0 | 22.2 | | ug/L | | 111 | 70 - 130 | 4 | 25 |
| Toluene | | | 20.0 | 20.4 | | ug/L | | 102 | 70 - 130 | 1 | 25 |
| m,p-Xylene | | | 40.0 | 43.4 | | ug/L | | 108 | 70 - 130 | 1 | 25 |
| o-Xylene | | | 20.0 | 21.7 | | ug/L | | 108 | 70 - 130 | 0 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *100* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *100* | | *70 - 130* |

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

**Lab Sample ID: MB 620-22769/1-B**
**Matrix: Water**
**Analysis Batch: 22799**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 22769**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 100 | 100 | ug/L | | 05/19/23 09:53 | 05/22/23 19:41 | 1 |
| C19-C36 Aliphatics | ND | | 100 | 100 | ug/L | | 05/19/23 09:53 | 05/22/23 19:41 | 1 |
| C11-C22 Aromatics | ND | | 100 | 100 | ug/L | | 05/19/23 09:53 | 05/22/23 19:41 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 100 | 100 | ug/L | | 05/19/23 09:53 | 05/22/23 19:41 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *56* | | *40 - 140* | *05/19/23 09:53* | *05/22/23 19:41* | *1* |
| *o-Terphenyl (Surr)* | *47* | | *40 - 140* | *05/19/23 09:53* | *05/22/23 19:41* | *1* |
| *2-Fluorobiphenyl (Surr)* | *63* | | *40 - 140* | *05/19/23 09:53* | *05/22/23 19:41* | *1* |

**Lab Sample ID: LCS 620-22769/2-B**
**Matrix: Water**
**Analysis Batch: 22799**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 22769**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | | | 120 | ND | | ug/L | | 60 | 40 - 140 | | |
| C19-C36 Aliphatics | | | 160 | 122 | | ug/L | | 76 | 40 - 140 | | |
| C11-C22 Aromatics | | | 340 | 266 | | ug/L | | 78 | 40 - 140 | | |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *69* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *66* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *81* | | *40 - 140* |

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: LCSD 620-22769/3-B**
**Matrix: Water**
**Analysis Batch: 22799**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 22769**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | | | 120 | ND | | ug/L | | 58 | 40 - 140 | 3 | 25 |
| C19-C36 Aliphatics | | | 160 | 126 | | ug/L | | 78 | 40 - 140 | 3 | 25 |
| C11-C22 Aromatics | | | 340 | 274 | | ug/L | | 81 | 40 - 140 | 3 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *65* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *64* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *84* | | *40 - 140* |

**Lab Sample ID: 620-11550-5 MS**
**Matrix: Water**
**Analysis Batch: 22850**

**Client Sample ID: LM-GW-B/MW104-051723**
**Prep Type: Total/NA**
**Prep Batch: 22769**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 30.0 | ND | | ug/L | | NC | 40 - 140 | | |
| C19-C36 Aliphatics | ND | | 40.0 | ND | | ug/L | | NC | 40 - 140 | | |
| C11-C22 Aromatics | ND | | 85.0 | ND | | ug/L | | NC | 40 - 140 | | |

| *Surrogate* | *MS %Recovery* | *MS Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *50* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *49* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *78* | | *40 - 140* |

**Lab Sample ID: 620-11550-5 MSD**
**Matrix: Water**
**Analysis Batch: 22850**

**Client Sample ID: LM-GW-B/MW104-051723**
**Prep Type: Total/NA**
**Prep Batch: 22769**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 30.0 | ND | | ug/L | | NC | 40 - 140 | NC | 50 |
| C19-C36 Aliphatics | ND | | 40.0 | ND | | ug/L | | NC | 40 - 140 | NC | 50 |
| C11-C22 Aromatics | ND | | 85.0 | ND | | ug/L | | NC | 40 - 140 | NC | 50 |

| *Surrogate* | *MSD %Recovery* | *MSD Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *55* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *52* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *78* | | *40 - 140* |

**Lab Sample ID: MB 620-22911/1-B**
**Matrix: Water**
**Analysis Batch: 22945**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 22911**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 100 | 100 | ug/L | | 05/24/23 11:41 | 05/25/23 12:41 | 1 |
| C19-C36 Aliphatics | ND | | 100 | 100 | ug/L | | 05/24/23 11:41 | 05/25/23 12:41 | 1 |
| C11-C22 Aromatics | ND | | 100 | 100 | ug/L | | 05/24/23 11:41 | 05/25/23 12:41 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 100 | 100 | ug/L | | 05/24/23 11:41 | 05/25/23 12:41 | 1 |

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: MB 620-22911/1-B**
**Matrix: Water**
**Analysis Batch: 22945**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 22911**

| Surrogate | MB %Recovery | MB Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|
| 1-Chlorooctadecane (Surr) | 62 | | 40 - 140 | 05/24/23 11:41 | 05/25/23 12:41 | 1 |
| o-Terphenyl (Surr) | 63 | | 40 - 140 | 05/24/23 11:41 | 05/25/23 12:41 | 1 |
| 2-Fluorobiphenyl (Surr) | 88 | | 40 - 140 | 05/24/23 11:41 | 05/25/23 12:41 | 1 |

**Lab Sample ID: LCS 620-22911/2-B**
**Matrix: Water**
**Analysis Batch: 22945**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 22911**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | | | 120 | ND | | ug/L | | 49 | 40 - 140 | | |
| C19-C36 Aliphatics | | | 160 | ND | | ug/L | | 61 | 40 - 140 | | |
| C11-C22 Aromatics | | | 340 | 245 | | ug/L | | 72 | 40 - 140 | | |

| Surrogate | LCS %Recovery | LCS Qualifier | Limits |
|---|---|---|---|
| 1-Chlorooctadecane (Surr) | 68 | | 40 - 140 |
| o-Terphenyl (Surr) | 66 | | 40 - 140 |
| 2-Fluorobiphenyl (Surr) | 96 | | 40 - 140 |

**Lab Sample ID: LCSD 620-22911/3-B**
**Matrix: Water**
**Analysis Batch: 22945**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 22911**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | | | 120 | ND | | ug/L | | 43 | 40 - 140 | 13 | 25 |
| C19-C36 Aliphatics | | | 160 | ND | | ug/L | | 56 | 40 - 140 | 9 | 25 |
| C11-C22 Aromatics | | | 340 | 249 | | ug/L | | 73 | 40 - 140 | 1 | 25 |

| Surrogate | LCSD %Recovery | LCSD Qualifier | Limits |
|---|---|---|---|
| 1-Chlorooctadecane (Surr) | 69 | | 40 - 140 |
| o-Terphenyl (Surr) | 65 | | 40 - 140 |
| 2-Fluorobiphenyl (Surr) | 94 | | 40 - 140 |

## Method: 6010D - Metals (ICP)

**Lab Sample ID: MB 620-22768/1-A**
**Matrix: Water**
**Analysis Batch: 22844**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 22768**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 0.012 | 0.0032 | mg/L | | 05/19/23 09:48 | 05/22/23 12:41 | 1 |
| Arsenic | ND | | 0.0080 | 0.0028 | mg/L | | 05/19/23 09:48 | 05/22/23 12:41 | 1 |
| Barium | ND | | 0.010 | 0.0014 | mg/L | | 05/19/23 09:48 | 05/22/23 12:41 | 1 |
| Beryllium | ND | | 0.0040 | 0.00056 | mg/L | | 05/19/23 09:48 | 05/22/23 12:41 | 1 |
| Cadmium | ND | | 0.0050 | 0.00071 | mg/L | | 05/19/23 09:48 | 05/22/23 12:41 | 1 |
| Chromium | ND | | 0.010 | 0.0019 | mg/L | | 05/19/23 09:48 | 05/22/23 12:41 | 1 |
| Lead | ND | | 0.015 | 0.012 | mg/L | | 05/19/23 09:48 | 05/22/23 12:41 | 1 |
| Nickel | ND | | 0.010 | 0.0017 | mg/L | | 05/19/23 09:48 | 05/22/23 12:41 | 1 |
| Selenium | ND | | 0.030 | 0.0083 | mg/L | | 05/19/23 09:48 | 05/22/23 12:41 | 1 |

## Method: 6010D - Metals (ICP) (Continued)

**Lab Sample ID: MB 620-22768/1-A**
**Matrix: Water**
**Analysis Batch: 22844**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 22768**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Silver | ND | | 0.010 | 0.0012 | mg/L | | 05/19/23 09:48 | 05/22/23 12:41 | 1 |
| Thallium | ND | | 0.010 | 0.0042 | mg/L | | 05/19/23 09:48 | 05/22/23 12:41 | 1 |
| Vanadium | ND | | 0.010 | 0.0022 | mg/L | | 05/19/23 09:48 | 05/22/23 12:41 | 1 |
| Zinc | ND | | 0.050 | 0.0032 | mg/L | | 05/19/23 09:48 | 05/22/23 12:41 | 1 |

**Lab Sample ID: LCS 620-22768/2-A**
**Matrix: Water**
**Analysis Batch: 22844**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 22768**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Antimony | 2.50 | 2.56 | | mg/L | | 102 | 80 - 120 |
| Arsenic | 2.50 | 2.64 | | mg/L | | 106 | 80 - 120 |
| Barium | 2.50 | 2.36 | | mg/L | | 94 | 80 - 120 |
| Beryllium | 2.50 | 2.67 | | mg/L | | 107 | 80 - 120 |
| Cadmium | 2.50 | 2.64 | | mg/L | | 105 | 80 - 120 |
| Chromium | 2.50 | 2.56 | | mg/L | | 102 | 80 - 120 |
| Lead | 2.50 | 2.34 | | mg/L | | 94 | 80 - 120 |
| Nickel | 2.50 | 2.58 | | mg/L | | 103 | 80 - 120 |
| Selenium | 2.50 | 2.70 | | mg/L | | 108 | 80 - 120 |
| Silver | 2.50 | 2.48 | | mg/L | | 99 | 80 - 120 |
| Thallium | 2.50 | 2.61 | | mg/L | | 104 | 80 - 120 |
| Vanadium | 2.50 | 2.53 | | mg/L | | 101 | 80 - 120 |
| Zinc | 2.50 | 2.67 | | mg/L | | 107 | 80 - 120 |

**Lab Sample ID: LCSD 620-22768/3-A**
**Matrix: Water**
**Analysis Batch: 22844**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 22768**

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 2.50 | 2.50 | | mg/L | | 100 | 80 - 120 | 2 | 20 |
| Arsenic | 2.50 | 2.58 | | mg/L | | 103 | 80 - 120 | 2 | 20 |
| Barium | 2.50 | 2.35 | | mg/L | | 94 | 80 - 120 | 1 | 20 |
| Beryllium | 2.50 | 2.65 | | mg/L | | 106 | 80 - 120 | 1 | 20 |
| Cadmium | 2.50 | 2.58 | | mg/L | | 103 | 80 - 120 | 2 | 20 |
| Chromium | 2.50 | 2.53 | | mg/L | | 101 | 80 - 120 | 1 | 20 |
| Lead | 2.50 | 2.30 | | mg/L | | 92 | 80 - 120 | 2 | 20 |
| Nickel | 2.50 | 2.52 | | mg/L | | 101 | 80 - 120 | 2 | 20 |
| Selenium | 2.50 | 2.64 | | mg/L | | 106 | 80 - 120 | 2 | 20 |
| Silver | 2.50 | 2.45 | | mg/L | | 98 | 80 - 120 | 1 | 20 |
| Thallium | 2.50 | 2.55 | | mg/L | | 102 | 80 - 120 | 2 | 20 |
| Vanadium | 2.50 | 2.49 | | mg/L | | 100 | 80 - 120 | 1 | 20 |
| Zinc | 2.50 | 2.61 | | mg/L | | 104 | 80 - 120 | 2 | 20 |

**Lab Sample ID: 620-11550-5 MS**
**Matrix: Water**
**Analysis Batch: 22844**

**Client Sample ID: LM-GW-B/MW104-051723**
**Prep Type: Dissolved**
**Prep Batch: 22768**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.0053 | | 2.50 | 2.53 | | mg/L | | 101 | 75 - 125 |

## Method: 6010D - Metals (ICP) (Continued)

**Lab Sample ID: 620-11550-5 MS**
**Matrix: Water**
**Analysis Batch: 22844**

**Client Sample ID: LM-GW-B/MW104-051723**
**Prep Type: Dissolved**
**Prep Batch: 22768**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 0.0081 | | 2.50 | 2.68 | | mg/L | | 107 | 75 - 125 |
| Barium | 0.069 | | 2.50 | 2.44 | | mg/L | | 95 | 75 - 125 |
| Beryllium | ND | | 2.50 | 2.74 | | mg/L | | 109 | 75 - 125 |
| Cadmium | ND | | 2.50 | 2.48 | | mg/L | | 99 | 75 - 125 |
| Chromium | ND | | 2.50 | 2.52 | | mg/L | | 101 | 75 - 125 |
| Lead | ND | | 2.50 | 2.13 | | mg/L | | 85 | 75 - 125 |
| Nickel | 0.015 | | 2.50 | 2.38 | | mg/L | | 95 | 75 - 125 |
| Selenium | ND | | 2.50 | 2.67 | | mg/L | | 107 | 75 - 125 |
| Silver | ND | | 2.50 | 2.57 | | mg/L | | 103 | 75 - 125 |
| Thallium | 0.0027 | | 2.50 | 2.44 | | mg/L | | 97 | 75 - 125 |
| Vanadium | ND | | 2.50 | 2.57 | | mg/L | | 103 | 75 - 125 |
| Zinc | 0.14 | | 2.50 | 2.67 | | mg/L | | 101 | 75 - 125 |

**Lab Sample ID: 620-11550-5 MSD**
**Matrix: Water**
**Analysis Batch: 22844**

**Client Sample ID: LM-GW-B/MW104-051723**
**Prep Type: Dissolved**
**Prep Batch: 22768**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.0053 | | 2.50 | 2.53 | | mg/L | | 101 | 75 - 125 | 0 | 20 |
| Arsenic | 0.0081 | | 2.50 | 2.70 | | mg/L | | 108 | 75 - 125 | 1 | 20 |
| Barium | 0.069 | | 2.50 | 2.44 | | mg/L | | 95 | 75 - 125 | 0 | 20 |
| Beryllium | ND | | 2.50 | 2.72 | | mg/L | | 109 | 75 - 125 | 0 | 20 |
| Cadmium | ND | | 2.50 | 2.51 | | mg/L | | 100 | 75 - 125 | 1 | 20 |
| Chromium | ND | | 2.50 | 2.51 | | mg/L | | 100 | 75 - 125 | 1 | 20 |
| Lead | ND | | 2.50 | 2.14 | | mg/L | | 85 | 75 - 125 | 0 | 20 |
| Nickel | 0.015 | | 2.50 | 2.41 | | mg/L | | 96 | 75 - 125 | 1 | 20 |
| Selenium | ND | | 2.50 | 2.67 | | mg/L | | 107 | 75 - 125 | 0 | 20 |
| Silver | ND | | 2.50 | 2.54 | | mg/L | | 102 | 75 - 125 | 1 | 20 |
| Thallium | 0.0027 | | 2.50 | 2.47 | | mg/L | | 99 | 75 - 125 | 1 | 20 |
| Vanadium | ND | | 2.50 | 2.55 | | mg/L | | 102 | 75 - 125 | 1 | 20 |
| Zinc | 0.14 | | 2.50 | 2.70 | | mg/L | | 102 | 75 - 125 | 1 | 20 |

**Lab Sample ID: 620-11550-5 DU**
**Matrix: Water**
**Analysis Batch: 22844**

**Client Sample ID: LM-GW-B/MW104-051723**
**Prep Type: Dissolved**
**Prep Batch: 22768**

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|
| Antimony | 0.0053 | | 0.00555 | | mg/L | | 5 | 20 |
| Arsenic | 0.0081 | | 0.00760 | | mg/L | | 6 | 20 |
| Barium | 0.069 | | 0.0696 | | mg/L | | 0.4 | 20 |
| Beryllium | ND | | ND | | mg/L | | NC | 20 |
| Cadmium | ND | | ND | | mg/L | | NC | 20 |
| Chromium | ND | | ND | | mg/L | | NC | 20 |
| Lead | ND | | ND | | mg/L | | NC | 20 |
| Nickel | 0.015 | | 0.0152 | | mg/L | | 2 | 20 |
| Selenium | ND | | ND | | mg/L | | NC | 20 |
| Silver | ND | | ND | | mg/L | | NC | 20 |
| Thallium | 0.0027 | | ND | | mg/L | | NC | 20 |
| Vanadium | ND | | ND | | mg/L | | NC | 20 |

## Method: 6010D - Metals (ICP) (Continued)

**Lab Sample ID: 620-11550-5 DU**
**Matrix: Water**
**Analysis Batch: 22844**

**Client Sample ID: LM-GW-B/MW104-051723**
**Prep Type: Dissolved**
**Prep Batch: 22768**

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|
| Zinc | 0.14 | | 0.142 | | mg/L | | 0.3 | 20 |

## Method: 7470A - Mercury (CVAA)

**Lab Sample ID: MB 620-22770/1-A**
**Matrix: Water**
**Analysis Batch: 22788**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 22770**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 05/19/23 10:03 | 05/19/23 15:00 | 1 |

**Lab Sample ID: LCS 620-22770/2-A**
**Matrix: Water**
**Analysis Batch: 22788**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 22770**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Mercury | 0.00500 | 0.00519 | | mg/L | | 104 | 85 - 115 |

**Lab Sample ID: LCSD 620-22770/3-A**
**Matrix: Water**
**Analysis Batch: 22788**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 22770**

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.00500 | 0.00510 | | mg/L | | 102 | 85 - 115 | 2 | 20 |

**Lab Sample ID: 620-11550-5 MS**
**Matrix: Water**
**Analysis Batch: 22788**

**Client Sample ID: LM-GW-B/MW104-051723**
**Prep Type: Dissolved**
**Prep Batch: 22770**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00500 | 0.00520 | | mg/L | | 104 | 80 - 120 |

**Lab Sample ID: 620-11550-5 MSD**
**Matrix: Water**
**Analysis Batch: 22788**

**Client Sample ID: LM-GW-B/MW104-051723**
**Prep Type: Dissolved**
**Prep Batch: 22770**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00500 | 0.00511 | | mg/L | | 102 | 80 - 120 | 2 | 20 |

**Lab Sample ID: 620-11550-5 DU**
**Matrix: Water**
**Analysis Batch: 22788**

**Client Sample ID: LM-GW-B/MW104-051723**
**Prep Type: Dissolved**
**Prep Batch: 22770**

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | ND | | mg/L | | NC | 20 |

## GC/MS Semi VOA

### Prep Batch: 22769

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11550-1 | LM-GW-B/MW105-051723 | Total/NA | Water | 3510C | |
| 620-11550-2 | LM-GW-B/MW102-051723 | Total/NA | Water | 3510C | |
| 620-11550-3 | LM-FD-051723 | Total/NA | Water | 3510C | |
| 620-11550-4 | LM-GW-B/MW101-051723 | Total/NA | Water | 3510C | |
| MB 620-22769/1-B | Method Blank | Total/NA | Water | 3510C | |
| LCS 620-22769/4-B | Lab Control Sample | Total/NA | Water | 3510C | |
| LCSD 620-22769/5-B | Lab Control Sample Dup | Total/NA | Water | 3510C | |
| 620-11550-5 MS | LM-GW-B/MW104-051723 | Total/NA | Water | 3510C | |
| 620-11550-5 MSD | LM-GW-B/MW104-051723 | Total/NA | Water | 3510C | |

### Fraction Batch: 22824

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11550-1 | LM-GW-B/MW105-051723 | Total/NA | Water | MA EPH Frac | 22769 |
| 620-11550-2 | LM-GW-B/MW102-051723 | Total/NA | Water | MA EPH Frac | 22769 |
| 620-11550-3 | LM-FD-051723 | Total/NA | Water | MA EPH Frac | 22769 |
| 620-11550-4 | LM-GW-B/MW101-051723 | Total/NA | Water | MA EPH Frac | 22769 |
| MB 620-22769/1-B | Method Blank | Total/NA | Water | MA EPH Frac | 22769 |
| LCS 620-22769/4-B | Lab Control Sample | Total/NA | Water | MA EPH Frac | 22769 |
| LCSD 620-22769/5-B | Lab Control Sample Dup | Total/NA | Water | MA EPH Frac | 22769 |
| 620-11550-5 MS | LM-GW-B/MW104-051723 | Total/NA | Water | MA EPH Frac | 22769 |
| 620-11550-5 MSD | LM-GW-B/MW104-051723 | Total/NA | Water | MA EPH Frac | 22769 |

### Analysis Batch: 22859

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11550-1 | LM-GW-B/MW105-051723 | Total/NA | Water | EPH | 22824 |
| 620-11550-2 | LM-GW-B/MW102-051723 | Total/NA | Water | EPH | 22824 |
| 620-11550-3 | LM-FD-051723 | Total/NA | Water | EPH | 22824 |
| MB 620-22769/1-B | Method Blank | Total/NA | Water | EPH | 22824 |
| LCS 620-22769/4-B | Lab Control Sample | Total/NA | Water | EPH | 22824 |
| LCSD 620-22769/5-B | Lab Control Sample Dup | Total/NA | Water | EPH | 22824 |

### Analysis Batch: 22894

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11550-4 | LM-GW-B/MW101-051723 | Total/NA | Water | EPH | 22824 |
| 620-11550-5 MS | LM-GW-B/MW104-051723 | Total/NA | Water | EPH | 22824 |
| 620-11550-5 MSD | LM-GW-B/MW104-051723 | Total/NA | Water | EPH | 22824 |

### Prep Batch: 22911

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11550-5 | LM-GW-B/MW104-051723 | Total/NA | Water | 3510C | |
| MB 620-22911/1-B | Method Blank | Total/NA | Water | 3510C | |
| LCS 620-22911/4-B | Lab Control Sample | Total/NA | Water | 3510C | |
| LCSD 620-22911/5-B | Lab Control Sample Dup | Total/NA | Water | 3510C | |

### Fraction Batch: 22956

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11550-5 | LM-GW-B/MW104-051723 | Total/NA | Water | MA EPH Frac | 22911 |
| MB 620-22911/1-B | Method Blank | Total/NA | Water | MA EPH Frac | 22911 |
| LCS 620-22911/4-B | Lab Control Sample | Total/NA | Water | MA EPH Frac | 22911 |
| LCSD 620-22911/5-B | Lab Control Sample Dup | Total/NA | Water | MA EPH Frac | 22911 |

## GC/MS Semi VOA

### Analysis Batch: 23053

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11550-5 | LM-GW-B/MW104-051723 | Total/NA | Water | EPH | 22956 |
| MB 620-22911/1-B | Method Blank | Total/NA | Water | EPH | 22956 |
| LCS 620-22911/4-B | Lab Control Sample | Total/NA | Water | EPH | 22956 |
| LCSD 620-22911/5-B | Lab Control Sample Dup | Total/NA | Water | EPH | 22956 |

## GC VOA

### Analysis Batch: 22877

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11550-1 | LM-GW-B/MW105-051723 | Total/NA | Water | MAVPH2.1 | |
| 620-11550-2 | LM-GW-B/MW102-051723 | Total/NA | Water | MAVPH2.1 | |
| 620-11550-3 | LM-FD-051723 | Total/NA | Water | MAVPH2.1 | |
| 620-11550-4 | LM-GW-B/MW101-051723 | Total/NA | Water | MAVPH2.1 | |
| 620-11550-5 | LM-GW-B/MW104-051723 | Total/NA | Water | MAVPH2.1 | |
| 620-11550-6 | LM-TB-051723 | Total/NA | Water | MAVPH2.1 | |
| MB 620-22877/5 | Method Blank | Total/NA | Water | MAVPH2.1 | |
| LCS 620-22877/3 | Lab Control Sample | Total/NA | Water | MAVPH2.1 | |
| LCSD 620-22877/4 | Lab Control Sample Dup | Total/NA | Water | MAVPH2.1 | |
| 620-11550-5 MS | LM-GW-B/MW104-051723 | Total/NA | Water | MAVPH2.1 | |
| 620-11550-5 MSD | LM-GW-B/MW104-051723 | Total/NA | Water | MAVPH2.1 | |

### Analysis Batch: 22907

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11550-2 - DL | LM-GW-B/MW102-051723 | Total/NA | Water | MAVPH2.1 | |
| 620-11550-3 - DL | LM-FD-051723 | Total/NA | Water | MAVPH2.1 | |
| MB 620-22907/5 | Method Blank | Total/NA | Water | MAVPH2.1 | |
| LCS 620-22907/3 | Lab Control Sample | Total/NA | Water | MAVPH2.1 | |
| LCSD 620-22907/4 | Lab Control Sample Dup | Total/NA | Water | MAVPH2.1 | |

## GC Semi VOA

### Prep Batch: 22769

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11550-1 | LM-GW-B/MW105-051723 | Total/NA | Water | 3510C | |
| 620-11550-2 | LM-GW-B/MW102-051723 | Total/NA | Water | 3510C | |
| 620-11550-3 | LM-FD-051723 | Total/NA | Water | 3510C | |
| 620-11550-4 | LM-GW-B/MW101-051723 | Total/NA | Water | 3510C | |
| MB 620-22769/1-B | Method Blank | Total/NA | Water | 3510C | |
| LCS 620-22769/2-B | Lab Control Sample | Total/NA | Water | 3510C | |
| LCSD 620-22769/3-B | Lab Control Sample Dup | Total/NA | Water | 3510C | |
| 620-11550-5 MS | LM-GW-B/MW104-051723 | Total/NA | Water | 3510C | |
| 620-11550-5 MSD | LM-GW-B/MW104-051723 | Total/NA | Water | 3510C | |

### Analysis Batch: 22799

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11550-1 | LM-GW-B/MW105-051723 | Total/NA | Water | MAEPH2.1 | 22824 |
| 620-11550-2 | LM-GW-B/MW102-051723 | Total/NA | Water | MAEPH2.1 | 22824 |
| 620-11550-3 | LM-FD-051723 | Total/NA | Water | MAEPH2.1 | 22824 |
| MB 620-22769/1-B | Method Blank | Total/NA | Water | MAEPH2.1 | 22824 |
| LCS 620-22769/2-B | Lab Control Sample | Total/NA | Water | MAEPH2.1 | 22824 |
| LCSD 620-22769/3-B | Lab Control Sample Dup | Total/NA | Water | MAEPH2.1 | 22824 |

## GC Semi VOA

### Fraction Batch: 22824

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11550-1 | LM-GW-B/MW105-051723 | Total/NA | Water | MA EPH Frac | 22769 |
| 620-11550-2 | LM-GW-B/MW102-051723 | Total/NA | Water | MA EPH Frac | 22769 |
| 620-11550-3 | LM-FD-051723 | Total/NA | Water | MA EPH Frac | 22769 |
| 620-11550-4 | LM-GW-B/MW101-051723 | Total/NA | Water | MA EPH Frac | 22769 |
| MB 620-22769/1-B | Method Blank | Total/NA | Water | MA EPH Frac | 22769 |
| LCS 620-22769/2-B | Lab Control Sample | Total/NA | Water | MA EPH Frac | 22769 |
| LCSD 620-22769/3-B | Lab Control Sample Dup | Total/NA | Water | MA EPH Frac | 22769 |
| 620-11550-5 MS | LM-GW-B/MW104-051723 | Total/NA | Water | MA EPH Frac | 22769 |
| 620-11550-5 MSD | LM-GW-B/MW104-051723 | Total/NA | Water | MA EPH Frac | 22769 |

### Analysis Batch: 22850

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11550-4 | LM-GW-B/MW101-051723 | Total/NA | Water | MAEPH2.1 | 22824 |
| 620-11550-5 MS | LM-GW-B/MW104-051723 | Total/NA | Water | MAEPH2.1 | 22824 |
| 620-11550-5 MSD | LM-GW-B/MW104-051723 | Total/NA | Water | MAEPH2.1 | 22824 |

### Prep Batch: 22911

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11550-5 | LM-GW-B/MW104-051723 | Total/NA | Water | 3510C | |
| MB 620-22911/1-B | Method Blank | Total/NA | Water | 3510C | |
| LCS 620-22911/2-B | Lab Control Sample | Total/NA | Water | 3510C | |
| LCSD 620-22911/3-B | Lab Control Sample Dup | Total/NA | Water | 3510C | |

### Analysis Batch: 22945

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11550-5 | LM-GW-B/MW104-051723 | Total/NA | Water | MAEPH2.1 | 22956 |
| MB 620-22911/1-B | Method Blank | Total/NA | Water | MAEPH2.1 | 22956 |
| LCS 620-22911/2-B | Lab Control Sample | Total/NA | Water | MAEPH2.1 | 22956 |
| LCSD 620-22911/3-B | Lab Control Sample Dup | Total/NA | Water | MAEPH2.1 | 22956 |

### Fraction Batch: 22956

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11550-5 | LM-GW-B/MW104-051723 | Total/NA | Water | MA EPH Frac | 22911 |
| MB 620-22911/1-B | Method Blank | Total/NA | Water | MA EPH Frac | 22911 |
| LCS 620-22911/2-B | Lab Control Sample | Total/NA | Water | MA EPH Frac | 22911 |
| LCSD 620-22911/3-B | Lab Control Sample Dup | Total/NA | Water | MA EPH Frac | 22911 |

## Metals

### Prep Batch: 22768

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11550-1 | LM-GW-B/MW105-051723 | Dissolved | Water | 3005A | |
| 620-11550-2 | LM-GW-B/MW102-051723 | Dissolved | Water | 3005A | |
| 620-11550-3 | LM-FD-051723 | Dissolved | Water | 3005A | |
| 620-11550-4 | LM-GW-B/MW101-051723 | Dissolved | Water | 3005A | |
| 620-11550-5 | LM-GW-B/MW104-051723 | Dissolved | Water | 3005A | |
| MB 620-22768/1-A | Method Blank | Total/NA | Water | 3005A | |
| LCS 620-22768/2-A | Lab Control Sample | Total/NA | Water | 3005A | |
| LCSD 620-22768/3-A | Lab Control Sample Dup | Total/NA | Water | 3005A | |
| 620-11550-5 MS | LM-GW-B/MW104-051723 | Dissolved | Water | 3005A | |
| 620-11550-5 MSD | LM-GW-B/MW104-051723 | Dissolved | Water | 3005A | |

## Metals (Continued)

### Prep Batch: 22768 (Continued)

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11550-5 DU | LM-GW-B/MW104-051723 | Dissolved | Water | 3005A | |

### Prep Batch: 22770

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11550-1 | LM-GW-B/MW105-051723 | Dissolved | Water | 7470A | |
| 620-11550-2 | LM-GW-B/MW102-051723 | Dissolved | Water | 7470A | |
| 620-11550-3 | LM-FD-051723 | Dissolved | Water | 7470A | |
| 620-11550-4 | LM-GW-B/MW101-051723 | Dissolved | Water | 7470A | |
| 620-11550-5 | LM-GW-B/MW104-051723 | Dissolved | Water | 7470A | |
| MB 620-22770/1-A | Method Blank | Total/NA | Water | 7470A | |
| LCS 620-22770/2-A | Lab Control Sample | Total/NA | Water | 7470A | |
| LCSD 620-22770/3-A | Lab Control Sample Dup | Total/NA | Water | 7470A | |
| 620-11550-5 MS | LM-GW-B/MW104-051723 | Dissolved | Water | 7470A | |
| 620-11550-5 MSD | LM-GW-B/MW104-051723 | Dissolved | Water | 7470A | |
| 620-11550-5 DU | LM-GW-B/MW104-051723 | Dissolved | Water | 7470A | |

### Analysis Batch: 22788

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11550-1 | LM-GW-B/MW105-051723 | Dissolved | Water | 7470A | 22770 |
| 620-11550-2 | LM-GW-B/MW102-051723 | Dissolved | Water | 7470A | 22770 |
| 620-11550-3 | LM-FD-051723 | Dissolved | Water | 7470A | 22770 |
| 620-11550-4 | LM-GW-B/MW101-051723 | Dissolved | Water | 7470A | 22770 |
| 620-11550-5 | LM-GW-B/MW104-051723 | Dissolved | Water | 7470A | 22770 |
| MB 620-22770/1-A | Method Blank | Total/NA | Water | 7470A | 22770 |
| LCS 620-22770/2-A | Lab Control Sample | Total/NA | Water | 7470A | 22770 |
| LCSD 620-22770/3-A | Lab Control Sample Dup | Total/NA | Water | 7470A | 22770 |
| 620-11550-5 MS | LM-GW-B/MW104-051723 | Dissolved | Water | 7470A | 22770 |
| 620-11550-5 MSD | LM-GW-B/MW104-051723 | Dissolved | Water | 7470A | 22770 |
| 620-11550-5 DU | LM-GW-B/MW104-051723 | Dissolved | Water | 7470A | 22770 |

### Analysis Batch: 22844

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11550-1 | LM-GW-B/MW105-051723 | Dissolved | Water | 6010D | 22768 |
| 620-11550-2 | LM-GW-B/MW102-051723 | Dissolved | Water | 6010D | 22768 |
| 620-11550-3 | LM-FD-051723 | Dissolved | Water | 6010D | 22768 |
| 620-11550-4 | LM-GW-B/MW101-051723 | Dissolved | Water | 6010D | 22768 |
| 620-11550-5 | LM-GW-B/MW104-051723 | Dissolved | Water | 6010D | 22768 |
| MB 620-22768/1-A | Method Blank | Total/NA | Water | 6010D | 22768 |
| LCS 620-22768/2-A | Lab Control Sample | Total/NA | Water | 6010D | 22768 |
| LCSD 620-22768/3-A | Lab Control Sample Dup | Total/NA | Water | 6010D | 22768 |
| 620-11550-5 MS | LM-GW-B/MW104-051723 | Dissolved | Water | 6010D | 22768 |
| 620-11550-5 MSD | LM-GW-B/MW104-051723 | Dissolved | Water | 6010D | 22768 |
| 620-11550-5 DU | LM-GW-B/MW104-051723 | Dissolved | Water | 6010D | 22768 |

# Lab Chronicle

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11550-1

## Client Sample ID: LM-GW-B/MW105-051723

**Lab Sample ID: 620-11550-1**

**Date Collected: 05/17/23 10:55**

**Matrix: Water**

**Date Received: 05/18/23 16:31**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 22769 | AAH | EET NE | 05/19/23 09:53 |
| Total/NA | Fraction | MA EPH Frac | | | 22824 | BJJ | EET NE | 05/22/23 14:23 |
| Total/NA | Analysis | EPH | | 1 | 22859 | JS | EET NE | 05/23/23 11:56 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 22877 | BMH | EET NE | 05/23/23 20:34 |
| Total/NA | Prep | 3510C | | | 22769 | AAH | EET NE | 05/19/23 09:53 |
| Total/NA | Fraction | MA EPH Frac | | | 22824 | BJJ | EET NE | 05/22/23 14:23 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 22799 | JS | EET NE | 05/22/23 21:10 |
| Dissolved | Prep | 3005A | | | 22768 | PRB | EET NE | 05/19/23 09:48 |
| Dissolved | Analysis | 6010D | | 1 | 22844 | JPC | EET NE | 05/22/23 13:52 |
| Dissolved | Prep | 7470A | | | 22770 | PRB | EET NE | 05/19/23 10:03 |
| Dissolved | Analysis | 7470A | | 1 | 22788 | PRB | EET NE | 05/19/23 15:12 |

## Client Sample ID: LM-GW-B/MW102-051723

**Lab Sample ID: 620-11550-2**

**Date Collected: 05/17/23 12:40**

**Matrix: Water**

**Date Received: 05/18/23 16:31**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 22769 | AAH | EET NE | 05/19/23 09:53 |
| Total/NA | Fraction | MA EPH Frac | | | 22824 | BJJ | EET NE | 05/22/23 14:23 |
| Total/NA | Analysis | EPH | | 1 | 22859 | JS | EET NE | 05/23/23 12:19 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 22877 | BMH | EET NE | 05/24/23 03:36 |
| Total/NA | Analysis | MAVPH2.1 | DL | 10 | 22907 | BMH | EET NE | 05/24/23 15:00 |
| Total/NA | Prep | 3510C | | | 22769 | AAH | EET NE | 05/19/23 09:53 |
| Total/NA | Fraction | MA EPH Frac | | | 22824 | BJJ | EET NE | 05/22/23 14:23 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 22799 | JS | EET NE | 05/22/23 21:39 |
| Dissolved | Prep | 3005A | | | 22768 | PRB | EET NE | 05/19/23 09:48 |
| Dissolved | Analysis | 6010D | | 1 | 22844 | JPC | EET NE | 05/22/23 13:58 |
| Dissolved | Prep | 7470A | | | 22770 | PRB | EET NE | 05/19/23 10:03 |
| Dissolved | Analysis | 7470A | | 1 | 22788 | PRB | EET NE | 05/19/23 15:14 |

## Client Sample ID: LM-FD-051723

**Lab Sample ID: 620-11550-3**

**Date Collected: 05/17/23 08:00**

**Matrix: Water**

**Date Received: 05/18/23 16:31**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 22769 | AAH | EET NE | 05/19/23 09:53 |
| Total/NA | Fraction | MA EPH Frac | | | 22824 | BJJ | EET NE | 05/22/23 14:23 |
| Total/NA | Analysis | EPH | | 1 | 22859 | JS | EET NE | 05/23/23 12:42 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 22877 | BMH | EET NE | 05/24/23 03:01 |
| Total/NA | Analysis | MAVPH2.1 | DL | 10 | 22907 | BMH | EET NE | 05/24/23 15:35 |
| Total/NA | Prep | 3510C | | | 22769 | AAH | EET NE | 05/19/23 09:53 |
| Total/NA | Fraction | MA EPH Frac | | | 22824 | BJJ | EET NE | 05/22/23 14:23 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 22799 | JS | EET NE | 05/22/23 22:09 |
| Dissolved | Prep | 3005A | | | 22768 | PRB | EET NE | 05/19/23 09:48 |
| Dissolved | Analysis | 6010D | | 1 | 22844 | JPC | EET NE | 05/22/23 14:04 |

# Lab Chronicle

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11550-1

## Client Sample ID: LM-FD-051723

**Lab Sample ID: 620-11550-3**

**Date Collected: 05/17/23 08:00**

**Matrix: Water**

**Date Received: 05/18/23 16:31**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Dissolved | Prep | 7470A | | | 22770 | PRB | EET NE | 05/19/23 10:03 |
| Dissolved | Analysis | 7470A | | 1 | 22788 | PRB | EET NE | 05/19/23 15:16 |

## Client Sample ID: LM-GW-B/MW101-051723

**Lab Sample ID: 620-11550-4**

**Date Collected: 05/17/23 13:00**

**Matrix: Water**

**Date Received: 05/18/23 16:31**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 22769 | AAH | EET NE | 05/19/23 09:53 |
| Total/NA | Fraction | MA EPH Frac | | | 22824 | BJJ | EET NE | 05/22/23 14:23 |
| Total/NA | Analysis | EPH | | 1 | 22894 | JS | EET NE | 05/24/23 09:51 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 22877 | BMH | EET NE | 05/23/23 21:10 |
| Total/NA | Prep | 3510C | | | 22769 | AAH | EET NE | 05/19/23 09:53 |
| Total/NA | Fraction | MA EPH Frac | | | 22824 | BJJ | EET NE | 05/22/23 14:23 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 22850 | JS | EET NE | 05/23/23 17:01 |
| Dissolved | Prep | 3005A | | | 22768 | PRB | EET NE | 05/19/23 09:48 |
| Dissolved | Analysis | 6010D | | 1 | 22844 | JPC | EET NE | 05/22/23 14:10 |
| Dissolved | Prep | 7470A | | | 22770 | PRB | EET NE | 05/19/23 10:03 |
| Dissolved | Analysis | 7470A | | 1 | 22788 | PRB | EET NE | 05/19/23 15:18 |

## Client Sample ID: LM-GW-B/MW104-051723

**Lab Sample ID: 620-11550-5**

**Date Collected: 05/17/23 10:45**

**Matrix: Water**

**Date Received: 05/18/23 16:31**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 22911 | AAH | EET NE | 05/24/23 11:41 |
| Total/NA | Fraction | MA EPH Frac | | | 22956 | BMS | EET NE | 05/25/23 10:50 |
| Total/NA | Analysis | EPH | | 1 | 23053 | JS | EET NE | 05/30/23 12:54 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 22877 | BMH | EET NE | 05/23/23 18:48 |
| Total/NA | Prep | 3510C | | | 22911 | AAH | EET NE | 05/24/23 11:41 |
| Total/NA | Fraction | MA EPH Frac | | | 22956 | BMS | EET NE | 05/25/23 10:50 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 22945 | JS | EET NE | 05/25/23 14:11 |
| Dissolved | Prep | 3005A | | | 22768 | PRB | EET NE | 05/19/23 09:48 |
| Dissolved | Analysis | 6010D | | 1 | 22844 | JPC | EET NE | 05/22/23 12:58 |
| Dissolved | Prep | 7470A | | | 22770 | PRB | EET NE | 05/19/23 10:03 |
| Dissolved | Analysis | 7470A | | 1 | 22788 | PRB | EET NE | 05/19/23 15:25 |

## Client Sample ID: LM-TB-051723

**Lab Sample ID: 620-11550-6**

**Date Collected: 05/17/23 14:00**

**Matrix: Water**

**Date Received: 05/18/23 16:31**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | MAVPH2.1 | | 1 | 22877 | BMH | EET NE | 05/23/23 17:03 |

**Laboratory References:**

EET NE = Eurofins New England, 646 Camp Ave, North Kingstown, RI 02852, TEL (413)789-9018

# Accreditation/Certification Summary

Client: Nobis Engineering, Inc. Job ID: 620-11550-1
Project/Site: Former L&M - Lunenburg MA

## Laboratory: Eurofins New England

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

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|
| Massachusetts | State | M-RI907 | 06-30-23 |

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

| Analysis Method | Prep Method | Matrix | Analyte |
|---|---|---|---|
| 6010D | 3005A | Water | Antimony |
| 6010D | 3005A | Water | Arsenic |
| 6010D | 3005A | Water | Barium |
| 6010D | 3005A | Water | Beryllium |
| 6010D | 3005A | Water | Cadmium |
| 6010D | 3005A | Water | Chromium |
| 6010D | 3005A | Water | Lead |
| 6010D | 3005A | Water | Nickel |
| 6010D | 3005A | Water | Selenium |
| 6010D | 3005A | Water | Silver |
| 6010D | 3005A | Water | Thallium |
| 6010D | 3005A | Water | Vanadium |
| 6010D | 3005A | Water | Zinc |
| 7470A | 7470A | Water | Mercury |
| EPH | 3510C | Water | 2-Methylnaphthalene |
| EPH | 3510C | Water | Acenaphthene |
| EPH | 3510C | Water | Acenaphthylene |
| EPH | 3510C | Water | Anthracene |
| EPH | 3510C | Water | Benzo[a]anthracene |
| EPH | 3510C | Water | Benzo[a]pyrene |
| EPH | 3510C | Water | Benzo[b]fluoranthene |
| EPH | 3510C | Water | Benzo[g,h,i]perylene |
| EPH | 3510C | Water | Benzo[k]fluoranthene |
| EPH | 3510C | Water | Chrysene |
| EPH | 3510C | Water | Dibenz(a,h)anthracene |
| EPH | 3510C | Water | Fluoranthene |
| EPH | 3510C | Water | Fluorene |
| EPH | 3510C | Water | Indeno[1,2,3-cd]pyrene |
| EPH | 3510C | Water | Naphthalene |
| EPH | 3510C | Water | Phenanthrene |
| EPH | 3510C | Water | Pyrene |
| MAEPH2.1 | 3510C | Water | C11-C22 Aromatics |
| MAEPH2.1 | 3510C | Water | C11-C22 Aromatics (Adjusted) |
| MAEPH2.1 | 3510C | Water | C19-C36 Aliphatics |
| MAEPH2.1 | 3510C | Water | C9-C18 Aliphatics |
| MAVPH2.1 | | Water | Benzene |
| MAVPH2.1 | | Water | C5-C8 Aliphatics (adjusted) |
| MAVPH2.1 | | Water | C5-C8 Aliphatics (unadjusted) |
| MAVPH2.1 | | Water | C9-C10 Aromatics |
| MAVPH2.1 | | Water | C9-C12 Aliphatics (adjusted) |
| MAVPH2.1 | | Water | C9-C12 Aliphatics (unadjusted) |
| MAVPH2.1 | | Water | Ethylbenzene |
| MAVPH2.1 | | Water | m,p-Xylene |
| MAVPH2.1 | | Water | Methyl tert-butyl ether |
| MAVPH2.1 | | Water | Naphthalene |

# Accreditation/Certification Summary

Client: Nobis Engineering, Inc. Job ID: 620-11550-1
Project/Site: Former L&M - Lunenburg MA

## Laboratory: Eurofins New England (Continued)

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

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

| Analysis Method | Prep Method | Matrix | Analyte |
|---|---|---|---|
| MAVPH2.1 | | Water | o-Xylene |
| MAVPH2.1 | | Water | Toluene |
| MAVPH2.1 | | Water | Xylenes, Total |

# Method Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11550-1

| Method | Method Description | Protocol | Laboratory |
|---|---|---|---|
| EPH | Extractable Petroleum Hydrocarbons (GC/MS) | MA DEP | EET NE |
| MAVPH2.1 | Massachusetts - Volatile Petroleum Hydrocarbons (GC) | MA DEP | EET NE |
| MAEPH2.1 | Massachusetts - Extractable Petroleum Hydrocarbons (GC) | MA DEP | EET NE |
| 6010D | Metals (ICP) | SW846 | EET NE |
| 7470A | Mercury (CVAA) | SW846 | EET NE |
| 3005A | Preparation, Total Metals | SW846 | EET NE |
| 3510C | Liquid-Liquid Extraction (Separatory Funnel) | SW846 | EET NE |
| 5030C | Purge and Trap | SW846 | EET NE |
| 7470A | Preparation, Mercury | SW846 | EET NE |
| MA EPH Frac | Massachusetts - Extractable Petroleum Hydrocarbon Fractionation | MA DEP | EET NE |

**Protocol References:**

MA DEP = Massachusetts Department Of Environmental Protection

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

**Laboratory References:**

EET NE = Eurofins New England, 646 Camp Ave, North Kingstown, RI 02852, TEL (413)789-9018

# Sample Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11550-1

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---|---|---|---|---|
| 620-11550-1 | LM-GW-B/MW105-051723 | Water | 05/17/23 10:55 | 05/18/23 16:31 |
| 620-11550-2 | LM-GW-B/MW102-051723 | Water | 05/17/23 12:40 | 05/18/23 16:31 |
| 620-11550-3 | LM-FD-051723 | Water | 05/17/23 08:00 | 05/18/23 16:31 |
| 620-11550-4 | LM-GW-B/MW101-051723 | Water | 05/17/23 13:00 | 05/18/23 16:31 |
| 620-11550-5 | LM-GW-B/MW104-051723 | Water | 05/17/23 10:45 | 05/18/23 16:31 |
| 620-11550-6 | LM-TB-051723 | Water | 05/17/23 14:00 | 05/18/23 16:31 |

11550

620-11550 Chain of Custody

Testing

Page 1 of 2

# CHAIN OF CUSTODY RECORD


☐ Almgren Drive
Agawam, MA 01001
(413) 789-9018

☐ 46 Camp Avenue
N Kingstown, RI 02852
(401) 732-3400


**Special Handling:**

☐ TAT - Date Needed: Standard

All TATs subject to laboratory approval
Min 24-hr notification needed for rushes
Samples disposed after 30 days unless otherwise instructed.

Report To: aroy@nobis-group com
Adam Roy
Telephone #:
Project Mgr:

Invoice To: ap@nobis-group com
P O No:
Quote #:

Project No: S00001 005/400
Site Name: Former L&M
Location: Lunenburg State: MA
Sampler(s): B Fortier (978) 399-9651

F=Field Filtered 1=$Na_2S2O_3$ 2=HCl 3=$H_2SO_4$ 4=$HNO_3$ 5=NaOH 6=Ascorbic Acid
7=CH3OH 8=$NaHSO_4$ 9=Deionized Water 10=$H_3PO_4$ 11= 12=

DW=Drinking Water GW=Groundwater SW=Surface Water WW=Waste Water
O=Oil SO=Soil SL=Sludge A=Indoor/Ambient Air SG=Soil Gas
X1= X2= X3=

G= Grab C=Compsite

List Preservative Code below:

| Lab ID: | Sample ID: | Date: | Time: | Type | Matrix | Containers: # of VOA Vials | # of Amber Glass | # of Clear Glass | # of Plastic | Analysis: VPH MassDEP | EPH MassDEP | MCP 14 Dissolved Metals 6010/7471 | | | | | | Check if chlorinated | QA/QC Reporting Notes: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | 2 | 2 | 4 | | | | | | | |
| 01 | LM-GW-B/MW105-051723 | 5/17/2023 | 10 55 AM | G | GW | 3 | 2 | | 1 | x | x | x | | | | | | ☐ | Metals are field filtered |
| 02 | LM-GW-B/MW102-051723 | 5/17/2023 | 12 40 PM | G | GW | 3 | 2 | | 1 | x | x | x | | | | | | ☐ | Metals are field filtered |
| 03 | LM-FD-051723 | 5/17/2023 | 8 00 AM | G | GW | 3 | 2 | | 1 | x | x | x | | | | | | ☐ | Metals are field filtered |
| 04 | LM-GW-B/MW101-051723 | 5/17/2023 | 1 00 PM | G | GW | 3 | 2 | | 1 | x | x | x | | | | | | ☐ | Metals are field filtered |
| 05 | LM-GW-B/MW104-051723 | 5/17/2023 | 10 45 AM | G | GW | 9 | 6 | | 3 | x | x | x | | | | | | ☐ | MS/MSD, Metals are field filtered |
| 06 | LM-TB-051723 | 5/17/2023 | 2 00 PM | G | GW | 2 | | | | x | | | | | | | | ☐ | |
| | | | | | | | | | | | | | | | | | | ☐ | |
| | | | | | | | | | | | | | | | | | | ☐ | |
| | | | | | | | | | | | | | | | | | | ☐ | |
| | | | | | | | | | | | | | | | | | | ☐ | |

QA/QC Reporting Level
☐ Level I ☐ Level II
☐ Level III ☐ Level IV
☐ Other
State-specific reporting standards
MA MCP

| Relinquished by: | Received by: | Date: | Time: |
|---|---|---|---|
| | | 5/17/23 | 17:10 |
| | | 5/18/23 | 16:31 |

Temp °C
Observed: 2.5
Correction Factor: -0.2
Corrected: 2.3
IR ID #: 6

☑ EDD format: Equis EDD
☑ E-mail to: aroy@nobis-group com

Condition upon receipt: Custody Seals. ☐ Present ☐ Intact ☐ Broken
☐ Ambient ☐ Iced ☑ Refrigerated ☐ DI VOA Frozen ☐ Soil Jar Frozen

5/30/2023

# Login Sample Receipt Checklist

Client: Nobis Engineering, Inc.

Job Number: 620-11550-1

**Login Number: 11550**
**List Number: 1**
**Creator: Makhoul, Elie**

**List Source: Eurofins New England**

| Question | Answer | Comment |
|---|---|---|
| Radioactivity wasn't checked or is </= background as measured by a survey meter. | N/A | |
| The cooler's custody seal, if present, is intact. | N/A | |
| Sample custody seals, if present, are intact. | N/A | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| Is the Field Sampler's name present on COC? | True | |
| There are no discrepancies between the containers received and the COC. | True | |
| Samples are received within Holding Time (excluding tests with immediate HTs) | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| Sample Preservation Verified. | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| Containers requiring zero headspace have no headspace or bubble is <6mm (1/4"). | True | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |
| Residual Chlorine Checked. | N/A | |

October 2, 2023
Nobis File No. S00001.05

Ms. Katy Deng
USEPA – Region 1
Land, Chemicals, and Redevelopment Division
5 Post Office Square, Suite 100
Boston, MA 02109-3912

Re: USEPA Contract No. 68HE0122D0001
USEPA Task Order No. 68HE0122F0044
Targeted Brownfields Assessment (TBA)
Former L&M Service Station Site
Lunenburg, Massachusetts
Sample Delivery Group (SDG) No. 620117361
Eurofins New England, North Kingstown, RI

Tier 1 Stage 2A Organic and Inorganic Data Review:

Volatile Petroleum Hydrocarbons (VPH by MassDEP-VPH), Extractable Petroleum Hydrocarbons (EPH by MassDEP-EPH), Massachusetts Contingency Plan (MCP) Metals (MCP-14 Metals by 6020B/7470A)

5/Soil Samples: LM-SO-UST01-052523, LM-SO-UST02-052523, LM-SO-UST03-052523, SO-FD-01, LM-SO-PI-052523
1/Field Duplicate Pair: LM-SO-UST02-052523 / SO-FD-01

Dear Ms. Deng:

Nobis Group (Nobis), under a USEPA contract as a subcontractor to KGSNE JV, LLC, performed a Tier 1 Stage 2A manual data review (S2AVM) on the organic and inorganic analytical data for the samples listed above. The samples were collected by Nobis at the Former L&M Service Station Site located in Lunenburg, Massachusetts on May 25, 2023. The samples were analyzed for VPHs by MassDEP-VPH, EPHs by MassDEP-EPH, and MCP-14 Metals by EPA Methods 6010D/7470A by Eurofins New England in North Kingstown, RI.

The Tier 1 Stage 2A manual data review was performed in accordance with the Region 1 - EPA New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures (September 2020); USEPA's National Functional Guidelines for Organic Superfund Methods Data Review (November 2020); USEPA's National Functional Guidelines for Inorganic Superfund Methods Data Review (November 2020); the Program Quality Assurance Project Plan (Program QAPP) dated October 2022, and the Quality Assurance Project Plan Addendum (QAPPA) (May 2023) for the Former L&M Service Station Site, which appends the October 2022 Program QAPP.

The data were evaluated based on the following parameters:

* • Overall Evaluation of Data and Potential Usability Issues
* • Data Completeness
* • Preservation and Technical Holding Times
• Blanks



Nobis Group®
585 Middlesex Street
Lowell, MA 01851
T (978) 683-0891

| | | |
|---|---|---|
| * | • | Surrogates (organic analyses only) |
| NA | • | Internal Standards |
| | • | Matrix Spike Analysis |
| * | • | Laboratory Duplicates |
| | • | Laboratory Control Samples (LCS) |
| | • | Field Duplicates |
| | • | ICP Serial Dilutions (metals only) |
| NA | • | Performance Evaluation (PE) Samples |
| NA | • | Target Analyte Identification |
| * | • | Reported Quantitation Limits |

* All criteria were met for this parameter or did not require qualification.
NA – Not applicable.

**Overall Evaluation of Data and Potential Usability Issues**

The site sampling objectives are:

- Characterize in-situ soil based on AOCs identified by Fuss & O'Neill in November 2020 Phase I for the presence of possible site-related contamination.
- Evaluate groundwater elevation.
- Evaluate presence/absence of groundwater contamination related to site.

The data meet the project quality criteria and can be used without restriction except as summarized below. The attachments provide details and supporting documentation.

**MassDEP-VPH:**
Results were qualified for laboratory blank contamination.

**MassDEP-EPH:**
Results were qualified for MS/MSD recovery.

**MCP-14 Metals and Mercury:**
Results were qualified for serial dilution performance, field duplicate imprecision, and LCS/LCSD and MS/MSD recovery exceedances.

Please contact Linda Terzis at lterzis@nobis-group.com should you have any questions or comments regarding this information.

Sincerely,

NOBIS GROUP®

Linda Terzis
Data Validator

Gary Glennon
Data Validator

Tables: Data Summary Tables – Tier 1 Stage 2A (S2AVM) Validated Data
Data Qualification Actions Table

Attachments: Data Review Checklist
Support Documentation
COC

cc: Denis McGrath (Nobis Group)
Adam Roy (Nobis Group)

# DATA SUMMARY TABLE

| **Analysis** | | EPH in Soil | | | | |
|---|---|---|---|---|---|---|
| **Lab Sample ID** | | 620-11736-1 | 620-11736-2 | 620-11736-3 | 620-11736-4 | 620-11736-5 |
| **Field Sample ID** | | LM-SO-UST01-052523 | LM-SO-UST02-052523 | LM-SO-UST03-052523 | SO-FD-01 | LM-SO-PI-052523 |
| **Sample Type** | | N | N | N | FD | N |
| **Parent Sample ID** | | | | | | |
| **Sample Date** | **Units** | 05/25/23 | 05/25/23 | 05/25/23 | 05/25/23 | 05/25/23 |
| 2-Methylnaphthalene | mg/kg | 0.36 U | 0.4 U | 0.34 U | 0.4 U | 0.35 U |
| Acenaphthene | mg/kg | 0.36 U | 0.4 U | 0.34 U | 0.4 U | 0.35 U |
| Acenaphthylene | mg/kg | 0.36 U | 0.4 U | 0.34 U | 0.4 U | 0.35 U |
| Anthracene | mg/kg | 0.36 U | 0.4 U | 0.34 U | 0.4 U | 0.35 U |
| Benzo(a)anthracene | mg/kg | 0.36 U | 0.4 U | 0.34 U | 0.4 U | 0.35 U |
| Benzo(a)pyrene | mg/kg | 0.36 U | 0.4 U | 0.34 U | 0.4 U | 0.35 U |
| Benzo(b)fluoranthene | mg/kg | 0.36 U | 0.4 U | 0.34 U | 0.4 U | 0.35 U |
| Benzo(g,h,i)perylene | mg/kg | 0.36 U | 0.4 U | 0.34 U | 0.4 U | 0.35 U |
| Benzo(k)fluoranthene | mg/kg | 0.36 U | 0.4 U | 0.34 U | 0.4 U | 0.35 U |
| C11-C22 Aromatics | mg/kg | 12 | 8 U | 12 | 8 U | 33 |
| C11-C22 Aromatics (adjusted) | mg/kg | 11 | 8 U | 11 | 8 U | 32 |
| C19-C36 Aliphatics | mg/kg | 16 J | 8 UJ | 19 J | 8 UJ | 58 |
| C9-C18 Aliphatics | mg/kg | 7.2 U | 8 U | 6.9 U | 8 U | 7.1 U |
| Chrysene | mg/kg | 0.36 U | 0.4 U | 0.34 U | 0.4 U | 0.35 U |
| Dibenz(a,h)anthracene | mg/kg | 0.36 U | 0.4 U | 0.34 U | 0.4 U | 0.35 U |
| Fluoranthene | mg/kg | 0.63 | 0.44 | 0.64 | 0.45 | 0.44 |
| Fluorene | mg/kg | 0.36 U | 0.4 U | 0.34 U | 0.4 U | 0.35 U |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.36 U | 0.4 U | 0.34 U | 0.4 U | 0.35 U |
| Naphthalene | mg/kg | 0.36 U | 0.4 U | 0.34 U | 0.4 U | 0.35 U |
| Phenanthrene | mg/kg | 0.36 U | 0.4 U | 0.34 U | 0.4 U | 0.35 U |
| Pyrene | mg/kg | 0.36 U | 0.4 U | 0.34 U | 0.4 U | 0.35 U |

# DATA SUMMARY TABLE

| **Analysis** | | Metals in Soil | | | | |
|---|---|---|---|---|---|---|
| **Lab Sample ID** | | 620-11736-1 | 620-11736-2 | 620-11736-3 | 620-11736-4 | 620-11736-5 |
| **Field Sample ID** | | LM-SO-UST01-052523 | LM-SO-UST02-052523 | LM-SO-UST03-052523 | SO-FD-01 | LM-SO-PI-052523 |
| **Sample Type** | | N | N | N | FD | N |
| **Parent Sample ID** | | | | | | |
| **Sample Date** | **Units** | 05/25/23 | 05/25/23 | 05/25/23 | 05/25/23 | 05/25/23 |
| Antimony | mg/kg | 1.3 J | 1.5 J | 0.81 J | 1.7 J | 0.94 J |
| Arsenic | mg/kg | 21 | 52 | 12 | 53 | 16 |
| Barium | mg/kg | 50 J | 54 J | 66 J | 57 J | 44 |
| Beryllium | mg/kg | 0.33 J | 0.26 J | 0.42 J | 0.3 J | 0.24 J |
| Cadmium | mg/kg | 0.54 U | 0.62 U | 0.51 U | 0.54 U | 0.034 J |
| Chromium | mg/kg | 27 | 34 | 27 | 34 | 20 |
| Lead | mg/kg | 28 | 29 | 32 | 47 | 60 |
| Mercury | mg/kg | 0.025 J | 0.054 U | 0.069 | 0.012 J | 0.062 |
| Nickel | mg/kg | 20 | 23 | 19 | 24 | 16 |
| Selenium | mg/kg | 1.6 U | 1.8 U | 1.5 U | 1.6 U | 1.4 U |
| Silver | mg/kg | 1.6 U | 1.8 U | 1.5 U | 1.6 U | 1.4 U |
| Thallium | mg/kg | 3.2 U | 3.7 U | 3.1 U | 3.2 U | 2.8 U |
| Vanadium | mg/kg | 21 | 25 | 22 | 27 | 17 |
| Zinc | mg/kg | 64 J | 150 J | 47 J | 86 J | 150 |

## DATA SUMMARY TABLE

| **Analysis** | | VPH in Soil | | | | |
|---|---|---|---|---|---|---|
| **Lab Sample ID** | | 620-11736-1 | 620-11736-2 | 620-11736-3 | 620-11736-4 | 620-11736-5 |
| **Field Sample ID** | | LM-SO-UST01-052523 | LM-SO-UST02-052523 | LM-SO-UST03-052523 | SO-FD-01 | LM-SO-PI-052523 |
| **Sample Type** | | N | N | N | FD | N |
| **Parent Sample ID** | | | | | | |
| **Sample Date** | **Units** | 05/25/23 | 05/25/23 | 05/25/23 | 05/25/23 | 05/25/23 |
| Benzene | mg/kg | 0.013 U | 0.018 U | 0.015 U | 0.016 U | 0.013 J |
| C5-C8 Aliphatics (adjusted) | mg/kg | 0.2 | 0.091 U | 0.073 U | 0.079 U | 0.34 |
| C5-C8 Aliphatics (unadjusted) | mg/kg | 0.21 | 0.091 U | 0.073 U | 0.079 U | 0.48 |
| C9-C10 Aromatics | mg/kg | 0.3 | 0.034 J | 0.024 J | 0.019 J | 0.17 |
| C9-C12 Aliphatics (adjusted) | mg/kg | 0.29 | 0.091 U | 0.073 U | 0.079 U | 0.11 |
| C9-C12 Aliphatics (unadjusted) | mg/kg | 0.62 | 0.072 J | 0.055 J | 0.049 J | 0.38 |
| Ethylbenzene | mg/kg | 0.0069 J | 0.0049 J | 0.015 U | 0.016 U | 0.013 J |
| m,p-Xylene | mg/kg | 0.02 J | 0.016 J | 0.0066 J | 0.01 J | 0.051 |
| Methyl tert-butyl ether | mg/kg | 0.013 U | 0.057 J+ | 0.015 U | 0.053 J+ | 0.088 J+ |
| Naphthalene | mg/kg | 0.012 J | 0.018 U | 0.015 U | 0.016 U | 0.014 U |
| o-Xylene | mg/kg | 0.0048 J | 0.0091 J | 0.0043 J | 0.0066 J | 0.032 |
| Toluene | mg/kg | 0.0082 J | 0.016 J | 0.0056 J | 0.011 J | 0.04 |

**Data Review Qualification Actions**
**Former L&M Service Station**
**SDG 620117361**

| Parameter | Analyte | Samples | Evaluation Criteria | Action Needed | Comments |
|---|---|---|---|---|---|
| **MassDEP-VPH** | | | | | |
| | Methyl tert-butyl ether | LM-SO-UST01-052523, LM-SO-UST03-052523 | Laboratory blank contamination | RL (U) | |
| | Methyl tert-butyl ether | LM-SO-UST02-052523, SO-FD-01, LM-SO-PI-052523 | Laboratory blank contamination | J+ | |
| **MassDEP-EPH** | | | | | |
| | C19-C36 aliphatic hydrocarbons | LM-SO-UST01-052523, LM-SO-UST02-052523, LM-SO-UST03-052523, SO-FD-01 | MSD recovery | J / UJ | |
| **MCP-14 Metals / Mercury** | | | | | |
| | Antimony | All soil samples. | LCS/LCSD recovery | J- | Final qual is J, indeterminate bias, since detections are < RL. |
| | Barium | LM-SO-UST01-052523, LM-SO-UST02-052523, LM-SO-UST03-052523, SO-FD-01 | MS/MSD recovery | J- | Final qual is J, indeterminate bias, due to serial dilution qualification. |
| | Barium | LM-SO-UST01-052523, LM-SO-UST02-052523, LM-SO-UST03-052523, SO-FD-01 | Serial dilution | J | |
| | Zinc | LM-SO-UST01-052523, LM-SO-UST02-052523, LM-SO-UST03-052523, SO-FD-01 | Field duplicate imprecision | J | |

**Tier 1/Stage 2A Data Review Checklist**

**Project:** Former L&M Service Station, Lunenburg, Massachusetts
Targeted Brownfields Assessment (TBA)
**Project #:** S00001.05
**Case#:** NA
**Date:** 09/10/2023
**Methods:** Volatile Petroleum Hydrocarbons (VPH) (MassDEP-VPH)
Extractable Petroleum Hydrocarbons (EPH) (MassDEP-EPH)
Massachusetts Contingency Plan (MCP) Metals (MCP-14 Metals by 6010D/7470A)

**Laboratory:** Eurofins New England Laboratory, North Kingstown, RI
**SDG:** 620117361
**Reviewer:** Linda Terzis

1. **Case Narrative and Data Package Completeness (COC and Analyte List Review)**
Five (5) soil samples, including one field duplicate sample, were listed on the COC for SDG 620117361. The samples were collected on 05/25/2023 and received at the Eurofins New England Laboratory on 05/26/2023 at a maximum temperature of 3.6 °C.

| Sample ID | Laboratory ID | Analyses |
|---|---|---|
| LM-SO-UST01-052523 | 620-11736-1 | MassDEP-VPH, MassDEP-EPH, MCP-14 Metals/Mercury |
| LM-SO-UST02-052523 | 620-11736-2 | |
| LM-SO-UST03-052523 | 620-11736-3 | |
| SO-FD-01 | 620-11736-4 | |
| LM-SO-PI-052523 | 620-11736-5 | |

The data were evaluated using the site-specific Quality Assurance Project Plan Addendum (QAPPA) (dated May 2023) and the Program QAPP (dated October 2022). Both were prepared by KGSNE, LLC. The QAPPA appends and incorporates by reference the procedures and quality control measures detailed in the Program QAPP (October 2022). Therefore, site data for this SDG were evaluated using both the QAPPA of May 2023 and the Program QAPP dated October 2022. The Massachusetts Compendium of Analytical Methods (CAM) and/or SW-846 Methods were used to perform the analyses. Therefore, site data were also evaluated using CAM quality control (QC) limits, where applicable.

The analyte lists reported by the laboratory were compared to the required analyte lists per Table 3 (soil) in the QAPPA (May 2023) for the site. Results for all requested analytes were reported and no inconsistencies were noted.

2. **Holding Time and Sample Preservation Compliance**

Receipt temperatures are acceptable (≤ 6°), as specified in the QAPPA (May 2023).

MassDEP-VPH: Holding time criteria (analyzed within 14 days) met.

MassDEP-EPH: Holding time criteria (extracted within 14 days and analyzed within 40 days of extraction) met.



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MCP-14 Metals/Mercury: Holding time criteria (analyzed within 28 days for mercury; within 180 days for all other analytes) were met.

**3. Calibration Issues**

Not assessed for S2AVM data review.

**4. Laboratory and Field Blanks**

MassDEP-VPH: Results for the VPH laboratory method blank were non-detect except for methyl tert-butyl ether, which was detected at < RL.

Methyl tert-butyl ether was detected in samples LM-SO-UST01-052523 (620-11736-1) and LM-SO-UST03-052523 (620-11736-3) at < reporting limit (RL). Professional judgement based on the NFGs (2020) for the VOC analysis was used to qualify the detected results for methyl tert-butyl ether as non-detect at the reporting limit (RL) (RL [U]) in samples LM-SO-UST01-052523 and LM-SO-UST03-052523 due to laboratory blank contamination.

Methyl tert-butyl ether was detected in samples LM-SO-UST02-052523 (620-11736-2), SO-FD-01 (620-11736-4), and LM-SO-PI-052523 (620-11736-5) at concentrations > RL but < 10x the blank level. Detected results for methyl tert-butyl ether are qualified as estimated with a potential high bias (J+) in samples LM-SO-UST02-052523, SO-FD-01, and LM-SO-PI-052523 due to laboratory blank contamination.

MassDEP-EPH: Results for the EPH laboratory method blanks were non-detect. No blank actions are required.

MCP-14 Metals/Mercury: Results for the metals and mercury method blanks were non-detect. No blank actions are required.

An equipment blank was not submitted with the samples of this SDG. No actions are required.

**5. Interference Check Sample (metals only)**

Not assessed for S2AVM data review.

**6. Surrogates**

The Program QAPP (October 2022) was used to evaluate site data for surrogate recovery. If no Program QAPP-specific recovery limits were available for a surrogate, the MCP CAM recovery limits were used.

MassDEP-VPH: Percent surrogate recoveries for the samples were within the Program QAPP limits of 70-130%. No actions are required.

MassDEP-EPH: Percent surrogate recoveries for the samples were within the Program QAPP limits of 40-140%. No actions are required.

MCP-14 Metals/Mercury: Not applicable for this analysis.

nobis

**7. Laboratory Control Samples**

MassDEP-VPH: The percent recoveries in the VPH LCS/LCSD pair met the Program QAPP recovery limits of 70-130% and RPDs ≤ 25%. No actions are required.

MassDEP-EPH: The percent recoveries in the EPH LCS/LCSD pairs met the Program QAPP recovery limits of 40-140%. RPDs met the QAPP limit of ≤ 25% except for benzo(k)fluoranthene where the RPD was > 25%. Results for benzo(k)fluoranthene were non-detect in all soil samples. Professional judgement based on the NFGs (2020) for SVOCs was used to accept the non-detect benzo(k)fluoranthene results unqualified.

MCP-14 Metals/Mercury: Percent recoveries and RPDs for the metals and mercury LCS/LCSD analyses were within the QAPP limits of 80-120% and ≤ 30%, respectively, except for antimony, which was recovered below 80-120% in the LCS and LCSD analyses. Antimony was detected at concentrations < RL in the soil samples. Based on the NFGs (2020), the detected results are qualified as estimated with a potential low bias (J-) in all soil samples. Note that the final qualifier is estimated (J), with an indeterminate bias, since the sample results are < RL.

**8. Matrix Spikes**

Based on the Region I EPA New England Environmental Data Review Supplement (Region I Supplement, 2020), MS/MSD qualifications are applied to all field samples with similar matrix, unless otherwise noted.

MassDEP-VPH: MS/MSD analyses were performed on sample LM-SO-UST03-052523 (620-11736-3). Recoveries and RPDs met the Program QAPP limits of 70-130% recovery and ≤ 50% RPD. No actions are required.

MassDEP-EPH: MS/MSD analyses were performed on sample LM-SO-UST03-052523 (620-11736-3). The recovery of C19-C36 aliphatic hydrocarbons was below the Program QAPP limits of 40-140% in the MSD analysis. Based on the NFGs (2020) for SVOCs, the detected and non-detect results for C19-C36 aliphatic hydrocarbons are qualified as estimated (J/UJ) in all “UST” soil samples (LM-SO-UST01-052523 [620-11736-1], LM-SO-UST02-052523 [620-11736-2], LM-SO-UST03-052523 [620-11736-3], and SO-FD-01 [620-11736-4]) due to the low recovery. RPDs met the QAPP limits of ≤ 50%.

MCP-14 Metals/Mercury: MS/MSD analyses for MCP-14 metals and mercury were performed on sample LM-SO-UST03-052523 (620-11736-3). Recoveries and RPDs met the Program QAPP limits of 75-125% recovery and ≤ 35% RPD except for the recoveries of barium, which were recovered below the 75-125% limits in the MS and MSD analyses. Barium was detected in all soil samples. Based on the NFGs (2020), the detected barium results are qualified as estimated with a potential low bias (J-) in all “UST” soil samples ((LM-SO-UST01-052523 [620-11736-1], LM-SO-UST02-052523 [620-11736-2], LM-SO-UST03-052523 [620-11736-3], and SO-FD-01 [620-11736-4]) due to the low recovery. Note that the final qualifier is estimated (J), with an indeterminate bias, due to subsequent qualifications for serial dilution performance.

**9. Laboratory Duplicates (metals only)**

MCP-14 Metals/Mercury: A laboratory duplicate analysis was performed on sample LM-SO-UST03-052523 (620-11736-3). The QAPP duplicate criterion (≤ 35% RPD for soil samples) was met for all detected metals analytes and mercury.

**10. Serial Dilution (metals only)**

A serial dilution analysis was not performed for this SDG. The Massachusetts CAM requires a serial dilution analysis on samples used for MS/MSD analyses where analytes are detected at > 50x RL. MS/MSD analyses were performed on sample LM-SO-UST03-052523 (620-11736-3). Detected metals and mercury results were < 50x RL in this sample except for barium, which was present at > 50x RL. Based on the NFGs (2020), the detected results for barium are qualified as estimated (J) in all "UST" soil samples ((LM-SO-UST01-052523 [620-11736-1], LM-SO-UST02-052523 [620-11736-2], LM-SO-UST03-052523 [620-11736-3], and SO-FD-01 [620-11736-4]) due to a serial dilution analysis not being performed for this analyte.

**11. Field Duplicate Precision**

Acceptable field duplicate precision is an RPD of ≤ 50% for results > 5x RL and an absolute difference < 4x RL for results < 5x RL, based on the EPA Region I Supplement (2020).

Based on the Region I Supplement (2020), qualifications are applied to all field samples with similar matrix, unless otherwise indicated.

Field duplicate pair LM-SO-UST02-0525 / SO-FD-01 is associated with the soil samples of this SDG.

Field duplicate precision criteria were met for the VPH and EPH analyses. The RPD was > 50% for zinc results > 5x RL. Based on the EPA Region I Supplement (2020), detected results for zinc were qualified as estimated (J) in all soil samples from the "UST" locations due to field duplicate imprecision.

**12. Internal Standards**

Not assessed for S2AVM data review.

**13. Dual Column Precision (PCBs only)**

Not applicable for this SDG.

**14. Performance Evaluation Samples**

Performance Evaluation (PE) samples were not included in this SDG.

**15. Reporting Limits**

RLs for non-detect results for VPH, EPH, and metals/mercury analyses met the project action levels (PALs) for the site.

**16. Other**

EPA Region I Supplement (2020) criterion for percent solids content (> 30%) was met for all soil samples.

Overall bias is considered indeterminate when cumulative nonconformances do not show a consistent bias or in cases of the presence of conflicting high and low biases.

**Field Duplicate Evaluation**

**SDG: 620117361 VPH**

| Analyte | Original Result (mg/kg) | Qual | Duplicate Result (mg/kg) | Qual | RPD ≤ 50% | Abs Diff | Comment |
|---|---|---|---|---|---|---|---|
| **Sample ID** | **LM-SO-UST02-052523** | | **SO-FD-01** | | | | |
| | **620-11736-2** | | **620-11736-4** | | | | |
| Benzene | 0.018 | U | 0.016 | U | -11.76 | | Ok - both ND |
| C5-C8 Aliphatics (adjusted) | 0.091 | U | 0.079 | U | -14.12 | | Ok - both ND |
| C5-C8 Aliphatics (unadjusted) | 0.091 | U | 0.079 | U | -14.12 | | Ok - both ND |
| C9-C10 Aromatics | 0.034 | J | 0.019 | J | -56.60 | | Ok - both < RL |
| C9-C12 Aliphatics (adjusted) | 0.091 | U | 0.079 | U | -14.12 | | Ok - both ND |
| C9-C12 Aliphatics (unadjusted) | 0.072 | J | 0.049 | J | -38.02 | | Ok - both RL |
| Ethylbenzene | 0.0049 | J | 0.016 | U | 106.22 | | Ok - ND and < RL |
| m,p-Xylene | 0.016 | J | 0.01 | J | -46.15 | | Ok - both < RL |
| Methyl tert-butyl ether | 0.057 | | 0.053 | | -7.27 | -0.004 | Ok - abs diff < 4x RL |
| Naphthalene | 0.018 | U | 0.016 | U | -11.76 | | Ok - both ND |
| o-Xylene | 0.0091 | J | 0.0066 | J | -31.85 | | Ok - both < RL |
| Toluene | 0.016 | J | 0.011 | J | -37.04 | | Ok - both < RL |

**Field Duplicate Evaluation**

**SDG: 620117361 EPH**

| Analyte | Original Result (mg/kg) | Qual | Duplicate Result (mg/kg) | Qual | RPD ≤ 50% | Abs Diff | Comment |
|---|---|---|---|---|---|---|---|
| **Sample ID** | **LM-SO-UST02-052523** | | **SO-FD-01** | | | | |
| | **620-11736-2** | | **620-11736-4** | | | | |
| 2-Methylnaphthalene | 0.4 | U | 0.4 | U | 0.00 | | Ok - both ND |
| Acenaphthene | 0.4 | U | 0.4 | U | 0.00 | | Ok - both ND |
| Acenaphthylene | 0.4 | U | 0.4 | U | 0.00 | | Ok - both ND |
| Anthracene | 0.4 | U | 0.4 | U | 0.00 | | Ok - both ND |
| Benzo(a)anthracene | 0.4 | U | 0.4 | U | 0.00 | | Ok - both ND |
| Benzo(a)pyrene | 0.4 | U | 0.4 | U | 0.00 | | Ok - both ND |
| Benzo(b)fluoranthene | 0.4 | U | 0.4 | U | 0.00 | | Ok - both ND |
| Benzo(g,h,i)perylene | 0.4 | U | 0.4 | U | 0.00 | | Ok - both ND |
| Benzo(k)fluoranthene | 0.4 | U | 0.4 | U | 0.00 | | Ok - both ND |
| C11-C22 Aromatics | 8 | U | 8 | U | 0.00 | | Ok - both ND |
| C11-C22 Aromatics (adjusted) | 8 | U | 8 | U | 0.00 | | Ok - both ND |
| C19-C36 Aliphatics | 8 | U | 8 | U | 0.00 | | Ok - both ND |
| C9-C18 Aliphatics | 8 | U | 8 | U | 0.00 | | Ok - both ND |
| Chrysene | 0.4 | U | 0.4 | U | 0.00 | | Ok - both ND |
| Dibenz(a,h)anthracene | 0.4 | U | 0.4 | U | 0.00 | | Ok - both ND |
| Fluoranthene | 0.44 | | 0.45 | | 2.25 | 0.01 | Ok - abs diff < 4x RL |
| Fluorene | 0.4 | U | 0.4 | U | 0.00 | | Ok - both ND |
| Indeno(1,2,3-cd)pyrene | 0.4 | U | 0.4 | U | 0.00 | | Ok - both ND |
| Naphthalene | 0.4 | U | 0.4 | U | 0.00 | | Ok - both ND |
| Phenanthrene | 0.4 | U | 0.4 | U | 0.00 | | Ok - both ND |
| Pyrene | 0.4 | U | 0.4 | U | 0.00 | | Ok - both ND |

**Field Duplicate Evaluation**

**SDG: 620117631 METALS**

| Analyte | Original Result (mg/kg) | Qual | Duplicate Result (mg/kg) | Qual | RPD ≤ 50% | Abs Diff | Comment |
|---|---|---|---|---|---|---|---|
| **Sample ID** | **LM-SO-UST02-052523** | | **SO-FD-01** | | | | |
| | **620-11736-2** | | **620-11736-4** | | | | |
| Antimony | 1.5 | J | 1.7 | J | 12.5 | | Ok - both < RL |
| Arsenic | 52 | | 53 | | 1.9 | | Ok - RPD < 50% |
| Barium | 54 | | 57 | | 5.4 | | Ok - RPD < 50% |
| Beryllium | 0.26 | J | 0.3 | J | 14.3 | | Ok - both < RL |
| Cadmium | 0.62 | U | 0.54 | U | -13.8 | | Ok - both ND |
| Chromium | 34 | | 34 | | 0.00 | | Ok - RPD < 50% |
| Lead | 29 | | 47 | | 47.4 | | Ok - RPD < 50% |
| Mercury | 0.054 | U | 0.012 | J | -127.3 | | Ok - ND and < RL |
| Nickel | 23 | | 24 | | 4.3 | | Ok - RPD < 50% |
| Selenium | 1.8 | U | 1.6 | U | -11.8 | | Ok - both ND |
| Silver | 1.8 | U | 1.6 | U | -11.8 | | Ok - both ND |
| Thallium | 3.7 | U | 3.2 | U | -14.5 | | Ok - both ND |
| Vanadium | 25 | | 27 | | 7.7 | | Ok - RPD < 50% |
| **Zinc** | 150 | | 86 | | -54.2 | | **J both - RPD > 50%** |

620-11736 Chain of Custody

11736

# Chain of Custody Record

eurofins | Environment Testing

| | | | | |
|---|---|---|---|---|
| Client Contact: Bridget Fortier | Sampler: S. Stone | Lab PM: A. Ray | Carrier Tracking No(s): | COC No: 620-10175-1337 1 |
| Company: Nobis Engineering, Inc | Phone: 774-245-3607 | E-Mail: aray@nobis-group.com | State of Origin: | Page: Page 1 of 2 |
| Address: 585 Middlesex Street | PWSID: | | | Job #: |
| City: Lowell | Due Date Requested: | | | |
| State, Zip: MA, 01851 | TAT Requested (days): standard 10 day | | | |
| Phone: | Compliance Project: Δ Yes Δ No | | | |
| Email: bfortier@nobis-group.com | PO #: | | | |
| Project Name: Former L&M | WO #: | | | |
| Site: | Project #: 50000001.005/406 | | | |
| | SSOW#: | | | |

**Analysis Requested**

**Preservation Codes:**

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)

Other:

| | Sample Identification | Sample Date | Sample Time | Sample Type (C=comp, G=grab) | Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air) | Field Filtered Sample (Yes or No) | Perform MS/MSD (Yes or No) | Preservation Code: | UPH | EDD, MADEP (CAM) | Total Number of containers | Special Instructions/Note: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | LM-SO-UST01-052523 | 5-25-23 | 1210 | C | Solid | | | F | X | X | | |
| 02 | LM-SO-UST02-052523 | | 1750 | C | Solid | | | | X | X | | |
| 03 | LM-SO-UST03-052523 | | 1630 | C | Solid | | Y | | X | X | | MS/MSD |
| 04 | SO-FD-01 | | 800 | C | Solid | | | | X | X | | |
| 05 | LM-SO-01-052523 | | 1650 | G | Solid | | | | X | X | | |
| | | | | | Solid | | | | | | | |
| | | | | | Solid | | | | | | | |
| | | | | | Solid | | | | | | | |
| | | | | | Solid | | | | | | | |
| | | | | | Solid | | | | | | | |
| | | | | | Solid | | | | | | | |

***Possible Hazard Identification***

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

***Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)***

☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested. I, II, III, IV, Other (specify): EDD report PDF & email

Special Instructions/QC Requirements: MADEP CAM METHOD required

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

| | Relinquished by | Date/Time | Company | Received by | Date/Time | Company |
|---|---|---|---|---|---|---|
| 1 | | 5-26-23 1135 | | | 5/26/23 1135 | ENE |
| 2 | | 5/26/23 1659 | | | 5/26/23 16:59 | ENE |
| 3 | | | | | | |

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 3.4 +0.2 = 3.6 #6

Ver: 06/08/2021

eurofins | Environment Testing



# ANALYTICAL REPORT

## PREPARED FOR

Attn: Adam Roy
Nobis Engineering, Inc.
585 Middlesex Street
Lowell, Massachusetts 01851

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## JOB DESCRIPTION

Former L&M - Lunenburg MA

## JOB NUMBER

620-11736-1

Eurofins New England
646 Camp Ave
North Kingstown RI 02852

See page two for job notes and contact information.



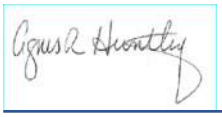
myEOL

## Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northeast, LLC Project Manager.

## Authorization



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Authorized for release by
Agnes Huntley, Project Manager
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# Table of Contents

Cover Page . . . . . 1
Table of Contents . . . . . 3
Definitions/Glossary . . . . . 4
Case Narrative . . . . . 5
Detection Summary . . . . . 6
Client Sample Results . . . . . 9
Surrogate Summary . . . . . 19
QC Sample Results . . . . . 20
QC Association Summary . . . . . 29
Lab Chronicle . . . . . 32
Certification Summary . . . . . 35
Method Summary . . . . . 37
Sample Summary . . . . . 38
Chain of Custody . . . . . 39
Receipt Checklists . . . . . 41

# Definitions/Glossary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11736-1

## Qualifiers

### GC VOA

| Qualifier | Qualifier Description |
|---|---|
| B | Compound was found in the blank and sample. |
| J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |

### GC Semi VOA

| Qualifier | Qualifier Description |
|---|---|
| *1 | LCS/LCSD RPD exceeds control limits. |
| F1 | MS and/or MSD recovery exceeds control limits. |

### Metals

| Qualifier | Qualifier Description |
|---|---|
| F1 | MS and/or MSD recovery exceeds control limits. |
| F3 | Duplicate RPD exceeds the control limit |
| F5 | Duplicate RPD exceeds limit, and one or both sample results are less than 5 times RL, and the absolute difference between results is < the upper reporting limits for both. |
| J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |

## Glossary

| Abbreviation | These commonly used abbreviations may or may not be present in this report. |
|---|---|
| ¤ | Listed under the "D" column to designate that the result is reported on a dry weight basis |
| %R | Percent Recovery |
| CFL | Contains Free Liquid |
| CFU | Colony Forming Unit |
| CNF | Contains No Free Liquid |
| DER | Duplicate Error Ratio (normalized absolute difference) |
| Dil Fac | Dilution Factor |
| DL | Detection Limit (DoD/DOE) |
| DL, RA, RE, IN | Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample |
| DLC | Decision Level Concentration (Radiochemistry) |
| EDL | Estimated Detection Limit (Dioxin) |
| LOD | Limit of Detection (DoD/DOE) |
| LOQ | Limit of Quantitation (DoD/DOE) |
| MCL | EPA recommended "Maximum Contaminant Level" |
| MDA | Minimum Detectable Activity (Radiochemistry) |
| MDC | Minimum Detectable Concentration (Radiochemistry) |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| MPN | Most Probable Number |
| MQL | Method Quantitation Limit |
| NC | Not Calculated |
| ND | Not Detected at the reporting limit (or MDL or EDL if shown) |
| NEG | Negative / Absent |
| POS | Positive / Present |
| PQL | Practical Quantitation Limit |
| PRES | Presumptive |
| QC | Quality Control |
| RER | Relative Error Ratio (Radiochemistry) |
| RL | Reporting Limit or Requested Limit (Radiochemistry) |
| RPD | Relative Percent Difference, a measure of the relative difference between two points |
| TEF | Toxicity Equivalent Factor (Dioxin) |
| TEQ | Toxicity Equivalent Quotient (Dioxin) |
| TNTC | Too Numerous To Count |

## Job ID: 620-11736-1

### Laboratory: Eurofins New England

**Narrative**

**Job Narrative**
**620-11736-1**

**Receipt**
The samples were received on 5/26/2023 4:59 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.6º C.

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

**GC VOA**
Method MAVPH: The method blank for preparation batch 480-671326 and analytical batch 480-671344 contained Methyl tert-butyl ether above the method detection limit. This target analyte concentration was less than the reporting limit (RL); therefore, re-extraction and/or re-analysis of samples was not performed.

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

**GC Semi VOA**
Method MAEPH2.1: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 620-23055 and 620-23114 and analytical batch 620-23095 recovered outside control limits for the following analytes: Benzo[k]fluoranthene. The individual percent recoveries are within acceptance limits.

Method MAEPH2.1: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 620-23055 and 620-23114 and analytical batch 620-23139 were outside control limits for C9-C18 Aliphatics. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory sample control duplicate (LCS/LCSD) precision was within acceptance limits.

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

**Metals**
Methods 6010, 6010D: The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision for preparation batch 620-23032 and analytical batch 620-23088 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory sample control duplicate (LCS/LCSD) precision was within acceptance limits.

Methods 7471A, 7471B: The sample duplicate (DUP) precision for preparation batch 620-23034 and analytical batch 620-23098 was outside control limits. Sample matrix interference is suspected.

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

**General Chemistry**
Method Moisture: The sample duplicate (DUP) precision for analytical batch 620-23159 was outside control limits. Sample non-homogeneity is suspected.

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

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

# Detection Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11736-1

## Client Sample ID: LM-SO-UST01-052523 — Lab Sample ID: 620-11736-1

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | 0.20 | | 0.065 | 0.033 | mg/Kg | 1 | | MA VPH SUM | Total/NA |
| C9-C12 Aliphatics (adjusted) | 0.29 | | 0.065 | 0.028 | mg/Kg | 1 | | MA VPH SUM | Total/NA |
| Ethylbenzene | 0.0069 | J | 0.013 | 0.0026 | mg/Kg | 1 | ☼ | MAVPH | Total/NA |
| Methyl tert-butyl ether | 0.0043 | J B | 0.013 | 0.0026 | mg/Kg | 1 | ☼ | MAVPH | Total/NA |
| m,p-Xylene | 0.020 | J | 0.026 | 0.0026 | mg/Kg | 1 | ☼ | MAVPH | Total/NA |
| Naphthalene | 0.012 | J | 0.013 | 0.0088 | mg/Kg | 1 | ☼ | MAVPH | Total/NA |
| o-Xylene | 0.0048 | J | 0.013 | 0.0026 | mg/Kg | 1 | ☼ | MAVPH | Total/NA |
| Toluene | 0.0082 | J | 0.013 | 0.0026 | mg/Kg | 1 | ☼ | MAVPH | Total/NA |
| C5-C8 Aliphatics (unadjusted) | 0.21 | | 0.065 | 0.033 | mg/Kg | 1 | ☼ | MAVPH | Total/NA |
| C9-C10 Aromatics | 0.30 | | 0.065 | 0.0091 | mg/Kg | 1 | ☼ | MAVPH | Total/NA |
| C9-C12 Aliphatics (unadjusted) | 0.62 | | 0.065 | 0.028 | mg/Kg | 1 | ☼ | MAVPH | Total/NA |
| C19-C36 Aliphatics | 16 | | 7.2 | 7.2 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics | 12 | | 7.2 | 7.2 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics (Adjusted) | 11 | | 7.2 | 7.2 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| Fluoranthene | 0.63 | | 0.36 | 0.36 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| Antimony | 1.3 | J | 5.4 | 0.41 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Arsenic | 21 | | 1.6 | 0.20 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Barium | 50 | | 1.1 | 0.13 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Beryllium | 0.33 | J | 0.54 | 0.027 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Chromium | 27 | | 1.1 | 0.14 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Lead | 28 | | 1.6 | 0.23 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Nickel | 20 | | 1.1 | 0.12 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Vanadium | 21 | | 1.6 | 0.29 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Zinc | 64 | | 3.2 | 0.83 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Mercury | 0.025 | J | 0.054 | 0.0091 | mg/Kg | 1 | ☼ | 7471A | Total/NA |

## Client Sample ID: LM-SO-UST02-052523 — Lab Sample ID: 620-11736-2

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Ethylbenzene | 0.0049 | J | 0.018 | 0.0036 | mg/Kg | 1 | ☼ | MAVPH | Total/NA |
| Methyl tert-butyl ether | 0.057 | B | 0.018 | 0.0036 | mg/Kg | 1 | ☼ | MAVPH | Total/NA |
| m,p-Xylene | 0.016 | J | 0.036 | 0.0036 | mg/Kg | 1 | ☼ | MAVPH | Total/NA |
| o-Xylene | 0.0091 | J | 0.018 | 0.0036 | mg/Kg | 1 | ☼ | MAVPH | Total/NA |
| Toluene | 0.016 | J | 0.018 | 0.0036 | mg/Kg | 1 | ☼ | MAVPH | Total/NA |
| C9-C10 Aromatics | 0.034 | J | 0.091 | 0.013 | mg/Kg | 1 | ☼ | MAVPH | Total/NA |
| C9-C12 Aliphatics (unadjusted) | 0.072 | J | 0.091 | 0.039 | mg/Kg | 1 | ☼ | MAVPH | Total/NA |
| Fluoranthene | 0.44 | | 0.40 | 0.40 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| Antimony | 1.5 | J | 6.2 | 0.46 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Arsenic | 52 | | 1.8 | 0.23 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Barium | 54 | | 1.2 | 0.15 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Beryllium | 0.26 | J | 0.62 | 0.031 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Chromium | 34 | | 1.2 | 0.16 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Lead | 29 | | 1.8 | 0.26 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Nickel | 23 | | 1.2 | 0.14 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Vanadium | 25 | | 1.8 | 0.33 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Zinc | 150 | | 3.7 | 0.95 | mg/Kg | 1 | ☼ | 6010D | Total/NA |

## Client Sample ID: LM-SO-UST03-052523 — Lab Sample ID: 620-11736-3

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Methyl tert-butyl ether | 0.011 | J B | 0.015 | 0.0029 | mg/Kg | 1 | ☼ | MAVPH | Total/NA |
| m,p-Xylene | 0.0066 | J | 0.029 | 0.0029 | mg/Kg | 1 | ☼ | MAVPH | Total/NA |

This Detection Summary does not include radiochemical test results.

Eurofins New England

## Client Sample ID: LM-SO-UST03-052523 (Continued) — Lab Sample ID: 620-11736-3

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| o-Xylene | 0.0043 | J | 0.015 | 0.0029 | mg/Kg | 1 | ☼ | MAVPH | Total/NA |
| Toluene | 0.0056 | J | 0.015 | 0.0029 | mg/Kg | 1 | ☼ | MAVPH | Total/NA |
| C9-C10 Aromatics | 0.024 | J | 0.073 | 0.010 | mg/Kg | 1 | ☼ | MAVPH | Total/NA |
| C9-C12 Aliphatics (unadjusted) | 0.055 | J | 0.073 | 0.031 | mg/Kg | 1 | ☼ | MAVPH | Total/NA |
| C19-C36 Aliphatics | 19 | F1 | 6.9 | 6.9 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics | 12 | | 6.9 | 6.9 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics (Adjusted) | 11 | | 6.9 | 6.9 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| Fluoranthene | 0.64 | | 0.34 | 0.34 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| Antimony | 0.81 | J | 5.1 | 0.38 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Arsenic | 12 | | 1.5 | 0.19 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Barium | 66 | F1 | 1.0 | 0.12 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Beryllium | 0.42 | J | 0.51 | 0.026 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Chromium | 27 | | 1.0 | 0.14 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Lead | 32 | | 1.5 | 0.22 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Nickel | 19 | | 1.0 | 0.12 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Vanadium | 22 | | 1.5 | 0.27 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Zinc | 47 | | 3.1 | 0.79 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Mercury | 0.069 | | 0.045 | 0.0076 | mg/Kg | 1 | ☼ | 7471A | Total/NA |

## Client Sample ID: SO-FD-01 — Lab Sample ID: 620-11736-4

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Methyl tert-butyl ether | 0.053 | B | 0.016 | 0.0032 | mg/Kg | 1 | ☼ | MAVPH | Total/NA |
| m,p-Xylene | 0.010 | J | 0.032 | 0.0032 | mg/Kg | 1 | ☼ | MAVPH | Total/NA |
| o-Xylene | 0.0066 | J | 0.016 | 0.0032 | mg/Kg | 1 | ☼ | MAVPH | Total/NA |
| Toluene | 0.011 | J | 0.016 | 0.0032 | mg/Kg | 1 | ☼ | MAVPH | Total/NA |
| C9-C10 Aromatics | 0.019 | J | 0.079 | 0.011 | mg/Kg | 1 | ☼ | MAVPH | Total/NA |
| C9-C12 Aliphatics (unadjusted) | 0.049 | J | 0.079 | 0.034 | mg/Kg | 1 | ☼ | MAVPH | Total/NA |
| Fluoranthene | 0.45 | | 0.40 | 0.40 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| Antimony | 1.7 | J | 5.4 | 0.40 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Arsenic | 53 | | 1.6 | 0.20 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Barium | 57 | | 1.1 | 0.13 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Beryllium | 0.30 | J | 0.54 | 0.027 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Chromium | 34 | | 1.1 | 0.14 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Lead | 47 | | 1.6 | 0.23 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Nickel | 24 | | 1.1 | 0.12 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Vanadium | 27 | | 1.6 | 0.29 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Zinc | 86 | | 3.2 | 0.83 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Mercury | 0.012 | J | 0.052 | 0.0087 | mg/Kg | 1 | ☼ | 7471A | Total/NA |

## Client Sample ID: LM-SO-P1-052523 — Lab Sample ID: 620-11736-5

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | 0.34 | | 0.070 | 0.036 | mg/Kg | 1 | | MA VPH SUM | Total/NA |
| C9-C12 Aliphatics (adjusted) | 0.11 | | 0.070 | 0.030 | mg/Kg | 1 | | MA VPH SUM | Total/NA |
| Benzene | 0.013 | J | 0.014 | 0.0028 | mg/Kg | 1 | ☼ | MAVPH | Total/NA |
| Ethylbenzene | 0.013 | J | 0.014 | 0.0028 | mg/Kg | 1 | ☼ | MAVPH | Total/NA |
| Methyl tert-butyl ether | 0.088 | B | 0.014 | 0.0028 | mg/Kg | 1 | ☼ | MAVPH | Total/NA |
| m,p-Xylene | 0.051 | | 0.028 | 0.0028 | mg/Kg | 1 | ☼ | MAVPH | Total/NA |
| o-Xylene | 0.032 | | 0.014 | 0.0028 | mg/Kg | 1 | ☼ | MAVPH | Total/NA |
| Toluene | 0.040 | | 0.014 | 0.0028 | mg/Kg | 1 | ☼ | MAVPH | Total/NA |
| C5-C8 Aliphatics (unadjusted) | 0.48 | | 0.070 | 0.036 | mg/Kg | 1 | ☼ | MAVPH | Total/NA |

This Detection Summary does not include radiochemical test results.

## Client Sample ID: LM-SO-P1-052523 (Continued)

## Lab Sample ID: 620-11736-5

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | 0.17 | | 0.070 | 0.0098 | mg/Kg | 1 | ☼ | MAVPH | Total/NA |
| C9-C12 Aliphatics (unadjusted) | 0.38 | | 0.070 | 0.030 | mg/Kg | 1 | ☼ | MAVPH | Total/NA |
| C19-C36 Aliphatics | 58 | | 7.1 | 7.1 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics | 33 | | 7.1 | 7.1 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics (Adjusted) | 32 | | 7.1 | 7.1 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| Fluoranthene | 0.44 | | 0.35 | 0.35 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| Antimony | 0.94 | J | 4.7 | 0.36 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Arsenic | 16 | | 1.4 | 0.18 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Barium | 44 | | 0.95 | 0.11 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Beryllium | 0.24 | J | 0.47 | 0.024 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Cadmium | 0.034 | J | 0.47 | 0.025 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Chromium | 20 | | 0.95 | 0.13 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Lead | 60 | | 1.4 | 0.20 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Nickel | 16 | | 0.95 | 0.11 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Vanadium | 17 | | 1.4 | 0.25 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Zinc | 150 | | 2.8 | 0.74 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Mercury | 0.062 | | 0.044 | 0.0074 | mg/Kg | 1 | ☼ | 7471A | Total/NA |

This Detection Summary does not include radiochemical test results.

## Client Sample ID: LM-SO-UST01-052523 Lab Sample ID: 620-11736-1

**Date Collected: 05/25/23 12:10** **Matrix: Solid**
**Date Received: 05/26/23 16:59** **Percent Solids: 90.3**

### Method: MA DEP MA VPH SUM - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C5-C8 Aliphatics (adjusted)** | **0.20** | | 0.065 | 0.033 | mg/Kg | | | 06/02/23 10:41 | 1 |
| **C9-C12 Aliphatics (adjusted)** | **0.29** | | 0.065 | 0.028 | mg/Kg | | | 06/02/23 10:41 | 1 |

### Method: MA DEP MAVPH - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | | 0.013 | 0.0026 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 10:03 | 1 |
| **Ethylbenzene** | **0.0069** | **J** | 0.013 | 0.0026 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 10:03 | 1 |
| **Methyl tert-butyl ether** | **0.0043** | **J B** | 0.013 | 0.0026 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 10:03 | 1 |
| **m,p-Xylene** | **0.020** | **J** | 0.026 | 0.0026 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 10:03 | 1 |
| **Naphthalene** | **0.012** | **J** | 0.013 | 0.0088 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 10:03 | 1 |
| **o-Xylene** | **0.0048** | **J** | 0.013 | 0.0026 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 10:03 | 1 |
| **Toluene** | **0.0082** | **J** | 0.013 | 0.0026 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 10:03 | 1 |
| **C5-C8 Aliphatics (unadjusted)** | **0.21** | | 0.065 | 0.033 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 10:03 | 1 |
| **C9-C10 Aromatics** | **0.30** | | 0.065 | 0.0091 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 10:03 | 1 |
| **C9-C12 Aliphatics (unadjusted)** | **0.62** | | 0.065 | 0.028 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 10:03 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *a,a,a-Trifluorotoluene (fid)* | *103* | | *70 - 130* | *05/31/23 07:06* | *05/31/23 10:03* | *1* |
| *a,a,a-Trifluorotoluene (pid)* | *94* | | *70 - 130* | *05/31/23 07:06* | *05/31/23 10:03* | *1* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 7.2 | 7.2 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 18:20 | 1 |
| **C19-C36 Aliphatics** | **16** | | 7.2 | 7.2 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 18:20 | 1 |
| **C11-C22 Aromatics** | **12** | | 7.2 | 7.2 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 18:20 | 1 |
| **C11-C22 Aromatics (Adjusted)** | **11** | | 7.2 | 7.2 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 18:20 | 1 |
| Naphthalene | ND | | 0.36 | 0.36 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 18:20 | 1 |
| 2-Methylnaphthalene | ND | | 0.36 | 0.36 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 18:20 | 1 |
| Acenaphthylene | ND | | 0.36 | 0.36 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 18:20 | 1 |
| Acenaphthene | ND | | 0.36 | 0.36 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 18:20 | 1 |
| Fluorene | ND | | 0.36 | 0.36 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 18:20 | 1 |
| Phenanthrene | ND | | 0.36 | 0.36 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 18:20 | 1 |
| Anthracene | ND | | 0.36 | 0.36 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 18:20 | 1 |
| **Fluoranthene** | **0.63** | | 0.36 | 0.36 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 18:20 | 1 |
| Pyrene | ND | | 0.36 | 0.36 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 18:20 | 1 |
| Benzo[a]anthracene | ND | | 0.36 | 0.36 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 18:20 | 1 |
| Chrysene | ND | | 0.36 | 0.36 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 18:20 | 1 |
| Benzo[b]fluoranthene | ND | | 0.36 | 0.36 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 18:20 | 1 |
| Benzo[k]fluoranthene | ND | *1 | 0.36 | 0.36 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 18:20 | 1 |
| Benzo[a]pyrene | ND | | 0.36 | 0.36 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 18:20 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.36 | 0.36 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 18:20 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.36 | 0.36 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 18:20 | 1 |
| Benzo[g,h,i]perylene | ND | | 0.36 | 0.36 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 18:20 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *60* | | *40 - 140* | *05/30/23 10:20* | *06/01/23 18:20* | *1* |
| *o-Terphenyl (Surr)* | *69* | | *40 - 140* | *05/30/23 10:20* | *06/01/23 18:20* | *1* |
| *2-Fluorobiphenyl (Surr)* | *94* | | *40 - 140* | *05/30/23 10:20* | *06/01/23 18:20* | *1* |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11736-1

## Client Sample ID: LM-SO-UST01-052523

**Date Collected: 05/25/23 12:10**
**Date Received: 05/26/23 16:59**

## Lab Sample ID: 620-11736-1

**Matrix: Solid**
**Percent Solids: 90.3**

### Method: SW846 6010D - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 1.3 | J | 5.4 | 0.41 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 17:51 | 1 |
| Arsenic | 21 | | 1.6 | 0.20 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 17:51 | 1 |
| Barium | 50 | | 1.1 | 0.13 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 17:51 | 1 |
| Beryllium | 0.33 | J | 0.54 | 0.027 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 17:51 | 1 |
| Cadmium | ND | | 0.54 | 0.028 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 17:51 | 1 |
| Chromium | 27 | | 1.1 | 0.14 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 17:51 | 1 |
| Lead | 28 | | 1.6 | 0.23 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 17:51 | 1 |
| Nickel | 20 | | 1.1 | 0.12 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 17:51 | 1 |
| Selenium | ND | | 1.6 | 0.31 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 17:51 | 1 |
| Silver | ND | | 1.6 | 0.17 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 17:51 | 1 |
| Thallium | ND | | 3.2 | 1.2 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 17:51 | 1 |
| Vanadium | 21 | | 1.6 | 0.29 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 17:51 | 1 |
| Zinc | 64 | | 3.2 | 0.83 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 17:51 | 1 |

### Method: SW846 7471A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.025 | J | 0.054 | 0.0091 | mg/Kg | ☼ | 05/30/23 08:08 | 05/30/23 13:51 | 1 |

### General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Percent Moisture (EPA Moisture) | 9.7 | | 0.1 | 0.1 | % | | | 06/01/23 10:58 | 1 |
| Percent Solids (EPA Moisture) | 90.3 | | 0.1 | 0.1 | % | | | 06/01/23 10:58 | 1 |

## Client Sample ID: LM-SO-UST02-052523 Lab Sample ID: 620-11736-2

**Date Collected: 05/25/23 17:50** **Matrix: Solid**
**Date Received: 05/26/23 16:59** **Percent Solids: 79.9**

### Method: MA DEP MA VPH SUM - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 0.091 | 0.047 | mg/Kg | | | 06/02/23 10:41 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 0.091 | 0.039 | mg/Kg | | | 06/02/23 10:41 | 1 |

### Method: MA DEP MAVPH - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | | 0.018 | 0.0036 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 10:44 | 1 |
| **Ethylbenzene** | **0.0049** | **J** | 0.018 | 0.0036 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 10:44 | 1 |
| **Methyl tert-butyl ether** | **0.057** | **B** | 0.018 | 0.0036 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 10:44 | 1 |
| **m,p-Xylene** | **0.016** | **J** | 0.036 | 0.0036 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 10:44 | 1 |
| Naphthalene | ND | | 0.018 | 0.012 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 10:44 | 1 |
| **o-Xylene** | **0.0091** | **J** | 0.018 | 0.0036 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 10:44 | 1 |
| **Toluene** | **0.016** | **J** | 0.018 | 0.0036 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 10:44 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 0.091 | 0.047 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 10:44 | 1 |
| **C9-C10 Aromatics** | **0.034** | **J** | 0.091 | 0.013 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 10:44 | 1 |
| **C9-C12 Aliphatics (unadjusted)** | **0.072** | **J** | 0.091 | 0.039 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 10:44 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *a,a,a-Trifluorotoluene (fid)* | *104* | | *70 - 130* | *05/31/23 07:06* | *05/31/23 10:44* | *1* |
| *a,a,a-Trifluorotoluene (pid)* | *95* | | *70 - 130* | *05/31/23 07:06* | *05/31/23 10:44* | *1* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 8.0 | 8.0 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 18:49 | 1 |
| C19-C36 Aliphatics | ND | | 8.0 | 8.0 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 18:49 | 1 |
| C11-C22 Aromatics | ND | | 8.0 | 8.0 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 18:49 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 8.0 | 8.0 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 18:49 | 1 |
| Naphthalene | ND | | 0.40 | 0.40 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 18:49 | 1 |
| 2-Methylnaphthalene | ND | | 0.40 | 0.40 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 18:49 | 1 |
| Acenaphthylene | ND | | 0.40 | 0.40 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 18:49 | 1 |
| Acenaphthene | ND | | 0.40 | 0.40 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 18:49 | 1 |
| Fluorene | ND | | 0.40 | 0.40 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 18:49 | 1 |
| Phenanthrene | ND | | 0.40 | 0.40 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 18:49 | 1 |
| Anthracene | ND | | 0.40 | 0.40 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 18:49 | 1 |
| **Fluoranthene** | **0.44** | | 0.40 | 0.40 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 18:49 | 1 |
| Pyrene | ND | | 0.40 | 0.40 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 18:49 | 1 |
| Benzo[a]anthracene | ND | | 0.40 | 0.40 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 18:49 | 1 |
| Chrysene | ND | | 0.40 | 0.40 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 18:49 | 1 |
| Benzo[b]fluoranthene | ND | | 0.40 | 0.40 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 18:49 | 1 |
| Benzo[k]fluoranthene | ND | *1 | 0.40 | 0.40 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 18:49 | 1 |
| Benzo[a]pyrene | ND | | 0.40 | 0.40 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 18:49 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.40 | 0.40 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 18:49 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.40 | 0.40 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 18:49 | 1 |
| Benzo[g,h,i]perylene | ND | | 0.40 | 0.40 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 18:49 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *53* | | *40 - 140* | *05/30/23 10:20* | *06/01/23 18:49* | *1* |
| *o-Terphenyl (Surr)* | *58* | | *40 - 140* | *05/30/23 10:20* | *06/01/23 18:49* | *1* |
| *2-Fluorobiphenyl (Surr)* | *88* | | *40 - 140* | *05/30/23 10:20* | *06/01/23 18:49* | *1* |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11736-1

## Client Sample ID: LM-SO-UST02-052523

**Date Collected: 05/25/23 17:50**
**Date Received: 05/26/23 16:59**

## Lab Sample ID: 620-11736-2

**Matrix: Solid**
**Percent Solids: 79.9**

### Method: SW846 6010D - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 1.5 | J | 6.2 | 0.46 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 17:57 | 1 |
| Arsenic | 52 | | 1.8 | 0.23 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 17:57 | 1 |
| Barium | 54 | | 1.2 | 0.15 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 17:57 | 1 |
| Beryllium | 0.26 | J | 0.62 | 0.031 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 17:57 | 1 |
| Cadmium | ND | | 0.62 | 0.032 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 17:57 | 1 |
| Chromium | 34 | | 1.2 | 0.16 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 17:57 | 1 |
| Lead | 29 | | 1.8 | 0.26 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 17:57 | 1 |
| Nickel | 23 | | 1.2 | 0.14 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 17:57 | 1 |
| Selenium | ND | | 1.8 | 0.35 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 17:57 | 1 |
| Silver | ND | | 1.8 | 0.20 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 17:57 | 1 |
| Thallium | ND | | 3.7 | 1.4 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 17:57 | 1 |
| Vanadium | 25 | | 1.8 | 0.33 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 17:57 | 1 |
| Zinc | 150 | | 3.7 | 0.95 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 17:57 | 1 |

### Method: SW846 7471A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.054 | 0.0089 | mg/Kg | ☼ | 05/30/23 08:08 | 05/30/23 13:53 | 1 |

### General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Percent Moisture (EPA Moisture) | 20.1 | | 0.1 | 0.1 | % | | | 06/01/23 10:58 | 1 |
| Percent Solids (EPA Moisture) | 79.9 | | 0.1 | 0.1 | % | | | 06/01/23 10:58 | 1 |

## Client Sample ID: LM-SO-UST03-052523 Lab Sample ID: 620-11736-3

**Date Collected: 05/25/23 16:30** **Matrix: Solid**
**Date Received: 05/26/23 16:59** **Percent Solids: 91.2**

### Method: MA DEP MA VPH SUM - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 0.073 | 0.037 | mg/Kg | | | 06/02/23 10:41 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 0.073 | 0.031 | mg/Kg | | | 06/02/23 10:41 | 1 |

### Method: MA DEP MAVPH - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | | 0.015 | 0.0029 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 11:25 | 1 |
| Ethylbenzene | ND | | 0.015 | 0.0029 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 11:25 | 1 |
| **Methyl tert-butyl ether** | **0.011** | **J B** | 0.015 | 0.0029 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 11:25 | 1 |
| **m,p-Xylene** | **0.0066** | **J** | 0.029 | 0.0029 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 11:25 | 1 |
| Naphthalene | ND | | 0.015 | 0.0099 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 11:25 | 1 |
| **o-Xylene** | **0.0043** | **J** | 0.015 | 0.0029 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 11:25 | 1 |
| **Toluene** | **0.0056** | **J** | 0.015 | 0.0029 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 11:25 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 0.073 | 0.037 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 11:25 | 1 |
| **C9-C10 Aromatics** | **0.024** | **J** | 0.073 | 0.010 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 11:25 | 1 |
| **C9-C12 Aliphatics (unadjusted)** | **0.055** | **J** | 0.073 | 0.031 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 11:25 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *a,a,a-Trifluorotoluene (fid)* | *102* | | *70 - 130* | *05/31/23 07:06* | *05/31/23 11:25* | *1* |
| *a,a,a-Trifluorotoluene (pid)* | *93* | | *70 - 130* | *05/31/23 07:06* | *05/31/23 11:25* | *1* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | F1 | 6.9 | 6.9 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 19:18 | 1 |
| **C19-C36 Aliphatics** | **19** | **F1** | 6.9 | 6.9 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 19:18 | 1 |
| **C11-C22 Aromatics** | **12** | | 6.9 | 6.9 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 19:18 | 1 |
| **C11-C22 Aromatics (Adjusted)** | **11** | | 6.9 | 6.9 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 19:18 | 1 |
| Naphthalene | ND | | 0.34 | 0.34 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 19:18 | 1 |
| 2-Methylnaphthalene | ND | | 0.34 | 0.34 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 19:18 | 1 |
| Acenaphthylene | ND | | 0.34 | 0.34 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 19:18 | 1 |
| Acenaphthene | ND | | 0.34 | 0.34 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 19:18 | 1 |
| Fluorene | ND | | 0.34 | 0.34 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 19:18 | 1 |
| Phenanthrene | ND | | 0.34 | 0.34 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 19:18 | 1 |
| Anthracene | ND | | 0.34 | 0.34 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 19:18 | 1 |
| **Fluoranthene** | **0.64** | | 0.34 | 0.34 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 19:18 | 1 |
| Pyrene | ND | | 0.34 | 0.34 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 19:18 | 1 |
| Benzo[a]anthracene | ND | | 0.34 | 0.34 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 19:18 | 1 |
| Chrysene | ND | | 0.34 | 0.34 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 19:18 | 1 |
| Benzo[b]fluoranthene | ND | | 0.34 | 0.34 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 19:18 | 1 |
| Benzo[k]fluoranthene | ND | *1 | 0.34 | 0.34 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 19:18 | 1 |
| Benzo[a]pyrene | ND | | 0.34 | 0.34 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 19:18 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.34 | 0.34 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 19:18 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.34 | 0.34 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 19:18 | 1 |
| Benzo[g,h,i]perylene | ND | | 0.34 | 0.34 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 19:18 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *55* | | *40 - 140* | *05/30/23 10:20* | *06/01/23 19:18* | *1* |
| *o-Terphenyl (Surr)* | *64* | | *40 - 140* | *05/30/23 10:20* | *06/01/23 19:18* | *1* |
| *2-Fluorobiphenyl (Surr)* | *103* | | *40 - 140* | *05/30/23 10:20* | *06/01/23 19:18* | *1* |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11736-1

## Client Sample ID: LM-SO-UST03-052523

**Date Collected: 05/25/23 16:30**
**Date Received: 05/26/23 16:59**

## Lab Sample ID: 620-11736-3

**Matrix: Solid**
**Percent Solids: 91.2**

### Method: SW846 6010D - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.81 | J | 5.1 | 0.38 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 18:03 | 1 |
| Arsenic | 12 | | 1.5 | 0.19 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 18:03 | 1 |
| Barium | 66 | F1 | 1.0 | 0.12 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 18:03 | 1 |
| Beryllium | 0.42 | J | 0.51 | 0.026 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 18:03 | 1 |
| Cadmium | ND | | 0.51 | 0.026 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 18:03 | 1 |
| Chromium | 27 | | 1.0 | 0.14 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 18:03 | 1 |
| Lead | 32 | | 1.5 | 0.22 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 18:03 | 1 |
| Nickel | 19 | | 1.0 | 0.12 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 18:03 | 1 |
| Selenium | ND | | 1.5 | 0.29 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 18:03 | 1 |
| Silver | ND | | 1.5 | 0.16 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 18:03 | 1 |
| Thallium | ND | | 3.1 | 1.1 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 18:03 | 1 |
| Vanadium | 22 | | 1.5 | 0.27 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 18:03 | 1 |
| Zinc | 47 | | 3.1 | 0.79 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 18:03 | 1 |

### Method: SW846 7471A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.069 | | 0.045 | 0.0076 | mg/Kg | ☼ | 05/30/23 08:08 | 05/30/23 14:01 | 1 |

### General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Percent Moisture (EPA Moisture) | 8.8 | | 0.1 | 0.1 | % | | | 06/01/23 10:58 | 1 |
| Percent Solids (EPA Moisture) | 91.2 | | 0.1 | 0.1 | % | | | 06/01/23 10:58 | 1 |

## Client Sample ID: SO-FD-01

**Date Collected: 05/25/23 08:00**
**Date Received: 05/26/23 16:59**

## Lab Sample ID: 620-11736-4

**Matrix: Solid**
**Percent Solids: 81.2**

### Method: MA DEP MA VPH SUM - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 0.079 | 0.041 | mg/Kg | | | 06/02/23 10:41 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 0.079 | 0.034 | mg/Kg | | | 06/02/23 10:41 | 1 |

### Method: MA DEP MAVPH - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | | 0.016 | 0.0032 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 12:05 | 1 |
| Ethylbenzene | ND | | 0.016 | 0.0032 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 12:05 | 1 |
| **Methyl tert-butyl ether** | **0.053** | **B** | 0.016 | 0.0032 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 12:05 | 1 |
| **m,p-Xylene** | **0.010** | **J** | 0.032 | 0.0032 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 12:05 | 1 |
| Naphthalene | ND | | 0.016 | 0.011 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 12:05 | 1 |
| **o-Xylene** | **0.0066** | **J** | 0.016 | 0.0032 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 12:05 | 1 |
| **Toluene** | **0.011** | **J** | 0.016 | 0.0032 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 12:05 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 0.079 | 0.041 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 12:05 | 1 |
| **C9-C10 Aromatics** | **0.019** | **J** | 0.079 | 0.011 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 12:05 | 1 |
| **C9-C12 Aliphatics (unadjusted)** | **0.049** | **J** | 0.079 | 0.034 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 12:05 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *a,a,a-Trifluorotoluene (fid)* | *103* | | *70 - 130* | *05/31/23 07:06* | *05/31/23 12:05* | *1* |
| *a,a,a-Trifluorotoluene (pid)* | *94* | | *70 - 130* | *05/31/23 07:06* | *05/31/23 12:05* | *1* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 8.0 | 8.0 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 20:46 | 1 |
| C19-C36 Aliphatics | ND | | 8.0 | 8.0 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 20:46 | 1 |
| C11-C22 Aromatics | ND | | 8.0 | 8.0 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 20:46 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 8.0 | 8.0 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 20:46 | 1 |
| Naphthalene | ND | | 0.40 | 0.40 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 20:46 | 1 |
| 2-Methylnaphthalene | ND | | 0.40 | 0.40 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 20:46 | 1 |
| Acenaphthylene | ND | | 0.40 | 0.40 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 20:46 | 1 |
| Acenaphthene | ND | | 0.40 | 0.40 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 20:46 | 1 |
| Fluorene | ND | | 0.40 | 0.40 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 20:46 | 1 |
| Phenanthrene | ND | | 0.40 | 0.40 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 20:46 | 1 |
| Anthracene | ND | | 0.40 | 0.40 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 20:46 | 1 |
| **Fluoranthene** | **0.45** | | 0.40 | 0.40 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 20:46 | 1 |
| Pyrene | ND | | 0.40 | 0.40 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 20:46 | 1 |
| Benzo[a]anthracene | ND | | 0.40 | 0.40 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 20:46 | 1 |
| Chrysene | ND | | 0.40 | 0.40 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 20:46 | 1 |
| Benzo[b]fluoranthene | ND | | 0.40 | 0.40 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 20:46 | 1 |
| Benzo[k]fluoranthene | ND | *1 | 0.40 | 0.40 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 20:46 | 1 |
| Benzo[a]pyrene | ND | | 0.40 | 0.40 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 20:46 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.40 | 0.40 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 20:46 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.40 | 0.40 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 20:46 | 1 |
| Benzo[g,h,i]perylene | ND | | 0.40 | 0.40 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 20:46 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *57* | | *40 - 140* | *05/30/23 10:20* | *06/01/23 20:46* | *1* |
| *o-Terphenyl (Surr)* | *60* | | *40 - 140* | *05/30/23 10:20* | *06/01/23 20:46* | *1* |
| *2-Fluorobiphenyl (Surr)* | *102* | | *40 - 140* | *05/30/23 10:20* | *06/01/23 20:46* | *1* |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11736-1

## Client Sample ID: SO-FD-01

**Date Collected: 05/25/23 08:00**
**Date Received: 05/26/23 16:59**

## Lab Sample ID: 620-11736-4

**Matrix: Solid**
**Percent Solids: 81.2**

### Method: SW846 6010D - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 1.7 | J | 5.4 | 0.40 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 18:39 | 1 |
| Arsenic | 53 | | 1.6 | 0.20 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 18:39 | 1 |
| Barium | 57 | | 1.1 | 0.13 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 18:39 | 1 |
| Beryllium | 0.30 | J | 0.54 | 0.027 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 18:39 | 1 |
| Cadmium | ND | | 0.54 | 0.028 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 18:39 | 1 |
| Chromium | 34 | | 1.1 | 0.14 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 18:39 | 1 |
| Lead | 47 | | 1.6 | 0.23 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 18:39 | 1 |
| Nickel | 24 | | 1.1 | 0.12 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 18:39 | 1 |
| Selenium | ND | | 1.6 | 0.31 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 18:39 | 1 |
| Silver | ND | | 1.6 | 0.17 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 18:39 | 1 |
| Thallium | ND | | 3.2 | 1.2 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 18:39 | 1 |
| Vanadium | 27 | | 1.6 | 0.29 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 18:39 | 1 |
| Zinc | 86 | | 3.2 | 0.83 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 18:39 | 1 |

### Method: SW846 7471A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.012 | J | 0.052 | 0.0087 | mg/Kg | ☼ | 05/30/23 08:08 | 05/30/23 14:14 | 1 |

### General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Percent Moisture (EPA Moisture) | 18.8 | | 0.1 | 0.1 | % | | | 06/01/23 10:58 | 1 |
| Percent Solids (EPA Moisture) | 81.2 | | 0.1 | 0.1 | % | | | 06/01/23 10:58 | 1 |

## Client Sample ID: LM-SO-P1-052523

**Date Collected: 05/25/23 16:50**
**Date Received: 05/26/23 16:59**

## Lab Sample ID: 620-11736-5

**Matrix: Solid**
**Percent Solids: 92.2**

### Method: MA DEP MA VPH SUM - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C5-C8 Aliphatics (adjusted)** | **0.34** | | 0.070 | 0.036 | mg/Kg | | | 06/02/23 10:41 | 1 |
| **C9-C12 Aliphatics (adjusted)** | **0.11** | | 0.070 | 0.030 | mg/Kg | | | 06/02/23 10:41 | 1 |

### Method: MA DEP MAVPH - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Benzene** | **0.013** | **J** | 0.014 | 0.0028 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 12:45 | 1 |
| **Ethylbenzene** | **0.013** | **J** | 0.014 | 0.0028 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 12:45 | 1 |
| **Methyl tert-butyl ether** | **0.088** | **B** | 0.014 | 0.0028 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 12:45 | 1 |
| **m,p-Xylene** | **0.051** | | 0.028 | 0.0028 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 12:45 | 1 |
| Naphthalene | ND | | 0.014 | 0.0095 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 12:45 | 1 |
| **o-Xylene** | **0.032** | | 0.014 | 0.0028 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 12:45 | 1 |
| **Toluene** | **0.040** | | 0.014 | 0.0028 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 12:45 | 1 |
| **C5-C8 Aliphatics (unadjusted)** | **0.48** | | 0.070 | 0.036 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 12:45 | 1 |
| **C9-C10 Aromatics** | **0.17** | | 0.070 | 0.0098 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 12:45 | 1 |
| **C9-C12 Aliphatics (unadjusted)** | **0.38** | | 0.070 | 0.030 | mg/Kg | ☼ | 05/31/23 07:06 | 05/31/23 12:45 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *a,a,a-Trifluorotoluene (fid)* | *105* | | *70 - 130* | *05/31/23 07:06* | *05/31/23 12:45* | *1* |
| *a,a,a-Trifluorotoluene (pid)* | *95* | | *70 - 130* | *05/31/23 07:06* | *05/31/23 12:45* | *1* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 7.1 | 7.1 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 21:15 | 1 |
| **C19-C36 Aliphatics** | **58** | | 7.1 | 7.1 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 21:15 | 1 |
| **C11-C22 Aromatics** | **33** | | 7.1 | 7.1 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 21:15 | 1 |
| **C11-C22 Aromatics (Adjusted)** | **32** | | 7.1 | 7.1 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 21:15 | 1 |
| Naphthalene | ND | | 0.35 | 0.35 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 21:15 | 1 |
| 2-Methylnaphthalene | ND | | 0.35 | 0.35 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 21:15 | 1 |
| Acenaphthylene | ND | | 0.35 | 0.35 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 21:15 | 1 |
| Acenaphthene | ND | | 0.35 | 0.35 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 21:15 | 1 |
| Fluorene | ND | | 0.35 | 0.35 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 21:15 | 1 |
| Phenanthrene | ND | | 0.35 | 0.35 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 21:15 | 1 |
| Anthracene | ND | | 0.35 | 0.35 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 21:15 | 1 |
| **Fluoranthene** | **0.44** | | 0.35 | 0.35 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 21:15 | 1 |
| Pyrene | ND | | 0.35 | 0.35 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 21:15 | 1 |
| Benzo[a]anthracene | ND | | 0.35 | 0.35 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 21:15 | 1 |
| Chrysene | ND | | 0.35 | 0.35 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 21:15 | 1 |
| Benzo[b]fluoranthene | ND | | 0.35 | 0.35 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 21:15 | 1 |
| Benzo[k]fluoranthene | ND | *1 | 0.35 | 0.35 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 21:15 | 1 |
| Benzo[a]pyrene | ND | | 0.35 | 0.35 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 21:15 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.35 | 0.35 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 21:15 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.35 | 0.35 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 21:15 | 1 |
| Benzo[g,h,i]perylene | ND | | 0.35 | 0.35 | mg/Kg | ☼ | 05/30/23 10:20 | 06/01/23 21:15 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *51* | | *40 - 140* | *05/30/23 10:20* | *06/01/23 21:15* | *1* |
| *o-Terphenyl (Surr)* | *56* | | *40 - 140* | *05/30/23 10:20* | *06/01/23 21:15* | *1* |
| *2-Fluorobiphenyl (Surr)* | *92* | | *40 - 140* | *05/30/23 10:20* | *06/01/23 21:15* | *1* |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11736-1

## Client Sample ID: LM-SO-P1-052523

**Date Collected: 05/25/23 16:50**
**Date Received: 05/26/23 16:59**

## Lab Sample ID: 620-11736-5

**Matrix: Solid**
**Percent Solids: 92.2**

### Method: SW846 6010D - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.94 | J | 4.7 | 0.36 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 18:45 | 1 |
| Arsenic | 16 | | 1.4 | 0.18 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 18:45 | 1 |
| Barium | 44 | | 0.95 | 0.11 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 18:45 | 1 |
| Beryllium | 0.24 | J | 0.47 | 0.024 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 18:45 | 1 |
| Cadmium | 0.034 | J | 0.47 | 0.025 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 18:45 | 1 |
| Chromium | 20 | | 0.95 | 0.13 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 18:45 | 1 |
| Lead | 60 | | 1.4 | 0.20 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 18:45 | 1 |
| Nickel | 16 | | 0.95 | 0.11 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 18:45 | 1 |
| Selenium | ND | | 1.4 | 0.27 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 18:45 | 1 |
| Silver | ND | | 1.4 | 0.15 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 18:45 | 1 |
| Thallium | ND | | 2.8 | 1.0 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 18:45 | 1 |
| Vanadium | 17 | | 1.4 | 0.25 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 18:45 | 1 |
| Zinc | 150 | | 2.8 | 0.74 | mg/Kg | ☼ | 05/30/23 07:41 | 05/30/23 18:45 | 1 |

### Method: SW846 7471A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.062 | | 0.044 | 0.0074 | mg/Kg | ☼ | 05/30/23 08:08 | 05/30/23 14:16 | 1 |

### General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Percent Moisture (EPA Moisture) | 7.8 | | 0.1 | 0.1 | % | | | 06/01/23 10:58 | 1 |
| Percent Solids (EPA Moisture) | 92.2 | | 0.1 | 0.1 | % | | | 06/01/23 10:58 | 1 |

# Surrogate Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11736-1

## Method: MAVPH - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

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

| | | Percent Surrogate Recovery (Acceptance Limits) | |
|---|---|---|---|
| | | TFT-F1 | TFT-P2 |
| Lab Sample ID | Client Sample ID | (70-130) | (70-130) |
| 620-11736-1 | LM-SO-UST01-052523 | 103 | 94 |
| 620-11736-2 | LM-SO-UST02-052523 | 104 | 95 |
| 620-11736-3 | LM-SO-UST03-052523 | 102 | 93 |
| 620-11736-3 MS | LM-SO-UST03-052523 | 102 | 95 |
| 620-11736-3 MSD | LM-SO-UST03-052523 | 103 | 96 |
| 620-11736-4 | SO-FD-01 | 103 | 94 |
| 620-11736-5 | LM-SO-P1-052523 | 105 | 95 |
| LCS 480-671326/2-A | Lab Control Sample | 103 | 95 |
| LCSD 480-671326/3-A | Lab Control Sample Dup | 99 | 92 |
| MB 480-671326/1-A | Method Blank | 113 | 103 |

**Surrogate Legend**

TFT-F = a,a,a-Trifluorotoluene (fid)
TFT-P = a,a,a-Trifluorotoluene (pid)

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

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

| | | Percent Surrogate Recovery (Acceptance Limits) | | |
|---|---|---|---|---|
| | | 1COD1 | OTPH1 | FBP1 |
| Lab Sample ID | Client Sample ID | (40-140) | (40-140) | (40-140) |
| 620-11736-1 | LM-SO-UST01-052523 | 60 | 69 | 94 |
| 620-11736-2 | LM-SO-UST02-052523 | 53 | 58 | 88 |
| 620-11736-3 | LM-SO-UST03-052523 | 55 | 64 | 103 |
| 620-11736-3 MS | LM-SO-UST03-052523 | 77 | 89 | 127 |
| 620-11736-3 MSD | LM-SO-UST03-052523 | 68 | 70 | 101 |
| 620-11736-4 | SO-FD-01 | 57 | 60 | 102 |
| 620-11736-5 | LM-SO-P1-052523 | 51 | 56 | 92 |
| LCS 620-23055/2-B | Lab Control Sample | 77 | 66 | 103 |
| LCSD 620-23055/3-B | Lab Control Sample Dup | 70 | 67 | 104 |
| MB 620-23055/1-B | Method Blank | 65 | 60 | 106 |

**Surrogate Legend**

1COD = 1-Chlorooctadecane (Surr)
OTPH = o-Terphenyl (Surr)
FBP = 2-Fluorobiphenyl (Surr)

## Method: MAVPH - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

**Lab Sample ID: MB 480-671326/1-A**
**Matrix: Solid**
**Analysis Batch: 671344**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 671326**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | | 0.050 | 0.010 | mg/Kg | | 05/31/23 07:06 | 05/31/23 08:02 | 1 |
| Ethylbenzene | ND | | 0.050 | 0.010 | mg/Kg | | 05/31/23 07:06 | 05/31/23 08:02 | 1 |
| Methyl tert-butyl ether | 0.0110 | J | 0.050 | 0.010 | mg/Kg | | 05/31/23 07:06 | 05/31/23 08:02 | 1 |
| m,p-Xylene | ND | | 0.10 | 0.010 | mg/Kg | | 05/31/23 07:06 | 05/31/23 08:02 | 1 |
| Naphthalene | ND | | 0.050 | 0.034 | mg/Kg | | 05/31/23 07:06 | 05/31/23 08:02 | 1 |
| o-Xylene | ND | | 0.050 | 0.010 | mg/Kg | | 05/31/23 07:06 | 05/31/23 08:02 | 1 |
| Toluene | ND | | 0.050 | 0.010 | mg/Kg | | 05/31/23 07:06 | 05/31/23 08:02 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 0.25 | 0.13 | mg/Kg | | 05/31/23 07:06 | 05/31/23 08:02 | 1 |
| C9-C10 Aromatics | ND | | 0.25 | 0.035 | mg/Kg | | 05/31/23 07:06 | 05/31/23 08:02 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 0.25 | 0.11 | mg/Kg | | 05/31/23 07:06 | 05/31/23 08:02 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *a,a,a-Trifluorotoluene (fid)* | *113* | | *70 - 130* | *05/31/23 07:06* | *05/31/23 08:02* | *1* |
| *a,a,a-Trifluorotoluene (pid)* | *103* | | *70 - 130* | *05/31/23 07:06* | *05/31/23 08:02* | *1* |

**Lab Sample ID: LCS 480-671326/2-A**
**Matrix: Solid**
**Analysis Batch: 671344**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 671326**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Benzene | 2.50 | 2.25 | | mg/Kg | | 90 | 70 - 130 |
| Ethylbenzene | 2.50 | 2.32 | | mg/Kg | | 93 | 70 - 130 |
| Methyl tert-butyl ether | 2.50 | 2.01 | | mg/Kg | | 80 | 70 - 130 |
| m,p-Xylene | 5.00 | 4.54 | | mg/Kg | | 91 | 70 - 130 |
| Naphthalene | 2.50 | 2.14 | | mg/Kg | | 85 | 70 - 130 |
| o-Xylene | 2.50 | 2.25 | | mg/Kg | | 90 | 70 - 130 |
| Toluene | 2.50 | 2.24 | | mg/Kg | | 90 | 70 - 130 |
| C5-C8 Aliphatics (unadjusted) | 7.50 | 8.06 | | mg/Kg | | 107 | 70 - 130 |
| C9-C10 Aromatics | 2.50 | 2.46 | | mg/Kg | | 99 | 70 - 130 |
| C9-C12 Aliphatics (unadjusted) | 7.50 | 8.39 | | mg/Kg | | 112 | 70 - 130 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *a,a,a-Trifluorotoluene (fid)* | *103* | | *70 - 130* |
| *a,a,a-Trifluorotoluene (pid)* | *95* | | *70 - 130* |

**Lab Sample ID: LCSD 480-671326/3-A**
**Matrix: Solid**
**Analysis Batch: 671344**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 671326**

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | 2.50 | 2.19 | | mg/Kg | | 87 | 70 - 130 | 3 | 25 |
| Ethylbenzene | 2.50 | 2.26 | | mg/Kg | | 90 | 70 - 130 | 3 | 25 |
| Methyl tert-butyl ether | 2.50 | 1.97 | | mg/Kg | | 79 | 70 - 130 | 2 | 25 |
| m,p-Xylene | 5.00 | 4.42 | | mg/Kg | | 88 | 70 - 130 | 3 | 25 |
| Naphthalene | 2.50 | 2.12 | | mg/Kg | | 85 | 70 - 130 | 1 | 25 |
| o-Xylene | 2.50 | 2.21 | | mg/Kg | | 88 | 70 - 130 | 2 | 25 |
| Toluene | 2.50 | 2.18 | | mg/Kg | | 87 | 70 - 130 | 3 | 25 |
| C5-C8 Aliphatics (unadjusted) | 7.50 | 7.74 | | mg/Kg | | 103 | 70 - 130 | 4 | 25 |

## Method: MAVPH - Massachusetts - Volatile Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: LCSD 480-671326/3-A**
**Matrix: Solid**
**Analysis Batch: 671344**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 671326**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | | | 2.50 | 2.39 | | mg/Kg | | 96 | 70 - 130 | 3 | 25 |
| C9-C12 Aliphatics (unadjusted) | | | 7.50 | 8.09 | | mg/Kg | | 108 | 70 - 130 | 4 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *a,a,a-Trifluorotoluene (fid)* | *99* | | *70 - 130* |
| *a,a,a-Trifluorotoluene (pid)* | *92* | | *70 - 130* |

**Lab Sample ID: 620-11736-3 MS**
**Matrix: Solid**
**Analysis Batch: 671344**

**Client Sample ID: LM-SO-UST03-052523**
**Prep Type: Total/NA**
**Prep Batch: 671326**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | | 0.696 | 0.639 | | mg/Kg | ☼ | 92 | 70 - 130 |
| Ethylbenzene | ND | | 0.696 | 0.648 | | mg/Kg | ☼ | 93 | 70 - 130 |
| Methyl tert-butyl ether | 0.011 | J B | 0.696 | 0.582 | | mg/Kg | ☼ | 82 | 70 - 130 |
| m,p-Xylene | 0.0066 | J | 1.39 | 1.29 | | mg/Kg | ☼ | 92 | 70 - 130 |
| Naphthalene | ND | | 0.696 | 0.586 | | mg/Kg | ☼ | 84 | 70 - 130 |
| o-Xylene | 0.0043 | J | 0.696 | 0.635 | | mg/Kg | ☼ | 91 | 70 - 130 |
| Toluene | 0.0056 | J | 0.696 | 0.634 | | mg/Kg | ☼ | 90 | 70 - 130 |
| C5-C8 Aliphatics (unadjusted) | ND | | 2.09 | 2.25 | | mg/Kg | ☼ | 108 | 70 - 130 |
| C9-C10 Aromatics | 0.024 | J | 0.696 | 0.722 | | mg/Kg | ☼ | 100 | 70 - 130 |
| C9-C12 Aliphatics (unadjusted) | 0.055 | J | 2.09 | 2.47 | | mg/Kg | ☼ | 116 | 70 - 130 |

| *Surrogate* | *MS %Recovery* | *MS Qualifier* | *Limits* |
|---|---|---|---|
| *a,a,a-Trifluorotoluene (fid)* | *102* | | *70 - 130* |
| *a,a,a-Trifluorotoluene (pid)* | *95* | | *70 - 130* |

**Lab Sample ID: 620-11736-3 MSD**
**Matrix: Solid**
**Analysis Batch: 671344**

**Client Sample ID: LM-SO-UST03-052523**
**Prep Type: Total/NA**
**Prep Batch: 671326**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | | 0.687 | 0.632 | | mg/Kg | ☼ | 92 | 70 - 130 | 1 | 50 |
| Ethylbenzene | ND | | 0.687 | 0.647 | | mg/Kg | ☼ | 94 | 70 - 130 | 0 | 50 |
| Methyl tert-butyl ether | 0.011 | J B | 0.687 | 0.577 | | mg/Kg | ☼ | 82 | 70 - 130 | 1 | 50 |
| m,p-Xylene | 0.0066 | J | 1.37 | 1.28 | | mg/Kg | ☼ | 93 | 70 - 130 | 1 | 50 |
| Naphthalene | ND | | 0.687 | 0.572 | | mg/Kg | ☼ | 83 | 70 - 130 | 2 | 50 |
| o-Xylene | 0.0043 | J | 0.687 | 0.629 | | mg/Kg | ☼ | 91 | 70 - 130 | 1 | 50 |
| Toluene | 0.0056 | J | 0.687 | 0.632 | | mg/Kg | ☼ | 91 | 70 - 130 | 0 | 50 |
| C5-C8 Aliphatics (unadjusted) | ND | | 2.06 | 2.15 | | mg/Kg | ☼ | 104 | 70 - 130 | 4 | 50 |
| C9-C10 Aromatics | 0.024 | J | 0.687 | 0.720 | | mg/Kg | ☼ | 101 | 70 - 130 | 0 | 50 |
| C9-C12 Aliphatics (unadjusted) | 0.055 | J | 2.06 | 2.47 | | mg/Kg | ☼ | 117 | 70 - 130 | 0 | 50 |

| *Surrogate* | *MSD %Recovery* | *MSD Qualifier* | *Limits* |
|---|---|---|---|
| *a,a,a-Trifluorotoluene (fid)* | *103* | | *70 - 130* |
| *a,a,a-Trifluorotoluene (pid)* | *96* | | *70 - 130* |

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

**Lab Sample ID: MB 620-23055/1-B**
**Matrix: Solid**
**Analysis Batch: 23095**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 23055**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 6.7 | 6.7 | mg/Kg | | 05/30/23 10:20 | 05/31/23 13:14 | 1 |
| C19-C36 Aliphatics | ND | | 6.7 | 6.7 | mg/Kg | | 05/30/23 10:20 | 05/31/23 13:14 | 1 |
| C11-C22 Aromatics | ND | | 6.7 | 6.7 | mg/Kg | | 05/30/23 10:20 | 05/31/23 13:14 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 6.7 | 6.7 | mg/Kg | | 05/30/23 10:20 | 05/31/23 13:14 | 1 |
| Naphthalene | ND | | 0.33 | 0.33 | mg/Kg | | 05/30/23 10:20 | 05/31/23 13:14 | 1 |
| 2-Methylnaphthalene | ND | | 0.33 | 0.33 | mg/Kg | | 05/30/23 10:20 | 05/31/23 13:14 | 1 |
| Acenaphthylene | ND | | 0.33 | 0.33 | mg/Kg | | 05/30/23 10:20 | 05/31/23 13:14 | 1 |
| Acenaphthene | ND | | 0.33 | 0.33 | mg/Kg | | 05/30/23 10:20 | 05/31/23 13:14 | 1 |
| Fluorene | ND | | 0.33 | 0.33 | mg/Kg | | 05/30/23 10:20 | 05/31/23 13:14 | 1 |
| Phenanthrene | ND | | 0.33 | 0.33 | mg/Kg | | 05/30/23 10:20 | 05/31/23 13:14 | 1 |
| Anthracene | ND | | 0.33 | 0.33 | mg/Kg | | 05/30/23 10:20 | 05/31/23 13:14 | 1 |
| Fluoranthene | ND | | 0.33 | 0.33 | mg/Kg | | 05/30/23 10:20 | 05/31/23 13:14 | 1 |
| Pyrene | ND | | 0.33 | 0.33 | mg/Kg | | 05/30/23 10:20 | 05/31/23 13:14 | 1 |
| Benzo[a]anthracene | ND | | 0.33 | 0.33 | mg/Kg | | 05/30/23 10:20 | 05/31/23 13:14 | 1 |
| Chrysene | ND | | 0.33 | 0.33 | mg/Kg | | 05/30/23 10:20 | 05/31/23 13:14 | 1 |
| Benzo[b]fluoranthene | ND | | 0.33 | 0.33 | mg/Kg | | 05/30/23 10:20 | 05/31/23 13:14 | 1 |
| Benzo[k]fluoranthene | ND | | 0.33 | 0.33 | mg/Kg | | 05/30/23 10:20 | 05/31/23 13:14 | 1 |
| Benzo[a]pyrene | ND | | 0.33 | 0.33 | mg/Kg | | 05/30/23 10:20 | 05/31/23 13:14 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.33 | 0.33 | mg/Kg | | 05/30/23 10:20 | 05/31/23 13:14 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.33 | 0.33 | mg/Kg | | 05/30/23 10:20 | 05/31/23 13:14 | 1 |
| Benzo[g,h,i]perylene | ND | | 0.33 | 0.33 | mg/Kg | | 05/30/23 10:20 | 05/31/23 13:14 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *65* | | *40 - 140* | *05/30/23 10:20* | *05/31/23 13:14* | *1* |
| *o-Terphenyl (Surr)* | *60* | | *40 - 140* | *05/30/23 10:20* | *05/31/23 13:14* | *1* |
| *2-Fluorobiphenyl (Surr)* | *106* | | *40 - 140* | *05/30/23 10:20* | *05/31/23 13:14* | *1* |

**Lab Sample ID: LCS 620-23055/2-B**
**Matrix: Solid**
**Analysis Batch: 23095**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 23055**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | 8.00 | ND | | mg/Kg | | 57 | 40 - 140 |
| C19-C36 Aliphatics | 10.7 | 8.17 | | mg/Kg | | 77 | 40 - 140 |
| C11-C22 Aromatics | 22.7 | 17.2 | | mg/Kg | | 76 | 40 - 140 |
| Naphthalene | 1.33 | 0.912 | | mg/Kg | | 68 | 40 - 140 |
| 2-Methylnaphthalene | 1.33 | 0.917 | | mg/Kg | | 69 | 40 - 140 |
| Acenaphthylene | 1.33 | 0.907 | | mg/Kg | | 68 | 40 - 140 |
| Acenaphthene | 1.33 | 0.871 | | mg/Kg | | 65 | 40 - 140 |
| Fluorene | 1.33 | 0.881 | | mg/Kg | | 66 | 40 - 140 |
| Phenanthrene | 1.33 | 0.793 | | mg/Kg | | 59 | 40 - 140 |
| Anthracene | 1.33 | 0.938 | | mg/Kg | | 70 | 40 - 140 |
| Fluoranthene | 1.33 | 1.56 | | mg/Kg | | 117 | 40 - 140 |
| Pyrene | 1.33 | 1.01 | | mg/Kg | | 76 | 40 - 140 |
| Benzo[a]anthracene | 1.33 | 0.882 | | mg/Kg | | 66 | 40 - 140 |
| Chrysene | 1.33 | 1.04 | | mg/Kg | | 78 | 40 - 140 |
| Benzo[b]fluoranthene | 1.33 | 0.857 | | mg/Kg | | 64 | 40 - 140 |
| Benzo[k]fluoranthene | 1.33 | 1.40 | | mg/Kg | | 105 | 40 - 140 |

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: LCS 620-23055/2-B**
**Matrix: Solid**
**Analysis Batch: 23095**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 23055**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Benzo[a]pyrene | 1.33 | 0.966 | | mg/Kg | | 72 | 40 - 140 |
| Indeno[1,2,3-cd]pyrene | 1.33 | 0.974 | | mg/Kg | | 73 | 40 - 140 |
| Dibenz(a,h)anthracene | 1.33 | 0.993 | | mg/Kg | | 75 | 40 - 140 |
| Benzo[g,h,i]perylene | 1.33 | 1.12 | | mg/Kg | | 84 | 40 - 140 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *77* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *66* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *103* | | *40 - 140* |

**Lab Sample ID: LCSD 620-23055/3-B**
**Matrix: Solid**
**Analysis Batch: 23095**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 23055**

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | 8.00 | ND | | mg/Kg | | 49 | 40 - 140 | 16 | 25 |
| C19-C36 Aliphatics | 10.7 | 7.04 | | mg/Kg | | 66 | 40 - 140 | 15 | 25 |
| C11-C22 Aromatics | 22.7 | 17.1 | | mg/Kg | | 75 | 40 - 140 | 1 | 25 |
| Naphthalene | 1.33 | 0.921 | | mg/Kg | | 69 | 40 - 140 | 1 | 25 |
| 2-Methylnaphthalene | 1.33 | 0.915 | | mg/Kg | | 69 | 40 - 140 | 0 | 25 |
| Acenaphthylene | 1.33 | 0.898 | | mg/Kg | | 67 | 40 - 140 | 1 | 25 |
| Acenaphthene | 1.33 | 0.866 | | mg/Kg | | 65 | 40 - 140 | 1 | 25 |
| Fluorene | 1.33 | 0.874 | | mg/Kg | | 66 | 40 - 140 | 1 | 25 |
| Phenanthrene | 1.33 | 0.793 | | mg/Kg | | 59 | 40 - 140 | 0 | 25 |
| Anthracene | 1.33 | 0.935 | | mg/Kg | | 70 | 40 - 140 | 0 | 25 |
| Fluoranthene | 1.33 | 1.40 | | mg/Kg | | 105 | 40 - 140 | 10 | 25 |
| Pyrene | 1.33 | 1.02 | | mg/Kg | | 76 | 40 - 140 | 0 | 25 |
| Benzo[a]anthracene | 1.33 | 0.892 | | mg/Kg | | 67 | 40 - 140 | 1 | 25 |
| Chrysene | 1.33 | 0.987 | | mg/Kg | | 74 | 40 - 140 | 6 | 25 |
| Benzo[b]fluoranthene | 1.33 | 0.980 | | mg/Kg | | 74 | 40 - 140 | 13 | 25 |
| Benzo[k]fluoranthene | 1.33 | 0.910 | *1 | mg/Kg | | 68 | 40 - 140 | 42 | 25 |
| Benzo[a]pyrene | 1.33 | 1.08 | | mg/Kg | | 81 | 40 - 140 | 12 | 25 |
| Indeno[1,2,3-cd]pyrene | 1.33 | 0.973 | | mg/Kg | | 73 | 40 - 140 | 0 | 25 |
| Dibenz(a,h)anthracene | 1.33 | 0.994 | | mg/Kg | | 75 | 40 - 140 | 0 | 25 |
| Benzo[g,h,i]perylene | 1.33 | 1.12 | | mg/Kg | | 84 | 40 - 140 | 0 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *70* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *67* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *104* | | *40 - 140* |

**Lab Sample ID: 620-11736-3 MS**
**Matrix: Solid**
**Analysis Batch: 23364**

**Client Sample ID: LM-SO-UST03-052523**
**Prep Type: Total/NA**
**Prep Batch: 23055**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | F1 | 8.59 | 6.41 | | mg/Kg | ☼ | 75 | 40 - 140 |
| C19-C36 Aliphatics | 19 | F1 | 11.5 | 25.4 | | mg/Kg | ☼ | 53 | 40 - 140 |

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: 620-11736-3 MS**
**Matrix: Solid**
**Analysis Batch: 23364**

**Client Sample ID: LM-SO-UST03-052523**
**Prep Type: Total/NA**
**Prep Batch: 23055**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| C11-C22 Aromatics | 12 | | 24.4 | 36.5 | | mg/Kg | ☼ | 103 | 40 - 140 |
| Naphthalene | ND | | 1.43 | 1.04 | | mg/Kg | ☼ | 72 | 40 - 140 |
| 2-Methylnaphthalene | ND | | 1.43 | 1.09 | | mg/Kg | ☼ | 76 | 40 - 140 |
| Acenaphthylene | ND | | 1.43 | 1.13 | | mg/Kg | ☼ | 79 | 40 - 140 |
| Acenaphthene | ND | | 1.43 | 1.09 | | mg/Kg | ☼ | 76 | 40 - 140 |
| Fluorene | ND | | 1.43 | 1.14 | | mg/Kg | ☼ | 80 | 40 - 140 |
| Phenanthrene | ND | | 1.43 | 1.19 | | mg/Kg | ☼ | 83 | 40 - 140 |
| Anthracene | ND | | 1.43 | 1.28 | | mg/Kg | ☼ | 89 | 40 - 140 |
| Fluoranthene | 0.64 | | 1.43 | 1.82 | | mg/Kg | ☼ | 82 | 40 - 140 |
| Pyrene | ND | | 1.43 | 1.59 | | mg/Kg | ☼ | 111 | 40 - 140 |
| Benzo[a]anthracene | ND | | 1.43 | 1.25 | | mg/Kg | ☼ | 87 | 40 - 140 |
| Chrysene | ND | | 1.43 | 1.52 | | mg/Kg | ☼ | 106 | 40 - 140 |
| Benzo[b]fluoranthene | ND | | 1.43 | 1.38 | | mg/Kg | ☼ | 97 | 40 - 140 |
| Benzo[k]fluoranthene | ND | *1 | 1.43 | 1.37 | | mg/Kg | ☼ | 95 | 40 - 140 |
| Benzo[a]pyrene | ND | | 1.43 | 1.57 | | mg/Kg | ☼ | 110 | 40 - 140 |
| Indeno[1,2,3-cd]pyrene | ND | | 1.43 | 1.48 | | mg/Kg | ☼ | 103 | 40 - 140 |
| Dibenz(a,h)anthracene | ND | | 1.43 | 1.77 | | mg/Kg | ☼ | 123 | 40 - 140 |
| Benzo[g,h,i]perylene | ND | | 1.43 | 1.54 | | mg/Kg | ☼ | 107 | 40 - 140 |

| *Surrogate* | *MS %Recovery* | *MS Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *77* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *89* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *127* | | *40 - 140* |

**Lab Sample ID: 620-11736-3 MSD**
**Matrix: Solid**
**Analysis Batch: 23139**

**Client Sample ID: LM-SO-UST03-052523**
**Prep Type: Total/NA**
**Prep Batch: 23055**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | F1 | 8.70 | 4.26 | | mg/Kg | ☼ | 49 | 40 - 140 | NC | 50 |
| C19-C36 Aliphatics | 19 | F1 | 11.6 | 23.8 | F1 | mg/Kg | ☼ | 38 | 40 - 140 | 7 | 50 |
| C11-C22 Aromatics | 12 | | 24.6 | 29.5 | | mg/Kg | ☼ | 73 | 40 - 140 | 21 | 50 |
| Naphthalene | ND | | 1.45 | 0.858 | | mg/Kg | ☼ | 59 | 40 - 140 | 19 | 50 |
| 2-Methylnaphthalene | ND | | 1.45 | 0.867 | | mg/Kg | ☼ | 60 | 40 - 140 | 23 | 50 |
| Acenaphthylene | ND | | 1.45 | 0.916 | | mg/Kg | ☼ | 63 | 40 - 140 | 21 | 50 |
| Acenaphthene | ND | | 1.45 | 0.868 | | mg/Kg | ☼ | 60 | 40 - 140 | 22 | 50 |
| Fluorene | ND | | 1.45 | 0.921 | | mg/Kg | ☼ | 64 | 40 - 140 | 21 | 50 |
| Phenanthrene | ND | | 1.45 | 0.984 | | mg/Kg | ☼ | 68 | 40 - 140 | 19 | 50 |
| Anthracene | ND | | 1.45 | 0.988 | | mg/Kg | ☼ | 68 | 40 - 140 | 26 | 50 |
| Fluoranthene | 0.64 | | 1.45 | 1.75 | | mg/Kg | ☼ | 77 | 40 - 140 | 4 | 50 |
| Pyrene | ND | | 1.45 | 1.22 | | mg/Kg | ☼ | 84 | 40 - 140 | 26 | 50 |
| Benzo[a]anthracene | ND | | 1.45 | 1.02 | | mg/Kg | ☼ | 70 | 40 - 140 | 20 | 50 |
| Chrysene | ND | | 1.45 | 1.24 | | mg/Kg | ☼ | 85 | 40 - 140 | 20 | 50 |
| Benzo[b]fluoranthene | ND | | 1.45 | 1.02 | | mg/Kg | ☼ | 71 | 40 - 140 | 30 | 50 |
| Benzo[k]fluoranthene | ND | *1 | 1.45 | 0.999 | | mg/Kg | ☼ | 69 | 40 - 140 | 31 | 50 |
| Benzo[a]pyrene | ND | | 1.45 | 1.17 | | mg/Kg | ☼ | 81 | 40 - 140 | 30 | 50 |
| Indeno[1,2,3-cd]pyrene | ND | | 1.45 | 1.21 | | mg/Kg | ☼ | 84 | 40 - 140 | 20 | 50 |
| Dibenz(a,h)anthracene | ND | | 1.45 | 1.26 | | mg/Kg | ☼ | 87 | 40 - 140 | 33 | 50 |

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: 620-11736-3 MSD**
**Matrix: Solid**
**Analysis Batch: 23139**

**Client Sample ID: LM-SO-UST03-052523**
**Prep Type: Total/NA**
**Prep Batch: 23055**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzo[g,h,i]perylene | ND | | 1.45 | 1.76 | | mg/Kg | ☼ | 121 | 40 - 140 | 14 | 50 |

| *Surrogate* | *MSD %Recovery* | *MSD Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *68* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *70* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *101* | | *40 - 140* |

## Method: 6010D - Metals (ICP)

**Lab Sample ID: MB 620-23032/1-A**
**Matrix: Solid**
**Analysis Batch: 23088**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 23032**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 5.0 | 0.38 | mg/Kg | | 05/30/23 07:41 | 05/30/23 17:27 | 1 |
| Arsenic | ND | | 1.5 | 0.19 | mg/Kg | | 05/30/23 07:41 | 05/30/23 17:27 | 1 |
| Barium | ND | | 1.0 | 0.12 | mg/Kg | | 05/30/23 07:41 | 05/30/23 17:27 | 1 |
| Beryllium | ND | | 0.50 | 0.025 | mg/Kg | | 05/30/23 07:41 | 05/30/23 17:27 | 1 |
| Cadmium | ND | | 0.50 | 0.026 | mg/Kg | | 05/30/23 07:41 | 05/30/23 17:27 | 1 |
| Chromium | ND | | 1.0 | 0.13 | mg/Kg | | 05/30/23 07:41 | 05/30/23 17:27 | 1 |
| Lead | ND | | 1.5 | 0.21 | mg/Kg | | 05/30/23 07:41 | 05/30/23 17:27 | 1 |
| Nickel | ND | | 1.0 | 0.12 | mg/Kg | | 05/30/23 07:41 | 05/30/23 17:27 | 1 |
| Selenium | ND | | 1.5 | 0.29 | mg/Kg | | 05/30/23 07:41 | 05/30/23 17:27 | 1 |
| Silver | ND | | 1.5 | 0.16 | mg/Kg | | 05/30/23 07:41 | 05/30/23 17:27 | 1 |
| Thallium | ND | | 3.0 | 1.1 | mg/Kg | | 05/30/23 07:41 | 05/30/23 17:27 | 1 |
| Vanadium | ND | | 1.5 | 0.27 | mg/Kg | | 05/30/23 07:41 | 05/30/23 17:27 | 1 |
| Zinc | ND | | 3.0 | 0.77 | mg/Kg | | 05/30/23 07:41 | 05/30/23 17:27 | 1 |

**Lab Sample ID: LCDSRM 620-23032/3-A**
**Matrix: Solid**
**Analysis Batch: 23088**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 23032**

| Analyte | | | Spike Added | LCDSRM Result | LCDSRM Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | | | 225 | 78.5 | | mg/Kg | | 35.0 | 10.0 - 139.2 | 1 | 20 |
| Arsenic | | | 189 | 166 | | mg/Kg | | 88.1 | 65.6 - 122.1 | 3 | 20 |
| Barium | | | 311 | 284 | | mg/Kg | | 91.5 | 69.5 - 115.9 | 0 | 20 |
| Beryllium | | | 82.1 | 69.9 | | mg/Kg | | 85.2 | 69.7 - 116.0 | 1 | 20 |
| Cadmium | | | 239 | 184 | | mg/Kg | | 76.8 | 67.2 - 111.7 | 5 | 20 |
| Chromium | | | 210 | 183 | | mg/Kg | | 87.1 | 64.5 - 119.8 | 1 | 20 |
| Lead | | | 261 | 218 | | mg/Kg | | 83.4 | 70.4 - 120.0 | 4 | 20 |
| Nickel | | | 181 | 150 | | mg/Kg | | 82.9 | 63.1 - 117.1 | 1 | 20 |
| Selenium | | | 233 | 192 | | mg/Kg | | 82.2 | 62.2 - 118.3 | 3 | 20 |

## Method: 6010D - Metals (ICP) (Continued)

**Lab Sample ID: LCDSRM 620-23032/3-A**
**Matrix: Solid**
**Analysis Batch: 23088**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 23032**

| Analyte | Spike Added | LCDSRM Result | LCDSRM Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Silver | 69.7 | 59.6 | | mg/Kg | | 85.5 | 66.5 - 121.7 | 2 | 20 |
| Thallium | 86.0 | 72.6 | | mg/Kg | | 84.4 | 58.9 - 122.6 | 7 | 20 |
| Vanadium | 218 | 195 | | mg/Kg | | 89.3 | 68.0 - 114.2 | 2 | 20 |
| Zinc | 234 | 202 | | mg/Kg | | 86.2 | 64.9 - 120.7 | 2 | 20 |

**Lab Sample ID: LCSSRM 620-23032/2-A**
**Matrix: Solid**
**Analysis Batch: 23088**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 23032**

| Analyte | Spike Added | LCSSRM Result | LCSSRM Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Antimony | 212 | 77.4 | | mg/Kg | | 36.5 | 10.0 - 139.2 |
| Arsenic | 178 | 171 | | mg/Kg | | 96.1 | 65.6 - 122.1 |
| Barium | 293 | 285 | | mg/Kg | | 97.1 | 69.5 - 115.9 |
| Beryllium | 77.5 | 70.5 | | mg/Kg | | 91.1 | 69.7 - 116.0 |
| Cadmium | 226 | 193 | | mg/Kg | | 85.4 | 67.2 - 111.7 |
| Chromium | 198 | 185 | | mg/Kg | | 93.4 | 64.5 - 119.8 |
| Lead | 247 | 227 | | mg/Kg | | 92.0 | 70.4 - 120.0 |
| Nickel | 171 | 151 | | mg/Kg | | 88.5 | 63.1 - 117.1 |
| Selenium | 220 | 198 | | mg/Kg | | 89.8 | 62.2 - 118.3 |
| Silver | 65.8 | 60.5 | | mg/Kg | | 92.0 | 66.5 - 121.7 |
| Thallium | 81.2 | 77.8 | | mg/Kg | | 95.8 | 58.9 - 122.6 |
| Vanadium | 206 | 198 | | mg/Kg | | 96.2 | 68.0 - 114.2 |
| Zinc | 221 | 206 | | mg/Kg | | 93.4 | 64.9 - 120.7 |

**Lab Sample ID: 620-11736-3 MS**
**Matrix: Solid**
**Analysis Batch: 23088**

**Client Sample ID: LM-SO-UST03-052523**
**Prep Type: Total/NA**
**Prep Batch: 23032**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.81 | J | 116 | 118 | | mg/Kg | ☼ | 101 | 75 - 125 |
| Arsenic | 12 | | 116 | 118 | | mg/Kg | ☼ | 91 | 75 - 125 |
| Barium | 66 | F1 | 116 | 137 | F1 | mg/Kg | ☼ | 61 | 75 - 125 |
| Beryllium | 0.42 | J | 116 | 105 | | mg/Kg | ☼ | 90 | 75 - 125 |
| Cadmium | ND | | 116 | 97.3 | | mg/Kg | ☼ | 84 | 75 - 125 |
| Chromium | 27 | | 116 | 128 | | mg/Kg | ☼ | 86 | 75 - 125 |
| Lead | 32 | | 116 | 126 | | mg/Kg | ☼ | 80 | 75 - 125 |

## Method: 6010D - Metals (ICP) (Continued)

**Lab Sample ID: 620-11736-3 MS**
**Matrix: Solid**
**Analysis Batch: 23088**

**Client Sample ID: LM-SO-UST03-052523**
**Prep Type: Total/NA**
**Prep Batch: 23032**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| Nickel | 19 | | 116 | 113 | | mg/Kg | ☼ | 80 | 75 - 125 |
| Selenium | ND | | 116 | 100 | | mg/Kg | ☼ | 86 | 75 - 125 |
| Silver | ND | | 116 | 94.3 | | mg/Kg | ☼ | 81 | 75 - 125 |
| Thallium | ND | | 116 | 112 | | mg/Kg | ☼ | 96 | 75 - 125 |
| Vanadium | 22 | | 116 | 127 | | mg/Kg | ☼ | 90 | 75 - 125 |
| Zinc | 47 | | 116 | 139 | | mg/Kg | ☼ | 79 | 75 - 125 |

**Lab Sample ID: 620-11736-3 MSD**
**Matrix: Solid**
**Analysis Batch: 23088**

**Client Sample ID: LM-SO-UST03-052523**
**Prep Type: Total/NA**
**Prep Batch: 23032**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.81 | J | 129 | 130 | | mg/Kg | ☼ | 100 | 75 - 125 | 10 | 20 |
| Arsenic | 12 | | 129 | 131 | | mg/Kg | ☼ | 92 | 75 - 125 | 10 | 20 |
| Barium | 66 | F1 | 129 | 136 | F1 | mg/Kg | ☼ | 54 | 75 - 125 | 1 | 20 |
| Beryllium | 0.42 | J | 129 | 116 | | mg/Kg | ☼ | 89 | 75 - 125 | 10 | 20 |
| Cadmium | ND | | 129 | 111 | | mg/Kg | ☼ | 86 | 75 - 125 | 13 | 20 |
| Chromium | 27 | | 129 | 138 | | mg/Kg | ☼ | 85 | 75 - 125 | 8 | 20 |
| Lead | 32 | | 129 | 139 | | mg/Kg | ☼ | 83 | 75 - 125 | 10 | 20 |
| Nickel | 19 | | 129 | 125 | | mg/Kg | ☼ | 82 | 75 - 125 | 10 | 20 |
| Selenium | ND | | 129 | 115 | | mg/Kg | ☼ | 89 | 75 - 125 | 13 | 20 |
| Silver | ND | | 129 | 108 | | mg/Kg | ☼ | 84 | 75 - 125 | 14 | 20 |
| Thallium | ND | | 129 | 126 | | mg/Kg | ☼ | 98 | 75 - 125 | 12 | 20 |
| Vanadium | 22 | | 129 | 136 | | mg/Kg | ☼ | 88 | 75 - 125 | 7 | 20 |
| Zinc | 47 | | 129 | 161 | | mg/Kg | ☼ | 88 | 75 - 125 | 14 | 20 |

**Lab Sample ID: 620-11736-3 DU**
**Matrix: Solid**
**Analysis Batch: 23088**

**Client Sample ID: LM-SO-UST03-052523**
**Prep Type: Total/NA**
**Prep Batch: 23032**

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|
| Antimony | 0.81 | J | 0.905 | J | mg/Kg | ☼ | 11 | 20 |
| Arsenic | 12 | | 11.7 | | mg/Kg | ☼ | 0.8 | 20 |
| Barium | 66 | F1 | 63.2 | | mg/Kg | ☼ | 4 | 20 |
| Beryllium | 0.42 | J | 0.412 | J | mg/Kg | ☼ | 0.7 | 20 |
| Cadmium | ND | | ND | | mg/Kg | ☼ | NC | 20 |
| Chromium | 27 | | 27.8 | | mg/Kg | ☼ | 2 | 20 |
| Lead | 32 | | 26.0 | F3 | mg/Kg | ☼ | 22 | 20 |
| Nickel | 19 | | 18.8 | | mg/Kg | ☼ | 2 | 20 |
| Selenium | ND | | ND | | mg/Kg | ☼ | NC | 20 |
| Silver | ND | | ND | | mg/Kg | ☼ | NC | 20 |
| Thallium | ND | | ND | | mg/Kg | ☼ | NC | 20 |
| Vanadium | 22 | | 24.2 | | mg/Kg | ☼ | 9 | 20 |
| Zinc | 47 | | 46.7 | | mg/Kg | ☼ | 1 | 20 |

## Method: 7471A - Mercury (CVAA)

**Lab Sample ID: MB 620-23034/1-A**
**Matrix: Solid**
**Analysis Batch: 23098**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 23034**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.050 | 0.0083 | mg/Kg | | 05/30/23 08:08 | 05/30/23 13:09 | 1 |

**Lab Sample ID: LCDSRM 620-23034/3-A ^10**
**Matrix: Solid**
**Analysis Batch: 23098**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 23034**

| Analyte | | | Spike Added | LCDSRM Result | LCDSRM Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | | | 18.2 | 21.2 | | mg/Kg | | 116.6 | 59.9 - 140.1 | 4 | |

**Lab Sample ID: LCSSRM 620-23034/2-A ^10**
**Matrix: Solid**
**Analysis Batch: 23098**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 23034**

| Analyte | | | Spike Added | LCSSRM Result | LCSSRM Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | | | 18.2 | 20.3 | | mg/Kg | | 111.7 | 59.9 - 140.1 | | |

**Lab Sample ID: 620-11736-3 MS**
**Matrix: Solid**
**Analysis Batch: 23098**

**Client Sample ID: LM-SO-UST03-052523**
**Prep Type: Total/NA**
**Prep Batch: 23034**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.069 | | 0.201 | 0.321 | | mg/Kg | ☼ | 125 | 75 - 125 | | |

**Lab Sample ID: 620-11736-3 MSD**
**Matrix: Solid**
**Analysis Batch: 23098**

**Client Sample ID: LM-SO-UST03-052523**
**Prep Type: Total/NA**
**Prep Batch: 23034**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.069 | | 0.219 | 0.338 | | mg/Kg | ☼ | 123 | 75 - 125 | 5 | 20 |

**Lab Sample ID: 620-11736-3 DU**
**Matrix: Solid**
**Analysis Batch: 23098**

**Client Sample ID: LM-SO-UST03-052523**
**Prep Type: Total/NA**
**Prep Batch: 23034**

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|
| Mercury | 0.069 | | 0.0884 | F5 | mg/Kg | ☼ | 24 | 20 |

## GC VOA

### Prep Batch: 671326

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11736-1 | LM-SO-UST01-052523 | Total/NA | Solid | 5035A_H | |
| 620-11736-2 | LM-SO-UST02-052523 | Total/NA | Solid | 5035A_H | |
| 620-11736-3 | LM-SO-UST03-052523 | Total/NA | Solid | 5035A_H | |
| 620-11736-4 | SO-FD-01 | Total/NA | Solid | 5035A_H | |
| 620-11736-5 | LM-SO-P1-052523 | Total/NA | Solid | 5035A_H | |
| MB 480-671326/1-A | Method Blank | Total/NA | Solid | 5035A_H | |
| LCS 480-671326/2-A | Lab Control Sample | Total/NA | Solid | 5035A_H | |
| LCSD 480-671326/3-A | Lab Control Sample Dup | Total/NA | Solid | 5035A_H | |
| 620-11736-3 MS | LM-SO-UST03-052523 | Total/NA | Solid | 5035A_H | |
| 620-11736-3 MSD | LM-SO-UST03-052523 | Total/NA | Solid | 5035A_H | |

### Analysis Batch: 671344

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11736-1 | LM-SO-UST01-052523 | Total/NA | Solid | MAVPH | 671326 |
| 620-11736-2 | LM-SO-UST02-052523 | Total/NA | Solid | MAVPH | 671326 |
| 620-11736-3 | LM-SO-UST03-052523 | Total/NA | Solid | MAVPH | 671326 |
| 620-11736-4 | SO-FD-01 | Total/NA | Solid | MAVPH | 671326 |
| 620-11736-5 | LM-SO-P1-052523 | Total/NA | Solid | MAVPH | 671326 |
| MB 480-671326/1-A | Method Blank | Total/NA | Solid | MAVPH | 671326 |
| LCS 480-671326/2-A | Lab Control Sample | Total/NA | Solid | MAVPH | 671326 |
| LCSD 480-671326/3-A | Lab Control Sample Dup | Total/NA | Solid | MAVPH | 671326 |
| 620-11736-3 MS | LM-SO-UST03-052523 | Total/NA | Solid | MAVPH | 671326 |
| 620-11736-3 MSD | LM-SO-UST03-052523 | Total/NA | Solid | MAVPH | 671326 |

### Analysis Batch: 671728

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11736-1 | LM-SO-UST01-052523 | Total/NA | Solid | MA VPH SUM | |
| 620-11736-2 | LM-SO-UST02-052523 | Total/NA | Solid | MA VPH SUM | |
| 620-11736-3 | LM-SO-UST03-052523 | Total/NA | Solid | MA VPH SUM | |
| 620-11736-4 | SO-FD-01 | Total/NA | Solid | MA VPH SUM | |
| 620-11736-5 | LM-SO-P1-052523 | Total/NA | Solid | MA VPH SUM | |

## GC Semi VOA

### Prep Batch: 23055

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11736-1 | LM-SO-UST01-052523 | Total/NA | Solid | 3546 | |
| 620-11736-2 | LM-SO-UST02-052523 | Total/NA | Solid | 3546 | |
| 620-11736-3 | LM-SO-UST03-052523 | Total/NA | Solid | 3546 | |
| 620-11736-4 | SO-FD-01 | Total/NA | Solid | 3546 | |
| 620-11736-5 | LM-SO-P1-052523 | Total/NA | Solid | 3546 | |
| MB 620-23055/1-B | Method Blank | Total/NA | Solid | 3546 | |
| LCS 620-23055/2-B | Lab Control Sample | Total/NA | Solid | 3546 | |
| LCSD 620-23055/3-B | Lab Control Sample Dup | Total/NA | Solid | 3546 | |
| 620-11736-3 MS | LM-SO-UST03-052523 | Total/NA | Solid | 3546 | |
| 620-11736-3 MSD | LM-SO-UST03-052523 | Total/NA | Solid | 3546 | |

### Analysis Batch: 23095

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| MB 620-23055/1-B | Method Blank | Total/NA | Solid | MAEPH2.1 | 23114 |
| LCS 620-23055/2-B | Lab Control Sample | Total/NA | Solid | MAEPH2.1 | 23114 |

## GC Semi VOA (Continued)

### Analysis Batch: 23095 (Continued)

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| LCSD 620-23055/3-B | Lab Control Sample Dup | Total/NA | Solid | MAEPH2.1 | 23114 |

### Fraction Batch: 23114

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11736-1 | LM-SO-UST01-052523 | Total/NA | Solid | MA EPH Frac | 23055 |
| 620-11736-2 | LM-SO-UST02-052523 | Total/NA | Solid | MA EPH Frac | 23055 |
| 620-11736-3 | LM-SO-UST03-052523 | Total/NA | Solid | MA EPH Frac | 23055 |
| 620-11736-4 | SO-FD-01 | Total/NA | Solid | MA EPH Frac | 23055 |
| 620-11736-5 | LM-SO-P1-052523 | Total/NA | Solid | MA EPH Frac | 23055 |
| MB 620-23055/1-B | Method Blank | Total/NA | Solid | MA EPH Frac | 23055 |
| LCS 620-23055/2-B | Lab Control Sample | Total/NA | Solid | MA EPH Frac | 23055 |
| LCSD 620-23055/3-B | Lab Control Sample Dup | Total/NA | Solid | MA EPH Frac | 23055 |
| 620-11736-3 MS | LM-SO-UST03-052523 | Total/NA | Solid | MA EPH Frac | 23055 |
| 620-11736-3 MSD | LM-SO-UST03-052523 | Total/NA | Solid | MA EPH Frac | 23055 |

### Analysis Batch: 23139

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11736-1 | LM-SO-UST01-052523 | Total/NA | Solid | MAEPH2.1 | 23114 |
| 620-11736-2 | LM-SO-UST02-052523 | Total/NA | Solid | MAEPH2.1 | 23114 |
| 620-11736-3 | LM-SO-UST03-052523 | Total/NA | Solid | MAEPH2.1 | 23114 |
| 620-11736-4 | SO-FD-01 | Total/NA | Solid | MAEPH2.1 | 23114 |
| 620-11736-5 | LM-SO-P1-052523 | Total/NA | Solid | MAEPH2.1 | 23114 |
| 620-11736-3 MSD | LM-SO-UST03-052523 | Total/NA | Solid | MAEPH2.1 | 23114 |

### Analysis Batch: 23364

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11736-3 MS | LM-SO-UST03-052523 | Total/NA | Solid | MAEPH2.1 | 23114 |

## Metals

### Prep Batch: 23032

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11736-1 | LM-SO-UST01-052523 | Total/NA | Solid | 3050B | |
| 620-11736-2 | LM-SO-UST02-052523 | Total/NA | Solid | 3050B | |
| 620-11736-3 | LM-SO-UST03-052523 | Total/NA | Solid | 3050B | |
| 620-11736-4 | SO-FD-01 | Total/NA | Solid | 3050B | |
| 620-11736-5 | LM-SO-P1-052523 | Total/NA | Solid | 3050B | |
| MB 620-23032/1-A | Method Blank | Total/NA | Solid | 3050B | |
| LCDSRM 620-23032/3-A | Lab Control Sample Dup | Total/NA | Solid | 3050B | |
| LCSSRM 620-23032/2-A | Lab Control Sample | Total/NA | Solid | 3050B | |
| 620-11736-3 MS | LM-SO-UST03-052523 | Total/NA | Solid | 3050B | |
| 620-11736-3 MSD | LM-SO-UST03-052523 | Total/NA | Solid | 3050B | |
| 620-11736-3 DU | LM-SO-UST03-052523 | Total/NA | Solid | 3050B | |

### Prep Batch: 23034

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11736-1 | LM-SO-UST01-052523 | Total/NA | Solid | 7471B | |
| 620-11736-2 | LM-SO-UST02-052523 | Total/NA | Solid | 7471B | |
| 620-11736-3 | LM-SO-UST03-052523 | Total/NA | Solid | 7471B | |
| 620-11736-4 | SO-FD-01 | Total/NA | Solid | 7471B | |
| 620-11736-5 | LM-SO-P1-052523 | Total/NA | Solid | 7471B | |

## Metals (Continued)

### Prep Batch: 23034 (Continued)

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| MB 620-23034/1-A | Method Blank | Total/NA | Solid | 7471B | |
| LCDSRM 620-23034/3-A ^10 | Lab Control Sample Dup | Total/NA | Solid | 7471B | |
| LCSSRM 620-23034/2-A ^10 | Lab Control Sample | Total/NA | Solid | 7471B | |
| 620-11736-3 MS | LM-SO-UST03-052523 | Total/NA | Solid | 7471B | |
| 620-11736-3 MSD | LM-SO-UST03-052523 | Total/NA | Solid | 7471B | |
| 620-11736-3 DU | LM-SO-UST03-052523 | Total/NA | Solid | 7471B | |

### Analysis Batch: 23088

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11736-1 | LM-SO-UST01-052523 | Total/NA | Solid | 6010D | 23032 |
| 620-11736-2 | LM-SO-UST02-052523 | Total/NA | Solid | 6010D | 23032 |
| 620-11736-3 | LM-SO-UST03-052523 | Total/NA | Solid | 6010D | 23032 |
| 620-11736-4 | SO-FD-01 | Total/NA | Solid | 6010D | 23032 |
| 620-11736-5 | LM-SO-P1-052523 | Total/NA | Solid | 6010D | 23032 |
| MB 620-23032/1-A | Method Blank | Total/NA | Solid | 6010D | 23032 |
| LCDSRM 620-23032/3-A | Lab Control Sample Dup | Total/NA | Solid | 6010D | 23032 |
| LCSSRM 620-23032/2-A | Lab Control Sample | Total/NA | Solid | 6010D | 23032 |
| 620-11736-3 MS | LM-SO-UST03-052523 | Total/NA | Solid | 6010D | 23032 |
| 620-11736-3 MSD | LM-SO-UST03-052523 | Total/NA | Solid | 6010D | 23032 |
| 620-11736-3 DU | LM-SO-UST03-052523 | Total/NA | Solid | 6010D | 23032 |

### Analysis Batch: 23098

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11736-1 | LM-SO-UST01-052523 | Total/NA | Solid | 7471A | 23034 |
| 620-11736-2 | LM-SO-UST02-052523 | Total/NA | Solid | 7471A | 23034 |
| 620-11736-3 | LM-SO-UST03-052523 | Total/NA | Solid | 7471A | 23034 |
| 620-11736-4 | SO-FD-01 | Total/NA | Solid | 7471A | 23034 |
| 620-11736-5 | LM-SO-P1-052523 | Total/NA | Solid | 7471A | 23034 |
| MB 620-23034/1-A | Method Blank | Total/NA | Solid | 7471A | 23034 |
| LCDSRM 620-23034/3-A ^10 | Lab Control Sample Dup | Total/NA | Solid | 7471A | 23034 |
| LCSSRM 620-23034/2-A ^10 | Lab Control Sample | Total/NA | Solid | 7471A | 23034 |
| 620-11736-3 MS | LM-SO-UST03-052523 | Total/NA | Solid | 7471A | 23034 |
| 620-11736-3 MSD | LM-SO-UST03-052523 | Total/NA | Solid | 7471A | 23034 |
| 620-11736-3 DU | LM-SO-UST03-052523 | Total/NA | Solid | 7471A | 23034 |

## General Chemistry

### Analysis Batch: 23159

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11736-1 | LM-SO-UST01-052523 | Total/NA | Solid | Moisture | |
| 620-11736-2 | LM-SO-UST02-052523 | Total/NA | Solid | Moisture | |
| 620-11736-3 | LM-SO-UST03-052523 | Total/NA | Solid | Moisture | |
| 620-11736-4 | SO-FD-01 | Total/NA | Solid | Moisture | |
| 620-11736-5 | LM-SO-P1-052523 | Total/NA | Solid | Moisture | |
| 620-11736-3 MS | LM-SO-UST03-052523 | Total/NA | Solid | Moisture | |
| 620-11736-3 MSD | LM-SO-UST03-052523 | Total/NA | Solid | Moisture | |

# Lab Chronicle

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11736-1

## Client Sample ID: LM-SO-UST01-052523

**Lab Sample ID: 620-11736-1**

**Date Collected: 05/25/23 12:10**

**Matrix: Solid**

**Date Received: 05/26/23 16:59**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | MA VPH SUM | | 1 | 671728 | MAN | EET BUF | 06/02/23 10:41 |
| Total/NA | Analysis | Moisture | | 1 | 23159 | MJH | EET NE | 06/01/23 10:58 |

## Client Sample ID: LM-SO-UST01-052523

**Lab Sample ID: 620-11736-1**

**Date Collected: 05/25/23 12:10**

**Matrix: Solid**

**Date Received: 05/26/23 16:59**

**Percent Solids: 90.3**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 5035A_H | | | 671326 | JLS | EET BUF | 05/31/23 07:06 |
| Total/NA | Analysis | MAVPH | | 1 | 671344 | JLS | EET BUF | 05/31/23 10:03 |
| Total/NA | Prep | 3546 | | | 23055 | JAC | EET NE | 05/30/23 10:20 |
| Total/NA | Fraction | MA EPH Frac | | | 23114 | BJJ | EET NE | 05/31/23 11:25 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 23139 | BJJ | EET NE | 06/01/23 18:20 |
| Total/NA | Prep | 3050B | | | 23032 | PRB | EET NE | 05/30/23 07:41 |
| Total/NA | Analysis | 6010D | | 1 | 23088 | JPC | EET NE | 05/30/23 17:51 |
| Total/NA | Prep | 7471B | | | 23034 | PRB | EET NE | 05/30/23 08:08 |
| Total/NA | Analysis | 7471A | | 1 | 23098 | PRB | EET NE | 05/30/23 13:51 |

## Client Sample ID: LM-SO-UST02-052523

**Lab Sample ID: 620-11736-2**

**Date Collected: 05/25/23 17:50**

**Matrix: Solid**

**Date Received: 05/26/23 16:59**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | MA VPH SUM | | 1 | 671728 | MAN | EET BUF | 06/02/23 10:41 |
| Total/NA | Analysis | Moisture | | 1 | 23159 | MJH | EET NE | 06/01/23 10:58 |

## Client Sample ID: LM-SO-UST02-052523

**Lab Sample ID: 620-11736-2**

**Date Collected: 05/25/23 17:50**

**Matrix: Solid**

**Date Received: 05/26/23 16:59**

**Percent Solids: 79.9**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 5035A_H | | | 671326 | JLS | EET BUF | 05/31/23 07:06 |
| Total/NA | Analysis | MAVPH | | 1 | 671344 | JLS | EET BUF | 05/31/23 10:44 |
| Total/NA | Prep | 3546 | | | 23055 | JAC | EET NE | 05/30/23 10:20 |
| Total/NA | Fraction | MA EPH Frac | | | 23114 | BJJ | EET NE | 05/31/23 11:25 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 23139 | BJJ | EET NE | 06/01/23 18:49 |
| Total/NA | Prep | 3050B | | | 23032 | PRB | EET NE | 05/30/23 07:41 |
| Total/NA | Analysis | 6010D | | 1 | 23088 | JPC | EET NE | 05/30/23 17:57 |
| Total/NA | Prep | 7471B | | | 23034 | PRB | EET NE | 05/30/23 08:08 |
| Total/NA | Analysis | 7471A | | 1 | 23098 | PRB | EET NE | 05/30/23 13:53 |

# Lab Chronicle

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11736-1

## Client Sample ID: LM-SO-UST03-052523
**Date Collected: 05/25/23 16:30**
**Date Received: 05/26/23 16:59**

## Lab Sample ID: 620-11736-3
**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | MA VPH SUM | | 1 | 671728 | MAN | EET BUF | 06/02/23 10:41 |
| Total/NA | Analysis | Moisture | | 1 | 23159 | MJH | EET NE | 06/01/23 10:58 |

## Client Sample ID: LM-SO-UST03-052523
**Date Collected: 05/25/23 16:30**
**Date Received: 05/26/23 16:59**

## Lab Sample ID: 620-11736-3
**Matrix: Solid**
**Percent Solids: 91.2**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 5035A_H | | | 671326 | JLS | EET BUF | 05/31/23 07:06 |
| Total/NA | Analysis | MAVPH | | 1 | 671344 | JLS | EET BUF | 05/31/23 11:25 |
| Total/NA | Prep | 3546 | | | 23055 | JAC | EET NE | 05/30/23 10:20 |
| Total/NA | Fraction | MA EPH Frac | | | 23114 | BJJ | EET NE | 05/31/23 11:25 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 23139 | BJJ | EET NE | 06/01/23 19:18 |
| Total/NA | Prep | 3050B | | | 23032 | PRB | EET NE | 05/30/23 07:41 |
| Total/NA | Analysis | 6010D | | 1 | 23088 | JPC | EET NE | 05/30/23 18:03 |
| Total/NA | Prep | 7471B | | | 23034 | PRB | EET NE | 05/30/23 08:08 |
| Total/NA | Analysis | 7471A | | 1 | 23098 | PRB | EET NE | 05/30/23 14:01 |

## Client Sample ID: SO-FD-01
**Date Collected: 05/25/23 08:00**
**Date Received: 05/26/23 16:59**

## Lab Sample ID: 620-11736-4
**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | MA VPH SUM | | 1 | 671728 | MAN | EET BUF | 06/02/23 10:41 |
| Total/NA | Analysis | Moisture | | 1 | 23159 | MJH | EET NE | 06/01/23 10:58 |

## Client Sample ID: SO-FD-01
**Date Collected: 05/25/23 08:00**
**Date Received: 05/26/23 16:59**

## Lab Sample ID: 620-11736-4
**Matrix: Solid**
**Percent Solids: 81.2**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 5035A_H | | | 671326 | JLS | EET BUF | 05/31/23 07:06 |
| Total/NA | Analysis | MAVPH | | 1 | 671344 | JLS | EET BUF | 05/31/23 12:05 |
| Total/NA | Prep | 3546 | | | 23055 | JAC | EET NE | 05/30/23 10:20 |
| Total/NA | Fraction | MA EPH Frac | | | 23114 | BJJ | EET NE | 05/31/23 11:25 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 23139 | BJJ | EET NE | 06/01/23 20:46 |
| Total/NA | Prep | 3050B | | | 23032 | PRB | EET NE | 05/30/23 07:41 |
| Total/NA | Analysis | 6010D | | 1 | 23088 | JPC | EET NE | 05/30/23 18:39 |
| Total/NA | Prep | 7471B | | | 23034 | PRB | EET NE | 05/30/23 08:08 |
| Total/NA | Analysis | 7471A | | 1 | 23098 | PRB | EET NE | 05/30/23 14:14 |

# Lab Chronicle

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11736-1

## Client Sample ID: LM-SO-P1-052523

**Date Collected: 05/25/23 16:50**
**Date Received: 05/26/23 16:59**

## Lab Sample ID: 620-11736-5

**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | MA VPH SUM | | 1 | 671728 | MAN | EET BUF | 06/02/23 10:41 |
| Total/NA | Analysis | Moisture | | 1 | 23159 | MJH | EET NE | 06/01/23 10:58 |

## Client Sample ID: LM-SO-P1-052523

**Date Collected: 05/25/23 16:50**
**Date Received: 05/26/23 16:59**

## Lab Sample ID: 620-11736-5

**Matrix: Solid**
**Percent Solids: 92.2**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 5035A_H | | | 671326 | JLS | EET BUF | 05/31/23 07:06 |
| Total/NA | Analysis | MAVPH | | 1 | 671344 | JLS | EET BUF | 05/31/23 12:45 |
| Total/NA | Prep | 3546 | | | 23055 | JAC | EET NE | 05/30/23 10:20 |
| Total/NA | Fraction | MA EPH Frac | | | 23114 | BJJ | EET NE | 05/31/23 11:25 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 23139 | BJJ | EET NE | 06/01/23 21:15 |
| Total/NA | Prep | 3050B | | | 23032 | PRB | EET NE | 05/30/23 07:41 |
| Total/NA | Analysis | 6010D | | 1 | 23088 | JPC | EET NE | 05/30/23 18:45 |
| Total/NA | Prep | 7471B | | | 23034 | PRB | EET NE | 05/30/23 08:08 |
| Total/NA | Analysis | 7471A | | 1 | 23098 | PRB | EET NE | 05/30/23 14:16 |

**Laboratory References:**

EET BUF = Eurofins Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600
EET NE = Eurofins New England, 646 Camp Ave, North Kingstown, RI 02852, TEL (413)789-9018

# Accreditation/Certification Summary

Client: Nobis Engineering, Inc. Job ID: 620-11736-1
Project/Site: Former L&M - Lunenburg MA

## Laboratory: Eurofins New England

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

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|
| Massachusetts | State | M-RI907 | 06-30-23 |

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

| Analysis Method | Prep Method | Matrix | Analyte |
|---|---|---|---|
| 6010D | 3050B | Solid | Antimony |
| 6010D | 3050B | Solid | Arsenic |
| 6010D | 3050B | Solid | Barium |
| 6010D | 3050B | Solid | Beryllium |
| 6010D | 3050B | Solid | Cadmium |
| 6010D | 3050B | Solid | Chromium |
| 6010D | 3050B | Solid | Lead |
| 6010D | 3050B | Solid | Nickel |
| 6010D | 3050B | Solid | Selenium |
| 6010D | 3050B | Solid | Silver |
| 6010D | 3050B | Solid | Thallium |
| 6010D | 3050B | Solid | Vanadium |
| 6010D | 3050B | Solid | Zinc |
| 7471A | 7471B | Solid | Mercury |
| MAEPH2.1 | 3546 | Solid | 2-Methylnaphthalene |
| MAEPH2.1 | 3546 | Solid | Acenaphthene |
| MAEPH2.1 | 3546 | Solid | Acenaphthylene |
| MAEPH2.1 | 3546 | Solid | Anthracene |
| MAEPH2.1 | 3546 | Solid | Benzo[a]anthracene |
| MAEPH2.1 | 3546 | Solid | Benzo[a]pyrene |
| MAEPH2.1 | 3546 | Solid | Benzo[b]fluoranthene |
| MAEPH2.1 | 3546 | Solid | Benzo[g,h,i]perylene |
| MAEPH2.1 | 3546 | Solid | Benzo[k]fluoranthene |
| MAEPH2.1 | 3546 | Solid | C11-C22 Aromatics |
| MAEPH2.1 | 3546 | Solid | C11-C22 Aromatics (Adjusted) |
| MAEPH2.1 | 3546 | Solid | C19-C36 Aliphatics |
| MAEPH2.1 | 3546 | Solid | C9-C18 Aliphatics |
| MAEPH2.1 | 3546 | Solid | Chrysene |
| MAEPH2.1 | 3546 | Solid | Dibenz(a,h)anthracene |
| MAEPH2.1 | 3546 | Solid | Fluoranthene |
| MAEPH2.1 | 3546 | Solid | Fluorene |
| MAEPH2.1 | 3546 | Solid | Indeno[1,2,3-cd]pyrene |
| MAEPH2.1 | 3546 | Solid | Naphthalene |
| MAEPH2.1 | 3546 | Solid | Phenanthrene |
| MAEPH2.1 | 3546 | Solid | Pyrene |
| Moisture | | Solid | Percent Moisture |
| Moisture | | Solid | Percent Solids |

## Laboratory: Eurofins Buffalo

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

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|
| Arkansas DEQ | State | 88-0686 | 07-06-22 * |
| Connecticut | State | PH-0568 | 03-31-24 |
| Florida | NELAP | E87672 | 06-30-23 |
| Georgia | State | 10026 (NY) | 03-31-24 |

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

# Accreditation/Certification Summary

Client: Nobis Engineering, Inc. Job ID: 620-11736-1
Project/Site: Former L&M - Lunenburg MA

## Laboratory: Eurofins Buffalo (Continued)

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

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|
| Georgia | State Program | N/A | 03-31-09 * |
| Georgia (DW) | State | 956 | 03-31-23 * |
| Illinois | NELAP | 200003 | 09-30-23 |
| Iowa | State | 374 | 03-01-23 * |
| Iowa | State Program | 374 | 03-01-09 * |
| Kansas | NELAP | E-10187 | 02-01-24 |
| Kentucky (DW) | State | 90029 | 01-01-24 |
| Kentucky (UST) | State | 30 | 04-01-23 * |
| Kentucky (WW) | State | KY90029 | 12-31-23 |
| Louisiana | NELAP | 02031 | 06-30-23 |
| Louisiana (All) | NELAP | 02031 | 06-30-23 |
| Maine | State | NY00044 | 12-04-24 |
| Maryland | State | 294 | 03-31-23 * |
| Massachusetts | State | M-NY044 | 06-30-23 |
| Michigan | State | 9937 | 03-31-23 * |
| Michigan | State Program | 9937 | 04-01-09 * |
| New Hampshire | NELAP | 2973 | 09-11-19 * |
| New Hampshire | NELAP | 2337 | 11-17-23 |
| New Jersey | NELAP | NY455 | 06-30-23 |
| New York | NELAP | 10026 | 03-31-24 |
| Pennsylvania | NELAP | 68-00281 | 07-31-23 |
| Rhode Island | State | LAO00328 | 12-30-23 |
| Texas | NELAP | T104704412-18-10 | 07-31-23 |
| USDA | US Federal Programs | P330-18-00039 | 03-25-24 |
| Virginia | NELAP | 460185 | 09-14-23 |
| Washington | State | C784 | 02-10-23 * |
| Wisconsin | State | 998310390 | 08-31-23 |

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

# Method Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11736-1

| Method | Method Description | Protocol | Laboratory |
|---|---|---|---|
| MA VPH SUM | Massachusetts - Volatile Petroleum Hydrocarbons (GC) | MA DEP | EET BUF |
| MAVPH | Massachusetts - Volatile Petroleum Hydrocarbons (GC) | MA DEP | EET BUF |
| MAEPH2.1 | Massachusetts - Extractable Petroleum Hydrocarbons (GC) | MA DEP | EET NE |
| 6010D | Metals (ICP) | SW846 | EET NE |
| 7471A | Mercury (CVAA) | SW846 | EET NE |
| Moisture | Percent Moisture | EPA | EET NE |
| 3050B | Preparation, Metals | SW846 | EET NE |
| 3546 | Microwave Extraction | SW846 | EET NE |
| 5035A_H | Closed System Purge and Trap | SW846 | EET BUF |
| 7471B | Preparation, Mercury | SW846 | EET NE |
| MA EPH Frac | Massachusetts - Extractable Petroleum Hydrocarbon Fractionation | MA DEP | EET NE |

**Protocol References:**

EPA = US Environmental Protection Agency

MA DEP = Massachusetts Department Of Environmental Protection

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

**Laboratory References:**

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

EET NE = Eurofins New England, 646 Camp Ave, North Kingstown, RI 02852, TEL (413)789-9018

# Sample Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11736-1

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---|---|---|---|---|
| 620-11736-1 | LM-SO-UST01-052523 | Solid | 05/25/23 12:10 | 05/26/23 16:59 |
| 620-11736-2 | LM-SO-UST02-052523 | Solid | 05/25/23 17:50 | 05/26/23 16:59 |
| 620-11736-3 | LM-SO-UST03-052523 | Solid | 05/25/23 16:30 | 05/26/23 16:59 |
| 620-11736-4 | SO-FD-01 | Solid | 05/25/23 08:00 | 05/26/23 16:59 |
| 620-11736-5 | LM-SO-P1-052523 | Solid | 05/25/23 16:50 | 05/26/23 16:59 |

620-11736 Chain of Custody

11736

# Chain of Custody Record

eurofins | Environment Testing

| | | | | |
|---|---|---|---|---|
| Client Contact: Bridget Fortier | Sampler: S. Stone | Lab PM: A. Ray | Carrier Tracking No(s): | COC No: 620-10175-1337 1 |
| Company: Nobis Engineering, Inc | Phone: 774-245-3607 | E-Mail: aray@nobis-group.com | State of Origin: | Page: Page 1 of 2 |
| Address: 585 Middlesex Street | PWSID: | | | Job #: |
| City: Lowell | Due Date Requested: | | | |
| State, Zip: MA, 01851 | TAT Requested (days): standard 10 day | | | |
| Phone: | Compliance Project: Δ Yes Δ No | | | |
| Email: bfortier@nobis-group.com | PO #: | | | |
| Project Name: Former L&M | WO #: | | | |
| Site: | Project #: 50000001.005/406 | | | |
| | SSOW#: | | | |

**Analysis Requested**

**Preservation Codes:**

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)

Other:

| | Sample Identification | Sample Date | Sample Time | Sample Type (C=comp, G=grab) | Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air) | Field Filtered Sample (Yes or No) | Perform MS/MSD (Yes or No) | Preservation Code: | UPH | EDD, MADEP (CAM) | Total Number of containers | Special Instructions/Note: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | LM-SO-UST01-052523 | 5-25-23 | 1210 | C | Solid | | | F | X | X | | |
| 02 | LM-SO-UST02-052523 | | 1750 | C | Solid | | | | X | X | | |
| 03 | LM-SO-UST03-052523 | | 1630 | C | Solid | | Y | | X | X | | MS/MSD |
| 04 | SO-FD-01 | | 800 | C | Solid | | | | X | X | | |
| 05 | LM-SO-01-052523 | | 1650 | G | Solid | | | | X | X | | |
| | | | | | Solid | | | | | | | |
| | | | | | Solid | | | | | | | |
| | | | | | Solid | | | | | | | |
| | | | | | Solid | | | | | | | |
| | | | | | Solid | | | | | | | |
| | | | | | Solid | | | | | | | |

***Possible Hazard Identification***

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

***Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)***

☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested. I, II, III, IV, Other (specify): EDD report PDF & email

Special Instructions/QC Requirements: MADEP CAM METHOD required

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

| | Relinquished by | Date/Time | Company | Received by | Date/Time | Company |
|---|---|---|---|---|---|---|
| 1 | | 5-26-23 1135 | | | 5/26/23 1135 | ENE |
| 2 | | 5/26/23 1659 | | | 5/26/23 16:59 | ENE |
| 3 | | | | | | |

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 3.4 +0.2 = 3.6 #6

Ver: 06/08/2021

**Eurofins New England**
646 Camp Ave
North Kingstown, RI 02852
Phone: 413-789-9018

# Chain of Custody Record

eurofins | Environment Testing

| Client Information (Sub Contract Lab) | Sampler: | Lab PM: Huntley, Agnes R | Carrier Tracking No(s): | COC No: 620-9727.1 |
|---|---|---|---|---|
| Client Contact: Shipping/Receiving | Phone: | E-Mail: Agnes.Huntley@et.eurofinsus.com | State of Origin: Massachusetts | Page: Page 1 of 1 |
| Company: Eurofins Environment Testing Northeast, | | Accreditations Required (See note): State - Massachusetts | | Job #: 620-11736-1 |
| Address: 10 Hazelwood Drive, , | Due Date Requested: 6/1/2023 | | | |
| City: Amherst | TAT Requested (days): | | | |
| State, Zip: NY, 14228-2298 | PO #: | | | |
| Phone: 716-691-2600(Tel) 716-691-7991(Fax) | WO #: | | | |
| Email: | Project #: 62002215 | | | |
| Project Name: Former L&M - Lunenburg MA | SSOW#: | | | |
| Site: | | | | |

**Analysis Requested**

**Preservation Codes:**
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)
Other:

| Sample Identification - Client ID (Lab ID) | Sample Date | Sample Time | Sample Type (C=Comp, G=grab) | Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air) | Field Filtered Sample (Yes or No) | Perform MS/MSD (Yes or No) | MAVPH/5035A_M_Calc (MOD) Standard Targets and Carbon Ranges | MAVPH_SUM/ MAVPH Adjusted Range Calculation | Total Number of containers | Special Instructions/Note: |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preservation Code: | | | | | | | |
| LM-SO-UST01-052523 (620-11736-1) | 5/25/23 | Eastern | | Solid | | | X | X | 1 | |
| LM-SO-UST02-052523 (620-11736-2) | 5/25/23 | Eastern | | Solid | | | X | X | 1 | |
| LM-SO-UST03-052523 (620-11736-3) | 5/25/23 | Eastern | | Solid | | | X | X | 1 | |
| LM-SO-UST03-052523 (620-11736-3MS) | 5/25/23 | Eastern | MS | Solid | | | X | X | 1 | |
| LM-SO-UST03-052523 (620-11736-3MSD) | 5/25/23 | Eastern | MSD | Solid | | | X | X | 1 | |
| SO-FD-01 (620-11736-4) | 5/25/23 | Eastern | | Solid | | | X | X | 1 | |
| LM-SO-P1-052523 (620-11736-5) | 5/25/23 | Eastern | | Solid | | | X | X | 1 | |
| | | | | | | | | | | |
| | | | | | | | | | | |

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing Northeast, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing Northeast, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing Northeast, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing Northeast, LLC.

***Possible Hazard Identification***
*Unconfirmed*

***Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)***
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2

Special Instructions/QC Requirements:

| Empty Kit Relinquished by: | Date: | Time: | Method of Shipment: |
|---|---|---|---|
| Relinquished by: | Date/Time: 5/26/23 17:17 | Company: ENE | Received by: | Date/Time: 5/27/23 1000 | Company: TVT |
| Relinquished by: | Date/Time: | Company | Received by: | Date/Time: | Company |
| Relinquished by: | Date/Time: | Company | Received by: | Date/Time: | Company |

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks: 2.9# ICE

Ver: 06/08/2021

# Login Sample Receipt Checklist

Client: Nobis Engineering, Inc.

Job Number: 620-11736-1

**Login Number: 11736**
**List Number: 1**
**Creator: Makhoul, Elie**

**List Source: Eurofins New England**

| Question | Answer | Comment |
|---|---|---|
| Radioactivity wasn't checked or is </= background as measured by a survey meter. | N/A | |
| The cooler's custody seal, if present, is intact. | N/A | |
| Sample custody seals, if present, are intact. | N/A | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| Is the Field Sampler's name present on COC? | True | |
| There are no discrepancies between the containers received and the COC. | True | |
| Samples are received within Holding Time (excluding tests with immediate HTs) | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| Sample Preservation Verified. | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| Containers requiring zero headspace have no headspace or bubble is <6mm (1/4"). | True | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |
| Residual Chlorine Checked. | N/A | |

# Login Sample Receipt Checklist

Client: Nobis Engineering, Inc.

Job Number: 620-11736-1

**Login Number: 11736**
**List Number: 2**
**Creator: Kolb, Chris M**

**List Source: Eurofins Buffalo**
**List Creation: 05/30/23 02:03 PM**

| Question | Answer | Comment |
|---|---|---|
| Radioactivity either was not measured or, if measured, is at or below background | True | |
| The cooler's custody seal, if present, is intact. | True | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | 2.9 ir gun #1 ice |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| Is the Field Sampler's name present on COC? | True | |
| There are no discrepancies between the sample IDs on the containers and the COC. | True | |
| Samples are received within Holding Time (Excluding tests with immediate HTs).. | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| Sample Preservation Verified | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter. | True | |
| If necessary, staff have been informed of any short hold time or quick TAT needs | True | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |
| Sampling Company provided. | True | |
| Samples received within 48 hours of sampling. | True | |
| Samples requiring field filtration have been filtered in the field. | True | |
| Chlorine Residual checked. | True | |

October 2, 2023
Nobis File No. S00001.05

Ms. Katy Deng
USEPA – Region 1
Land, Chemicals, and Redevelopment Division
5 Post Office Square, Suite 100
Boston, MA 02109-3912

Re: USEPA Contract No. 68HE0122D0001
USEPA Task Order No. 68HE0122F0044
Targeted Brownfields Assessment (TBA)
Former L&M Service Station Site
Lunenburg, Massachusetts
Sample Delivery Group (SDG) No. 620117371
Eurofins New England, North Kingstown, RI

Tier 1 Stage 2A Organic and Inorganic Data Review:

Volatile Petroleum Hydrocarbons (VPH by MassDEP-VPH), Extractable Petroleum Hydrocarbons (EPH by MassDEP-EPH), Massachusetts Contingency Plan (MCP) Metals (MCP-14 Metals by 6020B/7470A)

2/Groundwater Samples: LM-GW-UST01-052523, LM-GW-UST02-052523
1/Aqueous Trip Blank: TB-01-052523

Dear Ms. Deng:

Nobis Group (Nobis), under a USEPA contract as a subcontractor to KGSNE JV, LLC, performed a Tier 1 Stage 2A manual data review (S2AVM) on the organic and inorganic analytical data for the samples listed above. The samples were collected by Nobis at the Former L&M Service Station Site located in Lunenburg, Massachusetts on May 25, 2023. The samples were analyzed for VPHs by MassDEP-VPH, EPHs by MassDEP-EPH, and MCP-14 Metals by EPA Methods 6010D/7470A by Eurofins New England in North Kingstown, RI.

The Tier 1 Stage 2A manual data review was performed in accordance with the Region 1 - EPA New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures (September 2020); USEPA's National Functional Guidelines for Organic Superfund Methods Data Review (November 2020); USEPA's National Functional Guidelines for Inorganic Superfund Methods Data Review (November 2020); the Program Quality Assurance Project Plan (Program QAPP) dated October 2022, and the Quality Assurance Project Plan Addendum (QAPPA) (May 2023) for the Former L&M Service Station Site, which appends the October 2022 Program QAPP.

The data were evaluated based on the following parameters:

* • Overall Evaluation of Data and Potential Usability Issues
* • Data Completeness
* • Preservation and Technical Holding Times
• Blanks
• Surrogates (organic analyses only)



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| | | |
|---|---|---|
| NA | • | Internal Standards |
| * | • | Matrix Spike Analysis |
| * | • | Laboratory Duplicates |
| * | • | Laboratory Control Samples (LCS) |
| NA | • | Field Duplicates |
| * | • | ICP Serial Dilutions (metals only) |
| NA | • | Performance Evaluation (PE) Samples |
| NA | • | Target Analyte Identification |
| * | • | Reported Quantitation Limits |

* All criteria were met for this parameter or did not require qualification.
NA – Not applicable.

**Overall Evaluation of Data and Potential Usability Issues**

The site sampling objectives are:

- Characterize in-situ soil based on AOCs identified by Fuss & O'Neill in November 2020 Phase I for the presence of possible site-related contamination.
- Evaluate groundwater elevation.
- Evaluate presence/absence of groundwater contamination related to site.

The data meet the project quality criteria and can be used without restriction except as summarized below. The attachments provide details and supporting documentation.

**MassDEP-VPH:**
Qualification of the data was not required.

**MassDEP-EPH:**
Results were qualified for surrogate recovery.

**MCP-14 Metals and Mercury:**
Results were qualified for laboratory blank contamination.

Please contact Linda Terzis at lterzis@nobis-group.com should you have any questions or comments regarding this information.

Sincerely,

NOBIS GROUP®

Linda Terzis
Data Validator

Gary Glennon
Data Validator

Tables: Data Summary Tables – Tier 1 Stage 2A (S2AVM) Validated Data
Data Qualification Actions Table

Attachments: Data Review Checklist
Support Documentation
COC

cc: Denis McGrath (Nobis Group)
Adam Roy (Nobis Group)

# DATA SUMMARY TABLE

| **Analysis** | | EPH in Groundwater | |
|---|---|---|---|
| **Lab Sample ID** | | 620-11737-1 | 620-11737-2 |
| **Field Sample ID** | | LM-GW-UST01-052523 | LM-GW-UST02-052523 |
| **Sample Type** | | N | N |
| **Parent Sample ID** | | | |
| **Sample Date** | **Units** | 05/25/23 | 05/25/23 |
| 2-Methylnaphthalene | ug/L | 46 | 5.9 |
| Acenaphthene | ug/L | 1.1 U | 1.1 U |
| Acenaphthylene | ug/L | 1.1 U | 1.1 U |
| Anthracene | ug/L | 1.1 U | 1.1 U |
| Benzo(a)anthracene | ug/L | 0.15 J | 1.1 U |
| Benzo(a)pyrene | ug/L | 0.17 J | 0.22 U |
| Benzo(b)fluoranthene | ug/L | 0.19 J | 1.1 U |
| Benzo(g,h,i)perylene | ug/L | 0.3 J | 1.1 U |
| Benzo(k)fluoranthene | ug/L | 1.1 U | 1.1 U |
| C11-C22 Aromatics | ug/L | 290 | 110 U |
| C11-C22 Aromatics (adjusted) | ug/L | 180 | 110 U |
| C19-C36 Aliphatics | ug/L | 110 J- | 110 U |
| C9-C18 Aliphatics | ug/L | 230 J- | 110 U |
| Chrysene | ug/L | 0.19 J | 1.1 U |
| Dibenz(a,h)anthracene | ug/L | 0.53 U | 0.56 U |
| Fluoranthene | ug/L | 0.27 J | 1.1 U |
| Fluorene | ug/L | 1.1 U | 1.1 U |
| Indeno(1,2,3-cd)pyrene | ug/L | 0.53 U | 0.56 U |
| Naphthalene | ug/L | 60 | 17 |
| Phenanthrene | ug/L | 1.1 U | 1.1 U |
| Pyrene | ug/L | 0.23 J | 1.1 U |

# DATA SUMMARY TABLE

| **Analysis** | | Dissolved Metals in Groundwater | |
|---|---|---|---|
| **Lab Sample ID** | | 620-11737-1 | 620-11737-2 |
| **Field Sample ID** | | LM-GW-UST01-052523 | LM-GW-UST02-052523 |
| **Sample Type** | | N | N |
| **Parent Sample ID** | | | |
| **Sample Date** | **Units** | 05/25/23 | 05/25/23 |
| Antimony | mg/L | 0.0051 J | 0.0039 J |
| Arsenic | mg/L | 0.032 | 0.011 |
| Barium | mg/L | 0.056 | 0.049 |
| Beryllium | mg/L | 0.002 U | 0.002 U |
| Cadmium | mg/L | 0.0025 U | 0.00045 J |
| Chromium | mg/L | 0.005 U | 0.005 U |
| Lead | mg/L | 0.013 | 0.0085 |
| Mercury | mg/L | 0.0002 U | 0.0002 U |
| Nickel | mg/L | 0.011 | 0.01 |
| Selenium | mg/L | 0.015 U | 0.015 U |
| Silver | mg/L | 0.005 U | 0.005 U |
| Thallium | mg/L | 0.0022 J | 0.005 U |
| Vanadium | mg/L | 0.0037 J | 0.0022 J |
| Zinc | mg/L | 0.033 J+ | 0.042 J+ |

## DATA SUMMARY TABLE

| **Analysis** | | VPH in Groundwater | |
|---|---|---|---|
| **Lab Sample ID** | | 620-11737-1 | 620-11737-2 |
| **Field Sample ID** | | LM-GW-UST01-052523 | LM-GW-UST02-052523 |
| **Sample Type** | | N | N |
| **Parent Sample ID** | | | |
| **Sample Date** | **Units** | 05/25/23 | 05/25/23 |
| Benzene | ug/L | 13 | 76 |
| C5-C8 Aliphatics (adjusted) | ug/L | 1000 U | 2000 U |
| C5-C8 Aliphatics (unadjusted) | ug/L | 1200 | 2800 |
| C9-C10 Aromatics | ug/L | 4400 | 890 |
| C9-C12 Aliphatics (adjusted) | ug/L | 3600 | 2000 U |
| C9-C12 Aliphatics (unadjusted) | ug/L | 9100 | 3900 |
| Ethylbenzene | ug/L | 120 | 170 |
| m,p-Xylene | ug/L | 720 | 570 |
| Methyl tert-butyl ether | ug/L | 810 | 2300 |
| Naphthalene | ug/L | 120 | 62 |
| o-Xylene | ug/L | 87 | 280 |
| Toluene | ug/L | 170 | 680 |
| Xylene (total) | ug/L | 880 | 850 |

# DATA SUMMARY TABLE

| **Analysis** | | VPH in Water Quality Control Matrix |
|---|---|---|
| **Lab Sample ID** | | 620-11737-3 |
| **Field Sample ID** | | TB-01-052523 |
| **Sample Type** | | TB |
| **Parent Sample ID** | | |
| **Sample Date** | **Units** | 05/25/23 |
| Benzene | ug/L | 5 U |
| C5-C8 Aliphatics (adjusted) | ug/L | 100 U |
| C5-C8 Aliphatics (unadjusted) | ug/L | 100 U |
| C9-C10 Aromatics | ug/L | 100 U |
| C9-C12 Aliphatics (adjusted) | ug/L | 100 U |
| C9-C12 Aliphatics (unadjusted) | ug/L | 100 U |
| Ethylbenzene | ug/L | 5 U |
| m,p-Xylene | ug/L | 10 U |
| Methyl tert-butyl ether | ug/L | 5 U |
| Naphthalene | ug/L | 5 U |
| o-Xylene | ug/L | 5 U |
| Toluene | ug/L | 5 U |
| Xylene (total) | ug/L | 15 U |

**Data Review Qualification Actions**
**Former L&M Service Station**
**SDG 620117371**

| Parameter | Analyte | Samples | Evaluation Criteria | Action Needed | Comments |
|---|---|---|---|---|---|
| **MassDEP-VPH** | | | | | |
| | Qualification of the data was not required. | | | | |
| **MassDEP-EPH** | | | | | |
| | C9-C18 and C19-C36 aliphatics | LM-GW-UST01-052523 | Surrogate recovery | J- | |
| **MCP-14 Metals / Mercury** | | | | | |
| | Chromium | LM-GW-UST01-052523, LM-GW-UST02-052523 | Laboratory blank contamination | RL (U) | |
| | Silver | LM-GW-UST02-052523 | Laboratory blank contamination | RL (U) | |
| | Zinc | LM-GW-UST01-052523, LM-GW-UST02-052523 | Laboratory blank contamination | J+ | |

**Tier 1/Stage 2A Data Review Checklist**

**Project:** Former L&M Service Station, Lunenburg, Massachusetts
Targeted Brownfields Assessment (TBA)
**Project #:** S00001.05
**Case#:** NA
**Date:** 09/08/2023
**Methods:** Volatile Petroleum Hydrocarbons (VPH) (MassDEP-VPH)
Extractable Petroleum Hydrocarbons (EPH) (MassDEP-EPH)
Massachusetts Contingency Plan (MCP) Metals (MCP-14 Metals by 6010D/7470A)

**Laboratory:** Eurofins New England Laboratory, North Kingstown, RI
**SDG:** 620117371
**Reviewer:** Linda Terzis

1. **Case Narrative and Data Package Completeness (COC and Analyte List Review)**
Two (2) groundwater samples and one trip blank sample were listed on the COC for SDG 620117371. The samples were collected on 05/25/2023 and received at the Eurofins New England Laboratory on 05/26/2023 at a maximum temperature of 3.6 °C.

| Sample ID | Laboratory ID | Analyses |
|---|---|---|
| LM-GW-UST01-052523 | 620-11737-1 | MassDEP-VPH, MassDEP-EPH, MCP-14 Metals/Mercury |
| LM-GW-UST02-052523 | 620-11737-2 | |
| TB-01-052523 | 620-11737-3 | MassDEP-VPH |

The data were evaluated using the site-specific Quality Assurance Project Plan Addendum (QAPPA) (dated May 2023) and the Program QAPP (dated October 2022). Both were prepared by KGSNE, LLC. The QAPPA appends and incorporates by reference the procedures and quality control measures detailed in the Program QAPP (October 2022). Therefore, site data for this SDG were evaluated using both the QAPPA of May 2023 and the Program QAPP dated October 2022. The Massachusetts Compendium of Analytical Methods (CAM) and/or SW-846 Methods were used to perform the analyses. Therefore, site data were also evaluated using CAM quality control (QC) limits, where applicable.

The analyte lists reported by the laboratory were compared to the required analyte lists per Table 4 (groundwater) in the QAPPA (May 2023) for the site. Results for all requested analytes were reported and no inconsistencies were noted.

2. **Holding Time and Sample Preservation Compliance**

Receipt temperatures are acceptable (≤ 6°), as specified in the QAPPA (May 2023).

MassDEP-VPH: Holding time criteria (analyzed within 14 days) met.

MassDEP-EPH: Holding time criteria (extracted within 14 days and analyzed within 40 days of extraction) met.

MCP-14 Metals/Mercury: Holding time criteria (analyzed within 28 days for mercury; within 180 days for all other analytes) were met.



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3. **Calibration Issues**

Not assessed for S2AVM data review.

4. **Laboratory and Field Blanks**

MassDEP-VPH: Results for the VPH laboratory method blanks and the trip blank (TB-01-052523) were non-detect. No blank actions are required.

MassDEP-EPH: Results for the EPH laboratory method blanks were non-detect. No blank actions are required.

MCP-14 Metals/Mercury: Barium, chromium, silver, and zinc were detected in the method blank associated with the groundwater samples. Detected concentrations were < reporting limit (RL).

Barium was detected in the groundwater samples at > RL and > 10x the blank level. Based on the NFGs (2020), no action is taken for barium.

Chromium was detected in the groundwater samples at < RL and < 10x the blank concentration. Based on the NFGs (2020), the detected results for chromium and silver are qualified as non-detect at the RL (RL [U]) in both groundwater samples.

Silver was detected in sample LM-GW-UST02-052523 (620-11737-2) at < RL and < 10x the blank concentration. Based on the NFGs (2020), the detected result for silver is qualified as non-detect at the RL (RL [U]) in sample LM-GW-UST02-052523.

Zinc was detected in the groundwater samples at > RL and < 10x the blank concentration. Based on the NFGs (2020), the detected results for zinc are qualified as estimated with a potential high bias (J+) in both groundwater samples.

Results for mercury in the laboratory method blanks were non-detect. No blank actions are required.

An equipment blank was not submitted with the samples of this SDG. No actions are required.

5. **Interference Check Sample (metals only)**

Not assessed for S2AVM data review.

6. **Surrogates**

The Program QAPP (October 2022) was used to evaluate site data for surrogate recovery. If no Program QAPP-specific recovery limits were available for a surrogate, the MCP CAM recovery limits were used.

MassDEP-VPH: Percent surrogate recoveries for the samples were within the Program QAPP limits of 70-130%. No actions are required.

MassDEP-EPH: Percent surrogate recoveries for the samples were within the Program QAPP limits of 40-140% except for the recovery the surrogate 1-chlorooctadecane in sample LM-GW-UST01-052523 (620-11737-1) which was recovered at 34%. As noted in Table IV B-2 of the MCP CAM for the EPH method, 1-chlorooctadecane is associated with C9-C18 and C19-C36 aliphatic

hydrocarbons. C9-C18 and C19-C36 aliphatics were detected in the sample. Professional judgement based on the NFGs (2020) for SVOCs was used to qualify the detected results for C9-C18 and C19-C36 aliphatic hydrocarbons as estimated with a potential low bias (J-) in sample LM-GW-UST01-052523 (620-11737-1) due to low surrogate recovery.

MCP-14 Metals/Mercury: Not applicable for this analysis.

**7. Laboratory Control Samples**

MassDEP-VPH: The percent recoveries in the VPH LCS/LCSD pairs met the Program QAPP recovery limits of 70-130% and RPDs ≤ 25%. No actions are required.

MassDEP-EPH: The percent recoveries in the EPH LCS/LCSD pairs met the Program QAPP recovery limits of 40-140% and RPDs ≤ 25%. No actions are required.

MCP-14 Metals/Mercury: Percent recoveries and RPDs for all metals and mercury LCS/LCSD analyses were within the QAPP limits of 80-120% and ≤ 20%, respectively. No actions are required.

**8. Matrix Spikes**

Based on the Region I EPA New England Environmental Data Review Supplement (Region I Supplement, 2020), MS/MSD qualifications are applied to all field samples with similar matrix, unless otherwise noted.

MassDEP-VPH: MS/MSD analyses were not performed for the VPH analysis. No actions are required.

MassDEP-EPH: MS/MSD analyses were not performed for the EPH analysis. No actions are required.

MCP-14 Metals/Mercury: MS/MSD analyses for MCP-14 metals and mercury were performed on sample LM-GW-UST01-052523 (620-11737-1). Recoveries and RPDs met the Program QAPP limits of 75-125% recovery and ≤ 20% RPD. No actions are required.

**9. Laboratory Duplicates (metals only)**

MCP-14 Metals/Mercury: Laboratory duplicate analysis was performed on sample LM-GW-UST01-052523 (620-11737-1). The QAPP duplicate criterion (≤ 20% RPD) was met for all detected analytes. Mercury results were non-detect for both the sample and duplicate analyses. Laboratory duplicate precision is acceptable and no actions are required.

**10. Serial Dilution (metals only)**

MCP-14 Metals/Mercury: A serial dilution analysis was not performed for this SDG. The Massachusetts CAM requires a serial dilution analysis on samples used for MS/MSD analyses where analytes are detected at > 50x RL. MS/MSD analyses were performed on sample LM-GW-UST01-052523 (620-11737-1). Detected analyte results were < 50x RL in this sample and no actions are required.

11. **Field Duplicate Precision**

    Acceptable field duplicate precision is an RPD of ≤ 30% for results > 5x RL and an absolute difference < 2x RL for results < 5x RL, based on the EPA Region I Supplement (2020).

    Based on the Region I Supplement (2020), qualifications are applied to all field samples with similar matrix, unless otherwise indicated.

    A field duplicate pair was not submitted with the samples of this SDG. No actions are required.

12. **Internal Standards**

    Not assessed for S2AVM data review.

13. **Dual Column Precision (PCBs only)**

    Not applicable for this SDG.

14. **Performance Evaluation Samples**

    Performance Evaluation (PE) samples were not included in this SDG.

15. **Reporting Limits**

    RLs for non-detect results for VPH, EPH, and metals/mercury analyses met the project action levels (PALs) for the site.

16. **Other**

    EPA Region I Supplement (2020) criterion for percent solids content (> 30%) not applicable for groundwater samples.

    Overall bias is considered indeterminate when cumulative nonconformances do not show a consistent bias or in cases of the presence of conflicting high and low biases.

11737

620-11737 Chain of Custody

# Chain of Custody Record

eurofins | Environment Testing

| | | | | |
|---|---|---|---|---|
| Client Contact: Bridget Fortier | Sampler: S. Stone | Lab PM: A. Ray | Carrier Tracking No(s): | COC No: 620-10175-1337 2 |
| Company: Nobis Engineering, Inc | Phone: 774-245-3612 | E-Mail: araya@nobis-group.com | State of Origin: | Page: Page 2 of 2 |
| Address: 585 Middlesex Street | PWSID: | | | Job #: |
| City: Lowell | Due Date Requested: | | | |
| State, Zip: MA, 01851 | TAT Requested (days): standard 10 day | | | |
| Phone: | Compliance Project: Δ Yes Δ No | | | |
| Email: bfortier@nobis-group.com | PO #: | | | |
| Project Name: Former L&M | WO #: | | | |
| Site: | Project #: 50000101.005/400 | | | |
| | SSOW#: | | | |

**Analysis Requested**

**Preservation Codes:**

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)

Other:

| Sample Identification | Sample Date | Sample Time | Sample Type (C=comp, G=grab) | Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air) | Field Filtered Sample (Yes or No) | Perform MS/MSD (Yes or No) | VOC | GDH, ~~Metals~~ | Metals (Filtered) | Trip Blank | Total Number of containers | Special Instructions/Note: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preservation Code: | | X | X | A | A | D | A | X | |
| LM-GW-UST01-0525-23 | 5-25-23 | 1130 | G | Water | ✓ | X | X | X | | | | |
| LM-GW-UST02-0525-23 | 5-25-23 | 1710 | G | Water | ✓ | X | X | X | | | | |
| TB-01-052523 | 5-25-23 | 1600 | G | Water | | | | | | X | | |
| | | | | Water | | | | | | | | |
| | | | | Water | | | | | | | | |
| | | | | Water | | | | | | | | |
| | | | | Water | | | | | | | | |
| | | | | Water | | | | | | | | |
| | | | | Water | | | | | | | | |
| | | | | Water | | | | | | | | |
| | | | | Water | | | | | | | | |

Page 32 of 33

***Possible Hazard Identification***

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

***Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)***

☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested I, II, III, IV, Other (specify): EDD report PDF email

Special Instructions/QC Requirements: MADEP CAM methods required

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Empty Kit Relinquished by: | | Date: | | Time: | | Method of Shipment: | |
| Relinquished by: | | Date/Time: 5-26-23 1135 | Company | Received by: | | Date/Time: 5/26/23 1135 | Company |
| Relinquished by: | | Date/Time: 5/26/23 16:59 | Company | Received by: | | Date/Time: 5/26/23 16:59 | Company: CHC |
| Relinquished by: | | Date/Time | Company | Received by: | | Date/Time | Company |

Custody Seals Intact: Δ Yes Δ No | Custody Seal No :

Cooler Temperature(s) °C and Other Remarks: 3.4 to 3.6 #6

6/5/2023

Ver: 06/08/2021

# ANALYTICAL REPORT

## PREPARED FOR

Attn: Adam Roy
Nobis Engineering, Inc.
585 Middlesex Street
Lowell, Massachusetts 01851

Generated 6/5/2023 11:45:28 PM

## JOB DESCRIPTION

Former L&M - Lunenburg MA

## JOB NUMBER

620-11737-1

Eurofins New England
646 Camp Ave
North Kingstown RI 02852

See page two for job notes and contact information.



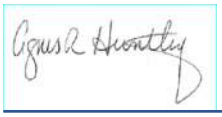
my EOL

## Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northeast, LLC Project Manager.

## Authorization



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Authorized for release by
Agnes Huntley, Project Manager
Agnes.Huntley@et.eurofinsus.com
(401)372-3482

# Table of Contents

Cover Page . . . . . 1
Table of Contents . . . . . 3
Definitions/Glossary . . . . . 4
State Forms . . . . . 5
MCP Checklist . . . . . 5
Case Narrative . . . . . 6
Detection Summary . . . . . 7
Client Sample Results . . . . . 9
Surrogate Summary . . . . . 14
QC Sample Results . . . . . 15
QC Association Summary . . . . . 24
Lab Chronicle . . . . . 27
Certification Summary . . . . . 28
Method Summary . . . . . 30
Sample Summary . . . . . 31
Chain of Custody . . . . . 32
Receipt Checklists . . . . . 33

# Definitions/Glossary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11737-1

## Qualifiers

### GC/MS Semi VOA

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

### GC Semi VOA

| Qualifier | Qualifier Description |
|---|---|
| S1- | Surrogate recovery exceeds control limits, low biased. |

### Metals

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

## Glossary

| Abbreviation | These commonly used abbreviations may or may not be present in this report. |
|---|---|
| ¤ | Listed under the "D" column to designate that the result is reported on a dry weight basis |
| %R | Percent Recovery |
| CFL | Contains Free Liquid |
| CFU | Colony Forming Unit |
| CNF | Contains No Free Liquid |
| DER | Duplicate Error Ratio (normalized absolute difference) |
| Dil Fac | Dilution Factor |
| DL | Detection Limit (DoD/DOE) |
| DL, RA, RE, IN | Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample |
| DLC | Decision Level Concentration (Radiochemistry) |
| EDL | Estimated Detection Limit (Dioxin) |
| LOD | Limit of Detection (DoD/DOE) |
| LOQ | Limit of Quantitation (DoD/DOE) |
| MCL | EPA recommended "Maximum Contaminant Level" |
| MDA | Minimum Detectable Activity (Radiochemistry) |
| MDC | Minimum Detectable Concentration (Radiochemistry) |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| MPN | Most Probable Number |
| MQL | Method Quantitation Limit |
| NC | Not Calculated |
| ND | Not Detected at the reporting limit (or MDL or EDL if shown) |
| NEG | Negative / Absent |
| POS | Positive / Present |
| PQL | Practical Quantitation Limit |
| PRES | Presumptive |
| QC | Quality Control |
| RER | Relative Error Ratio (Radiochemistry) |
| RL | Reporting Limit or Requested Limit (Radiochemistry) |
| RPD | Relative Percent Difference, a measure of the relative difference between two points |
| TEF | Toxicity Equivalent Factor (Dioxin) |
| TEQ | Toxicity Equivalent Quotient (Dioxin) |
| TNTC | Too Numerous To Count |

# MassDEP Analytical Protocol Certfication Form

Laboratory Name: Eurofins New England | Project #: 620-11737-1

Project Location: Former L&M - Lunenburg MA | RTN:

**This Form provides certifications for the following data set: list Laboratory Sample ID Number(s):**
620-11737-1 through 620-11737-3

Matrices: ☑ Groundwater/Surface Water ☐ Soil/Sediment ☐ Drinking Water ☐ Air ☐ Other:

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

| | | | | | |
|---|---|---|---|---|---|
| 8260 VOC CAM II A ☐ | 7470/7471 Hg CAM III B ☑ | MassDEP VPH (GC/PID/FID) CAM IV A ☑ | 8082 PCB CAM V A ☐ | 9014 Total Cyanide/PAC CAM VI A ☐ | 6860 Perchlorate CAM VIII B ☐ |
| 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 ☐ |
| 6010 Metals CAM III A ☑ | 6020 Metals CAM III D ☐ | MassDEP EPH CAM IV B ☑ | 8151 Herbicides CAM V C ☐ | 8330 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 ☐ No |
| **B** | Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed? | ☑ Yes ☐ 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 ☐ No |
| **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 ☐ No |
| **E** | VPH, EPH, APH, and TO-15 only<br>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).<br>b. APH and TO-15 Methods only: Was the complete analyte list reported for each method? | ☑ Yes ☐ No<br>☐ 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 ☐ 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 protocol(s)? | ☐ Yes ☑ No[1] |

***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[1] |
| **I** | Were results reported for the complete analyte list specified in the selected CAM protocol(s)? | ☑ Yes ☐ No[1] |

*1 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, is accurate and complete.***

**Signature:** Agnes R Huntley **Position:** Project Manager

**Printed Name:** Agnes Huntley **Date:** 06/05/2023

## Job ID: 620-11737-1

### Laboratory: Eurofins New England

**Narrative**

**Job Narrative**
**620-11737-1**

**Receipt**
The samples were received on 5/26/2023 4:59 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.6º C.

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

**GC/MS Semi VOA**
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

**GC VOA**
Method MAVPH2.1: The following sample was diluted due to the nature of the sample matrix: LM-GW-UST02-0525-23 (620-11737-2). Elevated reporting limits (RLs) are provided.

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

**GC Semi VOA**
Method MAEPH2.1: Surrogate recovery for the following sample was outside control limits: LM-GW-UST01-0525-23 (620-11737-1). Evidence of matrix interference is present in the extraction process; therefore, re-extraction and/or re-analysis was not performed.

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

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

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

# Detection Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11737-1

## Client Sample ID: LM-GW-UST01-0525-23 — Lab Sample ID: 620-11737-1

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | 60 | | 5.3 | 1.2 | ug/L | 5 | | EPH | Total/NA |
| 2-Methylnaphthalene | 46 | | 1.1 | 0.31 | ug/L | 1 | | EPH | Total/NA |
| Fluoranthene | 0.27 | J | 1.1 | 0.16 | ug/L | 1 | | EPH | Total/NA |
| Pyrene | 0.23 | J | 1.1 | 0.15 | ug/L | 1 | | EPH | Total/NA |
| Benzo[a]anthracene | 0.15 | J | 1.1 | 0.074 | ug/L | 1 | | EPH | Total/NA |
| Chrysene | 0.19 | J | 1.1 | 0.15 | ug/L | 1 | | EPH | Total/NA |
| Benzo[b]fluoranthene | 0.19 | J | 1.1 | 0.16 | ug/L | 1 | | EPH | Total/NA |
| Benzo[a]pyrene | 0.17 | J | 0.21 | 0.17 | ug/L | 1 | | EPH | Total/NA |
| Benzo[g,h,i]perylene | 0.30 | J | 1.1 | 0.18 | ug/L | 1 | | EPH | Total/NA |
| Benzene | 13 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Ethylbenzene | 120 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Naphthalene | 120 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Toluene | 170 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| o-Xylene | 87 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (adjusted) - DL | 3600 | | 1000 | 1000 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| C9-C10 Aromatics - DL | 4400 | | 1000 | 1000 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| C5-C8 Aliphatics (unadjusted) - DL | 1200 | | 1000 | 1000 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (unadjusted) - DL | 9100 | | 1000 | 1000 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| Methyl tert-butyl ether - DL | 810 | | 50 | 50 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| m,p-Xylene - DL | 720 | | 100 | 100 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| Xylenes, Total - DL | 880 | | 150 | 150 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| C9-C18 Aliphatics | 230 | | 110 | 110 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| C19-C36 Aliphatics | 110 | | 110 | 110 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics | 290 | | 110 | 110 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics (Adjusted) | 180 | | 110 | 110 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| Antimony | 0.0051 | J | 0.0060 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |
| Arsenic | 0.032 | | 0.0040 | 0.0014 | mg/L | 1 | | 6010D | Dissolved |
| Barium | 0.056 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Chromium | 0.0043 | | 0.0050 | 0.00093 | mg/L | 1 | | 6010D | Dissolved |
| Lead | 0.013 | | 0.0075 | 0.0062 | mg/L | 1 | | 6010D | Dissolved |
| Nickel | 0.011 | | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |
| Thallium | 0.0022 | J | 0.0050 | 0.0021 | mg/L | 1 | | 6010D | Dissolved |
| Vanadium | 0.0037 | J | 0.0050 | 0.0011 | mg/L | 1 | | 6010D | Dissolved |
| Zinc | 0.033 | | 0.025 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |

## Client Sample ID: LM-GW-UST02-0525-23 — Lab Sample ID: 620-11737-2

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | 17 | | 1.1 | 0.26 | ug/L | 1 | | EPH | Total/NA |
| 2-Methylnaphthalene | 5.9 | | 1.1 | 0.32 | ug/L | 1 | | EPH | Total/NA |
| C9-C10 Aromatics | 890 | | 500 | 500 | ug/L | 5 | | MAVPH2.1 | Total/NA |
| Benzene | 76 | | 25 | 25 | ug/L | 5 | | MAVPH2.1 | Total/NA |
| Ethylbenzene | 170 | | 25 | 25 | ug/L | 5 | | MAVPH2.1 | Total/NA |
| Naphthalene | 62 | | 25 | 25 | ug/L | 5 | | MAVPH2.1 | Total/NA |
| Toluene | 680 | | 25 | 25 | ug/L | 5 | | MAVPH2.1 | Total/NA |
| m,p-Xylene | 570 | | 50 | 50 | ug/L | 5 | | MAVPH2.1 | Total/NA |
| o-Xylene | 280 | | 25 | 25 | ug/L | 5 | | MAVPH2.1 | Total/NA |
| Xylenes, Total | 850 | | 75 | 75 | ug/L | 5 | | MAVPH2.1 | Total/NA |
| C5-C8 Aliphatics (unadjusted) - DL | 2800 | | 2000 | 2000 | ug/L | 20 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (unadjusted) - DL | 3900 | | 2000 | 2000 | ug/L | 20 | | MAVPH2.1 | Total/NA |
| Methyl tert-butyl ether - DL | 2300 | | 100 | 100 | ug/L | 20 | | MAVPH2.1 | Total/NA |

This Detection Summary does not include radiochemical test results.

# Detection Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11737-1

## Client Sample ID: LM-GW-UST02-0525-23 (Continued)

## Lab Sample ID: 620-11737-2

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.0039 | J | 0.0060 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |
| Arsenic | 0.011 | | 0.0040 | 0.0014 | mg/L | 1 | | 6010D | Dissolved |
| Barium | 0.049 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Cadmium | 0.00045 | J | 0.0025 | 0.00036 | mg/L | 1 | | 6010D | Dissolved |
| Chromium | 0.0027 | | 0.0050 | 0.00093 | mg/L | 1 | | 6010D | Dissolved |
| Lead | 0.0085 | | 0.0075 | 0.0062 | mg/L | 1 | | 6010D | Dissolved |
| Nickel | 0.010 | | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |
| Silver | 0.00080 | | 0.0050 | 0.00062 | mg/L | 1 | | 6010D | Dissolved |
| Vanadium | 0.0022 | J | 0.0050 | 0.0011 | mg/L | 1 | | 6010D | Dissolved |
| Zinc | 0.042 | | 0.025 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |

## Client Sample ID: TB-01-052523

## Lab Sample ID: 620-11737-3

No Detections.

This Detection Summary does not include radiochemical test results.

## Client Sample ID: LM-GW-UST01-0525-23

**Date Collected: 05/25/23 11:30**
**Date Received: 05/26/23 16:59**

**Lab Sample ID: 620-11737-1**
**Matrix: Water**

### Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Naphthalene** | **60** | | 5.3 | 1.2 | ug/L | | 05/30/23 14:16 | 06/05/23 14:25 | 5 |
| **2-Methylnaphthalene** | **46** | | 1.1 | 0.31 | ug/L | | 05/30/23 14:16 | 06/05/23 13:40 | 1 |
| Acenaphthylene | ND | | 1.1 | 0.41 | ug/L | | 05/30/23 14:16 | 06/05/23 13:40 | 1 |
| Acenaphthene | ND | | 1.1 | 0.20 | ug/L | | 05/30/23 14:16 | 06/05/23 13:40 | 1 |
| Fluorene | ND | | 1.1 | 0.41 | ug/L | | 05/30/23 14:16 | 06/05/23 13:40 | 1 |
| Phenanthrene | ND | | 1.1 | 0.18 | ug/L | | 05/30/23 14:16 | 06/05/23 13:40 | 1 |
| Anthracene | ND | | 1.1 | 0.16 | ug/L | | 05/30/23 14:16 | 06/05/23 13:40 | 1 |
| **Fluoranthene** | **0.27** | **J** | 1.1 | 0.16 | ug/L | | 05/30/23 14:16 | 06/05/23 13:40 | 1 |
| **Pyrene** | **0.23** | **J** | 1.1 | 0.15 | ug/L | | 05/30/23 14:16 | 06/05/23 13:40 | 1 |
| **Benzo[a]anthracene** | **0.15** | **J** | 1.1 | 0.074 | ug/L | | 05/30/23 14:16 | 06/05/23 13:40 | 1 |
| **Chrysene** | **0.19** | **J** | 1.1 | 0.15 | ug/L | | 05/30/23 14:16 | 06/05/23 13:40 | 1 |
| **Benzo[b]fluoranthene** | **0.19** | **J** | 1.1 | 0.16 | ug/L | | 05/30/23 14:16 | 06/05/23 13:40 | 1 |
| Benzo[k]fluoranthene | ND | | 1.1 | 0.25 | ug/L | | 05/30/23 14:16 | 06/05/23 13:40 | 1 |
| **Benzo[a]pyrene** | **0.17** | **J** | 0.21 | 0.17 | ug/L | | 05/30/23 14:16 | 06/05/23 13:40 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.53 | 0.49 | ug/L | | 05/30/23 14:16 | 06/05/23 13:40 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.53 | 0.23 | ug/L | | 05/30/23 14:16 | 06/05/23 13:40 | 1 |
| **Benzo[g,h,i]perylene** | **0.30** | **J** | 1.1 | 0.18 | ug/L | | 05/30/23 14:16 | 06/05/23 13:40 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *62* | | *40 - 140* | *05/30/23 14:16* | *06/05/23 13:40* | *1* |
| *o-Terphenyl (Surr)* | *48* | | *40 - 140* | *05/30/23 14:16* | *06/05/23 14:25* | *5* |
| *2-Fluorobiphenyl (Surr)* | *106* | | *40 - 140* | *05/30/23 14:16* | *06/05/23 13:40* | *1* |
| *2-Fluorobiphenyl (Surr)* | *76* | | *40 - 140* | *05/30/23 14:16* | *06/05/23 14:25* | *5* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Benzene** | **13** | | 5.0 | 5.0 | ug/L | | | 05/30/23 23:26 | 1 |
| **Ethylbenzene** | **120** | | 5.0 | 5.0 | ug/L | | | 05/30/23 23:26 | 1 |
| **Naphthalene** | **120** | | 5.0 | 5.0 | ug/L | | | 05/30/23 23:26 | 1 |
| **Toluene** | **170** | | 5.0 | 5.0 | ug/L | | | 05/30/23 23:26 | 1 |
| **o-Xylene** | **87** | | 5.0 | 5.0 | ug/L | | | 05/30/23 23:26 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *114* | | *70 - 130* | | *05/30/23 23:26* | *1* |
| *2,5-Dibromotoluene (pid)* | *109* | | *70 - 130* | | *05/30/23 23:26* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) - DL

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 1000 | 1000 | ug/L | | | 05/31/23 16:57 | 10 |
| **C9-C12 Aliphatics (adjusted)** | **3600** | | 1000 | 1000 | ug/L | | | 05/31/23 16:57 | 10 |
| **C9-C10 Aromatics** | **4400** | | 1000 | 1000 | ug/L | | | 05/31/23 16:57 | 10 |
| **C5-C8 Aliphatics (unadjusted)** | **1200** | | 1000 | 1000 | ug/L | | | 05/31/23 16:57 | 10 |
| **C9-C12 Aliphatics (unadjusted)** | **9100** | | 1000 | 1000 | ug/L | | | 05/31/23 16:57 | 10 |
| **Methyl tert-butyl ether** | **810** | | 50 | 50 | ug/L | | | 05/31/23 16:57 | 10 |
| **m,p-Xylene** | **720** | | 100 | 100 | ug/L | | | 05/31/23 16:57 | 10 |
| **Xylenes, Total** | **880** | | 150 | 150 | ug/L | | | 05/31/23 16:57 | 10 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *99* | | *70 - 130* | | *05/31/23 16:57* | *10* |
| *2,5-Dibromotoluene (pid)* | *95* | | *70 - 130* | | *05/31/23 16:57* | *10* |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11737-1

## Client Sample ID: LM-GW-UST01-0525-23

**Lab Sample ID: 620-11737-1**

**Date Collected: 05/25/23 11:30**

**Matrix: Water**

**Date Received: 05/26/23 16:59**

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | 230 | | 110 | 110 | ug/L | | 05/30/23 14:16 | 06/01/23 14:42 | 1 |
| C19-C36 Aliphatics | 110 | | 110 | 110 | ug/L | | 05/30/23 14:16 | 06/01/23 14:42 | 1 |
| C11-C22 Aromatics | 290 | | 110 | 110 | ug/L | | 05/30/23 14:16 | 06/01/23 14:42 | 1 |
| C11-C22 Aromatics (Adjusted) | 180 | | 110 | 110 | ug/L | | 05/30/23 14:16 | 06/01/23 14:42 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *34* | *S1-* | *40 - 140* | *05/30/23 14:16* | *06/01/23 14:42* | *1* |
| *o-Terphenyl (Surr)* | *50* | | *40 - 140* | *05/30/23 14:16* | *06/01/23 14:42* | *1* |
| *2-Fluorobiphenyl (Surr)* | *83* | | *40 - 140* | *05/30/23 14:16* | *06/01/23 14:42* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.0051 | J | 0.0060 | 0.0016 | mg/L | | 05/30/23 09:06 | 05/31/23 14:29 | 1 |
| Arsenic | 0.032 | | 0.0040 | 0.0014 | mg/L | | 05/30/23 09:06 | 05/31/23 14:29 | 1 |
| Barium | 0.056 | | 0.0050 | 0.00070 | mg/L | | 05/30/23 09:06 | 05/31/23 14:29 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 05/30/23 09:06 | 05/31/23 14:29 | 1 |
| Cadmium | ND | | 0.0025 | 0.00036 | mg/L | | 05/30/23 09:06 | 05/31/23 14:29 | 1 |
| Chromium | 0.0043 | | 0.0050 | 0.00093 | mg/L | | 05/30/23 09:06 | 05/31/23 14:29 | 1 |
| Lead | 0.013 | | 0.0075 | 0.0062 | mg/L | | 05/30/23 09:06 | 05/31/23 14:29 | 1 |
| Nickel | 0.011 | | 0.0050 | 0.00087 | mg/L | | 05/30/23 09:06 | 05/31/23 14:29 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 05/30/23 09:06 | 05/31/23 14:29 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 05/30/23 09:06 | 05/31/23 14:29 | 1 |
| Thallium | 0.0022 | J | 0.0050 | 0.0021 | mg/L | | 05/30/23 09:06 | 05/31/23 14:29 | 1 |
| Vanadium | 0.0037 | J | 0.0050 | 0.0011 | mg/L | | 05/30/23 09:06 | 05/31/23 14:29 | 1 |
| Zinc | 0.033 | | 0.025 | 0.0016 | mg/L | | 05/30/23 09:06 | 05/31/23 14:29 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 05/30/23 10:37 | 06/02/23 13:26 | 1 |

## Client Sample ID: LM-GW-UST02-0525-23

**Date Collected: 05/25/23 17:10**
**Date Received: 05/26/23 16:59**

## Lab Sample ID: 620-11737-2

**Matrix: Water**

### Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Naphthalene** | **17** | | 1.1 | 0.26 | ug/L | | 05/30/23 14:16 | 06/05/23 14:02 | 1 |
| **2-Methylnaphthalene** | **5.9** | | 1.1 | 0.32 | ug/L | | 05/30/23 14:16 | 06/05/23 14:02 | 1 |
| Acenaphthylene | ND | | 1.1 | 0.43 | ug/L | | 05/30/23 14:16 | 06/05/23 14:02 | 1 |
| Acenaphthene | ND | | 1.1 | 0.21 | ug/L | | 05/30/23 14:16 | 06/05/23 14:02 | 1 |
| Fluorene | ND | | 1.1 | 0.43 | ug/L | | 05/30/23 14:16 | 06/05/23 14:02 | 1 |
| Phenanthrene | ND | | 1.1 | 0.19 | ug/L | | 05/30/23 14:16 | 06/05/23 14:02 | 1 |
| Anthracene | ND | | 1.1 | 0.17 | ug/L | | 05/30/23 14:16 | 06/05/23 14:02 | 1 |
| Fluoranthene | ND | | 1.1 | 0.17 | ug/L | | 05/30/23 14:16 | 06/05/23 14:02 | 1 |
| Pyrene | ND | | 1.1 | 0.16 | ug/L | | 05/30/23 14:16 | 06/05/23 14:02 | 1 |
| Benzo[a]anthracene | ND | | 1.1 | 0.078 | ug/L | | 05/30/23 14:16 | 06/05/23 14:02 | 1 |
| Chrysene | ND | | 1.1 | 0.16 | ug/L | | 05/30/23 14:16 | 06/05/23 14:02 | 1 |
| Benzo[b]fluoranthene | ND | | 1.1 | 0.17 | ug/L | | 05/30/23 14:16 | 06/05/23 14:02 | 1 |
| Benzo[k]fluoranthene | ND | | 1.1 | 0.26 | ug/L | | 05/30/23 14:16 | 06/05/23 14:02 | 1 |
| Benzo[a]pyrene | ND | | 0.22 | 0.18 | ug/L | | 05/30/23 14:16 | 06/05/23 14:02 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.56 | 0.51 | ug/L | | 05/30/23 14:16 | 06/05/23 14:02 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.56 | 0.24 | ug/L | | 05/30/23 14:16 | 06/05/23 14:02 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.1 | 0.19 | ug/L | | 05/30/23 14:16 | 06/05/23 14:02 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *67* | | *40 - 140* | *05/30/23 14:16* | *06/05/23 14:02* | *1* |
| *2-Fluorobiphenyl (Surr)* | *101* | | *40 - 140* | *05/30/23 14:16* | *06/05/23 14:02* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C9-C10 Aromatics** | **890** | | 500 | 500 | ug/L | | | 05/31/23 01:11 | 5 |
| **Benzene** | **76** | | 25 | 25 | ug/L | | | 05/31/23 01:11 | 5 |
| **Ethylbenzene** | **170** | | 25 | 25 | ug/L | | | 05/31/23 01:11 | 5 |
| **Naphthalene** | **62** | | 25 | 25 | ug/L | | | 05/31/23 01:11 | 5 |
| **Toluene** | **680** | | 25 | 25 | ug/L | | | 05/31/23 01:11 | 5 |
| **m,p-Xylene** | **570** | | 50 | 50 | ug/L | | | 05/31/23 01:11 | 5 |
| **o-Xylene** | **280** | | 25 | 25 | ug/L | | | 05/31/23 01:11 | 5 |
| **Xylenes, Total** | **850** | | 75 | 75 | ug/L | | | 05/31/23 01:11 | 5 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *97* | | *70 - 130* | | *05/31/23 01:11* | *5* |
| *2,5-Dibromotoluene (pid)* | *93* | | *70 - 130* | | *05/31/23 01:11* | *5* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) - DL

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 2000 | 2000 | ug/L | | | 05/31/23 16:22 | 20 |
| C9-C12 Aliphatics (adjusted) | ND | | 2000 | 2000 | ug/L | | | 05/31/23 16:22 | 20 |
| **C5-C8 Aliphatics (unadjusted)** | **2800** | | 2000 | 2000 | ug/L | | | 05/31/23 16:22 | 20 |
| **C9-C12 Aliphatics (unadjusted)** | **3900** | | 2000 | 2000 | ug/L | | | 05/31/23 16:22 | 20 |
| **Methyl tert-butyl ether** | **2300** | | 100 | 100 | ug/L | | | 05/31/23 16:22 | 20 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *95* | | *70 - 130* | | *05/31/23 16:22* | *20* |
| *2,5-Dibromotoluene (pid)* | *95* | | *70 - 130* | | *05/31/23 16:22* | *20* |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11737-1

## Client Sample ID: LM-GW-UST02-0525-23

**Lab Sample ID: 620-11737-2**

**Date Collected: 05/25/23 17:10**

**Matrix: Water**

**Date Received: 05/26/23 16:59**

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 110 | 110 | ug/L | | 05/30/23 14:16 | 06/01/23 15:11 | 1 |
| C19-C36 Aliphatics | ND | | 110 | 110 | ug/L | | 05/30/23 14:16 | 06/01/23 15:11 | 1 |
| C11-C22 Aromatics | ND | | 110 | 110 | ug/L | | 05/30/23 14:16 | 06/01/23 15:11 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 110 | 110 | ug/L | | 05/30/23 14:16 | 06/01/23 15:11 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *48* | | *40 - 140* | *05/30/23 14:16* | *06/01/23 15:11* | *1* |
| *o-Terphenyl (Surr)* | *56* | | *40 - 140* | *05/30/23 14:16* | *06/01/23 15:11* | *1* |
| *2-Fluorobiphenyl (Surr)* | *94* | | *40 - 140* | *05/30/23 14:16* | *06/01/23 15:11* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Antimony** | **0.0039** | **J** | 0.0060 | 0.0016 | mg/L | | 05/30/23 09:06 | 05/31/23 15:17 | 1 |
| **Arsenic** | **0.011** | | 0.0040 | 0.0014 | mg/L | | 05/30/23 09:06 | 05/31/23 15:17 | 1 |
| **Barium** | **0.049** | | 0.0050 | 0.00070 | mg/L | | 05/30/23 09:06 | 05/31/23 15:17 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 05/30/23 09:06 | 05/31/23 15:17 | 1 |
| **Cadmium** | **0.00045** | **J** | 0.0025 | 0.00036 | mg/L | | 05/30/23 09:06 | 05/31/23 15:17 | 1 |
| **Chromium** | **0.0027** | | 0.0050 | 0.00093 | mg/L | | 05/30/23 09:06 | 05/31/23 15:17 | 1 |
| **Lead** | **0.0085** | | 0.0075 | 0.0062 | mg/L | | 05/30/23 09:06 | 05/31/23 15:17 | 1 |
| **Nickel** | **0.010** | | 0.0050 | 0.00087 | mg/L | | 05/30/23 09:06 | 05/31/23 15:17 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 05/30/23 09:06 | 05/31/23 15:17 | 1 |
| **Silver** | **0.00080** | | 0.0050 | 0.00062 | mg/L | | 05/30/23 09:06 | 05/31/23 15:17 | 1 |
| Thallium | ND | | 0.0050 | 0.0021 | mg/L | | 05/30/23 09:06 | 05/31/23 15:17 | 1 |
| **Vanadium** | **0.0022** | **J** | 0.0050 | 0.0011 | mg/L | | 05/30/23 09:06 | 05/31/23 15:17 | 1 |
| **Zinc** | **0.042** | | 0.025 | 0.0016 | mg/L | | 05/30/23 09:06 | 05/31/23 15:17 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 05/30/23 10:37 | 06/02/23 13:34 | 1 |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11737-1

## Client Sample ID: TB-01-052523

**Date Collected: 05/25/23 16:00**
**Date Received: 05/26/23 16:59**

## Lab Sample ID: 620-11737-3

**Matrix: Water**

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 05/30/23 15:51 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 05/30/23 15:51 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 05/30/23 15:51 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 05/30/23 15:51 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 05/30/23 15:51 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 05/30/23 15:51 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 05/30/23 15:51 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 05/30/23 15:51 | 1 |
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 05/30/23 15:51 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 05/30/23 15:51 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 05/30/23 15:51 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 05/30/23 15:51 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 05/30/23 15:51 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *92* | | *70 - 130* | | *05/30/23 15:51* | *1* |
| *2,5-Dibromotoluene (pid)* | *93* | | *70 - 130* | | *05/30/23 15:51* | *1* |

# Surrogate Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11737-1

## Method: EPH - Extractable Petroleum Hydrocarbons (GC/MS)

**Matrix: Water**

**Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) | |
|---|---|---|---|
| | | OTPH | FBP |
| Lab Sample ID | Client Sample ID | (40-140) | (40-140) |
| 620-11737-1 | LM-GW-UST01-0525-23 | 62 | 106 |
| 620-11737-1 | LM-GW-UST01-0525-23 | 48 | 76 |
| 620-11737-2 | LM-GW-UST02-0525-23 | 67 | 101 |
| LCS 620-23074/4-B | Lab Control Sample | 74 | 113 |
| LCSD 620-23074/5-B | Lab Control Sample Dup | 70 | 96 |
| MB 620-23074/1-B | Method Blank | 70 | 106 |

**Surrogate Legend**

OTPH = o-Terphenyl (Surr)
FBP = 2-Fluorobiphenyl (Surr)

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

**Matrix: Water**

**Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) | |
|---|---|---|---|
| | | 25DBTf1 | 25DBTp1 |
| Lab Sample ID | Client Sample ID | (70-130) | (70-130) |
| 620-11737-1 | LM-GW-UST01-0525-23 | 114 | 109 |
| 620-11737-1 - DL | LM-GW-UST01-0525-23 | 99 | 95 |
| 620-11737-2 | LM-GW-UST02-0525-23 | 97 | 93 |
| 620-11737-2 - DL | LM-GW-UST02-0525-23 | 95 | 95 |
| 620-11737-3 | TB-01-052523 | 92 | 93 |
| LCS 620-23050/3 | Lab Control Sample | 96 | 95 |
| LCS 620-23107/3 | Lab Control Sample | 99 | 97 |
| LCSD 620-23050/4 | Lab Control Sample Dup | 97 | 96 |
| LCSD 620-23107/4 | Lab Control Sample Dup | 99 | 98 |
| MB 620-23050/5 | Method Blank | 96 | 96 |
| MB 620-23107/5 | Method Blank | 100 | 99 |

**Surrogate Legend**

25DBTf = 2,5-Dibromotoluene (fid)
25DBTp = 2,5-Dibromotoluene (pid)

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

**Matrix: Water**

**Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) | | |
|---|---|---|---|---|
| | | 1COD1 | OTPH1 | FBP1 |
| Lab Sample ID | Client Sample ID | (40-140) | (40-140) | (40-140) |
| 620-11737-1 | LM-GW-UST01-0525-23 | 34 S1- | 50 | 83 |
| 620-11737-2 | LM-GW-UST02-0525-23 | 48 | 56 | 94 |
| LCS 620-23074/2-B | Lab Control Sample | 73 | 54 | 79 |
| LCSD 620-23074/3-B | Lab Control Sample Dup | 74 | 60 | 91 |
| MB 620-23074/1-B | Method Blank | 70 | 60 | 91 |

**Surrogate Legend**

1COD = 1-Chlorooctadecane (Surr)
OTPH = o-Terphenyl (Surr)
FBP = 2-Fluorobiphenyl (Surr)

## Method: EPH - Extractable Petroleum Hydrocarbons (GC/MS)

**Lab Sample ID: MB 620-23074/1-B**
**Matrix: Water**
**Analysis Batch: 23261**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 23074**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 1.0 | 0.23 | ug/L | | 05/30/23 14:16 | 06/05/23 12:32 | 1 |
| 2-Methylnaphthalene | ND | | 1.0 | 0.29 | ug/L | | 05/30/23 14:16 | 06/05/23 12:32 | 1 |
| Acenaphthylene | ND | | 1.0 | 0.39 | ug/L | | 05/30/23 14:16 | 06/05/23 12:32 | 1 |
| Acenaphthene | ND | | 1.0 | 0.19 | ug/L | | 05/30/23 14:16 | 06/05/23 12:32 | 1 |
| Fluorene | ND | | 1.0 | 0.39 | ug/L | | 05/30/23 14:16 | 06/05/23 12:32 | 1 |
| Phenanthrene | ND | | 1.0 | 0.17 | ug/L | | 05/30/23 14:16 | 06/05/23 12:32 | 1 |
| Anthracene | ND | | 1.0 | 0.15 | ug/L | | 05/30/23 14:16 | 06/05/23 12:32 | 1 |
| Fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 05/30/23 14:16 | 06/05/23 12:32 | 1 |
| Pyrene | ND | | 1.0 | 0.14 | ug/L | | 05/30/23 14:16 | 06/05/23 12:32 | 1 |
| Benzo[a]anthracene | ND | | 1.0 | 0.070 | ug/L | | 05/30/23 14:16 | 06/05/23 12:32 | 1 |
| Chrysene | ND | | 1.0 | 0.14 | ug/L | | 05/30/23 14:16 | 06/05/23 12:32 | 1 |
| Benzo[b]fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 05/30/23 14:16 | 06/05/23 12:32 | 1 |
| Benzo[k]fluoranthene | ND | | 1.0 | 0.24 | ug/L | | 05/30/23 14:16 | 06/05/23 12:32 | 1 |
| Benzo[a]pyrene | ND | | 0.20 | 0.16 | ug/L | | 05/30/23 14:16 | 06/05/23 12:32 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.50 | 0.46 | ug/L | | 05/30/23 14:16 | 06/05/23 12:32 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.50 | 0.21 | ug/L | | 05/30/23 14:16 | 06/05/23 12:32 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.0 | 0.17 | ug/L | | 05/30/23 14:16 | 06/05/23 12:32 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *70* | | *40 - 140* | *05/30/23 14:16* | *06/05/23 12:32* | *1* |
| *2-Fluorobiphenyl (Surr)* | *106* | | *40 - 140* | *05/30/23 14:16* | *06/05/23 12:32* | *1* |

**Lab Sample ID: LCS 620-23074/4-B**
**Matrix: Water**
**Analysis Batch: 23261**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 23074**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Naphthalene | 5.00 | 2.96 | | ug/L | | 59 | 40 - 140 |
| 2-Methylnaphthalene | 5.00 | 2.92 | | ug/L | | 58 | 40 - 140 |
| Acenaphthylene | 5.00 | 3.16 | | ug/L | | 63 | 40 - 140 |
| Acenaphthene | 5.00 | 3.11 | | ug/L | | 62 | 40 - 140 |
| Fluorene | 5.00 | 3.01 | | ug/L | | 60 | 40 - 140 |
| Phenanthrene | 5.00 | 3.13 | | ug/L | | 63 | 40 - 140 |
| Anthracene | 5.00 | 3.01 | | ug/L | | 60 | 40 - 140 |
| Fluoranthene | 5.00 | 3.55 | | ug/L | | 71 | 40 - 140 |
| Pyrene | 5.00 | 3.48 | | ug/L | | 70 | 40 - 140 |
| Benzo[a]anthracene | 5.00 | 3.40 | | ug/L | | 68 | 40 - 140 |
| Chrysene | 5.00 | 3.48 | | ug/L | | 70 | 40 - 140 |
| Benzo[b]fluoranthene | 5.00 | 3.29 | | ug/L | | 66 | 40 - 140 |
| Benzo[k]fluoranthene | 5.00 | 3.82 | | ug/L | | 76 | 40 - 140 |
| Benzo[a]pyrene | 5.00 | 3.20 | | ug/L | | 64 | 40 - 140 |
| Indeno[1,2,3-cd]pyrene | 5.00 | 3.37 | | ug/L | | 67 | 40 - 140 |
| Dibenz(a,h)anthracene | 5.00 | 3.41 | | ug/L | | 68 | 40 - 140 |
| Benzo[g,h,i]perylene | 5.00 | 3.97 | | ug/L | | 79 | 40 - 140 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl (Surr)* | *74* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *113* | | *40 - 140* |

## Method: EPH - Extractable Petroleum Hydrocarbons (GC/MS)

**Lab Sample ID: LCSD 620-23074/5-B**
**Matrix: Water**
**Analysis Batch: 23261**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 23074**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | | | 5.00 | 2.56 | | ug/L | | 51 | 40 - 140 | 14 | 25 |
| 2-Methylnaphthalene | | | 5.00 | 2.47 | | ug/L | | 49 | 40 - 140 | 17 | 25 |
| Acenaphthylene | | | 5.00 | 2.75 | | ug/L | | 55 | 40 - 140 | 14 | 25 |
| Acenaphthene | | | 5.00 | 2.65 | | ug/L | | 53 | 40 - 140 | 16 | 25 |
| Fluorene | | | 5.00 | 2.85 | | ug/L | | 57 | 40 - 140 | 6 | 25 |
| Phenanthrene | | | 5.00 | 2.75 | | ug/L | | 55 | 40 - 140 | 13 | 25 |
| Anthracene | | | 5.00 | 2.67 | | ug/L | | 53 | 40 - 140 | 12 | 25 |
| Fluoranthene | | | 5.00 | 3.15 | | ug/L | | 63 | 40 - 140 | 12 | 25 |
| Pyrene | | | 5.00 | 3.15 | | ug/L | | 63 | 40 - 140 | 10 | 25 |
| Benzo[a]anthracene | | | 5.00 | 2.76 | | ug/L | | 55 | 40 - 140 | 21 | 25 |
| Chrysene | | | 5.00 | 2.82 | | ug/L | | 56 | 40 - 140 | 21 | 25 |
| Benzo[b]fluoranthene | | | 5.00 | 3.11 | | ug/L | | 62 | 40 - 140 | 6 | 25 |
| Benzo[k]fluoranthene | | | 5.00 | 3.66 | | ug/L | | 73 | 40 - 140 | 4 | 25 |
| Benzo[a]pyrene | | | 5.00 | 2.84 | | ug/L | | 57 | 40 - 140 | 12 | 25 |
| Indeno[1,2,3-cd]pyrene | | | 5.00 | 2.84 | | ug/L | | 57 | 40 - 140 | 17 | 25 |
| Dibenz(a,h)anthracene | | | 5.00 | 2.85 | | ug/L | | 57 | 40 - 140 | 18 | 25 |
| Benzo[g,h,i]perylene | | | 5.00 | 3.25 | | ug/L | | 65 | 40 - 140 | 20 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl (Surr)* | *70* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *96* | | *40 - 140* |

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

**Lab Sample ID: MB 620-23050/5**
**Matrix: Water**
**Analysis Batch: 23050**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 05/30/23 13:36 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 05/30/23 13:36 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 05/30/23 13:36 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 05/30/23 13:36 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 05/30/23 13:36 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 05/30/23 13:36 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 05/30/23 13:36 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 05/30/23 13:36 | 1 |
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 05/30/23 13:36 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 05/30/23 13:36 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 05/30/23 13:36 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 05/30/23 13:36 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 05/30/23 13:36 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *96* | | *70 - 130* | | *05/30/23 13:36* | *1* |
| *2,5-Dibromotoluene (pid)* | *96* | | *70 - 130* | | *05/30/23 13:36* | *1* |

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: LCS 620-23050/3**
**Matrix: Water**
**Analysis Batch: 23050**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | | | 20.0 | ND | | ug/L | | 109 | 70 - 130 | | |
| C5-C8 Aliphatics (unadjusted) | | | 60.0 | ND | | ug/L | | 99 | 70 - 130 | | |
| C9-C12 Aliphatics (unadjusted) | | | 60.0 | ND | | ug/L | | 98 | 70 - 130 | | |
| Benzene | | | 20.0 | 20.0 | | ug/L | | 100 | 70 - 130 | | |
| Ethylbenzene | | | 20.0 | 21.2 | | ug/L | | 106 | 70 - 130 | | |
| Methyl tert-butyl ether | | | 20.0 | 20.0 | | ug/L | | 100 | 70 - 130 | | |
| Naphthalene | | | 20.0 | 20.5 | | ug/L | | 103 | 70 - 130 | | |
| Toluene | | | 20.0 | 20.5 | | ug/L | | 102 | 70 - 130 | | |
| m,p-Xylene | | | 40.0 | 43.5 | | ug/L | | 109 | 70 - 130 | | |
| o-Xylene | | | 20.0 | 21.7 | | ug/L | | 108 | 70 - 130 | | |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *96* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *95* | | *70 - 130* |

**Lab Sample ID: LCSD 620-23050/4**
**Matrix: Water**
**Analysis Batch: 23050**

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

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | | | 20.0 | ND | | ug/L | | 109 | 70 - 130 | 0 | 25 |
| C5-C8 Aliphatics (unadjusted) | | | 60.0 | ND | | ug/L | | 97 | 70 - 130 | 2 | 25 |
| C9-C12 Aliphatics (unadjusted) | | | 60.0 | ND | | ug/L | | 95 | 70 - 130 | 3 | 25 |
| Benzene | | | 20.0 | 20.0 | | ug/L | | 100 | 70 - 130 | 0 | 25 |
| Ethylbenzene | | | 20.0 | 21.0 | | ug/L | | 105 | 70 - 130 | 1 | 25 |
| Methyl tert-butyl ether | | | 20.0 | 19.5 | | ug/L | | 98 | 70 - 130 | 2 | 25 |
| Naphthalene | | | 20.0 | 20.6 | | ug/L | | 103 | 70 - 130 | 0 | 25 |
| Toluene | | | 20.0 | 20.4 | | ug/L | | 102 | 70 - 130 | 1 | 25 |
| m,p-Xylene | | | 40.0 | 42.7 | | ug/L | | 107 | 70 - 130 | 2 | 25 |
| o-Xylene | | | 20.0 | 21.5 | | ug/L | | 108 | 70 - 130 | 1 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *97* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *96* | | *70 - 130* |

**Lab Sample ID: MB 620-23107/5**
**Matrix: Water**
**Analysis Batch: 23107**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 05/31/23 13:03 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 05/31/23 13:03 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 05/31/23 13:03 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 05/31/23 13:03 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 05/31/23 13:03 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 05/31/23 13:03 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 05/31/23 13:03 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 05/31/23 13:03 | 1 |

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: MB 620-23107/5**
**Matrix: Water**
**Analysis Batch: 23107**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 05/31/23 13:03 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 05/31/23 13:03 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 05/31/23 13:03 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 05/31/23 13:03 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 05/31/23 13:03 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *100* | | *70 - 130* | | *05/31/23 13:03* | *1* |
| *2,5-Dibromotoluene (pid)* | *99* | | *70 - 130* | | *05/31/23 13:03* | *1* |

**Lab Sample ID: LCS 620-23107/3**
**Matrix: Water**
**Analysis Batch: 23107**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | 20.0 | ND | | ug/L | | 110 | 70 - 130 |
| C5-C8 Aliphatics (unadjusted) | 60.0 | ND | | ug/L | | 98 | 70 - 130 |
| C9-C12 Aliphatics (unadjusted) | 60.0 | ND | | ug/L | | 96 | 70 - 130 |
| Benzene | 20.0 | 19.9 | | ug/L | | 100 | 70 - 130 |
| Ethylbenzene | 20.0 | 21.3 | | ug/L | | 107 | 70 - 130 |
| Methyl tert-butyl ether | 20.0 | 20.3 | | ug/L | | 102 | 70 - 130 |
| Naphthalene | 20.0 | 21.7 | | ug/L | | 109 | 70 - 130 |
| Toluene | 20.0 | 20.6 | | ug/L | | 103 | 70 - 130 |
| m,p-Xylene | 40.0 | 43.6 | | ug/L | | 109 | 70 - 130 |
| o-Xylene | 20.0 | 21.9 | | ug/L | | 109 | 70 - 130 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *99* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *97* | | *70 - 130* |

**Lab Sample ID: LCSD 620-23107/4**
**Matrix: Water**
**Analysis Batch: 23107**

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

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | 20.0 | ND | | ug/L | | 110 | 70 - 130 | 0 | 25 |
| C5-C8 Aliphatics (unadjusted) | 60.0 | ND | | ug/L | | 96 | 70 - 130 | 2 | 25 |
| C9-C12 Aliphatics (unadjusted) | 60.0 | ND | | ug/L | | 93 | 70 - 130 | 3 | 25 |
| Benzene | 20.0 | 20.0 | | ug/L | | 100 | 70 - 130 | 0 | 25 |
| Ethylbenzene | 20.0 | 21.1 | | ug/L | | 105 | 70 - 130 | 1 | 25 |
| Methyl tert-butyl ether | 20.0 | 20.2 | | ug/L | | 101 | 70 - 130 | 1 | 25 |
| Naphthalene | 20.0 | 21.7 | | ug/L | | 108 | 70 - 130 | 0 | 25 |
| Toluene | 20.0 | 20.5 | | ug/L | | 102 | 70 - 130 | 0 | 25 |
| m,p-Xylene | 40.0 | 43.3 | | ug/L | | 108 | 70 - 130 | 1 | 25 |
| o-Xylene | 20.0 | 21.6 | | ug/L | | 108 | 70 - 130 | 1 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *99* | | *70 - 130* |

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: LCSD 620-23107/4**
**Matrix: Water**
**Analysis Batch: 23107**

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

| Surrogate | LCSD %Recovery | LCSD Qualifier | Limits |
|---|---|---|---|
| 2,5-Dibromotoluene (pid) | 98 | | 70 - 130 |

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

**Lab Sample ID: MB 620-23074/1-B**
**Matrix: Water**
**Analysis Batch: 23139**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 23074**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 100 | 100 | ug/L | | 05/30/23 14:16 | 06/01/23 13:13 | 1 |
| C19-C36 Aliphatics | ND | | 100 | 100 | ug/L | | 05/30/23 14:16 | 06/01/23 13:13 | 1 |
| C11-C22 Aromatics | ND | | 100 | 100 | ug/L | | 05/30/23 14:16 | 06/01/23 13:13 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 100 | 100 | ug/L | | 05/30/23 14:16 | 06/01/23 13:13 | 1 |

| Surrogate | MB %Recovery | MB Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|
| 1-Chlorooctadecane (Surr) | 70 | | 40 - 140 | 05/30/23 14:16 | 06/01/23 13:13 | 1 |
| o-Terphenyl (Surr) | 60 | | 40 - 140 | 05/30/23 14:16 | 06/01/23 13:13 | 1 |
| 2-Fluorobiphenyl (Surr) | 91 | | 40 - 140 | 05/30/23 14:16 | 06/01/23 13:13 | 1 |

**Lab Sample ID: LCS 620-23074/2-B**
**Matrix: Water**
**Analysis Batch: 23139**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 23074**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | | | 120 | ND | | ug/L | | 41 | 40 - 140 | | |
| C19-C36 Aliphatics | | | 160 | ND | | ug/L | | 57 | 40 - 140 | | |
| C11-C22 Aromatics | | | 340 | 212 | | ug/L | | 62 | 40 - 140 | | |

| Surrogate | LCS %Recovery | LCS Qualifier | Limits |
|---|---|---|---|
| 1-Chlorooctadecane (Surr) | 73 | | 40 - 140 |
| o-Terphenyl (Surr) | 54 | | 40 - 140 |
| 2-Fluorobiphenyl (Surr) | 79 | | 40 - 140 |

**Lab Sample ID: LCSD 620-23074/3-B**
**Matrix: Water**
**Analysis Batch: 23139**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 23074**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | | | 120 | ND | | ug/L | | 43 | 40 - 140 | 6 | 25 |
| C19-C36 Aliphatics | | | 160 | ND | | ug/L | | 56 | 40 - 140 | 3 | 25 |
| C11-C22 Aromatics | | | 340 | 253 | | ug/L | | 74 | 40 - 140 | 18 | 25 |

| Surrogate | LCSD %Recovery | LCSD Qualifier | Limits |
|---|---|---|---|
| 1-Chlorooctadecane (Surr) | 74 | | 40 - 140 |
| o-Terphenyl (Surr) | 60 | | 40 - 140 |
| 2-Fluorobiphenyl (Surr) | 91 | | 40 - 140 |

## Method: 6010D - Metals (ICP)

**Lab Sample ID: LCS 620-23040/2-A**
**Matrix: Water**
**Analysis Batch: 23156**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 23040**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Antimony | 2.50 | 2.76 | | mg/L | | 110 | 80 - 120 |
| Arsenic | 2.50 | 2.36 | | mg/L | | 94 | 80 - 120 |
| Barium | 2.50 | 2.38 | | mg/L | | 95 | 80 - 120 |
| Beryllium | 2.50 | 2.51 | | mg/L | | 100 | 80 - 120 |
| Cadmium | 2.50 | 2.74 | | mg/L | | 110 | 80 - 120 |
| Chromium | 2.50 | 2.50 | | mg/L | | 100 | 80 - 120 |
| Lead | 2.50 | 2.59 | | mg/L | | 104 | 80 - 120 |
| Nickel | 2.50 | 2.52 | | mg/L | | 101 | 80 - 120 |
| Selenium | 2.50 | 2.79 | | mg/L | | 112 | 80 - 120 |
| Silver | 2.50 | 2.36 | | mg/L | | 95 | 80 - 120 |
| Thallium | 2.50 | 2.55 | | mg/L | | 102 | 80 - 120 |
| Vanadium | 2.50 | 2.45 | | mg/L | | 98 | 80 - 120 |
| Zinc | 2.50 | 2.59 | | mg/L | | 103 | 80 - 120 |

**Lab Sample ID: LCSD 620-23040/3-A**
**Matrix: Water**
**Analysis Batch: 23156**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 23040**

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 2.50 | 2.75 | | mg/L | | 110 | 80 - 120 | 0 | 20 |
| Arsenic | 2.50 | 2.39 | | mg/L | | 96 | 80 - 120 | 1 | 20 |
| Barium | 2.50 | 2.37 | | mg/L | | 95 | 80 - 120 | 0 | 20 |
| Beryllium | 2.50 | 2.51 | | mg/L | | 101 | 80 - 120 | 0 | 20 |
| Cadmium | 2.50 | 2.73 | | mg/L | | 109 | 80 - 120 | 0 | 20 |
| Chromium | 2.50 | 2.50 | | mg/L | | 100 | 80 - 120 | 0 | 20 |
| Lead | 2.50 | 2.59 | | mg/L | | 104 | 80 - 120 | 0 | 20 |
| Nickel | 2.50 | 2.53 | | mg/L | | 101 | 80 - 120 | 0 | 20 |
| Selenium | 2.50 | 2.80 | | mg/L | | 112 | 80 - 120 | 0 | 20 |
| Silver | 2.50 | 2.37 | | mg/L | | 95 | 80 - 120 | 0 | 20 |
| Thallium | 2.50 | 2.56 | | mg/L | | 102 | 80 - 120 | 1 | 20 |
| Vanadium | 2.50 | 2.47 | | mg/L | | 99 | 80 - 120 | 0 | 20 |
| Zinc | 2.50 | 2.59 | | mg/L | | 103 | 80 - 120 | 0 | 20 |

**Lab Sample ID: MB 620-23100/1-A**
**Matrix: Water**
**Analysis Batch: 23156**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 23100**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 0.012 | 0.0032 | mg/L | | 05/31/23 10:04 | 05/31/23 13:36 | 1 |
| Arsenic | ND | | 0.0080 | 0.0028 | mg/L | | 05/31/23 10:04 | 05/31/23 13:36 | 1 |
| Barium | 0.00170 | J | 0.010 | 0.0014 | mg/L | | 05/31/23 10:04 | 05/31/23 13:36 | 1 |
| Beryllium | ND | | 0.0040 | 0.00056 | mg/L | | 05/31/23 10:04 | 05/31/23 13:36 | 1 |
| Cadmium | ND | | 0.0050 | 0.00071 | mg/L | | 05/31/23 10:04 | 05/31/23 13:36 | 1 |
| Chromium | 0.00360 | J | 0.010 | 0.0019 | mg/L | | 05/31/23 10:04 | 05/31/23 13:36 | 1 |
| Lead | ND | | 0.015 | 0.012 | mg/L | | 05/31/23 10:04 | 05/31/23 13:36 | 1 |
| Nickel | ND | | 0.010 | 0.0017 | mg/L | | 05/31/23 10:04 | 05/31/23 13:36 | 1 |
| Selenium | ND | | 0.030 | 0.0083 | mg/L | | 05/31/23 10:04 | 05/31/23 13:36 | 1 |
| Silver | 0.00190 | J | 0.010 | 0.0012 | mg/L | | 05/31/23 10:04 | 05/31/23 13:36 | 1 |
| Thallium | ND | | 0.010 | 0.0042 | mg/L | | 05/31/23 10:04 | 05/31/23 13:36 | 1 |

## Method: 6010D - Metals (ICP) (Continued)

**Lab Sample ID: MB 620-23100/1-A**
**Matrix: Water**
**Analysis Batch: 23156**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 23100**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Vanadium | ND | | 0.010 | 0.0022 | mg/L | | 05/31/23 10:04 | 05/31/23 13:36 | 1 |
| Zinc | 0.00610 | J | 0.050 | 0.0032 | mg/L | | 05/31/23 10:04 | 05/31/23 13:36 | 1 |

**Lab Sample ID: 620-11737-1 MS**
**Matrix: Water**
**Analysis Batch: 23156**

**Client Sample ID: LM-GW-UST01-0525-23**
**Prep Type: Dissolved**
**Prep Batch: 23040**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.0051 | J | 2.50 | 2.79 | | mg/L | | 112 | 75 - 125 |
| Arsenic | 0.032 | | 2.50 | 2.38 | | mg/L | | 94 | 75 - 125 |
| Barium | 0.056 | | 2.50 | 2.43 | | mg/L | | 95 | 75 - 125 |
| Beryllium | ND | | 2.50 | 2.46 | | mg/L | | 98 | 75 - 125 |
| Cadmium | ND | | 2.50 | 2.67 | | mg/L | | 107 | 75 - 125 |
| Chromium | 0.0043 | | 2.50 | 2.45 | | mg/L | | 98 | 75 - 125 |
| Lead | 0.013 | | 2.50 | 2.53 | | mg/L | | 101 | 75 - 125 |
| Nickel | 0.011 | | 2.50 | 2.46 | | mg/L | | 98 | 75 - 125 |
| Selenium | ND | | 2.50 | 2.79 | | mg/L | | 112 | 75 - 125 |
| Silver | ND | | 2.50 | 2.35 | | mg/L | | 94 | 75 - 125 |
| Thallium | 0.0022 | J | 2.50 | 2.51 | | mg/L | | 100 | 75 - 125 |
| Vanadium | 0.0037 | J | 2.50 | 2.44 | | mg/L | | 97 | 75 - 125 |
| Zinc | 0.033 | | 2.50 | 2.54 | | mg/L | | 100 | 75 - 125 |

**Lab Sample ID: 620-11737-1 MSD**
**Matrix: Water**
**Analysis Batch: 23156**

**Client Sample ID: LM-GW-UST01-0525-23**
**Prep Type: Dissolved**
**Prep Batch: 23040**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.0051 | J | 2.50 | 2.80 | | mg/L | | 112 | 75 - 125 | 0 | 20 |
| Arsenic | 0.032 | | 2.50 | 2.43 | | mg/L | | 96 | 75 - 125 | 2 | 20 |
| Barium | 0.056 | | 2.50 | 2.44 | | mg/L | | 95 | 75 - 125 | 0 | 20 |
| Beryllium | ND | | 2.50 | 2.50 | | mg/L | | 100 | 75 - 125 | 2 | 20 |
| Cadmium | ND | | 2.50 | 2.71 | | mg/L | | 108 | 75 - 125 | 1 | 20 |
| Chromium | 0.0043 | | 2.50 | 2.48 | | mg/L | | 99 | 75 - 125 | 1 | 20 |
| Lead | 0.013 | | 2.50 | 2.55 | | mg/L | | 102 | 75 - 125 | 1 | 20 |
| Nickel | 0.011 | | 2.50 | 2.49 | | mg/L | | 99 | 75 - 125 | 1 | 20 |
| Selenium | ND | | 2.50 | 2.82 | | mg/L | | 113 | 75 - 125 | 1 | 20 |
| Silver | ND | | 2.50 | 2.38 | | mg/L | | 95 | 75 - 125 | 1 | 20 |
| Thallium | 0.0022 | J | 2.50 | 2.55 | | mg/L | | 102 | 75 - 125 | 2 | 20 |
| Vanadium | 0.0037 | J | 2.50 | 2.47 | | mg/L | | 99 | 75 - 125 | 1 | 20 |
| Zinc | 0.033 | | 2.50 | 2.58 | | mg/L | | 102 | 75 - 125 | 2 | 20 |

**Lab Sample ID: 620-11737-1 DU**
**Matrix: Water**
**Analysis Batch: 23156**

**Client Sample ID: LM-GW-UST01-0525-23**
**Prep Type: Dissolved**
**Prep Batch: 23040**

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|
| Antimony | 0.0051 | J | 0.00580 | J | mg/L | | 13 | 20 |
| Arsenic | 0.032 | | 0.0298 | | mg/L | | 7 | 20 |
| Barium | 0.056 | | 0.0560 | | mg/L | | 0.8 | 20 |

## Method: 6010D - Metals (ICP) (Continued)

**Lab Sample ID: 620-11737-1 DU**
**Matrix: Water**
**Analysis Batch: 23156**

**Client Sample ID: LM-GW-UST01-0525-23**
**Prep Type: Dissolved**
**Prep Batch: 23040**

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|
| Beryllium | ND | | ND | | mg/L | | NC | 20 |
| Cadmium | ND | | ND | | mg/L | | NC | 20 |
| Chromium | 0.0043 | | 0.00415 | J | mg/L | | 4 | 20 |
| Lead | 0.013 | | 0.0131 | | mg/L | | 2 | 20 |
| Nickel | 0.011 | | 0.0116 | | mg/L | | 1 | 20 |
| Selenium | ND | | ND | | mg/L | | NC | 20 |
| Silver | ND | | 0.000750 | J | mg/L | | NC | 20 |
| Thallium | 0.0022 | J | 0.00215 | J | mg/L | | 2 | 20 |
| Vanadium | 0.0037 | J | 0.00350 | J | mg/L | | 4 | 20 |
| Zinc | 0.033 | | 0.0333 | | mg/L | | 1 | 20 |

## Method: 7470A - Mercury (CVAA)

**Lab Sample ID: MB 620-23056/1-A**
**Matrix: Water**
**Analysis Batch: 23226**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 23056**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 05/30/23 10:37 | 06/02/23 13:10 | 1 |

**Lab Sample ID: LCS 620-23056/2-A**
**Matrix: Water**
**Analysis Batch: 23226**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 23056**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Mercury | 0.00500 | 0.00548 | | mg/L | | 110 | 85 - 115 |

**Lab Sample ID: LCSD 620-23056/3-A**
**Matrix: Water**
**Analysis Batch: 23226**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 23056**

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.00500 | 0.00534 | | mg/L | | 107 | 85 - 115 | 3 | 20 |

**Lab Sample ID: 620-11737-1 MS**
**Matrix: Water**
**Analysis Batch: 23226**

**Client Sample ID: LM-GW-UST01-0525-23**
**Prep Type: Dissolved**
**Prep Batch: 23056**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00500 | 0.00575 | | mg/L | | 115 | 80 - 120 |

**Lab Sample ID: 620-11737-1 MSD**
**Matrix: Water**
**Analysis Batch: 23226**

**Client Sample ID: LM-GW-UST01-0525-23**
**Prep Type: Dissolved**
**Prep Batch: 23056**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00500 | 0.00576 | | mg/L | | 115 | 80 - 120 | 0 | 20 |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11737-1

## Method: 7470A - Mercury (CVAA) (Continued)

**Lab Sample ID: 620-11737-1 DU**
**Matrix: Water**
**Analysis Batch: 23226**

**Client Sample ID: LM-GW-UST01-0525-23**
**Prep Type: Dissolved**
**Prep Batch: 23056**

| Analyte | Sample Result | Sample Qualifier | | DU Result | DU Qualifier | Unit | D | | | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | | ND | | mg/L | | | | NC | 20 |

## GC/MS Semi VOA

### Prep Batch: 23074

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11737-1 | LM-GW-UST01-0525-23 | Total/NA | Water | 3510C | |
| 620-11737-2 | LM-GW-UST02-0525-23 | Total/NA | Water | 3510C | |
| MB 620-23074/1-B | Method Blank | Total/NA | Water | 3510C | |
| LCS 620-23074/4-B | Lab Control Sample | Total/NA | Water | 3510C | |
| LCSD 620-23074/5-B | Lab Control Sample Dup | Total/NA | Water | 3510C | |

### Fraction Batch: 23131

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11737-1 | LM-GW-UST01-0525-23 | Total/NA | Water | MA EPH Frac | 23074 |
| 620-11737-2 | LM-GW-UST02-0525-23 | Total/NA | Water | MA EPH Frac | 23074 |
| MB 620-23074/1-B | Method Blank | Total/NA | Water | MA EPH Frac | 23074 |
| LCS 620-23074/4-B | Lab Control Sample | Total/NA | Water | MA EPH Frac | 23074 |
| LCSD 620-23074/5-B | Lab Control Sample Dup | Total/NA | Water | MA EPH Frac | 23074 |

### Analysis Batch: 23261

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11737-1 | LM-GW-UST01-0525-23 | Total/NA | Water | EPH | 23131 |
| 620-11737-1 | LM-GW-UST01-0525-23 | Total/NA | Water | EPH | 23131 |
| 620-11737-2 | LM-GW-UST02-0525-23 | Total/NA | Water | EPH | 23131 |
| MB 620-23074/1-B | Method Blank | Total/NA | Water | EPH | 23131 |
| LCS 620-23074/4-B | Lab Control Sample | Total/NA | Water | EPH | 23131 |
| LCSD 620-23074/5-B | Lab Control Sample Dup | Total/NA | Water | EPH | 23131 |

## GC VOA

### Analysis Batch: 23050

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11737-1 | LM-GW-UST01-0525-23 | Total/NA | Water | MAVPH2.1 | |
| 620-11737-2 | LM-GW-UST02-0525-23 | Total/NA | Water | MAVPH2.1 | |
| 620-11737-3 | TB-01-052523 | Total/NA | Water | MAVPH2.1 | |
| MB 620-23050/5 | Method Blank | Total/NA | Water | MAVPH2.1 | |
| LCS 620-23050/3 | Lab Control Sample | Total/NA | Water | MAVPH2.1 | |
| LCSD 620-23050/4 | Lab Control Sample Dup | Total/NA | Water | MAVPH2.1 | |

### Analysis Batch: 23107

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11737-1 - DL | LM-GW-UST01-0525-23 | Total/NA | Water | MAVPH2.1 | |
| 620-11737-2 - DL | LM-GW-UST02-0525-23 | Total/NA | Water | MAVPH2.1 | |
| MB 620-23107/5 | Method Blank | Total/NA | Water | MAVPH2.1 | |
| LCS 620-23107/3 | Lab Control Sample | Total/NA | Water | MAVPH2.1 | |
| LCSD 620-23107/4 | Lab Control Sample Dup | Total/NA | Water | MAVPH2.1 | |

## GC Semi VOA

### Prep Batch: 23074

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11737-1 | LM-GW-UST01-0525-23 | Total/NA | Water | 3510C | |
| 620-11737-2 | LM-GW-UST02-0525-23 | Total/NA | Water | 3510C | |
| MB 620-23074/1-B | Method Blank | Total/NA | Water | 3510C | |
| LCS 620-23074/2-B | Lab Control Sample | Total/NA | Water | 3510C | |
| LCSD 620-23074/3-B | Lab Control Sample Dup | Total/NA | Water | 3510C | |

## GC Semi VOA

### Fraction Batch: 23131

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11737-1 | LM-GW-UST01-0525-23 | Total/NA | Water | MA EPH Frac | 23074 |
| 620-11737-2 | LM-GW-UST02-0525-23 | Total/NA | Water | MA EPH Frac | 23074 |
| MB 620-23074/1-B | Method Blank | Total/NA | Water | MA EPH Frac | 23074 |
| LCS 620-23074/2-B | Lab Control Sample | Total/NA | Water | MA EPH Frac | 23074 |
| LCSD 620-23074/3-B | Lab Control Sample Dup | Total/NA | Water | MA EPH Frac | 23074 |

### Analysis Batch: 23139

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11737-1 | LM-GW-UST01-0525-23 | Total/NA | Water | MAEPH2.1 | 23131 |
| 620-11737-2 | LM-GW-UST02-0525-23 | Total/NA | Water | MAEPH2.1 | 23131 |
| MB 620-23074/1-B | Method Blank | Total/NA | Water | MAEPH2.1 | 23131 |
| LCS 620-23074/2-B | Lab Control Sample | Total/NA | Water | MAEPH2.1 | 23131 |
| LCSD 620-23074/3-B | Lab Control Sample Dup | Total/NA | Water | MAEPH2.1 | 23131 |

## Metals

### Prep Batch: 23040

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11737-1 | LM-GW-UST01-0525-23 | Dissolved | Water | 3005A | |
| 620-11737-2 | LM-GW-UST02-0525-23 | Dissolved | Water | 3005A | |
| LCS 620-23040/2-A | Lab Control Sample | Total/NA | Water | 3005A | |
| LCSD 620-23040/3-A | Lab Control Sample Dup | Total/NA | Water | 3005A | |
| 620-11737-1 MS | LM-GW-UST01-0525-23 | Dissolved | Water | 3005A | |
| 620-11737-1 MSD | LM-GW-UST01-0525-23 | Dissolved | Water | 3005A | |
| 620-11737-1 DU | LM-GW-UST01-0525-23 | Dissolved | Water | 3005A | |

### Prep Batch: 23056

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11737-1 | LM-GW-UST01-0525-23 | Dissolved | Water | 7470A | |
| 620-11737-2 | LM-GW-UST02-0525-23 | Dissolved | Water | 7470A | |
| MB 620-23056/1-A | Method Blank | Total/NA | Water | 7470A | |
| LCS 620-23056/2-A | Lab Control Sample | Total/NA | Water | 7470A | |
| LCSD 620-23056/3-A | Lab Control Sample Dup | Total/NA | Water | 7470A | |
| 620-11737-1 MS | LM-GW-UST01-0525-23 | Dissolved | Water | 7470A | |
| 620-11737-1 MSD | LM-GW-UST01-0525-23 | Dissolved | Water | 7470A | |
| 620-11737-1 DU | LM-GW-UST01-0525-23 | Dissolved | Water | 7470A | |

### Prep Batch: 23100

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| MB 620-23100/1-A | Method Blank | Total/NA | Water | 3005A | |

### Analysis Batch: 23156

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11737-1 | LM-GW-UST01-0525-23 | Dissolved | Water | 6010D | 23040 |
| 620-11737-2 | LM-GW-UST02-0525-23 | Dissolved | Water | 6010D | 23040 |
| MB 620-23100/1-A | Method Blank | Total/NA | Water | 6010D | 23100 |
| LCS 620-23040/2-A | Lab Control Sample | Total/NA | Water | 6010D | 23040 |
| LCSD 620-23040/3-A | Lab Control Sample Dup | Total/NA | Water | 6010D | 23040 |
| 620-11737-1 MS | LM-GW-UST01-0525-23 | Dissolved | Water | 6010D | 23040 |
| 620-11737-1 MSD | LM-GW-UST01-0525-23 | Dissolved | Water | 6010D | 23040 |
| 620-11737-1 DU | LM-GW-UST01-0525-23 | Dissolved | Water | 6010D | 23040 |

# QC Association Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11737-1

## Metals

### Analysis Batch: 23226

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11737-1 | LM-GW-UST01-0525-23 | Dissolved | Water | 7470A | 23056 |
| 620-11737-2 | LM-GW-UST02-0525-23 | Dissolved | Water | 7470A | 23056 |
| MB 620-23056/1-A | Method Blank | Total/NA | Water | 7470A | 23056 |
| LCS 620-23056/2-A | Lab Control Sample | Total/NA | Water | 7470A | 23056 |
| LCSD 620-23056/3-A | Lab Control Sample Dup | Total/NA | Water | 7470A | 23056 |
| 620-11737-1 MS | LM-GW-UST01-0525-23 | Dissolved | Water | 7470A | 23056 |
| 620-11737-1 MSD | LM-GW-UST01-0525-23 | Dissolved | Water | 7470A | 23056 |
| 620-11737-1 DU | LM-GW-UST01-0525-23 | Dissolved | Water | 7470A | 23056 |

# Lab Chronicle

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11737-1

## Client Sample ID: LM-GW-UST01-0525-23

**Lab Sample ID: 620-11737-1**

**Date Collected: 05/25/23 11:30**

**Matrix: Water**

**Date Received: 05/26/23 16:59**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 23074 | AAH | EET NE | 05/30/23 14:16 |
| Total/NA | Fraction | MA EPH Frac | | | 23131 | BJJ | EET NE | 05/31/23 16:59 |
| Total/NA | Analysis | EPH | | 1 | 23261 | BJJ | EET NE | 06/05/23 13:40 |
| Total/NA | Prep | 3510C | | | 23074 | AAH | EET NE | 05/30/23 14:16 |
| Total/NA | Fraction | MA EPH Frac | | | 23131 | BJJ | EET NE | 05/31/23 16:59 |
| Total/NA | Analysis | EPH | | 5 | 23261 | BJJ | EET NE | 06/05/23 14:25 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 23050 | BMH | EET NE | 05/30/23 23:26 |
| Total/NA | Analysis | MAVPH2.1 | DL | 10 | 23107 | BMH | EET NE | 05/31/23 16:57 |
| Total/NA | Prep | 3510C | | | 23074 | AAH | EET NE | 05/30/23 14:16 |
| Total/NA | Fraction | MA EPH Frac | | | 23131 | BJJ | EET NE | 05/31/23 16:59 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 23139 | BJJ | EET NE | 06/01/23 14:42 |
| Dissolved | Prep | 3005A | | | 23040 | PRB | EET NE | 05/30/23 09:06 |
| Dissolved | Analysis | 6010D | | 1 | 23156 | JPC | EET NE | 05/31/23 14:29 |
| Dissolved | Prep | 7470A | | | 23056 | PRB | EET NE | 05/30/23 10:37 |
| Dissolved | Analysis | 7470A | | 1 | 23226 | PRB | EET NE | 06/02/23 13:26 |

## Client Sample ID: LM-GW-UST02-0525-23

**Lab Sample ID: 620-11737-2**

**Date Collected: 05/25/23 17:10**

**Matrix: Water**

**Date Received: 05/26/23 16:59**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 23074 | AAH | EET NE | 05/30/23 14:16 |
| Total/NA | Fraction | MA EPH Frac | | | 23131 | BJJ | EET NE | 05/31/23 16:59 |
| Total/NA | Analysis | EPH | | 1 | 23261 | BJJ | EET NE | 06/05/23 14:02 |
| Total/NA | Analysis | MAVPH2.1 | | 5 | 23050 | BMH | EET NE | 05/31/23 01:11 |
| Total/NA | Analysis | MAVPH2.1 | DL | 20 | 23107 | BMH | EET NE | 05/31/23 16:22 |
| Total/NA | Prep | 3510C | | | 23074 | AAH | EET NE | 05/30/23 14:16 |
| Total/NA | Fraction | MA EPH Frac | | | 23131 | BJJ | EET NE | 05/31/23 16:59 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 23139 | BJJ | EET NE | 06/01/23 15:11 |
| Dissolved | Prep | 3005A | | | 23040 | PRB | EET NE | 05/30/23 09:06 |
| Dissolved | Analysis | 6010D | | 1 | 23156 | JPC | EET NE | 05/31/23 15:17 |
| Dissolved | Prep | 7470A | | | 23056 | PRB | EET NE | 05/30/23 10:37 |
| Dissolved | Analysis | 7470A | | 1 | 23226 | PRB | EET NE | 06/02/23 13:34 |

## Client Sample ID: TB-01-052523

**Lab Sample ID: 620-11737-3**

**Date Collected: 05/25/23 16:00**

**Matrix: Water**

**Date Received: 05/26/23 16:59**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | MAVPH2.1 | | 1 | 23050 | BMH | EET NE | 05/30/23 15:51 |

**Laboratory References:**

EET NE = Eurofins New England, 646 Camp Ave, North Kingstown, RI 02852, TEL (413)789-9018

# Accreditation/Certification Summary

Client: Nobis Engineering, Inc. Job ID: 620-11737-1
Project/Site: Former L&M - Lunenburg MA

## Laboratory: Eurofins New England

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

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|
| Massachusetts | State | M-RI907 | 06-30-23 |

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

| Analysis Method | Prep Method | Matrix | Analyte |
|---|---|---|---|
| 6010D | 3005A | Water | Antimony |
| 6010D | 3005A | Water | Arsenic |
| 6010D | 3005A | Water | Barium |
| 6010D | 3005A | Water | Beryllium |
| 6010D | 3005A | Water | Cadmium |
| 6010D | 3005A | Water | Chromium |
| 6010D | 3005A | Water | Lead |
| 6010D | 3005A | Water | Nickel |
| 6010D | 3005A | Water | Selenium |
| 6010D | 3005A | Water | Silver |
| 6010D | 3005A | Water | Thallium |
| 6010D | 3005A | Water | Vanadium |
| 6010D | 3005A | Water | Zinc |
| 7470A | 7470A | Water | Mercury |
| EPH | 3510C | Water | 2-Methylnaphthalene |
| EPH | 3510C | Water | Acenaphthene |
| EPH | 3510C | Water | Acenaphthylene |
| EPH | 3510C | Water | Anthracene |
| EPH | 3510C | Water | Benzo[a]anthracene |
| EPH | 3510C | Water | Benzo[a]pyrene |
| EPH | 3510C | Water | Benzo[b]fluoranthene |
| EPH | 3510C | Water | Benzo[g,h,i]perylene |
| EPH | 3510C | Water | Benzo[k]fluoranthene |
| EPH | 3510C | Water | Chrysene |
| EPH | 3510C | Water | Dibenz(a,h)anthracene |
| EPH | 3510C | Water | Fluoranthene |
| EPH | 3510C | Water | Fluorene |
| EPH | 3510C | Water | Indeno[1,2,3-cd]pyrene |
| EPH | 3510C | Water | Naphthalene |
| EPH | 3510C | Water | Phenanthrene |
| EPH | 3510C | Water | Pyrene |
| MAEPH2.1 | 3510C | Water | C11-C22 Aromatics |
| MAEPH2.1 | 3510C | Water | C11-C22 Aromatics (Adjusted) |
| MAEPH2.1 | 3510C | Water | C19-C36 Aliphatics |
| MAEPH2.1 | 3510C | Water | C9-C18 Aliphatics |
| MAVPH2.1 | | Water | Benzene |
| MAVPH2.1 | | Water | C5-C8 Aliphatics (adjusted) |
| MAVPH2.1 | | Water | C5-C8 Aliphatics (unadjusted) |
| MAVPH2.1 | | Water | C9-C10 Aromatics |
| MAVPH2.1 | | Water | C9-C12 Aliphatics (adjusted) |
| MAVPH2.1 | | Water | C9-C12 Aliphatics (unadjusted) |
| MAVPH2.1 | | Water | Ethylbenzene |
| MAVPH2.1 | | Water | m,p-Xylene |
| MAVPH2.1 | | Water | Methyl tert-butyl ether |
| MAVPH2.1 | | Water | Naphthalene |

# Accreditation/Certification Summary

Client: Nobis Engineering, Inc. Job ID: 620-11737-1
Project/Site: Former L&M - Lunenburg MA

## Laboratory: Eurofins New England (Continued)

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

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

| Analysis Method | Prep Method | Matrix | Analyte |
|---|---|---|---|
| MAVPH2.1 | | Water | o-Xylene |
| MAVPH2.1 | | Water | Toluene |
| MAVPH2.1 | | Water | Xylenes, Total |

# Method Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11737-1

| Method | Method Description | Protocol | Laboratory |
|---|---|---|---|
| EPH | Extractable Petroleum Hydrocarbons (GC/MS) | MA DEP | EET NE |
| MAVPH2.1 | Massachusetts - Volatile Petroleum Hydrocarbons (GC) | MA DEP | EET NE |
| MAEPH2.1 | Massachusetts - Extractable Petroleum Hydrocarbons (GC) | MA DEP | EET NE |
| 6010D | Metals (ICP) | SW846 | EET NE |
| 7470A | Mercury (CVAA) | SW846 | EET NE |
| 3005A | Preparation, Total Metals | SW846 | EET NE |
| 3510C | Liquid-Liquid Extraction (Separatory Funnel) | SW846 | EET NE |
| 5030C | Purge and Trap | SW846 | EET NE |
| 7470A | Preparation, Mercury | SW846 | EET NE |
| MA EPH Frac | Massachusetts - Extractable Petroleum Hydrocarbon Fractionation | MA DEP | EET NE |

**Protocol References:**

MA DEP = Massachusetts Department Of Environmental Protection

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

**Laboratory References:**

EET NE = Eurofins New England, 646 Camp Ave, North Kingstown, RI 02852, TEL (413)789-9018

# Sample Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11737-1

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---|---|---|---|---|
| 620-11737-1 | LM-GW-UST01-0525-23 | Water | 05/25/23 11:30 | 05/26/23 16:59 |
| 620-11737-2 | LM-GW-UST02-0525-23 | Water | 05/25/23 17:10 | 05/26/23 16:59 |
| 620-11737-3 | TB-01-052523 | Water | 05/25/23 16:00 | 05/26/23 16:59 |

11737

620-11737 Chain of Custody

# Chain of Custody Record

eurofins | Environment Testing

| | | | | |
|---|---|---|---|---|
| Client Contact: Bridget Fortier | Sampler: S. Stone | Lab PM: A. Ray | Carrier Tracking No(s): | COC No: 620-10175-1337 2 |
| Company: Nobis Engineering, Inc | Phone: 774-245-3612 | E-Mail: araya@nobis-group.com | State of Origin: | Page: Page 2 of 2 |
| Address: 585 Middlesex Street | PWSID: | | | Job #: |
| City: Lowell | Due Date Requested: | | | |
| State, Zip: MA, 01851 | TAT Requested (days): standard 10 day | | | |
| Phone: | Compliance Project: Δ Yes Δ No | | | |
| Email: bfortier@nobis-group.com | PO #: | | | |
| Project Name: Former L&M | WO #: | | | |
| Site: | Project #: 50000101.005/400 | | | |
| | SSOW#: | | | |

**Analysis Requested**

**Preservation Codes:**

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)

Other:

| Sample Identification | Sample Date | Sample Time | Sample Type (C=comp, G=grab) | Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air) | Field Filtered Sample (Yes or No) | Perform MS/MSD (Yes or No) | VOC | GDH, ~~Metals~~ | Metals (Filtered) | Trip Blank | Total Number of containers | Special Instructions/Note: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preservation Code: | | X | X | A | A | D | A | X | |
| LM-GW-UST01-0525-23 | 5-25-23 | 1130 | G | Water | ✓ | X | X | X | | | | |
| LM-GW-UST02-0525-23 | 5-25-23 | 1710 | G | Water | ✓ | X | X | X | | | | |
| TB-01-052523 | 5-25-23 | 1600 | G | Water | | | | | | X | | |
| | | | | Water | | | | | | | | |
| | | | | Water | | | | | | | | |
| | | | | Water | | | | | | | | |
| | | | | Water | | | | | | | | |
| | | | | Water | | | | | | | | |
| | | | | Water | | | | | | | | |
| | | | | Water | | | | | | | | |
| | | | | Water | | | | | | | | |

Page 32 of 33

***Possible Hazard Identification***

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

***Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)***

☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested I, II, III, IV, Other (specify): EDD report PDF email

Special Instructions/QC Requirements: MADEP CAM methods required

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Empty Kit Relinquished by: | | Date: | | Time: | | Method of Shipment: | |
| Relinquished by: | | Date/Time: 5-26-23 1135 | Company | Received by: | | Date/Time: 5/26/23 1135 | Company |
| Relinquished by: | | Date/Time: 5/26/23 16:59 | Company | Received by: | | Date/Time: 5/26/23 16:59 | Company: CHC |
| Relinquished by: | | Date/Time | Company | Received by: | | Date/Time | Company |

Custody Seals Intact: Δ Yes Δ No | Custody Seal No :

Cooler Temperature(s) °C and Other Remarks: 3.4 to 3.6 #6

6/5/2023

Ver: 06/08/2021

# Login Sample Receipt Checklist

Client: Nobis Engineering, Inc.

Job Number: 620-11737-1

**Login Number: 11737**
**List Number: 1**
**Creator: Makhoul, Elie**

**List Source: Eurofins New England**

| Question | Answer | Comment |
|---|---|---|
| Radioactivity wasn't checked or is </= background as measured by a survey meter. | N/A | |
| The cooler's custody seal, if present, is intact. | N/A | |
| Sample custody seals, if present, are intact. | N/A | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| Is the Field Sampler's name present on COC? | True | |
| There are no discrepancies between the containers received and the COC. | True | |
| Samples are received within Holding Time (excluding tests with immediate HTs) | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| Sample Preservation Verified. | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| Containers requiring zero headspace have no headspace or bubble is <6mm (1/4"). | True | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |
| Residual Chlorine Checked. | N/A | |

October 2, 2023
Nobis File No. S00001.05

Ms. Katy Deng
USEPA – Region 1
Land, Chemicals, and Redevelopment Division
5 Post Office Square, Suite 100
Boston, MA 02109-3912

Re: USEPA Contract No. 68HE0122D0001
USEPA Task Order No. 68HE0122F0044
Targeted Brownfields Assessment (TBA)
Former L&M Service Station Site
Lunenburg, Massachusetts
Sample Delivery Group (SDG) No. 620117781
Eurofins New England, North Kingstown, RI
Phoenix Environmental Laboratories, Inc., Manchester, CT (reactive cyanide and reactive sulfide)

Tier 1 Stage 2A Organic and Inorganic Data Review:

Volatile Organic Compounds (VOCs by 8260C), Semivolatile Organic Compounds (SVOCs by 8270D), Pesticides (8081B), Polychlorinated Biphenyls (PCBs by 8082), RCRA-8 Metals (6010D/7471A), Toxicity Characteristic Leaching Procedure (TCLP) RCRA-8 Metals (1311/601D/7470A), Total Extractable Petroleum Hydrocarbons (ETPH by 8100), General Chemistry Parameters (Specific Conductance [SM 2510B], Ignitability [1030], Reactive Cyanide [9014/9034], Reactive Sulfide [9034], Corrosivity [9045D])

2/Soil Samples: LM-SO-SD01-053123, LM-SO-SD02-053123

Dear Ms. Deng:

Nobis Group (Nobis), under a USEPA contract as a subcontractor to KGSNE JV, LLC, performed a Tier 1 Stage 2A manual data review (S2AVM) on the organic and inorganic analytical data for the samples listed above. The samples were collected by Nobis at the Former L&M Service Station Site located in Lunenburg, Massachusetts on May 31, 2023. The samples were analyzed for VOCs by 8260C, SVOCs by 8270D, Pesticides by 8081B, PCBs by 8082, RCRA-8 Metals by 6010D/7471A, TCLP RCRA-8 Metals by 1311/6010D/7470A, ETPH by 8100, Specific Conductance by Standard Method 2510B, Ignitability by 1020, and Corrosivity by 9045D by Eurofins New England in North Kingstown, RI. Reactive cyanide and Reactive Sulfide analyses were performed by Phoenix Environmental Laboratories, Inc. in Manchester, CT under sub-contract to Eurofins New England.

The Tier 1 Stage 2A manual data review was performed in accordance with the Region 1 - EPA New England Environmental Data Review Supplement for Region I Data Review Elements and Superfund Specific Guidance/Procedures (September 2020); USEPA's National Functional Guidelines for Organic Superfund Methods Data Review (November 2020); USEPA's National Functional Guidelines for Inorganic Superfund Methods Data Review (November 2020); the Program Quality Assurance Project Plan (Program QAPP) dated October 2022, and the Quality Assurance Project Plan Addendum (QAPPA) (May 2023) for the Former L&M Service Station Site, which appends the October 2022 Program QAPP.



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585 Middlesex Street
Lowell, MA 01851
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The data were evaluated based on the following parameters:

| | | |
|---|---|---|
| * | • | Overall Evaluation of Data and Potential Usability Issues |
| | • | Data Completeness |
| | • | Preservation and Technical Holding Times |
| * | • | Blanks |
| * | • | Surrogates (organic analyses only) |
| NA | • | Internal Standards |
| * | • | Matrix Spike Analysis |
| | • | Laboratory Duplicates |
| | • | Laboratory Control Samples (LCS) |
| NA | • | Field Duplicates |
| NA | • | ICP Serial Dilutions (metals only) |
| NA | • | Performance Evaluation (PE) Samples |
| NA | • | Target Analyte Identification |
| * | • | Reported Quantitation Limits |

* All criteria were met for this parameter or did not require qualification.
NA – Not applicable.

**Overall Evaluation of Data and Potential Usability Issues**

The site sampling objectives are:

- Characterize in-situ soil based on AOCs identified by Fuss & O'Neill in November 2020 Phase I for the presence of possible site-related contamination.
- Evaluate groundwater elevation.
- Evaluate presence/absence of groundwater contamination related to site.

Note that the laboratory inadvertently reported results for total extractable petroleum hydrocarbons (ETPH) (i.e., DRO C9-C36) by SW-846 Method 8100 rather than results for total petroleum hydrocarbon (TPH) by Method 8015, as indicated in the QAPPA. Site objectives may be impacted.

Results for bis(-chloroisopropyl)ether (2,2'-oxybis(1-chloropropane)) and N-nitrosodimethylamine were rejected (R) in both samples due to low LCS/LCSD recovery.

The remaining data meet the project quality criteria and can be used without restriction except as summarized below. The attachments provide details and supporting documentation.

**VOCs:**
Results were qualified for LCS recovery.

**SVOCS:**
Results were rejected for LCS recovery. Results were also qualified for LCS recovery.

**Pesticides:**
Qualification of the data was not required.

**PCBs:**
Qualification of the data was not required.

**RCRA-8 Metals:**
Results were qualified for LCS recovery.

**TCLP RCRA-8 Metals:**
Qualification of the data was not required.

**ETPH:**
Qualification of the data was not required.

**General Chemistry Parameters:**
Results were qualified for holding time exceedance and laboratory duplicate imprecision.

Please contact Linda Terzis at lterzis@nobis-group.com should you have any questions or comments regarding this information.

Sincerely,

NOBIS GROUP®

Linda Terzis
Data Validator

Gary Glennon
Data Validator

Tables: Data Summary Tables – Tier 1 Stage 2A (S2AVM) Validated Data
Data Qualification Actions Table

Attachments: Data Review Checklist
Support Documentation
COC

cc: Denis McGrath (Nobis Group)
Adam Roy (Nobis Group)

# DATA SUMMARY TABLE

| **Analysis** | | Metals in Soil | |
|---|---|---|---|
| **Lab Sample ID** | | 620-11778-1 | 620-11778-2 |
| **Field Sample ID** | | LM-SO-SD01-053123 | LM-SO-SD02-053123 |
| **Sample Type** | | N | N |
| **Parent Sample ID** | | | |
| **Sample Date** | **Units** | 05/31/23 | 05/31/23 |
| Arsenic | mg/kg | 22 | 15 |
| Barium | mg/kg | 42 | 33 |
| Cadmium | mg/kg | 0.76 UJ | 0.92 UJ |
| Chromium | mg/kg | 21 | 18 |
| Lead | mg/kg | 29 | 20 |
| Mercury | mg/kg | 0.056 | 0.035 |
| Selenium | mg/kg | 2.3 UJ | 2.8 UJ |
| Silver | mg/kg | 2.3 U | 2.8 U |

# DATA SUMMARY TABLE

| **Analysis** | | Pesticides/PCBs in Soil | |
|---|---|---|---|
| **Lab Sample ID** | | 620-11778-1 | 620-11778-2 |
| **Field Sample ID** | | LM-SO-SD01-053123 | LM-SO-SD02-053123 |
| **Sample Type** | | N | N |
| **Parent Sample ID** | | | |
| **Sample Date** | **Units** | 05/31/23 | 05/31/23 |
| 4,4'-DDD | ug/kg | 8.5 U | 8.4 U |
| 4,4'-DDE | ug/kg | 8.5 U | 8.4 U |
| 4,4'-DDT | ug/kg | 1.7 | 1.7 |
| Alachlor | ug/kg | 5.3 U | 5.2 U |
| Aldrin | ug/kg | 5.3 U | 5.2 U |
| alpha-BHC | ug/kg | 5.3 U | 5.2 U |
| Aroclor 1016 | ug/kg | 35 U | 35 U |
| Aroclor 1221 | ug/kg | 35 U | 35 U |
| Aroclor 1232 | ug/kg | 35 U | 35 U |
| Aroclor 1242 | ug/kg | 35 U | 35 U |
| Aroclor 1248 | ug/kg | 35 U | 35 U |
| Aroclor 1254 | ug/kg | 35 U | 35 U |
| Aroclor 1260 | ug/kg | 35 U | 35 U |
| Aroclor 1262 | ug/kg | 35 U | 35 U |
| Aroclor 1268 | ug/kg | 35 U | 35 U |
| beta-BHC | ug/kg | 5.3 U | 5.2 U |
| cis-Chlordane | ug/kg | 5.3 U | 5.2 U |
| delta-BHC | ug/kg | 5.3 U | 5.2 U |
| Dieldrin | ug/kg | 5.3 U | 5.2 U |
| Endosulfan I | ug/kg | 5.3 U | 5.2 U |
| Endosulfan II | ug/kg | 8.5 U | 8.4 U |

## DATA SUMMARY TABLE

| **Analysis** | | Pesticides/PCBs in Soil | |
|---|---|---|---|
| **Lab Sample ID** | | 620-11778-1 | 620-11778-2 |
| **Field Sample ID** | | LM-SO-SD01-053123 | LM-SO-SD02-053123 |
| **Sample Type** | | N | N |
| **Parent Sample ID** | | | |
| **Sample Date** | **Units** | 05/31/23 | 05/31/23 |
| Endosulfan Sulfate | ug/kg | 8.5 U | 8.4 U |
| Endrin | ug/kg | 8.5 U | 8.4 U |
| Endrin Aldehyde | ug/kg | 8.5 U | 8.4 U |
| Endrin Ketone | ug/kg | 8.5 U | 8.4 U |
| gamma-BHC (Lindane) | ug/kg | 2.1 U | 2.1 U |
| Heptachlor | ug/kg | 5.3 U | 5.2 U |
| Heptachlor Epoxide | ug/kg | 5.3 U | 5.2 U |
| Methoxychlor | ug/kg | 8.5 U | 8.4 U |
| Toxaphene | ug/kg | 110 U | 100 U |
| trans-Chlordane | ug/kg | 5.3 U | 5.2 U |

# DATA SUMMARY TABLE

| **Analysis** | | Semivolatiles in Soil | |
|---|---|---|---|
| **Lab Sample ID** | | 620-11778-1 | 620-11778-2 |
| **Field Sample ID** | | LM-SO-SD01-053123 | LM-SO-SD02-053123 |
| **Sample Type** | | N | N |
| **Parent Sample ID** | | | |
| **Sample Date** | **Units** | 05/31/23 | 05/31/23 |
| 1,2,4,5-Tetrachlorobenzene | ug/kg | 350 U | 700 U |
| 1,2,4-Trichlorobenzene | ug/kg | 350 U | 700 U |
| 1,2-Dichlorobenzene | ug/kg | 350 U | 700 U |
| 1,3-Dichlorobenzene | ug/kg | 350 U | 700 U |
| 1,4-Dichlorobenzene | ug/kg | 350 U | 700 U |
| 2,2'-Oxybis(1-chloropropane) | ug/kg | R | R |
| 2,4,5-Trichlorophenol | ug/kg | 350 U | 700 U |
| 2,4,6-Trichlorophenol | ug/kg | 180 U | 350 U |
| 2,4-Dichlorophenol | ug/kg | 180 U | 350 U |
| 2,4-Dimethylphenol | ug/kg | 350 U | 700 U |
| 2,4-Dinitrophenol | ug/kg | 350 U | 700 U |
| 2,4-Dinitrotoluene | ug/kg | 180 U | 350 U |
| 2,6-Dinitrotoluene | ug/kg | 180 U | 350 U |
| 2-Chloronaphthalene | ug/kg | 350 U | 700 U |
| 2-Chlorophenol | ug/kg | 180 U | 350 U |
| 2-Methylnaphthalene | ug/kg | 71 U | 140 U |
| 2-Methylphenol | ug/kg | 350 U | 700 U |
| 2-Nitroaniline | ug/kg | 350 U | 700 U |
| 2-Nitrophenol | ug/kg | 180 U | 350 U |
| 3 & 4 Methylphenol | ug/kg | 350 U | 700 U |
| 3,3'-Dichlorobenzidine | ug/kg | 350 U | 700 U |

# DATA SUMMARY TABLE

| **Analysis** | | Semivolatiles in Soil | |
|---|---|---|---|
| **Lab Sample ID** | | 620-11778-1 | 620-11778-2 |
| **Field Sample ID** | | LM-SO-SD01-053123 | LM-SO-SD02-053123 |
| **Sample Type** | | N | N |
| **Parent Sample ID** | | | |
| **Sample Date** | **Units** | 05/31/23 | 05/31/23 |
| 3-Nitroaniline | ug/kg | 350 U | 700 U |
| 4,6-Dinitro-2-methylphenol | ug/kg | 350 U | 700 U |
| 4-Bromophenyl-phenylether | ug/kg | 350 U | 700 U |
| 4-Chloro-3-methylphenol | ug/kg | 350 U | 700 U |
| 4-Chloroaniline | ug/kg | 180 U | 350 U |
| 4-Chlorophenyl-phenylether | ug/kg | 350 U | 700 U |
| 4-Nitroaniline | ug/kg | 180 U | 350 U |
| 4-Nitrophenol | ug/kg | 350 U | 700 U |
| Acenaphthene | ug/kg | 71 U | 140 U |
| Acenaphthylene | ug/kg | 71 U | 140 U |
| Acetophenone | ug/kg | 180 U | 350 U |
| Aniline | ug/kg | 350 U | 700 U |
| Anthracene | ug/kg | 71 U | 140 U |
| Azobenzene | ug/kg | 350 U | 700 U |
| Benzidine | ug/kg | 700 U | 1400 U |
| Benzo(a)anthracene | ug/kg | 65 | 86 |
| Benzo(a)pyrene | ug/kg | 69 | 140 U |
| Benzo(b)fluoranthene | ug/kg | 71 | 140 U |
| Benzo(g,h,i)perylene | ug/kg | 58 | 140 U |
| Benzo(k)fluoranthene | ug/kg | 78 | 110 |
| Benzoic Acid | ug/kg | 350 U | 700 U |

# DATA SUMMARY TABLE

| **Analysis** | | Semivolatiles in Soil | |
|---|---|---|---|
| **Lab Sample ID** | | 620-11778-1 | 620-11778-2 |
| **Field Sample ID** | | LM-SO-SD01-053123 | LM-SO-SD02-053123 |
| **Sample Type** | | N | N |
| **Parent Sample ID** | | | |
| **Sample Date** | **Units** | 05/31/23 | 05/31/23 |
| Benzyl Alcohol | ug/kg | 350 U | 700 U |
| Bis(2-chloroethoxy)methane | ug/kg | 350 UJ | 700 UJ |
| Bis(2-chloroethyl)ether | ug/kg | 180 UJ | 350 UJ |
| Bis(2-ethylhexyl)phthalate | ug/kg | 180 U | 350 U |
| Butylbenzylphthalate | ug/kg | 350 U | 700 U |
| Carbazole | ug/kg | 180 U | 350 U |
| Chrysene | ug/kg | 74 | 98 |
| Dibenz(a,h)anthracene | ug/kg | 71 U | 140 U |
| Dibenzofuran | ug/kg | 180 U | 350 U |
| Diethylphthalate | ug/kg | 350 U | 700 U |
| Dimethylphthalate | ug/kg | 350 U | 700 U |
| Di-N-Butylphthalate | ug/kg | 350 U | 700 U |
| Di-N-Octyl Phthalate | ug/kg | 350 U | 700 U |
| Fluoranthene | ug/kg | 110 | 130 |
| Fluorene | ug/kg | 71 U | 140 U |
| Hexachlorobenzene | ug/kg | 180 U | 350 U |
| Hexachlorobutadiene | ug/kg | 180 U | 350 U |
| Hexachlorocyclopentadiene | ug/kg | 180 U | 350 U |
| Hexachloroethane | ug/kg | 180 U | 350 U |
| Indeno(1,2,3-cd)pyrene | ug/kg | 71 U | 140 U |
| Isophorone | ug/kg | 180 U | 350 U |

## DATA SUMMARY TABLE

| **Analysis** | | Semivolatiles in Soil | |
|---|---|---|---|
| **Lab Sample ID** | | 620-11778-1 | 620-11778-2 |
| **Field Sample ID** | | LM-SO-SD01-053123 | LM-SO-SD02-053123 |
| **Sample Type** | | N | N |
| **Parent Sample ID** | | | |
| **Sample Date** | **Units** | 05/31/23 | 05/31/23 |
| Naphthalene | ug/kg | 71 U | 140 U |
| Naphthalene, 1-methyl- | ug/kg | 71 U | 140 U |
| Nitrobenzene | ug/kg | 180 U | 350 U |
| N-Nitrosodimethylamine (NDMA) | ug/kg | R | R |
| N-Nitroso-di-n-propylamine (NDPA) | ug/kg | 180 UJ | 350 UJ |
| N-Nitrosodiphenylamine | ug/kg | 350 U | 700 U |
| Pentachloronitrobenzene | ug/kg | 350 U | 700 U |
| Pentachlorophenol | ug/kg | 350 U | 700 U |
| Phenanthrene | ug/kg | 41 | 140 U |
| Phenol | ug/kg | 350 U | 700 U |
| Pyrene | ug/kg | 120 | 130 |
| Pyridine | ug/kg | 350 U | 700 U |

## DATA SUMMARY TABLE

| **Analysis** | | TCLP Metals in Soil | |
|---|---|---|---|
| **Lab Sample ID** | | 620-11778-1 | 620-11778-2 |
| **Field Sample ID** | | LM-SO-SD01-053123 | LM-SO-SD02-053123 |
| **Sample Type** | | N | N |
| **Parent Sample ID** | | | |
| **Sample Date** | **Units** | 05/31/23 | 05/31/23 |
| Arsenic | mg/L | 0.0045 | 0.0032 |
| Barium | mg/L | 0.38 | 0.23 |
| Cadmium | mg/L | 0.0011 | 0.0011 |
| Chromium | mg/L | 0.0078 | 0.0032 |
| Lead | mg/L | 0.024 | 0.052 |
| Mercury | mg/L | 0.0002 U | 0.0002 U |
| Selenium | mg/L | 0.03 U | 0.03 U |
| Silver | mg/L | 0.01 U | 0.01 U |

# DATA SUMMARY TABLE

| **Analysis** | | Volatiles in Soil | |
|---|---|---|---|
| **Lab Sample ID** | | 620-11778-1 | 620-11778-2 |
| **Field Sample ID** | | LM-SO-SD01-053123 | LM-SO-SD02-053123 |
| **Sample Type** | | N | N |
| **Parent Sample ID** | | | |
| **Sample Date** | **Units** | 05/31/23 | 05/31/23 |
| 1,1,1,2-Tetrachloroethane | ug/kg | 1.7 U | 1.6 U |
| 1,1,1-Trichloroethane | ug/kg | 1.7 U | 1.6 U |
| 1,1,2,2-Tetrachloroethane | ug/kg | 1.7 U | 1.6 U |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | ug/kg | 1.7 U | 1.6 U |
| 1,1,2-Trichloroethane | ug/kg | 1.7 U | 1.6 U |
| 1,1-Dichloroethane | ug/kg | 1.7 U | 1.6 U |
| 1,1-Dichloroethene | ug/kg | 1.7 U | 1.6 U |
| 1,1-Dichloropropene | ug/kg | 1.7 U | 1.6 U |
| 1,2,3-Trichlorobenzene | ug/kg | 1.7 U | 1.6 U |
| 1,2,3-Trichloropropane | ug/kg | 1.7 U | 1.6 U |
| 1,2,4-Trichlorobenzene | ug/kg | 1.7 U | 1.6 U |
| 1,2,4-Trimethylbenzene | ug/kg | 1.7 U | 1.6 U |
| 1,2-Dibromo-3-chloropropane | ug/kg | 3.5 U | 3.2 U |
| 1,2-Dibromoethane | ug/kg | 1.7 U | 1.6 U |
| 1,2-Dichlorobenzene | ug/kg | 1.7 U | 1.6 U |
| 1,2-Dichloroethane | ug/kg | 1.7 U | 1.6 U |
| 1,2-Dichloropropane | ug/kg | 1.7 U | 1.6 U |
| 1,3,5-Trichlorobenzene | ug/kg | 1.7 U | 1.6 U |
| 1,3,5-Trimethylbenzene | ug/kg | 1.7 U | 1.6 U |
| 1,3-Dichlorobenzene | ug/kg | 1.7 U | 1.6 U |
| 1,3-Dichloropropane | ug/kg | 1.7 U | 1.6 U |

# DATA SUMMARY TABLE

| **Analysis** | | Volatiles in Soil | |
|---|---|---|---|
| **Lab Sample ID** | | 620-11778-1 | 620-11778-2 |
| **Field Sample ID** | | LM-SO-SD01-053123 | LM-SO-SD02-053123 |
| **Sample Type** | | N | N |
| **Parent Sample ID** | | | |
| **Sample Date** | **Units** | 05/31/23 | 05/31/23 |
| 1,3-Dichloropropene | ug/kg | 1.7 U | 1.6 U |
| 1,4-Dichlorobenzene | ug/kg | 1.7 U | 1.6 U |
| 1,4-Dioxane | ug/kg | 35 U | 32 U |
| 2,2-Dichloropropane | ug/kg | 1.7 U | 1.6 U |
| 2-Butanone | ug/kg | 3.5 U | 3.2 U |
| 2-Chlorotoluene | ug/kg | 1.7 U | 1.6 U |
| 2-Hexanone | ug/kg | 3.5 U | 3.2 U |
| 4-Chlorotoluene | ug/kg | 1.7 U | 1.6 U |
| 4-Isopropyltoluene | ug/kg | 1.7 U | 1.6 U |
| 4-Methyl-2-pentanone | ug/kg | 3.5 U | 3.2 U |
| Acetone | ug/kg | 11 | 16 U |
| Acrylonitrile | ug/kg | 1.7 U | 1.6 U |
| Benzene | ug/kg | 1.7 U | 1.6 U |
| Bromobenzene | ug/kg | 1.7 U | 1.6 U |
| Bromochloromethane | ug/kg | 1.7 U | 1.6 U |
| Bromodichloromethane | ug/kg | 1.7 U | 1.6 U |
| Bromoform | ug/kg | 1.7 U | 1.6 U |
| Bromomethane | ug/kg | 3.5 U | 3.2 U |
| Carbon disulfide | ug/kg | 3.5 U | 3.2 U |
| Carbon tetrachloride | ug/kg | 1.7 U | 1.6 U |
| Chlorobenzene | ug/kg | 1.7 U | 1.6 U |

# DATA SUMMARY TABLE

| **Analysis** | | Volatiles in Soil | |
|---|---|---|---|
| **Lab Sample ID** | | 620-11778-1 | 620-11778-2 |
| **Field Sample ID** | | LM-SO-SD01-053123 | LM-SO-SD02-053123 |
| **Sample Type** | | N | N |
| **Parent Sample ID** | | | |
| **Sample Date** | **Units** | 05/31/23 | 05/31/23 |
| Chloroethane | ug/kg | 3.5 U | 3.2 U |
| Chloroform | ug/kg | 1.7 U | 1.6 U |
| Chloromethane | ug/kg | 3.5 U | 3.2 U |
| cis-1,2-Dichloroethene | ug/kg | 1.7 U | 1.6 U |
| cis-1,3-Dichloropropene | ug/kg | 1.7 U | 1.6 U |
| Dibromochloromethane | ug/kg | 1.7 U | 1.6 U |
| Dibromomethane | ug/kg | 1.7 U | 1.6 U |
| Dichlorodifluoromethane | ug/kg | 3.5 U | 3.2 U |
| Diethyl ether | ug/kg | 1.7 U | 1.6 U |
| Diisopropyl Ether | ug/kg | 1.7 U | 1.6 U |
| Ethanol | ug/kg | 350 UJ | 320 UJ |
| Ethylbenzene | ug/kg | 1.7 U | 1.6 U |
| Hexachlorobutadiene | ug/kg | 3.5 U | 3.2 U |
| Isopropylbenzene | ug/kg | 1.7 U | 1.6 U |
| m,p-Xylene | ug/kg | 1.7 U | 1.6 U |
| Methyl tert-butyl ether | ug/kg | 1.7 | 2.6 |
| Methylene chloride | ug/kg | 3.5 U | 3.2 U |
| Naphthalene | ug/kg | 1.7 U | 1.6 U |
| n-Butylbenzene | ug/kg | 3.5 U | 3.2 U |
| n-Propylbenzene | ug/kg | 1.7 U | 1.6 U |
| o-Xylene | ug/kg | 1.7 U | 1.6 U |

## DATA SUMMARY TABLE

| **Analysis** | | Volatiles in Soil | |
|---|---|---|---|
| **Lab Sample ID** | | 620-11778-1 | 620-11778-2 |
| **Field Sample ID** | | LM-SO-SD01-053123 | LM-SO-SD02-053123 |
| **Sample Type** | | N | N |
| **Parent Sample ID** | | | |
| **Sample Date** | **Units** | 05/31/23 | 05/31/23 |
| sec-Butylbenzene | ug/kg | 1.7 U | 1.6 U |
| Styrene | ug/kg | 1.7 U | 1.6 U |
| tert-Amyl methyl ether | ug/kg | 1.7 U | 1.6 U |
| tert-Butyl Alcohol | ug/kg | 35 U | 32 U |
| Tert-Butyl Ethyl Ether | ug/kg | 1.7 U | 1.6 U |
| tert-Butylbenzene | ug/kg | 1.7 U | 1.6 U |
| Tetrachloroethene | ug/kg | 1.7 U | 1.6 U |
| Tetrahydrofuran | ug/kg | 3.5 U | 3.2 U |
| Toluene | ug/kg | 1.7 U | 1.6 U |
| trans-1,2-Dichloroethene | ug/kg | 1.7 U | 1.6 U |
| trans-1,3-Dichloropropene | ug/kg | 1.7 U | 1.6 U |
| trans-1,4-Dichlorobutene | ug/kg | 8.7 U | 8.1 U |
| Trichloroethene | ug/kg | 1.7 U | 1.6 U |
| Trichlorofluoromethane | ug/kg | 1.7 U | 1.6 U |
| Vinyl chloride | ug/kg | 1.7 U | 1.6 U |
| Xylene (total) | ug/kg | 5.2 U | 4.8 U |

## DATA SUMMARY TABLE

| **Analysis** | | General Chemistry in Soil | |
|---|---|---|---|
| **Lab Sample ID** | | 620-11778-1 | 620-11778-2 |
| **Field Sample ID** | | LM-SO-SD01-053123 | LM-SO-SD02-053123 |
| **Sample Type** | | N | N |
| **Parent Sample ID** | | | |
| **Sample Date** | **Units** | 05/31/23 | 05/31/23 |
| Diesel Range Organics (C9-C36) | mg/kg | 93 | 410 |
| Ignitability | None | 0 U | 0 U |
| pH | S.U. | 6.8 J | 7 J |
| Reactive Cyanide | mg/kg | 5 U | 5 U |
| Reactive Sulfide | mg/kg | 20 U | 20 U |
| Specific Conductance | uS/cm | 1900 J | 200 J |
| Temperature | deg C | 28.5 | 28.5 |

**Data Review Qualification Actions**
**Former L&M Service Station**
**SDG 620117781**

| Parameter | Analyte | Samples | Evaluation Criteria | Action Needed | Comments |
|---|---|---|---|---|---|
| **VOCs** | | | | | |
| | Ethanol | LM-SO-SD01-053123, LM-SO-SD02-053123 | LCSD recovery | UJ | |
| **SVOCs** | | | | | |
| | bis(2-Chloroisopropyl)ether, N-nitrosodimethylamine | LM-SO-SD01-053123, LM-SO-SD02-053123 | LCS/LCSD recovery | R | |
| | bis(2-Chloroethoxy)methane, bis(2-chloroethyl)ether, and N-nitrosodi-n-propylamine | LM-SO-SD01-053123, LM-SO-SD02-053123 | LCSD recovery | UJ | |
| **Pesticides** | | | | | |
| | Qualification of the data was not required. | | | | |
| **PCBs** | | | | | |
| | Qualification of the data was not required. | | | | |
| **ETPH** | | | | | |
| | Qualification of the data was not required. | | | | |
| **RCRA-8 Metals** | | | | | |
| | Cadmium, selenium | LM-SO-SD01-053123, LM-SO-SD02-053123 | LCS/LCSD recovery | UJ | |
| **TCLP RCRA-8 Metals** | | | | | |
| | Qualification of the data was not required. | | | | |
| **General Chemistry (specific conductance, flashpoint, reactive cyanide, reactive sulfide, corrosivity)** | | | | | |
| | Corrosivity (pH) | SD02-053123 | Holding time | J | |
| | Specific conductivity | SD02-053123 | Laboratory duplicate | J | |

**Tier 1/Stage 2A Data Review Checklist**

**Project:** Former L&M Service Station, Lunenburg, Massachusetts
Targeted Brownfields Assessment (TBA)
**Project #:** S00001.05
**Case#:** NA
**Date:** 09/11/2023
**Methods:** Volatile Organic Compounds (VOCs by 8260C)
Semivolatile Organic Compounds (SVOCs by 8270D)
Pesticides (8081B)
Polychlorinated Biphenyls (PCBs by 8082)
RCRA-8 Metals (6010D/7471A)
Toxicity Characteristic Leaching Procedure (TCLP) RCRA-8 Metals (1311/6010D/7470A)
Total Extractable Petroleum Hydrocarbons (ETPH by Method 8100)
General Chemistry Parameters (Specific Conductance [SM 2510B], Ignitability [1030], Reactive Cyanide [9014/9034], Reactive Sulfide [9034], Corrosivity [9045D]

**Laboratory:** Eurofins New England Laboratory, North Kingstown, RI
Phoenix Environmental Laboratories, Inc., Manchester, CT (reactive cyanide and reactive sulfide analyses)
**SDG:** 620117781
**Reviewer:** Linda Terzis

1. **Case Narrative and Data Package Completeness (COC and Analyte List Review)**
Two (2) soil samples were listed on the COC for SDG 620117781. The samples were collected on 05/31/2023 and received at the Eurofins New England Laboratory on 05/31/2023 at a maximum temperature of 4.6 °C.

| Sample ID | Laboratory ID | Analyses |
|---|---|---|
| LM-SO-SD01-053123 | 620-11778-1 | VOCs, SVOCs, Pesticides, PCBs, RCRA-8 Metals, TCLP RCRA-8 Metals, ETPH, Specific Conductance, Ignitability, Reactive Cyanide, Reactive Sulfide, Corrosivity |
| LM-SO-SD02-053123 | 620-11778-2 | |

Note that the COC also includes an additional sample for VPH, EPH, and MCP metals analyses. Results for these analyses are reported in SDG 620117782. The review for this SDG (620117781) is limited to the samples and analyses listed above.

The data were evaluated using the site-specific Quality Assurance Project Plan Addendum (QAPPA) (dated May 2023) and the Program QAPP (dated October 2022). Both were prepared by KGSNE, LLC. The QAPPA appends and incorporates by reference the procedures and quality control measures detailed in the Program QAPP (October 2022). Therefore, site data for this SDG were evaluated using both the QAPPA of May 2023 and the Program QAPP dated October 2022. The Massachusetts Compendium of Analytical Methods (CAM) and/or SW-846 Methods were used to perform the analyses. Therefore, site data were also evaluated using CAM quality control (QC) limits, where applicable.


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The analyte lists reported by the laboratory were compared to the required analyte lists per Table 3 (soil) in the QAPPA (May 2023) for the site. Results for all requested analytes were reported with the following inconsistencies noted below.

SVOCs: Results were reported for all requested SVOCs except for 1,4-dioxane and 1,1'-biphenyl. Site objectives may be impacted.

Pesticides: Results for hexachlorobenzene were reported with the SVOC results rather than the pesticide results. No actions are required.

TPH: The laboratory inadvertently reported results for total extractable petroleum hydrocarbons (ETPH) (i.e., DRO C9-C36) by SW-846 Method 8100 rather than results for total petroleum hydrocarbons (TPH) by Method 8015, as indicated in the QAPPA. Site objectives may be impacted.

**2. Holding Time and Sample Preservation Compliance**

Receipt temperatures are acceptable (≤ 6°), as specified in the QAPPA (May 2023).

VOCs: Holding time criteria (analyzed within 14 days) met.

SVOCs: Holding time criteria (extracted within 14 days and analyzed within 40 days of extraction) met.

Pesticides: Holding time criteria (extracted within 14 days and analyzed within 40 days of extraction) met.

PCBs: Holding time criteria (extracted within 14 days and analyzed within 40 days of extraction) met.

ETPH: Holding time criteria (extracted within 14 days and analyzed within 40 days of extraction) met.

RCRA 8 Metals: Holding time criteria (analyzed within 28 days for mercury; within 180 days for all other analytes) were met.

TCLP RCRA Metals: Holding time criteria (analyzed within 28 days for mercury; within 180 days for all other analytes) were met.

Specific Conductance: Holding time criteria (analyzed within 14 days) met.

Ignitability: Holding time criteria (analyzed within 14 days) met.

Reactive Cyanide: Holding time criteria (analyzed within 14 days) met.

Reactive Sulfide: Holding time criteria (analyzed within 14 days) met.

Corrosivity: The holding time criteria in the QAPPA for the corrosivity test is listed as "as soon as possible" (ASAP). The ASAP criterion is generally considered to be within 15 minutes for NPDES compliance purposes. For RCRA compliance purposes, EPA expects that the pH of collected samples would be analyzed within a few hours of laboratory receipt, and not the next day

(https://www.epa.gov/hw-sw846/holding-time-preservation#:~:text=Methods%209040%20and%209045%20for,(pH)%20as%2015%20minutes). The samples were received at the laboratory on 05/31/2023 at 13:30 and the pH test was conducted on 06/01/2023 at 14:14 for both samples. Therefore, professional judgement was used to qualify the corrosivity results for samples LM-SO-SD01-053123 (620-11778-1) and LM-SO-SD02-053123 (620-11778-2) as estimated (J) due to holding time exceedance.

3. **Calibration Issues**

Not assessed for S2AVM data review.

4. **Laboratory and Field Blanks**

VOCs: Results for the VOC laboratory method blank were non-detect. No blank actions are required.

SVOCs: Results for the SVOC laboratory method blank were non-detect. No blank actions are required.

Pesticides: Results for the pesticides laboratory method blank were non-detect. No blank actions are required.

PCBs: Results for the PCB laboratory method blanks were non-detect. No blank actions are required.

ETPH: Results for the ETPH laboratory method blank were non-detect. No blank actions are required.

RCRA-8 Metals: Results for the metals and mercury laboratory method blanks were non-detect. No blank actions are required.

TCLP RCRA-8 Metals: Results for the TCLP RCRA-8 metals and mercury laboratory method and leachate blanks are non-detect. No blank actions are required.

General Chemistry Parameters: Laboratory blanks are associated with the specific conductance, reactive cyanide, and reactive sulfide tests. Results for these blanks are all non-detect. No blank actions are required.

An equipment blank was not submitted with the samples of this SDG. No actions are required.

5. **Interference Check Sample (metals only)**

Not assessed for S2AVM data review.

6. **Surrogates**

The Program QAPP (October 2022) was used to evaluate site data for surrogate recovery. If no Program QAPP-specific recovery limits were available for a surrogate, the MCP CAM recovery limits were used.

VOCs: Percent surrogate recoveries met the Program QAPP limits of 70-130%. No actions are required.

SVOC: Percent surrogate recoveries were within the Program QAPP limits of 30-130%. No actions are required.

Pesticides: Percent surrogate recoveries were within the Program QAPP limits of 30-150%. No actions are required.

PCBs: Percent surrogate recoveries were within the Program QAPP limits of 30-150%. No actions are required.

ETPH: Percent surrogate recoveries for the ETPH analysis were within the Program QAPP limits of 40-140% for DRO. No actions are required.

Surrogate recovery is not applicable for the RCRA-8 metals, TCLP RCRA-8 metals, and general chemistry parameters.

**7. Laboratory Control Samples**

VOCs: The percent recoveries in the VPH LCS/LCSD pair met the Program QAPP limits of 70-130% recovery (or 40-160% for compounds considered difficult to recover per the MassDEP CAM 8260B method) and RPDs ≤ 20% except for the recovery of ethanol, which was below the 70-130% limits (69%) in the LCSD analysis. Based on the NFGs (2020) guidance for MS/MSDs, the non-detect results for ethanol are qualified as estimated (UJ) in both soil samples due to the low LCSD recovery. RPDs all met the Program QAPP limit of ≤ 20%.

The recoveries for bromomethane and dichlorodifluoromethane exceeded 70-130% limits. These compounds are considered potentially difficult to recover compounds and were therefore evaluated using the 40-160% recovery limits. The recoveries were within 40-160% and no actions are required for these compound results.

SVOCs: The percent recoveries for bis(2-chloroisopropyl)ether and N-nitrosodimethylamine are below the 40-140% limits for base/neutral compounds in the LCS and LCSD pair associated with the samples of this SDG. Based on the NFGs (2020), the non-detect results for bis(2-chloroisopropyl)ether (i.e., 2,2'-oxybis(1-chloropropane)) and N-nitrosodimethylamine are rejected (R) in both soil samples. Data are not usable for site decision-making purposes.

The recoveries for bis(2-chloroethoxy)methane, bis(2-chloroethyl)ether, and N-nitrosodi-n-propylamine were below the 40-140% limits for base/neutral compounds in the LCSD analysis of the LCS/LCSD pair. Results for these compounds were non-detect in the samples. Professional judgement was used to qualify the non-detect results for bis(2-chloroethoxy)methane, bis(2-chloroethyl)ether, and N-nitrosodi-n-propylamine as estimated (UJ), rather than rejected (R), in both soil samples since the recoveries in the LCS were acceptable for all three compounds.

Recoveries for hexachlorocyclopentadiene and hexachlorobenzene exceeded the 40-140% limits for base/neutral compounds (143% in the LCS and 144% in the LCSD, respectively). Results for these compounds were non-detect in the samples. Based on the NFGs (2020), the non-detect results for hexachlorocyclopentadiene and hexachlorobenzene are accepted unqualified in both soil samples since the potential bias is high.

The recovery for benzidine was within the 40-140% limits for base/neutral compounds in the LCS analysis but exceeded the calibration range in the LCSD analysis. An RPD was not calculated.

Results for benzidine were non-detect in the samples. Based on the NFGs (2020), the non-detect results for benzidine are accepted unqualified since the potential bias is high.
Pesticides: Percent recoveries and RPDs for the pesticides LCS/LCSD analyses were within the QAPP recovery limits of 40-140% and RPD ≤ 30%. No actions are required.

PCBs: Percent recoveries and RPDs for the PCB LCS/LCSD analyses were within the QAPP recovery limits of 40-140% and RPD ≤ 30%. No actions are required.

ETPH: Percent recoveries and the RPD for the laboratory's ETPH LCS/LCSD pair met the criteria for the DRO analysis (60-140% recovery and RPD ≤ 50%) as specified in the QAPPA. No actions are required.

RCRA-8 Metals: The recoveries of cadmium and selenium were below the 80-120% recovery limits in the LCS and/or LCSD analyses associated with the samples. Recoveries and RPDs for all other metal analytes and mercury met the QAPP limits. Cadmium and selenium were non-detect in the samples. Based on the NFGs (2020), the non-detect results for cadmium and selenium are qualified as estimated (UJ) in both samples due to the low recoveries.

TCLP RCRA-8 Metals: The recoveries and RPDs for all metal analytes and mercury met the QAPP recovery limits of 80-120% and RPDs ≤ 20%. No actions are required.

General Chemistry Parameters: Recoveries for specific conductivity, ignitability, reactive cyanide, and reactive sulfide tests were within laboratory limits. No action is required.

**8. Matrix Spikes**

Based on the Region I EPA New England Environmental Data Review Supplement (Region I Supplement, 2020), MS/MSD qualifications are applied to all field samples with similar matrix, unless otherwise noted.

MS/MSD analyses were performed for the total mercury and TCLP RCRA-8 metals analyses only.

RCRA-8 Metals: MS/MSD analyses were performed for mercury on sample LM-SO-SD01-053123 (620-11778-1). MS/MSD results met the QAPP limits of 75-125% recovery and RPD ≤ 35%. No actions are required.

TCLP RCRA-8 Metals: MS/MSD analyses were performed for TCLP RCRA-8 metals on sample LM-SO-SD02-053123 (620-11778-2). MS/MSD results met the QAPP limits of 75-125% recovery and RPD ≤ 35%. No actions are required.

**9. Laboratory Duplicates (metals only)**

RCRA-8 Metals: A laboratory duplicate analysis was performed for mercury on sample LM-SO-SD01-053123 (620-11778-1). The RPD was not calculated since the sample result was < 5x RL and the duplicate result was < RL. No actions are required.

TCLP RCRA-8 Metals: A laboratory duplicate analysis was performed for TCLP RCRA-8 metals on sample LM-SO-SD02-053123 (620-11778-2). RPDs for detected results met the QAPP limit of ≤ 35%. No actions are required.

General Chemistry Parameters: Laboratory duplicate analyses were performed for specific conductivity, ignitability, and corrosivity.

The laboratory duplicate analysis for specific conductivity was performed on sample LM-SO-SD02-053123 (620-11778-2). The RPD (40%) exceeded the laboratory limit of ≤ 5%. The sample and duplicate sample results are > 5x RL. Professional judgment was used to qualify the detected results for specific conductivity as estimated (J) in both soil samples, based on the NFGs for inorganic analyses.

The laboratory duplicate analysis for ignitability was performed on sample LM-SO-SD01-053123 (620-11778-1) and the laboratory duplicate analysis for corrosivity was performed on sample LM-SO-SD02-053123 (620-11778-2 ). Laboratory duplicate results for both analyses met the laboratory limits and no action is required.

**10. Serial Dilution (metals only)**

A serial dilution analysis was not performed for this SDG. No actions are required.

**11. Field Duplicate Precision**

Acceptable field duplicate precision is an RPD of ≤ 50% for results > 5x RL and an absolute difference < 4x RL for results < 5x RL, based on the EPA Region I Supplement (2020).

Based on the Region I Supplement (2020), qualifications are applied to all field samples with similar matrix, unless otherwise indicated.

A field duplicate sample was not submitted with the samples of this SDG. No action is required.

**12. Internal Standards**

Not assessed for S2AVM data review.

**13. Dual Column Precision (Pesticides and PCBs only)**

The laboratory did not report RPDs for dual column results for the pesticide or PCB analyses. The MassDEP CAM for pesticide and PCB methods indicate that the laboratory must qualify and/or note in the case narrative if an RPD between the dual column results exceeds 40%. There is no indication in the laboratory report that any RPD exceeded 40%. No actions are required.

**14. Performance Evaluation Samples**

Performance Evaluation (PE) samples were not included in this SDG.

**15. Reporting Limits**

Project action levels (PALs) for the site are limited to the VPH, EPH, and metals/mercury analyses, per the QAPPA. Therefore, there were no PALs associated with the analyses of this SDG.

## 16. Other

EPA Region I Supplement (2020) criterion for percent solids content (> 30%) was met for the soil samples.

Overall bias is considered indeterminate when cumulative nonconformances do not show a consistent bias or in cases of the presence of conflicting high and low biases.

11778

# Chain of Custody Record

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| | | | | |
|---|---|---|---|---|
| | Sampler: S Stone | Lab PM | Carrier Tracking No(s) | COC No: 620-10175-1337 3 |
| Bridget Fortier | Phone | E-Mail: arcyn@nobis-group.com | State of Origin: MA | Page: Page ~~3 of 3~~ 1 of 1 |
| Company: Nobis Engineering, Inc | PWSID | | | Job #: |

| | | |
|---|---|---|
| Address: 585 Middlesex Street | Due Date Requested: 6/2-23 | |
| City: Lowell | TAT Requested (days): LM-SO-SD01-053123 ]2 day; LM-SO-SD02-053123 | |
| State, Zip: MA, 01851 | Compliance Project: Δ Yes Δ No | |
| Phone | PO #: | |
| Email: bfortier@nobis-group com | WO #: | |
| Project Name: Former L&M | Project #: 50000105/400 | |
| Site: Former L&M | SSOW#: | |

**Analysis Requested**

**Preservation Codes:**

A - HCL; B - NaOH; C - Zn Acetate; D - Nitric Acid; E - NaHSO4; F - MeOH; G - Amchlor; H - Ascorbic Acid; I - Ice; J - DI Water; K - EDTA; L - EDA; M - Hexane; N - None; O - AsNaO2; P - Na2O4S; Q - Na2SO3; R - Na2S2O3; S - H2SO4; T - TSP Dodecahydrate; U - Acetone; V - MCAA; W - pH 4-5; Y - Trizma; Z - other (specify)

Other:

| Sample Identification | Sample Date | Sample Time | Sample Type (C=Comp, G=grab) | Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air) | Field Filtered Sample (Yes or No) | Perform MS/MSD (Yes or No) | VPH | EPH, metals, % moisture | VOCs LL | VOCs HL | SVOCs, pest, PCBs & TPH | Total & TCLP RCRA | Spec. Cond, Flashpoint, Reactivity | Total Number of containers | Special Instructions/Note: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preservation Code: | | | | F | | J | F | | | | | |
| | | | | Water | | | | | | | | | | | |
| | | | | Solid | | | | | | | | | | | |
| | | | | Water | | | | | | | | | | | |
| LM-SO-SD01-053123 | 5-31-23 | 750 | C | Soil | | | | | X | X | X | X | X | | |
| LM-SO-SD02-053123 | 5-31-23 | 810 | C | Soil | | | | | X | X | X | X | X | | |
| LM-SO-UST04-053023 | 5-30-23 | 1330 | C | Soil | | | X | X | | | | | | | |

| | |
|---|---|
| **Possible Hazard Identification**: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological | **Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)**: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months |
| Deliverable Requested I, II, III, IV, Other (specify): EDD PDF and email | Special Instructions/QC Requirements: MCP CAM Methods; LM-SO-UST04-053023 is standard TAT |

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Relinquished by: | Date/Time: 5-31-23 10:55 | Company | Received by: | Date/Time: 5/31/23 10:55 | Company |
| Relinquished by: | Date/Time: 5/31/23 | Company | Received by: | Date/Time: 5/31/23 13:30 | Company |
| Relinquished by: | Date/Time: | Company | Received by: | Date/Time: | Company |

| | |
|---|---|
| Custody Seals Intact: Δ Yes Δ No | Custody Seal No.. |
| Cooler Temperature(s) °C and Other Remarks: 0.9 +0.2 -0.6 IR#5 | |

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# ANALYTICAL REPORT

## PREPARED FOR

Attn: Adam Roy
Nobis Engineering, Inc.
585 Middlesex Street
Lowell, Massachusetts 01851

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## JOB DESCRIPTION

Former L&M - Lunenburg MA

## JOB NUMBER

620-11778-1

Eurofins New England
646 Camp Ave
North Kingstown RI 02852

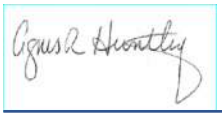
See page two for job notes and contact information.

## Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northeast, LLC Project Manager.

## Authorization



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Authorized for release by
Agnes Huntley, Project Manager
Agnes.Huntley@et.eurofinsus.com
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# Table of Contents

Cover Page . . . . . 1
Table of Contents . . . . . 3
Definitions/Glossary . . . . . 4
State Forms . . . . . 6
    MCP Checklist . . . . . 6
Case Narrative . . . . . 7
Detection Summary . . . . . 9
Client Sample Results . . . . . 11
Surrogate Summary . . . . . 23
QC Sample Results . . . . . 25
QC Association Summary . . . . . 47
Lab Chronicle . . . . . 52
Certification Summary . . . . . 54
Method Summary . . . . . 59
Sample Summary . . . . . 60
Chain of Custody . . . . . 61
Receipt Checklists . . . . . 62

# Definitions/Glossary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11778-1

## Qualifiers

### GC/MS VOA

| Qualifier | Qualifier Description |
|---|---|
| *- | LCS and/or LCSD is outside acceptance limits, low biased. |
| *+ | LCS and/or LCSD is outside acceptance limits, high biased. |
| J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |

### GC/MS Semi VOA

| Qualifier | Qualifier Description |
|---|---|
| *- | LCS and/or LCSD is outside acceptance limits, low biased. |
| *+ | LCS and/or LCSD is outside acceptance limits, high biased. |
| *1 | LCS/LCSD RPD exceeds control limits. |
| E | Result exceeded calibration range. |
| J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |

### GC Semi VOA

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

### Metals

| Qualifier | Qualifier Description |
|---|---|
| F5 | Duplicate RPD exceeds limit, and one or both sample results are less than 5 times RL, and the absolute difference between results is < the upper reporting limits for both. |
| J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |

### General Chemistry

| Qualifier | Qualifier Description |
|---|---|
| F3 | Duplicate RPD exceeds the control limit |

## Glossary

| Abbreviation | These commonly used abbreviations may or may not be present in this report. |
|---|---|
| ¤ | Listed under the "D" column to designate that the result is reported on a dry weight basis |
| %R | Percent Recovery |
| CFL | Contains Free Liquid |
| CFU | Colony Forming Unit |
| CNF | Contains No Free Liquid |
| DER | Duplicate Error Ratio (normalized absolute difference) |
| Dil Fac | Dilution Factor |
| DL | Detection Limit (DoD/DOE) |
| DL, RA, RE, IN | Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample |
| DLC | Decision Level Concentration (Radiochemistry) |
| EDL | Estimated Detection Limit (Dioxin) |
| LOD | Limit of Detection (DoD/DOE) |
| LOQ | Limit of Quantitation (DoD/DOE) |
| MCL | EPA recommended "Maximum Contaminant Level" |
| MDA | Minimum Detectable Activity (Radiochemistry) |
| MDC | Minimum Detectable Concentration (Radiochemistry) |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| MPN | Most Probable Number |
| MQL | Method Quantitation Limit |
| NC | Not Calculated |
| ND | Not Detected at the reporting limit (or MDL or EDL if shown) |
| NEG | Negative / Absent |
| POS | Positive / Present |
| PQL | Practical Quantitation Limit |
| PRES | Presumptive |
| QC | Quality Control |

## Glossary (Continued)

| Abbreviation | These commonly used abbreviations may or may not be present in this report. |
|---|---|
| RER | Relative Error Ratio (Radiochemistry) |
| RL | Reporting Limit or Requested Limit (Radiochemistry) |
| RPD | Relative Percent Difference, a measure of the relative difference between two points |
| TEF | Toxicity Equivalent Factor (Dioxin) |
| TEQ | Toxicity Equivalent Quotient (Dioxin) |
| TNTC | Too Numerous To Count |

# MassDEP Analytical Protocol Certfication Form

Laboratory Name: Eurofins New England | Project #: 620-11778-1

Project Location: Former L&M - Lunenburg MA | RTN:

**This Form provides certifications for the following data set: list Laboratory Sample ID Number(s):**
620-11778-1, 620-11778-2

Matrices: ☑ Groundwater/Surface Water ☑ Soil/Sediment ☐ Drinking Water ☐ Air ☐ Other:

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

| | | | | | |
|---|---|---|---|---|---|
| 8260 VOC CAM II A ☑ | 7470/7471 Hg CAM III B ☑ | MassDEP VPH (GC/PID/FID) CAM IV A ☐ | 8082 PCB CAM V A ☑ | 9014 Total Cyanide/PAC CAM VI A ☐ | 6860 Perchlorate CAM VIII B ☐ |
| 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 ☐ |
| 6010 Metals CAM III A ☑ | 6020 Metals CAM III D ☐ | MassDEP EPH CAM IV B ☐ | 8151 Herbicides CAM V C ☐ | 8330 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 ☐ No |
| **B** | Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed? | ☑ Yes ☐ 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 ☐ No |
| **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 ☐ No |
| **E** | VPH, EPH, APH, and TO-15 only<br>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).<br>b. APH and TO-15 Methods only: Was the complete analyte list reported for each method? | ☐ Yes ☐ No<br>☐ 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 ☐ 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 protocol(s)? | ☐ Yes ☑ No[1] |

***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[1] |
| **I** | Were results reported for the complete analyte list specified in the selected CAM protocol(s)? | ☐ Yes ☑ No[1] |

*1 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, is accurate and complete.***

**Signature:** Agnes R Huntley **Position:** Project Manager

**Printed Name:** Agnes Huntley **Date:** 06/05/2023

## Job ID: 620-11778-1

### Laboratory: Eurofins New England

**Narrative**

**Job Narrative**
**620-11778-1**

**Receipt**
The samples were received on 5/31/2023 1:30 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.6º C.

**GC/MS VOA**
Method 8260C: The large number of analytes included in the continuing calibration verification (CCV) gives a high probability that one or more analytes will be outside acceptance criteria. As indicated in the reference method, analysis may proceed as long as no more than 20% of the analytes of interest are outside the method-defined %D criteria. Affected analyte (high bias): Dichlorodifluoromethane. (CCVIS 620-23153/3)

Method 8260C: The laboratory control sample (LCS) for preparation batch 620-23152 and analytical batch 620-23153 recovered outside control limits for the following analytes: Dichlorodifluoromethane and Ethanol, which have been identified as poor performing analytes when analyzed using this method. According to MCP requirements, poor performers are allowed to recover within 40-160%; therefore, re-extraction/re-analysis was not performed. These results have been reported and qualified.

Method 8260C: The laboratory control sample duplicate (LCSD) for preparation batch 620-23152 and analytical batch 620-23153 recovered outside control limits for the following analytes: Dichlorodifluoromethane and Bromomethane, which have been identified as poor performing analytes when analyzed using this method. According to MCP requirements, poor performers are allowed to recover within 40-160%; therefore, re-extraction/re-analysis was not performed. These results have been reported and qualified.

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

**GC/MS Semi VOA**
Method 8270D: The large number of analytes included in the continuing calibration verification (CCV) (CCVIS 620-23208/3) gives a high probability that one or more analytes will be outside acceptance criteria. As indicated in the MCP method, analysis may proceed as long as no more than 20% of the analytes of interest are outside the method-defined %D criteria. Benzidine.

Method 8270D: The laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 620-23157 and analytical batch 620-23208 recovered outside control limits for the following analytes: bis (2-chloroisopropyl) ether and N-Nitrosodimethylamine. MCP allows for <10% of analytes to fall outside of control limits. The affected target analytes recovered within acceptance limits >10%; therefore, demonstrates the analytical system had sufficient sensitivity to detect the compounds had they been present. Since the affected target compounds were not detected in the samples, the data have been reported and qualified.

Method 8270D: The laboratory control sample (LCS) for preparation batch 620-23157 and analytical batch 620-23208 recovered outside control limits for the following analyte: Hexachlorocyclopentadiene. This analyte was biased high in the LCS and was not detected in the associated samples; therefore, the data have been reported.

Method 8270D: The laboratory control sample duplicate (LCSD) for preparation batch 620-23157 and analytical batch 620-23208 recovered outside control limits for the following analytes: Bis(2-chloroethoxy)methane, Bis(2-chloroethyl)ether, Hexachlorobenzene and N-Nitrosodi-n-propylamine. The affected target analytes recovered within acceptance limits in the LCS, therefore the data have been reported.

Method 8270D: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 620-23157 and analytical batch 620-23208 recovered outside control limits for the following analytes: N-Nitrosodimethylamine. The individual percent recoveries are within acceptance criteria.

Method 8270D: The laboratory control sample duplicate (LCSD) for preparation batch 620-23157 and analytical batch 620-23208 recovered above the upper calibration limit for the following analyte: Benzidine. This analyte was biased high in the LCSD and was not detected in the associated samples; therefore, the data have been reported. The analyte recovered within calibration limits in the LCS.

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

## Job ID: 620-11778-1 (Continued)

### Laboratory: Eurofins New England (Continued)

**GC Semi VOA**
Method 8082: The following samples exhibited elevated noise or matrix interferences for one or more analytes causing elevation of the detection limit (EDL): LM-SO-SD01-053123 (620-11778-1) and LM-SO-SD02-053123 (620-11778-2) . The reporting limit (RL) for the affected analytes has been raised to be equal to the EDL.

Method 8081B: The continuing calibration verification (CCV) associated with batch 620-23216 recovered outside acceptance criteria, low biased, for Endrin on the confirmation column. The analyte passes within method criteria on the primary column, thus all data was reported off the primary column.

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

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

**General Chemistry**
Method SM 2510B: The sample duplicate (DUP) precision for preparation batch 620-23168 and analytical batch 620-23175 was outside control limits. Sample non-homogeneity is suspected.

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

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

**Subcontract Work**
Methods Reactive Cyanide, Reactive Sulfide: These methods were subcontracted to Phoenix Environmental Laboratories, Inc.. The subcontract laboratory certifications are different from that of the facility issuing the final report.

# Detection Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11778-1

## Client Sample ID: LM-SO-SD01-053123 — Lab Sample ID: 620-11778-1

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Acetone | 11 | J | 17 | 3.9 | ug/Kg | 1 | ☼ | 8260C | Total/NA |
| Methyl tert-butyl ether | 1.7 | | 1.7 | 1.0 | ug/Kg | 1 | ☼ | 8260C | Total/NA |
| Benzo[a]anthracene | 65 | J | 71 | 40 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Benzo[a]pyrene | 69 | J | 71 | 51 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Benzo[b]fluoranthene | 71 | | 71 | 59 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Benzo[g,h,i]perylene | 58 | J | 71 | 55 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Benzo[k]fluoranthene | 78 | | 71 | 55 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Chrysene | 74 | | 71 | 40 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Fluoranthene | 110 | | 71 | 42 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Phenanthrene | 41 | J | 71 | 40 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Pyrene | 120 | | 71 | 39 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| 4,4'-DDT | 1.7 | J | 8.5 | 0.85 | ug/Kg | 1 | ☼ | 8081B | Total/NA |
| TEPH (C9-C36) | 93 | | 14 | 12 | mg/Kg | 1 | ☼ | 8100 | Total/NA |
| Arsenic | 22 | | 2.3 | 0.29 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Barium | 42 | | 1.5 | 0.18 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Chromium | 21 | | 1.5 | 0.20 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Lead | 29 | | 2.3 | 0.32 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Arsenic | 0.0045 | J | 0.0080 | 0.0028 | mg/L | 1 | | 6010D | TCLP |
| Barium | 0.38 | | 0.010 | 0.0014 | mg/L | 1 | | 6010D | TCLP |
| Cadmium | 0.0011 | J | 0.0050 | 0.00071 | mg/L | 1 | | 6010D | TCLP |
| Chromium | 0.0078 | J | 0.010 | 0.0019 | mg/L | 1 | | 6010D | TCLP |
| Lead | 0.024 | | 0.015 | 0.012 | mg/L | 1 | | 6010D | TCLP |
| Mercury | 0.056 | | 0.053 | 0.0088 | mg/Kg | 1 | ☼ | 7471A | Total/NA |
| Ignitability | negative | | | | NONE | 1 | | 1030 | Total/NA |
| pH | 6.8 | | | | SU | 1 | | 9045D | Soluble |
| Temperature | 28.5 | | | | Degrees C | 1 | | 9045D | Soluble |
| Specific Conductance | 1900 | | 10 | 10 | uS/cm | 1 | | SM 2510B | Soluble |

## Client Sample ID: LM-SO-SD02-053123 — Lab Sample ID: 620-11778-2

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Methyl tert-butyl ether | 2.6 | | 1.6 | 0.93 | ug/Kg | 1 | ☼ | 8260C | Total/NA |
| Benzo[a]anthracene | 86 | J | 140 | 79 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Benzo[k]fluoranthene | 110 | J | 140 | 110 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Chrysene | 98 | J | 140 | 80 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Fluoranthene | 130 | J | 140 | 83 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| Pyrene | 130 | J | 140 | 78 | ug/Kg | 1 | ☼ | 8270D | Total/NA |
| 4,4'-DDT | 1.7 | J | 8.4 | 0.84 | ug/Kg | 1 | ☼ | 8081B | Total/NA |
| TEPH (C9-C36) | 410 | | 27 | 23 | mg/Kg | 1 | ☼ | 8100 | Total/NA |
| Arsenic | 15 | | 2.8 | 0.35 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Barium | 33 | | 1.8 | 0.22 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Chromium | 18 | | 1.8 | 0.25 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Lead | 20 | | 2.8 | 0.39 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Arsenic | 0.0032 | J | 0.0080 | 0.0028 | mg/L | 1 | | 6010D | TCLP |
| Barium | 0.23 | | 0.010 | 0.0014 | mg/L | 1 | | 6010D | TCLP |
| Cadmium | 0.0011 | J | 0.0050 | 0.00071 | mg/L | 1 | | 6010D | TCLP |
| Chromium | 0.0032 | J | 0.010 | 0.0019 | mg/L | 1 | | 6010D | TCLP |
| Lead | 0.052 | | 0.015 | 0.012 | mg/L | 1 | | 6010D | TCLP |
| Mercury | 0.035 | J | 0.052 | 0.0086 | mg/Kg | 1 | ☼ | 7471A | Total/NA |
| Ignitability | negative | | | | NONE | 1 | | 1030 | Total/NA |
| pH | 7.0 | | | | SU | 1 | | 9045D | Soluble |

This Detection Summary does not include radiochemical test results.

## Client Sample ID: LM-SO-SD02-053123 (Continued)

## Lab Sample ID: 620-11778-2

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Temperature | 28.5 | | | | Degrees C | 1 | | 9045D | Soluble |
| Specific Conductance | 200 | | 10 | 10 | uS/cm | 1 | | SM 2510B | Soluble |

This Detection Summary does not include radiochemical test results.

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11778-1

**Client Sample ID: LM-SO-SD01-053123**
**Date Collected: 05/31/23 07:50**
**Date Received: 05/31/23 13:30**

**Lab Sample ID: 620-11778-1**
**Matrix: Solid**
**Percent Solids: 93.9**

**Method: MA DEP 8260C - Volatile Organic Compounds (GC/MS)**

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,1,2-Trichlorotrifluoroethane (Freon 113) | ND | | 1.7 | 1.1 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| **Acetone** | **11** | **J** | 17 | 3.9 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| Acrylonitrile | ND | | 1.7 | 1.0 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| Benzene | ND | | 1.7 | 1.2 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| Bromobenzene | ND | | 1.7 | 1.2 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| Bromochloromethane | ND | | 1.7 | 0.99 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| Bromodichloromethane | ND | | 1.7 | 1.3 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| Bromoform | ND | | 1.7 | 1.3 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| Bromomethane | ND | *+ | 3.5 | 2.2 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| 2-Butanone (MEK) | ND | | 3.5 | 1.4 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| n-Butylbenzene | ND | | 3.5 | 1.9 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| sec-Butylbenzene | ND | | 1.7 | 1.4 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| tert-Butylbenzene | ND | | 1.7 | 1.4 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| Carbon disulfide | ND | | 3.5 | 1.2 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| Carbon tetrachloride | ND | | 1.7 | 1.1 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| Chlorobenzene | ND | | 1.7 | 1.3 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| Chloroethane | ND | | 3.5 | 1.3 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| Chloroform | ND | | 1.7 | 1.2 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| Chloromethane | ND | | 3.5 | 1.3 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| 2-Chlorotoluene | ND | | 1.7 | 1.4 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| 4-Chlorotoluene | ND | | 1.7 | 1.5 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| 1,2-Dibromo-3-Chloropropane | ND | | 3.5 | 1.5 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| Dibromochloromethane | ND | | 1.7 | 1.1 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| 1,2-Dibromoethane (EDB) | ND | | 1.7 | 1.2 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| Dibromomethane | ND | | 1.7 | 1.0 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| 1,2-Dichlorobenzene | ND | | 1.7 | 1.6 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| 1,3-Dichlorobenzene | ND | | 1.7 | 1.4 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| 1,4-Dichlorobenzene | ND | | 1.7 | 1.6 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| Dichlorodifluoromethane (Freon 12) | ND | *+ | 3.5 | 0.93 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| 1,1-Dichloroethane | ND | | 1.7 | 1.2 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| 1,2-Dichloroethane | ND | | 1.7 | 1.2 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| 1,1-Dichloroethene | ND | | 1.7 | 1.1 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| cis-1,2-Dichloroethene | ND | | 1.7 | 1.0 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| trans-1,2-Dichloroethene | ND | | 1.7 | 1.1 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| 1,2-Dichloropropane | ND | | 1.7 | 1.1 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| 1,3-Dichloropropane | ND | | 1.7 | 1.3 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| 2,2-Dichloropropane | ND | | 1.7 | 1.2 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| 1,1-Dichloropropene | ND | | 1.7 | 1.2 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| cis-1,3-Dichloropropene | ND | | 1.7 | 1.1 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| trans-1,3-Dichloropropene | ND | | 1.7 | 1.3 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| Ethylbenzene | ND | | 1.7 | 1.2 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| Hexachlorobutadiene | ND | | 3.5 | 1.7 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| 2-Hexanone (MBK) | ND | | 3.5 | 1.0 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| Isopropylbenzene | ND | | 1.7 | 1.3 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| 4-Isopropyltoluene | ND | | 1.7 | 1.7 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| **Methyl tert-butyl ether** | **1.7** | | 1.7 | 1.0 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 3.5 | 1.1 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| Methylene Chloride | ND | | 3.5 | 0.93 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| Naphthalene | ND | | 1.7 | 1.6 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |

**Client Sample ID: LM-SO-SD01-053123**
**Date Collected: 05/31/23 07:50**
**Date Received: 05/31/23 13:30**

**Lab Sample ID: 620-11778-1**
**Matrix: Solid**
**Percent Solids: 93.9**

## Method: MA DEP 8260C - Volatile Organic Compounds (GC/MS) (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| N-Propylbenzene | ND | | 1.7 | 1.5 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| Styrene | ND | | 1.7 | 1.3 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| 1,1,1,2-Tetrachloroethane | ND | | 1.7 | 1.3 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| 1,1,2,2-Tetrachloroethane | ND | | 1.7 | 1.6 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| Tetrachloroethene | ND | | 1.7 | 0.96 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| Toluene | ND | | 1.7 | 1.1 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| 1,2,3-Trichlorobenzene | ND | | 1.7 | 1.5 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| 1,2,4-Trichlorobenzene | ND | | 1.7 | 1.6 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| 1,3,5-Trichlorobenzene | ND | | 1.7 | 1.6 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| 1,1,1-Trichloroethane | ND | | 1.7 | 1.2 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| 1,1,2-Trichloroethane | ND | | 1.7 | 1.3 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| Trichloroethene | ND | | 1.7 | 1.2 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| Trichlorofluoromethane (Freon 11) | ND | | 1.7 | 1.3 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| 1,2,3-Trichloropropane | ND | | 1.7 | 1.5 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| 1,2,4-Trimethylbenzene | ND | | 1.7 | 1.5 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| 1,3,5-Trimethylbenzene | ND | | 1.7 | 1.5 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| Vinyl chloride | ND | | 1.7 | 1.1 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| m,p-Xylene | ND | | 1.7 | 2.4 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| o-Xylene | ND | | 1.7 | 1.3 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| Tetrahydrofuran | ND | | 3.5 | 0.88 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| Ethyl ether | ND | | 1.7 | 0.91 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| Tert-amyl methyl ether | ND | | 1.7 | 1.4 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| Ethyl tert-butyl ether | ND | | 1.7 | 1.1 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| di-Isopropyl ether | ND | | 1.7 | 1.2 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| tert-Butanol | ND | | 35 | 9.3 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| 1,4-Dioxane | ND | | 35 | 11 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| trans-1,4-Dichloro-2-butene | ND | | 8.7 | 1.3 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| Ethanol | ND | *- | 350 | 22 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| 1,3-Dichloropropene, Total | ND | | 1.7 | 1.3 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |
| Xylenes, Total | ND | | 5.2 | 1.7 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 15:48 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *4-Bromofluorobenzene (Surr)* | *109* | | *70 - 130* | *06/01/23 13:00* | *06/01/23 15:48* | *1* |
| *Toluene-d8 (Surr)* | *105* | | *70 - 130* | *06/01/23 13:00* | *06/01/23 15:48* | *1* |
| *1,2-Dichloroethane-d4 (Surr)* | *108* | | *70 - 130* | *06/01/23 13:00* | *06/01/23 15:48* | *1* |
| *Dibromofluoromethane (Surr)* | *104* | | *70 - 130* | *06/01/23 13:00* | *06/01/23 15:48* | *1* |

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

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,2,4,5-Tetrachlorobenzene | ND | | 350 | 62 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| 1,2,4-Trichlorobenzene | ND | | 350 | 80 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| 1,2-Dichlorobenzene | ND | | 350 | 68 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| 1,3-Dichlorobenzene | ND | | 350 | 85 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| 1,4-Dichlorobenzene | ND | | 350 | 83 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| 1-Methylnaphthalene | ND | | 71 | 59 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| 2,4,5-Trichlorophenol | ND | | 350 | 40 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| 2,4,6-Trichlorophenol | ND | | 180 | 43 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| 2,4-Dichlorophenol | ND | | 180 | 71 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| 2,4-Dimethylphenol | ND | | 350 | 51 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| 2,4-Dinitrophenol | ND | | 350 | 92 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |

## Client Sample ID: LM-SO-SD01-053123

**Date Collected: 05/31/23 07:50**
**Date Received: 05/31/23 13:30**

## Lab Sample ID: 620-11778-1

**Matrix: Solid**
**Percent Solids: 93.9**

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

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 2,4-Dinitrotoluene | ND | | 180 | 42 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| 2,6-Dinitrotoluene | ND | | 180 | 42 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| 2-Chloronaphthalene | ND | | 350 | 81 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| 2-Chlorophenol | ND | | 180 | 73 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| 2-Methylnaphthalene | ND | | 71 | 52 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| 2-Methylphenol | ND | | 350 | 51 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| 2-Nitroaniline | ND | | 350 | 33 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| 2-Nitrophenol | ND | | 180 | 63 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| 3 & 4 Methylphenol | ND | | 350 | 66 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| 3,3'-Dichlorobenzidine | ND | | 350 | 58 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| 3-Nitroaniline | ND | | 350 | 31 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| 4,6-Dinitro-2-methylphenol | ND | | 350 | 63 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| 4-Bromophenyl phenyl ether | ND | | 350 | 40 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| 4-Chloro-3-methylphenol | ND | | 350 | 69 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| 4-Chloroaniline | ND | | 180 | 27 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| 4-Chlorophenyl phenyl ether | ND | | 350 | 37 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| 4-Nitroaniline | ND | | 180 | 56 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| 4-Nitrophenol | ND | | 350 | 120 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| Acenaphthene | ND | | 71 | 57 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| Acenaphthylene | ND | | 71 | 47 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| Acetophenone | ND | | 180 | 43 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| Aniline | ND | | 350 | 27 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| Anthracene | ND | | 71 | 41 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| Azobenzene/Diphenyldiazene | ND | | 350 | 60 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| Benzidine | ND | | 700 | 100 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| **Benzo[a]anthracene** | **65** | **J** | 71 | 40 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| **Benzo[a]pyrene** | **69** | **J** | 71 | 51 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| **Benzo[b]fluoranthene** | **71** | | 71 | 59 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| **Benzo[g,h,i]perylene** | **58** | **J** | 71 | 55 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| **Benzo[k]fluoranthene** | **78** | | 71 | 55 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| Benzoic acid | ND | | 350 | 240 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| Benzyl alcohol | ND | | 350 | 64 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| Bis(2-chloroethoxy)methane | ND | *- | 350 | 61 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| Bis(2-chloroethyl)ether | ND | *- | 180 | 58 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| bis (2-chloroisopropyl) ether | ND | *- | 180 | 79 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| Bis(2-ethylhexyl) phthalate | ND | | 180 | 45 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| Butyl benzyl phthalate | ND | | 350 | 35 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| Carbazole | ND | | 180 | 46 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| **Chrysene** | **74** | | 71 | 40 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| Dibenz(a,h)anthracene | ND | | 71 | 54 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| Dibenzofuran | ND | | 180 | 61 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| Diethyl phthalate | ND | | 350 | 38 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| Dimethyl phthalate | ND | | 350 | 46 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| Di-n-butyl phthalate | ND | | 350 | 37 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| Di-n-octyl phthalate | ND | | 350 | 58 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| **Fluoranthene** | **110** | | 71 | 42 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| Fluorene | ND | | 71 | 65 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| Hexachlorobenzene | ND | *+ | 180 | 49 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| Hexachlorobutadiene | ND | | 180 | 88 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |

**Client Sample ID: LM-SO-SD01-053123**
**Date Collected: 05/31/23 07:50**
**Date Received: 05/31/23 13:30**

**Lab Sample ID: 620-11778-1**
**Matrix: Solid**
**Percent Solids: 93.9**

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

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Hexachlorocyclopentadiene | ND | *+ | 180 | 68 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| Hexachloroethane | ND | | 180 | 70 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 71 | 60 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| Isophorone | ND | | 180 | 49 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| Naphthalene | ND | | 71 | 68 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| Nitrobenzene | ND | | 180 | 82 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| N-Nitrosodimethylamine | ND | *- *1 | 180 | 47 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| N-Nitrosodi-n-propylamine | ND | *- | 180 | 71 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| N-Nitrosodiphenylamine | ND | | 350 | 45 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| Pentachloronitrobenzene | ND | | 350 | 55 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| Pentachlorophenol | ND | | 350 | 140 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| **Phenanthrene** | **41** | **J** | 71 | 40 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| Phenol | ND | | 350 | 72 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| **Pyrene** | **120** | | 71 | 39 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |
| Pyridine | ND | | 350 | 83 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:20 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2-Fluorobiphenyl (Surr)* | *51* | | *30 - 130* | *06/01/23 10:46* | *06/02/23 15:20* | *1* |
| *2-Fluorophenol (Surr)* | *52* | | *15 - 110* | *06/01/23 10:46* | *06/02/23 15:20* | *1* |
| *Nitrobenzene-d5 (Surr)* | *44* | | *30 - 130* | *06/01/23 10:46* | *06/02/23 15:20* | *1* |
| *Phenol-d5 (Surr)* | *50* | | *15 - 110* | *06/01/23 10:46* | *06/02/23 15:20* | *1* |
| *2,4,6-Tribromophenol (Surr)* | *50* | | *15 - 110* | *06/01/23 10:46* | *06/02/23 15:20* | *1* |
| *Terphenyl-d14* | *49* | | *30 - 130* | *06/01/23 10:46* | *06/02/23 15:20* | *1* |

## Method: MA DEP 8081B - Organochlorine Pesticides (GC/ECD)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| alpha-BHC | ND | | 5.3 | 1.1 | ug/Kg | ☼ | 06/01/23 09:22 | 06/02/23 19:31 | 1 |
| beta-BHC | ND | | 5.3 | 0.95 | ug/Kg | ☼ | 06/01/23 09:22 | 06/02/23 19:31 | 1 |
| delta-BHC | ND | | 5.3 | 1.1 | ug/Kg | ☼ | 06/01/23 09:22 | 06/02/23 19:31 | 1 |
| gamma-BHC (Lindane) | ND | | 2.1 | 1.1 | ug/Kg | ☼ | 06/01/23 09:22 | 06/02/23 19:31 | 1 |
| Heptachlor | ND | | 5.3 | 1.1 | ug/Kg | ☼ | 06/01/23 09:22 | 06/02/23 19:31 | 1 |
| Aldrin | ND | | 5.3 | 1.0 | ug/Kg | ☼ | 06/01/23 09:22 | 06/02/23 19:31 | 1 |
| Heptachlor epoxide | ND | | 5.3 | 1.3 | ug/Kg | ☼ | 06/01/23 09:22 | 06/02/23 19:31 | 1 |
| Endosulfan I | ND | | 5.3 | 1.3 | ug/Kg | ☼ | 06/01/23 09:22 | 06/02/23 19:31 | 1 |
| Dieldrin | ND | | 5.3 | 1.1 | ug/Kg | ☼ | 06/01/23 09:22 | 06/02/23 19:31 | 1 |
| 4,4'-DDE | ND | | 8.5 | 1.3 | ug/Kg | ☼ | 06/01/23 09:22 | 06/02/23 19:31 | 1 |
| Endrin | ND | | 8.5 | 1.7 | ug/Kg | ☼ | 06/01/23 09:22 | 06/02/23 19:31 | 1 |
| Endosulfan II | ND | | 8.5 | 1.3 | ug/Kg | ☼ | 06/01/23 09:22 | 06/02/23 19:31 | 1 |
| 4,4'-DDD | ND | | 8.5 | 1.6 | ug/Kg | ☼ | 06/01/23 09:22 | 06/02/23 19:31 | 1 |
| Endosulfan sulfate | ND | | 8.5 | 1.6 | ug/Kg | ☼ | 06/01/23 09:22 | 06/02/23 19:31 | 1 |
| **4,4'-DDT** | **1.7** | **J** | 8.5 | 0.85 | ug/Kg | ☼ | 06/01/23 09:22 | 06/02/23 19:31 | 1 |
| Methoxychlor | ND | | 8.5 | 1.5 | ug/Kg | ☼ | 06/01/23 09:22 | 06/02/23 19:31 | 1 |
| Endrin ketone | ND | | 8.5 | 1.2 | ug/Kg | ☼ | 06/01/23 09:22 | 06/02/23 19:31 | 1 |
| Endrin aldehyde | ND | | 8.5 | 1.7 | ug/Kg | ☼ | 06/01/23 09:22 | 06/02/23 19:31 | 1 |
| cis-Chlordane | ND | | 5.3 | 1.3 | ug/Kg | ☼ | 06/01/23 09:22 | 06/02/23 19:31 | 1 |
| trans-Chlordane | ND | | 5.3 | 1.3 | ug/Kg | ☼ | 06/01/23 09:22 | 06/02/23 19:31 | 1 |
| Toxaphene | ND | | 110 | 75 | ug/Kg | ☼ | 06/01/23 09:22 | 06/02/23 19:31 | 1 |
| Alachlor | ND | | 5.3 | 1.2 | ug/Kg | ☼ | 06/01/23 09:22 | 06/02/23 19:31 | 1 |

## Client Sample ID: LM-SO-SD01-053123

**Date Collected: 05/31/23 07:50**
**Date Received: 05/31/23 13:30**

## Lab Sample ID: 620-11778-1

**Matrix: Solid**
**Percent Solids: 93.9**

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *Tetrachloro-m-xylene* | *48* | | *30 - 150* | *06/01/23 09:22* | *06/02/23 19:31* | *1* |
| *Tetrachloro-m-xylene* | *54* | | *30 - 150* | *06/01/23 09:22* | *06/02/23 19:31* | *1* |
| *DCB Decachlorobiphenyl (Surr)* | *60* | | *30 - 150* | *06/01/23 09:22* | *06/02/23 19:31* | *1* |
| *DCB Decachlorobiphenyl (Surr)* | *56* | | *30 - 150* | *06/01/23 09:22* | *06/02/23 19:31* | *1* |

### Method: MA DEP 8082 - Polychlorinated Biphenyls (GC/ECD)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| PCB-1016 | ND | | 35 | 35 | ug/Kg | ☼ | 06/01/23 09:22 | 06/01/23 16:23 | 1 |
| PCB-1221 | ND | | 35 | 35 | ug/Kg | ☼ | 06/01/23 09:22 | 06/01/23 16:23 | 1 |
| PCB-1232 | ND | | 35 | 35 | ug/Kg | ☼ | 06/01/23 09:22 | 06/01/23 16:23 | 1 |
| PCB-1242 | ND | | 35 | 35 | ug/Kg | ☼ | 06/01/23 09:22 | 06/01/23 16:23 | 1 |
| PCB-1248 | ND | | 35 | 35 | ug/Kg | ☼ | 06/01/23 09:22 | 06/01/23 16:23 | 1 |
| PCB-1254 | ND | | 35 | 35 | ug/Kg | ☼ | 06/01/23 09:22 | 06/01/23 16:23 | 1 |
| PCB-1262 | ND | | 35 | 35 | ug/Kg | ☼ | 06/01/23 09:22 | 06/01/23 16:23 | 1 |
| PCB-1260 | ND | | 35 | 35 | ug/Kg | ☼ | 06/01/23 09:22 | 06/01/23 16:23 | 1 |
| PCB-1268 | ND | | 35 | 35 | ug/Kg | ☼ | 06/01/23 09:22 | 06/01/23 16:23 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *Tetrachloro-m-xylene* | *91* | | *30 - 150* | *06/01/23 09:22* | *06/01/23 16:23* | *1* |
| *Tetrachloro-m-xylene* | *86* | | *30 - 150* | *06/01/23 09:22* | *06/01/23 16:23* | *1* |
| *DCB Decachlorobiphenyl (Surr)* | *95* | | *30 - 150* | *06/01/23 09:22* | *06/01/23 16:23* | *1* |
| *DCB Decachlorobiphenyl (Surr)* | *101* | | *30 - 150* | *06/01/23 09:22* | *06/01/23 16:23* | *1* |

### Method: SW846 8100 - Polynuclear Aromatic Hydrocarbons (PAHs) (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **TEPH (C9-C36)** | **93** | | 14 | 12 | mg/Kg | ☼ | 06/01/23 14:23 | 06/02/23 14:21 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *78* | | *40 - 140* | *06/01/23 14:23* | *06/02/23 14:21* | *1* |
| *o-Terphenyl (Surr)* | *57* | | *40 - 140* | *06/01/23 14:23* | *06/02/23 14:21* | *1* |

### Method: SW846 6010D - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Arsenic** | **22** | | 2.3 | 0.29 | mg/Kg | ☼ | 05/31/23 14:15 | 06/01/23 12:54 | 1 |
| **Barium** | **42** | | 1.5 | 0.18 | mg/Kg | ☼ | 05/31/23 14:15 | 06/01/23 12:54 | 1 |
| Cadmium | ND | | 0.76 | 0.039 | mg/Kg | ☼ | 05/31/23 14:15 | 06/01/23 12:54 | 1 |
| **Chromium** | **21** | | 1.5 | 0.20 | mg/Kg | ☼ | 05/31/23 14:15 | 06/01/23 12:54 | 1 |
| **Lead** | **29** | | 2.3 | 0.32 | mg/Kg | ☼ | 05/31/23 14:15 | 06/01/23 12:54 | 1 |
| Selenium | ND | | 2.3 | 0.44 | mg/Kg | ☼ | 05/31/23 14:15 | 06/01/23 12:54 | 1 |
| Silver | ND | | 2.3 | 0.25 | mg/Kg | ☼ | 05/31/23 14:15 | 06/01/23 12:54 | 1 |

### Method: SW846 6010D - Metals (ICP) - TCLP

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Arsenic** | **0.0045** | **J** | 0.0080 | 0.0028 | mg/L | | 06/01/23 10:53 | 06/01/23 14:51 | 1 |
| **Barium** | **0.38** | | 0.010 | 0.0014 | mg/L | | 06/01/23 10:53 | 06/01/23 14:51 | 1 |
| **Cadmium** | **0.0011** | **J** | 0.0050 | 0.00071 | mg/L | | 06/01/23 10:53 | 06/01/23 14:51 | 1 |
| **Chromium** | **0.0078** | **J** | 0.010 | 0.0019 | mg/L | | 06/01/23 10:53 | 06/01/23 14:51 | 1 |
| **Lead** | **0.024** | | 0.015 | 0.012 | mg/L | | 06/01/23 10:53 | 06/01/23 14:51 | 1 |
| Selenium | ND | | 0.030 | 0.0083 | mg/L | | 06/01/23 10:53 | 06/01/23 14:51 | 1 |
| Silver | ND | | 0.010 | 0.0012 | mg/L | | 06/01/23 10:53 | 06/01/23 14:51 | 1 |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11778-1

## Client Sample ID: LM-SO-SD01-053123

**Date Collected: 05/31/23 07:50**
**Date Received: 05/31/23 13:30**

## Lab Sample ID: 620-11778-1

**Matrix: Solid**
**Percent Solids: 93.9**

### Method: SW846 7470A - Mercury (CVAA) - TCLP

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 06/02/23 07:19 | 06/02/23 14:22 | 1 |

### Method: SW846 7471A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.056** | | 0.053 | 0.0088 | mg/Kg | ☼ | 06/01/23 09:40 | 06/02/23 12:07 | 1 |

### General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Ignitability (SW846 1030)** | **negative** | | | | NONE | | | 06/01/23 15:23 | 1 |
| **Percent Moisture (EPA Moisture)** | **6.1** | | 0.1 | 0.1 | % | | | 06/01/23 11:46 | 1 |
| **Percent Solids (EPA Moisture)** | **93.9** | | 0.1 | 0.1 | % | | | 06/01/23 11:46 | 1 |

### General Chemistry - Soluble

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **pH (SW846 9045D)** | **6.8** | | | | SU | | | 06/01/23 14:14 | 1 |
| **Temperature (SW846 9045D)** | **28.5** | | | | Degrees C | | | 06/01/23 14:14 | 1 |
| **Specific Conductance (SM 2510B)** | **1900** | | 10 | 10 | uS/cm | | | 06/01/23 14:51 | 1 |

### Method: Reactive Cyanide - SW846 9014/9034 Reactivity

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Reactivity Cyanide | ND | | 5 | | mg/Kg | | 06/01/23 17:09 | 06/01/23 16:15 | 1 |

### Method: Reactive Sulfide - SW846 9034 – Reactive Sulfide

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Reactivity Sulfide | ND | | 20 | | mg/Kg | | 06/01/23 00:00 | 06/01/23 17:09 | 1 |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11778-1

## Client Sample ID: LM-SO-SD02-053123

**Date Collected: 05/31/23 08:10**
**Date Received: 05/31/23 13:30**

## Lab Sample ID: 620-11778-2

**Matrix: Solid**
**Percent Solids: 93.7**

### Method: MA DEP 8260C - Volatile Organic Compounds (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,1,2-Trichlorotrifluoroethane (Freon 113) | ND | | 1.6 | 1.1 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| Acetone | ND | | 16 | 3.6 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| Acrylonitrile | ND | | 1.6 | 0.97 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| Benzene | ND | | 1.6 | 1.1 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| Bromobenzene | ND | | 1.6 | 1.1 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| Bromochloromethane | ND | | 1.6 | 0.92 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| Bromodichloromethane | ND | | 1.6 | 1.2 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| Bromoform | ND | | 1.6 | 1.2 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| Bromomethane | ND | *+ | 3.2 | 2.0 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| 2-Butanone (MEK) | ND | | 3.2 | 1.3 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| n-Butylbenzene | ND | | 3.2 | 1.7 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| sec-Butylbenzene | ND | | 1.6 | 1.3 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| tert-Butylbenzene | ND | | 1.6 | 1.3 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| Carbon disulfide | ND | | 3.2 | 1.1 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| Carbon tetrachloride | ND | | 1.6 | 1.0 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| Chlorobenzene | ND | | 1.6 | 1.2 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| Chloroethane | ND | | 3.2 | 1.2 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| Chloroform | ND | | 1.6 | 1.1 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| Chloromethane | ND | | 3.2 | 1.2 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| 2-Chlorotoluene | ND | | 1.6 | 1.3 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| 4-Chlorotoluene | ND | | 1.6 | 1.4 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| 1,2-Dibromo-3-Chloropropane | ND | | 3.2 | 1.4 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| Dibromochloromethane | ND | | 1.6 | 1.1 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| 1,2-Dibromoethane (EDB) | ND | | 1.6 | 1.2 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| Dibromomethane | ND | | 1.6 | 0.95 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| 1,2-Dichlorobenzene | ND | | 1.6 | 1.5 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| 1,3-Dichlorobenzene | ND | | 1.6 | 1.3 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| 1,4-Dichlorobenzene | ND | | 1.6 | 1.5 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| Dichlorodifluoromethane (Freon 12) | ND | *+ | 3.2 | 0.87 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| 1,1-Dichloroethane | ND | | 1.6 | 1.1 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| 1,2-Dichloroethane | ND | | 1.6 | 1.1 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| 1,1-Dichloroethene | ND | | 1.6 | 0.99 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| cis-1,2-Dichloroethene | ND | | 1.6 | 0.93 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| trans-1,2-Dichloroethene | ND | | 1.6 | 1.0 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| 1,2-Dichloropropane | ND | | 1.6 | 1.1 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| 1,3-Dichloropropane | ND | | 1.6 | 1.2 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| 2,2-Dichloropropane | ND | | 1.6 | 1.1 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| 1,1-Dichloropropene | ND | | 1.6 | 1.1 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| cis-1,3-Dichloropropene | ND | | 1.6 | 1.1 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| trans-1,3-Dichloropropene | ND | | 1.6 | 1.2 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| Ethylbenzene | ND | | 1.6 | 1.2 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| Hexachlorobutadiene | ND | | 3.2 | 1.6 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| 2-Hexanone (MBK) | ND | | 3.2 | 0.95 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| Isopropylbenzene | ND | | 1.6 | 1.2 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| 4-Isopropyltoluene | ND | | 1.6 | 1.6 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| **Methyl tert-butyl ether** | **2.6** | | 1.6 | 0.93 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 3.2 | 1.0 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| Methylene Chloride | ND | | 3.2 | 0.87 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| Naphthalene | ND | | 1.6 | 1.5 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |

**Client Sample ID: LM-SO-SD02-053123**
**Date Collected: 05/31/23 08:10**
**Date Received: 05/31/23 13:30**

**Lab Sample ID: 620-11778-2**
**Matrix: Solid**
**Percent Solids: 93.7**

## Method: MA DEP 8260C - Volatile Organic Compounds (GC/MS) (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| N-Propylbenzene | ND | | 1.6 | 1.4 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| Styrene | ND | | 1.6 | 1.3 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| 1,1,1,2-Tetrachloroethane | ND | | 1.6 | 1.2 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| 1,1,2,2-Tetrachloroethane | ND | | 1.6 | 1.5 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| Tetrachloroethene | ND | | 1.6 | 0.90 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| Toluene | ND | | 1.6 | 1.0 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| 1,2,3-Trichlorobenzene | ND | | 1.6 | 1.4 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| 1,2,4-Trichlorobenzene | ND | | 1.6 | 1.5 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| 1,3,5-Trichlorobenzene | ND | | 1.6 | 1.5 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| 1,1,1-Trichloroethane | ND | | 1.6 | 1.1 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| 1,1,2-Trichloroethane | ND | | 1.6 | 1.2 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| Trichloroethene | ND | | 1.6 | 1.1 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| Trichlorofluoromethane (Freon 11) | ND | | 1.6 | 1.2 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| 1,2,3-Trichloropropane | ND | | 1.6 | 1.4 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| 1,2,4-Trimethylbenzene | ND | | 1.6 | 1.4 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| 1,3,5-Trimethylbenzene | ND | | 1.6 | 1.4 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| Vinyl chloride | ND | | 1.6 | 0.99 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| m,p-Xylene | ND | | 1.6 | 2.2 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| o-Xylene | ND | | 1.6 | 1.2 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| Tetrahydrofuran | ND | | 3.2 | 0.82 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| Ethyl ether | ND | | 1.6 | 0.85 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| Tert-amyl methyl ether | ND | | 1.6 | 1.3 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| Ethyl tert-butyl ether | ND | | 1.6 | 1.1 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| di-Isopropyl ether | ND | | 1.6 | 1.2 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| tert-Butanol | ND | | 32 | 8.7 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| 1,4-Dioxane | ND | | 32 | 10 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| trans-1,4-Dichloro-2-butene | ND | | 8.1 | 1.2 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| Ethanol | ND | *- | 320 | 20 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| 1,3-Dichloropropene, Total | ND | | 1.6 | 1.2 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |
| Xylenes, Total | ND | | 4.8 | 1.6 | ug/Kg | ☼ | 06/01/23 13:00 | 06/01/23 16:13 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *4-Bromofluorobenzene (Surr)* | *105* | | *70 - 130* | *06/01/23 13:00* | *06/01/23 16:13* | *1* |
| *Toluene-d8 (Surr)* | *106* | | *70 - 130* | *06/01/23 13:00* | *06/01/23 16:13* | *1* |
| *1,2-Dichloroethane-d4 (Surr)* | *98* | | *70 - 130* | *06/01/23 13:00* | *06/01/23 16:13* | *1* |
| *Dibromofluoromethane (Surr)* | *117* | | *70 - 130* | *06/01/23 13:00* | *06/01/23 16:13* | *1* |

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

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,2,4,5-Tetrachlorobenzene | ND | | 700 | 120 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| 1,2,4-Trichlorobenzene | ND | | 700 | 160 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| 1,2-Dichlorobenzene | ND | | 700 | 130 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| 1,3-Dichlorobenzene | ND | | 700 | 170 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| 1,4-Dichlorobenzene | ND | | 700 | 160 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| 1-Methylnaphthalene | ND | | 140 | 120 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| 2,4,5-Trichlorophenol | ND | | 700 | 80 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| 2,4,6-Trichlorophenol | ND | | 350 | 86 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| 2,4-Dichlorophenol | ND | | 350 | 140 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| 2,4-Dimethylphenol | ND | | 700 | 100 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| 2,4-Dinitrophenol | ND | | 700 | 180 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11778-1

**Client Sample ID: LM-SO-SD02-053123**
**Date Collected: 05/31/23 08:10**
**Date Received: 05/31/23 13:30**

**Lab Sample ID: 620-11778-2**
**Matrix: Solid**
**Percent Solids: 93.7**

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

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 2,4-Dinitrotoluene | ND | | 350 | 83 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| 2,6-Dinitrotoluene | ND | | 350 | 83 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| 2-Chloronaphthalene | ND | | 700 | 160 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| 2-Chlorophenol | ND | | 350 | 140 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| 2-Methylnaphthalene | ND | | 140 | 100 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| 2-Methylphenol | ND | | 700 | 100 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| 2-Nitroaniline | ND | | 700 | 67 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| 2-Nitrophenol | ND | | 350 | 130 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| 3 & 4 Methylphenol | ND | | 700 | 130 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| 3,3'-Dichlorobenzidine | ND | | 700 | 120 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| 3-Nitroaniline | ND | | 700 | 62 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| 4,6-Dinitro-2-methylphenol | ND | | 700 | 130 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| 4-Bromophenyl phenyl ether | ND | | 700 | 79 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| 4-Chloro-3-methylphenol | ND | | 700 | 140 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| 4-Chloroaniline | ND | | 350 | 54 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| 4-Chlorophenyl phenyl ether | ND | | 700 | 75 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| 4-Nitroaniline | ND | | 350 | 110 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| 4-Nitrophenol | ND | | 700 | 240 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| Acenaphthene | ND | | 140 | 110 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| Acenaphthylene | ND | | 140 | 93 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| Acetophenone | ND | | 350 | 86 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| Aniline | ND | | 700 | 54 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| Anthracene | ND | | 140 | 82 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| Azobenzene/Diphenyldiazene | ND | | 700 | 120 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| Benzidine | ND | | 1400 | 210 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| **Benzo[a]anthracene** | **86** | **J** | 140 | 79 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| Benzo[a]pyrene | ND | | 140 | 100 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| Benzo[b]fluoranthene | ND | | 140 | 120 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| Benzo[g,h,i]perylene | ND | | 140 | 110 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| **Benzo[k]fluoranthene** | **110** | **J** | 140 | 110 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| Benzoic acid | ND | | 700 | 480 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| Benzyl alcohol | ND | | 700 | 130 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| Bis(2-chloroethoxy)methane | ND | *- | 700 | 120 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| Bis(2-chloroethyl)ether | ND | *- | 350 | 120 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| bis (2-chloroisopropyl) ether | ND | *- | 350 | 160 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| Bis(2-ethylhexyl) phthalate | ND | | 350 | 90 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| Butyl benzyl phthalate | ND | | 700 | 70 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| Carbazole | ND | | 350 | 93 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| **Chrysene** | **98** | **J** | 140 | 80 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| Dibenz(a,h)anthracene | ND | | 140 | 110 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| Dibenzofuran | ND | | 350 | 120 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| Diethyl phthalate | ND | | 700 | 77 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| Dimethyl phthalate | ND | | 700 | 91 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| Di-n-butyl phthalate | ND | | 700 | 75 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| Di-n-octyl phthalate | ND | | 700 | 120 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| **Fluoranthene** | **130** | **J** | 140 | 83 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| Fluorene | ND | | 140 | 130 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| Hexachlorobenzene | ND | *+ | 350 | 98 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| Hexachlorobutadiene | ND | | 350 | 180 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11778-1

## Client Sample ID: LM-SO-SD02-053123

**Date Collected: 05/31/23 08:10**
**Date Received: 05/31/23 13:30**

## Lab Sample ID: 620-11778-2

**Matrix: Solid**
**Percent Solids: 93.7**

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

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Hexachlorocyclopentadiene | ND | *+ | 350 | 140 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| Hexachloroethane | ND | | 350 | 140 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 140 | 120 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| Isophorone | ND | | 350 | 97 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| Naphthalene | ND | | 140 | 140 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| Nitrobenzene | ND | | 350 | 160 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| N-Nitrosodimethylamine | ND | *- *1 | 350 | 93 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| N-Nitrosodi-n-propylamine | ND | *- | 350 | 140 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| N-Nitrosodiphenylamine | ND | | 700 | 89 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| Pentachloronitrobenzene | ND | | 700 | 110 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| Pentachlorophenol | ND | | 700 | 290 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| Phenanthrene | ND | | 140 | 80 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| Phenol | ND | | 700 | 140 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| **Pyrene** | **130** | **J** | 140 | 78 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |
| Pyridine | ND | | 700 | 170 | ug/Kg | ☼ | 06/01/23 10:46 | 06/02/23 15:45 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2-Fluorobiphenyl (Surr)* | *77* | | *30 - 130* | *06/01/23 10:46* | *06/02/23 15:45* | *1* |
| *2-Fluorophenol (Surr)* | *80* | | *15 - 110* | *06/01/23 10:46* | *06/02/23 15:45* | *1* |
| *Nitrobenzene-d5 (Surr)* | *71* | | *30 - 130* | *06/01/23 10:46* | *06/02/23 15:45* | *1* |
| *Phenol-d5 (Surr)* | *76* | | *15 - 110* | *06/01/23 10:46* | *06/02/23 15:45* | *1* |
| *2,4,6-Tribromophenol (Surr)* | *79* | | *15 - 110* | *06/01/23 10:46* | *06/02/23 15:45* | *1* |
| *Terphenyl-d14* | *70* | | *30 - 130* | *06/01/23 10:46* | *06/02/23 15:45* | *1* |

### Method: MA DEP 8081B - Organochlorine Pesticides (GC/ECD)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| alpha-BHC | ND | | 5.2 | 1.1 | ug/Kg | ☼ | 06/01/23 09:23 | 06/02/23 19:47 | 1 |
| beta-BHC | ND | | 5.2 | 0.93 | ug/Kg | ☼ | 06/01/23 09:23 | 06/02/23 19:47 | 1 |
| delta-BHC | ND | | 5.2 | 1.1 | ug/Kg | ☼ | 06/01/23 09:23 | 06/02/23 19:47 | 1 |
| gamma-BHC (Lindane) | ND | | 2.1 | 1.1 | ug/Kg | ☼ | 06/01/23 09:23 | 06/02/23 19:47 | 1 |
| Heptachlor | ND | | 5.2 | 1.1 | ug/Kg | ☼ | 06/01/23 09:23 | 06/02/23 19:47 | 1 |
| Aldrin | ND | | 5.2 | 1.0 | ug/Kg | ☼ | 06/01/23 09:23 | 06/02/23 19:47 | 1 |
| Heptachlor epoxide | ND | | 5.2 | 1.2 | ug/Kg | ☼ | 06/01/23 09:23 | 06/02/23 19:47 | 1 |
| Endosulfan I | ND | | 5.2 | 1.3 | ug/Kg | ☼ | 06/01/23 09:23 | 06/02/23 19:47 | 1 |
| Dieldrin | ND | | 5.2 | 1.1 | ug/Kg | ☼ | 06/01/23 09:23 | 06/02/23 19:47 | 1 |
| 4,4'-DDE | ND | | 8.4 | 1.3 | ug/Kg | ☼ | 06/01/23 09:23 | 06/02/23 19:47 | 1 |
| Endrin | ND | | 8.4 | 1.7 | ug/Kg | ☼ | 06/01/23 09:23 | 06/02/23 19:47 | 1 |
| Endosulfan II | ND | | 8.4 | 1.3 | ug/Kg | ☼ | 06/01/23 09:23 | 06/02/23 19:47 | 1 |
| 4,4'-DDD | ND | | 8.4 | 1.6 | ug/Kg | ☼ | 06/01/23 09:23 | 06/02/23 19:47 | 1 |
| Endosulfan sulfate | ND | | 8.4 | 1.6 | ug/Kg | ☼ | 06/01/23 09:23 | 06/02/23 19:47 | 1 |
| **4,4'-DDT** | **1.7** | **J** | 8.4 | 0.84 | ug/Kg | ☼ | 06/01/23 09:23 | 06/02/23 19:47 | 1 |
| Methoxychlor | ND | | 8.4 | 1.5 | ug/Kg | ☼ | 06/01/23 09:23 | 06/02/23 19:47 | 1 |
| Endrin ketone | ND | | 8.4 | 1.2 | ug/Kg | ☼ | 06/01/23 09:23 | 06/02/23 19:47 | 1 |
| Endrin aldehyde | ND | | 8.4 | 1.7 | ug/Kg | ☼ | 06/01/23 09:23 | 06/02/23 19:47 | 1 |
| cis-Chlordane | ND | | 5.2 | 1.3 | ug/Kg | ☼ | 06/01/23 09:23 | 06/02/23 19:47 | 1 |
| trans-Chlordane | ND | | 5.2 | 1.3 | ug/Kg | ☼ | 06/01/23 09:23 | 06/02/23 19:47 | 1 |
| Toxaphene | ND | | 100 | 74 | ug/Kg | ☼ | 06/01/23 09:23 | 06/02/23 19:47 | 1 |
| Alachlor | ND | | 5.2 | 1.2 | ug/Kg | ☼ | 06/01/23 09:23 | 06/02/23 19:47 | 1 |

## Client Sample ID: LM-SO-SD02-053123

**Date Collected: 05/31/23 08:10**
**Date Received: 05/31/23 13:30**

## Lab Sample ID: 620-11778-2

**Matrix: Solid**
**Percent Solids: 93.7**

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *Tetrachloro-m-xylene* | *69* | | *30 - 150* | *06/01/23 09:23* | *06/02/23 19:47* | *1* |
| *Tetrachloro-m-xylene* | *73* | | *30 - 150* | *06/01/23 09:23* | *06/02/23 19:47* | *1* |
| *DCB Decachlorobiphenyl (Surr)* | *77* | | *30 - 150* | *06/01/23 09:23* | *06/02/23 19:47* | *1* |
| *DCB Decachlorobiphenyl (Surr)* | *80* | | *30 - 150* | *06/01/23 09:23* | *06/02/23 19:47* | *1* |

### Method: MA DEP 8082 - Polychlorinated Biphenyls (GC/ECD)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| PCB-1016 | ND | | 35 | 35 | ug/Kg | ☼ | 06/01/23 09:23 | 06/01/23 16:40 | 1 |
| PCB-1221 | ND | | 35 | 35 | ug/Kg | ☼ | 06/01/23 09:23 | 06/01/23 16:40 | 1 |
| PCB-1232 | ND | | 35 | 35 | ug/Kg | ☼ | 06/01/23 09:23 | 06/01/23 16:40 | 1 |
| PCB-1242 | ND | | 35 | 35 | ug/Kg | ☼ | 06/01/23 09:23 | 06/01/23 16:40 | 1 |
| PCB-1248 | ND | | 35 | 35 | ug/Kg | ☼ | 06/01/23 09:23 | 06/01/23 16:40 | 1 |
| PCB-1254 | ND | | 35 | 35 | ug/Kg | ☼ | 06/01/23 09:23 | 06/01/23 16:40 | 1 |
| PCB-1262 | ND | | 35 | 35 | ug/Kg | ☼ | 06/01/23 09:23 | 06/01/23 16:40 | 1 |
| PCB-1260 | ND | | 35 | 35 | ug/Kg | ☼ | 06/01/23 09:23 | 06/01/23 16:40 | 1 |
| PCB-1268 | ND | | 35 | 35 | ug/Kg | ☼ | 06/01/23 09:23 | 06/01/23 16:40 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *Tetrachloro-m-xylene* | *113* | | *30 - 150* | *06/01/23 09:23* | *06/01/23 16:40* | *1* |
| *Tetrachloro-m-xylene* | *107* | | *30 - 150* | *06/01/23 09:23* | *06/01/23 16:40* | *1* |
| *DCB Decachlorobiphenyl (Surr)* | *125* | | *30 - 150* | *06/01/23 09:23* | *06/01/23 16:40* | *1* |
| *DCB Decachlorobiphenyl (Surr)* | *121* | | *30 - 150* | *06/01/23 09:23* | *06/01/23 16:40* | *1* |

### Method: SW846 8100 - Polynuclear Aromatic Hydrocarbons (PAHs) (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **TEPH (C9-C36)** | **410** | | 27 | 23 | mg/Kg | ☼ | 06/01/23 14:23 | 06/02/23 14:43 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *98* | | *40 - 140* | *06/01/23 14:23* | *06/02/23 14:43* | *1* |
| *o-Terphenyl (Surr)* | *65* | | *40 - 140* | *06/01/23 14:23* | *06/02/23 14:43* | *1* |

### Method: SW846 6010D - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Arsenic** | **15** | | 2.8 | 0.35 | mg/Kg | ☼ | 05/31/23 14:15 | 06/01/23 13:00 | 1 |
| **Barium** | **33** | | 1.8 | 0.22 | mg/Kg | ☼ | 05/31/23 14:15 | 06/01/23 13:00 | 1 |
| Cadmium | ND | | 0.92 | 0.048 | mg/Kg | ☼ | 05/31/23 14:15 | 06/01/23 13:00 | 1 |
| **Chromium** | **18** | | 1.8 | 0.25 | mg/Kg | ☼ | 05/31/23 14:15 | 06/01/23 13:00 | 1 |
| **Lead** | **20** | | 2.8 | 0.39 | mg/Kg | ☼ | 05/31/23 14:15 | 06/01/23 13:00 | 1 |
| Selenium | ND | | 2.8 | 0.53 | mg/Kg | ☼ | 05/31/23 14:15 | 06/01/23 13:00 | 1 |
| Silver | ND | | 2.8 | 0.30 | mg/Kg | ☼ | 05/31/23 14:15 | 06/01/23 13:00 | 1 |

### Method: SW846 6010D - Metals (ICP) - TCLP

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Arsenic** | **0.0032** | **J** | 0.0080 | 0.0028 | mg/L | | 06/01/23 10:53 | 06/01/23 14:21 | 1 |
| **Barium** | **0.23** | | 0.010 | 0.0014 | mg/L | | 06/01/23 10:53 | 06/01/23 14:21 | 1 |
| **Cadmium** | **0.0011** | **J** | 0.0050 | 0.00071 | mg/L | | 06/01/23 10:53 | 06/01/23 14:21 | 1 |
| **Chromium** | **0.0032** | **J** | 0.010 | 0.0019 | mg/L | | 06/01/23 10:53 | 06/01/23 14:21 | 1 |
| **Lead** | **0.052** | | 0.015 | 0.012 | mg/L | | 06/01/23 10:53 | 06/01/23 14:21 | 1 |
| Selenium | ND | | 0.030 | 0.0083 | mg/L | | 06/01/23 10:53 | 06/01/23 14:21 | 1 |
| Silver | ND | | 0.010 | 0.0012 | mg/L | | 06/01/23 10:53 | 06/01/23 14:21 | 1 |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11778-1

## Client Sample ID: LM-SO-SD02-053123

**Date Collected: 05/31/23 08:10**
**Date Received: 05/31/23 13:30**

## Lab Sample ID: 620-11778-2

**Matrix: Solid**
**Percent Solids: 93.7**

### Method: SW846 7470A - Mercury (CVAA) - TCLP

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 06/02/23 07:19 | 06/02/23 14:24 | 1 |

### Method: SW846 7471A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.035** | **J** | 0.052 | 0.0086 | mg/Kg | ☼ | 06/01/23 09:40 | 06/02/23 12:16 | 1 |

### General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Ignitability (SW846 1030)** | **negative** | | | | NONE | | | 06/01/23 15:23 | 1 |
| **Percent Moisture (EPA Moisture)** | **6.3** | | 0.1 | 0.1 | % | | | 06/01/23 11:46 | 1 |
| **Percent Solids (EPA Moisture)** | **93.7** | | 0.1 | 0.1 | % | | | 06/01/23 11:46 | 1 |

### General Chemistry - Soluble

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **pH (SW846 9045D)** | **7.0** | | | | SU | | | 06/01/23 14:14 | 1 |
| **Temperature (SW846 9045D)** | **28.5** | | | | Degrees C | | | 06/01/23 14:14 | 1 |
| **Specific Conductance (SM 2510B)** | **200** | | 10 | 10 | uS/cm | | | 06/01/23 14:51 | 1 |

### Method: Reactive Cyanide - SW846 9014/9034 Reactivity

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Reactivity Cyanide | ND | | 5 | | mg/Kg | | 06/01/23 17:09 | 06/01/23 16:16 | 1 |

### Method: Reactive Sulfide - SW846 9034 – Reactive Sulfide

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Reactivity Sulfide | ND | | 20 | | mg/Kg | | 06/01/23 00:00 | 06/01/23 17:09 | 1 |

# Surrogate Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11778-1

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

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

| | | Percent Surrogate Recovery (Acceptance Limits) | | | |
|---|---|---|---|---|---|
| | | BFB | TOL | DCA | DBFM |
| Lab Sample ID | Client Sample ID | (70-130) | (70-130) | (70-130) | (70-130) |
| 620-11778-1 | LM-SO-SD01-053123 | 109 | 105 | 108 | 104 |
| 620-11778-2 | LM-SO-SD02-053123 | 105 | 106 | 98 | 117 |
| LCS 620-23152/1-A | Lab Control Sample | 106 | 104 | 94 | 104 |
| LCSD 620-23152/2-A | Lab Control Sample Dup | 106 | 105 | 93 | 102 |
| MB 620-23152/3-A | Method Blank | 106 | 104 | 95 | 101 |

**Surrogate Legend**

BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
DBFM = Dibromofluoromethane (Surr)

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

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

| | | Percent Surrogate Recovery (Acceptance Limits) | | | | | |
|---|---|---|---|---|---|---|---|
| | | FBP | 2FP | NBZ | PHL | TBP | TPHL |
| Lab Sample ID | Client Sample ID | (30-130) | (15-110) | (30-130) | (15-110) | (15-110) | (30-130) |
| 620-11778-1 | LM-SO-SD01-053123 | 51 | 52 | 44 | 50 | 50 | 49 |
| 620-11778-2 | LM-SO-SD02-053123 | 77 | 80 | 71 | 76 | 79 | 70 |
| LCS 620-23157/2-A | Lab Control Sample | 84 | 90 | 87 | 86 | 97 | 82 |
| LCSD 620-23157/3-A | Lab Control Sample Dup | 77 | 71 | 78 | 71 | 99 | 86 |
| MB 620-23157/1-A | Method Blank | 80 | 93 | 81 | 86 | 83 | 81 |

**Surrogate Legend**

FBP = 2-Fluorobiphenyl (Surr)
2FP = 2-Fluorophenol (Surr)
NBZ = Nitrobenzene-d5 (Surr)
PHL = Phenol-d5 (Surr)
TBP = 2,4,6-Tribromophenol (Surr)
TPHL = Terphenyl-d14

## Method: 8081B - Organochlorine Pesticides (GC/ECD)

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

| | | Percent Surrogate Recovery (Acceptance Limits) | | | |
|---|---|---|---|---|---|
| | | TCX1 | TCX2 | DCB1 | DCB2 |
| Lab Sample ID | Client Sample ID | (30-150) | (30-150) | (30-150) | (30-150) |
| 620-11778-1 | LM-SO-SD01-053123 | 48 | 54 | 60 | 56 |
| 620-11778-2 | LM-SO-SD02-053123 | 69 | 73 | 77 | 80 |
| LCS 620-23137/2-A | Lab Control Sample | 89 | 96 | 101 | 92 |
| LCSD 620-23137/3-A | Lab Control Sample Dup | 91 | 95 | 99 | 93 |
| MB 620-23137/1-A | Method Blank | 83 | 88 | 114 | 88 |

**Surrogate Legend**

TCX = Tetrachloro-m-xylene
DCB = DCB Decachlorobiphenyl (Surr)

# Surrogate Summary

Client: Nobis Engineering, Inc. Job ID: 620-11778-1
Project/Site: Former L&M - Lunenburg MA

## Method: 8082 - Polychlorinated Biphenyls (GC/ECD)

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

| | | Percent Surrogate Recovery (Acceptance Limits) | | | |
|---|---|---|---|---|---|
| | | TCX1 | TCX2 | DCB1 | DCB2 |
| Lab Sample ID | Client Sample ID | (30-150) | (30-150) | (30-150) | (30-150) |
| 620-11778-1 | LM-SO-SD01-053123 | 91 | 86 | 95 | 101 |
| 620-11778-2 | LM-SO-SD02-053123 | 113 | 107 | 125 | 121 |
| LCS 620-23137/4-A | Lab Control Sample | 112 | 105 | 136 | 138 |
| LCSD 620-23137/5-A | Lab Control Sample Dup | 122 | 115 | 143 | 131 |
| MB 620-23137/1-A | Method Blank | 114 | 109 | 123 | 125 |

**Surrogate Legend**

TCX = Tetrachloro-m-xylene
DCB = DCB Decachlorobiphenyl (Surr)

## Method: 8100 - Polynuclear Aromatic Hydrocarbons (PAHs) (GC)

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

| | | Percent Surrogate Recovery (Acceptance Limits) | |
|---|---|---|---|
| | | 1COD | OTPH |
| Lab Sample ID | Client Sample ID | (40-140) | (40-140) |
| 620-11778-1 | LM-SO-SD01-053123 | 78 | 57 |
| 620-11778-2 | LM-SO-SD02-053123 | 98 | 65 |
| LCS 620-23173/2-A | Lab Control Sample | 63 | 67 |
| LCSD 620-23173/3-A | Lab Control Sample Dup | 62 | 62 |
| MB 620-23173/1-A | Method Blank | 79 | 56 |

**Surrogate Legend**

1COD = 1-Chlorooctadecane (Surr)
OTPH = o-Terphenyl (Surr)

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

**Lab Sample ID: MB 620-23152/3-A**
**Matrix: Solid**
**Analysis Batch: 23153**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 23152**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,1,2-Trichlorotrifluoroethane (Freon 113) | ND | | 5.0 | 3.3 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| Acetone | ND | | 50 | 11 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| Acrylonitrile | ND | | 5.0 | 3.0 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| Benzene | ND | | 5.0 | 3.3 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| Bromobenzene | ND | | 5.0 | 3.3 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| Bromochloromethane | ND | | 5.0 | 2.8 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| Bromodichloromethane | ND | | 5.0 | 3.7 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| Bromoform | ND | | 5.0 | 3.8 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| Bromomethane | ND | | 10 | 6.2 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| 2-Butanone (MEK) | ND | | 10 | 4.0 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| n-Butylbenzene | ND | | 10 | 5.4 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| sec-Butylbenzene | ND | | 5.0 | 4.0 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| tert-Butylbenzene | ND | | 5.0 | 3.9 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| Carbon disulfide | ND | | 10 | 3.5 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| Carbon tetrachloride | ND | | 5.0 | 3.2 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| Chlorobenzene | ND | | 5.0 | 3.7 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| Chloroethane | ND | | 10 | 3.7 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| Chloroform | ND | | 5.0 | 3.4 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| Chloromethane | ND | | 10 | 3.8 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| 2-Chlorotoluene | ND | | 5.0 | 4.0 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| 4-Chlorotoluene | ND | | 5.0 | 4.3 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| 1,2-Dibromo-3-Chloropropane | ND | | 10 | 4.2 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| Dibromochloromethane | ND | | 5.0 | 3.3 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| 1,2-Dibromoethane (EDB) | ND | | 5.0 | 3.6 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| Dibromomethane | ND | | 5.0 | 2.9 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| 1,2-Dichlorobenzene | ND | | 5.0 | 4.6 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| 1,3-Dichlorobenzene | ND | | 5.0 | 4.0 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| 1,4-Dichlorobenzene | ND | | 5.0 | 4.7 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| Dichlorodifluoromethane (Freon 12) | ND | | 10 | 2.7 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| 1,1-Dichloroethane | ND | | 5.0 | 3.4 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| 1,2-Dichloroethane | ND | | 5.0 | 3.4 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| 1,1-Dichloroethene | ND | | 5.0 | 3.1 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| cis-1,2-Dichloroethene | ND | | 5.0 | 2.9 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| trans-1,2-Dichloroethene | ND | | 5.0 | 3.1 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| 1,2-Dichloropropane | ND | | 5.0 | 3.3 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| 1,3-Dichloropropane | ND | | 5.0 | 3.8 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| 2,2-Dichloropropane | ND | | 5.0 | 3.5 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| 1,1-Dichloropropene | ND | | 5.0 | 3.4 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| cis-1,3-Dichloropropene | ND | | 5.0 | 3.3 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| trans-1,3-Dichloropropene | ND | | 5.0 | 3.8 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| Ethylbenzene | ND | | 5.0 | 3.6 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| Hexachlorobutadiene | ND | | 10 | 5.0 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| 2-Hexanone (MBK) | ND | | 10 | 2.9 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| Isopropylbenzene | ND | | 5.0 | 3.8 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| 4-Isopropyltoluene | ND | | 5.0 | 4.9 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 2.9 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| 4-Methyl-2-pentanone (MIBK) | ND | | 10 | 3.2 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| Methylene Chloride | ND | | 10 | 2.7 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |

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

**Lab Sample ID: MB 620-23152/3-A**
**Matrix: Solid**
**Analysis Batch: 23153**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 23152**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 5.0 | 4.5 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| N-Propylbenzene | ND | | 5.0 | 4.2 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| Styrene | ND | | 5.0 | 3.9 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| 1,1,1,2-Tetrachloroethane | ND | | 5.0 | 3.8 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| 1,1,2,2-Tetrachloroethane | ND | | 5.0 | 4.6 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| Tetrachloroethene | ND | | 5.0 | 2.8 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| Toluene | ND | | 5.0 | 3.2 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| 1,2,3-Trichlorobenzene | ND | | 5.0 | 4.2 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| 1,2,4-Trichlorobenzene | ND | | 5.0 | 4.6 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| 1,3,5-Trichlorobenzene | ND | | 5.0 | 4.8 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| 1,1,1-Trichloroethane | ND | | 5.0 | 3.4 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| 1,1,2-Trichloroethane | ND | | 5.0 | 3.8 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| Trichloroethene | ND | | 5.0 | 3.4 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| Trichlorofluoromethane (Freon 11) | ND | | 5.0 | 3.8 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| 1,2,3-Trichloropropane | ND | | 5.0 | 4.4 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| 1,2,4-Trimethylbenzene | ND | | 5.0 | 4.2 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| 1,3,5-Trimethylbenzene | ND | | 5.0 | 4.3 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| Vinyl chloride | ND | | 5.0 | 3.1 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| m,p-Xylene | ND | | 5.0 | 6.8 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| o-Xylene | ND | | 5.0 | 3.7 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| Tetrahydrofuran | ND | | 10 | 2.5 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| Ethyl ether | ND | | 5.0 | 2.6 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| Tert-amyl methyl ether | ND | | 5.0 | 4.0 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| Ethyl tert-butyl ether | ND | | 5.0 | 3.3 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| di-Isopropyl ether | ND | | 5.0 | 3.6 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| tert-Butanol | ND | | 100 | 27 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| 1,4-Dioxane | ND | | 100 | 31 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| trans-1,4-Dichloro-2-butene | ND | | 25 | 3.7 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| Ethanol | ND | | 1000 | 62 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| 1,3-Dichloropropene, Total | ND | | 5.0 | 3.8 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |
| Xylenes, Total | ND | | 15 | 5.0 | ug/Kg | | 06/01/23 09:52 | 06/01/23 14:07 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *4-Bromofluorobenzene (Surr)* | *106* | | *70 - 130* | *06/01/23 09:52* | *06/01/23 14:07* | *1* |
| *Toluene-d8 (Surr)* | *104* | | *70 - 130* | *06/01/23 09:52* | *06/01/23 14:07* | *1* |
| *1,2-Dichloroethane-d4 (Surr)* | *95* | | *70 - 130* | *06/01/23 09:52* | *06/01/23 14:07* | *1* |
| *Dibromofluoromethane (Surr)* | *101* | | *70 - 130* | *06/01/23 09:52* | *06/01/23 14:07* | *1* |

**Lab Sample ID: LCS 620-23152/1-A**
**Matrix: Solid**
**Analysis Batch: 23153**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 23152**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| 1,1,2-Trichlorotrifluoroethane (Freon 113) | 20.0 | 17.5 | | ug/Kg | | 87 | 70 - 130 |
| Acetone | 20.0 | 17.6 | J | ug/Kg | | 88 | 70 - 130 |
| Acrylonitrile | 20.0 | 16.8 | | ug/Kg | | 84 | 70 - 130 |
| Benzene | 20.0 | 17.6 | | ug/Kg | | 88 | 70 - 130 |
| Bromobenzene | 20.0 | 16.2 | | ug/Kg | | 81 | 70 - 130 |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11778-1

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

**Lab Sample ID: LCS 620-23152/1-A**
**Matrix: Solid**
**Analysis Batch: 23153**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 23152**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Bromochloromethane | 20.0 | 18.3 | | ug/Kg | | 92 | 70 - 130 |
| Bromodichloromethane | 20.0 | 16.9 | | ug/Kg | | 85 | 70 - 130 |
| Bromoform | 20.0 | 15.7 | | ug/Kg | | 79 | 70 - 130 |
| Bromomethane | 20.0 | 26.9 | *+ | ug/Kg | | 135 | 70 - 130 |
| 2-Butanone (MEK) | 20.0 | 17.1 | | ug/Kg | | 86 | 70 - 130 |
| n-Butylbenzene | 20.0 | 14.2 | | ug/Kg | | 71 | 70 - 130 |
| sec-Butylbenzene | 20.0 | 16.1 | | ug/Kg | | 80 | 70 - 130 |
| tert-Butylbenzene | 20.0 | 18.4 | | ug/Kg | | 92 | 70 - 130 |
| Carbon disulfide | 20.0 | 17.8 | | ug/Kg | | 89 | 70 - 130 |
| Carbon tetrachloride | 20.0 | 18.6 | | ug/Kg | | 93 | 70 - 130 |
| Chlorobenzene | 20.0 | 15.3 | | ug/Kg | | 76 | 70 - 130 |
| Chloroethane | 20.0 | 18.5 | | ug/Kg | | 93 | 70 - 130 |
| Chloroform | 20.0 | 17.2 | | ug/Kg | | 86 | 70 - 130 |
| Chloromethane | 20.0 | 22.5 | | ug/Kg | | 113 | 70 - 130 |
| 2-Chlorotoluene | 20.0 | 16.2 | | ug/Kg | | 81 | 70 - 130 |
| 4-Chlorotoluene | 20.0 | 15.5 | | ug/Kg | | 78 | 70 - 130 |
| 1,2-Dibromo-3-Chloropropane | 20.0 | 14.9 | | ug/Kg | | 75 | 70 - 130 |
| Dibromochloromethane | 20.0 | 16.7 | | ug/Kg | | 84 | 70 - 130 |
| 1,2-Dibromoethane (EDB) | 20.0 | 16.9 | | ug/Kg | | 85 | 70 - 130 |
| Dibromomethane | 20.0 | 17.0 | | ug/Kg | | 85 | 70 - 130 |
| 1,2-Dichlorobenzene | 20.0 | 15.0 | | ug/Kg | | 75 | 70 - 130 |
| 1,3-Dichlorobenzene | 20.0 | 16.6 | | ug/Kg | | 83 | 70 - 130 |
| 1,4-Dichlorobenzene | 20.0 | 14.7 | | ug/Kg | | 74 | 70 - 130 |
| Dichlorodifluoromethane (Freon 12) | 20.0 | 26.7 | *+ | ug/Kg | | 134 | 70 - 130 |
| 1,1-Dichloroethane | 20.0 | 17.5 | | ug/Kg | | 87 | 70 - 130 |
| 1,2-Dichloroethane | 20.0 | 17.0 | | ug/Kg | | 85 | 70 - 130 |
| 1,1-Dichloroethene | 20.0 | 18.1 | | ug/Kg | | 90 | 70 - 130 |
| cis-1,2-Dichloroethene | 20.0 | 17.8 | | ug/Kg | | 89 | 70 - 130 |
| trans-1,2-Dichloroethene | 20.0 | 18.1 | | ug/Kg | | 90 | 70 - 130 |
| 1,2-Dichloropropane | 20.0 | 17.1 | | ug/Kg | | 85 | 70 - 130 |
| 1,3-Dichloropropane | 20.0 | 16.7 | | ug/Kg | | 84 | 70 - 130 |
| 2,2-Dichloropropane | 20.0 | 18.7 | | ug/Kg | | 94 | 70 - 130 |
| 1,1-Dichloropropene | 20.0 | 18.0 | | ug/Kg | | 90 | 70 - 130 |
| cis-1,3-Dichloropropene | 20.0 | 17.0 | | ug/Kg | | 85 | 70 - 130 |
| trans-1,3-Dichloropropene | 20.0 | 16.9 | | ug/Kg | | 84 | 70 - 130 |
| Ethylbenzene | 20.0 | 15.0 | | ug/Kg | | 75 | 70 - 130 |
| Hexachlorobutadiene | 20.0 | 17.7 | | ug/Kg | | 89 | 70 - 130 |
| 2-Hexanone (MBK) | 20.0 | 17.0 | | ug/Kg | | 85 | 70 - 130 |
| Isopropylbenzene | 20.0 | 15.8 | | ug/Kg | | 79 | 70 - 130 |
| 4-Isopropyltoluene | 20.0 | 14.8 | | ug/Kg | | 74 | 70 - 130 |
| Methyl tert-butyl ether | 20.0 | 17.3 | | ug/Kg | | 86 | 70 - 130 |
| 4-Methyl-2-pentanone (MIBK) | 20.0 | 16.8 | | ug/Kg | | 84 | 70 - 130 |
| Methylene Chloride | 20.0 | 16.4 | | ug/Kg | | 82 | 70 - 130 |
| Naphthalene | 20.0 | 17.3 | | ug/Kg | | 87 | 70 - 130 |
| N-Propylbenzene | 20.0 | 15.5 | | ug/Kg | | 77 | 70 - 130 |
| Styrene | 20.0 | 15.2 | | ug/Kg | | 76 | 70 - 130 |
| 1,1,1,2-Tetrachloroethane | 20.0 | 15.5 | | ug/Kg | | 77 | 70 - 130 |
| 1,1,2,2-Tetrachloroethane | 20.0 | 14.7 | | ug/Kg | | 73 | 70 - 130 |

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

**Lab Sample ID: LCS 620-23152/1-A**
**Matrix: Solid**
**Analysis Batch: 23153**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 23152**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Tetrachloroethene | 20.0 | 19.2 | | ug/Kg | | 96 | 70 - 130 |
| Toluene | 20.0 | 17.3 | | ug/Kg | | 87 | 70 - 130 |
| 1,2,3-Trichlorobenzene | 20.0 | 18.7 | | ug/Kg | | 93 | 70 - 130 |
| 1,2,4-Trichlorobenzene | 20.0 | 20.3 | | ug/Kg | | 102 | 70 - 130 |
| 1,3,5-Trichlorobenzene | 20.0 | 17.2 | | ug/Kg | | 86 | 70 - 130 |
| 1,1,1-Trichloroethane | 20.0 | 18.1 | | ug/Kg | | 91 | 70 - 130 |
| 1,1,2-Trichloroethane | 20.0 | 16.6 | | ug/Kg | | 83 | 70 - 130 |
| Trichloroethene | 20.0 | 17.9 | | ug/Kg | | 90 | 70 - 130 |
| Trichlorofluoromethane (Freon 11) | 20.0 | 18.6 | | ug/Kg | | 93 | 70 - 130 |
| 1,2,3-Trichloropropane | 20.0 | 15.1 | | ug/Kg | | 76 | 70 - 130 |
| 1,2,4-Trimethylbenzene | 20.0 | 15.8 | | ug/Kg | | 79 | 70 - 130 |
| 1,3,5-Trimethylbenzene | 20.0 | 15.7 | | ug/Kg | | 79 | 70 - 130 |
| Vinyl chloride | 20.0 | 19.6 | | ug/Kg | | 98 | 70 - 130 |
| m,p-Xylene | 20.0 | 15.5 | | ug/Kg | | 78 | 70 - 130 |
| o-Xylene | 20.0 | 15.3 | | ug/Kg | | 77 | 70 - 130 |
| Tetrahydrofuran | 20.0 | 14.6 | | ug/Kg | | 73 | 70 - 130 |
| Ethyl ether | 20.0 | 16.2 | | ug/Kg | | 81 | 70 - 130 |
| Tert-amyl methyl ether | 20.0 | 17.6 | | ug/Kg | | 88 | 70 - 130 |
| Ethyl tert-butyl ether | 20.0 | 17.3 | | ug/Kg | | 86 | 70 - 130 |
| di-Isopropyl ether | 20.0 | 17.2 | | ug/Kg | | 86 | 70 - 130 |
| tert-Butanol | 200 | 167 | | ug/Kg | | 83 | 70 - 130 |
| 1,4-Dioxane | 200 | 171 | | ug/Kg | | 86 | 70 - 130 |
| trans-1,4-Dichloro-2-butene | 20.0 | 15.1 | J | ug/Kg | | 76 | 70 - 130 |
| Ethanol | 400 | 311 | J | ug/Kg | | 78 | 70 - 130 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *4-Bromofluorobenzene (Surr)* | *106* | | *70 - 130* |
| *Toluene-d8 (Surr)* | *104* | | *70 - 130* |
| *1,2-Dichloroethane-d4 (Surr)* | *94* | | *70 - 130* |
| *Dibromofluoromethane (Surr)* | *104* | | *70 - 130* |

**Lab Sample ID: LCSD 620-23152/2-A**
**Matrix: Solid**
**Analysis Batch: 23153**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 23152**

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| 1,1,2-Trichlorotrifluoroethane (Freon 113) | 20.0 | 17.9 | | ug/Kg | | 90 | 70 - 130 | 2 | 30 |
| Acetone | 20.0 | 15.6 | J | ug/Kg | | 78 | 70 - 130 | 12 | 30 |
| Acrylonitrile | 20.0 | 16.3 | | ug/Kg | | 81 | 70 - 130 | 3 | 30 |
| Benzene | 20.0 | 18.2 | | ug/Kg | | 91 | 70 - 130 | 3 | 30 |
| Bromobenzene | 20.0 | 16.9 | | ug/Kg | | 85 | 70 - 130 | 4 | 30 |
| Bromochloromethane | 20.0 | 19.0 | | ug/Kg | | 95 | 70 - 130 | 4 | 30 |
| Bromodichloromethane | 20.0 | 17.8 | | ug/Kg | | 89 | 70 - 130 | 5 | 30 |
| Bromoform | 20.0 | 16.7 | | ug/Kg | | 84 | 70 - 130 | 6 | 30 |
| Bromomethane | 20.0 | 26.0 | | ug/Kg | | 130 | 70 - 130 | 3 | 30 |
| 2-Butanone (MEK) | 20.0 | 17.4 | | ug/Kg | | 87 | 70 - 130 | 2 | 30 |
| n-Butylbenzene | 20.0 | 15.1 | | ug/Kg | | 76 | 70 - 130 | 6 | 30 |

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

**Lab Sample ID: LCSD 620-23152/2-A**
**Matrix: Solid**
**Analysis Batch: 23153**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 23152**

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| sec-Butylbenzene | 20.0 | 16.9 | | ug/Kg | | 84 | 70 - 130 | 5 | 30 |
| tert-Butylbenzene | 20.0 | 19.4 | | ug/Kg | | 97 | 70 - 130 | 5 | 30 |
| Carbon disulfide | 20.0 | 17.7 | | ug/Kg | | 88 | 70 - 130 | 1 | 30 |
| Carbon tetrachloride | 20.0 | 18.8 | | ug/Kg | | 94 | 70 - 130 | 1 | 30 |
| Chlorobenzene | 20.0 | 16.1 | | ug/Kg | | 81 | 70 - 130 | 5 | 30 |
| Chloroethane | 20.0 | 18.6 | | ug/Kg | | 93 | 70 - 130 | 0 | 30 |
| Chloroform | 20.0 | 17.7 | | ug/Kg | | 89 | 70 - 130 | 3 | 30 |
| Chloromethane | 20.0 | 21.7 | | ug/Kg | | 109 | 70 - 130 | 4 | 30 |
| 2-Chlorotoluene | 20.0 | 16.8 | | ug/Kg | | 84 | 70 - 130 | 4 | 30 |
| 4-Chlorotoluene | 20.0 | 16.2 | | ug/Kg | | 81 | 70 - 130 | 4 | 30 |
| 1,2-Dibromo-3-Chloropropane | 20.0 | 15.2 | | ug/Kg | | 76 | 70 - 130 | 2 | 30 |
| Dibromochloromethane | 20.0 | 17.9 | | ug/Kg | | 89 | 70 - 130 | 7 | 30 |
| 1,2-Dibromoethane (EDB) | 20.0 | 18.4 | | ug/Kg | | 92 | 70 - 130 | 9 | 30 |
| Dibromomethane | 20.0 | 18.0 | | ug/Kg | | 90 | 70 - 130 | 6 | 30 |
| 1,2-Dichlorobenzene | 20.0 | 15.6 | | ug/Kg | | 78 | 70 - 130 | 4 | 30 |
| 1,3-Dichlorobenzene | 20.0 | 17.5 | | ug/Kg | | 88 | 70 - 130 | 6 | 30 |
| 1,4-Dichlorobenzene | 20.0 | 15.6 | | ug/Kg | | 78 | 70 - 130 | 6 | 30 |
| Dichlorodifluoromethane (Freon 12) | 20.0 | 26.3 | *+ | ug/Kg | | 132 | 70 - 130 | 2 | 30 |
| 1,1-Dichloroethane | 20.0 | 18.0 | | ug/Kg | | 90 | 70 - 130 | 3 | 30 |
| 1,2-Dichloroethane | 20.0 | 18.0 | | ug/Kg | | 90 | 70 - 130 | 6 | 30 |
| 1,1-Dichloroethene | 20.0 | 17.9 | | ug/Kg | | 89 | 70 - 130 | 1 | 30 |
| cis-1,2-Dichloroethene | 20.0 | 18.5 | | ug/Kg | | 92 | 70 - 130 | 4 | 30 |
| trans-1,2-Dichloroethene | 20.0 | 18.6 | | ug/Kg | | 93 | 70 - 130 | 3 | 30 |
| 1,2-Dichloropropane | 20.0 | 17.9 | | ug/Kg | | 89 | 70 - 130 | 5 | 30 |
| 1,3-Dichloropropane | 20.0 | 17.7 | | ug/Kg | | 88 | 70 - 130 | 6 | 30 |
| 2,2-Dichloropropane | 20.0 | 18.9 | | ug/Kg | | 94 | 70 - 130 | 1 | 30 |
| 1,1-Dichloropropene | 20.0 | 18.7 | | ug/Kg | | 93 | 70 - 130 | 4 | 30 |
| cis-1,3-Dichloropropene | 20.0 | 18.2 | | ug/Kg | | 91 | 70 - 130 | 7 | 30 |
| trans-1,3-Dichloropropene | 20.0 | 17.9 | | ug/Kg | | 89 | 70 - 130 | 6 | 30 |
| Ethylbenzene | 20.0 | 15.9 | | ug/Kg | | 79 | 70 - 130 | 6 | 30 |
| Hexachlorobutadiene | 20.0 | 18.9 | | ug/Kg | | 95 | 70 - 130 | 7 | 30 |
| 2-Hexanone (MBK) | 20.0 | 17.2 | | ug/Kg | | 86 | 70 - 130 | 1 | 30 |
| Isopropylbenzene | 20.0 | 16.5 | | ug/Kg | | 83 | 70 - 130 | 4 | 30 |
| 4-Isopropyltoluene | 20.0 | 15.6 | | ug/Kg | | 78 | 70 - 130 | 5 | 30 |
| Methyl tert-butyl ether | 20.0 | 18.4 | | ug/Kg | | 92 | 70 - 130 | 6 | 30 |
| 4-Methyl-2-pentanone (MIBK) | 20.0 | 17.0 | | ug/Kg | | 85 | 70 - 130 | 1 | 30 |
| Methylene Chloride | 20.0 | 16.8 | | ug/Kg | | 84 | 70 - 130 | 3 | 30 |
| Naphthalene | 20.0 | 17.8 | | ug/Kg | | 89 | 70 - 130 | 3 | 30 |
| N-Propylbenzene | 20.0 | 16.2 | | ug/Kg | | 81 | 70 - 130 | 5 | 30 |
| Styrene | 20.0 | 15.8 | | ug/Kg | | 79 | 70 - 130 | 4 | 30 |
| 1,1,1,2-Tetrachloroethane | 20.0 | 16.2 | | ug/Kg | | 81 | 70 - 130 | 5 | 30 |
| 1,1,2,2-Tetrachloroethane | 20.0 | 15.5 | | ug/Kg | | 77 | 70 - 130 | 5 | 30 |
| Tetrachloroethene | 20.0 | 19.8 | | ug/Kg | | 99 | 70 - 130 | 3 | 30 |
| Toluene | 20.0 | 18.1 | | ug/Kg | | 91 | 70 - 130 | 4 | 30 |
| 1,2,3-Trichlorobenzene | 20.0 | 19.3 | | ug/Kg | | 96 | 70 - 130 | 3 | 30 |
| 1,2,4-Trichlorobenzene | 20.0 | 21.1 | | ug/Kg | | 106 | 70 - 130 | 4 | 30 |
| 1,3,5-Trichlorobenzene | 20.0 | 18.2 | | ug/Kg | | 91 | 70 - 130 | 6 | 30 |
| 1,1,1-Trichloroethane | 20.0 | 18.6 | | ug/Kg | | 93 | 70 - 130 | 3 | 30 |

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

**Lab Sample ID: LCSD 620-23152/2-A**
**Matrix: Solid**
**Analysis Batch: 23153**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 23152**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,2-Trichloroethane | | | 20.0 | 17.5 | | ug/Kg | | 88 | 70 - 130 | 5 | 30 |
| Trichloroethene | | | 20.0 | 18.5 | | ug/Kg | | 92 | 70 - 130 | 3 | 30 |
| Trichlorofluoromethane (Freon 11) | | | 20.0 | 17.3 | | ug/Kg | | 86 | 70 - 130 | 8 | 30 |
| 1,2,3-Trichloropropane | | | 20.0 | 15.3 | | ug/Kg | | 77 | 70 - 130 | 1 | 30 |
| 1,2,4-Trimethylbenzene | | | 20.0 | 16.6 | | ug/Kg | | 83 | 70 - 130 | 5 | 30 |
| 1,3,5-Trimethylbenzene | | | 20.0 | 16.5 | | ug/Kg | | 83 | 70 - 130 | 5 | 30 |
| Vinyl chloride | | | 20.0 | 19.2 | | ug/Kg | | 96 | 70 - 130 | 2 | 30 |
| m,p-Xylene | | | 20.0 | 16.2 | | ug/Kg | | 81 | 70 - 130 | 4 | 30 |
| o-Xylene | | | 20.0 | 16.2 | | ug/Kg | | 81 | 70 - 130 | 5 | 30 |
| Tetrahydrofuran | | | 20.0 | 15.8 | | ug/Kg | | 79 | 70 - 130 | 7 | 30 |
| Ethyl ether | | | 20.0 | 16.9 | | ug/Kg | | 85 | 70 - 130 | 4 | 30 |
| Tert-amyl methyl ether | | | 20.0 | 18.7 | | ug/Kg | | 94 | 70 - 130 | 6 | 30 |
| Ethyl tert-butyl ether | | | 20.0 | 18.0 | | ug/Kg | | 90 | 70 - 130 | 4 | 30 |
| di-Isopropyl ether | | | 20.0 | 17.9 | | ug/Kg | | 89 | 70 - 130 | 4 | 30 |
| tert-Butanol | | | 200 | 168 | | ug/Kg | | 84 | 70 - 130 | 1 | 30 |
| 1,4-Dioxane | | | 200 | 189 | | ug/Kg | | 94 | 70 - 130 | 10 | 30 |
| trans-1,4-Dichloro-2-butene | | | 20.0 | 15.8 | J | ug/Kg | | 79 | 70 - 130 | 4 | 30 |
| Ethanol | | | 400 | 275 | J *- | ug/Kg | | 69 | 70 - 130 | 12 | 30 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *4-Bromofluorobenzene (Surr)* | *106* | | *70 - 130* |
| *Toluene-d8 (Surr)* | *105* | | *70 - 130* |
| *1,2-Dichloroethane-d4 (Surr)* | *93* | | *70 - 130* |
| *Dibromofluoromethane (Surr)* | *102* | | *70 - 130* |

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

**Lab Sample ID: MB 620-23157/1-A**
**Matrix: Solid**
**Analysis Batch: 23208**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 23157**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,2,4,5-Tetrachlorobenzene | ND | | 330 | 59 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| 1,2,4-Trichlorobenzene | ND | | 330 | 76 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| 1,2-Dichlorobenzene | ND | | 330 | 64 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| 1,3-Dichlorobenzene | ND | | 330 | 80 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| 1,4-Dichlorobenzene | ND | | 330 | 78 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| 1-Methylnaphthalene | ND | | 67 | 56 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| 2,4,5-Trichlorophenol | ND | | 330 | 38 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| 2,4,6-Trichlorophenol | ND | | 170 | 41 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| 2,4-Dichlorophenol | ND | | 170 | 67 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| 2,4-Dimethylphenol | ND | | 330 | 48 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| 2,4-Dinitrophenol | ND | | 330 | 87 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| 2,4-Dinitrotoluene | ND | | 170 | 39 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| 2,6-Dinitrotoluene | ND | | 170 | 39 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| 2-Chloronaphthalene | ND | | 330 | 76 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| 2-Chlorophenol | ND | | 170 | 68 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| 2-Methylnaphthalene | ND | | 67 | 49 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |

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

**Lab Sample ID: MB 620-23157/1-A**
**Matrix: Solid**
**Analysis Batch: 23208**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 23157**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 2-Methylphenol | ND | | 330 | 48 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| 2-Nitroaniline | ND | | 330 | 31 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| 2-Nitrophenol | ND | | 170 | 59 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| 3 & 4 Methylphenol | ND | | 330 | 63 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| 3,3'-Dichlorobenzidine | ND | | 330 | 55 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| 3-Nitroaniline | ND | | 330 | 30 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| 4,6-Dinitro-2-methylphenol | ND | | 330 | 59 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| 4-Bromophenyl phenyl ether | ND | | 330 | 37 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| 4-Chloro-3-methylphenol | ND | | 330 | 65 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| 4-Chloroaniline | ND | | 170 | 25 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| 4-Chlorophenyl phenyl ether | ND | | 330 | 35 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| 4-Nitroaniline | ND | | 170 | 53 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| 4-Nitrophenol | ND | | 330 | 120 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| Acenaphthene | ND | | 67 | 53 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| Acenaphthylene | ND | | 67 | 44 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| Acetophenone | ND | | 170 | 41 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| Aniline | ND | | 330 | 25 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| Anthracene | ND | | 67 | 39 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| Azobenzene/Diphenyldiazene | ND | | 330 | 56 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| Benzidine | ND | | 660 | 98 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| Benzo[a]anthracene | ND | | 67 | 38 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| Benzo[a]pyrene | ND | | 67 | 48 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| Benzo[b]fluoranthene | ND | | 67 | 55 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| Benzo[g,h,i]perylene | ND | | 67 | 52 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| Benzo[k]fluoranthene | ND | | 67 | 52 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| Benzoic acid | ND | | 330 | 230 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| Benzyl alcohol | ND | | 330 | 60 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| Bis(2-chloroethoxy)methane | ND | | 330 | 57 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| Bis(2-chloroethyl)ether | ND | | 170 | 55 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| bis (2-chloroisopropyl) ether | ND | | 170 | 74 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| Bis(2-ethylhexyl) phthalate | ND | | 170 | 43 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| Butyl benzyl phthalate | ND | | 330 | 33 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| Carbazole | ND | | 170 | 44 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| Chrysene | ND | | 67 | 38 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| Dibenz(a,h)anthracene | ND | | 67 | 51 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| Dibenzofuran | ND | | 170 | 58 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| Diethyl phthalate | ND | | 330 | 36 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| Dimethyl phthalate | ND | | 330 | 43 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| Di-n-butyl phthalate | ND | | 330 | 35 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| Di-n-octyl phthalate | ND | | 330 | 55 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| Fluoranthene | ND | | 67 | 39 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| Fluorene | ND | | 67 | 61 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| Hexachlorobenzene | ND | | 170 | 46 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| Hexachlorobutadiene | ND | | 170 | 83 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| Hexachlorocyclopentadiene | ND | | 170 | 64 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| Hexachloroethane | ND | | 170 | 66 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 67 | 57 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| Isophorone | ND | | 170 | 46 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| Naphthalene | ND | | 67 | 64 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |

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

**Lab Sample ID: MB 620-23157/1-A**
**Matrix: Solid**
**Analysis Batch: 23208**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 23157**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Nitrobenzene | ND | | 170 | 77 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| N-Nitrosodimethylamine | ND | | 170 | 44 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| N-Nitrosodi-n-propylamine | ND | | 170 | 67 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| N-Nitrosodiphenylamine | ND | | 330 | 42 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| Pentachloronitrobenzene | ND | | 330 | 52 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| Pentachlorophenol | ND | | 330 | 140 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| Phenanthrene | ND | | 67 | 38 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| Phenol | ND | | 330 | 68 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| Pyrene | ND | | 67 | 37 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |
| Pyridine | ND | | 330 | 78 | ug/Kg | | 06/01/23 10:46 | 06/02/23 14:03 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2-Fluorobiphenyl (Surr)* | *80* | | *30 - 130* | *06/01/23 10:46* | *06/02/23 14:03* | *1* |
| *2-Fluorophenol (Surr)* | *93* | | *15 - 110* | *06/01/23 10:46* | *06/02/23 14:03* | *1* |
| *Nitrobenzene-d5 (Surr)* | *81* | | *30 - 130* | *06/01/23 10:46* | *06/02/23 14:03* | *1* |
| *Phenol-d5 (Surr)* | *86* | | *15 - 110* | *06/01/23 10:46* | *06/02/23 14:03* | *1* |
| *2,4,6-Tribromophenol (Surr)* | *83* | | *15 - 110* | *06/01/23 10:46* | *06/02/23 14:03* | *1* |
| *Terphenyl-d14* | *81* | | *30 - 130* | *06/01/23 10:46* | *06/02/23 14:03* | *1* |

**Lab Sample ID: LCS 620-23157/2-A**
**Matrix: Solid**
**Analysis Batch: 23208**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 23157**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| 1,2,4,5-Tetrachlorobenzene | 1670 | 1370 | | ug/Kg | | 82 | 40 - 140 |
| 1,2,4-Trichlorobenzene | 1670 | 2120 | | ug/Kg | | 127 | 40 - 140 |
| 1,2-Dichlorobenzene | 1670 | 1970 | | ug/Kg | | 118 | 40 - 140 |
| 1,3-Dichlorobenzene | 1670 | 1980 | | ug/Kg | | 119 | 40 - 140 |
| 1,4-Dichlorobenzene | 1670 | 1990 | | ug/Kg | | 119 | 40 - 140 |
| 1-Methylnaphthalene | 1670 | 1380 | | ug/Kg | | 83 | 40 - 140 |
| 2,4,5-Trichlorophenol | 1670 | 1340 | | ug/Kg | | 80 | 30 - 130 |
| 2,4,6-Trichlorophenol | 1670 | 1350 | | ug/Kg | | 81 | 30 - 130 |
| 2,4-Dichlorophenol | 1670 | 1300 | | ug/Kg | | 78 | 30 - 130 |
| 2,4-Dimethylphenol | 1670 | 1210 | | ug/Kg | | 73 | 30 - 130 |
| 2,4-Dinitrophenol | 1670 | 1090 | | ug/Kg | | 65 | 30 - 130 |
| 2,4-Dinitrotoluene | 1670 | 2290 | | ug/Kg | | 137 | 40 - 140 |
| 2,6-Dinitrotoluene | 1670 | 2260 | | ug/Kg | | 136 | 40 - 140 |
| 2-Chloronaphthalene | 1670 | 2210 | | ug/Kg | | 133 | 40 - 140 |
| 2-Chlorophenol | 1670 | 1270 | | ug/Kg | | 76 | 30 - 130 |
| 2-Methylnaphthalene | 1670 | 2280 | | ug/Kg | | 137 | 40 - 140 |
| 2-Methylphenol | 1670 | 1230 | | ug/Kg | | 74 | 30 - 130 |
| 2-Nitroaniline | 1670 | 1430 | | ug/Kg | | 86 | 40 - 140 |
| 2-Nitrophenol | 1670 | 1300 | | ug/Kg | | 78 | 30 - 130 |
| 3 & 4 Methylphenol | 1670 | 1280 | | ug/Kg | | 77 | 30 - 130 |
| 3,3'-Dichlorobenzidine | 1670 | 1960 | | ug/Kg | | 118 | 40 - 140 |
| 3-Nitroaniline | 1670 | 1100 | | ug/Kg | | 66 | 40 - 140 |
| 4,6-Dinitro-2-methylphenol | 1670 | 1180 | | ug/Kg | | 71 | 30 - 130 |
| 4-Bromophenyl phenyl ether | 1670 | 786 | | ug/Kg | | 47 | 40 - 140 |

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

**Lab Sample ID: LCS 620-23157/2-A**
**Matrix: Solid**
**Analysis Batch: 23208**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 23157**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| 4-Chloro-3-methylphenol | 1670 | 1330 | | ug/Kg | | 80 | 30 - 130 |
| 4-Chloroaniline | 1670 | 875 | | ug/Kg | | 53 | 40 - 140 |
| 4-Chlorophenyl phenyl ether | 1670 | 791 | | ug/Kg | | 47 | 40 - 140 |
| 4-Nitroaniline | 1670 | 1510 | | ug/Kg | | 91 | 40 - 140 |
| 4-Nitrophenol | 1670 | 1430 | | ug/Kg | | 86 | 30 - 130 |
| Acenaphthene | 1670 | 1350 | | ug/Kg | | 81 | 40 - 140 |
| Acenaphthylene | 1670 | 1320 | | ug/Kg | | 79 | 40 - 140 |
| Acetophenone | 1670 | 1300 | | ug/Kg | | 78 | 40 - 140 |
| Aniline | 1670 | 1060 | | ug/Kg | | 64 | 40 - 140 |
| Anthracene | 1670 | 1560 | | ug/Kg | | 93 | 40 - 140 |
| Azobenzene/Diphenyldiazene | 1670 | 1260 | | ug/Kg | | 76 | 40 - 140 |
| Benzidine | 1670 | 1440 | | ug/Kg | | 86 | 40 - 140 |
| Benzo[a]anthracene | 1670 | 1590 | | ug/Kg | | 96 | 40 - 140 |
| Benzo[a]pyrene | 1670 | 1530 | | ug/Kg | | 92 | 40 - 140 |
| Benzo[b]fluoranthene | 1670 | 1480 | | ug/Kg | | 89 | 40 - 140 |
| Benzo[g,h,i]perylene | 1670 | 1560 | | ug/Kg | | 93 | 40 - 140 |
| Benzo[k]fluoranthene | 1670 | 1410 | | ug/Kg | | 84 | 40 - 140 |
| Benzoic acid | 1670 | 495 | | ug/Kg | | 30 | 30 - 130 |
| Benzyl alcohol | 1670 | 1770 | | ug/Kg | | 106 | 40 - 140 |
| Bis(2-chloroethoxy)methane | 1670 | 673 | | ug/Kg | | 40 | 40 - 140 |
| Bis(2-chloroethyl)ether | 1670 | 691 | | ug/Kg | | 41 | 40 - 140 |
| bis (2-chloroisopropyl) ether | 1670 | 626 | *- | ug/Kg | | 38 | 40 - 140 |
| Bis(2-ethylhexyl) phthalate | 1670 | 857 | | ug/Kg | | 51 | 40 - 140 |
| Butyl benzyl phthalate | 1670 | 846 | | ug/Kg | | 51 | 40 - 140 |
| Carbazole | 1670 | 1480 | | ug/Kg | | 89 | 40 - 140 |
| Chrysene | 1670 | 1540 | | ug/Kg | | 92 | 40 - 140 |
| Dibenz(a,h)anthracene | 1670 | 1570 | | ug/Kg | | 94 | 40 - 140 |
| Dibenzofuran | 1670 | 2240 | | ug/Kg | | 134 | 40 - 140 |
| Diethyl phthalate | 1670 | 795 | | ug/Kg | | 48 | 40 - 140 |
| Dimethyl phthalate | 1670 | 787 | | ug/Kg | | 47 | 40 - 140 |
| Di-n-butyl phthalate | 1670 | 856 | | ug/Kg | | 51 | 40 - 140 |
| Di-n-octyl phthalate | 1670 | 858 | | ug/Kg | | 51 | 40 - 140 |
| Fluoranthene | 1670 | 1530 | | ug/Kg | | 92 | 40 - 140 |
| Fluorene | 1670 | 1450 | | ug/Kg | | 87 | 40 - 140 |
| Hexachlorobenzene | 1670 | 2310 | | ug/Kg | | 139 | 40 - 140 |
| Hexachlorobutadiene | 1670 | 1890 | | ug/Kg | | 113 | 40 - 140 |
| Hexachlorocyclopentadiene | 1670 | 2380 | *+ | ug/Kg | | 143 | 40 - 140 |
| Hexachloroethane | 1670 | 1950 | | ug/Kg | | 117 | 40 - 140 |
| Indeno[1,2,3-cd]pyrene | 1670 | 1550 | | ug/Kg | | 93 | 40 - 140 |
| Isophorone | 1670 | 1820 | | ug/Kg | | 109 | 40 - 140 |
| Naphthalene | 1670 | 1380 | | ug/Kg | | 83 | 40 - 140 |
| Nitrobenzene | 1670 | 2150 | | ug/Kg | | 129 | 40 - 140 |
| N-Nitrosodimethylamine | 1670 | 607 | *- | ug/Kg | | 36 | 40 - 140 |
| N-Nitrosodi-n-propylamine | 1670 | 732 | | ug/Kg | | 44 | 40 - 140 |
| N-Nitrosodiphenylamine | 1670 | 888 | | ug/Kg | | 53 | 40 - 140 |
| Pentachloronitrobenzene | 1670 | 1540 | | ug/Kg | | 92 | 40 - 140 |
| Pentachlorophenol | 1670 | 1170 | | ug/Kg | | 70 | 30 - 130 |
| Phenanthrene | 1670 | 1460 | | ug/Kg | | 87 | 40 - 140 |
| Phenol | 1670 | 1260 | | ug/Kg | | 76 | 40 - 140 |

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

**Lab Sample ID: LCS 620-23157/2-A**
**Matrix: Solid**
**Analysis Batch: 23208**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 23157**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pyrene | | | 1670 | 1600 | | ug/Kg | | 96 | 40 - 140 | | |
| Pyridine | | | 1670 | 861 | | ug/Kg | | 52 | 40 - 140 | | |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *2-Fluorobiphenyl (Surr)* | *84* | | *30 - 130* |
| *2-Fluorophenol (Surr)* | *90* | | *15 - 110* |
| *Nitrobenzene-d5 (Surr)* | *87* | | *30 - 130* |
| *Phenol-d5 (Surr)* | *86* | | *15 - 110* |
| *2,4,6-Tribromophenol (Surr)* | *97* | | *15 - 110* |
| *Terphenyl-d14* | *82* | | *30 - 130* |

**Lab Sample ID: LCSD 620-23157/3-A**
**Matrix: Solid**
**Analysis Batch: 23208**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 23157**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,2,4,5-Tetrachlorobenzene | | | 1670 | 1200 | | ug/Kg | | 72 | 40 - 140 | 13 | 30 |
| 1,2,4-Trichlorobenzene | | | 1670 | 1790 | | ug/Kg | | 108 | 40 - 140 | 17 | 30 |
| 1,2-Dichlorobenzene | | | 1670 | 1690 | | ug/Kg | | 102 | 40 - 140 | 15 | 30 |
| 1,3-Dichlorobenzene | | | 1670 | 1660 | | ug/Kg | | 100 | 40 - 140 | 17 | 30 |
| 1,4-Dichlorobenzene | | | 1670 | 1690 | | ug/Kg | | 101 | 40 - 140 | 16 | 30 |
| 1-Methylnaphthalene | | | 1670 | 1230 | | ug/Kg | | 74 | 40 - 140 | 12 | 30 |
| 2,4,5-Trichlorophenol | | | 1670 | 1330 | | ug/Kg | | 80 | 30 - 130 | 0 | 30 |
| 2,4,6-Trichlorophenol | | | 1670 | 1330 | | ug/Kg | | 80 | 30 - 130 | 1 | 30 |
| 2,4-Dichlorophenol | | | 1670 | 1240 | | ug/Kg | | 74 | 30 - 130 | 5 | 30 |
| 2,4-Dimethylphenol | | | 1670 | 1070 | | ug/Kg | | 64 | 30 - 130 | 12 | 30 |
| 2,4-Dinitrophenol | | | 1670 | 1120 | | ug/Kg | | 67 | 30 - 130 | 3 | 30 |
| 2,4-Dinitrotoluene | | | 1670 | 2050 | | ug/Kg | | 123 | 40 - 140 | 11 | 30 |
| 2,6-Dinitrotoluene | | | 1670 | 2280 | | ug/Kg | | 137 | 40 - 140 | 1 | 30 |
| 2-Chloronaphthalene | | | 1670 | 1980 | | ug/Kg | | 119 | 40 - 140 | 11 | 30 |
| 2-Chlorophenol | | | 1670 | 1050 | | ug/Kg | | 63 | 30 - 130 | 19 | 30 |
| 2-Methylnaphthalene | | | 1670 | 1990 | | ug/Kg | | 119 | 40 - 140 | 14 | 30 |
| 2-Methylphenol | | | 1670 | 1090 | | ug/Kg | | 66 | 30 - 130 | 12 | 30 |
| 2-Nitroaniline | | | 1670 | 1430 | | ug/Kg | | 86 | 40 - 140 | 0 | 30 |
| 2-Nitrophenol | | | 1670 | 1120 | | ug/Kg | | 67 | 30 - 130 | 15 | 30 |
| 3 & 4 Methylphenol | | | 1670 | 1160 | | ug/Kg | | 70 | 30 - 130 | 10 | 30 |
| 3,3'-Dichlorobenzidine | | | 1670 | 2240 | | ug/Kg | | 134 | 40 - 140 | 13 | 30 |
| 3-Nitroaniline | | | 1670 | 1220 | | ug/Kg | | 73 | 40 - 140 | 11 | 30 |
| 4,6-Dinitro-2-methylphenol | | | 1670 | 1210 | | ug/Kg | | 73 | 30 - 130 | 3 | 30 |
| 4-Bromophenyl phenyl ether | | | 1670 | 800 | | ug/Kg | | 48 | 40 - 140 | 2 | 30 |
| 4-Chloro-3-methylphenol | | | 1670 | 1270 | | ug/Kg | | 76 | 30 - 130 | 5 | 30 |
| 4-Chloroaniline | | | 1670 | 1030 | | ug/Kg | | 62 | 40 - 140 | 16 | 30 |
| 4-Chlorophenyl phenyl ether | | | 1670 | 668 | | ug/Kg | | 40 | 40 - 140 | 17 | 30 |
| 4-Nitroaniline | | | 1670 | 1390 | | ug/Kg | | 83 | 40 - 140 | 8 | 30 |
| 4-Nitrophenol | | | 1670 | 1340 | | ug/Kg | | 80 | 30 - 130 | 7 | 30 |
| Acenaphthene | | | 1670 | 1290 | | ug/Kg | | 77 | 40 - 140 | 5 | 30 |
| Acenaphthylene | | | 1670 | 1230 | | ug/Kg | | 74 | 40 - 140 | 7 | 30 |
| Acetophenone | | | 1670 | 1160 | | ug/Kg | | 69 | 40 - 140 | 12 | 30 |

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

**Lab Sample ID: LCSD 620-23157/3-A**
**Matrix: Solid**
**Analysis Batch: 23208**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 23157**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aniline | | | 1670 | 972 | | ug/Kg | | 58 | 40 - 140 | 9 | 30 |
| Anthracene | | | 1670 | 1600 | | ug/Kg | | 96 | 40 - 140 | 3 | 30 |
| Azobenzene/Diphenyldiazene | | | 1670 | 1260 | | ug/Kg | | 76 | 40 - 140 | 0 | 30 |
| Benzidine | | | 1670 | NQ | E | ug/Kg | | NaN | 40 - 140 | NaN | 30 |
| Benzo[a]anthracene | | | 1670 | 1700 | | ug/Kg | | 102 | 40 - 140 | 6 | 30 |
| Benzo[a]pyrene | | | 1670 | 1600 | | ug/Kg | | 96 | 40 - 140 | 4 | 30 |
| Benzo[b]fluoranthene | | | 1670 | 1530 | | ug/Kg | | 92 | 40 - 140 | 3 | 30 |
| Benzo[g,h,i]perylene | | | 1670 | 1670 | | ug/Kg | | 100 | 40 - 140 | 7 | 30 |
| Benzo[k]fluoranthene | | | 1670 | 1500 | | ug/Kg | | 90 | 40 - 140 | 6 | 30 |
| Benzoic acid | | | 1670 | 651 | | ug/Kg | | 39 | 30 - 130 | 27 | 30 |
| Benzyl alcohol | | | 1670 | 1570 | | ug/Kg | | 94 | 40 - 140 | 12 | 30 |
| Bis(2-chloroethoxy)methane | | | 1670 | 611 | *- | ug/Kg | | 37 | 40 - 140 | 10 | 30 |
| Bis(2-chloroethyl)ether | | | 1670 | 565 | *- | ug/Kg | | 34 | 40 - 140 | 20 | 30 |
| bis (2-chloroisopropyl) ether | | | 1670 | 525 | *- | ug/Kg | | 32 | 40 - 140 | 17 | 30 |
| Bis(2-ethylhexyl) phthalate | | | 1670 | 898 | | ug/Kg | | 54 | 40 - 140 | 5 | 30 |
| Butyl benzyl phthalate | | | 1670 | 895 | | ug/Kg | | 54 | 40 - 140 | 6 | 30 |
| Carbazole | | | 1670 | 1580 | | ug/Kg | | 95 | 40 - 140 | 6 | 30 |
| Chrysene | | | 1670 | 1610 | | ug/Kg | | 97 | 40 - 140 | 5 | 30 |
| Dibenz(a,h)anthracene | | | 1670 | 1670 | | ug/Kg | | 100 | 40 - 140 | 6 | 30 |
| Dibenzofuran | | | 1670 | 1910 | | ug/Kg | | 115 | 40 - 140 | 16 | 30 |
| Diethyl phthalate | | | 1670 | 702 | | ug/Kg | | 42 | 40 - 140 | 12 | 30 |
| Dimethyl phthalate | | | 1670 | 811 | | ug/Kg | | 49 | 40 - 140 | 3 | 30 |
| Di-n-butyl phthalate | | | 1670 | 909 | | ug/Kg | | 55 | 40 - 140 | 6 | 30 |
| Di-n-octyl phthalate | | | 1670 | 901 | | ug/Kg | | 54 | 40 - 140 | 5 | 30 |
| Fluoranthene | | | 1670 | 1620 | | ug/Kg | | 97 | 40 - 140 | 6 | 30 |
| Fluorene | | | 1670 | 1240 | | ug/Kg | | 74 | 40 - 140 | 16 | 30 |
| Hexachlorobenzene | | | 1670 | 2400 | *+ | ug/Kg | | 144 | 40 - 140 | 4 | 30 |
| Hexachlorobutadiene | | | 1670 | 1700 | | ug/Kg | | 102 | 40 - 140 | 10 | 30 |
| Hexachlorocyclopentadiene | | | 1670 | 2030 | | ug/Kg | | 122 | 40 - 140 | 15 | 30 |
| Hexachloroethane | | | 1670 | 1670 | | ug/Kg | | 100 | 40 - 140 | 16 | 30 |
| Indeno[1,2,3-cd]pyrene | | | 1670 | 1650 | | ug/Kg | | 99 | 40 - 140 | 6 | 30 |
| Isophorone | | | 1670 | 1570 | | ug/Kg | | 94 | 40 - 140 | 14 | 30 |
| Naphthalene | | | 1670 | 1190 | | ug/Kg | | 71 | 40 - 140 | 15 | 30 |
| Nitrobenzene | | | 1670 | 1930 | | ug/Kg | | 116 | 40 - 140 | 11 | 30 |
| N-Nitrosodimethylamine | | | 1670 | 441 | *- *1 | ug/Kg | | 26 | 40 - 140 | 32 | 30 |
| N-Nitrosodi-n-propylamine | | | 1670 | 643 | *- | ug/Kg | | 39 | 40 - 140 | 13 | 30 |
| N-Nitrosodiphenylamine | | | 1670 | 909 | | ug/Kg | | 55 | 40 - 140 | 2 | 30 |
| Pentachloronitrobenzene | | | 1670 | 1610 | | ug/Kg | | 96 | 40 - 140 | 4 | 30 |
| Pentachlorophenol | | | 1670 | 1250 | | ug/Kg | | 75 | 30 - 130 | 6 | 30 |
| Phenanthrene | | | 1670 | 1490 | | ug/Kg | | 89 | 40 - 140 | 2 | 30 |
| Phenol | | | 1670 | 1060 | | ug/Kg | | 64 | 40 - 140 | 17 | 30 |
| Pyrene | | | 1670 | 1640 | | ug/Kg | | 99 | 40 - 140 | 3 | 30 |
| Pyridine | | | 1670 | 697 | | ug/Kg | | 42 | 40 - 140 | 21 | 30 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *2-Fluorobiphenyl (Surr)* | *77* | | *30 - 130* |
| *2-Fluorophenol (Surr)* | *71* | | *15 - 110* |
| *Nitrobenzene-d5 (Surr)* | *78* | | *30 - 130* |

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

**Lab Sample ID: LCSD 620-23157/3-A**
**Matrix: Solid**
**Analysis Batch: 23208**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 23157**

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *Phenol-d5 (Surr)* | *71* | | *15 - 110* |
| *2,4,6-Tribromophenol (Surr)* | *99* | | *15 - 110* |
| *Terphenyl-d14* | *86* | | *30 - 130* |

## Method: 8081B - Organochlorine Pesticides (GC/ECD)

**Lab Sample ID: MB 620-23137/1-A**
**Matrix: Solid**
**Analysis Batch: 23216**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 23137**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| alpha-BHC | ND | | 5.0 | 1.1 | ug/Kg | | 06/01/23 09:22 | 06/02/23 17:23 | 1 |
| beta-BHC | ND | | 5.0 | 0.89 | ug/Kg | | 06/01/23 09:22 | 06/02/23 17:23 | 1 |
| delta-BHC | ND | | 5.0 | 1.0 | ug/Kg | | 06/01/23 09:22 | 06/02/23 17:23 | 1 |
| gamma-BHC (Lindane) | ND | | 2.0 | 1.0 | ug/Kg | | 06/01/23 09:22 | 06/02/23 17:23 | 1 |
| Heptachlor | ND | | 5.0 | 1.0 | ug/Kg | | 06/01/23 09:22 | 06/02/23 17:23 | 1 |
| Aldrin | ND | | 5.0 | 0.98 | ug/Kg | | 06/01/23 09:22 | 06/02/23 17:23 | 1 |
| Heptachlor epoxide | ND | | 5.0 | 1.2 | ug/Kg | | 06/01/23 09:22 | 06/02/23 17:23 | 1 |
| Endosulfan I | ND | | 5.0 | 1.3 | ug/Kg | | 06/01/23 09:22 | 06/02/23 17:23 | 1 |
| Dieldrin | ND | | 5.0 | 1.0 | ug/Kg | | 06/01/23 09:22 | 06/02/23 17:23 | 1 |
| 4,4'-DDE | ND | | 8.0 | 1.2 | ug/Kg | | 06/01/23 09:22 | 06/02/23 17:23 | 1 |
| Endrin | ND | | 8.0 | 1.6 | ug/Kg | | 06/01/23 09:22 | 06/02/23 17:23 | 1 |
| Endosulfan II | ND | | 8.0 | 1.3 | ug/Kg | | 06/01/23 09:22 | 06/02/23 17:23 | 1 |
| 4,4'-DDD | ND | | 8.0 | 1.5 | ug/Kg | | 06/01/23 09:22 | 06/02/23 17:23 | 1 |
| Endosulfan sulfate | ND | | 8.0 | 1.5 | ug/Kg | | 06/01/23 09:22 | 06/02/23 17:23 | 1 |
| 4,4'-DDT | ND | | 8.0 | 0.80 | ug/Kg | | 06/01/23 09:22 | 06/02/23 17:23 | 1 |
| Methoxychlor | ND | | 8.0 | 1.4 | ug/Kg | | 06/01/23 09:22 | 06/02/23 17:23 | 1 |
| Endrin ketone | ND | | 8.0 | 1.1 | ug/Kg | | 06/01/23 09:22 | 06/02/23 17:23 | 1 |
| Endrin aldehyde | ND | | 8.0 | 1.6 | ug/Kg | | 06/01/23 09:22 | 06/02/23 17:23 | 1 |
| cis-Chlordane | ND | | 5.0 | 1.2 | ug/Kg | | 06/01/23 09:22 | 06/02/23 17:23 | 1 |
| trans-Chlordane | ND | | 5.0 | 1.2 | ug/Kg | | 06/01/23 09:22 | 06/02/23 17:23 | 1 |
| Toxaphene | ND | | 100 | 71 | ug/Kg | | 06/01/23 09:22 | 06/02/23 17:23 | 1 |
| Alachlor | ND | | 5.0 | 1.1 | ug/Kg | | 06/01/23 09:22 | 06/02/23 17:23 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *Tetrachloro-m-xylene* | *83* | | *30 - 150* | *06/01/23 09:22* | *06/02/23 17:23* | *1* |
| *Tetrachloro-m-xylene* | *88* | | *30 - 150* | *06/01/23 09:22* | *06/02/23 17:23* | *1* |
| *DCB Decachlorobiphenyl (Surr)* | *114* | | *30 - 150* | *06/01/23 09:22* | *06/02/23 17:23* | *1* |
| *DCB Decachlorobiphenyl (Surr)* | *88* | | *30 - 150* | *06/01/23 09:22* | *06/02/23 17:23* | *1* |

**Lab Sample ID: LCS 620-23137/2-A**
**Matrix: Solid**
**Analysis Batch: 23216**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 23137**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| alpha-BHC | 13.4 | 10.5 | | ug/Kg | | 78 | 40 - 140 |
| alpha-BHC | 13.4 | 11.1 | | ug/Kg | | 83 | 40 - 140 |
| beta-BHC | 13.3 | 10.8 | | ug/Kg | | 81 | 40 - 140 |

## Method: 8081B - Organochlorine Pesticides (GC/ECD) (Continued)

**Lab Sample ID: LCS 620-23137/2-A**
**Matrix: Solid**
**Analysis Batch: 23216**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 23137**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| beta-BHC | 13.3 | 11.8 | | ug/Kg | | 88 | 40 - 140 |
| delta-BHC | 13.4 | 8.01 | | ug/Kg | | 60 | 40 - 140 |
| delta-BHC | 13.4 | 8.99 | | ug/Kg | | 67 | 40 - 140 |
| gamma-BHC (Lindane) | 13.5 | 10.3 | | ug/Kg | | 77 | 40 - 140 |
| gamma-BHC (Lindane) | 13.5 | 10.9 | | ug/Kg | | 81 | 40 - 140 |
| Heptachlor | 13.4 | 10.6 | | ug/Kg | | 80 | 40 - 140 |
| Heptachlor | 13.4 | 11.2 | | ug/Kg | | 84 | 40 - 140 |
| Aldrin | 13.4 | 9.69 | | ug/Kg | | 73 | 40 - 140 |
| Aldrin | 13.4 | 10.5 | | ug/Kg | | 79 | 40 - 140 |
| Heptachlor epoxide | 13.3 | 9.64 | | ug/Kg | | 72 | 40 - 140 |
| Heptachlor epoxide | 13.3 | 10.1 | | ug/Kg | | 76 | 40 - 140 |
| Endosulfan I | 13.3 | 10.6 | | ug/Kg | | 79 | 40 - 140 |
| Endosulfan I | 13.3 | 10.4 | | ug/Kg | | 78 | 40 - 140 |
| Dieldrin | 13.4 | 10.3 | | ug/Kg | | 77 | 40 - 140 |
| Dieldrin | 13.4 | 10.5 | | ug/Kg | | 79 | 40 - 140 |
| 4,4'-DDE | 13.4 | 10.0 | | ug/Kg | | 75 | 40 - 140 |
| 4,4'-DDE | 13.4 | 10.8 | | ug/Kg | | 80 | 40 - 140 |
| Endrin | 13.4 | 12.3 | | ug/Kg | | 92 | 40 - 140 |
| Endrin | 13.4 | 11.7 | | ug/Kg | | 88 | 40 - 140 |
| Endosulfan II | 13.3 | 10.5 | | ug/Kg | | 79 | 40 - 140 |
| Endosulfan II | 13.3 | 10.9 | | ug/Kg | | 82 | 40 - 140 |
| 4,4'-DDD | 13.4 | 10.1 | | ug/Kg | | 76 | 40 - 140 |
| 4,4'-DDD | 13.4 | 10.9 | | ug/Kg | | 81 | 40 - 140 |
| Endosulfan sulfate | 13.4 | 10.7 | | ug/Kg | | 79 | 40 - 140 |
| Endosulfan sulfate | 13.4 | 10.9 | | ug/Kg | | 81 | 40 - 140 |
| 4,4'-DDT | 13.5 | 12.4 | | ug/Kg | | 92 | 40 - 140 |
| 4,4'-DDT | 13.5 | 13.0 | | ug/Kg | | 97 | 40 - 140 |
| Methoxychlor | 13.3 | 12.6 | | ug/Kg | | 94 | 40 - 140 |
| Methoxychlor | 13.3 | 13.4 | | ug/Kg | | 101 | 40 - 140 |
| Endrin ketone | 13.4 | 10.2 | | ug/Kg | | 76 | 40 - 140 |
| Endrin ketone | 13.4 | 11.3 | | ug/Kg | | 84 | 40 - 140 |
| Endrin aldehyde | 13.4 | 8.46 | | ug/Kg | | 63 | 40 - 140 |
| Endrin aldehyde | 13.4 | 9.24 | | ug/Kg | | 69 | 40 - 140 |
| cis-Chlordane | 13.4 | 10.1 | | ug/Kg | | 75 | 40 - 140 |
| cis-Chlordane | 13.4 | 10.1 | | ug/Kg | | 75 | 40 - 140 |
| trans-Chlordane | 13.4 | 9.91 | | ug/Kg | | 74 | 40 - 140 |
| trans-Chlordane | 13.4 | 10.3 | | ug/Kg | | 77 | 40 - 140 |
| Alachlor | 13.4 | 11.2 | | ug/Kg | | 84 | 40 - 140 |
| Alachlor | 13.4 | 12.4 | | ug/Kg | | 93 | 40 - 140 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *Tetrachloro-m-xylene* | *89* | | *30 - 150* |
| *Tetrachloro-m-xylene* | *96* | | *30 - 150* |
| *DCB Decachlorobiphenyl (Surr)* | *101* | | *30 - 150* |
| *DCB Decachlorobiphenyl (Surr)* | *92* | | *30 - 150* |

## Method: 8081B - Organochlorine Pesticides (GC/ECD) (Continued)

**Lab Sample ID: LCSD 620-23137/3-A**
**Matrix: Solid**
**Analysis Batch: 23216**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 23137**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| alpha-BHC | | | 13.4 | 10.7 | | ug/Kg | | 80 | 40 - 140 | 3 | 30 |
| alpha-BHC | | | 13.4 | 11.4 | | ug/Kg | | 85 | 40 - 140 | 3 | 30 |
| beta-BHC | | | 13.3 | 11.1 | | ug/Kg | | 83 | 40 - 140 | 3 | 30 |
| beta-BHC | | | 13.3 | 12.2 | | ug/Kg | | 92 | 40 - 140 | 4 | 30 |
| delta-BHC | | | 13.4 | 8.26 | | ug/Kg | | 62 | 40 - 140 | 3 | 30 |
| delta-BHC | | | 13.4 | 10.3 | | ug/Kg | | 77 | 40 - 140 | 14 | 30 |
| gamma-BHC (Lindane) | | | 13.5 | 10.6 | | ug/Kg | | 79 | 40 - 140 | 3 | 30 |
| gamma-BHC (Lindane) | | | 13.5 | 11.3 | | ug/Kg | | 84 | 40 - 140 | 3 | 30 |
| Heptachlor | | | 13.4 | 11.0 | | ug/Kg | | 82 | 40 - 140 | 3 | 30 |
| Heptachlor | | | 13.4 | 11.4 | | ug/Kg | | 85 | 40 - 140 | 1 | 30 |
| Aldrin | | | 13.4 | 9.91 | | ug/Kg | | 74 | 40 - 140 | 2 | 30 |
| Aldrin | | | 13.4 | 10.5 | | ug/Kg | | 79 | 40 - 140 | 0 | 30 |
| Heptachlor epoxide | | | 13.3 | 9.84 | | ug/Kg | | 74 | 40 - 140 | 2 | 30 |
| Heptachlor epoxide | | | 13.3 | 10.3 | | ug/Kg | | 77 | 40 - 140 | 2 | 30 |
| Endosulfan I | | | 13.3 | 10.7 | | ug/Kg | | 80 | 40 - 140 | 1 | 30 |
| Endosulfan I | | | 13.3 | 10.7 | | ug/Kg | | 80 | 40 - 140 | 3 | 30 |
| Dieldrin | | | 13.4 | 10.3 | | ug/Kg | | 77 | 40 - 140 | 0 | 30 |
| Dieldrin | | | 13.4 | 10.5 | | ug/Kg | | 79 | 40 - 140 | 0 | 30 |
| 4,4'-DDE | | | 13.4 | 10.1 | | ug/Kg | | 75 | 40 - 140 | 1 | 30 |
| 4,4'-DDE | | | 13.4 | 10.9 | | ug/Kg | | 81 | 40 - 140 | 1 | 30 |
| Endrin | | | 13.4 | 12.1 | | ug/Kg | | 91 | 40 - 140 | 1 | 30 |
| Endrin | | | 13.4 | 11.6 | | ug/Kg | | 87 | 40 - 140 | 1 | 30 |
| Endosulfan II | | | 13.3 | 10.5 | | ug/Kg | | 79 | 40 - 140 | 0 | 30 |
| Endosulfan II | | | 13.3 | 11.0 | | ug/Kg | | 82 | 40 - 140 | 1 | 30 |
| 4,4'-DDD | | | 13.4 | 10.2 | | ug/Kg | | 76 | 40 - 140 | 1 | 30 |
| 4,4'-DDD | | | 13.4 | 11.0 | | ug/Kg | | 82 | 40 - 140 | 1 | 30 |
| Endosulfan sulfate | | | 13.4 | 10.9 | | ug/Kg | | 81 | 40 - 140 | 2 | 30 |
| Endosulfan sulfate | | | 13.4 | 11.1 | | ug/Kg | | 82 | 40 - 140 | 1 | 30 |
| 4,4'-DDT | | | 13.5 | 12.6 | | ug/Kg | | 93 | 40 - 140 | 1 | 30 |
| 4,4'-DDT | | | 13.5 | 13.0 | | ug/Kg | | 96 | 40 - 140 | 0 | 30 |
| Methoxychlor | | | 13.3 | 12.7 | | ug/Kg | | 95 | 40 - 140 | 1 | 30 |
| Methoxychlor | | | 13.3 | 13.7 | | ug/Kg | | 103 | 40 - 140 | 2 | 30 |
| Endrin ketone | | | 13.4 | 10.5 | | ug/Kg | | 78 | 40 - 140 | 3 | 30 |
| Endrin ketone | | | 13.4 | 11.5 | | ug/Kg | | 86 | 40 - 140 | 2 | 30 |
| Endrin aldehyde | | | 13.4 | 8.68 | | ug/Kg | | 65 | 40 - 140 | 3 | 30 |
| Endrin aldehyde | | | 13.4 | 9.40 | | ug/Kg | | 70 | 40 - 140 | 2 | 30 |
| cis-Chlordane | | | 13.4 | 10.2 | | ug/Kg | | 76 | 40 - 140 | 1 | 30 |
| cis-Chlordane | | | 13.4 | 10.3 | | ug/Kg | | 77 | 40 - 140 | 2 | 30 |
| trans-Chlordane | | | 13.4 | 10.1 | | ug/Kg | | 75 | 40 - 140 | 2 | 30 |
| trans-Chlordane | | | 13.4 | 10.5 | | ug/Kg | | 79 | 40 - 140 | 2 | 30 |
| Alachlor | | | 13.4 | 11.7 | | ug/Kg | | 87 | 40 - 140 | 4 | 30 |
| Alachlor | | | 13.4 | 12.1 | | ug/Kg | | 91 | 40 - 140 | 2 | 30 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *Tetrachloro-m-xylene* | *91* | | *30 - 150* |
| *Tetrachloro-m-xylene* | *95* | | *30 - 150* |
| *DCB Decachlorobiphenyl (Surr)* | *99* | | *30 - 150* |
| *DCB Decachlorobiphenyl (Surr)* | *93* | | *30 - 150* |

## Method: 8082 - Polychlorinated Biphenyls (GC/ECD)

**Lab Sample ID: MB 620-23137/1-A**
**Matrix: Solid**
**Analysis Batch: 23154**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 23137**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| PCB-1016 | ND | | 20 | 14 | ug/Kg | | 06/01/23 09:22 | 06/01/23 15:31 | 1 |
| PCB-1221 | ND | | 20 | 5.9 | ug/Kg | | 06/01/23 09:22 | 06/01/23 15:31 | 1 |
| PCB-1232 | ND | | 20 | 5.5 | ug/Kg | | 06/01/23 09:22 | 06/01/23 15:31 | 1 |
| PCB-1242 | ND | | 20 | 3.2 | ug/Kg | | 06/01/23 09:22 | 06/01/23 15:31 | 1 |
| PCB-1248 | ND | | 20 | 6.3 | ug/Kg | | 06/01/23 09:22 | 06/01/23 15:31 | 1 |
| PCB-1254 | ND | | 20 | 16 | ug/Kg | | 06/01/23 09:22 | 06/01/23 15:31 | 1 |
| PCB-1262 | ND | | 20 | 4.7 | ug/Kg | | 06/01/23 09:22 | 06/01/23 15:31 | 1 |
| PCB-1260 | ND | | 20 | 4.3 | ug/Kg | | 06/01/23 09:22 | 06/01/23 15:31 | 1 |
| PCB-1268 | ND | | 20 | 4.3 | ug/Kg | | 06/01/23 09:22 | 06/01/23 15:31 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *Tetrachloro-m-xylene* | *114* | | *30 - 150* | *06/01/23 09:22* | *06/01/23 15:31* | *1* |
| *Tetrachloro-m-xylene* | *109* | | *30 - 150* | *06/01/23 09:22* | *06/01/23 15:31* | *1* |
| *DCB Decachlorobiphenyl (Surr)* | *123* | | *30 - 150* | *06/01/23 09:22* | *06/01/23 15:31* | *1* |
| *DCB Decachlorobiphenyl (Surr)* | *125* | | *30 - 150* | *06/01/23 09:22* | *06/01/23 15:31* | *1* |

**Lab Sample ID: LCS 620-23137/4-A**
**Matrix: Solid**
**Analysis Batch: 23154**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 23137**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PCB-1016 | | | 167 | 186 | | ug/Kg | | 111 | 40 - 140 | | |
| PCB-1016 | | | 167 | 168 | | ug/Kg | | 101 | 40 - 140 | | |
| PCB-1260 | | | 167 | 208 | | ug/Kg | | 125 | 40 - 140 | | |
| PCB-1260 | | | 167 | 219 | | ug/Kg | | 132 | 40 - 140 | | |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *Tetrachloro-m-xylene* | *112* | | *30 - 150* |
| *Tetrachloro-m-xylene* | *105* | | *30 - 150* |
| *DCB Decachlorobiphenyl (Surr)* | *136* | | *30 - 150* |
| *DCB Decachlorobiphenyl (Surr)* | *138* | | *30 - 150* |

**Lab Sample ID: LCSD 620-23137/5-A**
**Matrix: Solid**
**Analysis Batch: 23154**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 23137**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PCB-1016 | | | 167 | 213 | | ug/Kg | | 128 | 40 - 140 | 14 | 30 |
| PCB-1016 | | | 167 | 221 | | ug/Kg | | 133 | 40 - 140 | 28 | 30 |
| PCB-1260 | | | 167 | 227 | | ug/Kg | | 136 | 40 - 140 | 8 | 30 |
| PCB-1260 | | | 167 | 226 | | ug/Kg | | 136 | 40 - 140 | 3 | 30 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *Tetrachloro-m-xylene* | *122* | | *30 - 150* |
| *Tetrachloro-m-xylene* | *115* | | *30 - 150* |
| *DCB Decachlorobiphenyl (Surr)* | *143* | | *30 - 150* |
| *DCB Decachlorobiphenyl (Surr)* | *131* | | *30 - 150* |

## Method: 8100 - Polynuclear Aromatic Hydrocarbons (PAHs) (GC)

**Lab Sample ID: MB 620-23173/1-A**
**Matrix: Solid**
**Analysis Batch: 23204**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 23173**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| TEPH (C9-C36) | ND | | 13 | 11 | mg/Kg | | 06/01/23 14:23 | 06/02/23 13:13 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *79* | | *40 - 140* | *06/01/23 14:23* | *06/02/23 13:13* | *1* |
| *o-Terphenyl (Surr)* | *56* | | *40 - 140* | *06/01/23 14:23* | *06/02/23 13:13* | *1* |

**Lab Sample ID: LCS 620-23173/2-A**
**Matrix: Solid**
**Analysis Batch: 23204**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 23173**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TEPH (C9-C36) | | | 340 | 247 | | mg/Kg | | 73 | 20 - 106 | | |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *63* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *67* | | *40 - 140* |

**Lab Sample ID: LCSD 620-23173/3-A**
**Matrix: Solid**
**Analysis Batch: 23204**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 23173**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TEPH (C9-C36) | | | 340 | 236 | | mg/Kg | | 69 | 20 - 106 | 4 | 30 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *62* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *62* | | *40 - 140* |

## Method: 6010D - Metals (ICP)

**Lab Sample ID: MB 620-23122/1-A**
**Matrix: Solid**
**Analysis Batch: 23183**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 23122**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | ND | | 1.7 | 0.22 | mg/Kg | | 05/31/23 14:15 | 06/01/23 11:12 | 1 |
| Barium | ND | | 1.1 | 0.13 | mg/Kg | | 05/31/23 14:15 | 06/01/23 11:12 | 1 |
| Cadmium | ND | | 0.57 | 0.030 | mg/Kg | | 05/31/23 14:15 | 06/01/23 11:12 | 1 |
| Chromium | ND | | 1.1 | 0.15 | mg/Kg | | 05/31/23 14:15 | 06/01/23 11:12 | 1 |
| Lead | ND | | 1.7 | 0.24 | mg/Kg | | 05/31/23 14:15 | 06/01/23 11:12 | 1 |
| Selenium | ND | | 1.7 | 0.33 | mg/Kg | | 05/31/23 14:15 | 06/01/23 11:12 | 1 |
| Silver | ND | | 1.7 | 0.19 | mg/Kg | | 05/31/23 14:15 | 06/01/23 11:12 | 1 |

## Method: 6010D - Metals (ICP) (Continued)

**Lab Sample ID: LCDSRM 620-23122/3-A**
**Matrix: Solid**
**Analysis Batch: 23183**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 23122**

| Analyte | Spike Added | LCDSRM Result | LCDSRM Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 195 | 160 | | mg/Kg | | 82.2 | 65.6 - 122.1 | 4 | 20 |
| Barium | 321 | 286 | | mg/Kg | | 89.0 | 69.5 - 115.9 | 0 | 20 |
| Cadmium | 247 | 170 | | mg/Kg | | 68.8 | 67.2 - 111.7 | 9 | 20 |
| Chromium | 217 | 182 | | mg/Kg | | 84.0 | 64.5 - 119.8 | 5 | 20 |
| Lead | 270 | 216 | | mg/Kg | | 80.0 | 70.4 - 120.0 | 4 | 20 |
| Selenium | 241 | 183 | | mg/Kg | | 75.8 | 62.2 - 118.3 | 6 | 20 |
| Silver | 72.0 | 64.6 | | mg/Kg | | 89.7 | 66.5 - 121.7 | 8 | 20 |

**Lab Sample ID: LCSSRM 620-23122/2-A**
**Matrix: Solid**
**Analysis Batch: 23183**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 23122**

| Analyte | Spike Added | LCSSRM Result | LCSSRM Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Arsenic | 195 | 167 | | mg/Kg | | 85.4 | 65.6 - 122.1 |
| Barium | 321 | 287 | | mg/Kg | | 89.4 | 69.5 - 115.9 |
| Cadmium | 247 | 186 | | mg/Kg | | 75.4 | 67.2 - 111.7 |
| Chromium | 217 | 192 | | mg/Kg | | 88.5 | 64.5 - 119.8 |
| Lead | 270 | 226 | | mg/Kg | | 83.7 | 70.4 - 120.0 |
| Selenium | 241 | 193 | | mg/Kg | | 80.3 | 62.2 - 118.3 |
| Silver | 72.0 | 59.7 | | mg/Kg | | 82.9 | 66.5 - 121.7 |

**Lab Sample ID: MB 620-23158/1-A**
**Matrix: Solid**
**Analysis Batch: 23183**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 23158**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | ND | | 0.0080 | 0.0028 | mg/L | | 06/01/23 10:53 | 06/01/23 13:58 | 1 |
| Barium | ND | | 0.010 | 0.0014 | mg/L | | 06/01/23 10:53 | 06/01/23 13:58 | 1 |
| Cadmium | ND | | 0.0050 | 0.00071 | mg/L | | 06/01/23 10:53 | 06/01/23 13:58 | 1 |
| Chromium | ND | | 0.010 | 0.0019 | mg/L | | 06/01/23 10:53 | 06/01/23 13:58 | 1 |
| Lead | ND | | 0.015 | 0.012 | mg/L | | 06/01/23 10:53 | 06/01/23 13:58 | 1 |
| Selenium | ND | | 0.030 | 0.0083 | mg/L | | 06/01/23 10:53 | 06/01/23 13:58 | 1 |
| Silver | ND | | 0.010 | 0.0012 | mg/L | | 06/01/23 10:53 | 06/01/23 13:58 | 1 |

## Method: 6010D - Metals (ICP) (Continued)

**Lab Sample ID: LCS 620-23158/2-A**
**Matrix: Solid**
**Analysis Batch: 23183**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 23158**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Arsenic | 2.50 | 2.20 | | mg/L | | 88 | 80 - 120 |
| Barium | 2.50 | 2.29 | | mg/L | | 92 | 80 - 120 |
| Cadmium | 2.50 | 2.05 | | mg/L | | 82 | 80 - 120 |
| Chromium | 2.50 | 2.24 | | mg/L | | 90 | 80 - 120 |
| Lead | 2.50 | 2.16 | | mg/L | | 86 | 80 - 120 |
| Selenium | 2.50 | 2.21 | | mg/L | | 88 | 80 - 120 |
| Silver | 2.50 | 2.45 | | mg/L | | 98 | 80 - 120 |

**Lab Sample ID: LCSD 620-23158/3-A**
**Matrix: Solid**
**Analysis Batch: 23183**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 23158**

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 2.50 | 2.34 | | mg/L | | 94 | 80 - 120 | 6 | 20 |
| Barium | 2.50 | 2.40 | | mg/L | | 96 | 80 - 120 | 5 | 20 |
| Cadmium | 2.50 | 2.17 | | mg/L | | 87 | 80 - 120 | 6 | 20 |
| Chromium | 2.50 | 2.38 | | mg/L | | 95 | 80 - 120 | 6 | 20 |
| Lead | 2.50 | 2.30 | | mg/L | | 92 | 80 - 120 | 6 | 20 |
| Selenium | 2.50 | 2.35 | | mg/L | | 94 | 80 - 120 | 6 | 20 |
| Silver | 2.50 | 2.61 | | mg/L | | 104 | 80 - 120 | 6 | 20 |

**Lab Sample ID: LB 620-23125/1-B**
**Matrix: Solid**
**Analysis Batch: 23183**

**Client Sample ID: Method Blank**
**Prep Type: TCLP**
**Prep Batch: 23158**

| Analyte | LB Result | LB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | ND | | 0.0080 | 0.0028 | mg/L | | 06/01/23 10:53 | 06/01/23 14:04 | 1 |
| Barium | ND | | 0.010 | 0.0014 | mg/L | | 06/01/23 10:53 | 06/01/23 14:04 | 1 |
| Cadmium | ND | | 0.0050 | 0.00071 | mg/L | | 06/01/23 10:53 | 06/01/23 14:04 | 1 |
| Chromium | ND | | 0.010 | 0.0019 | mg/L | | 06/01/23 10:53 | 06/01/23 14:04 | 1 |
| Lead | ND | | 0.015 | 0.012 | mg/L | | 06/01/23 10:53 | 06/01/23 14:04 | 1 |
| Selenium | ND | | 0.030 | 0.0083 | mg/L | | 06/01/23 10:53 | 06/01/23 14:04 | 1 |
| Silver | ND | | 0.010 | 0.0012 | mg/L | | 06/01/23 10:53 | 06/01/23 14:04 | 1 |

**Lab Sample ID: 620-11778-2 MS**
**Matrix: Solid**
**Analysis Batch: 23183**

**Client Sample ID: LM-SO-SD02-053123**
**Prep Type: TCLP**
**Prep Batch: 23158**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 0.0032 | J | 2.50 | 2.67 | | mg/L | | 107 | 75 - 125 |
| Barium | 0.23 | | 2.50 | 2.67 | | mg/L | | 98 | 75 - 125 |
| Cadmium | 0.0011 | J | 2.50 | 2.33 | | mg/L | | 93 | 75 - 125 |
| Chromium | 0.0032 | J | 2.50 | 2.50 | | mg/L | | 100 | 75 - 125 |
| Lead | 0.052 | | 2.50 | 2.33 | | mg/L | | 91 | 75 - 125 |
| Selenium | ND | | 2.50 | 2.76 | | mg/L | | 111 | 75 - 125 |
| Silver | ND | | 2.50 | 2.78 | | mg/L | | 111 | 75 - 125 |

## Method: 6010D - Metals (ICP) (Continued)

**Lab Sample ID: 620-11778-2 MSD**
**Matrix: Solid**
**Analysis Batch: 23183**

**Client Sample ID: LM-SO-SD02-053123**
**Prep Type: TCLP**
**Prep Batch: 23158**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 0.0032 | J | 2.50 | 2.56 | | mg/L | | 102 | 75 - 125 | 4 | 20 |
| Barium | 0.23 | | 2.50 | 2.62 | | mg/L | | 96 | 75 - 125 | 2 | 20 |
| Cadmium | 0.0011 | J | 2.50 | 2.19 | | mg/L | | 87 | 75 - 125 | 6 | 20 |
| Chromium | 0.0032 | J | 2.50 | 2.41 | | mg/L | | 96 | 75 - 125 | 4 | 20 |
| Lead | 0.052 | | 2.50 | 2.22 | | mg/L | | 87 | 75 - 125 | 5 | 20 |
| Selenium | ND | | 2.50 | 2.64 | | mg/L | | 105 | 75 - 125 | 5 | 20 |
| Silver | ND | | 2.50 | 2.73 | | mg/L | | 109 | 75 - 125 | 2 | 20 |

**Lab Sample ID: 620-11778-2 DU**
**Matrix: Solid**
**Analysis Batch: 23183**

**Client Sample ID: LM-SO-SD02-053123**
**Prep Type: TCLP**
**Prep Batch: 23158**

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|
| Arsenic | 0.0032 | J | 0.00330 | J | mg/L | | 3 | 20 |
| Barium | 0.23 | | 0.238 | | mg/L | | 4 | 20 |
| Cadmium | 0.0011 | J | 0.00105 | J | mg/L | | 2 | 20 |
| Chromium | 0.0032 | J | 0.00330 | J | mg/L | | 3 | 20 |
| Lead | 0.052 | | 0.0601 | | mg/L | | 14 | 20 |
| Selenium | ND | | ND | | mg/L | | NC | 20 |
| Silver | ND | | ND | | mg/L | | NC | 20 |

## Method: 7470A - Mercury (CVAA)

**Lab Sample ID: MB 620-23193/1-A**
**Matrix: Solid**
**Analysis Batch: 23226**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 23193**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 06/02/23 07:19 | 06/02/23 14:14 | 1 |

**Lab Sample ID: LCS 620-23193/2-A**
**Matrix: Solid**
**Analysis Batch: 23226**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 23193**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Mercury | 0.00500 | 0.00509 | | mg/L | | 102 | 85 - 115 |

**Lab Sample ID: LCSD 620-23193/3-A**
**Matrix: Solid**
**Analysis Batch: 23226**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 23193**

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.00500 | 0.00498 | | mg/L | | 100 | 85 - 115 | 2 | 20 |

**Lab Sample ID: LB 620-23125/1-C**
**Matrix: Solid**
**Analysis Batch: 23226**

**Client Sample ID: Method Blank**
**Prep Type: TCLP**
**Prep Batch: 23193**

| Analyte | LB Result | LB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 06/02/23 07:19 | 06/02/23 14:20 | 1 |

## Method: 7471A - Mercury (CVAA)

**Lab Sample ID: MB 620-23147/1-A**
**Matrix: Solid**
**Analysis Batch: 23226**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 23147**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.050 | 0.0083 | mg/Kg | | 06/01/23 09:40 | 06/02/23 12:01 | 1 |

**Lab Sample ID: LCDSRM 620-23147/3-A**
**Matrix: Solid**
**Analysis Batch: 23226**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 23147**

| Analyte | | | Spike Added | LCDSRM Result | LCDSRM Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | | | 18.2 | 19.7 | | mg/Kg | | 108.1 | 59.9 - 140.1 | 1 | |

**Lab Sample ID: LCSSRM 620-23147/2-A**
**Matrix: Solid**
**Analysis Batch: 23226**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 23147**

| Analyte | | | Spike Added | LCSSRM Result | LCSSRM Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | | | 18.2 | 19.6 | | mg/Kg | | 107.5 | 59.9 - 140.1 | | |

**Lab Sample ID: 620-11778-1 MS**
**Matrix: Solid**
**Analysis Batch: 23226**

**Client Sample ID: LM-SO-SD01-053123**
**Prep Type: Total/NA**
**Prep Batch: 23147**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.056 | | 0.214 | 0.309 | | mg/Kg | ☼ | 118 | 75 - 125 | | |

**Lab Sample ID: 620-11778-1 MSD**
**Matrix: Solid**
**Analysis Batch: 23226**

**Client Sample ID: LM-SO-SD01-053123**
**Prep Type: Total/NA**
**Prep Batch: 23147**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.056 | | 0.206 | 0.286 | | mg/Kg | ☼ | 112 | 75 - 125 | 8 | 20 |

**Lab Sample ID: 620-11778-1 DU**
**Matrix: Solid**
**Analysis Batch: 23226**

**Client Sample ID: LM-SO-SD01-053123**
**Prep Type: Total/NA**
**Prep Batch: 23147**

| Analyte | Sample Result | Sample Qualifier | | DU Result | DU Qualifier | Unit | D | | | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.056 | | | 0.0337 | J F5 | mg/Kg | ☼ | | | 50 | 20 |

## Method: 1030 - Ignitability, Solids

**Lab Sample ID: 620-11778-1 DU**
**Matrix: Solid**
**Analysis Batch: 23180**

**Client Sample ID: LM-SO-SD01-053123**
**Prep Type: Total/NA**

| Analyte | Sample Result | Sample Qualifier | | DU Result | DU Qualifier | Unit | D | | | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Ignitability | negative | | | negative | | NONE | | | | NC | 35 |

## Method: 9045D - pH

**Lab Sample ID: LCDSRM 620-23172/3**
**Matrix: Solid**
**Analysis Batch: 23172**

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

| Analyte | | | Spike Added | LCDSRM Result | LCDSRM Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| pH | | | 6.00 | 6.0 | | SU | | 99.5 | 97.5 - 102.5 | 0 | 20 |

**Lab Sample ID: LCSSRM 620-23172/2**
**Matrix: Solid**
**Analysis Batch: 23172**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**

| Analyte | | | Spike Added | LCSSRM Result | LCSSRM Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| pH | | | 6.00 | 6.0 | | SU | | 99.7 | 97.5 - 102.5 | | |

**Lab Sample ID: MB 620-23168/1-A**
**Matrix: Solid**
**Analysis Batch: 23172**

**Client Sample ID: Method Blank**
**Prep Type: Soluble**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| pH | 6.2 | | | | SU | | | 06/01/23 14:14 | 1 |
| Temperature | 28.5 | | | | Degrees C | | | 06/01/23 14:14 | 1 |

**Lab Sample ID: 620-11778-2 DU**
**Matrix: Solid**
**Analysis Batch: 23172**

**Client Sample ID: LM-SO-SD02-053123**
**Prep Type: Soluble**

| Analyte | Sample Result | Sample Qualifier | | DU Result | DU Qualifier | Unit | D | | | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| pH | 7.0 | | | 7.1 | | SU | | | | 1 | 5 |
| Temperature | 28.5 | | | 28.5 | | Degrees C | | | | 0 | 5 |

## Method: SM 2510B - Conductivity, Specific Conductance

**Lab Sample ID: LCDSRM 620-23175/3**
**Matrix: Solid**
**Analysis Batch: 23175**

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

| Analyte | | | Spike Added | LCDSRM Result | LCDSRM Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Specific Conductance | | | 1410 | 1380 | | uS/cm | | 97.3 | 95.0 - 105.0 | 0 | 20 |

**Lab Sample ID: LCSSRM 620-23175/2**
**Matrix: Solid**
**Analysis Batch: 23175**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**

| Analyte | | | Spike Added | LCSSRM Result | LCSSRM Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Specific Conductance | | | 1410 | 1380 | | uS/cm | | 97.5 | 95.0 - 105.0 | | |

**Lab Sample ID: MB 620-23168/1-A**
**Matrix: Solid**
**Analysis Batch: 23175**

**Client Sample ID: Method Blank**
**Prep Type: Soluble**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Specific Conductance | ND | | 10 | 10 | uS/cm | | | 06/01/23 14:51 | 1 |

## Method: SM 2510B - Conductivity, Specific Conductance (Continued)

**Lab Sample ID: 620-11778-2 DU**
**Matrix: Solid**
**Analysis Batch: 23175**

**Client Sample ID: LM-SO-SD02-053123**
**Prep Type: Soluble**

| Analyte | Sample Result | Sample Qualifier | | DU Result | DU Qualifier | Unit | D | | | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Specific Conductance | 200 | | | 136 | F3 | uS/cm | | | | 40 | 5 |

## Method: Reactive Cyanide - SW846 9014/9034 Reactivity

**Lab Sample ID: CO14857-BLK**
**Matrix: SOLID**
**Analysis Batch: 680267A**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 680267A_P**

| Analyte | Blank Result | Blank Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Reactivity Cyanide | ND | | 5 | | mg/Kg | | 06/01/23 00:00 | 06/01/23 15:54 | 5 |

**Lab Sample ID: CO14857-LCS**
**Matrix: SOLID**
**Analysis Batch: 680267A**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 680267A_P**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Reactivity Cyanide | | | 0.5 | 0.4840 | | mg/Kg | | 96.8 | 80 - 120 | | |

## Method: Reactive Sulfide - SW846 9034 – Reactive Sulfide

**Lab Sample ID: CO14857-BLK**
**Matrix: SOLID**
**Analysis Batch: 680267B**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 680267B_P**

| Analyte | Blank Result | Blank Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Reactivity Sulfide | ND | | 20 | | mg/Kg | | 06/01/23 00:00 | 06/01/23 17:09 | 1 |

**Lab Sample ID: CO14857-LCS**
**Matrix: SOLID**
**Analysis Batch: 680267B**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 680267B_P**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Reactivity Sulfide | | | 40 | 0 | | mg/Kg | | 95.5 | 80 - 120 | | |

# QC Association Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11778-1

## GC/MS VOA

### Pre Prep Batch: 23132

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11778-1 | LM-SO-SD01-053123 | Total/NA | Solid | Frozen Preserve | |
| 620-11778-2 | LM-SO-SD02-053123 | Total/NA | Solid | Frozen Preserve | |

### Prep Batch: 23152

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11778-1 | LM-SO-SD01-053123 | Total/NA | Solid | 5035 | 23132 |
| 620-11778-2 | LM-SO-SD02-053123 | Total/NA | Solid | 5035 | 23132 |
| MB 620-23152/3-A | Method Blank | Total/NA | Solid | 5035 | |
| LCS 620-23152/1-A | Lab Control Sample | Total/NA | Solid | 5035 | |
| LCSD 620-23152/2-A | Lab Control Sample Dup | Total/NA | Solid | 5035 | |

### Analysis Batch: 23153

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11778-1 | LM-SO-SD01-053123 | Total/NA | Solid | 8260C | 23152 |
| 620-11778-2 | LM-SO-SD02-053123 | Total/NA | Solid | 8260C | 23152 |
| MB 620-23152/3-A | Method Blank | Total/NA | Solid | 8260C | 23152 |
| LCS 620-23152/1-A | Lab Control Sample | Total/NA | Solid | 8260C | 23152 |
| LCSD 620-23152/2-A | Lab Control Sample Dup | Total/NA | Solid | 8260C | 23152 |

## GC/MS Semi VOA

### Prep Batch: 23157

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11778-1 | LM-SO-SD01-053123 | Total/NA | Solid | 3546 | |
| 620-11778-2 | LM-SO-SD02-053123 | Total/NA | Solid | 3546 | |
| MB 620-23157/1-A | Method Blank | Total/NA | Solid | 3546 | |
| LCS 620-23157/2-A | Lab Control Sample | Total/NA | Solid | 3546 | |
| LCSD 620-23157/3-A | Lab Control Sample Dup | Total/NA | Solid | 3546 | |

### Analysis Batch: 23208

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11778-1 | LM-SO-SD01-053123 | Total/NA | Solid | 8270D | 23157 |
| 620-11778-2 | LM-SO-SD02-053123 | Total/NA | Solid | 8270D | 23157 |
| MB 620-23157/1-A | Method Blank | Total/NA | Solid | 8270D | 23157 |
| LCS 620-23157/2-A | Lab Control Sample | Total/NA | Solid | 8270D | 23157 |
| LCSD 620-23157/3-A | Lab Control Sample Dup | Total/NA | Solid | 8270D | 23157 |

## GC Semi VOA

### Prep Batch: 23137

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11778-1 | LM-SO-SD01-053123 | Total/NA | Solid | 3546 | |
| 620-11778-2 | LM-SO-SD02-053123 | Total/NA | Solid | 3546 | |
| MB 620-23137/1-A | Method Blank | Total/NA | Solid | 3546 | |
| LCS 620-23137/2-A | Lab Control Sample | Total/NA | Solid | 3546 | |
| LCS 620-23137/4-A | Lab Control Sample | Total/NA | Solid | 3546 | |
| LCSD 620-23137/3-A | Lab Control Sample Dup | Total/NA | Solid | 3546 | |
| LCSD 620-23137/5-A | Lab Control Sample Dup | Total/NA | Solid | 3546 | |

## GC Semi VOA

### Analysis Batch: 23154

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11778-1 | LM-SO-SD01-053123 | Total/NA | Solid | 8082 | 23137 |
| 620-11778-2 | LM-SO-SD02-053123 | Total/NA | Solid | 8082 | 23137 |
| MB 620-23137/1-A | Method Blank | Total/NA | Solid | 8082 | 23137 |
| LCS 620-23137/4-A | Lab Control Sample | Total/NA | Solid | 8082 | 23137 |
| LCSD 620-23137/5-A | Lab Control Sample Dup | Total/NA | Solid | 8082 | 23137 |

### Prep Batch: 23173

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11778-1 | LM-SO-SD01-053123 | Total/NA | Solid | 3546 | |
| 620-11778-2 | LM-SO-SD02-053123 | Total/NA | Solid | 3546 | |
| MB 620-23173/1-A | Method Blank | Total/NA | Solid | 3546 | |
| LCS 620-23173/2-A | Lab Control Sample | Total/NA | Solid | 3546 | |
| LCSD 620-23173/3-A | Lab Control Sample Dup | Total/NA | Solid | 3546 | |

### Analysis Batch: 23204

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11778-1 | LM-SO-SD01-053123 | Total/NA | Solid | 8100 | 23173 |
| 620-11778-2 | LM-SO-SD02-053123 | Total/NA | Solid | 8100 | 23173 |
| MB 620-23173/1-A | Method Blank | Total/NA | Solid | 8100 | 23173 |
| LCS 620-23173/2-A | Lab Control Sample | Total/NA | Solid | 8100 | 23173 |
| LCSD 620-23173/3-A | Lab Control Sample Dup | Total/NA | Solid | 8100 | 23173 |

### Analysis Batch: 23216

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11778-1 | LM-SO-SD01-053123 | Total/NA | Solid | 8081B | 23137 |
| 620-11778-2 | LM-SO-SD02-053123 | Total/NA | Solid | 8081B | 23137 |
| MB 620-23137/1-A | Method Blank | Total/NA | Solid | 8081B | 23137 |
| LCS 620-23137/2-A | Lab Control Sample | Total/NA | Solid | 8081B | 23137 |
| LCSD 620-23137/3-A | Lab Control Sample Dup | Total/NA | Solid | 8081B | 23137 |

## Metals

### Prep Batch: 23122

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11778-1 | LM-SO-SD01-053123 | Total/NA | Solid | 3050B | |
| 620-11778-2 | LM-SO-SD02-053123 | Total/NA | Solid | 3050B | |
| MB 620-23122/1-A | Method Blank | Total/NA | Solid | 3050B | |
| LCDSRM 620-23122/3-A | Lab Control Sample Dup | Total/NA | Solid | 3050B | |
| LCSSRM 620-23122/2-A | Lab Control Sample | Total/NA | Solid | 3050B | |

### Leach Batch: 23125

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11778-1 | LM-SO-SD01-053123 | TCLP | Solid | 1311 | |
| 620-11778-2 | LM-SO-SD02-053123 | TCLP | Solid | 1311 | |
| LB 620-23125/1-B | Method Blank | TCLP | Solid | 1311 | |
| LB 620-23125/1-C | Method Blank | TCLP | Solid | 1311 | |
| 620-11778-2 MS | LM-SO-SD02-053123 | TCLP | Solid | 1311 | |
| 620-11778-2 MSD | LM-SO-SD02-053123 | TCLP | Solid | 1311 | |
| 620-11778-2 DU | LM-SO-SD02-053123 | TCLP | Solid | 1311 | |

## Metals

### Prep Batch: 23147

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11778-1 | LM-SO-SD01-053123 | Total/NA | Solid | 7471B | |
| 620-11778-2 | LM-SO-SD02-053123 | Total/NA | Solid | 7471B | |
| MB 620-23147/1-A | Method Blank | Total/NA | Solid | 7471B | |
| LCDSRM 620-23147/3-A | Lab Control Sample Dup | Total/NA | Solid | 7471B | |
| LCSSRM 620-23147/2-A | Lab Control Sample | Total/NA | Solid | 7471B | |
| 620-11778-1 MS | LM-SO-SD01-053123 | Total/NA | Solid | 7471B | |
| 620-11778-1 MSD | LM-SO-SD01-053123 | Total/NA | Solid | 7471B | |
| 620-11778-1 DU | LM-SO-SD01-053123 | Total/NA | Solid | 7471B | |

### Prep Batch: 23158

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11778-1 | LM-SO-SD01-053123 | TCLP | Solid | 3010A | 23125 |
| 620-11778-2 | LM-SO-SD02-053123 | TCLP | Solid | 3010A | 23125 |
| LB 620-23125/1-B | Method Blank | TCLP | Solid | 3010A | 23125 |
| MB 620-23158/1-A | Method Blank | Total/NA | Solid | 3010A | |
| LCS 620-23158/2-A | Lab Control Sample | Total/NA | Solid | 3010A | |
| LCSD 620-23158/3-A | Lab Control Sample Dup | Total/NA | Solid | 3010A | |
| 620-11778-2 MS | LM-SO-SD02-053123 | TCLP | Solid | 3010A | 23125 |
| 620-11778-2 MSD | LM-SO-SD02-053123 | TCLP | Solid | 3010A | 23125 |
| 620-11778-2 DU | LM-SO-SD02-053123 | TCLP | Solid | 3010A | 23125 |

### Analysis Batch: 23183

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11778-1 | LM-SO-SD01-053123 | TCLP | Solid | 6010D | 23158 |
| 620-11778-1 | LM-SO-SD01-053123 | Total/NA | Solid | 6010D | 23122 |
| 620-11778-2 | LM-SO-SD02-053123 | TCLP | Solid | 6010D | 23158 |
| 620-11778-2 | LM-SO-SD02-053123 | Total/NA | Solid | 6010D | 23122 |
| LB 620-23125/1-B | Method Blank | TCLP | Solid | 6010D | 23158 |
| MB 620-23122/1-A | Method Blank | Total/NA | Solid | 6010D | 23122 |
| MB 620-23158/1-A | Method Blank | Total/NA | Solid | 6010D | 23158 |
| LCDSRM 620-23122/3-A | Lab Control Sample Dup | Total/NA | Solid | 6010D | 23122 |
| LCS 620-23158/2-A | Lab Control Sample | Total/NA | Solid | 6010D | 23158 |
| LCSD 620-23158/3-A | Lab Control Sample Dup | Total/NA | Solid | 6010D | 23158 |
| LCSSRM 620-23122/2-A | Lab Control Sample | Total/NA | Solid | 6010D | 23122 |
| 620-11778-2 MS | LM-SO-SD02-053123 | TCLP | Solid | 6010D | 23158 |
| 620-11778-2 MSD | LM-SO-SD02-053123 | TCLP | Solid | 6010D | 23158 |
| 620-11778-2 DU | LM-SO-SD02-053123 | TCLP | Solid | 6010D | 23158 |

### Prep Batch: 23193

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11778-1 | LM-SO-SD01-053123 | TCLP | Solid | 7470A | 23125 |
| 620-11778-2 | LM-SO-SD02-053123 | TCLP | Solid | 7470A | 23125 |
| LB 620-23125/1-C | Method Blank | TCLP | Solid | 7470A | 23125 |
| MB 620-23193/1-A | Method Blank | Total/NA | Solid | 7470A | |
| LCS 620-23193/2-A | Lab Control Sample | Total/NA | Solid | 7470A | |
| LCSD 620-23193/3-A | Lab Control Sample Dup | Total/NA | Solid | 7470A | |

### Analysis Batch: 23226

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11778-1 | LM-SO-SD01-053123 | TCLP | Solid | 7470A | 23193 |
| 620-11778-1 | LM-SO-SD01-053123 | Total/NA | Solid | 7471A | 23147 |

## Metals (Continued)

### Analysis Batch: 23226 (Continued)

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11778-2 | LM-SO-SD02-053123 | TCLP | Solid | 7470A | 23193 |
| 620-11778-2 | LM-SO-SD02-053123 | Total/NA | Solid | 7471A | 23147 |
| LB 620-23125/1-C | Method Blank | TCLP | Solid | 7470A | 23193 |
| MB 620-23147/1-A | Method Blank | Total/NA | Solid | 7471A | 23147 |
| MB 620-23193/1-A | Method Blank | Total/NA | Solid | 7470A | 23193 |
| LCDSRM 620-23147/3-A | Lab Control Sample Dup | Total/NA | Solid | 7471A | 23147 |
| LCS 620-23193/2-A | Lab Control Sample | Total/NA | Solid | 7470A | 23193 |
| LCSD 620-23193/3-A | Lab Control Sample Dup | Total/NA | Solid | 7470A | 23193 |
| LCSSRM 620-23147/2-A | Lab Control Sample | Total/NA | Solid | 7471A | 23147 |
| 620-11778-1 MS | LM-SO-SD01-053123 | Total/NA | Solid | 7471A | 23147 |
| 620-11778-1 MSD | LM-SO-SD01-053123 | Total/NA | Solid | 7471A | 23147 |
| 620-11778-1 DU | LM-SO-SD01-053123 | Total/NA | Solid | 7471A | 23147 |

## General Chemistry

### Analysis Batch: 23163

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11778-1 | LM-SO-SD01-053123 | Total/NA | Solid | Moisture | |
| 620-11778-2 | LM-SO-SD02-053123 | Total/NA | Solid | Moisture | |

### Leach Batch: 23168

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11778-1 | LM-SO-SD01-053123 | Soluble | Solid | DI Leach | |
| 620-11778-2 | LM-SO-SD02-053123 | Soluble | Solid | DI Leach | |
| MB 620-23168/1-A | Method Blank | Soluble | Solid | DI Leach | |
| 620-11778-2 DU | LM-SO-SD02-053123 | Soluble | Solid | DI Leach | |

### Analysis Batch: 23172

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11778-1 | LM-SO-SD01-053123 | Soluble | Solid | 9045D | 23168 |
| 620-11778-2 | LM-SO-SD02-053123 | Soluble | Solid | 9045D | 23168 |
| MB 620-23168/1-A | Method Blank | Soluble | Solid | 9045D | 23168 |
| LCDSRM 620-23172/3 | Lab Control Sample Dup | Total/NA | Solid | 9045D | |
| LCSSRM 620-23172/2 | Lab Control Sample | Total/NA | Solid | 9045D | |
| 620-11778-2 DU | LM-SO-SD02-053123 | Soluble | Solid | 9045D | 23168 |

### Analysis Batch: 23175

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11778-1 | LM-SO-SD01-053123 | Soluble | Solid | SM 2510B | 23168 |
| 620-11778-2 | LM-SO-SD02-053123 | Soluble | Solid | SM 2510B | 23168 |
| MB 620-23168/1-A | Method Blank | Soluble | Solid | SM 2510B | 23168 |
| LCDSRM 620-23175/3 | Lab Control Sample Dup | Total/NA | Solid | SM 2510B | |
| LCSSRM 620-23175/2 | Lab Control Sample | Total/NA | Solid | SM 2510B | |
| 620-11778-2 DU | LM-SO-SD02-053123 | Soluble | Solid | SM 2510B | 23168 |

### Analysis Batch: 23180

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11778-1 | LM-SO-SD01-053123 | Total/NA | Solid | 1030 | |
| 620-11778-2 | LM-SO-SD02-053123 | Total/NA | Solid | 1030 | |
| 620-11778-1 DU | LM-SO-SD01-053123 | Total/NA | Solid | 1030 | |

## Subcontract

### Analysis Batch: 680267A

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11778-1 | LM-SO-SD01-053123 | Total/NA | Solid | Reactive Cyanide | 680267A_P |
| 620-11778-2 | LM-SO-SD02-053123 | Total/NA | Solid | Reactive Cyanide | 680267A_P |
| CO14857-BLK | Method Blank | Total/NA | SOLID | Reactive Cyanide | 680267A_P |
| CO14857-LCS | Lab Control Sample | Total/NA | SOLID | Reactive Cyanide | 680267A_P |

### Analysis Batch: 680267B

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11778-1 | LM-SO-SD01-053123 | Total/NA | Solid | Reactive Sulfide | 680267B_P |
| 620-11778-2 | LM-SO-SD02-053123 | Total/NA | Solid | Reactive Sulfide | 680267B_P |
| CO14857-BLK | Method Blank | Total/NA | SOLID | Reactive Sulfide | 680267B_P |
| CO14857-LCS | Lab Control Sample | Total/NA | SOLID | Reactive Sulfide | 680267B_P |

### Prep Batch: 680267A_P

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11778-1 | LM-SO-SD01-053123 | Total/NA | Solid | SW846 7.3.3.1/90 | |
| 620-11778-2 | LM-SO-SD02-053123 | Total/NA | Solid | SW846 7.3.3.1/90 | |
| CO14857-BLK | Method Blank | Total/NA | SOLID | SW846 7.3.3.1/90 | |
| CO14857-LCS | Lab Control Sample | Total/NA | SOLID | SW846 7.3.3.1/90 | |

### Prep Batch: 680267B_P

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11778-1 | LM-SO-SD01-053123 | Total/NA | Solid | SW846 7.3.3.1/90 | |
| 620-11778-2 | LM-SO-SD02-053123 | Total/NA | Solid | SW846 7.3.3.1/90 | |
| CO14857-BLK | Method Blank | Total/NA | SOLID | SW846 7.3.3.1/90 | |
| CO14857-LCS | Lab Control Sample | Total/NA | SOLID | SW846 7.3.3.1/90 | |

# Lab Chronicle

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11778-1

## Client Sample ID: LM-SO-SD01-053123

**Lab Sample ID: 620-11778-1**

**Date Collected: 05/31/23 07:50**

**Matrix: Solid**

**Date Received: 05/31/23 13:30**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| TCLP | Leach | 1311 | | | 23125 | PRB | EET NE | 05/31/23 14:46 - 06/01/23 08:30 [1] |
| TCLP | Prep | 3010A | | | 23158 | PRB | EET NE | 06/01/23 10:53 |
| TCLP | Analysis | 6010D | | 1 | 23183 | JPC | EET NE | 06/01/23 14:51 |
| TCLP | Leach | 1311 | | | 23125 | PRB | EET NE | 05/31/23 14:46 - 06/01/23 08:30 [1] |
| TCLP | Prep | 7470A | | | 23193 | PRB | EET NE | 06/02/23 07:19 |
| TCLP | Analysis | 7470A | | 1 | 23226 | PRB | EET NE | 06/02/23 14:22 |
| Total/NA | Analysis | 1030 | | 1 | 23180 | MJH | EET NE | 06/01/23 15:23 |
| Soluble | Leach | DI Leach | | | 23168 | MJH | EET NE | 06/01/23 12:50 |
| Soluble | Analysis | 9045D | | 1 | 23172 | MJH | EET NE | 06/01/23 14:14 |
| Total/NA | Analysis | Moisture | | 1 | 23163 | MJH | EET NE | 06/01/23 11:46 |
| Soluble | Leach | DI Leach | | | 23168 | MJH | EET NE | 06/01/23 12:50 |
| Soluble | Analysis | SM 2510B | | 1 | 23175 | MJH | EET NE | 06/01/23 14:51 |
| Total/NA | Analysis | Reactive Cyanide | | 1 | 680267A | CT007 | PEL, Inc | 06/01/23 16:15 |
| Total/NA | Prep | SW846 7.3.3.1/90 | | 1 | 680267A_P | | PEL, Inc | 06/01/23 17:09 |
| Total/NA | Prep | SW846 7.3.3.1/90 | | 1 | 680267B_P | | PEL, Inc | 06/01/23 00:00 |
| Total/NA | Analysis | Reactive Sulfide | | 1 | 680267B | CT007 | PEL, Inc | 06/01/23 17:09 |

## Client Sample ID: LM-SO-SD01-053123

**Lab Sample ID: 620-11778-1**

**Date Collected: 05/31/23 07:50**

**Matrix: Solid**

**Date Received: 05/31/23 13:30**

**Percent Solids: 93.9**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Pre Prep | Frozen Preserve | | | 23132 | KFS | EET NE | 05/31/23 19:52 |
| Total/NA | Prep | 5035 | | | 23152 | CLR | EET NE | 06/01/23 13:00 |
| Total/NA | Analysis | 8260C | | 1 | 23153 | CLR | EET NE | 06/01/23 15:48 |
| Total/NA | Prep | 3546 | | | 23157 | JAC | EET NE | 06/01/23 10:46 |
| Total/NA | Analysis | 8270D | | 1 | 23208 | JS | EET NE | 06/02/23 15:20 |
| Total/NA | Prep | 3546 | | | 23137 | JAC | EET NE | 06/01/23 09:22 |
| Total/NA | Analysis | 8081B | | 1 | 23216 | SFL | EET NE | 06/02/23 19:31 |
| Total/NA | Prep | 3546 | | | 23137 | JAC | EET NE | 06/01/23 09:22 |
| Total/NA | Analysis | 8082 | | 1 | 23154 | SFL | EET NE | 06/01/23 16:23 |
| Total/NA | Prep | 3546 | | | 23173 | JAC | EET NE | 06/01/23 14:23 |
| Total/NA | Analysis | 8100 | | 1 | 23204 | JS | EET NE | 06/02/23 14:21 |
| Total/NA | Prep | 3050B | | | 23122 | PRB | EET NE | 05/31/23 14:15 |
| Total/NA | Analysis | 6010D | | 1 | 23183 | JPC | EET NE | 06/01/23 12:54 |
| Total/NA | Prep | 7471B | | | 23147 | PRB | EET NE | 06/01/23 09:40 |
| Total/NA | Analysis | 7471A | | 1 | 23226 | PRB | EET NE | 06/02/23 12:07 |

# Lab Chronicle

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11778-1

## Client Sample ID: LM-SO-SD02-053123

**Date Collected: 05/31/23 08:10**
**Date Received: 05/31/23 13:30**

## Lab Sample ID: 620-11778-2

**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| TCLP | Leach | 1311 | | | 23125 | PRB | EET NE | 05/31/23 14:46 - 06/01/23 08:30 [1] |
| TCLP | Prep | 3010A | | | 23158 | PRB | EET NE | 06/01/23 10:53 |
| TCLP | Analysis | 6010D | | 1 | 23183 | JPC | EET NE | 06/01/23 14:21 |
| TCLP | Leach | 1311 | | | 23125 | PRB | EET NE | 05/31/23 14:46 - 06/01/23 08:30 [1] |
| TCLP | Prep | 7470A | | | 23193 | PRB | EET NE | 06/02/23 07:19 |
| TCLP | Analysis | 7470A | | 1 | 23226 | PRB | EET NE | 06/02/23 14:24 |
| Total/NA | Analysis | 1030 | | 1 | 23180 | MJH | EET NE | 06/01/23 15:23 |
| Soluble | Leach | DI Leach | | | 23168 | MJH | EET NE | 06/01/23 12:50 |
| Soluble | Analysis | 9045D | | 1 | 23172 | MJH | EET NE | 06/01/23 14:14 |
| Total/NA | Analysis | Moisture | | 1 | 23163 | MJH | EET NE | 06/01/23 11:46 |
| Soluble | Leach | DI Leach | | | 23168 | MJH | EET NE | 06/01/23 12:50 |
| Soluble | Analysis | SM 2510B | | 1 | 23175 | MJH | EET NE | 06/01/23 14:51 |
| Total/NA | Analysis | Reactive Cyanide | | 1 | 680267A | CT007 | PEL, Inc | 06/01/23 16:16 |
| Total/NA | Prep | SW846 7.3.3.1/90 | | 1 | 680267A_P | | PEL, Inc | 06/01/23 17:09 |
| Total/NA | Prep | SW846 7.3.3.1/90 | | 1 | 680267B_P | | PEL, Inc | 06/01/23 00:00 |
| Total/NA | Analysis | Reactive Sulfide | | 1 | 680267B | CT007 | PEL, Inc | 06/01/23 17:09 |

## Client Sample ID: LM-SO-SD02-053123

**Date Collected: 05/31/23 08:10**
**Date Received: 05/31/23 13:30**

## Lab Sample ID: 620-11778-2

**Matrix: Solid**
**Percent Solids: 93.7**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Pre Prep | Frozen Preserve | | | 23132 | KFS | EET NE | 05/31/23 19:52 |
| Total/NA | Prep | 5035 | | | 23152 | CLR | EET NE | 06/01/23 13:00 |
| Total/NA | Analysis | 8260C | | 1 | 23153 | CLR | EET NE | 06/01/23 16:13 |
| Total/NA | Prep | 3546 | | | 23157 | JAC | EET NE | 06/01/23 10:46 |
| Total/NA | Analysis | 8270D | | 1 | 23208 | JS | EET NE | 06/02/23 15:45 |
| Total/NA | Prep | 3546 | | | 23137 | JAC | EET NE | 06/01/23 09:23 |
| Total/NA | Analysis | 8081B | | 1 | 23216 | SFL | EET NE | 06/02/23 19:47 |
| Total/NA | Prep | 3546 | | | 23137 | JAC | EET NE | 06/01/23 09:23 |
| Total/NA | Analysis | 8082 | | 1 | 23154 | SFL | EET NE | 06/01/23 16:40 |
| Total/NA | Prep | 3546 | | | 23173 | JAC | EET NE | 06/01/23 14:23 |
| Total/NA | Analysis | 8100 | | 1 | 23204 | JS | EET NE | 06/02/23 14:43 |
| Total/NA | Prep | 3050B | | | 23122 | PRB | EET NE | 05/31/23 14:15 |
| Total/NA | Analysis | 6010D | | 1 | 23183 | JPC | EET NE | 06/01/23 13:00 |
| Total/NA | Prep | 7471B | | | 23147 | PRB | EET NE | 06/01/23 09:40 |
| Total/NA | Analysis | 7471A | | 1 | 23226 | PRB | EET NE | 06/02/23 12:16 |

[1] This procedure uses a method stipulated length of time for the process. Both start and end times are displayed.

**Laboratory References:**

EET NE = Eurofins New England, 646 Camp Ave, North Kingstown, RI 02852, TEL (413)789-9018

PEL, Inc = Phoenix Environmental Laboratories, Inc., 587 East Middle Turnpike, Manchester, CT 06040, TEL (860)645-8726

# Accreditation/Certification Summary

Client: Nobis Engineering, Inc. Job ID: 620-11778-1
Project/Site: Former L&M - Lunenburg MA

## Laboratory: Eurofins New England

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

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|
| Massachusetts | State | M-RI907 | 06-30-23 |

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

| Analysis Method | Prep Method | Matrix | Analyte |
|---|---|---|---|
| 1030 | | Solid | Ignitability |
| 6010D | 3010A | Solid | Arsenic |
| 6010D | 3010A | Solid | Barium |
| 6010D | 3010A | Solid | Cadmium |
| 6010D | 3010A | Solid | Chromium |
| 6010D | 3010A | Solid | Lead |
| 6010D | 3010A | Solid | Selenium |
| 6010D | 3010A | Solid | Silver |
| 6010D | 3050B | Solid | Arsenic |
| 6010D | 3050B | Solid | Barium |
| 6010D | 3050B | Solid | Cadmium |
| 6010D | 3050B | Solid | Chromium |
| 6010D | 3050B | Solid | Lead |
| 6010D | 3050B | Solid | Selenium |
| 6010D | 3050B | Solid | Silver |
| 7470A | 7470A | Solid | Mercury |
| 7471A | 7471B | Solid | Mercury |
| 8081B | 3546 | Solid | 4,4'-DDD |
| 8081B | 3546 | Solid | 4,4'-DDE |
| 8081B | 3546 | Solid | 4,4'-DDT |
| 8081B | 3546 | Solid | Alachlor |
| 8081B | 3546 | Solid | Aldrin |
| 8081B | 3546 | Solid | alpha-BHC |
| 8081B | 3546 | Solid | beta-BHC |
| 8081B | 3546 | Solid | cis-Chlordane |
| 8081B | 3546 | Solid | delta-BHC |
| 8081B | 3546 | Solid | Dieldrin |
| 8081B | 3546 | Solid | Endosulfan I |
| 8081B | 3546 | Solid | Endosulfan II |
| 8081B | 3546 | Solid | Endosulfan sulfate |
| 8081B | 3546 | Solid | Endrin |
| 8081B | 3546 | Solid | Endrin aldehyde |
| 8081B | 3546 | Solid | Endrin ketone |
| 8081B | 3546 | Solid | gamma-BHC (Lindane) |
| 8081B | 3546 | Solid | Heptachlor |
| 8081B | 3546 | Solid | Heptachlor epoxide |
| 8081B | 3546 | Solid | Methoxychlor |
| 8081B | 3546 | Solid | Toxaphene |
| 8081B | 3546 | Solid | trans-Chlordane |
| 8082 | 3546 | Solid | PCB-1016 |
| 8082 | 3546 | Solid | PCB-1221 |
| 8082 | 3546 | Solid | PCB-1232 |
| 8082 | 3546 | Solid | PCB-1242 |
| 8082 | 3546 | Solid | PCB-1248 |
| 8082 | 3546 | Solid | PCB-1254 |

## Laboratory: Eurofins New England (Continued)

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

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

| Analysis Method | Prep Method | Matrix | Analyte |
|---|---|---|---|
| 8082 | 3546 | Solid | PCB-1260 |
| 8082 | 3546 | Solid | PCB-1262 |
| 8082 | 3546 | Solid | PCB-1268 |
| 8100 | 3546 | Solid | TEPH (C9-C36) |
| 8260C | 5035 | Solid | 1,1,1,2-Tetrachloroethane |
| 8260C | 5035 | Solid | 1,1,1-Trichloroethane |
| 8260C | 5035 | Solid | 1,1,2,2-Tetrachloroethane |
| 8260C | 5035 | Solid | 1,1,2-Trichloroethane |
| 8260C | 5035 | Solid | 1,1,2-Trichlorotrifluoroethane (Freon 113) |
| 8260C | 5035 | Solid | 1,1-Dichloroethane |
| 8260C | 5035 | Solid | 1,1-Dichloroethene |
| 8260C | 5035 | Solid | 1,1-Dichloropropene |
| 8260C | 5035 | Solid | 1,2,3-Trichlorobenzene |
| 8260C | 5035 | Solid | 1,2,3-Trichloropropane |
| 8260C | 5035 | Solid | 1,2,4-Trichlorobenzene |
| 8260C | 5035 | Solid | 1,2,4-Trimethylbenzene |
| 8260C | 5035 | Solid | 1,2-Dibromo-3-Chloropropane |
| 8260C | 5035 | Solid | 1,2-Dibromoethane (EDB) |
| 8260C | 5035 | Solid | 1,2-Dichlorobenzene |
| 8260C | 5035 | Solid | 1,2-Dichloroethane |
| 8260C | 5035 | Solid | 1,2-Dichloropropane |
| 8260C | 5035 | Solid | 1,3,5-Trichlorobenzene |
| 8260C | 5035 | Solid | 1,3,5-Trimethylbenzene |
| 8260C | 5035 | Solid | 1,3-Dichlorobenzene |
| 8260C | 5035 | Solid | 1,3-Dichloropropane |
| 8260C | 5035 | Solid | 1,3-Dichloropropene, Total |
| 8260C | 5035 | Solid | 1,4-Dichlorobenzene |
| 8260C | 5035 | Solid | 1,4-Dioxane |
| 8260C | 5035 | Solid | 2,2-Dichloropropane |
| 8260C | 5035 | Solid | 2-Butanone (MEK) |
| 8260C | 5035 | Solid | 2-Chlorotoluene |
| 8260C | 5035 | Solid | 2-Hexanone (MBK) |
| 8260C | 5035 | Solid | 4-Chlorotoluene |
| 8260C | 5035 | Solid | 4-Isopropyltoluene |
| 8260C | 5035 | Solid | 4-Methyl-2-pentanone (MIBK) |
| 8260C | 5035 | Solid | Acetone |
| 8260C | 5035 | Solid | Acrylonitrile |
| 8260C | 5035 | Solid | Benzene |
| 8260C | 5035 | Solid | Bromobenzene |
| 8260C | 5035 | Solid | Bromochloromethane |
| 8260C | 5035 | Solid | Bromodichloromethane |
| 8260C | 5035 | Solid | Bromoform |
| 8260C | 5035 | Solid | Bromomethane |
| 8260C | 5035 | Solid | Carbon disulfide |
| 8260C | 5035 | Solid | Carbon tetrachloride |
| 8260C | 5035 | Solid | Chlorobenzene |
| 8260C | 5035 | Solid | Chloroethane |

## Laboratory: Eurofins New England (Continued)

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

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

| Analysis Method | Prep Method | Matrix | Analyte |
|---|---|---|---|
| 8260C | 5035 | Solid | Chloroform |
| 8260C | 5035 | Solid | Chloromethane |
| 8260C | 5035 | Solid | cis-1,2-Dichloroethene |
| 8260C | 5035 | Solid | cis-1,3-Dichloropropene |
| 8260C | 5035 | Solid | Dibromochloromethane |
| 8260C | 5035 | Solid | Dibromomethane |
| 8260C | 5035 | Solid | Dichlorodifluoromethane (Freon 12) |
| 8260C | 5035 | Solid | di-Isopropyl ether |
| 8260C | 5035 | Solid | Ethanol |
| 8260C | 5035 | Solid | Ethyl ether |
| 8260C | 5035 | Solid | Ethyl tert-butyl ether |
| 8260C | 5035 | Solid | Ethylbenzene |
| 8260C | 5035 | Solid | Hexachlorobutadiene |
| 8260C | 5035 | Solid | Isopropylbenzene |
| 8260C | 5035 | Solid | m,p-Xylene |
| 8260C | 5035 | Solid | Methyl tert-butyl ether |
| 8260C | 5035 | Solid | Methylene Chloride |
| 8260C | 5035 | Solid | Naphthalene |
| 8260C | 5035 | Solid | n-Butylbenzene |
| 8260C | 5035 | Solid | N-Propylbenzene |
| 8260C | 5035 | Solid | o-Xylene |
| 8260C | 5035 | Solid | sec-Butylbenzene |
| 8260C | 5035 | Solid | Styrene |
| 8260C | 5035 | Solid | Tert-amyl methyl ether |
| 8260C | 5035 | Solid | tert-Butanol |
| 8260C | 5035 | Solid | tert-Butylbenzene |
| 8260C | 5035 | Solid | Tetrachloroethene |
| 8260C | 5035 | Solid | Tetrahydrofuran |
| 8260C | 5035 | Solid | Toluene |
| 8260C | 5035 | Solid | trans-1,2-Dichloroethene |
| 8260C | 5035 | Solid | trans-1,3-Dichloropropene |
| 8260C | 5035 | Solid | trans-1,4-Dichloro-2-butene |
| 8260C | 5035 | Solid | Trichloroethene |
| 8260C | 5035 | Solid | Trichlorofluoromethane (Freon 11) |
| 8260C | 5035 | Solid | Vinyl chloride |
| 8260C | 5035 | Solid | Xylenes, Total |
| 8270D | 3546 | Solid | 1,2,4,5-Tetrachlorobenzene |
| 8270D | 3546 | Solid | 1,2,4-Trichlorobenzene |
| 8270D | 3546 | Solid | 1,2-Dichlorobenzene |
| 8270D | 3546 | Solid | 1,3-Dichlorobenzene |
| 8270D | 3546 | Solid | 1,4-Dichlorobenzene |
| 8270D | 3546 | Solid | 1-Methylnaphthalene |
| 8270D | 3546 | Solid | 2,4,5-Trichlorophenol |
| 8270D | 3546 | Solid | 2,4,6-Trichlorophenol |
| 8270D | 3546 | Solid | 2,4-Dichlorophenol |
| 8270D | 3546 | Solid | 2,4-Dimethylphenol |
| 8270D | 3546 | Solid | 2,4-Dinitrophenol |

## Laboratory: Eurofins New England (Continued)

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

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

| Analysis Method | Prep Method | Matrix | Analyte |
|---|---|---|---|
| 8270D | 3546 | Solid | 2,4-Dinitrotoluene |
| 8270D | 3546 | Solid | 2,6-Dinitrotoluene |
| 8270D | 3546 | Solid | 2-Chloronaphthalene |
| 8270D | 3546 | Solid | 2-Chlorophenol |
| 8270D | 3546 | Solid | 2-Methylnaphthalene |
| 8270D | 3546 | Solid | 2-Methylphenol |
| 8270D | 3546 | Solid | 2-Nitroaniline |
| 8270D | 3546 | Solid | 2-Nitrophenol |
| 8270D | 3546 | Solid | 3 & 4 Methylphenol |
| 8270D | 3546 | Solid | 3,3'-Dichlorobenzidine |
| 8270D | 3546 | Solid | 3-Nitroaniline |
| 8270D | 3546 | Solid | 4,6-Dinitro-2-methylphenol |
| 8270D | 3546 | Solid | 4-Bromophenyl phenyl ether |
| 8270D | 3546 | Solid | 4-Chloro-3-methylphenol |
| 8270D | 3546 | Solid | 4-Chloroaniline |
| 8270D | 3546 | Solid | 4-Chlorophenyl phenyl ether |
| 8270D | 3546 | Solid | 4-Nitroaniline |
| 8270D | 3546 | Solid | 4-Nitrophenol |
| 8270D | 3546 | Solid | Acenaphthene |
| 8270D | 3546 | Solid | Acenaphthylene |
| 8270D | 3546 | Solid | Acetophenone |
| 8270D | 3546 | Solid | Aniline |
| 8270D | 3546 | Solid | Anthracene |
| 8270D | 3546 | Solid | Azobenzene/Diphenyldiazene |
| 8270D | 3546 | Solid | Benzidine |
| 8270D | 3546 | Solid | Benzo[a]anthracene |
| 8270D | 3546 | Solid | Benzo[a]pyrene |
| 8270D | 3546 | Solid | Benzo[b]fluoranthene |
| 8270D | 3546 | Solid | Benzo[g,h,i]perylene |
| 8270D | 3546 | Solid | Benzo[k]fluoranthene |
| 8270D | 3546 | Solid | Benzoic acid |
| 8270D | 3546 | Solid | Benzyl alcohol |
| 8270D | 3546 | Solid | bis (2-chloroisopropyl) ether |
| 8270D | 3546 | Solid | Bis(2-chloroethoxy)methane |
| 8270D | 3546 | Solid | Bis(2-chloroethyl)ether |
| 8270D | 3546 | Solid | Bis(2-ethylhexyl) phthalate |
| 8270D | 3546 | Solid | Butyl benzyl phthalate |
| 8270D | 3546 | Solid | Carbazole |
| 8270D | 3546 | Solid | Chrysene |
| 8270D | 3546 | Solid | Dibenz(a,h)anthracene |
| 8270D | 3546 | Solid | Dibenzofuran |
| 8270D | 3546 | Solid | Diethyl phthalate |
| 8270D | 3546 | Solid | Dimethyl phthalate |
| 8270D | 3546 | Solid | Di-n-butyl phthalate |
| 8270D | 3546 | Solid | Di-n-octyl phthalate |
| 8270D | 3546 | Solid | Fluoranthene |
| 8270D | 3546 | Solid | Fluorene |

# Accreditation/Certification Summary

Client: Nobis Engineering, Inc. Job ID: 620-11778-1
Project/Site: Former L&M - Lunenburg MA

## Laboratory: Eurofins New England (Continued)

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

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

| Analysis Method | Prep Method | Matrix | Analyte |
|---|---|---|---|
| 8270D | 3546 | Solid | Hexachlorobenzene |
| 8270D | 3546 | Solid | Hexachlorobutadiene |
| 8270D | 3546 | Solid | Hexachlorocyclopentadiene |
| 8270D | 3546 | Solid | Hexachloroethane |
| 8270D | 3546 | Solid | Indeno[1,2,3-cd]pyrene |
| 8270D | 3546 | Solid | Isophorone |
| 8270D | 3546 | Solid | Naphthalene |
| 8270D | 3546 | Solid | Nitrobenzene |
| 8270D | 3546 | Solid | N-Nitrosodimethylamine |
| 8270D | 3546 | Solid | N-Nitrosodi-n-propylamine |
| 8270D | 3546 | Solid | N-Nitrosodiphenylamine |
| 8270D | 3546 | Solid | Pentachloronitrobenzene |
| 8270D | 3546 | Solid | Pentachlorophenol |
| 8270D | 3546 | Solid | Phenanthrene |
| 8270D | 3546 | Solid | Phenol |
| 8270D | 3546 | Solid | Pyrene |
| 8270D | 3546 | Solid | Pyridine |
| 9045D | | Solid | pH |
| 9045D | | Solid | Temperature |
| Moisture | | Solid | Percent Moisture |
| Moisture | | Solid | Percent Solids |
| SM 2510B | | Solid | Specific Conductance |

# Method Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11778-1

| Method | Method Description | Protocol | Laboratory |
|---|---|---|---|
| 8260C | Volatile Organic Compounds (GC/MS) | MA DEP | EET NE |
| 8270D | Semivolatile Organic Compounds (GC/MS) | MA DEP | EET NE |
| 8081B | Organochlorine Pesticides (GC/ECD) | MA DEP | EET NE |
| 8082 | Polychlorinated Biphenyls (GC/ECD) | MA DEP | EET NE |
| 8100 | Polynuclear Aromatic Hydrocarbons (PAHs) (GC) | SW846 | EET NE |
| 6010D | Metals (ICP) | SW846 | EET NE |
| 7470A | Mercury (CVAA) | SW846 | EET NE |
| 7471A | Mercury (CVAA) | SW846 | EET NE |
| 1030 | Ignitability, Solids | SW846 | EET NE |
| 9045D | pH | SW846 | EET NE |
| Moisture | Percent Moisture | EPA | EET NE |
| SM 2510B | Conductivity, Specific Conductance | SM | EET NE |
| 9014/9034 | SW846 9014/9034 Reactivity | EPA | PEL, Inc |
| 9034 | SW846 9034 – Reactive Sulfide | SW846 | PEL, Inc |
| 1311 | TCLP Extraction | SW846 | EET NE |
| 3010A | Preparation, Total Metals | SW846 | EET NE |
| 3050B | Preparation, Metals | SW846 | EET NE |
| 3546 | Microwave Extraction | SW846 | EET NE |
| 5035 | Closed System Purge and Trap | SW846 | EET NE |
| 7470A | Preparation, Mercury | SW846 | EET NE |
| 7471B | Preparation, Mercury | SW846 | EET NE |
| DI Leach | Deionized Water Leaching Procedure | ASTM | EET NE |
| Frozen Preserve | Freezing Samples | None | EET NE |

**Protocol References:**

ASTM = ASTM International
EPA = US Environmental Protection Agency
MA DEP = Massachusetts Department Of Environmental Protection
None = None
SM = "Standard Methods For The Examination Of Water And Wastewater"
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

EET NE = Eurofins New England, 646 Camp Ave, North Kingstown, RI 02852, TEL (413)789-9018
PEL, Inc = Phoenix Environmental Laboratories, Inc., 587 East Middle Turnpike, Manchester, CT 06040, TEL (860)645-8726

# Sample Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11778-1

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---|---|---|---|---|
| 620-11778-1 | LM-SO-SD01-053123 | Solid | 05/31/23 07:50 | 05/31/23 13:30 |
| 620-11778-2 | LM-SO-SD02-053123 | Solid | 05/31/23 08:10 | 05/31/23 13:30 |

11778

# Chain of Custody Record

eurofins | Environment Testing

| | | | | |
|---|---|---|---|---|
| | Sampler: S Stone | Lab PM | Carrier Tracking No(s) | COC No: 620-10175-1337 3 |
| Bridget Fortier | Phone | E-Mail: arcyn@nobis-group.com | State of Origin: MA | Page: Page ~~3 of 3~~ 1 of 1 |
| Company: Nobis Engineering, Inc | PWSID | | | Job #: |

| | | |
|---|---|---|
| Address: 585 Middlesex Street | Due Date Requested: 6/2-23 | |
| City: Lowell | TAT Requested (days): LM-SO-SD01-053123 ]2 day; LM-SO-SD02-053123 | |
| State, Zip: MA, 01851 | Compliance Project: Δ Yes Δ No | |
| Phone | PO #: | |
| Email: bfortier@nobis-group com | WO #: | |
| Project Name: Former L&M | Project #: 50000105/400 | |
| Site: Former L&M | SSOW#: | |

**Analysis Requested**

**Preservation Codes:**

A - HCL; B - NaOH; C - Zn Acetate; D - Nitric Acid; E - NaHSO4; F - MeOH; G - Amchlor; H - Ascorbic Acid; I - Ice; J - DI Water; K - EDTA; L - EDA; M - Hexane; N - None; O - AsNaO2; P - Na2O4S; Q - Na2SO3; R - Na2S2O3; S - H2SO4; T - TSP Dodecahydrate; U - Acetone; V - MCAA; W - pH 4-5; Y - Trizma; Z - other (specify)

Other:

| Sample Identification | Sample Date | Sample Time | Sample Type (C=Comp, G=grab) | Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air) | Field Filtered Sample (Yes or No) | Perform MS/MSD (Yes or No) | VPH | EPH, metals, % moisture | VOCs LL | VOCs HL | SVOCs, pest, PCBs & TPH | Total & TCLP RCRA | Spec. Cond, Flashpoint, Reactivity | Total Number of containers | Special Instructions/Note: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preservation Code: | | | | F | | J | F | | | | | |
| | | | | Water | | | | | | | | | | | |
| | | | | Solid | | | | | | | | | | | |
| | | | | Water | | | | | | | | | | | |
| LM-SO-SD01-053123 | 5-31-23 | 750 | C | Soil | | | | | X | X | X | X | X | | |
| LM-SO-SD02-053123 | 5-31-23 | 810 | C | Soil | | | | | X | X | X | X | X | | |
| LM-SO-UST04-053023 | 5-30-23 | 1330 | C | Soil | | | X | X | | | | | | | |

| | |
|---|---|
| **Possible Hazard Identification**: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological | **Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)**: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months |
| Deliverable Requested I, II, III, IV, Other (specify): EDD PDF and email | Special Instructions/QC Requirements: MCP CAM Methods; LM-SO-UST04-053023 is standard TAT |

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Relinquished by: | Date/Time: 5-31-23 10:55 | Company | Received by: | Date/Time: 5/31/23 10:55 | Company |
| Relinquished by: | Date/Time: 5/31/23 | Company | Received by: | Date/Time: 5/31/23 13:30 | Company |
| Relinquished by: | Date/Time: | Company | Received by: | Date/Time: | Company |

| | |
|---|---|
| Custody Seals Intact: Δ Yes Δ No | Custody Seal No.. |
| Cooler Temperature(s) °C and Other Remarks: 0.9 +0.2 -0.6 IR#5 | |

# Login Sample Receipt Checklist

Client: Nobis Engineering, Inc.

Job Number: 620-11778-1

**Login Number: 11778**
**List Number: 1**
**Creator: Makhoul, Elie**

**List Source: Eurofins New England**

| Question | Answer | Comment |
|---|---|---|
| Radioactivity wasn't checked or is </= background as measured by a survey meter. | N/A | |
| The cooler's custody seal, if present, is intact. | N/A | |
| Sample custody seals, if present, are intact. | N/A | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| Is the Field Sampler's name present on COC? | True | |
| There are no discrepancies between the containers received and the COC. | True | |
| Samples are received within Holding Time (excluding tests with immediate HTs) | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| Sample Preservation Verified. | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| Containers requiring zero headspace have no headspace or bubble is <6mm (1/4"). | True | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |
| Residual Chlorine Checked. | N/A | |

October 2, 2023
Nobis File No. S00001.05

Ms. Katy Deng
USEPA – Region 1
Land, Chemicals, and Redevelopment Division
5 Post Office Square, Suite 100
Boston, MA 02109-3912

Re: USEPA Contract No. 68HE0122D0001
USEPA Task Order No. 68HE0122F0044
Targeted Brownfields Assessment (TBA)
Former L&M Service Station Site
Lunenburg, Massachusetts
Sample Delivery Group (SDG) No. 620117782
Eurofins New England, North Kingstown, RI

Tier 1 Stage 2A Organic and Inorganic Data Review:

Volatile Petroleum Hydrocarbons (VPH by MassDEP-VPH), Extractable Petroleum Hydrocarbons (EPH by MassDEP-EPH), Massachusetts Contingency Plan (MCP) Metals (MCP-14 Metals by 6020B/7470A)

1/Soil Sample: LM-SO-UST01-052523

Dear Ms. Deng:

Nobis Group (Nobis), under a USEPA contract as a subcontractor to KGSNE JV, LLC, performed a Tier 1 Stage 2A manual data review (S2AVM) on the organic and inorganic analytical data for the sample listed above. The sample was collected by Nobis at the Former L&M Service Station Site located in Lunenburg, Massachusetts on May 30, 2023. The sample was analyzed for VPHs by MassDEP-VPH, EPHs by MassDEP-EPH, and MCP-14 Metals by EPA Methods 6010D/7470A by Eurofins New England in North Kingstown, RI.

The Tier 1 Stage 2A manual data review was performed in accordance with the Region 1 - EPA New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures (September 2020); USEPA's National Functional Guidelines for Organic Superfund Methods Data Review (November 2020); USEPA's National Functional Guidelines for Inorganic Superfund Methods Data Review (November 2020); the Program Quality Assurance Project Plan (Program QAPP) dated October 2022, and the Quality Assurance Project Plan Addendum (QAPPA) (May 2023) for the Former L&M Service Station Site, which appends the October 2022 Program QAPP.

The data were evaluated based on the following parameters:

| | |
|---|---|
| * | • Overall Evaluation of Data and Potential Usability Issues |
| * | • Data Completeness |
| * | • Preservation and Technical Holding Times |
| * | • Blanks |
| * | • Surrogates (organic analyses only) |
| NA | • Internal Standards |



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| | | |
|---|---|---|
| NA | • | Matrix Spike Analysis |
| NA | • | Laboratory Duplicates |
| | • | Laboratory Control Samples (LCS) |
| NA | • | Field Duplicates |
| NA | • | ICP Serial Dilutions (metals only) |
| NA | • | Performance Evaluation (PE) Samples |
| NA | • | Target Analyte Identification |
| * | • | Reported Quantitation Limits |

* All criteria were met for this parameter or did not require qualification.
NA – Not applicable.

**Overall Evaluation of Data and Potential Usability Issues**

The site sampling objectives are:

- Characterize in-situ soil based on AOCs identified by Fuss & O'Neill in November 2020 Phase I for the presence of possible site-related contamination.
- Evaluate groundwater elevation.
- Evaluate presence/absence of groundwater contamination related to site.

Note that the COC includes additional samples and analyses than those listed above. Results for the analyses associated with the additional samples (LM-SO-SD01-053123 and LM-SO-SD02-053123) are located in SDG 620117781. This review (for SDG 620117782) is limited to the VPH, EPH, and the MCP-14 metals analytical results for sample LM-SO-UST01-05.

The data meet the project quality criteria and can be used without restriction except as summarized below. The attachments provide details and supporting documentation.

**MassDEP-VPH:**
Qualification of the data was not required.

**MassDEP-EPH:**
Qualification of the data was not required.

**MCP-14 Metals and Mercury:**
Results were qualified for LCS/LCSD recovery exceedances.

Please contact Linda Terzis at lterzis@nobis-group.com should you have any questions or comments regarding this information.

Sincerely,

NOBIS GROUP®

Linda Terzis
Data Validator

Gary Glennon
Data Validator

Tables: Data Summary Tables – Tier 1 Stage 2A (S2AVM) Validated Data
Data Qualification Actions Table

Attachments: Data Review Checklist
Support Documentation
COC

cc: Denis McGrath (Nobis Group)
Adam Roy (Nobis Group)

# DATA SUMMARY TABLE

| **Analysis** | | EPH in Soil |
|---|---|---|
| **Lab Sample ID** | | 620-11778-3 |
| **Field Sample ID** | | LM-SO-UST04-053023 |
| **Sample Type** | | N |
| **Parent Sample ID** | | |
| **Sample Date** | **Units** | 05/30/23 |
| 2-Methylnaphthalene | mg/kg | 4.8 |
| Acenaphthene | mg/kg | 0.36 U |
| Acenaphthylene | mg/kg | 0.36 U |
| Anthracene | mg/kg | 0.36 U |
| Benzo(a)anthracene | mg/kg | 0.36 U |
| Benzo(a)pyrene | mg/kg | 0.36 U |
| Benzo(b)fluoranthene | mg/kg | 0.36 U |
| Benzo(g,h,i)perylene | mg/kg | 0.36 U |
| Benzo(k)fluoranthene | mg/kg | 0.36 U |
| C11-C22 Aromatics | mg/kg | 250 |
| C11-C22 Aromatics (adjusted) | mg/kg | 240 |
| C19-C36 Aliphatics | mg/kg | 96 |
| C9-C18 Aliphatics | mg/kg | 240 |
| Chrysene | mg/kg | 0.36 U |
| Dibenz(a,h)anthracene | mg/kg | 0.36 U |
| Fluoranthene | mg/kg | 0.54 |
| Fluorene | mg/kg | 0.69 |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.36 U |
| Naphthalene | mg/kg | 0.48 |
| Phenanthrene | mg/kg | 0.46 |
| Pyrene | mg/kg | 0.36 U |

# DATA SUMMARY TABLE

| **Analysis** | | Metals in Soil |
|---|---|---|
| **Lab Sample ID** | | 620-11778-3 |
| **Field Sample ID** | | LM-SO-UST04-053023 |
| **Sample Type** | | N |
| **Parent Sample ID** | | |
| **Sample Date** | **Units** | 05/30/23 |
| Antimony | mg/kg | 8.6 UJ |
| Arsenic | mg/kg | 4.5 |
| Barium | mg/kg | 35 |
| Beryllium | mg/kg | 0.86 U |
| Cadmium | mg/kg | 0.86 UJ |
| Chromium | mg/kg | 10 |
| Lead | mg/kg | 56 |
| Mercury | mg/kg | 0.04 J |
| Nickel | mg/kg | 8.2 J- |
| Selenium | mg/kg | 2.6 UJ |
| Silver | mg/kg | 2.6 U |
| Thallium | mg/kg | 5.2 U |
| Vanadium | mg/kg | 11 |
| Zinc | mg/kg | 36 J- |

# DATA SUMMARY TABLE

| **Analysis** | | VPH in Soil |
|---|---|---|
| **Lab Sample ID** | | 620-11778-3 |
| **Field Sample ID** | | LM-SO-UST04-053023 |
| **Sample Type** | | N |
| **Parent Sample ID** | | |
| **Sample Date** | **Units** | 05/30/23 |
| Benzene | mg/kg | 0.08 U |
| C5-C8 Aliphatics (adjusted) | mg/kg | 1.6 U |
| C5-C8 Aliphatics (unadjusted) | mg/kg | 1.6 U |
| C9-C10 Aromatics | mg/kg | 1.6 U |
| C9-C12 Aliphatics (adjusted) | mg/kg | 1.6 U |
| C9-C12 Aliphatics (unadjusted) | mg/kg | 1.6 U |
| Ethylbenzene | mg/kg | 0.08 U |
| m,p-Xylene | mg/kg | 0.16 U |
| Methyl tert-butyl ether | mg/kg | 0.016 U |
| Naphthalene | mg/kg | 0.32 U |
| o-Xylene | mg/kg | 0.08 U |
| Toluene | mg/kg | 0.08 U |
| Xylene (total) | mg/kg | 0.24 U |

**Data Review Qualification Actions**
**Former L&M Service Station**
**SDG 620117782**

| Parameter | Analyte | Samples | Evaluation Criteria | Action Needed | Comments |
|---|---|---|---|---|---|
| **MassDEP-VPH** | | | | | |
| | Qualification of the data was not required. | | | | |
| **MassDEP-EPH** | | | | | |
| | Qualification of the data was not required. | | | | |
| **MCP-14 Metals / Mercury** | | | | | |
| | Nickel, zinc | LM-SO-UST04-053023 | LCS/LCSD recovery | J- | |
| | Antimony, cadmium, selenium | LM-SO-UST04-053023 | LCS/LCSD recovery | UJ | |

**Tier 1/Stage 2A Data Review Checklist**

**Project:** Former L&M Service Station, Lunenburg, Massachusetts
Targeted Brownfields Assessment (TBA)
**Project #:** S00001.05
**Case#:** NA
**Date:** 09/10/2023
**Methods:** Volatile Petroleum Hydrocarbons (VPH) (MassDEP-VPH)
Extractable Petroleum Hydrocarbons (EPH) (MassDEP-EPH)
Massachusetts Contingency Plan (MCP) Metals (MCP-14 Metals by 6010D/7470A)

**Laboratory:** Eurofins New England Laboratory, North Kingstown, RI
**SDG:** 620117782
**Reviewer:** Linda Terzis

1. **Case Narrative and Data Package Completeness (COC and Analyte List Review)**
One (1) soil sample was listed on the COC for SDG 620117782. The sample was collected on 05/30/2023 and received at the Eurofins New England Laboratory on 05/31/2023 at a maximum temperature of 4.6 °C.

| Sample ID | Laboratory ID | Analyses |
|---|---|---|
| LM-SO-UST04-053023 | 620-11778-3 | MassDEP-VPH, MassDEP-EPH, MCP-14 Metals/Mercury |

Note that the COC includes additional samples and analyses than those listed above. Results for the analyses associated with the additional samples (LM-SO-SD01-053123 and LM-SO-SD02-053123) are located in SDG 620117781. The review for this SDG (620117782) is limited to the VPH, EPH, and the MCP-14 metals analytical results for sample LM-SO-UST04-053023.

The data were evaluated using the site-specific Quality Assurance Project Plan Addendum (QAPPA) (dated May 2023) and the Program QAPP (dated October 2022). Both were prepared by KGSNE, LLC. The QAPPA appends and incorporates by reference the procedures and quality control measures detailed in the Program QAPP (October 2022). Therefore, site data for this SDG were evaluated using both the QAPPA of May 2023 and the Program QAPP dated October 2022. The Massachusetts Compendium of Analytical Methods (CAM) and/or SW-846 Methods were used to perform the analyses. Therefore, site data were also evaluated using CAM quality control (QC) limits, where applicable.

The analyte lists reported by the laboratory were compared to the required analyte lists per Table 3 (soil) in the QAPPA (May 2023) for the site. Results for all requested analytes were reported and no inconsistencies were noted.

2. **Holding Time and Sample Preservation Compliance**

Receipt temperatures are acceptable (≤ 6°), as specified in the QAPPA (May 2023).

MassDEP-VPH: Holding time criteria (analyzed within 14 days) met.



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MassDEP-EPH: Holding time criteria (extracted within 14 days and analyzed within 40 days of extraction) met.

MCP-14 Metals/Mercury: Holding time criteria (analyzed within 28 days for mercury; within 180 days for all other analytes) were met.

**3. Calibration Issues**

Not assessed for S2AVM data review.

**4. Laboratory and Field Blanks**

MassDEP-VPH: Results for the VPH laboratory method blank were non-detect. No blank actions are required.

MassDEP-EPH: Results for the EPH laboratory method blank were non-detect. No blank actions are required.

MCP-14 Metals/Mercury: Results for the metals and mercury method blanks were non-detect. No blank actions are required.

An equipment blank was not submitted with the samples of this SDG. No actions are required.

**5. Interference Check Sample (metals only)**

Not assessed for S2AVM data review.

**6. Surrogates**

The Program QAPP (October 2022) was used to evaluate site data for surrogate recovery. If no Program QAPP-specific recovery limits were available for a surrogate, the MCP CAM recovery limits were used.

MassDEP-VPH: Percent surrogate recoveries for the FID and PID surrogate 2,5-dibromotoluene exceeded the Program QAPP limits of 70-130% (158% and 148%, respectively). Sample results for VPH target analytes and all hydrocarbon ranges are non-detect. Based on the CAM VPH method and the National Functional Guidelines (2020) for VOCs, the non-detect results in sample LM-SO-UST04-053023 (620-11778-3) are accepted unqualified since the potential bias is high.

MassDEP-EPH: Percent surrogate recoveries for the sample were within the Program QAPP limits of 40-140%. No actions are required.

MCP-14 Metals/Mercury: Not applicable for this analysis.

**7. Laboratory Control Samples**

MassDEP-VPH: The percent recoveries in the VPH LCS/LCSD pair met the Program QAPP recovery limits of 70-130% and RPDs ≤ 25%. No actions are required.

MassDEP-EPH: The percent recoveries in the EPH LCS/LCSD pairs met the Program QAPP recovery limits of 40-140%. RPDs met the QAPP limit of ≤ 25%. No actions are required.

MCP-14 Metals/Mercury: Percent recoveries and RPDs for the metals and mercury LCS/LCSD analyses were within the QAPP limits of 80-120% and ≤ 30%, respectively, except for the recoveries of antimony, cadmium, nickel, selenium, and zinc, which were recovered below 80-120% in the LCS and/or LCSD analyses. Based on the NFGs (2020), the detected results for nickel and zinc are qualified as estimated with a potential low bias (J-) and the non-detect results for antimony, cadmium, and selenium are qualified as estimated (UJ) in sample LM-SO-UST04-053023 (620-11778-3) due to the low recoveries.

**8. Matrix Spikes**

Based on the Region I EPA New England Environmental Data Review Supplement (Region I Supplement, 2020), MS/MSD qualifications are applied to all field samples with similar matrix, unless otherwise noted.

MS/MSD analyses were not requested for the sample of this SDG. No actions are required.

**9. Laboratory Duplicates (metals only)**

MCP-14 Metals/Mercury: A laboratory duplicate analysis was not required for this SDG. No actions are required.

**10. Serial Dilution (metals only)**

A serial dilution analysis was not performed for this SDG. No actions are required.

**11. Field Duplicate Precision**

Acceptable field duplicate precision is an RPD of ≤ 50% for results > 5x RL and an absolute difference < 4x RL for results < 5x RL, based on the EPA Region I Supplement (2020).

Based on the Region I Supplement (2020), qualifications are applied to all field samples with similar matrix, unless otherwise indicated.

A field duplicate sample was not collected with the sample of this SDG. No action is required.

**12. Internal Standards**

Not assessed for S2AVM data review.

**13. Dual Column Precision (PCBs only)**

Not applicable for this SDG.

**14. Performance Evaluation Samples**

Performance Evaluation (PE) samples were not included in this SDG.

**15. Reporting Limits**

RLs for non-detect results for VPH, EPH, and metals/mercury analyses met the project action levels (PALs) for the site.

## 16. Other

EPA Region I Supplement (2020) criterion for percent solids content (> 30%) was met for the soil sample.

Overall bias is considered indeterminate when cumulative nonconformances do not show a consistent bias or in cases of the presence of conflicting high and low biases.

10778

620-11778 Chain of Custody

# Chain of Custody Record

eurofins | Environment Testing

| | | | | |
|---|---|---|---|---|
| | Sampler: S Stone | Lab PM | Carrier Tracking No(s) | COC No: 620-10175-1337 3 |
| Bridget Fortier | Phone | E-Mail: arcyn@nobis-group.com | State of Origin: MA | Page: Page ~~3 of 3~~ 1 of 1 |
| Company: Nobis Engineering, Inc | PWSID | | | Job #: |

**Analysis Requested**

| | |
|---|---|
| Address: 585 Middlesex Street | Due Date Requested: 6/2-23 |
| City: Lowell | TAT Requested (days): LM-SO-SD01-053123 ]2 day; LM-SO-SD02-053123 |
| State, Zip: MA, 01851 | Compliance Project: Δ Yes Δ No |
| Phone | PO #: |
| Email: bfortier@nobis-group com | WO #: |
| Project Name: Former L&M | Project #: 50000105/400 |
| Site: Former L&M | SSOW#: |

**Preservation Codes:**

A - HCL; B - NaOH; C - Zn Acetate; D - Nitric Acid; E - NaHSO4; F - MeOH; G - Amchlor; H - Ascorbic Acid; I - Ice; J - DI Water; K - EDTA; L - EDA; M - Hexane; N - None; O - AsNaO2; P - Na2O4S; Q - Na2SO3; R - Na2S2O3; S - H2SO4; T - TSP Dodecahydrate; U - Acetone; V - MCAA; W - pH 4-5; Y - Trizma; Z - other (specify)

Other:

| Sample Identification | Sample Date | Sample Time | Sample Type (C=Comp, G=grab) | Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air) | Field Filtered Sample (Yes or No) | Perform MS/MSD (Yes or No) | VPH | EPH, metals, % moisture | VOCs LL | VOCs HL | SVOCs, pest, PCBs & TPH | TCLP RCRA | Spec. Cond, Flashpoint, Reactivity | Total Number of containers | Special Instructions/Note: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preservation Code: | | X | X | F | | J | F | | | | X | |
| | | | | Water | | | | | | | | | | | |
| | | | | Solid | | | | | | | | | | | |
| | | | | Water | | | | | | | | | | | |
| LM-SO-SD01-053123 | 5-31-23 | 750 | C | Soil | | | | | X | X | X | X | X | | |
| LM-SO-SD02-053123 | 5-31-23 | 810 | C | Soil | | | | | X | X | X | X | X | | |
| LM-SO-UST04-053023 | 5-30-23 | 1330 | C | Soil | | | X | X | | | | | | | |

Page 23 of 24 5 02 03

**Possible Hazard Identification**

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

**Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)**

☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested I, II, III, IV, Other (specify): EDD PDF and Email

Special Instructions/QC Requirements: MCP CAM Methods; LM-SO-UST04-053023 is standard TAT

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Relinquished by: | Date/Time: 5-31-23 10:55 | Company | Received by: | Date/Time: 5/31/23 10:55 | Company |
| Relinquished by: | Date/Time: 5/31/23 | Company | Received by: | Date/Time: 5/31/23 13:30 | Company |
| Relinquished by: | Date/Time: | Company | Received by: | Date/Time: | Company |

Custody Seals Intact: Δ Yes Δ No | Custody Seal No..

Cooler Temperature(s) °C and Other Remarks: 0.9 +0.2 -0.6 IR#5

6/7/2023

Ver: 06/08/2021

eurofins | Environment Testing

# ANALYTICAL REPORT

## PREPARED FOR

Attn: Adam Roy
Nobis Engineering, Inc.
585 Middlesex Street
Lowell, Massachusetts 01851

Generated 6/7/2023 4:13:14 PM

## JOB DESCRIPTION

Former L&M - Lunenburg MA

## JOB NUMBER

620-11778-2

Eurofins New England
646 Camp Ave
North Kingstown RI 02852

See page two for job notes and contact information.



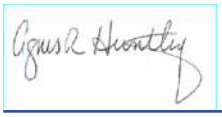
myEOL

## Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northeast, LLC Project Manager.

## Authorization



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Authorized for release by
Agnes Huntley, Project Manager
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(401)372-3482

# Table of Contents

Cover Page . . . . . 1
Table of Contents . . . . . 3
Definitions/Glossary . . . . . 4
Case Narrative . . . . . 5
Detection Summary . . . . . 6
Client Sample Results . . . . . 7
Surrogate Summary . . . . . 9
QC Sample Results . . . . . 10
QC Association Summary . . . . . 16
Lab Chronicle . . . . . 18
Certification Summary . . . . . 19
Method Summary . . . . . 21
Sample Summary . . . . . 22
Chain of Custody . . . . . 23
Receipt Checklists . . . . . 24

# Definitions/Glossary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11778-2

## Qualifiers

### GC VOA

| Qualifier | Qualifier Description |
|---|---|
| S1+ | Surrogate recovery exceeds control limits, high biased. |

### Metals

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

## Glossary

| Abbreviation | These commonly used abbreviations may or may not be present in this report. |
|---|---|
| ¤ | Listed under the "D" column to designate that the result is reported on a dry weight basis |
| %R | Percent Recovery |
| CFL | Contains Free Liquid |
| CFU | Colony Forming Unit |
| CNF | Contains No Free Liquid |
| DER | Duplicate Error Ratio (normalized absolute difference) |
| Dil Fac | Dilution Factor |
| DL | Detection Limit (DoD/DOE) |
| DL, RA, RE, IN | Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample |
| DLC | Decision Level Concentration (Radiochemistry) |
| EDL | Estimated Detection Limit (Dioxin) |
| LOD | Limit of Detection (DoD/DOE) |
| LOQ | Limit of Quantitation (DoD/DOE) |
| MCL | EPA recommended "Maximum Contaminant Level" |
| MDA | Minimum Detectable Activity (Radiochemistry) |
| MDC | Minimum Detectable Concentration (Radiochemistry) |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| MPN | Most Probable Number |
| MQL | Method Quantitation Limit |
| NC | Not Calculated |
| ND | Not Detected at the reporting limit (or MDL or EDL if shown) |
| NEG | Negative / Absent |
| POS | Positive / Present |
| PQL | Practical Quantitation Limit |
| PRES | Presumptive |
| QC | Quality Control |
| RER | Relative Error Ratio (Radiochemistry) |
| RL | Reporting Limit or Requested Limit (Radiochemistry) |
| RPD | Relative Percent Difference, a measure of the relative difference between two points |
| TEF | Toxicity Equivalent Factor (Dioxin) |
| TEQ | Toxicity Equivalent Quotient (Dioxin) |
| TNTC | Too Numerous To Count |

# Case Narrative

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11778-2

## Job ID: 620-11778-2

### Laboratory: Eurofins New England

**Narrative**

**Job Narrative**
**620-11778-2**

**Receipt**
The samples were received on 5/31/2023 1:30 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.6º C.

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

**GC VOA**
Method MAVPH2.1: Surrogate recoveries for the following sample was outside the upper control limit: LM-SO-UST04-053023 (620-11778-3). This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed. In addition to the provided sample vials containing more than 5 grams of soil sample per 5mL of methanol (notated in the prep batch), sample matrix is suspected due to some visible noise in the baseline.

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

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

**Metals**
Method 7471A: The matrix duplicate (DU) recoveries and precision for preparation batch 620-23147 and analytical batch 620-23226 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory sample control duplicate (LCS/LCSD) precision was within acceptance limits.

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

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

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

# Detection Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11778-2

## Client Sample ID: LM-SO-UST04-053023

## Lab Sample ID: 620-11778-3

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | 240 | | 7.2 | 7.2 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| C19-C36 Aliphatics | 96 | | 7.2 | 7.2 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics | 250 | | 7.2 | 7.2 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics (Adjusted) | 240 | | 7.2 | 7.2 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| Naphthalene | 0.48 | | 0.36 | 0.36 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| 2-Methylnaphthalene | 4.8 | | 0.36 | 0.36 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| Fluorene | 0.69 | | 0.36 | 0.36 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| Phenanthrene | 0.46 | | 0.36 | 0.36 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| Fluoranthene | 0.54 | | 0.36 | 0.36 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| Arsenic | 4.5 | | 2.6 | 0.33 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Barium | 35 | | 1.7 | 0.20 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Chromium | 10 | | 1.7 | 0.23 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Lead | 56 | | 2.6 | 0.37 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Nickel | 8.2 | | 1.7 | 0.20 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Vanadium | 11 | | 2.6 | 0.46 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Zinc | 36 | | 5.2 | 1.3 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Mercury | 0.040 | J | 0.052 | 0.0086 | mg/Kg | 1 | ☼ | 7471A | Total/NA |

This Detection Summary does not include radiochemical test results.

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11778-2

## Client Sample ID: LM-SO-UST04-053023

**Date Collected: 05/30/23 13:30**
**Date Received: 05/31/23 13:30**

## Lab Sample ID: 620-11778-3

**Matrix: Solid**
**Percent Solids: 90.9**

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 1.6 | 1.6 | mg/Kg | ☼ | 06/06/23 10:47 | 06/06/23 21:56 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 1.6 | 1.6 | mg/Kg | ☼ | 06/06/23 10:47 | 06/06/23 21:56 | 1 |
| C9-C10 Aromatics | ND | | 1.6 | 1.6 | mg/Kg | ☼ | 06/06/23 10:47 | 06/06/23 21:56 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 1.6 | 1.6 | mg/Kg | ☼ | 06/06/23 10:47 | 06/06/23 21:56 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 1.6 | 1.6 | mg/Kg | ☼ | 06/06/23 10:47 | 06/06/23 21:56 | 1 |
| Benzene | ND | | 0.080 | 0.080 | mg/Kg | ☼ | 06/06/23 10:47 | 06/06/23 21:56 | 1 |
| Ethylbenzene | ND | | 0.080 | 0.080 | mg/Kg | ☼ | 06/06/23 10:47 | 06/06/23 21:56 | 1 |
| Methyl tert-butyl ether | ND | | 0.016 | 0.016 | mg/Kg | ☼ | 06/06/23 10:47 | 06/06/23 21:56 | 1 |
| Naphthalene | ND | | 0.32 | 0.32 | mg/Kg | ☼ | 06/06/23 10:47 | 06/06/23 21:56 | 1 |
| Toluene | ND | | 0.080 | 0.080 | mg/Kg | ☼ | 06/06/23 10:47 | 06/06/23 21:56 | 1 |
| m,p-Xylene | ND | | 0.16 | 0.16 | mg/Kg | ☼ | 06/06/23 10:47 | 06/06/23 21:56 | 1 |
| o-Xylene | ND | | 0.080 | 0.080 | mg/Kg | ☼ | 06/06/23 10:47 | 06/06/23 21:56 | 1 |
| Xylenes, Total | ND | | 0.24 | 0.24 | mg/Kg | ☼ | 06/06/23 10:47 | 06/06/23 21:56 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *158* | *S1+* | *70 - 130* | *06/06/23 10:47* | *06/06/23 21:56* | *1* |
| *2,5-Dibromotoluene (pid)* | *148* | *S1+* | *70 - 130* | *06/06/23 10:47* | *06/06/23 21:56* | *1* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C9-C18 Aliphatics** | **240** | | 7.2 | 7.2 | mg/Kg | ☼ | 06/01/23 08:31 | 06/05/23 21:06 | 1 |
| **C19-C36 Aliphatics** | **96** | | 7.2 | 7.2 | mg/Kg | ☼ | 06/01/23 08:31 | 06/05/23 21:06 | 1 |
| **C11-C22 Aromatics** | **250** | | 7.2 | 7.2 | mg/Kg | ☼ | 06/01/23 08:31 | 06/05/23 21:06 | 1 |
| **C11-C22 Aromatics (Adjusted)** | **240** | | 7.2 | 7.2 | mg/Kg | ☼ | 06/01/23 08:31 | 06/05/23 21:06 | 1 |
| **Naphthalene** | **0.48** | | 0.36 | 0.36 | mg/Kg | ☼ | 06/01/23 08:31 | 06/05/23 21:06 | 1 |
| **2-Methylnaphthalene** | **4.8** | | 0.36 | 0.36 | mg/Kg | ☼ | 06/01/23 08:31 | 06/05/23 21:06 | 1 |
| Acenaphthylene | ND | | 0.36 | 0.36 | mg/Kg | ☼ | 06/01/23 08:31 | 06/05/23 21:06 | 1 |
| Acenaphthene | ND | | 0.36 | 0.36 | mg/Kg | ☼ | 06/01/23 08:31 | 06/05/23 21:06 | 1 |
| **Fluorene** | **0.69** | | 0.36 | 0.36 | mg/Kg | ☼ | 06/01/23 08:31 | 06/05/23 21:06 | 1 |
| **Phenanthrene** | **0.46** | | 0.36 | 0.36 | mg/Kg | ☼ | 06/01/23 08:31 | 06/05/23 21:06 | 1 |
| Anthracene | ND | | 0.36 | 0.36 | mg/Kg | ☼ | 06/01/23 08:31 | 06/05/23 21:06 | 1 |
| **Fluoranthene** | **0.54** | | 0.36 | 0.36 | mg/Kg | ☼ | 06/01/23 08:31 | 06/05/23 21:06 | 1 |
| Pyrene | ND | | 0.36 | 0.36 | mg/Kg | ☼ | 06/01/23 08:31 | 06/05/23 21:06 | 1 |
| Benzo[a]anthracene | ND | | 0.36 | 0.36 | mg/Kg | ☼ | 06/01/23 08:31 | 06/05/23 21:06 | 1 |
| Chrysene | ND | | 0.36 | 0.36 | mg/Kg | ☼ | 06/01/23 08:31 | 06/05/23 21:06 | 1 |
| Benzo[b]fluoranthene | ND | | 0.36 | 0.36 | mg/Kg | ☼ | 06/01/23 08:31 | 06/05/23 21:06 | 1 |
| Benzo[k]fluoranthene | ND | | 0.36 | 0.36 | mg/Kg | ☼ | 06/01/23 08:31 | 06/05/23 21:06 | 1 |
| Benzo[a]pyrene | ND | | 0.36 | 0.36 | mg/Kg | ☼ | 06/01/23 08:31 | 06/05/23 21:06 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.36 | 0.36 | mg/Kg | ☼ | 06/01/23 08:31 | 06/05/23 21:06 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.36 | 0.36 | mg/Kg | ☼ | 06/01/23 08:31 | 06/05/23 21:06 | 1 |
| Benzo[g,h,i]perylene | ND | | 0.36 | 0.36 | mg/Kg | ☼ | 06/01/23 08:31 | 06/05/23 21:06 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *47* | | *40 - 140* | *06/01/23 08:31* | *06/05/23 21:06* | *1* |
| *o-Terphenyl (Surr)* | *55* | | *40 - 140* | *06/01/23 08:31* | *06/05/23 21:06* | *1* |
| *2-Fluorobiphenyl (Surr)* | *101* | | *40 - 140* | *06/01/23 08:31* | *06/05/23 21:06* | *1* |

### Method: SW846 6010D - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 8.6 | 0.65 | mg/Kg | ☼ | 05/31/23 14:15 | 06/01/23 13:06 | 1 |

## Client Sample ID: LM-SO-UST04-053023

**Date Collected: 05/30/23 13:30**
**Date Received: 05/31/23 13:30**

## Lab Sample ID: 620-11778-3

**Matrix: Solid**
**Percent Solids: 90.9**

### Method: SW846 6010D - Metals (ICP) (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Arsenic** | **4.5** | | 2.6 | 0.33 | mg/Kg | ☼ | 05/31/23 14:15 | 06/01/23 13:06 | 1 |
| **Barium** | **35** | | 1.7 | 0.20 | mg/Kg | ☼ | 05/31/23 14:15 | 06/01/23 13:06 | 1 |
| Beryllium | ND | | 0.86 | 0.043 | mg/Kg | ☼ | 05/31/23 14:15 | 06/01/23 13:06 | 1 |
| Cadmium | ND | | 0.86 | 0.045 | mg/Kg | ☼ | 05/31/23 14:15 | 06/01/23 13:06 | 1 |
| **Chromium** | **10** | | 1.7 | 0.23 | mg/Kg | ☼ | 05/31/23 14:15 | 06/01/23 13:06 | 1 |
| **Lead** | **56** | | 2.6 | 0.37 | mg/Kg | ☼ | 05/31/23 14:15 | 06/01/23 13:06 | 1 |
| **Nickel** | **8.2** | | 1.7 | 0.20 | mg/Kg | ☼ | 05/31/23 14:15 | 06/01/23 13:06 | 1 |
| Selenium | ND | | 2.6 | 0.49 | mg/Kg | ☼ | 05/31/23 14:15 | 06/01/23 13:06 | 1 |
| Silver | ND | | 2.6 | 0.28 | mg/Kg | ☼ | 05/31/23 14:15 | 06/01/23 13:06 | 1 |
| Thallium | ND | | 5.2 | 1.9 | mg/Kg | ☼ | 05/31/23 14:15 | 06/01/23 13:06 | 1 |
| **Vanadium** | **11** | | 2.6 | 0.46 | mg/Kg | ☼ | 05/31/23 14:15 | 06/01/23 13:06 | 1 |
| **Zinc** | **36** | | 5.2 | 1.3 | mg/Kg | ☼ | 05/31/23 14:15 | 06/01/23 13:06 | 1 |

### Method: SW846 7471A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.040** | **J** | 0.052 | 0.0086 | mg/Kg | ☼ | 06/01/23 09:40 | 06/02/23 12:18 | 1 |

### General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Percent Moisture (EPA Moisture)** | **9.1** | | 0.1 | 0.1 | % | | | 06/01/23 11:46 | 1 |
| **Percent Solids (EPA Moisture)** | **90.9** | | 0.1 | 0.1 | % | | | 06/01/23 11:46 | 1 |

# Surrogate Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11778-2

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

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

| | | Percent Surrogate Recovery (Acceptance Limits) | |
|---|---|---|---|
| | | 25DBTf1 | 25DBTp1 |
| Lab Sample ID | Client Sample ID | (70-130) | (70-130) |
| 620-11778-3 | LM-SO-UST04-053023 | 158 S1+ | 148 S1+ |
| LCS 620-23366/1-A | Lab Control Sample | 99 | 98 |
| LCSD 620-23366/2-A | Lab Control Sample Dup | 99 | 98 |
| MB 620-23366/3-A | Method Blank | 94 | 93 |

**Surrogate Legend**

25DBTf = 2,5-Dibromotoluene (fid)
25DBTp = 2,5-Dibromotoluene (pid)

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

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

| | | Percent Surrogate Recovery (Acceptance Limits) | | |
|---|---|---|---|---|
| | | 1COD1 | OTPH1 | FBP1 |
| Lab Sample ID | Client Sample ID | (40-140) | (40-140) | (40-140) |
| 620-11778-3 | LM-SO-UST04-053023 | 47 | 55 | 101 |
| LCS 620-23135/2-B | Lab Control Sample | 54 | 60 | 115 |
| LCSD 620-23135/3-B | Lab Control Sample Dup | 62 | 63 | 112 |
| MB 620-23135/1-B | Method Blank | 49 | 50 | 103 |

**Surrogate Legend**

1COD = 1-Chlorooctadecane (Surr)
OTPH = o-Terphenyl (Surr)
FBP = 2-Fluorobiphenyl (Surr)

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

**Lab Sample ID: MB 620-23366/3-A**
**Matrix: Solid**
**Analysis Batch: 23320**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 23366**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 5.0 | 5.0 | mg/Kg | | 06/06/23 10:47 | 06/06/23 21:25 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 5.0 | 5.0 | mg/Kg | | 06/06/23 10:47 | 06/06/23 21:25 | 1 |
| C9-C10 Aromatics | ND | | 5.0 | 5.0 | mg/Kg | | 06/06/23 10:47 | 06/06/23 21:25 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 5.0 | 5.0 | mg/Kg | | 06/06/23 10:47 | 06/06/23 21:25 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 5.0 | 5.0 | mg/Kg | | 06/06/23 10:47 | 06/06/23 21:25 | 1 |
| Benzene | ND | | 0.25 | 0.25 | mg/Kg | | 06/06/23 10:47 | 06/06/23 21:25 | 1 |
| Ethylbenzene | ND | | 0.25 | 0.25 | mg/Kg | | 06/06/23 10:47 | 06/06/23 21:25 | 1 |
| Methyl tert-butyl ether | ND | | 0.050 | 0.050 | mg/Kg | | 06/06/23 10:47 | 06/06/23 21:25 | 1 |
| Naphthalene | ND | | 1.0 | 1.0 | mg/Kg | | 06/06/23 10:47 | 06/06/23 21:25 | 1 |
| Toluene | ND | | 0.25 | 0.25 | mg/Kg | | 06/06/23 10:47 | 06/06/23 21:25 | 1 |
| m,p-Xylene | ND | | 0.50 | 0.50 | mg/Kg | | 06/06/23 10:47 | 06/06/23 21:25 | 1 |
| o-Xylene | ND | | 0.25 | 0.25 | mg/Kg | | 06/06/23 10:47 | 06/06/23 21:25 | 1 |
| Xylenes, Total | ND | | 0.75 | 0.75 | mg/Kg | | 06/06/23 10:47 | 06/06/23 21:25 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *94* | | *70 - 130* | *06/06/23 10:47* | *06/06/23 21:25* | *1* |
| *2,5-Dibromotoluene (pid)* | *93* | | *70 - 130* | *06/06/23 10:47* | *06/06/23 21:25* | *1* |

**Lab Sample ID: LCS 620-23366/1-A**
**Matrix: Solid**
**Analysis Batch: 23320**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 23366**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | 1.00 | ND | | mg/Kg | | 117 | 70 - 130 |
| C5-C8 Aliphatics (unadjusted) | 3.00 | ND | | mg/Kg | | 102 | 70 - 130 |
| C9-C12 Aliphatics (unadjusted) | 3.00 | ND | | mg/Kg | | 99 | 70 - 130 |
| Benzene | 1.00 | 1.06 | | mg/Kg | | 106 | 70 - 130 |
| Ethylbenzene | 1.00 | 1.06 | | mg/Kg | | 106 | 70 - 130 |
| Methyl tert-butyl ether | 1.00 | 1.09 | | mg/Kg | | 109 | 70 - 130 |
| Naphthalene | 1.00 | 1.04 | | mg/Kg | | 104 | 70 - 130 |
| Toluene | 1.00 | 1.06 | | mg/Kg | | 106 | 70 - 130 |
| m,p-Xylene | 2.00 | 2.14 | | mg/Kg | | 107 | 70 - 130 |
| o-Xylene | 1.00 | 1.03 | | mg/Kg | | 103 | 70 - 130 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *99* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *98* | | *70 - 130* |

**Lab Sample ID: LCSD 620-23366/2-A**
**Matrix: Solid**
**Analysis Batch: 23320**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 23366**

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | 1.00 | ND | | mg/Kg | | 113 | 70 - 130 | 3 | 25 |
| C5-C8 Aliphatics (unadjusted) | 3.00 | ND | | mg/Kg | | 101 | 70 - 130 | 1 | 25 |
| C9-C12 Aliphatics (unadjusted) | 3.00 | ND | | mg/Kg | | 97 | 70 - 130 | 2 | 25 |
| Benzene | 1.00 | 1.05 | | mg/Kg | | 105 | 70 - 130 | 2 | 25 |
| Ethylbenzene | 1.00 | 1.03 | | mg/Kg | | 103 | 70 - 130 | 4 | 25 |

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: LCSD 620-23366/2-A**
**Matrix: Solid**
**Analysis Batch: 23320**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 23366**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Methyl tert-butyl ether | | | 1.00 | 1.05 | | mg/Kg | | 105 | 70 - 130 | 4 | 25 |
| Naphthalene | | | 1.00 | 1.04 | | mg/Kg | | 104 | 70 - 130 | 0 | 25 |
| Toluene | | | 1.00 | 1.04 | | mg/Kg | | 104 | 70 - 130 | 2 | 25 |
| m,p-Xylene | | | 2.00 | 2.06 | | mg/Kg | | 103 | 70 - 130 | 4 | 25 |
| o-Xylene | | | 1.00 | 1.00 | | mg/Kg | | 100 | 70 - 130 | 3 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *99* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *98* | | *70 - 130* |

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

**Lab Sample ID: MB 620-23135/1-B**
**Matrix: Solid**
**Analysis Batch: 23246**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 23135**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 6.7 | 6.7 | mg/Kg | | 06/01/23 08:31 | 06/05/23 18:39 | 1 |
| C19-C36 Aliphatics | ND | | 6.7 | 6.7 | mg/Kg | | 06/01/23 08:31 | 06/05/23 18:39 | 1 |
| C11-C22 Aromatics | ND | | 6.7 | 6.7 | mg/Kg | | 06/01/23 08:31 | 06/05/23 18:39 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 6.7 | 6.7 | mg/Kg | | 06/01/23 08:31 | 06/05/23 18:39 | 1 |
| Naphthalene | ND | | 0.33 | 0.33 | mg/Kg | | 06/01/23 08:31 | 06/05/23 18:39 | 1 |
| 2-Methylnaphthalene | ND | | 0.33 | 0.33 | mg/Kg | | 06/01/23 08:31 | 06/05/23 18:39 | 1 |
| Acenaphthylene | ND | | 0.33 | 0.33 | mg/Kg | | 06/01/23 08:31 | 06/05/23 18:39 | 1 |
| Acenaphthene | ND | | 0.33 | 0.33 | mg/Kg | | 06/01/23 08:31 | 06/05/23 18:39 | 1 |
| Fluorene | ND | | 0.33 | 0.33 | mg/Kg | | 06/01/23 08:31 | 06/05/23 18:39 | 1 |
| Phenanthrene | ND | | 0.33 | 0.33 | mg/Kg | | 06/01/23 08:31 | 06/05/23 18:39 | 1 |
| Anthracene | ND | | 0.33 | 0.33 | mg/Kg | | 06/01/23 08:31 | 06/05/23 18:39 | 1 |
| Fluoranthene | ND | | 0.33 | 0.33 | mg/Kg | | 06/01/23 08:31 | 06/05/23 18:39 | 1 |
| Pyrene | ND | | 0.33 | 0.33 | mg/Kg | | 06/01/23 08:31 | 06/05/23 18:39 | 1 |
| Benzo[a]anthracene | ND | | 0.33 | 0.33 | mg/Kg | | 06/01/23 08:31 | 06/05/23 18:39 | 1 |
| Chrysene | ND | | 0.33 | 0.33 | mg/Kg | | 06/01/23 08:31 | 06/05/23 18:39 | 1 |
| Benzo[b]fluoranthene | ND | | 0.33 | 0.33 | mg/Kg | | 06/01/23 08:31 | 06/05/23 18:39 | 1 |
| Benzo[k]fluoranthene | ND | | 0.33 | 0.33 | mg/Kg | | 06/01/23 08:31 | 06/05/23 18:39 | 1 |
| Benzo[a]pyrene | ND | | 0.33 | 0.33 | mg/Kg | | 06/01/23 08:31 | 06/05/23 18:39 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.33 | 0.33 | mg/Kg | | 06/01/23 08:31 | 06/05/23 18:39 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.33 | 0.33 | mg/Kg | | 06/01/23 08:31 | 06/05/23 18:39 | 1 |
| Benzo[g,h,i]perylene | ND | | 0.33 | 0.33 | mg/Kg | | 06/01/23 08:31 | 06/05/23 18:39 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *49* | | *40 - 140* | *06/01/23 08:31* | *06/05/23 18:39* | *1* |
| *o-Terphenyl (Surr)* | *50* | | *40 - 140* | *06/01/23 08:31* | *06/05/23 18:39* | *1* |
| *2-Fluorobiphenyl (Surr)* | *103* | | *40 - 140* | *06/01/23 08:31* | *06/05/23 18:39* | *1* |

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: LCS 620-23135/2-B**
**Matrix: Solid**
**Analysis Batch: 23246**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 23135**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | | | 8.00 | ND | | mg/Kg | | 42 | 40 - 140 | | |
| C19-C36 Aliphatics | | | 10.7 | ND | | mg/Kg | | 49 | 40 - 140 | | |
| C11-C22 Aromatics | | | 22.7 | 18.0 | | mg/Kg | | 79 | 40 - 140 | | |
| Naphthalene | | | 1.33 | 0.842 | | mg/Kg | | 63 | 40 - 140 | | |
| 2-Methylnaphthalene | | | 1.33 | 0.826 | | mg/Kg | | 62 | 40 - 140 | | |
| Acenaphthylene | | | 1.33 | 0.800 | | mg/Kg | | 60 | 40 - 140 | | |
| Acenaphthene | | | 1.33 | 0.781 | | mg/Kg | | 59 | 40 - 140 | | |
| Fluorene | | | 1.33 | 0.772 | | mg/Kg | | 58 | 40 - 140 | | |
| Phenanthrene | | | 1.33 | 0.691 | | mg/Kg | | 52 | 40 - 140 | | |
| Anthracene | | | 1.33 | 0.821 | | mg/Kg | | 62 | 40 - 140 | | |
| Fluoranthene | | | 1.33 | 1.30 | | mg/Kg | | 97 | 40 - 140 | | |
| Pyrene | | | 1.33 | 0.911 | | mg/Kg | | 68 | 40 - 140 | | |
| Benzo[a]anthracene | | | 1.33 | 0.790 | | mg/Kg | | 59 | 40 - 140 | | |
| Chrysene | | | 1.33 | 0.984 | | mg/Kg | | 74 | 40 - 140 | | |
| Benzo[b]fluoranthene | | | 1.33 | 0.905 | | mg/Kg | | 68 | 40 - 140 | | |
| Benzo[k]fluoranthene | | | 1.33 | 1.25 | | mg/Kg | | 93 | 40 - 140 | | |
| Benzo[a]pyrene | | | 1.33 | 1.12 | | mg/Kg | | 84 | 40 - 140 | | |
| Indeno[1,2,3-cd]pyrene | | | 1.33 | 0.896 | | mg/Kg | | 67 | 40 - 140 | | |
| Dibenz(a,h)anthracene | | | 1.33 | 0.946 | | mg/Kg | | 71 | 40 - 140 | | |
| Benzo[g,h,i]perylene | | | 1.33 | 1.18 | | mg/Kg | | 88 | 40 - 140 | | |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *54* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *60* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *115* | | *40 - 140* |

**Lab Sample ID: LCSD 620-23135/3-B**
**Matrix: Solid**
**Analysis Batch: 23246**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 23135**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | | | 8.00 | ND | | mg/Kg | | 46 | 40 - 140 | 9 | 25 |
| C19-C36 Aliphatics | | | 10.7 | ND | | mg/Kg | | 51 | 40 - 140 | 6 | 25 |
| C11-C22 Aromatics | | | 22.7 | 17.2 | | mg/Kg | | 76 | 40 - 140 | 5 | 25 |
| Naphthalene | | | 1.33 | 0.900 | | mg/Kg | | 68 | 40 - 140 | 7 | 25 |
| 2-Methylnaphthalene | | | 1.33 | 0.883 | | mg/Kg | | 66 | 40 - 140 | 7 | 25 |
| Acenaphthylene | | | 1.33 | 0.880 | | mg/Kg | | 66 | 40 - 140 | 10 | 25 |
| Acenaphthene | | | 1.33 | 0.843 | | mg/Kg | | 63 | 40 - 140 | 8 | 25 |
| Fluorene | | | 1.33 | 0.841 | | mg/Kg | | 63 | 40 - 140 | 9 | 25 |
| Phenanthrene | | | 1.33 | 0.733 | | mg/Kg | | 55 | 40 - 140 | 6 | 25 |
| Anthracene | | | 1.33 | 0.907 | | mg/Kg | | 68 | 40 - 140 | 10 | 25 |
| Fluoranthene | | | 1.33 | 1.32 | | mg/Kg | | 99 | 40 - 140 | 2 | 25 |
| Pyrene | | | 1.33 | 0.950 | | mg/Kg | | 71 | 40 - 140 | 4 | 25 |
| Benzo[a]anthracene | | | 1.33 | 0.831 | | mg/Kg | | 62 | 40 - 140 | 5 | 25 |
| Chrysene | | | 1.33 | 1.02 | | mg/Kg | | 77 | 40 - 140 | 4 | 25 |
| Benzo[b]fluoranthene | | | 1.33 | 0.866 | | mg/Kg | | 65 | 40 - 140 | 4 | 25 |
| Benzo[k]fluoranthene | | | 1.33 | 1.03 | | mg/Kg | | 77 | 40 - 140 | 19 | 25 |
| Benzo[a]pyrene | | | 1.33 | 1.12 | | mg/Kg | | 84 | 40 - 140 | 0 | 25 |

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: LCSD 620-23135/3-B**
**Matrix: Solid**
**Analysis Batch: 23246**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 23135**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Indeno[1,2,3-cd]pyrene | | | 1.33 | 0.928 | | mg/Kg | | 70 | 40 - 140 | 4 | 25 |
| Dibenz(a,h)anthracene | | | 1.33 | 0.998 | | mg/Kg | | 75 | 40 - 140 | 5 | 25 |
| Benzo[g,h,i]perylene | | | 1.33 | 1.22 | | mg/Kg | | 91 | 40 - 140 | 3 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *62* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *63* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *112* | | *40 - 140* |

## Method: 6010D - Metals (ICP)

**Lab Sample ID: MB 620-23122/1-A**
**Matrix: Solid**
**Analysis Batch: 23183**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 23122**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 5.7 | 0.43 | mg/Kg | | 05/31/23 14:15 | 06/01/23 11:12 | 1 |
| Arsenic | ND | | 1.7 | 0.22 | mg/Kg | | 05/31/23 14:15 | 06/01/23 11:12 | 1 |
| Barium | ND | | 1.1 | 0.13 | mg/Kg | | 05/31/23 14:15 | 06/01/23 11:12 | 1 |
| Beryllium | ND | | 0.57 | 0.029 | mg/Kg | | 05/31/23 14:15 | 06/01/23 11:12 | 1 |
| Cadmium | ND | | 0.57 | 0.030 | mg/Kg | | 05/31/23 14:15 | 06/01/23 11:12 | 1 |
| Chromium | ND | | 1.1 | 0.15 | mg/Kg | | 05/31/23 14:15 | 06/01/23 11:12 | 1 |
| Lead | ND | | 1.7 | 0.24 | mg/Kg | | 05/31/23 14:15 | 06/01/23 11:12 | 1 |
| Nickel | ND | | 1.1 | 0.13 | mg/Kg | | 05/31/23 14:15 | 06/01/23 11:12 | 1 |
| Selenium | ND | | 1.7 | 0.33 | mg/Kg | | 05/31/23 14:15 | 06/01/23 11:12 | 1 |
| Silver | ND | | 1.7 | 0.19 | mg/Kg | | 05/31/23 14:15 | 06/01/23 11:12 | 1 |
| Thallium | ND | | 3.4 | 1.3 | mg/Kg | | 05/31/23 14:15 | 06/01/23 11:12 | 1 |
| Vanadium | ND | | 1.7 | 0.30 | mg/Kg | | 05/31/23 14:15 | 06/01/23 11:12 | 1 |
| Zinc | ND | | 3.4 | 0.88 | mg/Kg | | 05/31/23 14:15 | 06/01/23 11:12 | 1 |

**Lab Sample ID: LCDSRM 620-23122/3-A**
**Matrix: Solid**
**Analysis Batch: 23183**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 23122**

| Analyte | | | Spike Added | LCDSRM Result | LCDSRM Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | | | 232 | 72.0 | | mg/Kg | | 31.0 | 10.0 - 139.2 | 0 | 20 |
| Arsenic | | | 195 | 160 | | mg/Kg | | 82.2 | 65.6 - 122.1 | 4 | 20 |
| Barium | | | 321 | 286 | | mg/Kg | | 89.0 | 69.5 - 115.9 | 0 | 20 |
| Beryllium | | | 84.8 | 73.8 | | mg/Kg | | 87.0 | 69.7 - 116.0 | 6 | 20 |
| Cadmium | | | 247 | 170 | | mg/Kg | | 68.8 | 67.2 - 111.7 | 9 | 20 |
| Chromium | | | 217 | 182 | | mg/Kg | | 84.0 | 64.5 - 119.8 | 5 | 20 |
| Lead | | | 270 | 216 | | mg/Kg | | 80.0 | 70.4 - 120.0 | 4 | 20 |
| Nickel | | | 187 | 143 | | mg/Kg | | 76.7 | 63.1 - 117.1 | 4 | 20 |

## Method: 6010D - Metals (ICP) (Continued)

**Lab Sample ID: LCDSRM 620-23122/3-A**
**Matrix: Solid**
**Analysis Batch: 23183**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 23122**

| Analyte | Spike Added | LCDSRM Result | LCDSRM Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Selenium | 241 | 183 | | mg/Kg | | 75.8 | 62.2 - 118.3 | 6 | 20 |
| Silver | 72.0 | 64.6 | | mg/Kg | | 89.7 | 66.5 - 121.7 | 8 | 20 |
| Thallium | 88.9 | 74.2 | | mg/Kg | | 83.5 | 58.9 - 122.6 | 9 | 20 |
| Vanadium | 225 | 203 | | mg/Kg | | 90.4 | 68.0 - 114.2 | 4 | 20 |
| Zinc | 242 | 188 | | mg/Kg | | 77.7 | 64.9 - 120.7 | 4 | 20 |

**Lab Sample ID: LCSSRM 620-23122/2-A**
**Matrix: Solid**
**Analysis Batch: 23183**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 23122**

| Analyte | Spike Added | LCSSRM Result | LCSSRM Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Antimony | 232 | 72.0 | | mg/Kg | | 31.0 | 10.0 - 139.2 |
| Arsenic | 195 | 167 | | mg/Kg | | 85.4 | 65.6 - 122.1 |
| Barium | 321 | 287 | | mg/Kg | | 89.4 | 69.5 - 115.9 |
| Beryllium | 84.8 | 78.5 | | mg/Kg | | 92.5 | 69.7 - 116.0 |
| Cadmium | 247 | 186 | | mg/Kg | | 75.4 | 67.2 - 111.7 |
| Chromium | 217 | 192 | | mg/Kg | | 88.5 | 64.5 - 119.8 |
| Lead | 270 | 226 | | mg/Kg | | 83.7 | 70.4 - 120.0 |
| Nickel | 187 | 150 | | mg/Kg | | 80.1 | 63.1 - 117.1 |
| Selenium | 241 | 193 | | mg/Kg | | 80.3 | 62.2 - 118.3 |
| Silver | 72.0 | 59.7 | | mg/Kg | | 82.9 | 66.5 - 121.7 |
| Thallium | 88.9 | 81.3 | | mg/Kg | | 91.5 | 58.9 - 122.6 |
| Vanadium | 225 | 212 | | mg/Kg | | 94.3 | 68.0 - 114.2 |
| Zinc | 242 | 195 | | mg/Kg | | 80.7 | 64.9 - 120.7 |

## Method: 7471A - Mercury (CVAA)

**Lab Sample ID: MB 620-23147/1-A**
**Matrix: Solid**
**Analysis Batch: 23226**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 23147**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.050 | 0.0083 | mg/Kg | | 06/01/23 09:40 | 06/02/23 12:01 | 1 |

## Method: 7471A - Mercury (CVAA) (Continued)

**Lab Sample ID: LCDSRM 620-23147/3-A**
**Matrix: Solid**
**Analysis Batch: 23226**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 23147**

| Analyte | | | Spike Added | LCDSRM Result | LCDSRM Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | | | 18.2 | 19.7 | | mg/Kg | | 108.1 | 59.9 - 140.1 | 1 | 20 |

**Lab Sample ID: LCSSRM 620-23147/2-A**
**Matrix: Solid**
**Analysis Batch: 23226**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 23147**

| Analyte | | | Spike Added | LCSSRM Result | LCSSRM Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | | | 18.2 | 19.6 | | mg/Kg | | 107.5 | 59.9 - 140.1 | | |

# QC Association Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11778-2

## GC VOA

### Analysis Batch: 23320

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11778-3 | LM-SO-UST04-053023 | Total/NA | Solid | MAVPH2.1 | 23366 |
| MB 620-23366/3-A | Method Blank | Total/NA | Solid | MAVPH2.1 | 23366 |
| LCS 620-23366/1-A | Lab Control Sample | Total/NA | Solid | MAVPH2.1 | 23366 |
| LCSD 620-23366/2-A | Lab Control Sample Dup | Total/NA | Solid | MAVPH2.1 | 23366 |

### Prep Batch: 23366

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11778-3 | LM-SO-UST04-053023 | Total/NA | Solid | 5035 | |
| MB 620-23366/3-A | Method Blank | Total/NA | Solid | 5035 | |
| LCS 620-23366/1-A | Lab Control Sample | Total/NA | Solid | 5035 | |
| LCSD 620-23366/2-A | Lab Control Sample Dup | Total/NA | Solid | 5035 | |

## GC Semi VOA

### Prep Batch: 23135

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11778-3 | LM-SO-UST04-053023 | Total/NA | Solid | 3546 | |
| MB 620-23135/1-B | Method Blank | Total/NA | Solid | 3546 | |
| LCS 620-23135/2-B | Lab Control Sample | Total/NA | Solid | 3546 | |
| LCSD 620-23135/3-B | Lab Control Sample Dup | Total/NA | Solid | 3546 | |

### Analysis Batch: 23246

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11778-3 | LM-SO-UST04-053023 | Total/NA | Solid | MAEPH2.1 | 23279 |
| MB 620-23135/1-B | Method Blank | Total/NA | Solid | MAEPH2.1 | 23279 |
| LCS 620-23135/2-B | Lab Control Sample | Total/NA | Solid | MAEPH2.1 | 23279 |
| LCSD 620-23135/3-B | Lab Control Sample Dup | Total/NA | Solid | MAEPH2.1 | 23279 |

### Fraction Batch: 23279

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11778-3 | LM-SO-UST04-053023 | Total/NA | Solid | MA EPH Frac | 23135 |
| MB 620-23135/1-B | Method Blank | Total/NA | Solid | MA EPH Frac | 23135 |
| LCS 620-23135/2-B | Lab Control Sample | Total/NA | Solid | MA EPH Frac | 23135 |
| LCSD 620-23135/3-B | Lab Control Sample Dup | Total/NA | Solid | MA EPH Frac | 23135 |

## Metals

### Prep Batch: 23122

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11778-3 | LM-SO-UST04-053023 | Total/NA | Solid | 3050B | |
| MB 620-23122/1-A | Method Blank | Total/NA | Solid | 3050B | |
| LCDSRM 620-23122/3-A | Lab Control Sample Dup | Total/NA | Solid | 3050B | |
| LCSSRM 620-23122/2-A | Lab Control Sample | Total/NA | Solid | 3050B | |

### Prep Batch: 23147

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11778-3 | LM-SO-UST04-053023 | Total/NA | Solid | 7471B | |
| MB 620-23147/1-A | Method Blank | Total/NA | Solid | 7471B | |
| LCDSRM 620-23147/3-A | Lab Control Sample Dup | Total/NA | Solid | 7471B | |
| LCSSRM 620-23147/2-A | Lab Control Sample | Total/NA | Solid | 7471B | |

# QC Association Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11778-2

## Metals

### Analysis Batch: 23183

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11778-3 | LM-SO-UST04-053023 | Total/NA | Solid | 6010D | 23122 |
| MB 620-23122/1-A | Method Blank | Total/NA | Solid | 6010D | 23122 |
| LCDSRM 620-23122/3-A | Lab Control Sample Dup | Total/NA | Solid | 6010D | 23122 |
| LCSSRM 620-23122/2-A | Lab Control Sample | Total/NA | Solid | 6010D | 23122 |

### Analysis Batch: 23226

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11778-3 | LM-SO-UST04-053023 | Total/NA | Solid | 7471A | 23147 |
| MB 620-23147/1-A | Method Blank | Total/NA | Solid | 7471A | 23147 |
| LCDSRM 620-23147/3-A | Lab Control Sample Dup | Total/NA | Solid | 7471A | 23147 |
| LCSSRM 620-23147/2-A | Lab Control Sample | Total/NA | Solid | 7471A | 23147 |

## General Chemistry

### Analysis Batch: 23163

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11778-3 | LM-SO-UST04-053023 | Total/NA | Solid | Moisture | |

# Lab Chronicle

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11778-2

## Client Sample ID: LM-SO-UST04-053023
**Date Collected: 05/30/23 13:30**
**Date Received: 05/31/23 13:30**

## Lab Sample ID: 620-11778-3
**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Moisture | | 1 | 23163 | MJH | EET NE | 06/01/23 11:46 |

## Client Sample ID: LM-SO-UST04-053023
**Date Collected: 05/30/23 13:30**
**Date Received: 05/31/23 13:30**

## Lab Sample ID: 620-11778-3
**Matrix: Solid**
**Percent Solids: 90.9**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 5035 | | | 23366 | BMH | EET NE | 06/06/23 10:47 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 23320 | BMH | EET NE | 06/06/23 21:56 |
| Total/NA | Prep | 3546 | | | 23135 | JAC | EET NE | 06/01/23 08:31 |
| Total/NA | Fraction | MA EPH Frac | | | 23279 | AAH | EET NE | 06/05/23 15:02 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 23246 | BJJ | EET NE | 06/05/23 21:06 |
| Total/NA | Prep | 3050B | | | 23122 | PRB | EET NE | 05/31/23 14:15 |
| Total/NA | Analysis | 6010D | | 1 | 23183 | JPC | EET NE | 06/01/23 13:06 |
| Total/NA | Prep | 7471B | | | 23147 | PRB | EET NE | 06/01/23 09:40 |
| Total/NA | Analysis | 7471A | | 1 | 23226 | PRB | EET NE | 06/02/23 12:18 |

**Laboratory References:**

EET NE = Eurofins New England, 646 Camp Ave, North Kingstown, RI 02852, TEL (413)789-9018

# Accreditation/Certification Summary

Client: Nobis Engineering, Inc. Job ID: 620-11778-2
Project/Site: Former L&M - Lunenburg MA

## Laboratory: Eurofins New England

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

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|
| Massachusetts | State | M-RI907 | 06-30-23 |

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

| Analysis Method | Prep Method | Matrix | Analyte |
|---|---|---|---|
| 6010D | 3050B | Solid | Antimony |
| 6010D | 3050B | Solid | Arsenic |
| 6010D | 3050B | Solid | Barium |
| 6010D | 3050B | Solid | Beryllium |
| 6010D | 3050B | Solid | Cadmium |
| 6010D | 3050B | Solid | Chromium |
| 6010D | 3050B | Solid | Lead |
| 6010D | 3050B | Solid | Nickel |
| 6010D | 3050B | Solid | Selenium |
| 6010D | 3050B | Solid | Silver |
| 6010D | 3050B | Solid | Thallium |
| 6010D | 3050B | Solid | Vanadium |
| 6010D | 3050B | Solid | Zinc |
| 7471A | 7471B | Solid | Mercury |
| MAEPH2.1 | 3546 | Solid | 2-Methylnaphthalene |
| MAEPH2.1 | 3546 | Solid | Acenaphthene |
| MAEPH2.1 | 3546 | Solid | Acenaphthylene |
| MAEPH2.1 | 3546 | Solid | Anthracene |
| MAEPH2.1 | 3546 | Solid | Benzo[a]anthracene |
| MAEPH2.1 | 3546 | Solid | Benzo[a]pyrene |
| MAEPH2.1 | 3546 | Solid | Benzo[b]fluoranthene |
| MAEPH2.1 | 3546 | Solid | Benzo[g,h,i]perylene |
| MAEPH2.1 | 3546 | Solid | Benzo[k]fluoranthene |
| MAEPH2.1 | 3546 | Solid | C11-C22 Aromatics |
| MAEPH2.1 | 3546 | Solid | C11-C22 Aromatics (Adjusted) |
| MAEPH2.1 | 3546 | Solid | C19-C36 Aliphatics |
| MAEPH2.1 | 3546 | Solid | C9-C18 Aliphatics |
| MAEPH2.1 | 3546 | Solid | Chrysene |
| MAEPH2.1 | 3546 | Solid | Dibenz(a,h)anthracene |
| MAEPH2.1 | 3546 | Solid | Fluoranthene |
| MAEPH2.1 | 3546 | Solid | Fluorene |
| MAEPH2.1 | 3546 | Solid | Indeno[1,2,3-cd]pyrene |
| MAEPH2.1 | 3546 | Solid | Naphthalene |
| MAEPH2.1 | 3546 | Solid | Phenanthrene |
| MAEPH2.1 | 3546 | Solid | Pyrene |
| MAVPH2.1 | 5035 | Solid | Benzene |
| MAVPH2.1 | 5035 | Solid | C5-C8 Aliphatics (adjusted) |
| MAVPH2.1 | 5035 | Solid | C5-C8 Aliphatics (unadjusted) |
| MAVPH2.1 | 5035 | Solid | C9-C10 Aromatics |
| MAVPH2.1 | 5035 | Solid | C9-C12 Aliphatics (adjusted) |
| MAVPH2.1 | 5035 | Solid | C9-C12 Aliphatics (unadjusted) |
| MAVPH2.1 | 5035 | Solid | Ethylbenzene |
| MAVPH2.1 | 5035 | Solid | m,p-Xylene |
| MAVPH2.1 | 5035 | Solid | Methyl tert-butyl ether |
| MAVPH2.1 | 5035 | Solid | Naphthalene |

# Accreditation/Certification Summary

Client: Nobis Engineering, Inc. Job ID: 620-11778-2
Project/Site: Former L&M - Lunenburg MA

## Laboratory: Eurofins New England (Continued)

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

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

| Analysis Method | Prep Method | Matrix | Analyte |
|---|---|---|---|
| MAVPH2.1 | 5035 | Solid | o-Xylene |
| MAVPH2.1 | 5035 | Solid | Toluene |
| MAVPH2.1 | 5035 | Solid | Xylenes, Total |
| Moisture | | Solid | Percent Moisture |
| Moisture | | Solid | Percent Solids |

# Method Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11778-2

| Method | Method Description | Protocol | Laboratory |
|---|---|---|---|
| MAVPH2.1 | Massachusetts - Volatile Petroleum Hydrocarbons (GC) | MA DEP | EET NE |
| MAEPH2.1 | Massachusetts - Extractable Petroleum Hydrocarbons (GC) | MA DEP | EET NE |
| 6010D | Metals (ICP) | SW846 | EET NE |
| 7471A | Mercury (CVAA) | SW846 | EET NE |
| Moisture | Percent Moisture | EPA | EET NE |
| 3050B | Preparation, Metals | SW846 | EET NE |
| 3546 | Microwave Extraction | SW846 | EET NE |
| 5035 | Closed System Purge and Trap | SW846 | EET NE |
| 7471B | Preparation, Mercury | SW846 | EET NE |
| MA EPH Frac | Massachusetts - Extractable Petroleum Hydrocarbon Fractionation | MA DEP | EET NE |

**Protocol References:**

EPA = US Environmental Protection Agency

MA DEP = Massachusetts Department Of Environmental Protection

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

**Laboratory References:**

EET NE = Eurofins New England, 646 Camp Ave, North Kingstown, RI 02852, TEL (413)789-9018

# Sample Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11778-2

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---|---|---|---|---|
| 620-11778-3 | LM-SO-UST04-053023 | Solid | 05/30/23 13:30 | 05/31/23 13:30 |

10778

620-11778 Chain of Custody

# Chain of Custody Record

eurofins | Environment Testing

| | | | | |
|---|---|---|---|---|
| | Sampler: S Stone | Lab PM | Carrier Tracking No(s) | COC No: 620-10175-1337 3 |
| Bridget Fortier | Phone | E-Mail: arcyn@nobis-group.com | State of Origin: MA | Page: Page ~~3 of 3~~ 1 of 1 |
| Company: Nobis Engineering, Inc | PWSID | | | Job #: |

**Analysis Requested**

| | |
|---|---|
| Address: 585 Middlesex Street | Due Date Requested: 6/2-23 |
| City: Lowell | TAT Requested (days): LM-SO-SD01-053123 ]2 day; LM-SO-SD02-053123 |
| State, Zip: MA, 01851 | Compliance Project: Δ Yes Δ No |
| Phone | PO #: |
| Email: bfortier@nobis-group com | WO #: |
| Project Name: Former L&M | Project #: 50000105/400 |
| Site: Former L&M | SSOW#: |

**Preservation Codes:**

A - HCL; B - NaOH; C - Zn Acetate; D - Nitric Acid; E - NaHSO4; F - MeOH; G - Amchlor; H - Ascorbic Acid; I - Ice; J - DI Water; K - EDTA; L - EDA; M - Hexane; N - None; O - AsNaO2; P - Na2O4S; Q - Na2SO3; R - Na2S2O3; S - H2SO4; T - TSP Dodecahydrate; U - Acetone; V - MCAA; W - pH 4-5; Y - Trizma; Z - other (specify)

Other:

| Sample Identification | Sample Date | Sample Time | Sample Type (C=Comp, G=grab) | Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air) | Field Filtered Sample (Yes or No) | Perform MS/MSD (Yes or No) | VPH | EPH, metals, % moisture | VOCs LL | VOCs HL | SVOCs, pest, PCBs & TPH | TCLP RCRA | Spec. Cond, Flashpoint, Reactivity | Total Number of containers | Special Instructions/Note: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preservation Code: | | X | X | F | | J | F | | | | X | |
| | | | | Water | | | | | | | | | | | |
| | | | | Solid | | | | | | | | | | | |
| | | | | Water | | | | | | | | | | | |
| LM-SO-SD01-053123 | 5-31-23 | 750 | C | Soil | | | | | X | X | X | X | X | | |
| LM-SO-SD02-053123 | 5-31-23 | 810 | C | Soil | | | | | X | X | X | X | X | | |
| LM-SO-UST04-053023 | 5-30-23 | 1330 | C | Soil | | | X | X | | | | | | | |

Page 23 of 24 5 02 03

**Possible Hazard Identification**

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

**Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)**

☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested I, II, III, IV, Other (specify): EDD PDF and Email

Special Instructions/QC Requirements: MCP CAM Methods; LM-SO-UST04-053023 is standard TAT

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Relinquished by: | Date/Time: 5-31-23 10:55 | Company | Received by: | Date/Time: 5/31/23 10:55 | Company |
| Relinquished by: | Date/Time: 5/31/23 | Company | Received by: | Date/Time: 5/31/23 13:30 | Company |
| Relinquished by: | Date/Time: | Company | Received by: | Date/Time: | Company |

Custody Seals Intact: Δ Yes Δ No | Custody Seal No..

Cooler Temperature(s) °C and Other Remarks: 0.9 +0.2 -0.6 IR#5

6/7/2023

Ver: 06/08/2021

# Login Sample Receipt Checklist

Client: Nobis Engineering, Inc.

Job Number: 620-11778-2

**Login Number: 11778**
**List Number: 1**
**Creator: Makhoul, Elie**

**List Source: Eurofins New England**

| Question | Answer | Comment |
|---|---|---|
| Radioactivity wasn't checked or is </= background as measured by a survey meter. | N/A | |
| The cooler's custody seal, if present, is intact. | N/A | |
| Sample custody seals, if present, are intact. | N/A | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| Is the Field Sampler's name present on COC? | True | |
| There are no discrepancies between the containers received and the COC. | True | |
| Samples are received within Holding Time (excluding tests with immediate HTs) | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| Sample Preservation Verified. | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| Containers requiring zero headspace have no headspace or bubble is <6mm (1/4"). | True | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |
| Residual Chlorine Checked. | N/A | |

October 2, 2023
Nobis File No. S00001.05

Ms. Katy Deng
USEPA – Region 1
Land, Chemicals, and Redevelopment Division
5 Post Office Square, Suite 100
Boston, MA 02109-3912

Re: USEPA Contract No. 68HE0122D0001
USEPA Task Order No. 68HE0122F0044
Targeted Brownfields Assessment (TBA)
Former L&M Service Station Site
Lunenburg, Massachusetts
Sample Delivery Group (SDG) No. 620118831
Eurofins New England, North Kingstown, RI

Tier 1 Stage 2A Organic and Inorganic Data Review:

Volatile Petroleum Hydrocarbons (VPH by MassDEP-VPH), Extractable Petroleum Hydrocarbons (EPH by MassDEP-EPH), Massachusetts Contingency Plan (MCP) Metals (MCP-14 Metals by 6020B/7470A)

1/Groundwater Sample: LM-GW-MW103-060223
1/Aqueous Trip Blank: TB01-060223

Dear Ms. Deng:

Nobis Group (Nobis), under a USEPA contract as a subcontractor to KGSNE JV, LLC, performed a Tier 1 Stage 2A manual data review (S2AVM) on the organic and inorganic analytical data for the samples listed above. The samples were collected by Nobis at the Former L&M Service Station Site located in Lunenburg, Massachusetts on June 2, 2023. The samples were analyzed for VPHs by MassDEP-VPH, EPHs by MassDEP-EPH, and MCP-14 Metals by EPA Methods 6010D/7470A by Eurofins New England in North Kingstown, RI.

The Tier 1 Stage 2A manual data review was performed in accordance with the Region 1 - EPA New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures (September 2020); USEPA's National Functional Guidelines for Organic Superfund Methods Data Review (November 2020); USEPA's National Functional Guidelines for Inorganic Superfund Methods Data Review (November 2020); the Program Quality Assurance Project Plan (Program QAPP) dated October 2022, and the Quality Assurance Project Plan Addendum (QAPPA) (May 2023) for the Former L&M Service Station Site, which appends the October 2022 Program QAPP.

The data were evaluated based on the following parameters:

* • Overall Evaluation of Data and Potential Usability Issues
* • Data Completeness
* • Preservation and Technical Holding Times
* • Blanks
• Surrogates (organic analyses only)



Nobis Group®
585 Middlesex Street
Lowell, MA 01851
T (978) 683-0891

| | | |
|---|---|---|
| NA | • | Internal Standards |
| NA | • | Matrix Spike Analysis |
| NA | • | Laboratory Duplicates |
| * | • | Laboratory Control Samples (LCS) |
| NA | • | Field Duplicates |
| NA | • | ICP Serial Dilutions (metals only) |
| NA | • | Performance Evaluation (PE) Samples |
| NA | • | Target Analyte Identification |
| * | • | Reported Quantitation Limits |

* All criteria were met for this parameter or did not require qualification.
NA – Not applicable.

**Overall Evaluation of Data and Potential Usability Issues**

The site sampling objectives are:

- Characterize in-situ soil based on AOCs identified by Fuss & O'Neill in November 2020 Phase I for the presence of possible site-related contamination.
- Evaluate groundwater elevation.
- Evaluate presence/absence of groundwater contamination related to site.

The data meet the project quality criteria and can be used without restriction except as summarized below. The attachments provide details and supporting documentation.

**MassDEP-VPH:**
Qualification of the data was not required.

**MassDEP-EPH:**
Results were qualified for surrogate recovery.

**MCP-14 Metals and Mercury:**
Qualification of the data was not required.

Please contact Linda Terzis at lterzis@nobis-group.com should you have any questions or comments regarding this information.

Sincerely,

NOBIS GROUP®

Linda Terzis
Data Validator

Gary Glennon
Data Validator

Tables: Data Summary Tables – Tier 1 Stage 2A (S2AVM) Validated Data
Data Qualification Actions Table

Attachments: Data Review Checklist
Support Documentation
COC

cc: Denis McGrath (Nobis Group)
Adam Roy (Nobis Group)

# DATA SUMMARY TABLE

| **Analysis** | | EPH in Groundwater |
|---|---|---|
| **Lab Sample ID** | | 620-11883-1 |
| **Field Sample ID** | | LM-GW-MW103-060223 |
| **Sample Type** | | N |
| **Parent Sample ID** | | |
| **Sample Date** | **Units** | 06/02/23 |
| 2-Methylnaphthalene | ug/L | 1.1 U |
| Acenaphthene | ug/L | 1.1 U |
| Acenaphthylene | ug/L | 1.1 U |
| Anthracene | ug/L | 1.1 U |
| Benzo(a)anthracene | ug/L | 1.1 U |
| Benzo(a)pyrene | ug/L | 0.21 U |
| Benzo(b)fluoranthene | ug/L | 1.1 U |
| Benzo(g,h,i)perylene | ug/L | 1.1 U |
| Benzo(k)fluoranthene | ug/L | 1.1 U |
| C11-C22 Aromatics | ug/L | 110 U |
| C11-C22 Aromatics (adjusted) | ug/L | 110 U |
| C19-C36 Aliphatics | ug/L | 110 UJ |
| C9-C18 Aliphatics | ug/L | 110 UJ |
| Chrysene | ug/L | 1.1 U |
| Dibenz(a,h)anthracene | ug/L | 0.53 U |
| Fluoranthene | ug/L | 1.1 U |
| Fluorene | ug/L | 1.1 U |
| Indeno(1,2,3-cd)pyrene | ug/L | 0.53 U |
| Naphthalene | ug/L | 1.1 U |
| Phenanthrene | ug/L | 1.1 U |
| Pyrene | ug/L | 1.1 U |

# DATA SUMMARY TABLE

| **Analysis** | | Metals in Groundwater |
|---|---|---|
| **Lab Sample ID** | | 620-11883-1 |
| **Field Sample ID** | | LM-GW-MW103-060223 |
| **Sample Type** | | N |
| **Parent Sample ID** | | |
| **Sample Date** | **Units** | 06/02/23 |
| Antimony | mg/L | 0.005 |
| Arsenic | mg/L | 0.0035 |
| Barium | mg/L | 0.24 |
| Beryllium | mg/L | 0.002 U |
| Cadmium | mg/L | 0.0012 |
| Chromium | mg/L | 0.024 |
| Lead | mg/L | 0.041 |
| Mercury | mg/L | 0.0002 U |
| Nickel | mg/L | 0.02 |
| Selenium | mg/L | 0.015 U |
| Silver | mg/L | 0.005 U |
| Thallium | mg/L | 0.005 U |
| Vanadium | mg/L | 0.019 |
| Zinc | mg/L | 0.48 |

# DATA SUMMARY TABLE

| **Analysis** | | VPH in Groundwater |
|---|---|---|
| **Lab Sample ID** | | 620-11883-1 |
| **Field Sample ID** | | LM-GW-MW103-060223 |
| **Sample Type** | | N |
| **Parent Sample ID** | | |
| **Sample Date** | **Units** | 06/02/23 |
| Benzene | ug/L | 5 U |
| C5-C8 Aliphatics (adjusted) | ug/L | 100 U |
| C5-C8 Aliphatics (unadjusted) | ug/L | 100 U |
| C9-C10 Aromatics | ug/L | 100 U |
| C9-C12 Aliphatics (adjusted) | ug/L | 100 U |
| C9-C12 Aliphatics (unadjusted) | ug/L | 100 U |
| Ethylbenzene | ug/L | 5 U |
| m,p-Xylene | ug/L | 10 U |
| Methyl tert-butyl ether | ug/L | 5 U |
| Naphthalene | ug/L | 5 U |
| o-Xylene | ug/L | 5 U |
| Toluene | ug/L | 5 U |
| Xylene (total) | ug/L | 15 U |

# DATA SUMMARY TABLE

| **Analysis** | | VPH in Water Quality Control Matrix |
|---|---|---|
| **Lab Sample ID** | | 620-11883-2 |
| **Field Sample ID** | | TB01-060223 |
| **Sample Type** | | TB |
| **Parent Sample ID** | | |
| **Sample Date** | **Units** | 06/02/23 |
| Benzene | ug/L | 5 U |
| C5-C8 Aliphatics (adjusted) | ug/L | 100 U |
| C5-C8 Aliphatics (unadjusted) | ug/L | 100 U |
| C9-C10 Aromatics | ug/L | 100 U |
| C9-C12 Aliphatics (adjusted) | ug/L | 100 U |
| C9-C12 Aliphatics (unadjusted) | ug/L | 100 U |
| Ethylbenzene | ug/L | 5 U |
| m,p-Xylene | ug/L | 10 U |
| Methyl tert-butyl ether | ug/L | 5 U |
| Naphthalene | ug/L | 5 U |
| o-Xylene | ug/L | 5 U |
| Toluene | ug/L | 5 U |
| Xylene (total) | ug/L | 15 U |

**Data Review Qualification Actions**
**Former L&M Service Station**
**SDG 620118831**

| Parameter | Analyte | Samples | Evaluation Criteria | Action Needed | Comments |
|---|---|---|---|---|---|
| **MassDEP-VPH** | | | | | |
| | Qualification of the data was not required. | | | | |
| **MassDEP-EPH** | | | | | |
| | C9-C18 and C19-C36 aliphatics | LM-GW-MW103-060223 | Surrogate recovery | UJ | |
| **MCP-14 Metals / Mercury** | | | | | |
| | Qualification of the data was not required. | | | | |

**Tier 1/Stage 2A Data Review Checklist**

**Project:** Former L&M Service Station, Lunenburg, Massachusetts
Targeted Brownfields Assessment (TBA)
**Project #:** S00001.05
**Case#:** NA
**Date:** 09/10/2023
**Methods:** Volatile Petroleum Hydrocarbons (VPH) (MassDEP-VPH)
Extractable Petroleum Hydrocarbons (EPH) (MassDEP-EPH)
Massachusetts Contingency Plan (MCP) Metals (MCP-14 Metals by 6010D/7470A)

**Laboratory:** Eurofins New England Laboratory, North Kingstown, RI
**SDG:** 620118831
**Reviewer:** Linda Terzis

1. **Case Narrative and Data Package Completeness (COC and Analyte List Review)**
One (1) groundwater sample and one trip blank sample were listed on the COC for SDG 620118831. The samples were collected on 06/02/2023 and received at the Eurofins New England Laboratory on 06/02/2023 at a maximum temperature of 2.4 °C.

| Sample ID | Laboratory ID | Analyses |
|---|---|---|
| LM-GW-MW103-060223 | 620-11883-1 | MassDEP-VPH, MassDEP-EPH, MCP-14 Metals/Mercury |
| TB01-060223 | 620-11883-2 | MassDEP-VPH |

The data were evaluated using the site-specific Quality Assurance Project Plan Addendum (QAPPA) (dated May 2023) and the Program QAPP (dated October 2022). Both were prepared by KGSNE, LLC. The QAPPA appends and incorporates by reference the procedures and quality control measures detailed in the Program QAPP (October 2022). Therefore, site data for this SDG were evaluated using both the QAPPA of May 2023 and the Program QAPP dated October 2022. The Massachusetts Compendium of Analytical Methods (CAM) and/or SW-846 Methods were used to perform the analyses. Therefore, site data were also evaluated using CAM quality control (QC) limits, where applicable.

The analyte lists reported by the laboratory were compared to the required analyte lists per Table 4 (groundwater) in the QAPPA (May 2023) for the site. Results for all requested analytes were reported and no inconsistencies were noted.

2. **Holding Time and Sample Preservation Compliance**

Receipt temperatures are acceptable (≤ 6°), as specified in the QAPPA (May 2023).

MassDEP-VPH: Holding time criteria (analyzed within 14 days) met.

MassDEP-EPH: Holding time criteria (extracted within 14 days and analyzed within 40 days of extraction) met.

MCP-14 Metals/Mercury: Holding time criteria (analyzed within 28 days for mercury; within 180 days for all other analytes) were met.


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3. **Calibration Issues**

Not assessed for S2AVM data review.

4. **Laboratory and Field Blanks**

MassDEP-VPH: Results for the VPH laboratory method blank and the trip blank (TB-01-0602223) were non-detect. No blank actions are required.

MassDEP-EPH: Results for the EPH laboratory method blanks were non-detect. No blank actions are required.

MCP-14 Metals/Mercury: Results for the metals and mercury method blanks were non-detect. No blank actions are required.

An equipment blank was not submitted with the samples of this SDG. No actions are required.

5. **Interference Check Sample (metals only)**

Not assessed for S2AVM data review.

6. **Surrogates**

The Program QAPP (October 2022) was used to evaluate site data for surrogate recovery. If no Program QAPP-specific recovery limits were available for a surrogate, the MCP CAM recovery limits were used.

MassDEP-VPH: Percent surrogate recoveries for the samples were within the Program QAPP limits of 70-130%. No actions are required.

MassDEP-EPH: Percent surrogate recoveries for the samples were within the Program QAPP limits of 40-140% except for the recovery the surrogate 1-chlorooctadecane in sample LM-GW-MW103-060223 (620-11883-1) which was recovered at 26%. As noted in Table IV B-2 of the MCP CAM for the EPH method, 1-chlorooctadecane is associated with C9-C18 and C19-C36 aliphatic hydrocarbons. C9-C18 and C19-C36 aliphatics were non-detect in the sample. Professional judgement based on the NFGs (2020) for SVOCs was used to qualify the non-detect results for C9-C18 and C19-C36 aliphatic hydrocarbons as estimated (UJ) in sample LM-GW-MW103-060223 (620-11883-1) due to low surrogate recovery.

MCP-14 Metals/Mercury: Not applicable for this analysis.

7. **Laboratory Control Samples**

MassDEP-VPH: The percent recoveries in the VPH LCS/LCSD pair met the Program QAPP recovery limits of 70-130% and RPDs ≤ 25%. No actions are required.

MassDEP-EPH: The percent recoveries in the EPH LCS/LCSD pairs met the Program QAPP recovery limits of 40-140%. RPDs met the QAPP limit of ≤ 25% except for 2-methylnaphthalene, acenaphthene, and benzo(g,h,i)perylene, where the RPDs were > 25%. The compounds were non-detected in the aqueous samples of this SDG. Based on the NFGs (2020) for SVOCs, the non-detect results are accepted unqualified.

MCP-14 Metals/Mercury: Percent recoveries and RPDs for the metals and mercury LCS/LCSD analyses were within the QAPP limits of 80-120% and ≤ 20%, respectively. No actions are required.

**8. Matrix Spikes**

Based on the Region I EPA New England Environmental Data Review Supplement (Region I Supplement, 2020), MS/MSD qualifications are applied to all field samples with similar matrix, unless otherwise noted.

MS/MSD analyses were not requested for the sample of this SDG. No actions are required.

**9. Laboratory Duplicates (metals only)**

MCP-14 Metals/Mercury: A Laboratory duplicate analysis was not performed for this SDG. No actions are required.

**10. Serial Dilution (metals only)**

MCP-14 Metals/Mercury: A serial dilution analysis was not performed for this SDG. No action is required.

**11. Field Duplicate Precision**

Acceptable field duplicate precision is an RPD of ≤ 30% for results > 5x RL and an absolute difference < 2x RL for results < 5x RL, based on the EPA Region I Supplement (2020).

Based on the Region I Supplement (2020), qualifications are applied to all field samples with similar matrix, unless otherwise indicated.

A field duplicate pair was not submitted with the samples of this SDG. No actions are required.

**12. Internal Standards**

Not assessed for S2AVM data review.

**13. Dual Column Precision (PCBs only)**

Not applicable for this SDG.

**14. Performance Evaluation Samples**

Performance Evaluation (PE) samples were not included in this SDG.

**15. Reporting Limits**

RLs for non-detect results for VPH, EPH, and metals/mercury analyses met the project action levels (PALs) for the site.

**16. Other**

EPA Region I Supplement (2020) criterion for percent solids content (> 30%) not applicable for groundwater samples.

Overall bias is considered indeterminate when cumulative nonconformances do not show a consistent bias or in cases of the presence of conflicting high and low biases.

11883

# Chain of Custody Record

eurofins | Environment Testing

| | | | | |
|---|---|---|---|---|
| | Sampler: S. Stone | Lab PM | Carrier Tracking No(s) | COC No: 620-10175-1337 2 |
| Bridget Fortier | Phone | E-Mail: dru_Nobis-group.com | State of Origin | Page: Page 1 of 3 |
| Company: Nobis Engineering, Inc | PWSID | | | Job #: |

**Analysis Requested**

| | |
|---|---|
| Address: 585 Middlesex Street | Due Date Requested: |
| City: Lowell | TAT Requested (days): Standard |
| State, Zip: MA, 01851 | Compliance Project: Δ Yes Δ No |
| Phone | PO #: |
| Email: bfortier@nobis-group.com | WO #: |
| Project Name: Former L&M | Project #: 500001.005/406 |
| Site: Former L&M | SSOW#: |

**Preservation Codes:**

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)

Other:

| Sample Identification | Sample Date | Sample Time | Sample Type (C=comp, G=grab) | Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air) | Field Filtered Sample (Yes or No) | Perform MS/MSD (Yes or No) | VPH | Metals | EPH | Total Number of containers | Special Instructions/Note: |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservation Code: | | | | | | | A | D | A | | |
| 01 LM-GW-MW103-060223 | 06-02-23 | 835 | G | Water | | | X | X | X | | metals could not be filtered |
| 02 TB01-060223 | 06-02-23 | 1000 | G | Water | | | X | | | | trip blank |
| | | | | Water | | | | | | | |
| | | | | Water | | | | | | | |
| | | | | Water | | | | | | | |
| | | | | Water | | | | | | | |
| | | | | Water | | | | | | | |
| | | | | Water | | | | | | | |
| | | | | Water | | | | | | | |
| | | | | Water | | | | | | | |
| | | | | Water | | | | | | | |
| | | | | Water | | | | | | | |

**Possible Hazard Identification**

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

**Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)**

☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested I, II, III, IV, Other (specify): EDD format PDF & email

Special Instructions/QC Requirements: MCP CAM metals; only 1 EPH due to volume

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Empty Kit Relinquished by | | Date | | Time | | Method of Shipment: | |
| Relinquished by: | | Date/Time: 6-2-23 1305 | Company: EA | Received by: | | Date/Time: 6/2-23 1305 | Company: EA |
| Relinquished by: | | Date/Time: 6-2-23 1510 | Company: EA | Received by: | | Date/Time: 6/2/23 1510 | Company: Eurofins |
| Relinquished by: | | Date/Time. | Company | Received by: | | Date/Time. | Company |

Custody Seals Intact. Δ Yes Δ No | Custody Seal No .

Cooler Temperature(s) °C and Other Remarks: 2.2 +0.2 2.4 #8

Ver: 06/08/2021

# ANALYTICAL REPORT

## PREPARED FOR

Attn: Adam Roy
Nobis Engineering, Inc.
585 Middlesex Street
Lowell, Massachusetts 01851

Generated 6/16/2023 2:04:51 PM

## JOB DESCRIPTION

Former L&M - Lunenburg MA

## JOB NUMBER

620-11883-1

Eurofins New England
646 Camp Ave
North Kingstown RI 02852

See page two for job notes and contact information.



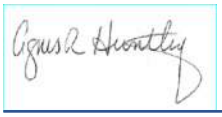
my EOL

## Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northeast, LLC Project Manager.

## Authorization



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Authorized for release by
Agnes Huntley, Project Manager
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# Table of Contents

Cover Page . . . . . 1
Table of Contents . . . . . 3
Definitions/Glossary . . . . . 4
Case Narrative . . . . . 5
Detection Summary . . . . . 6
Client Sample Results . . . . . 7
Surrogate Summary . . . . . 10
QC Sample Results . . . . . 11
QC Association Summary . . . . . 17
Lab Chronicle . . . . . 19
Certification Summary . . . . . 20
Method Summary . . . . . 22
Sample Summary . . . . . 23
Chain of Custody . . . . . 24
Receipt Checklists . . . . . 25

# Definitions/Glossary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11883-1

## Qualifiers

### GC/MS Semi VOA

| Qualifier | Qualifier Description |
|---|---|
| *1 | LCS/LCSD RPD exceeds control limits. |

### GC Semi VOA

| Qualifier | Qualifier Description |
|---|---|
| S1- | Surrogate recovery exceeds control limits, low biased. |

### Metals

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

## Glossary

| Abbreviation | These commonly used abbreviations may or may not be present in this report. |
|---|---|
| ¤ | Listed under the "D" column to designate that the result is reported on a dry weight basis |
| %R | Percent Recovery |
| CFL | Contains Free Liquid |
| CFU | Colony Forming Unit |
| CNF | Contains No Free Liquid |
| DER | Duplicate Error Ratio (normalized absolute difference) |
| Dil Fac | Dilution Factor |
| DL | Detection Limit (DoD/DOE) |
| DL, RA, RE, IN | Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample |
| DLC | Decision Level Concentration (Radiochemistry) |
| EDL | Estimated Detection Limit (Dioxin) |
| LOD | Limit of Detection (DoD/DOE) |
| LOQ | Limit of Quantitation (DoD/DOE) |
| MCL | EPA recommended "Maximum Contaminant Level" |
| MDA | Minimum Detectable Activity (Radiochemistry) |
| MDC | Minimum Detectable Concentration (Radiochemistry) |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| MPN | Most Probable Number |
| MQL | Method Quantitation Limit |
| NC | Not Calculated |
| ND | Not Detected at the reporting limit (or MDL or EDL if shown) |
| NEG | Negative / Absent |
| POS | Positive / Present |
| PQL | Practical Quantitation Limit |
| PRES | Presumptive |
| QC | Quality Control |
| RER | Relative Error Ratio (Radiochemistry) |
| RL | Reporting Limit or Requested Limit (Radiochemistry) |
| RPD | Relative Percent Difference, a measure of the relative difference between two points |
| TEF | Toxicity Equivalent Factor (Dioxin) |
| TEQ | Toxicity Equivalent Quotient (Dioxin) |
| TNTC | Too Numerous To Count |

Client: Nobis Engineering, Inc. Job ID: 620-11883-1
Project/Site: Former L&M - Lunenburg MA

## Job ID: 620-11883-1

### Laboratory: Eurofins New England

**Narrative**

**Job Narrative**
**620-11883-1**

**Receipt**
The samples were received on 6/2/2023 3:10 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.4º C.

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

**GC/MS Semi VOA**
Method EPH: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 620-23423 and 620-23465 and analytical batch 620-23645 recovered outside control limits for the following analytes: 2-Methylnaphthalene, Anthracene and Benzo[g,h,i]perylene. The individual percent recoveries are within acceptance criteria.

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

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

**GC Semi VOA**
Method MAEPH2.1: Surrogate recovery for the following sample was outside control limits: LM-GW-MW103-060223 (620-11883-1). Evidence of matrix interference was present and noted in the extraction process; therefore, re-extraction and/or re-analysis was not performed.

Method MAEPH2.1: The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision for preparation batch 620-23423 and 620-23465 and analytical batch 620-23496 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory sample control duplicate (LCS/LCSD) precision was within acceptance limits.

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

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

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

# Detection Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11883-1

## Client Sample ID: LM-GW-MW103-060223 — Lab Sample ID: 620-11883-1

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.0050 | J | 0.0060 | 0.0016 | mg/L | 1 | | 6010D | Total/NA |
| Arsenic | 0.0035 | J | 0.0040 | 0.0014 | mg/L | 1 | | 6010D | Total/NA |
| Barium | 0.24 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Total/NA |
| Cadmium | 0.0012 | J | 0.0025 | 0.00036 | mg/L | 1 | | 6010D | Total/NA |
| Chromium | 0.024 | | 0.0050 | 0.00093 | mg/L | 1 | | 6010D | Total/NA |
| Lead | 0.041 | | 0.0075 | 0.0062 | mg/L | 1 | | 6010D | Total/NA |
| Nickel | 0.020 | | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Total/NA |
| Vanadium | 0.019 | | 0.0050 | 0.0011 | mg/L | 1 | | 6010D | Total/NA |
| Zinc | 0.48 | | 0.025 | 0.0016 | mg/L | 1 | | 6010D | Total/NA |

## Client Sample ID: TB01-060223 — Lab Sample ID: 620-11883-2

No Detections.

This Detection Summary does not include radiochemical test results.

## Client Sample ID: LM-GW-MW103-060223

**Date Collected: 06/02/23 08:35**
**Date Received: 06/02/23 15:10**

## Lab Sample ID: 620-11883-1

**Matrix: Water**

### Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 1.1 | 0.25 | ug/L | | 06/08/23 13:47 | 06/15/23 17:32 | 1 |
| 2-Methylnaphthalene | ND | *1 | 1.1 | 0.31 | ug/L | | 06/08/23 13:47 | 06/15/23 17:32 | 1 |
| Acenaphthylene | ND | | 1.1 | 0.41 | ug/L | | 06/08/23 13:47 | 06/15/23 17:32 | 1 |
| Acenaphthene | ND | | 1.1 | 0.20 | ug/L | | 06/08/23 13:47 | 06/15/23 17:32 | 1 |
| Fluorene | ND | | 1.1 | 0.41 | ug/L | | 06/08/23 13:47 | 06/15/23 17:32 | 1 |
| Phenanthrene | ND | | 1.1 | 0.18 | ug/L | | 06/08/23 13:47 | 06/15/23 17:32 | 1 |
| Anthracene | ND | *1 | 1.1 | 0.16 | ug/L | | 06/08/23 13:47 | 06/15/23 17:32 | 1 |
| Fluoranthene | ND | | 1.1 | 0.16 | ug/L | | 06/08/23 13:47 | 06/15/23 17:32 | 1 |
| Pyrene | ND | | 1.1 | 0.15 | ug/L | | 06/08/23 13:47 | 06/15/23 17:32 | 1 |
| Benzo[a]anthracene | ND | | 1.1 | 0.074 | ug/L | | 06/08/23 13:47 | 06/15/23 17:32 | 1 |
| Chrysene | ND | | 1.1 | 0.15 | ug/L | | 06/08/23 13:47 | 06/15/23 17:32 | 1 |
| Benzo[b]fluoranthene | ND | | 1.1 | 0.16 | ug/L | | 06/08/23 13:47 | 06/15/23 17:32 | 1 |
| Benzo[k]fluoranthene | ND | | 1.1 | 0.25 | ug/L | | 06/08/23 13:47 | 06/15/23 17:32 | 1 |
| Benzo[a]pyrene | ND | | 0.21 | 0.17 | ug/L | | 06/08/23 13:47 | 06/15/23 17:32 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.53 | 0.49 | ug/L | | 06/08/23 13:47 | 06/15/23 17:32 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.53 | 0.23 | ug/L | | 06/08/23 13:47 | 06/15/23 17:32 | 1 |
| Benzo[g,h,i]perylene | ND | *1 | 1.1 | 0.18 | ug/L | | 06/08/23 13:47 | 06/15/23 17:32 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *42* | | *40 - 140* | *06/08/23 13:47* | *06/15/23 17:32* | *1* |
| *2-Fluorobiphenyl (Surr)* | *102* | | *40 - 140* | *06/08/23 13:47* | *06/15/23 17:32* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 06/06/23 02:40 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 06/06/23 02:40 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 06/06/23 02:40 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 06/06/23 02:40 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 06/06/23 02:40 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 06/06/23 02:40 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 06/06/23 02:40 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 06/06/23 02:40 | 1 |
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 06/06/23 02:40 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 06/06/23 02:40 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 06/06/23 02:40 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 06/06/23 02:40 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 06/06/23 02:40 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *99* | | *70 - 130* | | *06/06/23 02:40* | *1* |
| *2,5-Dibromotoluene (pid)* | *93* | | *70 - 130* | | *06/06/23 02:40* | *1* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 110 | 110 | ug/L | | 06/08/23 13:47 | 06/14/23 13:43 | 1 |
| C19-C36 Aliphatics | ND | | 110 | 110 | ug/L | | 06/08/23 13:47 | 06/14/23 13:43 | 1 |
| C11-C22 Aromatics | ND | | 110 | 110 | ug/L | | 06/08/23 13:47 | 06/14/23 13:43 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 110 | 110 | ug/L | | 06/08/23 13:47 | 06/14/23 13:43 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *26* | *S1-* | *40 - 140* | *06/08/23 13:47* | *06/14/23 13:43* | *1* |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11883-1

**Client Sample ID: LM-GW-MW103-060223**
**Date Collected: 06/02/23 08:35**
**Date Received: 06/02/23 15:10**

**Lab Sample ID: 620-11883-1**
**Matrix: Water**

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *42* | | *40 - 140* | *06/08/23 13:47* | *06/14/23 13:43* | *1* |
| *2-Fluorobiphenyl (Surr)* | *99* | | *40 - 140* | *06/08/23 13:47* | *06/14/23 13:43* | *1* |

### Method: SW846 6010D - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Antimony** | **0.0050** | **J** | 0.0060 | 0.0016 | mg/L | | 06/05/23 07:49 | 06/07/23 12:55 | 1 |
| **Arsenic** | **0.0035** | **J** | 0.0040 | 0.0014 | mg/L | | 06/05/23 07:49 | 06/07/23 12:55 | 1 |
| **Barium** | **0.24** | | 0.0050 | 0.00070 | mg/L | | 06/05/23 07:49 | 06/07/23 12:55 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 06/05/23 07:49 | 06/07/23 12:55 | 1 |
| **Cadmium** | **0.0012** | **J** | 0.0025 | 0.00036 | mg/L | | 06/05/23 07:49 | 06/07/23 12:55 | 1 |
| **Chromium** | **0.024** | | 0.0050 | 0.00093 | mg/L | | 06/05/23 07:49 | 06/07/23 12:55 | 1 |
| **Lead** | **0.041** | | 0.0075 | 0.0062 | mg/L | | 06/05/23 07:49 | 06/07/23 12:55 | 1 |
| **Nickel** | **0.020** | | 0.0050 | 0.00087 | mg/L | | 06/05/23 07:49 | 06/07/23 12:55 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 06/05/23 07:49 | 06/07/23 12:55 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 06/05/23 07:49 | 06/07/23 12:55 | 1 |
| Thallium | ND | | 0.0050 | 0.0021 | mg/L | | 06/05/23 07:49 | 06/07/23 12:55 | 1 |
| **Vanadium** | **0.019** | | 0.0050 | 0.0011 | mg/L | | 06/05/23 07:49 | 06/07/23 12:55 | 1 |
| **Zinc** | **0.48** | | 0.025 | 0.0016 | mg/L | | 06/05/23 07:49 | 06/07/23 12:55 | 1 |

### Method: SW846 7470A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 06/12/23 10:41 | 06/12/23 16:20 | 1 |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11883-1

**Client Sample ID: TB01-060223**
**Date Collected: 06/02/23 10:00**
**Date Received: 06/02/23 15:10**

**Lab Sample ID: 620-11883-2**
**Matrix: Water**

**Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)**

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 06/05/23 17:52 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 06/05/23 17:52 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 06/05/23 17:52 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 06/05/23 17:52 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 06/05/23 17:52 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 06/05/23 17:52 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 06/05/23 17:52 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 06/05/23 17:52 | 1 |
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 06/05/23 17:52 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 06/05/23 17:52 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 06/05/23 17:52 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 06/05/23 17:52 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 06/05/23 17:52 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *90* | | *70 - 130* | | *06/05/23 17:52* | *1* |
| *2,5-Dibromotoluene (pid)* | *86* | | *70 - 130* | | *06/05/23 17:52* | *1* |

# Surrogate Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11883-1

## Method: EPH - Extractable Petroleum Hydrocarbons (GC/MS)

**Matrix: Water** — **Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) | |
|---|---|---|---|
| Lab Sample ID | Client Sample ID | OTPH (40-140) | FBP (40-140) |
| 620-11883-1 | LM-GW-MW103-060223 | 42 | 102 |
| LCS 620-23423/24-B | Lab Control Sample | 64 | 101 |
| LCSD 620-23423/25-B | Lab Control Sample Dup | 72 | 95 |
| MB 620-23423/1-B | Method Blank | 60 | 115 |

**Surrogate Legend**

OTPH = o-Terphenyl (Surr)
FBP = 2-Fluorobiphenyl (Surr)

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

**Matrix: Water** — **Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) | |
|---|---|---|---|
| Lab Sample ID | Client Sample ID | 25DBTf1 (70-130) | 25DBTp1 (70-130) |
| 620-11883-1 | LM-GW-MW103-060223 | 99 | 93 |
| 620-11883-2 | TB01-060223 | 90 | 86 |
| LCS 620-23260/4 | Lab Control Sample | 89 | 86 |
| LCSD 620-23260/5 | Lab Control Sample Dup | 92 | 88 |
| MB 620-23260/6 | Method Blank | 94 | 90 |

**Surrogate Legend**

25DBTf = 2,5-Dibromotoluene (fid)
25DBTp = 2,5-Dibromotoluene (pid)

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

**Matrix: Water** — **Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) | | |
|---|---|---|---|---|
| Lab Sample ID | Client Sample ID | 1COD1 (40-140) | OTPH1 (40-140) | FBP1 (40-140) |
| 620-11883-1 | LM-GW-MW103-060223 | 26 S1- | 42 | 99 |
| LCS 620-23423/2-B | Lab Control Sample | 61 | 75 | 120 |
| LCSD 620-23423/3-B | Lab Control Sample Dup | 76 | 72 | 115 |
| MB 620-23423/1-B | Method Blank | 68 | 67 | 110 |

**Surrogate Legend**

1COD = 1-Chlorooctadecane (Surr)
OTPH = o-Terphenyl (Surr)
FBP = 2-Fluorobiphenyl (Surr)

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11883-1

## Method: EPH - Extractable Petroleum Hydrocarbons (GC/MS)

**Lab Sample ID: MB 620-23423/1-B**
**Matrix: Water**
**Analysis Batch: 23645**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 23423**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 1.0 | 0.23 | ug/L | | 06/08/23 13:47 | 06/15/23 16:25 | 1 |
| 2-Methylnaphthalene | ND | | 1.0 | 0.29 | ug/L | | 06/08/23 13:47 | 06/15/23 16:25 | 1 |
| Acenaphthylene | ND | | 1.0 | 0.39 | ug/L | | 06/08/23 13:47 | 06/15/23 16:25 | 1 |
| Acenaphthene | ND | | 1.0 | 0.19 | ug/L | | 06/08/23 13:47 | 06/15/23 16:25 | 1 |
| Fluorene | ND | | 1.0 | 0.39 | ug/L | | 06/08/23 13:47 | 06/15/23 16:25 | 1 |
| Phenanthrene | ND | | 1.0 | 0.17 | ug/L | | 06/08/23 13:47 | 06/15/23 16:25 | 1 |
| Anthracene | ND | | 1.0 | 0.15 | ug/L | | 06/08/23 13:47 | 06/15/23 16:25 | 1 |
| Fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 06/08/23 13:47 | 06/15/23 16:25 | 1 |
| Pyrene | ND | | 1.0 | 0.14 | ug/L | | 06/08/23 13:47 | 06/15/23 16:25 | 1 |
| Benzo[a]anthracene | ND | | 1.0 | 0.070 | ug/L | | 06/08/23 13:47 | 06/15/23 16:25 | 1 |
| Chrysene | ND | | 1.0 | 0.14 | ug/L | | 06/08/23 13:47 | 06/15/23 16:25 | 1 |
| Benzo[b]fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 06/08/23 13:47 | 06/15/23 16:25 | 1 |
| Benzo[k]fluoranthene | ND | | 1.0 | 0.24 | ug/L | | 06/08/23 13:47 | 06/15/23 16:25 | 1 |
| Benzo[a]pyrene | ND | | 0.20 | 0.16 | ug/L | | 06/08/23 13:47 | 06/15/23 16:25 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.50 | 0.46 | ug/L | | 06/08/23 13:47 | 06/15/23 16:25 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.50 | 0.21 | ug/L | | 06/08/23 13:47 | 06/15/23 16:25 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.0 | 0.17 | ug/L | | 06/08/23 13:47 | 06/15/23 16:25 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *60* | | *40 - 140* | *06/08/23 13:47* | *06/15/23 16:25* | *1* |
| *2-Fluorobiphenyl (Surr)* | *115* | | *40 - 140* | *06/08/23 13:47* | *06/15/23 16:25* | *1* |

**Lab Sample ID: LCS 620-23423/24-B**
**Matrix: Water**
**Analysis Batch: 23645**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 23423**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Naphthalene | 5.00 | 1.99 | | ug/L | | 40 | 40 - 140 |
| 2-Methylnaphthalene | 5.00 | 2.17 | | ug/L | | 43 | 40 - 140 |
| Acenaphthylene | 5.00 | 2.89 | | ug/L | | 58 | 40 - 140 |
| Acenaphthene | 5.00 | 2.39 | | ug/L | | 48 | 40 - 140 |
| Fluorene | 5.00 | 2.68 | | ug/L | | 54 | 40 - 140 |
| Phenanthrene | 5.00 | 2.66 | | ug/L | | 53 | 40 - 140 |
| Anthracene | 5.00 | 2.02 | | ug/L | | 40 | 40 - 140 |
| Fluoranthene | 5.00 | 3.33 | | ug/L | | 67 | 40 - 140 |
| Pyrene | 5.00 | 3.33 | | ug/L | | 67 | 40 - 140 |
| Benzo[a]anthracene | 5.00 | 3.58 | | ug/L | | 72 | 40 - 140 |
| Chrysene | 5.00 | 3.31 | | ug/L | | 66 | 40 - 140 |
| Benzo[b]fluoranthene | 5.00 | 3.77 | | ug/L | | 75 | 40 - 140 |
| Benzo[k]fluoranthene | 5.00 | 3.45 | | ug/L | | 69 | 40 - 140 |
| Benzo[a]pyrene | 5.00 | 3.30 | | ug/L | | 66 | 40 - 140 |
| Indeno[1,2,3-cd]pyrene | 5.00 | 3.31 | | ug/L | | 66 | 40 - 140 |
| Dibenz(a,h)anthracene | 5.00 | 3.27 | | ug/L | | 65 | 40 - 140 |
| Benzo[g,h,i]perylene | 5.00 | 3.59 | | ug/L | | 72 | 40 - 140 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl (Surr)* | *64* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *101* | | *40 - 140* |

## Method: EPH - Extractable Petroleum Hydrocarbons (GC/MS)

**Lab Sample ID: LCSD 620-23423/25-B**
**Matrix: Water**
**Analysis Batch: 23645**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 23423**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | | | 5.00 | 2.31 | | ug/L | | 46 | 40 - 140 | 15 | 25 |
| 2-Methylnaphthalene | | | 5.00 | 2.82 | *1 | ug/L | | 56 | 40 - 140 | 26 | 25 |
| Acenaphthylene | | | 5.00 | 3.03 | | ug/L | | 61 | 40 - 140 | 5 | 25 |
| Acenaphthene | | | 5.00 | 2.85 | | ug/L | | 57 | 40 - 140 | 17 | 25 |
| Fluorene | | | 5.00 | 2.64 | | ug/L | | 53 | 40 - 140 | 2 | 25 |
| Phenanthrene | | | 5.00 | 2.86 | | ug/L | | 57 | 40 - 140 | 7 | 25 |
| Anthracene | | | 5.00 | 3.00 | *1 | ug/L | | 60 | 40 - 140 | 39 | 25 |
| Fluoranthene | | | 5.00 | 3.76 | | ug/L | | 75 | 40 - 140 | 12 | 25 |
| Pyrene | | | 5.00 | 3.87 | | ug/L | | 77 | 40 - 140 | 15 | 25 |
| Benzo[a]anthracene | | | 5.00 | 3.94 | | ug/L | | 79 | 40 - 140 | 9 | 25 |
| Chrysene | | | 5.00 | 3.45 | | ug/L | | 69 | 40 - 140 | 4 | 25 |
| Benzo[b]fluoranthene | | | 5.00 | 4.24 | | ug/L | | 85 | 40 - 140 | 12 | 25 |
| Benzo[k]fluoranthene | | | 5.00 | 4.15 | | ug/L | | 83 | 40 - 140 | 18 | 25 |
| Benzo[a]pyrene | | | 5.00 | 3.65 | | ug/L | | 73 | 40 - 140 | 10 | 25 |
| Indeno[1,2,3-cd]pyrene | | | 5.00 | 4.24 | | ug/L | | 85 | 40 - 140 | 25 | 25 |
| Dibenz(a,h)anthracene | | | 5.00 | 4.22 | | ug/L | | 84 | 40 - 140 | 25 | 25 |
| Benzo[g,h,i]perylene | | | 5.00 | 4.66 | *1 | ug/L | | 93 | 40 - 140 | 26 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl (Surr)* | *72* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *95* | | *40 - 140* |

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

**Lab Sample ID: MB 620-23260/6**
**Matrix: Water**
**Analysis Batch: 23260**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 06/05/23 15:29 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 06/05/23 15:29 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 06/05/23 15:29 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 06/05/23 15:29 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 06/05/23 15:29 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 06/05/23 15:29 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 06/05/23 15:29 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 06/05/23 15:29 | 1 |
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 06/05/23 15:29 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 06/05/23 15:29 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 06/05/23 15:29 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 06/05/23 15:29 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 06/05/23 15:29 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *94* | | *70 - 130* | | *06/05/23 15:29* | *1* |
| *2,5-Dibromotoluene (pid)* | *90* | | *70 - 130* | | *06/05/23 15:29* | *1* |

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: LCS 620-23260/4**
**Matrix: Water**
**Analysis Batch: 23260**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | | | 20.0 | ND | | ug/L | | 112 | 70 - 130 | | |
| C5-C8 Aliphatics (unadjusted) | | | 60.0 | ND | | ug/L | | 97 | 70 - 130 | | |
| C9-C12 Aliphatics (unadjusted) | | | 60.0 | ND | | ug/L | | 98 | 70 - 130 | | |
| Benzene | | | 20.0 | 19.3 | | ug/L | | 96 | 70 - 130 | | |
| Ethylbenzene | | | 20.0 | 20.5 | | ug/L | | 103 | 70 - 130 | | |
| Methyl tert-butyl ether | | | 20.0 | 18.5 | | ug/L | | 93 | 70 - 130 | | |
| Naphthalene | | | 20.0 | 19.5 | | ug/L | | 97 | 70 - 130 | | |
| Toluene | | | 20.0 | 19.9 | | ug/L | | 99 | 70 - 130 | | |
| m,p-Xylene | | | 40.0 | 42.2 | | ug/L | | 106 | 70 - 130 | | |
| o-Xylene | | | 20.0 | 21.3 | | ug/L | | 107 | 70 - 130 | | |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *89* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *86* | | *70 - 130* |

**Lab Sample ID: LCSD 620-23260/5**
**Matrix: Water**
**Analysis Batch: 23260**

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

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | | | 20.0 | ND | | ug/L | | 108 | 70 - 130 | 4 | 25 |
| C5-C8 Aliphatics (unadjusted) | | | 60.0 | ND | | ug/L | | 97 | 70 - 130 | 0 | 25 |
| C9-C12 Aliphatics (unadjusted) | | | 60.0 | ND | | ug/L | | 96 | 70 - 130 | 2 | 25 |
| Benzene | | | 20.0 | 19.2 | | ug/L | | 96 | 70 - 130 | 1 | 25 |
| Ethylbenzene | | | 20.0 | 20.6 | | ug/L | | 103 | 70 - 130 | 0 | 25 |
| Methyl tert-butyl ether | | | 20.0 | 19.2 | | ug/L | | 96 | 70 - 130 | 4 | 25 |
| Naphthalene | | | 20.0 | 19.1 | | ug/L | | 96 | 70 - 130 | 2 | 25 |
| Toluene | | | 20.0 | 20.0 | | ug/L | | 100 | 70 - 130 | 1 | 25 |
| m,p-Xylene | | | 40.0 | 42.3 | | ug/L | | 106 | 70 - 130 | 0 | 25 |
| o-Xylene | | | 20.0 | 21.3 | | ug/L | | 107 | 70 - 130 | 0 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *92* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *88* | | *70 - 130* |

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

**Lab Sample ID: MB 620-23423/1-B**
**Matrix: Water**
**Analysis Batch: 23496**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 23423**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 100 | 100 | ug/L | | 06/08/23 13:47 | 06/13/23 12:11 | 1 |
| C19-C36 Aliphatics | ND | | 100 | 100 | ug/L | | 06/08/23 13:47 | 06/13/23 12:11 | 1 |
| C11-C22 Aromatics | ND | | 100 | 100 | ug/L | | 06/08/23 13:47 | 06/13/23 12:11 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 100 | 100 | ug/L | | 06/08/23 13:47 | 06/13/23 12:11 | 1 |

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: MB 620-23423/1-B**
**Matrix: Water**
**Analysis Batch: 23496**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 23423**

| Surrogate | MB %Recovery | MB Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|
| 1-Chlorooctadecane (Surr) | 68 | | 40 - 140 | 06/08/23 13:47 | 06/13/23 12:11 | 1 |
| o-Terphenyl (Surr) | 67 | | 40 - 140 | 06/08/23 13:47 | 06/13/23 12:11 | 1 |
| 2-Fluorobiphenyl (Surr) | 110 | | 40 - 140 | 06/08/23 13:47 | 06/13/23 12:11 | 1 |

**Lab Sample ID: LCS 620-23423/2-B**
**Matrix: Water**
**Analysis Batch: 23496**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 23423**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | | | 120 | ND | | ug/L | | 55 | 40 - 140 | | |
| C19-C36 Aliphatics | | | 160 | 123 | | ug/L | | 77 | 40 - 140 | | |
| C11-C22 Aromatics | | | 340 | 329 | | ug/L | | 97 | 40 - 140 | | |

| Surrogate | LCS %Recovery | LCS Qualifier | Limits |
|---|---|---|---|
| 1-Chlorooctadecane (Surr) | 61 | | 40 - 140 |
| o-Terphenyl (Surr) | 75 | | 40 - 140 |
| 2-Fluorobiphenyl (Surr) | 120 | | 40 - 140 |

**Lab Sample ID: LCSD 620-23423/3-B**
**Matrix: Water**
**Analysis Batch: 23496**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 23423**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | | | 120 | ND | | ug/L | | 66 | 40 - 140 | 18 | 25 |
| C19-C36 Aliphatics | | | 160 | 120 | | ug/L | | 75 | 40 - 140 | 2 | 25 |
| C11-C22 Aromatics | | | 340 | 308 | | ug/L | | 91 | 40 - 140 | 7 | 25 |

| Surrogate | LCSD %Recovery | LCSD Qualifier | Limits |
|---|---|---|---|
| 1-Chlorooctadecane (Surr) | 76 | | 40 - 140 |
| o-Terphenyl (Surr) | 72 | | 40 - 140 |
| 2-Fluorobiphenyl (Surr) | 115 | | 40 - 140 |

## Method: 6010D - Metals (ICP)

**Lab Sample ID: MB 620-23239/1-A**
**Matrix: Water**
**Analysis Batch: 23376**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 23239**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 0.0060 | 0.0016 | mg/L | | 06/05/23 07:45 | 06/07/23 09:59 | 1 |
| Arsenic | ND | | 0.0040 | 0.0014 | mg/L | | 06/05/23 07:45 | 06/07/23 09:59 | 1 |
| Barium | ND | | 0.0050 | 0.00070 | mg/L | | 06/05/23 07:45 | 06/07/23 09:59 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 06/05/23 07:45 | 06/07/23 09:59 | 1 |
| Cadmium | ND | | 0.0025 | 0.00036 | mg/L | | 06/05/23 07:45 | 06/07/23 09:59 | 1 |
| Chromium | ND | | 0.0050 | 0.00093 | mg/L | | 06/05/23 07:45 | 06/07/23 09:59 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 06/05/23 07:45 | 06/07/23 09:59 | 1 |
| Nickel | ND | | 0.0050 | 0.00087 | mg/L | | 06/05/23 07:45 | 06/07/23 09:59 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 06/05/23 07:45 | 06/07/23 09:59 | 1 |

## Method: 6010D - Metals (ICP) (Continued)

**Lab Sample ID: MB 620-23239/1-A**
**Matrix: Water**
**Analysis Batch: 23376**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 23239**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 06/05/23 07:45 | 06/07/23 09:59 | 1 |
| Thallium | ND | | 0.0050 | 0.0021 | mg/L | | 06/05/23 07:45 | 06/07/23 09:59 | 1 |
| Vanadium | ND | | 0.0050 | 0.0011 | mg/L | | 06/05/23 07:45 | 06/07/23 09:59 | 1 |
| Zinc | ND | | 0.025 | 0.0016 | mg/L | | 06/05/23 07:45 | 06/07/23 09:59 | 1 |

**Lab Sample ID: LCS 620-23239/2-A**
**Matrix: Water**
**Analysis Batch: 23376**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 23239**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Antimony | 1.25 | 1.26 | | mg/L | | 101 | 80 - 120 |
| Arsenic | 1.25 | 1.27 | | mg/L | | 101 | 80 - 120 |
| Barium | 1.25 | 1.25 | | mg/L | | 100 | 80 - 120 |
| Beryllium | 1.25 | 1.27 | | mg/L | | 101 | 80 - 120 |
| Cadmium | 1.25 | 1.26 | | mg/L | | 101 | 80 - 120 |
| Chromium | 1.25 | 1.24 | | mg/L | | 99 | 80 - 120 |
| Lead | 1.25 | 1.27 | | mg/L | | 101 | 80 - 120 |
| Nickel | 1.25 | 1.26 | | mg/L | | 100 | 80 - 120 |
| Selenium | 1.25 | 1.33 | | mg/L | | 106 | 80 - 120 |
| Silver | 1.25 | 1.23 | | mg/L | | 98 | 80 - 120 |
| Thallium | 1.25 | 1.27 | | mg/L | | 101 | 80 - 120 |
| Vanadium | 1.25 | 1.26 | | mg/L | | 101 | 80 - 120 |
| Zinc | 1.25 | 1.29 | | mg/L | | 103 | 80 - 120 |

**Lab Sample ID: LCSD 620-23239/3-A**
**Matrix: Water**
**Analysis Batch: 23376**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 23239**

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 1.25 | 1.26 | | mg/L | | 101 | 80 - 120 | 0 | 20 |
| Arsenic | 1.25 | 1.27 | | mg/L | | 102 | 80 - 120 | 0 | 20 |
| Barium | 1.25 | 1.25 | | mg/L | | 100 | 80 - 120 | 0 | 20 |
| Beryllium | 1.25 | 1.27 | | mg/L | | 102 | 80 - 120 | 0 | 20 |
| Cadmium | 1.25 | 1.26 | | mg/L | | 100 | 80 - 120 | 0 | 20 |
| Chromium | 1.25 | 1.24 | | mg/L | | 99 | 80 - 120 | 0 | 20 |
| Lead | 1.25 | 1.27 | | mg/L | | 101 | 80 - 120 | 0 | 20 |
| Nickel | 1.25 | 1.26 | | mg/L | | 100 | 80 - 120 | 0 | 20 |
| Selenium | 1.25 | 1.33 | | mg/L | | 106 | 80 - 120 | 0 | 20 |
| Silver | 1.25 | 1.23 | | mg/L | | 99 | 80 - 120 | 0 | 20 |
| Thallium | 1.25 | 1.27 | | mg/L | | 101 | 80 - 120 | 0 | 20 |
| Vanadium | 1.25 | 1.26 | | mg/L | | 101 | 80 - 120 | 0 | 20 |
| Zinc | 1.25 | 1.29 | | mg/L | | 103 | 80 - 120 | 0 | 20 |

# QC Sample Results

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11883-1

## Method: 7470A - Mercury (CVAA)

**Lab Sample ID: MB 620-23514/1-A**
**Matrix: Water**
**Analysis Batch: 23549**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 23514**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 06/12/23 10:41 | 06/12/23 16:05 | 1 |

**Lab Sample ID: LCS 620-23514/2-A**
**Matrix: Water**
**Analysis Batch: 23549**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 23514**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | | | 0.00500 | 0.00490 | | mg/L | | 98 | 85 - 115 | | |

**Lab Sample ID: LCSD 620-23514/3-A**
**Matrix: Water**
**Analysis Batch: 23549**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 23514**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | | | 0.00500 | 0.00495 | | mg/L | | 99 | 85 - 115 | 1 | 20 |

# QC Association Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11883-1

## GC/MS Semi VOA

### Prep Batch: 23423

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11883-1 | LM-GW-MW103-060223 | Total/NA | Water | 3510C | |
| MB 620-23423/1-B | Method Blank | Total/NA | Water | 3510C | |
| LCS 620-23423/24-B | Lab Control Sample | Total/NA | Water | 3510C | |
| LCSD 620-23423/25-B | Lab Control Sample Dup | Total/NA | Water | 3510C | |

### Fraction Batch: 23465

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11883-1 | LM-GW-MW103-060223 | Total/NA | Water | MA EPH Frac | 23423 |
| MB 620-23423/1-B | Method Blank | Total/NA | Water | MA EPH Frac | 23423 |
| LCS 620-23423/24-B | Lab Control Sample | Total/NA | Water | MA EPH Frac | 23423 |
| LCSD 620-23423/25-B | Lab Control Sample Dup | Total/NA | Water | MA EPH Frac | 23423 |

### Analysis Batch: 23645

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11883-1 | LM-GW-MW103-060223 | Total/NA | Water | EPH | 23465 |
| MB 620-23423/1-B | Method Blank | Total/NA | Water | EPH | 23465 |
| LCS 620-23423/24-B | Lab Control Sample | Total/NA | Water | EPH | 23465 |
| LCSD 620-23423/25-B | Lab Control Sample Dup | Total/NA | Water | EPH | 23465 |

## GC VOA

### Analysis Batch: 23260

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11883-1 | LM-GW-MW103-060223 | Total/NA | Water | MAVPH2.1 | |
| 620-11883-2 | TB01-060223 | Total/NA | Water | MAVPH2.1 | |
| MB 620-23260/6 | Method Blank | Total/NA | Water | MAVPH2.1 | |
| LCS 620-23260/4 | Lab Control Sample | Total/NA | Water | MAVPH2.1 | |
| LCSD 620-23260/5 | Lab Control Sample Dup | Total/NA | Water | MAVPH2.1 | |

## GC Semi VOA

### Prep Batch: 23423

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11883-1 | LM-GW-MW103-060223 | Total/NA | Water | 3510C | |
| MB 620-23423/1-B | Method Blank | Total/NA | Water | 3510C | |
| LCS 620-23423/2-B | Lab Control Sample | Total/NA | Water | 3510C | |
| LCSD 620-23423/3-B | Lab Control Sample Dup | Total/NA | Water | 3510C | |

### Fraction Batch: 23465

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11883-1 | LM-GW-MW103-060223 | Total/NA | Water | MA EPH Frac | 23423 |
| MB 620-23423/1-B | Method Blank | Total/NA | Water | MA EPH Frac | 23423 |
| LCS 620-23423/2-B | Lab Control Sample | Total/NA | Water | MA EPH Frac | 23423 |
| LCSD 620-23423/3-B | Lab Control Sample Dup | Total/NA | Water | MA EPH Frac | 23423 |

### Analysis Batch: 23496

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| MB 620-23423/1-B | Method Blank | Total/NA | Water | MAEPH2.1 | 23465 |
| LCS 620-23423/2-B | Lab Control Sample | Total/NA | Water | MAEPH2.1 | 23465 |
| LCSD 620-23423/3-B | Lab Control Sample Dup | Total/NA | Water | MAEPH2.1 | 23465 |

## GC Semi VOA

### Analysis Batch: 23595

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11883-1 | LM-GW-MW103-060223 | Total/NA | Water | MAEPH2.1 | 23465 |

## Metals

### Prep Batch: 23239

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11883-1 | LM-GW-MW103-060223 | Total/NA | Water | 3005A | |
| MB 620-23239/1-A | Method Blank | Total/NA | Water | 3005A | |
| LCS 620-23239/2-A | Lab Control Sample | Total/NA | Water | 3005A | |
| LCSD 620-23239/3-A | Lab Control Sample Dup | Total/NA | Water | 3005A | |

### Analysis Batch: 23376

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11883-1 | LM-GW-MW103-060223 | Total/NA | Water | 6010D | 23239 |
| MB 620-23239/1-A | Method Blank | Total/NA | Water | 6010D | 23239 |
| LCS 620-23239/2-A | Lab Control Sample | Total/NA | Water | 6010D | 23239 |
| LCSD 620-23239/3-A | Lab Control Sample Dup | Total/NA | Water | 6010D | 23239 |

### Prep Batch: 23514

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11883-1 | LM-GW-MW103-060223 | Total/NA | Water | 7470A | |
| MB 620-23514/1-A | Method Blank | Total/NA | Water | 7470A | |
| LCS 620-23514/2-A | Lab Control Sample | Total/NA | Water | 7470A | |
| LCSD 620-23514/3-A | Lab Control Sample Dup | Total/NA | Water | 7470A | |

### Analysis Batch: 23549

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-11883-1 | LM-GW-MW103-060223 | Total/NA | Water | 7470A | 23514 |
| MB 620-23514/1-A | Method Blank | Total/NA | Water | 7470A | 23514 |
| LCS 620-23514/2-A | Lab Control Sample | Total/NA | Water | 7470A | 23514 |
| LCSD 620-23514/3-A | Lab Control Sample Dup | Total/NA | Water | 7470A | 23514 |

# Lab Chronicle

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11883-1

## Client Sample ID: LM-GW-MW103-060223

**Lab Sample ID: 620-11883-1**

**Date Collected: 06/02/23 08:35**

**Matrix: Water**

**Date Received: 06/02/23 15:10**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 23423 | BMS | EET NE | 06/08/23 13:47 |
| Total/NA | Fraction | MA EPH Frac | | | 23465 | BMS | EET NE | 06/09/23 11:38 |
| Total/NA | Analysis | EPH | | 1 | 23645 | JS | EET NE | 06/15/23 17:32 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 23260 | BMH | EET NE | 06/06/23 02:40 |
| Total/NA | Prep | 3510C | | | 23423 | BMS | EET NE | 06/08/23 13:47 |
| Total/NA | Fraction | MA EPH Frac | | | 23465 | BMS | EET NE | 06/09/23 11:38 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 23595 | JS | EET NE | 06/14/23 13:43 |
| Total/NA | Prep | 3005A | | | 23239 | PRB | EET NE | 06/05/23 07:49 |
| Total/NA | Analysis | 6010D | | 1 | 23376 | JPC | EET NE | 06/07/23 12:55 |
| Total/NA | Prep | 7470A | | | 23514 | PRB | EET NE | 06/12/23 10:41 |
| Total/NA | Analysis | 7470A | | 1 | 23549 | PRB | EET NE | 06/12/23 16:20 |

## Client Sample ID: TB01-060223

**Lab Sample ID: 620-11883-2**

**Date Collected: 06/02/23 10:00**

**Matrix: Water**

**Date Received: 06/02/23 15:10**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | MAVPH2.1 | | 1 | 23260 | BMH | EET NE | 06/05/23 17:52 |

**Laboratory References:**

EET NE = Eurofins New England, 646 Camp Ave, North Kingstown, RI 02852, TEL (413)789-9018

# Accreditation/Certification Summary

Client: Nobis Engineering, Inc. Job ID: 620-11883-1
Project/Site: Former L&M - Lunenburg MA

## Laboratory: Eurofins New England

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

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|
| Massachusetts | State | M-RI907 | 06-30-23 |

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

| Analysis Method | Prep Method | Matrix | Analyte |
|---|---|---|---|
| 6010D | 3005A | Water | Antimony |
| 6010D | 3005A | Water | Arsenic |
| 6010D | 3005A | Water | Barium |
| 6010D | 3005A | Water | Beryllium |
| 6010D | 3005A | Water | Cadmium |
| 6010D | 3005A | Water | Chromium |
| 6010D | 3005A | Water | Lead |
| 6010D | 3005A | Water | Nickel |
| 6010D | 3005A | Water | Selenium |
| 6010D | 3005A | Water | Silver |
| 6010D | 3005A | Water | Thallium |
| 6010D | 3005A | Water | Vanadium |
| 6010D | 3005A | Water | Zinc |
| 7470A | 7470A | Water | Mercury |
| EPH | 3510C | Water | 2-Methylnaphthalene |
| EPH | 3510C | Water | Acenaphthene |
| EPH | 3510C | Water | Acenaphthylene |
| EPH | 3510C | Water | Anthracene |
| EPH | 3510C | Water | Benzo[a]anthracene |
| EPH | 3510C | Water | Benzo[a]pyrene |
| EPH | 3510C | Water | Benzo[b]fluoranthene |
| EPH | 3510C | Water | Benzo[g,h,i]perylene |
| EPH | 3510C | Water | Benzo[k]fluoranthene |
| EPH | 3510C | Water | Chrysene |
| EPH | 3510C | Water | Dibenz(a,h)anthracene |
| EPH | 3510C | Water | Fluoranthene |
| EPH | 3510C | Water | Fluorene |
| EPH | 3510C | Water | Indeno[1,2,3-cd]pyrene |
| EPH | 3510C | Water | Naphthalene |
| EPH | 3510C | Water | Phenanthrene |
| EPH | 3510C | Water | Pyrene |
| MAEPH2.1 | 3510C | Water | C11-C22 Aromatics |
| MAEPH2.1 | 3510C | Water | C11-C22 Aromatics (Adjusted) |
| MAEPH2.1 | 3510C | Water | C19-C36 Aliphatics |
| MAEPH2.1 | 3510C | Water | C9-C18 Aliphatics |
| MAVPH2.1 | | Water | Benzene |
| MAVPH2.1 | | Water | C5-C8 Aliphatics (adjusted) |
| MAVPH2.1 | | Water | C5-C8 Aliphatics (unadjusted) |
| MAVPH2.1 | | Water | C9-C10 Aromatics |
| MAVPH2.1 | | Water | C9-C12 Aliphatics (adjusted) |
| MAVPH2.1 | | Water | C9-C12 Aliphatics (unadjusted) |
| MAVPH2.1 | | Water | Ethylbenzene |
| MAVPH2.1 | | Water | m,p-Xylene |
| MAVPH2.1 | | Water | Methyl tert-butyl ether |
| MAVPH2.1 | | Water | Naphthalene |

# Accreditation/Certification Summary

Client: Nobis Engineering, Inc. Job ID: 620-11883-1
Project/Site: Former L&M - Lunenburg MA

## Laboratory: Eurofins New England (Continued)

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

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

| Analysis Method | Prep Method | Matrix | Analyte |
|---|---|---|---|
| MAVPH2.1 | | Water | o-Xylene |
| MAVPH2.1 | | Water | Toluene |
| MAVPH2.1 | | Water | Xylenes, Total |

# Method Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11883-1

| Method | Method Description | Protocol | Laboratory |
|---|---|---|---|
| EPH | Extractable Petroleum Hydrocarbons (GC/MS) | MA DEP | EET NE |
| MAVPH2.1 | Massachusetts - Volatile Petroleum Hydrocarbons (GC) | MA DEP | EET NE |
| MAEPH2.1 | Massachusetts - Extractable Petroleum Hydrocarbons (GC) | MA DEP | EET NE |
| 6010D | Metals (ICP) | SW846 | EET NE |
| 7470A | Mercury (CVAA) | SW846 | EET NE |
| 3005A | Preparation, Total Metals | SW846 | EET NE |
| 3510C | Liquid-Liquid Extraction (Separatory Funnel) | SW846 | EET NE |
| 5030C | Purge and Trap | SW846 | EET NE |
| 7470A | Preparation, Mercury | SW846 | EET NE |
| MA EPH Frac | Massachusetts - Extractable Petroleum Hydrocarbon Fractionation | MA DEP | EET NE |

**Protocol References:**

MA DEP = Massachusetts Department Of Environmental Protection

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

**Laboratory References:**

EET NE = Eurofins New England, 646 Camp Ave, North Kingstown, RI 02852, TEL (413)789-9018

# Sample Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-11883-1

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---|---|---|---|---|
| 620-11883-1 | LM-GW-MW103-060223 | Water | 06/02/23 08:35 | 06/02/23 15:10 |
| 620-11883-2 | TB01-060223 | Water | 06/02/23 10:00 | 06/02/23 15:10 |

11883

# Chain of Custody Record

eurofins | Environment Testing

| | | | | |
|---|---|---|---|---|
| | Sampler: S. Stone | Lab PM | Carrier Tracking No(s) | COC No: 620-10175-1337 2 |
| Bridget Fortier | Phone | E-Mail: dru_Nobis-group.com | State of Origin | Page: Page 1 of 3 |
| Company: Nobis Engineering, Inc | PWSID | | | Job #: |

**Analysis Requested**

| | |
|---|---|
| Address: 585 Middlesex Street | Due Date Requested: |
| City: Lowell | TAT Requested (days): Standard |
| State, Zip: MA, 01851 | Compliance Project: Δ Yes Δ No |
| Phone | PO #: |
| Email: bfortier@nobis-group.com | WO #: |
| Project Name: Former L&M | Project #: 500001.005/406 |
| Site: Former L&M | SSOW#: |

**Preservation Codes:**

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)

Other:

| Sample Identification | Sample Date | Sample Time | Sample Type (C=comp, G=grab) | Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air) | Field Filtered Sample (Yes or No) | Perform MS/MSD (Yes or No) | VPH | Metals | EPH | Total Number of containers | Special Instructions/Note: |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservation Code: | | | | | | | A | D | A | | |
| 01 LM-GW-MW103-060223 | 06-02-23 | 835 | G | Water | | | X | X | X | | metals could not be filtered |
| 02 TB01-060223 | 06-02-23 | 1000 | G | Water | | | X | | | | trip blank |
| | | | | Water | | | | | | | |
| | | | | Water | | | | | | | |
| | | | | Water | | | | | | | |
| | | | | Water | | | | | | | |
| | | | | Water | | | | | | | |
| | | | | Water | | | | | | | |
| | | | | Water | | | | | | | |
| | | | | Water | | | | | | | |
| | | | | Water | | | | | | | |
| | | | | Water | | | | | | | |

**Possible Hazard Identification**

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

**Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)**

☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested I, II, III, IV, Other (specify): EDD format PDF & email

Special Instructions/QC Requirements: MCP CAM metals; only 1 EPH due to volume

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Empty Kit Relinquished by | | Date | | Time | | Method of Shipment: | |
| Relinquished by: | | Date/Time: 6-2-23 1305 | Company: EA | Received by: | | Date/Time: 6/2-23 1305 | Company: EA |
| Relinquished by: | | Date/Time: 6-2-23 1510 | Company: EA | Received by: | | Date/Time: 6/2/23 1510 | Company: Eurofins |
| Relinquished by: | | Date/Time. | Company | Received by: | | Date/Time. | Company |

Custody Seals Intact. Δ Yes Δ No | Custody Seal No .

Cooler Temperature(s) °C and Other Remarks: 2.2 +0.2 2.4 #8

Ver: 06/08/2021

# Login Sample Receipt Checklist

Client: Nobis Engineering, Inc.

Job Number: 620-11883-1

**Login Number: 11883**
**List Number: 1**
**Creator: Makhoul, Elie**

**List Source: Eurofins New England**

| Question | Answer | Comment |
|---|---|---|
| Radioactivity wasn't checked or is </= background as measured by a survey meter. | N/A | |
| The cooler's custody seal, if present, is intact. | N/A | |
| Sample custody seals, if present, are intact. | N/A | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| Is the Field Sampler's name present on COC? | True | |
| There are no discrepancies between the containers received and the COC. | True | |
| Samples are received within Holding Time (excluding tests with immediate HTs) | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| Sample Preservation Verified. | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| Containers requiring zero headspace have no headspace or bubble is <6mm (1/4"). | True | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |
| Residual Chlorine Checked. | N/A | |

January 15, 2024
Nobis File No. S00001.05

Ms. Katy Deng
USEPA – Region 1
Land, Chemicals, and Redevelopment Division
5 Post Office Square, Suite 100
Boston, MA 02109-3912

Re: USEPA Contract No. 68HE0122D0001
USEPA Task Order No. 68HE0122F0044
Targeted Brownfields Assessment (TBA)
Former L&M Service Station Site
Lunenburg, Massachusetts
Sample Delivery Group (SDG) No. 620145821
Eurofins New England, North Kingstown, RI

Tier 1 Stage 2A Organic and Inorganic Data Review:

Volatile Petroleum Hydrocarbons (VPH by MassDEP-VPH), Extractable Petroleum Hydrocarbons (EPH by MassDEP-EPH), Massachusetts Contingency Plan (MCP) Metals (MCP-14 Metals by 6010D/7471A)

4/Soil Samples: SO-B/MW-106-1015, SO-B/MW-107-1015, SO-B/MW-108-1518, SO-FD01-101223
1/Field Duplicate Pair: SO-B/MW-106-1015 / SO-FD01-101223
1/Trip Blank: TB01-101223

Dear Ms. Deng:

Nobis Group (Nobis), under a USEPA contract as a subcontractor to KGSNE JV, LLC, performed a Tier 1 Stage 2A manual data review (S2AVM) on the organic and inorganic analytical data for the samples listed above. The samples were collected by Nobis at the Former L&M Service Station Site located in Lunenburg, Massachusetts on October 12, 2023. The samples were analyzed for VPH by MassDEP-VPH, EPH by MassDEP-EPH, and MCP-14 Metals by 6010D/7471A by Eurofins New England in North Kingstown, RI.

The Tier 1 Stage 2A manual data review was performed in accordance with the Region 1 - EPA New England Environmental Data Review Supplement for Region I Data Review Elements and Superfund Specific Guidance/Procedures (September 2020); USEPA's National Functional Guidelines for Organic Superfund Methods Data Review (November 2020); USEPA's National Functional Guidelines for Inorganic Superfund Methods Data Review (November 2020); the Program Quality Assurance Project Plan (Program QAPP) dated October 2022, and the Quality Assurance Project Plan Addendum (QAPPA) (May 2023) for the Former L&M Service Station Site, which appends the October 2022 Program QAPP.

The data were evaluated based on the following parameters:

* • Overall Evaluation of Data and Potential Usability Issues
* • Data Completeness
* • Preservation and Technical Holding Times
* • Blanks



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| | | |
|---|---|---|
| * | • | Surrogates (organic analyses only) |
| NA | • | Internal Standards |
| | • | Matrix Spike Analysis |
| | • | Laboratory Duplicates |
| | • | Laboratory Control Samples (LCS) |
| | • | Field Duplicates |
| NA | • | ICP Serial Dilutions (metals only) |
| NA | • | Performance Evaluation (PE) Samples |
| * | • | Target Analyte Identification |
| | • | Reported Quantitation Limits |

* All criteria were met for this parameter or did not require qualification.
NA – Not applicable.

**Overall Evaluation of Data and Potential Usability Issues**

The site sampling objectives are:

- Characterize in-situ soil based on AOCs identified by Fuss & O'Neill in November 2020 Phase I for the presence of possible site-related contamination.
- Evaluate groundwater elevation.
- Evaluate presence/absence of groundwater contamination related to site.

Note that non-detect reporting limits for the EPH dibenz(a,h)anthracene exceeded the project action limit (PAL) in samples SO-B/MW-106-1015 and SO-FD01-101223, where the RLs exceeded the PAL of 0.7 mg/kg (1 mg/kg and 1.1 mg/kg, respectively). The laboratory indicated that these samples required dilutions due to the matrix and a strong fuel odor.

The remaining data meet the project quality criteria and can be used without restriction except as summarized below. The attachments provide details and supporting documentation.

**MassDEP-VPH**:
Results were qualified for MS/MSD recovery and RPD exceedances and field duplicate imprecision.

**MassDEP-EPH:**
Results were qualified for MS/MSD recovery and RPD exceedances and field duplicate imprecision.

**MCP-14 Metals:**
Results were qualified for LCS recovery and laboratory duplicate imprecision.

Please contact Linda Terzis at lterzis@nobis-group.com should you have any questions or comments regarding this information.

Sincerely,

NOBIS GROUP®

Linda Terzis
Data Validator

Gary Glennon
Data Validator

Tables: Data Summary Tables – Tier 1 Stage 2A (S2AVM) Validated Data
Data Qualification Actions Table

Attachments: Data Review Checklist
Support Documentation
COC

cc: Denis McGrath (Nobis Group)
Adam Roy (Nobis Group)

# DATA SUMMARY TABLE

| **Analysis** | | EPH in Soil | | | |
|---|---|---|---|---|---|
| **Lab Sample ID** | | 620-14582-1 | 620-14582-2 | 620-14582-3 | 620-14582-4 |
| **Field Sample ID** | | SO-B/MW-106-1015 | SO-B/MW-107-1015 | SO-B/MW-108-1518 | SO-FD01-101223 |
| **Sample Type** | | N | N | N | FD |
| **Parent Sample ID** | | | | | SO-B/MW-106-1015 |
| **Sample Date** | **Units** | 10/12/23 | 10/12/23 | 10/12/23 | 10/12/23 |
| 2-Methylnaphthalene | mg/kg | 1.8 J | 0.39 UJ | 0.38 UJ | 6.3 J |
| Acenaphthene | mg/kg | 1 U | 0.39 U | 0.38 U | 1.1 U |
| Acenaphthylene | mg/kg | 1 U | 0.39 U | 0.38 U | 1.1 U |
| Anthracene | mg/kg | 1 U | 0.39 U | 0.38 U | 1.1 U |
| Benzo(a)anthracene | mg/kg | 1 U | 0.39 U | 0.38 U | 1.1 U |
| Benzo(a)pyrene | mg/kg | 1 U | 0.39 U | 0.38 U | 2 |
| Benzo(b)fluoranthene | mg/kg | 1 U | 0.39 U | 0.38 U | 1.1 U |
| Benzo(g,h,i)perylene | mg/kg | 1 U | 0.39 U | 0.38 U | 1.1 U |
| Benzo(k)fluoranthene | mg/kg | 1 U | 0.39 U | 0.38 U | 1.1 U |
| C11-C22 Aromatics | mg/kg | 47 J | 11 J | 7.6 UJ | 140 J |
| C11-C22 Aromatics (adjusted) | mg/kg | 44 J | 11 J | 7.6 UJ | 130 J |
| C19-C36 Aliphatics | mg/kg | 130 J | 32 J | 12 J | 360 J |
| C9-C18 Aliphatics | mg/kg | 60 | 7.7 U | 7.6 U | 93 |
| Chrysene | mg/kg | 1 U | 0.39 U | 0.38 U | 1.1 U |
| Dibenz(a,h)anthracene | mg/kg | 1 U | 0.39 U | 0.38 U | 1.1 U |
| Fluoranthene | mg/kg | 1 U | 0.39 U | 0.38 U | 1.1 U |
| Fluorene | mg/kg | 1 U | 0.39 U | 0.38 U | 1.1 U |
| Indeno(1,2,3-cd)pyrene | mg/kg | 1 U | 0.39 U | 0.38 U | 1.1 U |
| Naphthalene | mg/kg | 1.7 | 0.39 U | 0.38 U | 5.2 |
| Phenanthrene | mg/kg | 1 U | 0.39 U | 0.38 U | 1.1 U |
| Pyrene | mg/kg | 1 U | 0.39 U | 0.38 U | 1.1 U |

## DATA SUMMARY TABLE

| **Analysis** | | Metals in Soil | | | |
|---|---|---|---|---|---|
| **Lab Sample ID** | | 620-14582-1 | 620-14582-2 | 620-14582-3 | 620-14582-4 |
| **Field Sample ID** | | SO-B/MW-106-1015 | SO-B/MW-107-1015 | SO-B/MW-108-1518 | SO-FD01-101223 |
| **Sample Type** | | N | N | N | FD |
| **Parent Sample ID** | | | | | SO-B/MW-106-1015 |
| **Sample Date** | **Units** | 10/12/23 | 10/12/23 | 10/12/23 | 10/12/23 |
| Antimony | mg/kg | 1 J | 0.93 J | 1.2 J | 0.95 J |
| Arsenic | mg/kg | 8.9 J- | 23 J- | 27 J- | 3.7 J- |
| Barium | mg/kg | 54 | 29 | 34 | 56 |
| Beryllium | mg/kg | 0.46 U | 0.46 U | 0.56 U | 0.49 U |
| Cadmium | mg/kg | 0.46 U | 0.027 J | 0.035 J | 0.49 U |
| Chromium | mg/kg | 20 | 18 | 21 | 17 |
| Lead | mg/kg | 7.2 | 12 | 17 | 2.9 |
| Mercury | mg/kg | 0.04 UJ | 0.023 J | 0.032 UJ | 0.03 J |
| Nickel | mg/kg | 14 | 12 | 14 | 13 |
| Selenium | mg/kg | 1.4 U | 1.4 U | 1.7 U | 1.5 U |
| Silver | mg/kg | 1.4 U | 1.4 U | 1.7 U | 1.5 U |
| Thallium | mg/kg | 2.8 U | 2.8 U | 3.4 U | 2.9 U |
| Vanadium | mg/kg | 18 | 14 | 17 | 13 |
| Zinc | mg/kg | 22 J | 56 J | 79 J | 14 J |

## DATA SUMMARY TABLE

| **Analysis** | | VPH in Soil | | | |
|---|---|---|---|---|---|
| **Lab Sample ID** | | 620-14582-1 | 620-14582-2 | 620-14582-3 | 620-14582-4 |
| **Field Sample ID** | | SO-B/MW-106-1015 | SO-B/MW-107-1015 | SO-B/MW-108-1518 | SO-FD01-101223 |
| **Sample Type** | | N | N | N | FD |
| **Parent Sample ID** | | | | | SO-B/MW-106-1015 |
| **Sample Date** | **Units** | 10/12/23 | 10/12/23 | 10/12/23 | 10/12/23 |
| Benzene | mg/kg | 0.59 J | 0.15 UJ | 0.13 UJ | 1.5 UJ |
| C5-C8 Aliphatics (adjusted) | mg/kg | 340 | 3.6 | 4.3 | 500 |
| C5-C8 Aliphatics (unadjusted) | mg/kg | 340 | 3.9 | 4.6 | 500 |
| C9-C10 Aromatics | mg/kg | 210 J | 16 J | 18 J | 460 J |
| C9-C12 Aliphatics (adjusted) | mg/kg | 150 J | 9.8 J | 8.6 J | 300 UJ |
| C9-C12 Aliphatics (unadjusted) | mg/kg | 430 J | 26 J | 28 J | 720 J |
| Ethylbenzene | mg/kg | 12 | 0.15 U | 0.18 | 14 |
| m,p-Xylene | mg/kg | 51 | 0.29 U | 0.54 | 60 |
| Methyl tert-butyl ether | mg/kg | 0.23 J | 0.31 J | 0.34 J | 0.3 UJ |
| Naphthalene | mg/kg | 3.6 J | 0.58 UJ | 0.52 UJ | 6.9 J |
| o-Xylene | mg/kg | 4.6 | 0.17 | 0.24 | 4.7 |
| Toluene | mg/kg | 1.3 J | 0.15 U | 0.13 U | 1.5 U |
| Xylene (total) | mg/kg | 55 | 0.44 U | 0.78 | 65 |

# DATA SUMMARY TABLE

| **Analysis** | | VPH in Soil/Solid Quality Control Matrix |
|---|---|---|
| **Lab Sample ID** | | 620-14582-5 |
| **Field Sample ID** | | TB01-101223 |
| **Sample Type** | | TB |
| **Parent Sample ID** | | |
| **Sample Date** | **Units** | 10/12/23 |
| Benzene | mg/kg | 0.25 U |
| C5-C8 Aliphatics (adjusted) | mg/kg | 5 U |
| C5-C8 Aliphatics (unadjusted) | mg/kg | 5 U |
| C9-C10 Aromatics | mg/kg | 5 U |
| C9-C12 Aliphatics (adjusted) | mg/kg | 5 U |
| C9-C12 Aliphatics (unadjusted) | mg/kg | 5 U |
| Ethylbenzene | mg/kg | 0.25 U |
| m,p-Xylene | mg/kg | 0.5 U |
| Methyl tert-butyl ether | mg/kg | 0.05 U |
| Naphthalene | mg/kg | 1 U |
| o-Xylene | mg/kg | 0.25 U |
| Toluene | mg/kg | 0.25 U |
| Xylene (total) | mg/kg | 0.75 U |

**Data Review Qualification Actions**
**Former L&M Service Station**
**SDG 620145821**

| Parameter | Analyte | Samples | Evaluation Criteria | Action Needed | Comments |
|---|---|---|---|---|---|
| **VPH** | | | | | |
| | Benzene, C9-C12 aliphatics (adjusted), naphthalene | All soil samples | Field duplicate precision | J / UJ | |
| | C9-C10 Aromatics, C9-C12 aliphatics (unadjusted) | All soil samples | Field duplicate precision | J | |
| | Methyl tert-butyl ether | All soil samples | MS/MSD recovery | J / UJ | |
| | Benzene, toluene | SO-B/MW-106-1015 | MS/MSD RPD | J | |
| **EPH** | | | | | |
| | 2-Methylnaphthalene, C11-C22 aromatics, C11-C22 aromatics (adjusted) | All soil samples | Field duplicate precision | J / UJ | |
| | C19-C36 Aliphatics | All soil samples | Field duplicate precision | J | |
| | C19-C36 Aliphatics | All soil samples | MS/MSD recovery / RPD | J | |
| **MCP-14 Metals** | | | | | |
| | Antimony | All soil samples | LCS recovery | J- | Final qual J, indeterminate bias, all soil samples due to being < RL. |
| | Arsenic | All soil samples | LCS recovery | J- | |
| | Mercury | All soil samples | LCS recovery | J- / UJ | Final qual J, indeterminate bias, for detected results due to < RL. |
| | Zinc | All soil samples | Laboratory duplicate precision | J | |

**Tier 1/Stage 2A Data Review Checklist**

**Project:** Former L&M Service Station, Lunenburg, Massachusetts
Targeted Brownfields Assessment (TBA)
**Project #:** S00001.05

**Date:** 01/03/2024

**Methods:** Volatile Petroleum Hydrocarbons (VPH) (MassDEP-VPH)
Extractable Petroleum Hydrocarbons (EPH) (MassDEP-EPH)
Massachusetts Contingency Plan (MCP) Metals (MCP-14 Metals by 6010D/7471A)

**Laboratory:** Eurofins New England Laboratory, North Kingstown, RI
**Case:** N/A
**SDG:** 620145821
**Reviewer:** Linda Terzis

1. **Case Narrative and Data Package Completeness (COC and Analyte List Review)**
Four (4) soil samples were listed on the COC for SDG 620145821. A trip blank was also included on the COC. The samples were collected on 10/12/2023 and received at the Eurofins New England Laboratory on 10/13/2023 at a maximum temperature of 5.8 °C.

| Sample ID | Laboratory ID | Analyses |
|---|---|---|
| SO-B/MW-106-1015 | 620-14582-1 | MassDEP-VPH, MassDEP-EPH, MCP-14 Metals/Mercury |
| SO-B/MW-107-1015 | 620-14582-2 | MassDEP-VPH, MassDEP-EPH, MCP-14 Metals/Mercury |
| SO-B/MW-108-1518 | 620-14582-3 | MassDEP-VPH, MassDEP-EPH, MCP-14 Metals/Mercury |
| SO-FD01-101223 | 620-14582-4 | MassDEP-VPH, MassDEP-EPH, MCP-14 Metals/Mercury |
| TB01-101223 | 620-14582-5 | MassDEP-VPH |

The data were evaluated using the site-specific Quality Assurance Project Plan Addendum (QAPPA) (dated May 2023) and the Program QAPP (dated October 2022). Both were prepared by KGSNE, LLC. The QAPPA appends and incorporates by reference the procedures and quality control measures detailed in the Program QAPP (October 2022). Therefore, site data for this SDG were evaluated using both the QAPPA of May 2023 and the Program QAPP dated October 2022. The Massachusetts Compendium of Analytical Methods (CAM) and/or SW-846 Methods were used to perform the analyses. Therefore, site data were also evaluated using CAM quality control (QC) limits, where applicable.

The analyte lists reported by the laboratory were compared to the required analyte lists per Table 3 (soil) in the QAPPA (May 2023) for the site. Results for all requested analytes were reported and no inconsistencies were noted.

2. **Holding Time and Sample Preservation Compliance**

Receipt temperatures are acceptable (≤ 6°), as specified in the QAPPA (May 2023).



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MassDEP-VPH: Holding time criteria (analyzed within 14 days) met.

MassDEP-EPH: Holding time criteria (extracted within 14 days and analyzed within 40 days of extraction) met.

MCP-14 Metals/Mercury: Holding time criteria (analyzed within 28 days for mercury; within 180 days for all other analytes) were met.

**3. Calibration Issues**

Not assessed for S2AVM data review.

**4. Laboratory and Field Blanks**

MassDEP VPH: Results for the VPH laboratory method blank were non-detect. No blank actions are required.

MassDEP-EPH: Results for the EPH laboratory method blank were non-detect. No blank actions are required.

MCP-14 Metals/Mercury: Results for the metals and mercury laboratory method blanks were non-detect. No blank actions are required.

Field blanks were not submitted with the samples of this SDG. No actions are required.

**5. Interference Check Sample (metals only)**

Not assessed for S2AVM data review.

**6. Surrogates**

The Program QAPP (October 2022) was used to evaluate site data for surrogate recovery. If no Program QAPP-specific recovery limits were available for a surrogate, the MCP CAM recovery limits were used.

MassDEP-VPH: Percent recoveries for both surrogates were below the Program QAPP limits of 70-130% in samples SO-B/MW-106-1015 (620-14582-1) and SO-FD01-101223 (620-14582-4). The maximum surrogate recovery for these samples was 10%. The laboratory indicated these samples required dilutions due to the matrix and strong fuel odor. Additionally, initial sample volumes used in the analysis were reduced due to the matrix. The surrogates were diluted out by the dilutions. Percent surrogate recoveries were within the 70-130% limits for the remaining samples. No actions are required.

MassDEP-EPH: Surrogate recoveries in all samples were within the Program QAPP limits of 40-140%. No actions are required

Surrogate recovery is not applicable for the MCP-14 metals/mercury analysis.

**7. Laboratory Control Samples**

MassDEP-VPH: The results of the VPH LCS/LCSD pairs met the Program QAPP limits of 70-130% recovery and RPDs ≤ 25%. No actions are required.

MassDEP-EPH: The results of the EPH LCS/LCSD pair met the Program QAPP limits of 40-140% and RPDs ≤ 25%. No actions are required.

MCP-14 Metals/Mercury: The recoveries of antimony (37.7%), arsenic (75.8%), and mercury (64.2%) were below the 80-120% recovery limits in the LCS analyses associated with the samples. The Program QAPP and MCP CAM require that soil LCS/LCSD recoveries be "within vendor 95% confidence limits". Vendor limits were not presented in the laboratory report; therefore, the MassDEP CAM Method 6010D recovery limits for aqueous samples (80-120%) were conservatively used to evaluate the solid LCS results during this review.

Antimony was detected at concentrations below reporting limit (RL) in all soil samples. Based on the NFGs (2020), the detected results for antimony are qualified as estimated with a potential low bias (J-) in all soil samples due to the low LCS recovery. Note that the final qualification for the samples is estimated (J) with an indeterminate bias since sample results were < RL and estimated by the laboratory.

Arsenic was detected above the RL in all soil samples. Based on the NFGs (2020), the detected results for arsenic are qualified as estimated with a potential low bias (J-) in all soil samples due to the low LCS recovery.

The detect and non-detected results for mercury are qualified as estimated with a potential low bias (J-/UJ) in the samples due to the low LCS recovery. Note that the detected results for mercury are < RL. Therefore, the final qualifier for detected mercury results is estimated (J) with an indeterminate bias since results were < RL.

**8. Matrix Spikes**

Based on the Region I EPA New England Environmental Data Review Supplement (Region I Supplement, 2020), MS/MSD qualifications are applied to all field samples with similar matrix, unless otherwise noted.

MS/MSD analyses were performed on sample SO-B/MS-107-1015 (620-14582-2).

MassDEP-VPH: The recovery of methyl tert-butyl ether was below the Program QAPP limits of 70-130% in the MS analysis (63%). Professional judgment based on the NFG (2020) guidance for VOCs was used to qualify results for methyl tert-butyl ether as estimated (J/UJ) in all soil samples due to the low recovery in the MS analysis.

The laboratory reported negative percent recoveries for C9-C10 aromatic hydrocarbons and C9-C12 aliphatic hydrocarbons. These hydrocarbon ranges were present in the parent sample at concentrations > 4x the spiking level and therefore, meaningful recoveries could not be calculated. The RPDs for these ranges also exceeded the Program QAPP limit of 50%. No actions are taken.

The RPDs for benzene and toluene exceeded the Program QAPP limit of ≤ 50%. Based on the NFG (2020) guidance for VOCs, the detected results for benzene and toluene in sample SO-B/MW-106-1015 are qualified as estimated (J) and the non-detect results in the remaining soil samples are accepted unqualified.

MassDEP-EPH: The laboratory reported a negative percent recovery for C19-C36 aliphatic hydrocarbons in the MS analysis. The MSD recovery was within the Program QAPP limits of 40-140%. The RPD exceeded the Program QAPP limit of ≤ 50%. Results for C19-C36 aliphatic

hydrocarbons were detected in all soil samples. Professional judgement based on the NFG guidance for SVOCs (2020), was used to qualify the detected results for C19-C36 aliphatic hydrocarbons as estimated (J) in all soil samples due to the low recovery in the MS and the high RPD.

MCP-14 Metals/Mercury: Results for the metals/mercury MS/MSD analyses met the Program QAPP limits of 75-125% recovery and RPDs ≤ 35%. No actions are required.

**9. Laboratory Duplicates (metals only)**

MCP-14 Metals/Mercury: Laboratory duplicate analyses were performed on sample SO-B/MW-107-1015 (620-14582-2).

The laboratory duplicate criterion (≤ 35% RPD) was exceeded for antimony (RPD 37%) in sample SO-B/MS-107-1015. Original and duplicate sample results for antimony were < 5x RL. The absolute difference between the results was < RL. Based on the NFGs (2020), antimony results are accepted unqualified for laboratory duplicate performance. No action is taken.

The laboratory duplicate criterion of ≤ 35% was also exceeded for zinc (43%). Original and duplicate sample results for zinc were > 5x RL. Results for zinc were detected in all soil samples. Based on the NFGs (2020), detected results for zinc are qualified as estimated (J) due to laboratory duplicate imprecision.

Mercury results were below the RL in both the original and duplicate analyses. The RPD was < 35% (8%). No action is required.

**10. Serial Dilution (metals only)**

MCP-14 Metals/Mercury: A serial dilution analysis was not performed for this SDG. The Massachusetts CAM requires a serial dilution analysis on samples used for MS/MSD analyses where analytes are detected at > 50x RL. MS/MSD analyses were performed on sample SO-B/MS-107-1015 (620-14582-2). Detected analyte results were < 50x RL in this sample and no actions are required.

**11. Field Duplicate Precision**

Acceptable field duplicate precision is an RPD of ≤ 50% for results > 5x RL and an absolute difference < 4x RL for results < 5x RL, based on the EPA Region I Supplement (2020).

Based on the Region I Supplement (2020), qualifications are applied to all field samples with similar matrix, unless otherwise indicated.

Field duplicate pair SO-B/MW-106-1015 / SO-FD-01-101223 is associated with the soil samples of this SDG.

MassDEP-VPH: Absolute differences for the results for benzene and C9-C12 aliphatic hydrocarbons (adjusted) exceeded field duplicate precision criteria for results < 5x RL. Based on the EPA Region I Supplemental Guidance (2020), detected and non-detect results for benzene and C9-C12 aliphatic hydrocarbons are qualified as estimated (J/UJ) in all soil samples.

RPDs for C9-C10 aromatics, C9-C12 aliphatic hydrocarbons (unadjusted), and naphthalene exceeded field duplicate precision criteria for results > 5x RL. Based on the EPA Region I

Supplemental Guidance (2020), detected results for C9-C10 aromatic hydrocarbons and C9-C12 aliphatic hydrocarbons (unadjusted) are qualified as estimated (J) and detected and non-detect results for naphthalene are qualified as estimated (J/UJ) in all soil samples.
MassDEP-EPH: Absolute differences for the results for 2-methylnaphthalene and C11-C22 aromatic hydrocarbons (adjusted and unadjusted) exceeded field duplicate precision criteria for results < 5x RL. Based on the EPA Region I Supplemental Guidance (2020), detected and non-detect results for 2-methylnaphthalene and C11-C22 aromatic hydrocarbons (adjusted and unadjusted) are qualified as estimated (J/UJ) in all soil samples.

The RPD for C19-C36 aliphatic hydrocarbons exceeded field duplicate precision criteria for results > 5x RL. Based on the EPA Region I Supplemental Guidance (2020), The detected results for C19-C36 aliphatic hydrocarbons are qualified as estimated (J) in all soil samples.

MCP-14 Metals/Mercury: Field duplicate precision criteria were met for the metals and mercury analyses. No actions are required.

The laboratory's case narrative indicated dilutions and/or adjustments to initial sample volumes used during analysis were required for the field duplicate samples due to the matrix and strong fuel odors of the samples.

**12. Internal Standards**

Not assessed for S2AVM data review.

**13. Dual Column Precision (PCBs only)**

Not applicable to the analyses of this SDG.

**14. Performance Evaluation Samples**

Performance Evaluation (PE) samples were not included in this SDG.

**15. Reporting Limits**

Laboratory RLs for non-detect results met the project action levels (PALs) for the VPH, EPH, and MCP-14 metals analyses, as listed in Table 3 of the QAPPA, except for the RLs for the EPH dibenz(a,h)anthracene in samples SO-B/MW-106-1015 and SO-FD01-101223, where the RLs exceeded the PAL of 0.7 mg/kg (1 mg/kg and 1.1 mg/kg, respectively). As noted above, the laboratory has indicated that these samples required dilutions due to the matrix and a strong fuel odor.

**16. Other**

EPA Region I Supplement (2020) criterion for percent solids content (> 30%) was met for the soil samples.

Overall bias is considered indeterminate when cumulative nonconformances do not show a consistent bias or in cases of the presence of conflicting high and low biases.

**Field Duplicate Evaluation**

**SDG: 620145821 VPH**

| Analyte | Original Result (mg/kg) | Qual | Duplicate Result (mg/kg) | Qual | RPD ≤ 50% | Abs Diff | Comment[1] |
|---|---|---|---|---|---|---|---|
| **Sample ID** | **SO-B/MW-106-1015** | | **SO-FD01-101223** | | | | |
| | **620-14582-1** | | **620-14582-4** | | | | |
| **Benzene** | 0.59 | | 1.5 | U | 87.08 | 0.9 | **Abs diff > 4x RL (J/UJ)** |
| C5-C8 Aliphatics (adjusted) | 340 | | 500 | | 38.10 | | Ok - RPD < 50% |
| C5-C8 Aliphatics (unadjusted) | 340 | | 500 | | 38.10 | | Ok - RPD < 50% |
| **C9-C10 Aromatics** | 210 | | 460 | | 74.63 | | **RPD > 50% (J)** |
| **C9-C12 Aliphatics (adjusted)** | 150 | | 300 | U | 66.67 | 150.00 | **Abs diff > 4x RL (J/UJ)** |
| **C9-C12 Aliphatics (unadjusted)** | 430 | | 720 | | 50.43 | | **RPD > 50% (J)** |
| Ethylbenzene | 12 | | 14 | | 15.38 | | Ok - RPD < 50% |
| m,p-Xylene | 51 | | 60 | | 16.22 | | Ok - RPD < 50% |
| Methyl tert-butyl ether | 0.23 | | 0.3 | U | 26.42 | 0.070 | Ok - abs diff < 4x RL |
| **Naphthalene** | 3.6 | | 6.9 | | 62.86 | | **RPD > 50% (J/UJ)** |
| o-Xylene | 4.6 | | 4.7 | | 2.15 | | Ok - RPD < 50% |
| Toluene | 1.3 | | 1.5 | U | 14.29 | 0.2 | Ok - abs diff < 4x RL |

[1] - Actions apply to all samples based on the EPA Region I Supplemental Guidance (2020).

**Field Duplicate Evaluation**

**SDG: 620145821 EPH**

| Analyte | Original Result (mg/kg) | Qual | Duplicate Result (mg/kg) | Qual | RPD ≤ 50% | Abs Diff | Comment[1] |
|---|---|---|---|---|---|---|---|
| **Sample ID** | **SO-B/MW-106-1015** | | **SO-FD01-101223** | | | | |
| | **620-14582-1** | | **620-14582-4** | | | | |
| **2-Methylnaphthalene** | 1.8 | | 6.3 | | 111.11 | 4.50 | **Abs diff > 4x RL (J/UJ)** |
| Acenaphthene | 1 | U | 1.1 | U | 9.52 | | Ok - both ND |
| Acenaphthylene | 1 | U | 1.1 | U | 9.52 | | Ok - both ND |
| Anthracene | 1 | U | 1.1 | U | 9.52 | | Ok - both ND |
| Benzo(a)anthracene | 1 | U | 1.1 | U | 9.52 | | Ok - both ND |
| Benzo(a)pyrene | 1 | U | 2 | | 66.67 | 1.00 | Ok - abs diff < 4x RL |
| Benzo(b)fluoranthene | 1 | U | 1.1 | U | 9.52 | | Ok - both ND |
| Benzo(g,h,i)perylene | 1 | U | 1.1 | U | 9.52 | | Ok - both ND |
| Benzo(k)fluoranthene | 1 | U | 1.1 | U | 9.52 | | Ok - both ND |
| **C11-C22 Aromatics** | 47 | | 140 | | 99.47 | 93 | **Abs diff > 4x RL (J/UJ)** |
| **C11-C22 Aromatics (adjusted)** | 44 | | 130 | | 98.85 | 86 | **Abs diff > 4x RL (J/UJ)** |
| **C19-C36 Aliphatics** | 130 | | 360 | | 93.88 | | **RPD > 50% (J)** |
| C9-C18 Aliphatics | 60 | | 93 | | 43.14 | 33 | Ok - abs diff < 4x RL |
| Chrysene | 1 | U | 1.1 | U | 9.52 | | Ok - both ND |
| Dibenz(a,h)anthracene | 1 | U | 1.1 | U | 9.52 | | Ok - both ND |
| Fluoranthene | 1 | U | 1.1 | U | 9.52 | | Ok - both ND |
| Fluorene | 1 | U | 1.1 | U | 9.52 | | Ok - both ND |
| Indeno(1,2,3-cd)pyrene | 1 | U | 1.1 | U | 9.52 | | Ok - both ND |
| Naphthalene | 1.7 | | 5.2 | | 101.45 | 3.5 | Ok - abs diff < 4x RL |
| Phenanthrene | 1 | U | 1.1 | U | 9.52 | | Ok - both ND |
| Pyrene | 1 | U | 1.1 | U | 9.52 | | Ok - both ND |

[1] - Actions apply to all samples based on the EPA Region I Supplemental Guidance (2020).

**Field Duplicate Evaluation**

**SDG: 620145821 METALS**

| Analyte | Original Result (mg/kg) | Qual | Duplicate Result (mg/kg) | Qual | RPD ≤ 50% | Abs Diff | Comment[1] |
|---|---|---|---|---|---|---|---|
| **Sample ID** | **SO-B/MW-106-1015** | | **SO-FD01-101223** | | | | |
| | **620-14582-1** | | **620-14582-4** | | | | |
| Antimony | 1 | J | 0.95 | J | -5.1 | | Ok - both < RL |
| Arsenic | 8.9 | | 3.7 | | -82.5 | -5.20 | Ok - abs diff < 4x RL |
| Barium | 54 | | 56 | | 3.6 | | Ok - RPD < 50% |
| Beryllium | 0.46 | U | 0.49 | U | 6.3 | | Ok - both ND |
| Cadmium | 0.46 | U | 0.49 | U | 6.3 | | Ok - both ND |
| Chromium | 20 | | 17 | | -16.22 | | Ok - RPD < 50% |
| Lead | 7.2 | | 2.9 | | -85.1 | -4.30 | Ok - abs diff < 4x RL |
| Mercury | 0.04 | U | 0.03 | J | -28.6 | | Ok - ND and < RL |
| Nickel | 14 | | 13 | | -7.4 | | Ok - RPD < 50% |
| Selenium | 1.4 | U | 1.5 | U | 6.9 | | Ok - both ND |
| Silver | 1.4 | U | 1.5 | U | 6.9 | | Ok - both ND |
| Thallium | 2.8 | U | 2.9 | U | 3.5 | | Ok - both ND |
| Vanadium | 18 | | 13 | | -32.3 | | Ok - RPD < 50% |
| Zinc | 22 | | 14 | | -44.4 | -8 | Ok - abs diff < 4x RL |

[1] - Actions apply to all samples based on the EPA Region I Supplemental Guidance (2020).

620-14582 Chain of Custody

KFS 10/13

~~14582~~ 14582

# Chain of Custody Record

eurofins | Environment Testing

| | | | | |
|---|---|---|---|---|
| Client Contact: ~~Stephanie Stone~~ Caitlin ODell | Sampler: C. Odell | Lab PM: A. Roy | Carrier Tracking No(s): | COC No: 620-12716-1718 3 |
| Company: Nobis Engineering, Inc | Phone: 203-530-4433 | E-Mail: aroy@nobis-group.com | State of Origin: MA | Page: ~~Page 3 of 4~~ 1 of 1 |
| Address: 585 Middlesex Street | PWSID | Analysis Requested | | Job #: |
| City: Lowell | Due Date Requested: | | | |
| State, Zip: MA, 01851 | TAT Requested (days): Standard | | | |
| Phone: 203-530-4433 | Compliance Project: X Yes △ No MA CAM | | | |
| Email: sstone@nobis-group com | PO #: | | | |
| Project Name: S00001 005 L$M Service Station | WO #: | | | |
| Site: Lunenburg, MA | Project #: S00001.05/400 | | | |
| | SSOW#: | | | |

Preservation Codes:

A - HCl, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)

Other: ~~~~

| | Sample Identification | Sample Date | Sample Time | Sample Type (C=comp, G=grab) | Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air) | Field Filtered Sample (Yes or No) | Perform MS/MSD (Yes or No) | EPH (MassDEP CAM) | Metals (MCP 14) (6010/7471) | VPH (MassDEP CAM) | % Moisture | Trip blank | Total Number of containers | Special Instructions/Note: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Preservation Code: | | | | | | | | | F | | | | |
| 1 | SO-B/MW-106-1015 | 10/12/23 | 0850 | G | Water Solid | | | | | | | | 4 | |
| 2 | SO-B/MW-107-1015 | " | 0930 | " | Water Solid | | X | | | | | | 12 | MS/MSD |
| 3 | SO-B/MW-108-1518 | " | 1010 | " | Water Solid | | | | | | | | 4 | |
| 4 | SO-FD01-101223 | " | 0800 | " | Water Solid | | | | | | | | 4 | |
| 5 | TB01-101223 | " | — | | Solid | | | | | | | X | 1 | |
| | | | | | Solid | | | | | | | | | |
| | | | | | Solid | | | | | | | | | |
| | | | | | Solid | | | | | | | | | |
| | | | | | Solid | | | | | | | | | |
| | | | | | Solid | | | | | | | | | |
| | | | | | Solid | | | | | | | | | |

**Possible Hazard Identification**

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

**Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)**

☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested I, II, III, IV, Other (specify): EDD Report, PDF, & email

Special Instructions/QC Requirements: email EDD to AROY@nobis-group.com; MADEP CAM methods required

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Empty Kit Relinquished by: | | Date | | Time | | Method of Shipment: | |
| Relinquished by: Caitlin ODell | Date/Time: 10/13/23 11:40 | Company: Nobis | Received by: | Date/Time: 10/13/23 1140 | Company: EA | | |
| Relinquished by: | Date/Time: 10/13/23 17:11 | Company: EA | Received by: | Date/Time: 10/13/23 17:11 | Company: | | |
| Relinquished by: | Date/Time: | Company: | Received by: | Date/Time: | Company: | | |

| | | |
|---|---|---|
| Custody Seals Intact: △ Yes △ No | Custody Seal No: | Cooler Temperature(s) °C and Other Remarks: 5.6 to 2.8 +3 |

Ver: 06/08/2021

Page 42 of 43

10/30/2023

# ANALYTICAL REPORT

## PREPARED FOR

Attn: Adam Roy
Nobis Engineering, Inc.
585 Middlesex Street
Lowell, Massachusetts 01851

Generated 10/30/2023 4:06:29 PM

## JOB DESCRIPTION

Former L&M - Lunenburg MA

## JOB NUMBER

620-14582-1

Eurofins New England
646 Camp Ave
North Kingstown RI 02852

See page two for job notes and contact information.



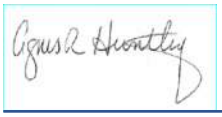
my EOL

## Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northeast, LLC Project Manager.

## Authorization



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Authorized for release by
Agnes Huntley, Project Manager
Agnes.Huntley@et.eurofinsus.com
(401)372-3482

# Table of Contents

Cover Page . . . . . 1
Table of Contents . . . . . 3
Definitions/Glossary . . . . . 4
State Forms . . . . . 6
    MCP Checklist . . . . . 6
Case Narrative . . . . . 7
Detection Summary . . . . . 9
Client Sample Results . . . . . 12
Surrogate Summary . . . . . 21
QC Sample Results . . . . . 22
QC Association Summary . . . . . 32
Lab Chronicle . . . . . 35
Certification Summary . . . . . 38
Method Summary . . . . . 40
Sample Summary . . . . . 41
Chain of Custody . . . . . 42
Receipt Checklists . . . . . 43

# Definitions/Glossary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-14582-1

## Qualifiers

### GC VOA

| Qualifier | Qualifier Description |
|---|---|
| 4 | MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable. |
| F1 | MS and/or MSD recovery exceeds control limits. |
| F2 | MS/MSD RPD exceeds control limits |
| S1- | Surrogate recovery exceeds control limits, low biased. |

### GC Semi VOA

| Qualifier | Qualifier Description |
|---|---|
| F1 | MS and/or MSD recovery exceeds control limits. |
| F2 | MS/MSD RPD exceeds control limits |

### Metals

| Qualifier | Qualifier Description |
|---|---|
| F1 | MS and/or MSD recovery exceeds control limits. |
| F2 | MS/MSD RPD exceeds control limits |
| F3 | Duplicate RPD exceeds the control limit |
| F5 | Duplicate RPD exceeds limit, and one or both sample results are less than 5 times RL, and the absolute difference between results is < the upper reporting limits for both. |
| J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |

## Glossary

| Abbreviation | These commonly used abbreviations may or may not be present in this report. |
|---|---|
| ¤ | Listed under the "D" column to designate that the result is reported on a dry weight basis |
| %R | Percent Recovery |
| CFL | Contains Free Liquid |
| CFU | Colony Forming Unit |
| CNF | Contains No Free Liquid |
| DER | Duplicate Error Ratio (normalized absolute difference) |
| Dil Fac | Dilution Factor |
| DL | Detection Limit (DoD/DOE) |
| DL, RA, RE, IN | Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample |
| DLC | Decision Level Concentration (Radiochemistry) |
| EDL | Estimated Detection Limit (Dioxin) |
| LOD | Limit of Detection (DoD/DOE) |
| LOQ | Limit of Quantitation (DoD/DOE) |
| MCL | EPA recommended "Maximum Contaminant Level" |
| MDA | Minimum Detectable Activity (Radiochemistry) |
| MDC | Minimum Detectable Concentration (Radiochemistry) |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| MPN | Most Probable Number |
| MQL | Method Quantitation Limit |
| NC | Not Calculated |
| ND | Not Detected at the reporting limit (or MDL or EDL if shown) |
| NEG | Negative / Absent |
| POS | Positive / Present |
| PQL | Practical Quantitation Limit |
| PRES | Presumptive |
| QC | Quality Control |
| RER | Relative Error Ratio (Radiochemistry) |
| RL | Reporting Limit or Requested Limit (Radiochemistry) |
| RPD | Relative Percent Difference, a measure of the relative difference between two points |
| TEF | Toxicity Equivalent Factor (Dioxin) |
| TEQ | Toxicity Equivalent Quotient (Dioxin) |

## Glossary (Continued)

| Abbreviation | These commonly used abbreviations may or may not be present in this report. |
|---|---|
| TNTC | Too Numerous To Count |

# MassDEP Analytical Protocol Certfication Form

Laboratory Name: Eurofins New England | Project #: 620-14582-1

Project Location: Former L&M - Lunenburg MA | RTN:

**This Form provides certifications for the following data set: list Laboratory Sample ID Number(s):**
620-14582-1 through 620-14582-5

Matrices: ☐ Groundwater/Surface Water ☑ Soil/Sediment ☐ Drinking Water ☐ Air ☐ Other:

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

| | | | | | |
|---|---|---|---|---|---|
| 8260 VOC CAM II A ☐ | 7470/7471 Hg CAM III B ☑ | MassDEP VPH (GC/PID/FID) CAM IV A ☑ | 8082 PCB CAM V A ☐ | 9014 Total Cyanide/PAC CAM VI A ☐ | 6860 Perchlorate CAM VIII B ☐ |
| 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 ☐ |
| 6010 Metals CAM III A ☑ | 6020 Metals CAM III D ☐ | MassDEP EPH CAM IV B ☑ | 8151 Herbicides CAM V C ☐ | 8330 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 ☐ No |
| **B** | Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed? | ☑ Yes ☐ 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 ☐ No |
| **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 ☐ No |
| **E** | VPH, EPH, APH, and TO-15 only<br>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).<br>b. APH and TO-15 Methods only: Was the complete analyte list reported for each method? | ☑ Yes ☐ No<br>☐ 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 ☐ 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 protocol(s)? | ☐ Yes ☑ No[1] |

***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[1] |
| **I** | Were results reported for the complete analyte list specified in the selected CAM protocol(s)? | ☑ Yes ☐ No[1] |

*1 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, is accurate and complete.***

**Signature:** Agnes R Huntley **Position:** Project Manager

**Printed Name:** Agnes Huntley **Date:** 10/30/2023

## Job ID: 620-14582-1

### Laboratory: Eurofins New England

**Narrative**

**Job Narrative**
**620-14582-1**

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

**Receipt**
The samples were received on 10/13/2023 5:11 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 5.8°C

**GC VOA**
Method MAVPH2.1: The following sample was diluted due to the nature of the sample matrix (strong odor) : SO-FD01-101223 (620-14582-4). Elevated reporting limits (RLs) are provided.

Method MAVPH2.1: The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision for preparation batch 620-28025 and analytical batch 620-27958 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory sample control duplicate (LCS/LCSD) precision was within acceptance limits.

Method MAVPH2.1: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 620-28025 and analytical batch 620-27958 were outside control limits for one or more ranges due to the complete integration of the baseline in samples rather than the summation of peaks in QC samples. The associated laboratory control sample (LCS) recovery is within acceptance limits.

Method MAVPH2.1: The following samples required a dilution due to the nature of the sample matrix: SO-B/MW-106-1015 (620-14582-1) and SO-FD01-101223 (620-14582-4). Because of this dilution, the surrogate spike concentration in the sample was reduced to a level where the recovery calculation does not provide useful information.

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

**GC Semi VOA**
Method MAEPH2.1: Due to the matrix and fuel odor, the initial volume used for the following samples deviated from the standard procedure: SO-B/MW-106-1015 (620-14582-1) and SO-FD01-101223 (620-14582-4). The reporting limits (RLs) have been adjusted proportionately.

Method MAEPH2.1: The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision for preparation batch 620-27844 and 620-27964 and analytical batch 620-28114 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory sample control duplicate (LCS/LCSD) precision was within acceptance limits.

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

**Metals**
Method 7471MCP: The matrix spike duplicate (MSD) recoveries and precision for preparation batch 620-27974 and analytical batch 620-28044 were outside control limits. Non-homogeneity is suspected because the associated laboratory control sample / matrix spike(LCS/MS) precision was within acceptance limits.

## Job ID: 620-14582-1 (Continued)

### Laboratory: Eurofins New England (Continued)

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

**General Chemistry**

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

# Detection Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-14582-1

## Client Sample ID: SO-B/MW-106-1015 — Lab Sample ID: 620-14582-1

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | 0.59 | | 0.15 | 0.15 | mg/Kg | 1 | ☼ | MAVPH2.1 | Total/NA |
| Methyl tert-butyl ether | 0.23 | | 0.030 | 0.030 | mg/Kg | 1 | ☼ | MAVPH2.1 | Total/NA |
| Naphthalene | 3.6 | | 0.59 | 0.59 | mg/Kg | 1 | ☼ | MAVPH2.1 | Total/NA |
| Toluene | 1.3 | | 0.15 | 0.15 | mg/Kg | 1 | ☼ | MAVPH2.1 | Total/NA |
| o-Xylene | 4.6 | | 0.15 | 0.15 | mg/Kg | 1 | ☼ | MAVPH2.1 | Total/NA |
| C5-C8 Aliphatics (adjusted) - DL | 340 | | 30 | 30 | mg/Kg | 10 | ☼ | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (adjusted) - DL | 150 | | 30 | 30 | mg/Kg | 10 | ☼ | MAVPH2.1 | Total/NA |
| C9-C10 Aromatics - DL | 210 | | 30 | 30 | mg/Kg | 10 | ☼ | MAVPH2.1 | Total/NA |
| C5-C8 Aliphatics (unadjusted) - DL | 340 | | 30 | 30 | mg/Kg | 10 | ☼ | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (unadjusted) - DL | 430 | | 30 | 30 | mg/Kg | 10 | ☼ | MAVPH2.1 | Total/NA |
| Ethylbenzene - DL | 12 | | 1.5 | 1.5 | mg/Kg | 10 | ☼ | MAVPH2.1 | Total/NA |
| m,p-Xylene - DL | 51 | | 3.0 | 3.0 | mg/Kg | 10 | ☼ | MAVPH2.1 | Total/NA |
| Xylenes, Total - DL | 55 | | 4.5 | 4.5 | mg/Kg | 10 | ☼ | MAVPH2.1 | Total/NA |
| C9-C18 Aliphatics | 60 | | 20 | 20 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| C19-C36 Aliphatics | 130 | | 20 | 20 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics | 47 | | 20 | 20 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics (Adjusted) | 44 | | 20 | 20 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| Naphthalene | 1.7 | | 1.0 | 1.0 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| 2-Methylnaphthalene | 1.8 | | 1.0 | 1.0 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| Antimony | 1.0 | J | 4.6 | 0.35 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Arsenic | 8.9 | | 1.4 | 0.18 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Barium | 54 | | 0.92 | 0.11 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Chromium | 20 | | 0.92 | 0.12 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Lead | 7.2 | | 1.4 | 0.20 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Nickel | 14 | | 0.92 | 0.11 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Vanadium | 18 | | 1.4 | 0.25 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Zinc | 22 | | 2.8 | 0.71 | mg/Kg | 1 | ☼ | 6010D | Total/NA |

## Client Sample ID: SO-B/MW-107-1015 — Lab Sample ID: 620-14582-2

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | 3.6 | | 2.9 | 2.9 | mg/Kg | 1 | ☼ | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (adjusted) | 9.8 | | 2.9 | 2.9 | mg/Kg | 1 | ☼ | MAVPH2.1 | Total/NA |
| C9-C10 Aromatics | 16 | F2 | 2.9 | 2.9 | mg/Kg | 1 | ☼ | MAVPH2.1 | Total/NA |
| C5-C8 Aliphatics (unadjusted) | 3.9 | F1 | 2.9 | 2.9 | mg/Kg | 1 | ☼ | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (unadjusted) | 26 | F2 | 2.9 | 2.9 | mg/Kg | 1 | ☼ | MAVPH2.1 | Total/NA |
| Methyl tert-butyl ether | 0.31 | F1 | 0.029 | 0.029 | mg/Kg | 1 | ☼ | MAVPH2.1 | Total/NA |
| o-Xylene | 0.17 | F2 | 0.15 | 0.15 | mg/Kg | 1 | ☼ | MAVPH2.1 | Total/NA |
| C19-C36 Aliphatics | 32 | | 7.7 | 7.7 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics | 11 | | 7.7 | 7.7 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics (Adjusted) | 11 | | 7.7 | 7.7 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| Antimony | 0.93 | J | 4.6 | 0.35 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Arsenic | 23 | | 1.4 | 0.18 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Barium | 29 | | 0.93 | 0.11 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Cadmium | 0.027 | J | 0.46 | 0.024 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Chromium | 18 | | 0.93 | 0.12 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Lead | 12 | | 1.4 | 0.20 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Nickel | 12 | | 0.93 | 0.11 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Vanadium | 14 | | 1.4 | 0.25 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Zinc | 56 | | 2.8 | 0.72 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Mercury | 0.023 | J F1 F2 | 0.030 | 0.0050 | mg/Kg | 1 | ☼ | 7471A | Total/NA |

This Detection Summary does not include radiochemical test results.

# Detection Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-14582-1

## Client Sample ID: SO-B/MW-108-1518

Lab Sample ID: 620-14582-3

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | 4.3 | | 2.6 | 2.6 | mg/Kg | 1 | ☼ | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (adjusted) | 8.6 | | 2.6 | 2.6 | mg/Kg | 1 | ☼ | MAVPH2.1 | Total/NA |
| C9-C10 Aromatics | 18 | | 2.6 | 2.6 | mg/Kg | 1 | ☼ | MAVPH2.1 | Total/NA |
| C5-C8 Aliphatics (unadjusted) | 4.6 | | 2.6 | 2.6 | mg/Kg | 1 | ☼ | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (unadjusted) | 28 | | 2.6 | 2.6 | mg/Kg | 1 | ☼ | MAVPH2.1 | Total/NA |
| Ethylbenzene | 0.18 | | 0.13 | 0.13 | mg/Kg | 1 | ☼ | MAVPH2.1 | Total/NA |
| Methyl tert-butyl ether | 0.34 | | 0.026 | 0.026 | mg/Kg | 1 | ☼ | MAVPH2.1 | Total/NA |
| m,p-Xylene | 0.54 | | 0.26 | 0.26 | mg/Kg | 1 | ☼ | MAVPH2.1 | Total/NA |
| o-Xylene | 0.24 | | 0.13 | 0.13 | mg/Kg | 1 | ☼ | MAVPH2.1 | Total/NA |
| Xylenes, Total | 0.78 | | 0.39 | 0.39 | mg/Kg | 1 | ☼ | MAVPH2.1 | Total/NA |
| C19-C36 Aliphatics | 12 | | 7.6 | 7.6 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| Antimony | 1.2 | J | 5.6 | 0.42 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Arsenic | 27 | | 1.7 | 0.21 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Barium | 34 | | 1.1 | 0.13 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Cadmium | 0.035 | J | 0.56 | 0.029 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Chromium | 21 | | 1.1 | 0.15 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Lead | 17 | | 1.7 | 0.24 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Nickel | 14 | | 1.1 | 0.13 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Vanadium | 17 | | 1.7 | 0.30 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Zinc | 79 | | 3.4 | 0.87 | mg/Kg | 1 | ☼ | 6010D | Total/NA |

## Client Sample ID: SO-FD01-101223

Lab Sample ID: 620-14582-4

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Ethylbenzene | 14 | | 1.5 | 1.5 | mg/Kg | 10 | ☼ | MAVPH2.1 | Total/NA |
| Naphthalene | 6.9 | | 6.1 | 6.1 | mg/Kg | 10 | ☼ | MAVPH2.1 | Total/NA |
| m,p-Xylene | 60 | | 3.0 | 3.0 | mg/Kg | 10 | ☼ | MAVPH2.1 | Total/NA |
| o-Xylene | 4.7 | | 1.5 | 1.5 | mg/Kg | 10 | ☼ | MAVPH2.1 | Total/NA |
| Xylenes, Total | 65 | | 4.5 | 4.5 | mg/Kg | 10 | ☼ | MAVPH2.1 | Total/NA |
| C5-C8 Aliphatics (adjusted) - DL | 500 | | 300 | 300 | mg/Kg | 100 | ☼ | MAVPH2.1 | Total/NA |
| C9-C10 Aromatics - DL | 460 | | 300 | 300 | mg/Kg | 100 | ☼ | MAVPH2.1 | Total/NA |
| C5-C8 Aliphatics (unadjusted) - DL | 500 | | 300 | 300 | mg/Kg | 100 | ☼ | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (unadjusted) - DL | 720 | | 300 | 300 | mg/Kg | 100 | ☼ | MAVPH2.1 | Total/NA |
| C9-C18 Aliphatics | 93 | | 22 | 22 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| C19-C36 Aliphatics | 360 | | 22 | 22 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics | 140 | | 22 | 22 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics (Adjusted) | 130 | | 22 | 22 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| Naphthalene | 5.2 | | 1.1 | 1.1 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| 2-Methylnaphthalene | 6.3 | | 1.1 | 1.1 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| Benzo[a]pyrene | 2.0 | | 1.1 | 1.1 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| Antimony | 0.95 | J | 4.9 | 0.37 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Arsenic | 3.7 | | 1.5 | 0.19 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Barium | 56 | | 0.98 | 0.12 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Chromium | 17 | | 0.98 | 0.13 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Lead | 2.9 | | 1.5 | 0.21 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Nickel | 13 | | 0.98 | 0.11 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Vanadium | 13 | | 1.5 | 0.26 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Zinc | 14 | | 2.9 | 0.76 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Mercury | 0.030 | J | 0.043 | 0.0072 | mg/Kg | 1 | ☼ | 7471A | Total/NA |

This Detection Summary does not include radiochemical test results.

# Detection Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-14582-1

**Client Sample ID: TB01-101223** **Lab Sample ID: 620-14582-5**

No Detections.

This Detection Summary does not include radiochemical test results.

## Client Sample ID: SO-B/MW-106-1015

**Date Collected: 10/12/23 08:50**
**Date Received: 10/13/23 17:11**

## Lab Sample ID: 620-14582-1

**Matrix: Solid**
**Percent Solids: 86.2**

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Benzene** | **0.59** | | 0.15 | 0.15 | mg/Kg | ☼ | 10/18/23 11:23 | 10/19/23 02:53 | 1 |
| **Methyl tert-butyl ether** | **0.23** | | 0.030 | 0.030 | mg/Kg | ☼ | 10/18/23 11:23 | 10/19/23 02:53 | 1 |
| **Naphthalene** | **3.6** | | 0.59 | 0.59 | mg/Kg | ☼ | 10/18/23 11:23 | 10/19/23 02:53 | 1 |
| **Toluene** | **1.3** | | 0.15 | 0.15 | mg/Kg | ☼ | 10/18/23 11:23 | 10/19/23 02:53 | 1 |
| **o-Xylene** | **4.6** | | 0.15 | 0.15 | mg/Kg | ☼ | 10/18/23 11:23 | 10/19/23 02:53 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *76* | | *70 - 130* | *10/18/23 11:23* | *10/19/23 02:53* | *1* |
| *2,5-Dibromotoluene (pid)* | *76* | | *70 - 130* | *10/18/23 11:23* | *10/19/23 02:53* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) - DL

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C5-C8 Aliphatics (adjusted)** | **340** | | 30 | 30 | mg/Kg | ☼ | 10/18/23 11:23 | 10/25/23 01:10 | 10 |
| **C9-C12 Aliphatics (adjusted)** | **150** | | 30 | 30 | mg/Kg | ☼ | 10/18/23 11:23 | 10/25/23 01:10 | 10 |
| **C9-C10 Aromatics** | **210** | | 30 | 30 | mg/Kg | ☼ | 10/18/23 11:23 | 10/25/23 01:10 | 10 |
| **C5-C8 Aliphatics (unadjusted)** | **340** | | 30 | 30 | mg/Kg | ☼ | 10/18/23 11:23 | 10/25/23 01:10 | 10 |
| **C9-C12 Aliphatics (unadjusted)** | **430** | | 30 | 30 | mg/Kg | ☼ | 10/18/23 11:23 | 10/25/23 01:10 | 10 |
| **Ethylbenzene** | **12** | | 1.5 | 1.5 | mg/Kg | ☼ | 10/18/23 11:23 | 10/25/23 01:10 | 10 |
| **m,p-Xylene** | **51** | | 3.0 | 3.0 | mg/Kg | ☼ | 10/18/23 11:23 | 10/25/23 01:10 | 10 |
| **Xylenes, Total** | **55** | | 4.5 | 4.5 | mg/Kg | ☼ | 10/18/23 11:23 | 10/25/23 01:10 | 10 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *10* | *S1-* | *70 - 130* | *10/18/23 11:23* | *10/25/23 01:10* | *10* |
| *2,5-Dibromotoluene (pid)* | *9* | *S1-* | *70 - 130* | *10/18/23 11:23* | *10/25/23 01:10* | *10* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C9-C18 Aliphatics** | **60** | | 20 | 20 | mg/Kg | ☼ | 10/16/23 09:16 | 10/19/23 22:03 | 1 |
| **C19-C36 Aliphatics** | **130** | | 20 | 20 | mg/Kg | ☼ | 10/16/23 09:16 | 10/19/23 22:03 | 1 |
| **C11-C22 Aromatics** | **47** | | 20 | 20 | mg/Kg | ☼ | 10/16/23 09:16 | 10/19/23 22:03 | 1 |
| **C11-C22 Aromatics (Adjusted)** | **44** | | 20 | 20 | mg/Kg | ☼ | 10/16/23 09:16 | 10/19/23 22:03 | 1 |
| **Naphthalene** | **1.7** | | 1.0 | 1.0 | mg/Kg | ☼ | 10/16/23 09:16 | 10/19/23 22:03 | 1 |
| **2-Methylnaphthalene** | **1.8** | | 1.0 | 1.0 | mg/Kg | ☼ | 10/16/23 09:16 | 10/19/23 22:03 | 1 |
| Acenaphthylene | ND | | 1.0 | 1.0 | mg/Kg | ☼ | 10/16/23 09:16 | 10/19/23 22:03 | 1 |
| Acenaphthene | ND | | 1.0 | 1.0 | mg/Kg | ☼ | 10/16/23 09:16 | 10/19/23 22:03 | 1 |
| Fluorene | ND | | 1.0 | 1.0 | mg/Kg | ☼ | 10/16/23 09:16 | 10/19/23 22:03 | 1 |
| Phenanthrene | ND | | 1.0 | 1.0 | mg/Kg | ☼ | 10/16/23 09:16 | 10/19/23 22:03 | 1 |
| Anthracene | ND | | 1.0 | 1.0 | mg/Kg | ☼ | 10/16/23 09:16 | 10/19/23 22:03 | 1 |
| Fluoranthene | ND | | 1.0 | 1.0 | mg/Kg | ☼ | 10/16/23 09:16 | 10/19/23 22:03 | 1 |
| Pyrene | ND | | 1.0 | 1.0 | mg/Kg | ☼ | 10/16/23 09:16 | 10/19/23 22:03 | 1 |
| Benzo[a]anthracene | ND | | 1.0 | 1.0 | mg/Kg | ☼ | 10/16/23 09:16 | 10/19/23 22:03 | 1 |
| Chrysene | ND | | 1.0 | 1.0 | mg/Kg | ☼ | 10/16/23 09:16 | 10/19/23 22:03 | 1 |
| Benzo[b]fluoranthene | ND | | 1.0 | 1.0 | mg/Kg | ☼ | 10/16/23 09:16 | 10/19/23 22:03 | 1 |
| Benzo[k]fluoranthene | ND | | 1.0 | 1.0 | mg/Kg | ☼ | 10/16/23 09:16 | 10/19/23 22:03 | 1 |
| Benzo[a]pyrene | ND | | 1.0 | 1.0 | mg/Kg | ☼ | 10/16/23 09:16 | 10/19/23 22:03 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 1.0 | 1.0 | mg/Kg | ☼ | 10/16/23 09:16 | 10/19/23 22:03 | 1 |
| Dibenz(a,h)anthracene | ND | | 1.0 | 1.0 | mg/Kg | ☼ | 10/16/23 09:16 | 10/19/23 22:03 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.0 | 1.0 | mg/Kg | ☼ | 10/16/23 09:16 | 10/19/23 22:03 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *68* | | *40 - 140* | *10/16/23 09:16* | *10/19/23 22:03* | *1* |

## Client Sample ID: SO-B/MW-106-1015

**Date Collected: 10/12/23 08:50**
**Date Received: 10/13/23 17:11**

## Lab Sample ID: 620-14582-1

**Matrix: Solid**
**Percent Solids: 86.2**

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *58* | | *40 - 140* | *10/16/23 09:16* | *10/19/23 22:03* | *1* |
| *2-Fluorobiphenyl (Surr)* | *64* | | *40 - 140* | *10/16/23 09:16* | *10/19/23 22:03* | *1* |

### Method: SW846 6010D - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Antimony** | **1.0** | **J** | 4.6 | 0.35 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 17:09 | 1 |
| **Arsenic** | **8.9** | | 1.4 | 0.18 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 17:09 | 1 |
| **Barium** | **54** | | 0.92 | 0.11 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 17:09 | 1 |
| Beryllium | ND | | 0.46 | 0.023 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 17:09 | 1 |
| Cadmium | ND | | 0.46 | 0.024 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 17:09 | 1 |
| **Chromium** | **20** | | 0.92 | 0.12 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 17:09 | 1 |
| **Lead** | **7.2** | | 1.4 | 0.20 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 17:09 | 1 |
| **Nickel** | **14** | | 0.92 | 0.11 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 17:09 | 1 |
| Selenium | ND | | 1.4 | 0.26 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 17:09 | 1 |
| Silver | ND | | 1.4 | 0.15 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 17:09 | 1 |
| Thallium | ND | | 2.8 | 1.0 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 17:09 | 1 |
| **Vanadium** | **18** | | 1.4 | 0.25 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 17:09 | 1 |
| **Zinc** | **22** | | 2.8 | 0.71 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 17:09 | 1 |

### Method: SW846 7471A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.040 | 0.0067 | mg/Kg | ☼ | 10/18/23 13:57 | 10/19/23 12:50 | 1 |

### General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Percent Moisture (EPA Moisture)** | **13.8** | | 0.1 | 0.1 | % | | | 10/16/23 09:33 | 1 |
| **Percent Solids (EPA Moisture)** | **86.2** | | 0.1 | 0.1 | % | | | 10/16/23 09:33 | 1 |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-14582-1

## Client Sample ID: SO-B/MW-107-1015

**Date Collected: 10/12/23 09:30**
**Date Received: 10/13/23 17:11**

## Lab Sample ID: 620-14582-2

**Matrix: Solid**
**Percent Solids: 84.3**

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C5-C8 Aliphatics (adjusted)** | **3.6** | | 2.9 | 2.9 | mg/Kg | ☼ | 10/18/23 11:23 | 10/18/23 19:44 | 1 |
| **C9-C12 Aliphatics (adjusted)** | **9.8** | | 2.9 | 2.9 | mg/Kg | ☼ | 10/18/23 11:23 | 10/18/23 19:44 | 1 |
| **C9-C10 Aromatics** | **16** | **F2** | 2.9 | 2.9 | mg/Kg | ☼ | 10/18/23 11:23 | 10/18/23 19:44 | 1 |
| **C5-C8 Aliphatics (unadjusted)** | **3.9** | **F1** | 2.9 | 2.9 | mg/Kg | ☼ | 10/18/23 11:23 | 10/18/23 19:44 | 1 |
| **C9-C12 Aliphatics (unadjusted)** | **26** | **F2** | 2.9 | 2.9 | mg/Kg | ☼ | 10/18/23 11:23 | 10/18/23 19:44 | 1 |
| Benzene | ND | F2 | 0.15 | 0.15 | mg/Kg | ☼ | 10/18/23 11:23 | 10/18/23 19:44 | 1 |
| Ethylbenzene | ND | F2 | 0.15 | 0.15 | mg/Kg | ☼ | 10/18/23 11:23 | 10/18/23 19:44 | 1 |
| **Methyl tert-butyl ether** | **0.31** | **F1** | 0.029 | 0.029 | mg/Kg | ☼ | 10/18/23 11:23 | 10/18/23 19:44 | 1 |
| Naphthalene | ND | F1 | 0.58 | 0.58 | mg/Kg | ☼ | 10/18/23 11:23 | 10/18/23 19:44 | 1 |
| Toluene | ND | F2 | 0.15 | 0.15 | mg/Kg | ☼ | 10/18/23 11:23 | 10/18/23 19:44 | 1 |
| m,p-Xylene | ND | | 0.29 | 0.29 | mg/Kg | ☼ | 10/18/23 11:23 | 10/18/23 19:44 | 1 |
| **o-Xylene** | **0.17** | **F2** | 0.15 | 0.15 | mg/Kg | ☼ | 10/18/23 11:23 | 10/18/23 19:44 | 1 |
| Xylenes, Total | ND | F2 | 0.44 | 0.44 | mg/Kg | ☼ | 10/18/23 11:23 | 10/18/23 19:44 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *89* | | *70 - 130* | *10/18/23 11:23* | *10/18/23 19:44* | *1* |
| *2,5-Dibromotoluene (pid)* | *80* | | *70 - 130* | *10/18/23 11:23* | *10/18/23 19:44* | *1* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 7.7 | 7.7 | mg/Kg | ☼ | 10/16/23 09:16 | 10/19/23 22:30 | 1 |
| **C19-C36 Aliphatics** | **32** | | 7.7 | 7.7 | mg/Kg | ☼ | 10/16/23 09:16 | 10/19/23 22:30 | 1 |
| **C11-C22 Aromatics** | **11** | | 7.7 | 7.7 | mg/Kg | ☼ | 10/16/23 09:16 | 10/19/23 22:30 | 1 |
| **C11-C22 Aromatics (Adjusted)** | **11** | | 7.7 | 7.7 | mg/Kg | ☼ | 10/16/23 09:16 | 10/19/23 22:30 | 1 |
| Naphthalene | ND | | 0.39 | 0.39 | mg/Kg | ☼ | 10/16/23 09:16 | 10/19/23 22:30 | 1 |
| 2-Methylnaphthalene | ND | | 0.39 | 0.39 | mg/Kg | ☼ | 10/16/23 09:16 | 10/19/23 22:30 | 1 |
| Acenaphthylene | ND | | 0.39 | 0.39 | mg/Kg | ☼ | 10/16/23 09:16 | 10/19/23 22:30 | 1 |
| Acenaphthene | ND | | 0.39 | 0.39 | mg/Kg | ☼ | 10/16/23 09:16 | 10/19/23 22:30 | 1 |
| Fluorene | ND | | 0.39 | 0.39 | mg/Kg | ☼ | 10/16/23 09:16 | 10/19/23 22:30 | 1 |
| Phenanthrene | ND | | 0.39 | 0.39 | mg/Kg | ☼ | 10/16/23 09:16 | 10/19/23 22:30 | 1 |
| Anthracene | ND | | 0.39 | 0.39 | mg/Kg | ☼ | 10/16/23 09:16 | 10/19/23 22:30 | 1 |
| Fluoranthene | ND | | 0.39 | 0.39 | mg/Kg | ☼ | 10/16/23 09:16 | 10/19/23 22:30 | 1 |
| Pyrene | ND | | 0.39 | 0.39 | mg/Kg | ☼ | 10/16/23 09:16 | 10/19/23 22:30 | 1 |
| Benzo[a]anthracene | ND | | 0.39 | 0.39 | mg/Kg | ☼ | 10/16/23 09:16 | 10/19/23 22:30 | 1 |
| Chrysene | ND | | 0.39 | 0.39 | mg/Kg | ☼ | 10/16/23 09:16 | 10/19/23 22:30 | 1 |
| Benzo[b]fluoranthene | ND | | 0.39 | 0.39 | mg/Kg | ☼ | 10/16/23 09:16 | 10/19/23 22:30 | 1 |
| Benzo[k]fluoranthene | ND | | 0.39 | 0.39 | mg/Kg | ☼ | 10/16/23 09:16 | 10/19/23 22:30 | 1 |
| Benzo[a]pyrene | ND | | 0.39 | 0.39 | mg/Kg | ☼ | 10/16/23 09:16 | 10/19/23 22:30 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.39 | 0.39 | mg/Kg | ☼ | 10/16/23 09:16 | 10/19/23 22:30 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.39 | 0.39 | mg/Kg | ☼ | 10/16/23 09:16 | 10/19/23 22:30 | 1 |
| Benzo[g,h,i]perylene | ND | | 0.39 | 0.39 | mg/Kg | ☼ | 10/16/23 09:16 | 10/19/23 22:30 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *70* | | *40 - 140* | *10/16/23 09:16* | *10/19/23 22:30* | *1* |
| *o-Terphenyl (Surr)* | *62* | | *40 - 140* | *10/16/23 09:16* | *10/19/23 22:30* | *1* |
| *2-Fluorobiphenyl (Surr)* | *73* | | *40 - 140* | *10/16/23 09:16* | *10/19/23 22:30* | *1* |

### Method: SW846 6010D - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Antimony** | **0.93** | **J** | 4.6 | 0.35 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 14:49 | 1 |

**Client Sample ID: SO-B/MW-107-1015**
**Date Collected: 10/12/23 09:30**
**Date Received: 10/13/23 17:11**

**Lab Sample ID: 620-14582-2**
**Matrix: Solid**
**Percent Solids: 84.3**

## Method: SW846 6010D - Metals (ICP) (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 23 | | 1.4 | 0.18 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 14:49 | 1 |
| Barium | 29 | | 0.93 | 0.11 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 14:49 | 1 |
| Beryllium | ND | | 0.46 | 0.023 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 14:49 | 1 |
| Cadmium | 0.027 | J | 0.46 | 0.024 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 14:49 | 1 |
| Chromium | 18 | | 0.93 | 0.12 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 14:49 | 1 |
| Lead | 12 | | 1.4 | 0.20 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 14:49 | 1 |
| Nickel | 12 | | 0.93 | 0.11 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 14:49 | 1 |
| Selenium | ND | | 1.4 | 0.26 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 14:49 | 1 |
| Silver | ND | | 1.4 | 0.15 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 14:49 | 1 |
| Thallium | ND | | 2.8 | 1.0 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 14:49 | 1 |
| Vanadium | 14 | | 1.4 | 0.25 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 14:49 | 1 |
| Zinc | 56 | | 2.8 | 0.72 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 14:49 | 1 |

## Method: SW846 7471A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.023 | J F1 F2 | 0.030 | 0.0050 | mg/Kg | ☼ | 10/18/23 13:57 | 10/19/23 12:52 | 1 |

## General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Percent Moisture (EPA Moisture) | 15.7 | | 0.1 | 0.1 | % | | | 10/16/23 09:33 | 1 |
| Percent Solids (EPA Moisture) | 84.3 | | 0.1 | 0.1 | % | | | 10/16/23 09:33 | 1 |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-14582-1

## Client Sample ID: SO-B/MW-108-1518

**Date Collected: 10/12/23 10:10**
**Date Received: 10/13/23 17:11**

## Lab Sample ID: 620-14582-3

**Matrix: Solid**
**Percent Solids: 85.3**

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C5-C8 Aliphatics (adjusted)** | **4.3** | | 2.6 | 2.6 | mg/Kg | ☼ | 10/18/23 11:23 | 10/19/23 03:29 | 1 |
| **C9-C12 Aliphatics (adjusted)** | **8.6** | | 2.6 | 2.6 | mg/Kg | ☼ | 10/18/23 11:23 | 10/19/23 03:29 | 1 |
| **C9-C10 Aromatics** | **18** | | 2.6 | 2.6 | mg/Kg | ☼ | 10/18/23 11:23 | 10/19/23 03:29 | 1 |
| **C5-C8 Aliphatics (unadjusted)** | **4.6** | | 2.6 | 2.6 | mg/Kg | ☼ | 10/18/23 11:23 | 10/19/23 03:29 | 1 |
| **C9-C12 Aliphatics (unadjusted)** | **28** | | 2.6 | 2.6 | mg/Kg | ☼ | 10/18/23 11:23 | 10/19/23 03:29 | 1 |
| Benzene | ND | | 0.13 | 0.13 | mg/Kg | ☼ | 10/18/23 11:23 | 10/19/23 03:29 | 1 |
| **Ethylbenzene** | **0.18** | | 0.13 | 0.13 | mg/Kg | ☼ | 10/18/23 11:23 | 10/19/23 03:29 | 1 |
| **Methyl tert-butyl ether** | **0.34** | | 0.026 | 0.026 | mg/Kg | ☼ | 10/18/23 11:23 | 10/19/23 03:29 | 1 |
| Naphthalene | ND | | 0.52 | 0.52 | mg/Kg | ☼ | 10/18/23 11:23 | 10/19/23 03:29 | 1 |
| Toluene | ND | | 0.13 | 0.13 | mg/Kg | ☼ | 10/18/23 11:23 | 10/19/23 03:29 | 1 |
| **m,p-Xylene** | **0.54** | | 0.26 | 0.26 | mg/Kg | ☼ | 10/18/23 11:23 | 10/19/23 03:29 | 1 |
| **o-Xylene** | **0.24** | | 0.13 | 0.13 | mg/Kg | ☼ | 10/18/23 11:23 | 10/19/23 03:29 | 1 |
| **Xylenes, Total** | **0.78** | | 0.39 | 0.39 | mg/Kg | ☼ | 10/18/23 11:23 | 10/19/23 03:29 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *87* | | *70 - 130* | *10/18/23 11:23* | *10/19/23 03:29* | *1* |
| *2,5-Dibromotoluene (pid)* | *78* | | *70 - 130* | *10/18/23 11:23* | *10/19/23 03:29* | *1* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 7.6 | 7.6 | mg/Kg | ☼ | 10/16/23 09:16 | 10/23/23 21:35 | 1 |
| **C19-C36 Aliphatics** | **12** | | 7.6 | 7.6 | mg/Kg | ☼ | 10/16/23 09:16 | 10/23/23 21:35 | 1 |
| C11-C22 Aromatics | ND | | 7.6 | 7.6 | mg/Kg | ☼ | 10/16/23 09:16 | 10/23/23 21:35 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 7.6 | 7.6 | mg/Kg | ☼ | 10/16/23 09:16 | 10/23/23 21:35 | 1 |
| Naphthalene | ND | | 0.38 | 0.38 | mg/Kg | ☼ | 10/16/23 09:16 | 10/23/23 21:35 | 1 |
| 2-Methylnaphthalene | ND | | 0.38 | 0.38 | mg/Kg | ☼ | 10/16/23 09:16 | 10/23/23 21:35 | 1 |
| Acenaphthylene | ND | | 0.38 | 0.38 | mg/Kg | ☼ | 10/16/23 09:16 | 10/23/23 21:35 | 1 |
| Acenaphthene | ND | | 0.38 | 0.38 | mg/Kg | ☼ | 10/16/23 09:16 | 10/23/23 21:35 | 1 |
| Fluorene | ND | | 0.38 | 0.38 | mg/Kg | ☼ | 10/16/23 09:16 | 10/23/23 21:35 | 1 |
| Phenanthrene | ND | | 0.38 | 0.38 | mg/Kg | ☼ | 10/16/23 09:16 | 10/23/23 21:35 | 1 |
| Anthracene | ND | | 0.38 | 0.38 | mg/Kg | ☼ | 10/16/23 09:16 | 10/23/23 21:35 | 1 |
| Fluoranthene | ND | | 0.38 | 0.38 | mg/Kg | ☼ | 10/16/23 09:16 | 10/23/23 21:35 | 1 |
| Pyrene | ND | | 0.38 | 0.38 | mg/Kg | ☼ | 10/16/23 09:16 | 10/23/23 21:35 | 1 |
| Benzo[a]anthracene | ND | | 0.38 | 0.38 | mg/Kg | ☼ | 10/16/23 09:16 | 10/23/23 21:35 | 1 |
| Chrysene | ND | | 0.38 | 0.38 | mg/Kg | ☼ | 10/16/23 09:16 | 10/23/23 21:35 | 1 |
| Benzo[b]fluoranthene | ND | | 0.38 | 0.38 | mg/Kg | ☼ | 10/16/23 09:16 | 10/23/23 21:35 | 1 |
| Benzo[k]fluoranthene | ND | | 0.38 | 0.38 | mg/Kg | ☼ | 10/16/23 09:16 | 10/23/23 21:35 | 1 |
| Benzo[a]pyrene | ND | | 0.38 | 0.38 | mg/Kg | ☼ | 10/16/23 09:16 | 10/23/23 21:35 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.38 | 0.38 | mg/Kg | ☼ | 10/16/23 09:16 | 10/23/23 21:35 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.38 | 0.38 | mg/Kg | ☼ | 10/16/23 09:16 | 10/23/23 21:35 | 1 |
| Benzo[g,h,i]perylene | ND | | 0.38 | 0.38 | mg/Kg | ☼ | 10/16/23 09:16 | 10/23/23 21:35 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *63* | | *40 - 140* | *10/16/23 09:16* | *10/23/23 21:35* | *1* |
| *o-Terphenyl (Surr)* | *80* | | *40 - 140* | *10/16/23 09:16* | *10/23/23 21:35* | *1* |
| *2-Fluorobiphenyl (Surr)* | *100* | | *40 - 140* | *10/16/23 09:16* | *10/23/23 21:35* | *1* |

### Method: SW846 6010D - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Antimony** | **1.2** | **J** | 5.6 | 0.42 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 17:03 | 1 |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-14582-1

## Client Sample ID: SO-B/MW-108-1518

**Date Collected: 10/12/23 10:10**
**Date Received: 10/13/23 17:11**

## Lab Sample ID: 620-14582-3

**Matrix: Solid**
**Percent Solids: 85.3**

### Method: SW846 6010D - Metals (ICP) (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Arsenic** | **27** | | 1.7 | 0.21 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 17:03 | 1 |
| **Barium** | **34** | | 1.1 | 0.13 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 17:03 | 1 |
| Beryllium | ND | | 0.56 | 0.028 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 17:03 | 1 |
| **Cadmium** | **0.035** | **J** | 0.56 | 0.029 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 17:03 | 1 |
| **Chromium** | **21** | | 1.1 | 0.15 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 17:03 | 1 |
| **Lead** | **17** | | 1.7 | 0.24 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 17:03 | 1 |
| **Nickel** | **14** | | 1.1 | 0.13 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 17:03 | 1 |
| Selenium | ND | | 1.7 | 0.32 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 17:03 | 1 |
| Silver | ND | | 1.7 | 0.18 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 17:03 | 1 |
| Thallium | ND | | 3.4 | 1.2 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 17:03 | 1 |
| **Vanadium** | **17** | | 1.7 | 0.30 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 17:03 | 1 |
| **Zinc** | **79** | | 3.4 | 0.87 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 17:03 | 1 |

### Method: SW846 7471A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.032 | 0.0053 | mg/Kg | ☼ | 10/18/23 13:57 | 10/19/23 13:00 | 1 |

### General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Percent Moisture (EPA Moisture)** | **14.7** | | 0.1 | 0.1 | % | | | 10/16/23 09:33 | 1 |
| **Percent Solids (EPA Moisture)** | **85.3** | | 0.1 | 0.1 | % | | | 10/16/23 09:33 | 1 |

## Client Sample ID: SO-FD01-101223

**Date Collected: 10/12/23 08:00**
**Date Received: 10/13/23 17:11**

## Lab Sample ID: 620-14582-4

**Matrix: Solid**
**Percent Solids: 88.4**

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | | 1.5 | 1.5 | mg/Kg | ☼ | 10/18/23 11:23 | 10/19/23 04:05 | 10 |
| **Ethylbenzene** | **14** | | 1.5 | 1.5 | mg/Kg | ☼ | 10/18/23 11:23 | 10/19/23 04:05 | 10 |
| Methyl tert-butyl ether | ND | | 0.30 | 0.30 | mg/Kg | ☼ | 10/18/23 11:23 | 10/19/23 04:05 | 10 |
| **Naphthalene** | **6.9** | | 6.1 | 6.1 | mg/Kg | ☼ | 10/18/23 11:23 | 10/19/23 04:05 | 10 |
| Toluene | ND | | 1.5 | 1.5 | mg/Kg | ☼ | 10/18/23 11:23 | 10/19/23 04:05 | 10 |
| **m,p-Xylene** | **60** | | 3.0 | 3.0 | mg/Kg | ☼ | 10/18/23 11:23 | 10/19/23 04:05 | 10 |
| **o-Xylene** | **4.7** | | 1.5 | 1.5 | mg/Kg | ☼ | 10/18/23 11:23 | 10/19/23 04:05 | 10 |
| **Xylenes, Total** | **65** | | 4.5 | 4.5 | mg/Kg | ☼ | 10/18/23 11:23 | 10/19/23 04:05 | 10 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *81* | | *70 - 130* | *10/18/23 11:23* | *10/19/23 04:05* | *10* |
| *2,5-Dibromotoluene (pid)* | *77* | | *70 - 130* | *10/18/23 11:23* | *10/19/23 04:05* | *10* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) - DL

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C5-C8 Aliphatics (adjusted)** | **500** | | 300 | 300 | mg/Kg | ☼ | 10/18/23 11:23 | 10/25/23 00:34 | 100 |
| C9-C12 Aliphatics (adjusted) | ND | | 300 | 300 | mg/Kg | ☼ | 10/18/23 11:23 | 10/25/23 00:34 | 100 |
| **C9-C10 Aromatics** | **460** | | 300 | 300 | mg/Kg | ☼ | 10/18/23 11:23 | 10/25/23 00:34 | 100 |
| **C5-C8 Aliphatics (unadjusted)** | **500** | | 300 | 300 | mg/Kg | ☼ | 10/18/23 11:23 | 10/25/23 00:34 | 100 |
| **C9-C12 Aliphatics (unadjusted)** | **720** | | 300 | 300 | mg/Kg | ☼ | 10/18/23 11:23 | 10/25/23 00:34 | 100 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *7* | *S1-* | *70 - 130* | *10/18/23 11:23* | *10/25/23 00:34* | *100* |
| *2,5-Dibromotoluene (pid)* | *6* | *S1-* | *70 - 130* | *10/18/23 11:23* | *10/25/23 00:34* | *100* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C9-C18 Aliphatics** | **93** | | 22 | 22 | mg/Kg | ☼ | 10/16/23 09:16 | 10/23/23 22:03 | 1 |
| **C19-C36 Aliphatics** | **360** | | 22 | 22 | mg/Kg | ☼ | 10/16/23 09:16 | 10/23/23 22:03 | 1 |
| **C11-C22 Aromatics** | **140** | | 22 | 22 | mg/Kg | ☼ | 10/16/23 09:16 | 10/23/23 22:03 | 1 |
| **C11-C22 Aromatics (Adjusted)** | **130** | | 22 | 22 | mg/Kg | ☼ | 10/16/23 09:16 | 10/23/23 22:03 | 1 |
| **Naphthalene** | **5.2** | | 1.1 | 1.1 | mg/Kg | ☼ | 10/16/23 09:16 | 10/23/23 22:03 | 1 |
| **2-Methylnaphthalene** | **6.3** | | 1.1 | 1.1 | mg/Kg | ☼ | 10/16/23 09:16 | 10/23/23 22:03 | 1 |
| Acenaphthylene | ND | | 1.1 | 1.1 | mg/Kg | ☼ | 10/16/23 09:16 | 10/23/23 22:03 | 1 |
| Acenaphthene | ND | | 1.1 | 1.1 | mg/Kg | ☼ | 10/16/23 09:16 | 10/23/23 22:03 | 1 |
| Fluorene | ND | | 1.1 | 1.1 | mg/Kg | ☼ | 10/16/23 09:16 | 10/23/23 22:03 | 1 |
| Phenanthrene | ND | | 1.1 | 1.1 | mg/Kg | ☼ | 10/16/23 09:16 | 10/23/23 22:03 | 1 |
| Anthracene | ND | | 1.1 | 1.1 | mg/Kg | ☼ | 10/16/23 09:16 | 10/23/23 22:03 | 1 |
| Fluoranthene | ND | | 1.1 | 1.1 | mg/Kg | ☼ | 10/16/23 09:16 | 10/23/23 22:03 | 1 |
| Pyrene | ND | | 1.1 | 1.1 | mg/Kg | ☼ | 10/16/23 09:16 | 10/23/23 22:03 | 1 |
| Benzo[a]anthracene | ND | | 1.1 | 1.1 | mg/Kg | ☼ | 10/16/23 09:16 | 10/23/23 22:03 | 1 |
| Chrysene | ND | | 1.1 | 1.1 | mg/Kg | ☼ | 10/16/23 09:16 | 10/23/23 22:03 | 1 |
| Benzo[b]fluoranthene | ND | | 1.1 | 1.1 | mg/Kg | ☼ | 10/16/23 09:16 | 10/23/23 22:03 | 1 |
| Benzo[k]fluoranthene | ND | | 1.1 | 1.1 | mg/Kg | ☼ | 10/16/23 09:16 | 10/23/23 22:03 | 1 |
| **Benzo[a]pyrene** | **2.0** | | 1.1 | 1.1 | mg/Kg | ☼ | 10/16/23 09:16 | 10/23/23 22:03 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 1.1 | 1.1 | mg/Kg | ☼ | 10/16/23 09:16 | 10/23/23 22:03 | 1 |
| Dibenz(a,h)anthracene | ND | | 1.1 | 1.1 | mg/Kg | ☼ | 10/16/23 09:16 | 10/23/23 22:03 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.1 | 1.1 | mg/Kg | ☼ | 10/16/23 09:16 | 10/23/23 22:03 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *61* | | *40 - 140* | *10/16/23 09:16* | *10/23/23 22:03* | *1* |

## Client Sample ID: SO-FD01-101223

**Date Collected: 10/12/23 08:00**
**Date Received: 10/13/23 17:11**

## Lab Sample ID: 620-14582-4

**Matrix: Solid**
**Percent Solids: 88.4**

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *72* | | *40 - 140* | *10/16/23 09:16* | *10/23/23 22:03* | *1* |
| *2-Fluorobiphenyl (Surr)* | *91* | | *40 - 140* | *10/16/23 09:16* | *10/23/23 22:03* | *1* |

### Method: SW846 6010D - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Antimony** | **0.95** | **J** | 4.9 | 0.37 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 16:57 | 1 |
| **Arsenic** | **3.7** | | 1.5 | 0.19 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 16:57 | 1 |
| **Barium** | **56** | | 0.98 | 0.12 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 16:57 | 1 |
| Beryllium | ND | | 0.49 | 0.025 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 16:57 | 1 |
| Cadmium | ND | | 0.49 | 0.025 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 16:57 | 1 |
| **Chromium** | **17** | | 0.98 | 0.13 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 16:57 | 1 |
| **Lead** | **2.9** | | 1.5 | 0.21 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 16:57 | 1 |
| **Nickel** | **13** | | 0.98 | 0.11 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 16:57 | 1 |
| Selenium | ND | | 1.5 | 0.28 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 16:57 | 1 |
| Silver | ND | | 1.5 | 0.16 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 16:57 | 1 |
| Thallium | ND | | 2.9 | 1.1 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 16:57 | 1 |
| **Vanadium** | **13** | | 1.5 | 0.26 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 16:57 | 1 |
| **Zinc** | **14** | | 2.9 | 0.76 | mg/Kg | ☼ | 10/16/23 11:07 | 10/17/23 16:57 | 1 |

### Method: SW846 7471A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Mercury** | **0.030** | **J** | 0.043 | 0.0072 | mg/Kg | ☼ | 10/18/23 13:57 | 10/19/23 13:02 | 1 |

### General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Percent Moisture (EPA Moisture)** | **11.6** | | 0.1 | 0.1 | % | | | 10/16/23 09:33 | 1 |
| **Percent Solids (EPA Moisture)** | **88.4** | | 0.1 | 0.1 | % | | | 10/16/23 09:33 | 1 |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-14582-1

**Client Sample ID: TB01-101223**
**Date Collected: 10/12/23 00:00**
**Date Received: 10/13/23 17:11**

**Lab Sample ID: 620-14582-5**
**Matrix: Solid**

**Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)**

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 5.0 | 5.0 | mg/Kg | | 10/24/23 12:28 | 10/24/23 22:47 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 5.0 | 5.0 | mg/Kg | | 10/24/23 12:28 | 10/24/23 22:47 | 1 |
| C9-C10 Aromatics | ND | | 5.0 | 5.0 | mg/Kg | | 10/24/23 12:28 | 10/24/23 22:47 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 5.0 | 5.0 | mg/Kg | | 10/24/23 12:28 | 10/24/23 22:47 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 5.0 | 5.0 | mg/Kg | | 10/24/23 12:28 | 10/24/23 22:47 | 1 |
| Benzene | ND | | 0.25 | 0.25 | mg/Kg | | 10/24/23 12:28 | 10/24/23 22:47 | 1 |
| Ethylbenzene | ND | | 0.25 | 0.25 | mg/Kg | | 10/24/23 12:28 | 10/24/23 22:47 | 1 |
| Methyl tert-butyl ether | ND | | 0.050 | 0.050 | mg/Kg | | 10/24/23 12:28 | 10/24/23 22:47 | 1 |
| Naphthalene | ND | | 1.0 | 1.0 | mg/Kg | | 10/24/23 12:28 | 10/24/23 22:47 | 1 |
| Toluene | ND | | 0.25 | 0.25 | mg/Kg | | 10/24/23 12:28 | 10/24/23 22:47 | 1 |
| m,p-Xylene | ND | | 0.50 | 0.50 | mg/Kg | | 10/24/23 12:28 | 10/24/23 22:47 | 1 |
| o-Xylene | ND | | 0.25 | 0.25 | mg/Kg | | 10/24/23 12:28 | 10/24/23 22:47 | 1 |
| Xylenes, Total | ND | | 0.75 | 0.75 | mg/Kg | | 10/24/23 12:28 | 10/24/23 22:47 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *91* | | *70 - 130* | *10/24/23 12:28* | *10/24/23 22:47* | *1* |
| *2,5-Dibromotoluene (pid)* | *90* | | *70 - 130* | *10/24/23 12:28* | *10/24/23 22:47* | *1* |

# Surrogate Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-14582-1

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

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

| | | Percent Surrogate Recovery (Acceptance Limits) | |
|---|---|---|---|
| | | 25DBTf1 | 25DBTp1 |
| Lab Sample ID | Client Sample ID | (70-130) | (70-130) |
| 620-14582-1 | SO-B/MW-106-1015 | 76 | 76 |
| 620-14582-1 - DL | SO-B/MW-106-1015 | 10 S1- | 9 S1- |
| 620-14582-2 | SO-B/MW-107-1015 | 89 | 80 |
| 620-14582-2 MS | SO-B/MW-107-1015 | 81 | 78 |
| 620-14582-2 MSD | SO-B/MW-107-1015 | 89 | 81 |
| 620-14582-3 | SO-B/MW-108-1518 | 87 | 78 |
| 620-14582-4 | SO-FD01-101223 | 81 | 77 |
| 620-14582-4 - DL | SO-FD01-101223 | 7 S1- | 6 S1- |
| 620-14582-5 | TB01-101223 | 91 | 90 |
| LCS 620-28025/1-A | Lab Control Sample | 86 | 85 |
| LCS 620-28262/1-A | Lab Control Sample | 94 | 93 |
| LCSD 620-28025/2-A | Lab Control Sample Dup | 84 | 82 |
| LCSD 620-28262/2-A | Lab Control Sample Dup | 94 | 94 |
| MB 620-28025/3-A | Method Blank | 74 | 74 |
| MB 620-28262/3-A | Method Blank | 90 | 88 |

**Surrogate Legend**

25DBTf = 2,5-Dibromotoluene (fid)
25DBTp = 2,5-Dibromotoluene (pid)

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

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

| | | Percent Surrogate Recovery (Acceptance Limits) | | |
|---|---|---|---|---|
| | | 1COD1 | OTPH1 | FBP1 |
| Lab Sample ID | Client Sample ID | (40-140) | (40-140) | (40-140) |
| 620-14582-1 | SO-B/MW-106-1015 | 68 | 58 | 64 |
| 620-14582-2 | SO-B/MW-107-1015 | 70 | 62 | 73 |
| 620-14582-2 MS | SO-B/MW-107-1015 | 43 | 55 | 80 |
| 620-14582-2 MSD | SO-B/MW-107-1015 | 49 | 67 | 93 |
| 620-14582-3 | SO-B/MW-108-1518 | 63 | 80 | 100 |
| 620-14582-4 | SO-FD01-101223 | 61 | 72 | 91 |
| LCS 620-27844/2-B | Lab Control Sample | 70 | 76 | 78 |
| LCSD 620-27844/3-B | Lab Control Sample Dup | 69 | 72 | 76 |
| MB 620-27844/1-B | Method Blank | 64 | 59 | 67 |

**Surrogate Legend**

1COD = 1-Chlorooctadecane (Surr)
OTPH = o-Terphenyl (Surr)
FBP = 2-Fluorobiphenyl (Surr)

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

**Lab Sample ID: MB 620-28025/3-A**
**Matrix: Solid**
**Analysis Batch: 27958**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 28025**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 5.0 | 5.0 | mg/Kg | | 10/18/23 10:00 | 10/18/23 16:45 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 5.0 | 5.0 | mg/Kg | | 10/18/23 10:00 | 10/18/23 16:45 | 1 |
| C9-C10 Aromatics | ND | | 5.0 | 5.0 | mg/Kg | | 10/18/23 10:00 | 10/18/23 16:45 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 5.0 | 5.0 | mg/Kg | | 10/18/23 10:00 | 10/18/23 16:45 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 5.0 | 5.0 | mg/Kg | | 10/18/23 10:00 | 10/18/23 16:45 | 1 |
| Benzene | ND | | 0.25 | 0.25 | mg/Kg | | 10/18/23 10:00 | 10/18/23 16:45 | 1 |
| Ethylbenzene | ND | | 0.25 | 0.25 | mg/Kg | | 10/18/23 10:00 | 10/18/23 16:45 | 1 |
| Methyl tert-butyl ether | ND | | 0.050 | 0.050 | mg/Kg | | 10/18/23 10:00 | 10/18/23 16:45 | 1 |
| Naphthalene | ND | | 1.0 | 1.0 | mg/Kg | | 10/18/23 10:00 | 10/18/23 16:45 | 1 |
| Toluene | ND | | 0.25 | 0.25 | mg/Kg | | 10/18/23 10:00 | 10/18/23 16:45 | 1 |
| m,p-Xylene | ND | | 0.50 | 0.50 | mg/Kg | | 10/18/23 10:00 | 10/18/23 16:45 | 1 |
| o-Xylene | ND | | 0.25 | 0.25 | mg/Kg | | 10/18/23 10:00 | 10/18/23 16:45 | 1 |
| Xylenes, Total | ND | | 0.75 | 0.75 | mg/Kg | | 10/18/23 10:00 | 10/18/23 16:45 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *74* | | *70 - 130* | *10/18/23 10:00* | *10/18/23 16:45* | *1* |
| *2,5-Dibromotoluene (pid)* | *74* | | *70 - 130* | *10/18/23 10:00* | *10/18/23 16:45* | *1* |

**Lab Sample ID: LCS 620-28025/1-A**
**Matrix: Solid**
**Analysis Batch: 27958**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 28025**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | 1.00 | ND | | mg/Kg | | 99 | 70 - 130 |
| C5-C8 Aliphatics (unadjusted) | 3.00 | ND | | mg/Kg | | 95 | 70 - 130 |
| C9-C12 Aliphatics (unadjusted) | 3.00 | ND | | mg/Kg | | 96 | 70 - 130 |
| Benzene | 1.00 | 0.976 | | mg/Kg | | 98 | 70 - 130 |
| Ethylbenzene | 1.00 | 1.01 | | mg/Kg | | 101 | 70 - 130 |
| Methyl tert-butyl ether | 1.00 | 0.928 | | mg/Kg | | 93 | 70 - 130 |
| Naphthalene | 1.00 | ND | | mg/Kg | | 94 | 70 - 130 |
| Toluene | 1.00 | 0.986 | | mg/Kg | | 99 | 70 - 130 |
| m,p-Xylene | 2.00 | 2.03 | | mg/Kg | | 102 | 70 - 130 |
| o-Xylene | 1.00 | 1.01 | | mg/Kg | | 101 | 70 - 130 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *86* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *85* | | *70 - 130* |

**Lab Sample ID: LCSD 620-28025/2-A**
**Matrix: Solid**
**Analysis Batch: 27958**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 28025**

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | 1.00 | ND | | mg/Kg | | 99 | 70 - 130 | 0 | 25 |
| C5-C8 Aliphatics (unadjusted) | 3.00 | ND | | mg/Kg | | 95 | 70 - 130 | 0 | 25 |
| C9-C12 Aliphatics (unadjusted) | 3.00 | ND | | mg/Kg | | 97 | 70 - 130 | 1 | 25 |
| Benzene | 1.00 | 0.972 | | mg/Kg | | 97 | 70 - 130 | 0 | 25 |
| Ethylbenzene | 1.00 | 1.02 | | mg/Kg | | 102 | 70 - 130 | 1 | 25 |

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: LCSD 620-28025/2-A**
**Matrix: Solid**
**Analysis Batch: 27958**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 28025**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Methyl tert-butyl ether | | | 1.00 | 0.915 | | mg/Kg | | 91 | 70 - 130 | 1 | 25 |
| Naphthalene | | | 1.00 | ND | | mg/Kg | | 89 | 70 - 130 | 6 | 25 |
| Toluene | | | 1.00 | 0.974 | | mg/Kg | | 97 | 70 - 130 | 1 | 25 |
| m,p-Xylene | | | 2.00 | 2.03 | | mg/Kg | | 102 | 70 - 130 | 0 | 25 |
| o-Xylene | | | 1.00 | 1.01 | | mg/Kg | | 101 | 70 - 130 | 0 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *84* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *82* | | *70 - 130* |

**Lab Sample ID: 620-14582-2 MS**
**Matrix: Solid**
**Analysis Batch: 27958**

**Client Sample ID: SO-B/MW-107-1015**
**Prep Type: Total/NA**
**Prep Batch: 28025**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | 16 | F2 | 1.23 | 9.27 | 4 | mg/Kg | ☼ | -524 | 70 - 130 |
| C5-C8 Aliphatics (unadjusted) | 3.9 | F1 | 3.68 | 8.09 | | mg/Kg | ☼ | 114 | 70 - 130 |
| C9-C12 Aliphatics (unadjusted) | 26 | F2 | 3.68 | 12.8 | 4 | mg/Kg | ☼ | -349 | 70 - 130 |
| Benzene | ND | F2 | 1.23 | 1.19 | | mg/Kg | ☼ | 97 | 70 - 130 |
| Ethylbenzene | ND | F2 | 1.23 | 1.23 | | mg/Kg | ☼ | 100 | 70 - 130 |
| Methyl tert-butyl ether | 0.31 | F1 | 1.23 | 1.08 | F1 | mg/Kg | ☼ | 63 | 70 - 130 |
| Naphthalene | ND | F1 | 1.23 | 1.03 | | mg/Kg | ☼ | 84 | 70 - 130 |
| Toluene | ND | F2 | 1.23 | 1.20 | | mg/Kg | ☼ | 98 | 70 - 130 |
| m,p-Xylene | ND | | 2.46 | 2.45 | | mg/Kg | ☼ | 100 | 70 - 130 |
| o-Xylene | 0.17 | F2 | 1.23 | 1.22 | | mg/Kg | ☼ | 85 | 70 - 130 |

| *Surrogate* | *MS %Recovery* | *MS Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *81* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *78* | | *70 - 130* |

**Lab Sample ID: 620-14582-2 MSD**
**Matrix: Solid**
**Analysis Batch: 27958**

**Client Sample ID: SO-B/MW-107-1015**
**Prep Type: Total/NA**
**Prep Batch: 28025**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | 16 | F2 | 0.715 | 19.1 | 4 F2 | mg/Kg | ☼ | 472 | 70 - 130 | 69 | 50 |
| C5-C8 Aliphatics (unadjusted) | 3.9 | F1 | 2.14 | 7.83 | F1 | mg/Kg | ☼ | 184 | 70 - 130 | 3 | 50 |
| C9-C12 Aliphatics (unadjusted) | 26 | F2 | 2.14 | 33.2 | 4 F2 | mg/Kg | ☼ | 353 | 70 - 130 | 89 | 50 |
| Benzene | ND | F2 | 0.715 | 0.699 | F2 | mg/Kg | ☼ | 98 | 70 - 130 | 52 | 30 |
| Ethylbenzene | ND | F2 | 0.715 | 0.893 | F2 | mg/Kg | ☼ | 125 | 70 - 130 | 32 | 30 |
| Methyl tert-butyl ether | 0.31 | F1 | 0.715 | 1.03 | | mg/Kg | ☼ | 100 | 70 - 130 | 6 | 30 |
| Naphthalene | ND | F1 | 0.715 | 0.886 | | mg/Kg | ☼ | 124 | 70 - 130 | NC | 30 |
| Toluene | ND | F2 | 0.715 | 0.706 | F2 | mg/Kg | ☼ | 99 | 70 - 130 | 52 | 30 |
| m,p-Xylene | ND | | 1.43 | 1.81 | | mg/Kg | ☼ | 127 | 70 - 130 | 30 | 30 |
| o-Xylene | 0.17 | F2 | 0.715 | 0.874 | F2 | mg/Kg | ☼ | 98 | 70 - 130 | 33 | 30 |

| *Surrogate* | *MSD %Recovery* | *MSD Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *89* | | *70 - 130* |

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: 620-14582-2 MSD**
**Matrix: Solid**
**Analysis Batch: 27958**

**Client Sample ID: SO-B/MW-107-1015**
**Prep Type: Total/NA**
**Prep Batch: 28025**

| *Surrogate* | *MSD %Recovery* | *MSD Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (pid)* | *81* | | *70 - 130* |

**Lab Sample ID: MB 620-28262/3-A**
**Matrix: Solid**
**Analysis Batch: 28182**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 28262**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 5.0 | 5.0 | mg/Kg | | 10/24/23 12:28 | 10/24/23 21:36 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 5.0 | 5.0 | mg/Kg | | 10/24/23 12:28 | 10/24/23 21:36 | 1 |
| C9-C10 Aromatics | ND | | 5.0 | 5.0 | mg/Kg | | 10/24/23 12:28 | 10/24/23 21:36 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 5.0 | 5.0 | mg/Kg | | 10/24/23 12:28 | 10/24/23 21:36 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 5.0 | 5.0 | mg/Kg | | 10/24/23 12:28 | 10/24/23 21:36 | 1 |
| Benzene | ND | | 0.25 | 0.25 | mg/Kg | | 10/24/23 12:28 | 10/24/23 21:36 | 1 |
| Ethylbenzene | ND | | 0.25 | 0.25 | mg/Kg | | 10/24/23 12:28 | 10/24/23 21:36 | 1 |
| Methyl tert-butyl ether | ND | | 0.050 | 0.050 | mg/Kg | | 10/24/23 12:28 | 10/24/23 21:36 | 1 |
| Naphthalene | ND | | 1.0 | 1.0 | mg/Kg | | 10/24/23 12:28 | 10/24/23 21:36 | 1 |
| Toluene | ND | | 0.25 | 0.25 | mg/Kg | | 10/24/23 12:28 | 10/24/23 21:36 | 1 |
| m,p-Xylene | ND | | 0.50 | 0.50 | mg/Kg | | 10/24/23 12:28 | 10/24/23 21:36 | 1 |
| o-Xylene | ND | | 0.25 | 0.25 | mg/Kg | | 10/24/23 12:28 | 10/24/23 21:36 | 1 |
| Xylenes, Total | ND | | 0.75 | 0.75 | mg/Kg | | 10/24/23 12:28 | 10/24/23 21:36 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *90* | | *70 - 130* | *10/24/23 12:28* | *10/24/23 21:36* | *1* |
| *2,5-Dibromotoluene (pid)* | *88* | | *70 - 130* | *10/24/23 12:28* | *10/24/23 21:36* | *1* |

**Lab Sample ID: LCS 620-28262/1-A**
**Matrix: Solid**
**Analysis Batch: 28182**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 28262**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | 1.00 | ND | | mg/Kg | | 96 | 70 - 130 |
| C5-C8 Aliphatics (unadjusted) | 3.00 | ND | | mg/Kg | | 93 | 70 - 130 |
| C9-C12 Aliphatics (unadjusted) | 3.00 | ND | | mg/Kg | | 91 | 70 - 130 |
| Benzene | 1.00 | 0.956 | | mg/Kg | | 96 | 70 - 130 |
| Ethylbenzene | 1.00 | 0.970 | | mg/Kg | | 97 | 70 - 130 |
| Methyl tert-butyl ether | 1.00 | 0.948 | | mg/Kg | | 95 | 70 - 130 |
| Naphthalene | 1.00 | ND | | mg/Kg | | 95 | 70 - 130 |
| Toluene | 1.00 | 0.937 | | mg/Kg | | 94 | 70 - 130 |
| m,p-Xylene | 2.00 | 1.96 | | mg/Kg | | 98 | 70 - 130 |
| o-Xylene | 1.00 | 0.959 | | mg/Kg | | 96 | 70 - 130 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *94* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *93* | | *70 - 130* |

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: LCSD 620-28262/2-A**
**Matrix: Solid**
**Analysis Batch: 28182**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 28262**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | | | 1.00 | ND | | mg/Kg | | 95 | 70 - 130 | 1 | 25 |
| C5-C8 Aliphatics (unadjusted) | | | 3.00 | ND | | mg/Kg | | 93 | 70 - 130 | 1 | 25 |
| C9-C12 Aliphatics (unadjusted) | | | 3.00 | ND | | mg/Kg | | 90 | 70 - 130 | 1 | 25 |
| Benzene | | | 1.00 | 0.964 | | mg/Kg | | 96 | 70 - 130 | 1 | 25 |
| Ethylbenzene | | | 1.00 | 0.960 | | mg/Kg | | 96 | 70 - 130 | 1 | 25 |
| Methyl tert-butyl ether | | | 1.00 | 0.947 | | mg/Kg | | 95 | 70 - 130 | 0 | 25 |
| Naphthalene | | | 1.00 | ND | | mg/Kg | | 95 | 70 - 130 | 0 | 25 |
| Toluene | | | 1.00 | 0.937 | | mg/Kg | | 94 | 70 - 130 | 0 | 25 |
| m,p-Xylene | | | 2.00 | 1.95 | | mg/Kg | | 98 | 70 - 130 | 0 | 25 |
| o-Xylene | | | 1.00 | 0.947 | | mg/Kg | | 95 | 70 - 130 | 1 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *94* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *94* | | *70 - 130* |

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

**Lab Sample ID: MB 620-27844/1-B**
**Matrix: Solid**
**Analysis Batch: 27945**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 27844**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 6.7 | 6.7 | mg/Kg | | 10/16/23 09:16 | 10/18/23 17:18 | 1 |
| C19-C36 Aliphatics | ND | | 6.7 | 6.7 | mg/Kg | | 10/16/23 09:16 | 10/18/23 17:18 | 1 |
| C11-C22 Aromatics | ND | | 6.7 | 6.7 | mg/Kg | | 10/16/23 09:16 | 10/18/23 17:18 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 6.7 | 6.7 | mg/Kg | | 10/16/23 09:16 | 10/18/23 17:18 | 1 |
| Naphthalene | ND | | 0.33 | 0.33 | mg/Kg | | 10/16/23 09:16 | 10/18/23 17:18 | 1 |
| 2-Methylnaphthalene | ND | | 0.33 | 0.33 | mg/Kg | | 10/16/23 09:16 | 10/18/23 17:18 | 1 |
| Acenaphthylene | ND | | 0.33 | 0.33 | mg/Kg | | 10/16/23 09:16 | 10/18/23 17:18 | 1 |
| Acenaphthene | ND | | 0.33 | 0.33 | mg/Kg | | 10/16/23 09:16 | 10/18/23 17:18 | 1 |
| Fluorene | ND | | 0.33 | 0.33 | mg/Kg | | 10/16/23 09:16 | 10/18/23 17:18 | 1 |
| Phenanthrene | ND | | 0.33 | 0.33 | mg/Kg | | 10/16/23 09:16 | 10/18/23 17:18 | 1 |
| Anthracene | ND | | 0.33 | 0.33 | mg/Kg | | 10/16/23 09:16 | 10/18/23 17:18 | 1 |
| Fluoranthene | ND | | 0.33 | 0.33 | mg/Kg | | 10/16/23 09:16 | 10/18/23 17:18 | 1 |
| Pyrene | ND | | 0.33 | 0.33 | mg/Kg | | 10/16/23 09:16 | 10/18/23 17:18 | 1 |
| Benzo[a]anthracene | ND | | 0.33 | 0.33 | mg/Kg | | 10/16/23 09:16 | 10/18/23 17:18 | 1 |
| Chrysene | ND | | 0.33 | 0.33 | mg/Kg | | 10/16/23 09:16 | 10/18/23 17:18 | 1 |
| Benzo[b]fluoranthene | ND | | 0.33 | 0.33 | mg/Kg | | 10/16/23 09:16 | 10/18/23 17:18 | 1 |
| Benzo[k]fluoranthene | ND | | 0.33 | 0.33 | mg/Kg | | 10/16/23 09:16 | 10/18/23 17:18 | 1 |
| Benzo[a]pyrene | ND | | 0.33 | 0.33 | mg/Kg | | 10/16/23 09:16 | 10/18/23 17:18 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.33 | 0.33 | mg/Kg | | 10/16/23 09:16 | 10/18/23 17:18 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.33 | 0.33 | mg/Kg | | 10/16/23 09:16 | 10/18/23 17:18 | 1 |
| Benzo[g,h,i]perylene | ND | | 0.33 | 0.33 | mg/Kg | | 10/16/23 09:16 | 10/18/23 17:18 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *64* | | *40 - 140* | *10/16/23 09:16* | *10/18/23 17:18* | *1* |
| *o-Terphenyl (Surr)* | *59* | | *40 - 140* | *10/16/23 09:16* | *10/18/23 17:18* | *1* |
| *2-Fluorobiphenyl (Surr)* | *67* | | *40 - 140* | *10/16/23 09:16* | *10/18/23 17:18* | *1* |

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

**Lab Sample ID: LCS 620-27844/2-B**
**Matrix: Solid**
**Analysis Batch: 27945**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 27844**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | | | 8.00 | ND | | mg/Kg | | 62 | 40 - 140 | | |
| C19-C36 Aliphatics | | | 10.7 | 11.5 | | mg/Kg | | 108 | 40 - 140 | | |
| C11-C22 Aromatics | | | 22.7 | 16.8 | | mg/Kg | | 74 | 40 - 140 | | |
| Naphthalene | | | 1.33 | 0.869 | | mg/Kg | | 65 | 40 - 140 | | |
| 2-Methylnaphthalene | | | 1.33 | 0.812 | | mg/Kg | | 61 | 40 - 140 | | |
| Acenaphthylene | | | 1.33 | 0.959 | | mg/Kg | | 72 | 40 - 140 | | |
| Acenaphthene | | | 1.33 | 0.999 | | mg/Kg | | 75 | 40 - 140 | | |
| Fluorene | | | 1.33 | 0.778 | | mg/Kg | | 58 | 40 - 140 | | |
| Phenanthrene | | | 1.33 | 0.757 | | mg/Kg | | 57 | 40 - 140 | | |
| Anthracene | | | 1.33 | 0.947 | | mg/Kg | | 71 | 40 - 140 | | |
| Fluoranthene | | | 1.33 | 1.06 | | mg/Kg | | 79 | 40 - 140 | | |
| Pyrene | | | 1.33 | 1.18 | | mg/Kg | | 89 | 40 - 140 | | |
| Benzo[a]anthracene | | | 1.33 | 0.688 | | mg/Kg | | 52 | 40 - 140 | | |
| Chrysene | | | 1.33 | 1.06 | | mg/Kg | | 80 | 40 - 140 | | |
| Benzo[b]fluoranthene | | | 1.33 | 0.862 | | mg/Kg | | 65 | 40 - 140 | | |
| Benzo[k]fluoranthene | | | 1.33 | 1.25 | | mg/Kg | | 93 | 40 - 140 | | |
| Benzo[a]pyrene | | | 1.33 | 0.749 | | mg/Kg | | 56 | 40 - 140 | | |
| Indeno[1,2,3-cd]pyrene | | | 1.33 | 0.704 | | mg/Kg | | 53 | 40 - 140 | | |
| Dibenz(a,h)anthracene | | | 1.33 | 0.838 | | mg/Kg | | 63 | 40 - 140 | | |
| Benzo[g,h,i]perylene | | | 1.33 | 1.14 | | mg/Kg | | 85 | 40 - 140 | | |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *70* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *76* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *78* | | *40 - 140* |

**Lab Sample ID: LCSD 620-27844/3-B**
**Matrix: Solid**
**Analysis Batch: 27945**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 27844**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | | | 8.00 | ND | | mg/Kg | | 61 | 40 - 140 | 2 | 25 |
| C19-C36 Aliphatics | | | 10.7 | 11.9 | | mg/Kg | | 112 | 40 - 140 | 3 | 25 |
| C11-C22 Aromatics | | | 22.7 | 16.2 | | mg/Kg | | 71 | 40 - 140 | 4 | 25 |
| Naphthalene | | | 1.33 | 0.778 | | mg/Kg | | 58 | 40 - 140 | 11 | 25 |
| 2-Methylnaphthalene | | | 1.33 | 0.709 | | mg/Kg | | 53 | 40 - 140 | 14 | 25 |
| Acenaphthylene | | | 1.33 | 0.956 | | mg/Kg | | 72 | 40 - 140 | 0 | 25 |
| Acenaphthene | | | 1.33 | 0.987 | | mg/Kg | | 74 | 40 - 140 | 1 | 25 |
| Fluorene | | | 1.33 | 0.656 | | mg/Kg | | 49 | 40 - 140 | 17 | 25 |
| Phenanthrene | | | 1.33 | 0.692 | | mg/Kg | | 52 | 40 - 140 | 9 | 25 |
| Anthracene | | | 1.33 | 0.788 | | mg/Kg | | 59 | 40 - 140 | 18 | 25 |
| Fluoranthene | | | 1.33 | 1.00 | | mg/Kg | | 75 | 40 - 140 | 5 | 25 |
| Pyrene | | | 1.33 | 1.11 | | mg/Kg | | 83 | 40 - 140 | 7 | 25 |
| Benzo[a]anthracene | | | 1.33 | 0.591 | | mg/Kg | | 44 | 40 - 140 | 15 | 25 |
| Chrysene | | | 1.33 | 1.10 | | mg/Kg | | 83 | 40 - 140 | 4 | 25 |
| Benzo[b]fluoranthene | | | 1.33 | 0.780 | | mg/Kg | | 59 | 40 - 140 | 10 | 25 |
| Benzo[k]fluoranthene | | | 1.33 | 1.28 | | mg/Kg | | 96 | 40 - 140 | 3 | 25 |
| Benzo[a]pyrene | | | 1.33 | 0.820 | | mg/Kg | | 62 | 40 - 140 | 9 | 25 |

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: LCSD 620-27844/3-B**
**Matrix: Solid**
**Analysis Batch: 27945**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 27844**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Indeno[1,2,3-cd]pyrene | | | 1.33 | 0.664 | | mg/Kg | | 50 | 40 - 140 | 6 | 25 |
| Dibenz(a,h)anthracene | | | 1.33 | 0.785 | | mg/Kg | | 59 | 40 - 140 | 6 | 25 |
| Benzo[g,h,i]perylene | | | 1.33 | 1.09 | | mg/Kg | | 81 | 40 - 140 | 5 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *69* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *72* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *76* | | *40 - 140* |

**Lab Sample ID: 620-14582-2 MS**
**Matrix: Solid**
**Analysis Batch: 28114**

**Client Sample ID: SO-B/MW-107-1015**
**Prep Type: Total/NA**
**Prep Batch: 27844**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 9.38 | 8.31 | | mg/Kg | ☼ | 89 | 40 - 140 |
| C19-C36 Aliphatics | 32 | | 12.5 | 21.0 | F1 | mg/Kg | ☼ | -88 | 40 - 140 |
| C11-C22 Aromatics | 11 | | 26.6 | 23.2 | | mg/Kg | ☼ | 47 | 40 - 140 |
| Naphthalene | ND | | 1.56 | 0.982 | | mg/Kg | ☼ | 63 | 40 - 140 |
| 2-Methylnaphthalene | ND | | 1.56 | 0.944 | | mg/Kg | ☼ | 60 | 40 - 140 |
| Acenaphthylene | ND | | 1.56 | 0.874 | | mg/Kg | ☼ | 56 | 40 - 140 |
| Acenaphthene | ND | | 1.56 | 0.950 | | mg/Kg | ☼ | 61 | 40 - 140 |
| Fluorene | ND | | 1.56 | 0.753 | | mg/Kg | ☼ | 48 | 40 - 140 |
| Phenanthrene | ND | | 1.56 | 0.900 | | mg/Kg | ☼ | 58 | 40 - 140 |
| Anthracene | ND | | 1.56 | 0.770 | | mg/Kg | ☼ | 49 | 40 - 140 |
| Fluoranthene | ND | | 1.56 | 1.22 | | mg/Kg | ☼ | 78 | 40 - 140 |
| Pyrene | ND | | 1.56 | 1.12 | | mg/Kg | ☼ | 71 | 40 - 140 |
| Benzo[a]anthracene | ND | | 1.56 | 1.01 | | mg/Kg | ☼ | 65 | 40 - 140 |
| Chrysene | ND | | 1.56 | 1.17 | | mg/Kg | ☼ | 75 | 40 - 140 |
| Benzo[b]fluoranthene | ND | | 1.56 | 0.997 | | mg/Kg | ☼ | 64 | 40 - 140 |
| Benzo[k]fluoranthene | ND | | 1.56 | 1.03 | | mg/Kg | ☼ | 66 | 40 - 140 |
| Benzo[a]pyrene | ND | | 1.56 | 1.06 | | mg/Kg | ☼ | 68 | 40 - 140 |
| Indeno[1,2,3-cd]pyrene | ND | | 1.56 | 0.862 | | mg/Kg | ☼ | 55 | 40 - 140 |
| Dibenz(a,h)anthracene | ND | | 1.56 | 1.16 | | mg/Kg | ☼ | 74 | 40 - 140 |
| Benzo[g,h,i]perylene | ND | | 1.56 | 0.897 | | mg/Kg | ☼ | 57 | 40 - 140 |

| *Surrogate* | *MS %Recovery* | *MS Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *43* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *55* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *80* | | *40 - 140* |

**Lab Sample ID: 620-14582-2 MSD**
**Matrix: Solid**
**Analysis Batch: 28114**

**Client Sample ID: SO-B/MW-107-1015**
**Prep Type: Total/NA**
**Prep Batch: 27844**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 9.40 | 9.04 | | mg/Kg | ☼ | 96 | 40 - 140 | 8 | 50 |
| C19-C36 Aliphatics | 32 | | 12.5 | 45.5 | F2 | mg/Kg | ☼ | 108 | 40 - 140 | 74 | 50 |
| C11-C22 Aromatics | 11 | | 26.6 | 37.5 | | mg/Kg | ☼ | 100 | 40 - 140 | 47 | 50 |

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: 620-14582-2 MSD**
**Matrix: Solid**
**Analysis Batch: 28114**

**Client Sample ID: SO-B/MW-107-1015**
**Prep Type: Total/NA**
**Prep Batch: 27844**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 1.57 | 0.912 | | mg/Kg | ☼ | 58 | 40 - 140 | 7 | 50 |
| 2-Methylnaphthalene | ND | | 1.57 | 0.992 | | mg/Kg | ☼ | 63 | 40 - 140 | 5 | 50 |
| Acenaphthylene | ND | | 1.57 | 0.902 | | mg/Kg | ☼ | 58 | 40 - 140 | 3 | 50 |
| Acenaphthene | ND | | 1.57 | 1.00 | | mg/Kg | ☼ | 64 | 40 - 140 | 5 | 50 |
| Fluorene | ND | | 1.57 | 0.880 | | mg/Kg | ☼ | 56 | 40 - 140 | 16 | 50 |
| Phenanthrene | ND | | 1.57 | 1.06 | | mg/Kg | ☼ | 68 | 40 - 140 | 17 | 50 |
| Anthracene | ND | | 1.57 | 0.928 | | mg/Kg | ☼ | 59 | 40 - 140 | 19 | 50 |
| Fluoranthene | ND | | 1.57 | 1.30 | | mg/Kg | ☼ | 83 | 40 - 140 | 6 | 50 |
| Pyrene | ND | | 1.57 | 1.40 | | mg/Kg | ☼ | 89 | 40 - 140 | 22 | 50 |
| Benzo[a]anthracene | ND | | 1.57 | 1.29 | | mg/Kg | ☼ | 82 | 40 - 140 | 24 | 50 |
| Chrysene | ND | | 1.57 | 1.68 | | mg/Kg | ☼ | 107 | 40 - 140 | 36 | 50 |
| Benzo[b]fluoranthene | ND | | 1.57 | 1.10 | | mg/Kg | ☼ | 70 | 40 - 140 | 10 | 50 |
| Benzo[k]fluoranthene | ND | | 1.57 | 1.04 | | mg/Kg | ☼ | 66 | 40 - 140 | 1 | 50 |
| Benzo[a]pyrene | ND | | 1.57 | 1.25 | | mg/Kg | ☼ | 80 | 40 - 140 | 17 | 50 |
| Indeno[1,2,3-cd]pyrene | ND | | 1.57 | 1.21 | | mg/Kg | ☼ | 77 | 40 - 140 | 34 | 50 |
| Dibenz(a,h)anthracene | ND | | 1.57 | 1.73 | | mg/Kg | ☼ | 110 | 40 - 140 | 39 | 50 |
| Benzo[g,h,i]perylene | ND | | 1.57 | 1.13 | | mg/Kg | ☼ | 72 | 40 - 140 | 23 | 50 |

| *Surrogate* | *MSD %Recovery* | *MSD Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *49* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *67* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *93* | | *40 - 140* |

## Method: 6010D - Metals (ICP)

**Lab Sample ID: MB 620-27854/1-A**
**Matrix: Solid**
**Analysis Batch: 27926**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 27854**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 4.6 | 0.34 | mg/Kg | | 10/16/23 11:07 | 10/17/23 14:14 | 1 |
| Arsenic | ND | | 1.4 | 0.17 | mg/Kg | | 10/16/23 11:07 | 10/17/23 14:14 | 1 |
| Barium | ND | | 0.91 | 0.11 | mg/Kg | | 10/16/23 11:07 | 10/17/23 14:14 | 1 |
| Beryllium | ND | | 0.46 | 0.023 | mg/Kg | | 10/16/23 11:07 | 10/17/23 14:14 | 1 |
| Cadmium | ND | | 0.46 | 0.024 | mg/Kg | | 10/16/23 11:07 | 10/17/23 14:14 | 1 |
| Chromium | ND | | 0.91 | 0.12 | mg/Kg | | 10/16/23 11:07 | 10/17/23 14:14 | 1 |
| Lead | ND | | 1.4 | 0.19 | mg/Kg | | 10/16/23 11:07 | 10/17/23 14:14 | 1 |
| Nickel | ND | | 0.91 | 0.11 | mg/Kg | | 10/16/23 11:07 | 10/17/23 14:14 | 1 |
| Selenium | ND | | 1.4 | 0.26 | mg/Kg | | 10/16/23 11:07 | 10/17/23 14:14 | 1 |
| Silver | ND | | 1.4 | 0.15 | mg/Kg | | 10/16/23 11:07 | 10/17/23 14:14 | 1 |
| Thallium | ND | | 2.7 | 1.0 | mg/Kg | | 10/16/23 11:07 | 10/17/23 14:14 | 1 |
| Vanadium | ND | | 1.4 | 0.24 | mg/Kg | | 10/16/23 11:07 | 10/17/23 14:14 | 1 |
| Zinc | ND | | 2.7 | 0.71 | mg/Kg | | 10/16/23 11:07 | 10/17/23 14:14 | 1 |

## Method: 6010D - Metals (ICP) (Continued)

**Lab Sample ID: LCSSRM 620-27854/2-A ^5**
**Matrix: Solid**
**Analysis Batch: 27926**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 27854**

| Analyte | Spike Added | LCSSRM Result | LCSSRM Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Antimony | 270 | 102 | | mg/Kg | | 37.7 | 3.3 - 103.3 |
| Arsenic | 218 | 165 | | mg/Kg | | 75.8 | 67.0 - 98.6 |
| Barium | 388 | 344 | | mg/Kg | | 88.7 | 74.5 - 107.7 |
| Beryllium | 165 | 146 | | mg/Kg | | 88.2 | 76.4 - 108.5 |
| Cadmium | 118 | 97.2 | | mg/Kg | | 82.4 | 73.6 - 105.1 |
| Chromium | 255 | 227 | | mg/Kg | | 89.1 | 74.1 - 107.8 |
| Lead | 155 | 137 | | mg/Kg | | 88.4 | 76.8 - 110.3 |
| Nickel | 120 | 102 | | mg/Kg | | 85.0 | 74.3 - 105.8 |
| Selenium | 107 | 87.8 | | mg/Kg | | 82.1 | 70.9 - 109.3 |
| Silver | 51.0 | 45.2 | | mg/Kg | | 88.6 | 73.7 - 111.8 |
| Thallium | 188 | 164 | | mg/Kg | | 87.3 | 73.9 - 108.5 |
| Vanadium | 133 | 121 | | mg/Kg | | 91.1 | 69.1 - 108.3 |
| Zinc | 406 | 337 | | mg/Kg | | 83.1 | 72.9 - 109.1 |

**Lab Sample ID: 620-14582-2 MS**
**Matrix: Solid**
**Analysis Batch: 27992**

**Client Sample ID: SO-B/MW-107-1015**
**Prep Type: Total/NA**
**Prep Batch: 27854**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.93 | J | 109 | 111 | | mg/Kg | ☼ | 101 | 75 - 125 |
| Arsenic | 23 | | 109 | 120 | | mg/Kg | ☼ | 90 | 75 - 125 |
| Barium | 29 | | 109 | 137 | | mg/Kg | ☼ | 100 | 75 - 125 |
| Beryllium | ND | | 109 | 89.7 | | mg/Kg | ☼ | 82 | 75 - 125 |
| Cadmium | 0.027 | J | 109 | 87.4 | | mg/Kg | ☼ | 80 | 75 - 125 |
| Chromium | 18 | | 109 | 116 | | mg/Kg | ☼ | 90 | 75 - 125 |
| Lead | 12 | | 109 | 104 | | mg/Kg | ☼ | 85 | 75 - 125 |
| Nickel | 12 | | 109 | 103 | | mg/Kg | ☼ | 84 | 75 - 125 |
| Selenium | ND | | 109 | 89.7 | | mg/Kg | ☼ | 83 | 75 - 125 |
| Silver | ND | | 109 | 91.6 | | mg/Kg | ☼ | 84 | 75 - 125 |
| Thallium | ND | | 109 | 99.1 | | mg/Kg | ☼ | 91 | 75 - 125 |
| Vanadium | 14 | | 109 | 115 | | mg/Kg | ☼ | 93 | 75 - 125 |
| Zinc | 56 | | 109 | 157 | | mg/Kg | ☼ | 93 | 75 - 125 |

**Lab Sample ID: 620-14582-2 MSD**
**Matrix: Solid**
**Analysis Batch: 27992**

**Client Sample ID: SO-B/MW-107-1015**
**Prep Type: Total/NA**
**Prep Batch: 27854**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.93 | J | 124 | 135 | | mg/Kg | ☼ | 108 | 75 - 125 | 19 | 20 |
| Arsenic | 23 | | 124 | 137 | | mg/Kg | ☼ | 92 | 75 - 125 | 13 | 20 |

## Method: 6010D - Metals (ICP) (Continued)

**Lab Sample ID: 620-14582-2 MSD**
**Matrix: Solid**
**Analysis Batch: 27992**

**Client Sample ID: SO-B/MW-107-1015**
**Prep Type: Total/NA**
**Prep Batch: 27854**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 29 | | 124 | 159 | | mg/Kg | ☼ | 105 | 75 - 125 | 15 | 20 |
| Beryllium | ND | | 124 | 108 | | mg/Kg | ☼ | 87 | 75 - 125 | 18 | 20 |
| Cadmium | 0.027 | J | 124 | 105 | | mg/Kg | ☼ | 84 | 75 - 125 | 18 | 20 |
| Chromium | 18 | | 124 | 134 | | mg/Kg | ☼ | 94 | 75 - 125 | 15 | 20 |
| Lead | 12 | | 124 | 125 | | mg/Kg | ☼ | 91 | 75 - 125 | 18 | 20 |
| Nickel | 12 | | 124 | 120 | | mg/Kg | ☼ | 87 | 75 - 125 | 15 | 20 |
| Selenium | ND | | 124 | 107 | | mg/Kg | ☼ | 86 | 75 - 125 | 17 | 20 |
| Silver | ND | | 124 | 109 | | mg/Kg | ☼ | 88 | 75 - 125 | 18 | 20 |
| Thallium | ND | | 124 | 117 | | mg/Kg | ☼ | 94 | 75 - 125 | 16 | 20 |
| Vanadium | 14 | | 124 | 134 | | mg/Kg | ☼ | 96 | 75 - 125 | 15 | 20 |
| Zinc | 56 | | 124 | 175 | | mg/Kg | ☼ | 96 | 75 - 125 | 11 | 20 |

**Lab Sample ID: 620-14582-2 DU**
**Matrix: Solid**
**Analysis Batch: 27992**

**Client Sample ID: SO-B/MW-107-1015**
**Prep Type: Total/NA**
**Prep Batch: 27854**

| Analyte | Sample Result | Sample Qualifier | | DU Result | DU Qualifier | Unit | D | | | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.93 | J | | 1.35 | J F5 | mg/Kg | ☼ | | | 37 | 20 |
| Arsenic | 23 | | | 28.5 | F3 | mg/Kg | ☼ | | | 23 | 20 |
| Barium | 29 | | | 36.0 | F3 | mg/Kg | ☼ | | | 23 | 20 |
| Beryllium | ND | | | ND | | mg/Kg | ☼ | | | NC | 20 |
| Cadmium | 0.027 | J | | 0.0291 | J | mg/Kg | ☼ | | | 6 | 20 |
| Chromium | 18 | | | 22.9 | F3 | mg/Kg | ☼ | | | 26 | 20 |
| Lead | 12 | | | 16.5 | F3 | mg/Kg | ☼ | | | 31 | 20 |
| Nickel | 12 | | | 14.9 | F3 | mg/Kg | ☼ | | | 21 | 20 |
| Selenium | ND | | | ND | | mg/Kg | ☼ | | | NC | 20 |
| Silver | ND | | | ND | | mg/Kg | ☼ | | | NC | 20 |
| Thallium | ND | | | ND | | mg/Kg | ☼ | | | NC | 20 |
| Vanadium | 14 | | | 17.3 | | mg/Kg | ☼ | | | 20 | 20 |
| Zinc | 56 | | | 86.7 | F3 | mg/Kg | ☼ | | | 43 | 20 |

## Method: 7471A - Mercury (CVAA)

**Lab Sample ID: MB 620-27974/1-A**
**Matrix: Solid**
**Analysis Batch: 28044**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 27974**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.050 | 0.0083 | mg/Kg | | 10/18/23 13:57 | 10/19/23 11:09 | 1 |

**Lab Sample ID: LCSSRM 620-27974/2-A ^10**
**Matrix: Solid**
**Analysis Batch: 28044**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 27974**

| Analyte | | | Spike Added | LCSSRM Result | LCSSRM Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | | | 17.1 | 11.0 | | mg/Kg | | 64.2 | 36.0 - 109.9 | | |

## Method: 7471A - Mercury (CVAA) (Continued)

**Lab Sample ID: 620-14582-2 MS**
**Matrix: Solid**
**Analysis Batch: 28044**

**Client Sample ID: SO-B/MW-107-1015**
**Prep Type: Total/NA**
**Prep Batch: 27974**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.023 | J F1 F2 | 0.110 | 0.148 | | mg/Kg | ☼ | 114 | 75 - 125 | | |

**Lab Sample ID: 620-14582-2 MSD**
**Matrix: Solid**
**Analysis Batch: 28044**

**Client Sample ID: SO-B/MW-107-1015**
**Prep Type: Total/NA**
**Prep Batch: 27974**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.023 | J F1 F2 | 0.127 | 0.183 | F1 F2 | mg/Kg | ☼ | 126 | 75 - 125 | 21 | 20 |

**Lab Sample ID: 620-14582-2 DU**
**Matrix: Solid**
**Analysis Batch: 28044**

**Client Sample ID: SO-B/MW-107-1015**
**Prep Type: Total/NA**
**Prep Batch: 27974**

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|
| Mercury | 0.023 | J F1 F2 | 0.0214 | J | mg/Kg | ☼ | 8 | 20 |

## Method: Moisture - Percent Moisture

**Lab Sample ID: 620-14582-2 DU**
**Matrix: Solid**
**Analysis Batch: 27847**

**Client Sample ID: SO-B/MW-107-1015**
**Prep Type: Total/NA**

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|
| Percent Moisture | 15.7 | | 15.8 | | % | | 0.4 | 5 |
| Percent Solids | 84.3 | | 84.2 | | % | | 0.08 | 5 |

## GC VOA

### Analysis Batch: 27958

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-14582-1 | SO-B/MW-106-1015 | Total/NA | Solid | MAVPH2.1 | 28025 |
| 620-14582-2 | SO-B/MW-107-1015 | Total/NA | Solid | MAVPH2.1 | 28025 |
| 620-14582-3 | SO-B/MW-108-1518 | Total/NA | Solid | MAVPH2.1 | 28025 |
| 620-14582-4 | SO-FD01-101223 | Total/NA | Solid | MAVPH2.1 | 28025 |
| MB 620-28025/3-A | Method Blank | Total/NA | Solid | MAVPH2.1 | 28025 |
| LCS 620-28025/1-A | Lab Control Sample | Total/NA | Solid | MAVPH2.1 | 28025 |
| LCSD 620-28025/2-A | Lab Control Sample Dup | Total/NA | Solid | MAVPH2.1 | 28025 |
| 620-14582-2 MS | SO-B/MW-107-1015 | Total/NA | Solid | MAVPH2.1 | 28025 |
| 620-14582-2 MSD | SO-B/MW-107-1015 | Total/NA | Solid | MAVPH2.1 | 28025 |

### Prep Batch: 28025

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-14582-1 - DL | SO-B/MW-106-1015 | Total/NA | Solid | 5035 | |
| 620-14582-1 | SO-B/MW-106-1015 | Total/NA | Solid | 5035 | |
| 620-14582-2 | SO-B/MW-107-1015 | Total/NA | Solid | 5035 | |
| 620-14582-3 | SO-B/MW-108-1518 | Total/NA | Solid | 5035 | |
| 620-14582-4 | SO-FD01-101223 | Total/NA | Solid | 5035 | |
| 620-14582-4 - DL | SO-FD01-101223 | Total/NA | Solid | 5035 | |
| MB 620-28025/3-A | Method Blank | Total/NA | Solid | 5035 | |
| LCS 620-28025/1-A | Lab Control Sample | Total/NA | Solid | 5035 | |
| LCSD 620-28025/2-A | Lab Control Sample Dup | Total/NA | Solid | 5035 | |
| 620-14582-2 MS | SO-B/MW-107-1015 | Total/NA | Solid | 5035 | |
| 620-14582-2 MSD | SO-B/MW-107-1015 | Total/NA | Solid | 5035 | |

### Analysis Batch: 28182

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-14582-1 - DL | SO-B/MW-106-1015 | Total/NA | Solid | MAVPH2.1 | 28025 |
| 620-14582-4 - DL | SO-FD01-101223 | Total/NA | Solid | MAVPH2.1 | 28025 |
| 620-14582-5 | TB01-101223 | Total/NA | Solid | MAVPH2.1 | 28262 |
| MB 620-28262/3-A | Method Blank | Total/NA | Solid | MAVPH2.1 | 28262 |
| LCS 620-28262/1-A | Lab Control Sample | Total/NA | Solid | MAVPH2.1 | 28262 |
| LCSD 620-28262/2-A | Lab Control Sample Dup | Total/NA | Solid | MAVPH2.1 | 28262 |

### Prep Batch: 28262

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-14582-5 | TB01-101223 | Total/NA | Solid | 5035 | |
| MB 620-28262/3-A | Method Blank | Total/NA | Solid | 5035 | |
| LCS 620-28262/1-A | Lab Control Sample | Total/NA | Solid | 5035 | |
| LCSD 620-28262/2-A | Lab Control Sample Dup | Total/NA | Solid | 5035 | |

## GC Semi VOA

### Prep Batch: 27844

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-14582-1 | SO-B/MW-106-1015 | Total/NA | Solid | 3546 | |
| 620-14582-2 | SO-B/MW-107-1015 | Total/NA | Solid | 3546 | |
| 620-14582-3 | SO-B/MW-108-1518 | Total/NA | Solid | 3546 | |
| 620-14582-4 | SO-FD01-101223 | Total/NA | Solid | 3546 | |
| MB 620-27844/1-B | Method Blank | Total/NA | Solid | 3546 | |
| LCS 620-27844/2-B | Lab Control Sample | Total/NA | Solid | 3546 | |
| LCSD 620-27844/3-B | Lab Control Sample Dup | Total/NA | Solid | 3546 | |

## GC Semi VOA (Continued)

### Prep Batch: 27844 (Continued)

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-14582-2 MS | SO-B/MW-107-1015 | Total/NA | Solid | 3546 | |
| 620-14582-2 MSD | SO-B/MW-107-1015 | Total/NA | Solid | 3546 | |

### Analysis Batch: 27945

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| MB 620-27844/1-B | Method Blank | Total/NA | Solid | MAEPH2.1 | 27964 |
| LCS 620-27844/2-B | Lab Control Sample | Total/NA | Solid | MAEPH2.1 | 27964 |
| LCSD 620-27844/3-B | Lab Control Sample Dup | Total/NA | Solid | MAEPH2.1 | 27964 |

### Fraction Batch: 27964

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-14582-1 | SO-B/MW-106-1015 | Total/NA | Solid | MA EPH Frac | 27844 |
| 620-14582-2 | SO-B/MW-107-1015 | Total/NA | Solid | MA EPH Frac | 27844 |
| 620-14582-3 | SO-B/MW-108-1518 | Total/NA | Solid | MA EPH Frac | 27844 |
| 620-14582-4 | SO-FD01-101223 | Total/NA | Solid | MA EPH Frac | 27844 |
| MB 620-27844/1-B | Method Blank | Total/NA | Solid | MA EPH Frac | 27844 |
| LCS 620-27844/2-B | Lab Control Sample | Total/NA | Solid | MA EPH Frac | 27844 |
| LCSD 620-27844/3-B | Lab Control Sample Dup | Total/NA | Solid | MA EPH Frac | 27844 |
| 620-14582-2 MS | SO-B/MW-107-1015 | Total/NA | Solid | MA EPH Frac | 27844 |
| 620-14582-2 MSD | SO-B/MW-107-1015 | Total/NA | Solid | MA EPH Frac | 27844 |

### Analysis Batch: 28013

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-14582-1 | SO-B/MW-106-1015 | Total/NA | Solid | MAEPH2.1 | 27964 |
| 620-14582-2 | SO-B/MW-107-1015 | Total/NA | Solid | MAEPH2.1 | 27964 |

### Analysis Batch: 28114

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-14582-3 | SO-B/MW-108-1518 | Total/NA | Solid | MAEPH2.1 | 27964 |
| 620-14582-4 | SO-FD01-101223 | Total/NA | Solid | MAEPH2.1 | 27964 |
| 620-14582-2 MS | SO-B/MW-107-1015 | Total/NA | Solid | MAEPH2.1 | 27964 |
| 620-14582-2 MSD | SO-B/MW-107-1015 | Total/NA | Solid | MAEPH2.1 | 27964 |

## Metals

### Prep Batch: 27854

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-14582-1 | SO-B/MW-106-1015 | Total/NA | Solid | 3050B | |
| 620-14582-2 | SO-B/MW-107-1015 | Total/NA | Solid | 3050B | |
| 620-14582-3 | SO-B/MW-108-1518 | Total/NA | Solid | 3050B | |
| 620-14582-4 | SO-FD01-101223 | Total/NA | Solid | 3050B | |
| MB 620-27854/1-A | Method Blank | Total/NA | Solid | 3050B | |
| LCSSRM 620-27854/2-A ^5 | Lab Control Sample | Total/NA | Solid | 3050B | |
| 620-14582-2 MS | SO-B/MW-107-1015 | Total/NA | Solid | 3050B | |
| 620-14582-2 MSD | SO-B/MW-107-1015 | Total/NA | Solid | 3050B | |
| 620-14582-2 DU | SO-B/MW-107-1015 | Total/NA | Solid | 3050B | |

### Analysis Batch: 27926

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-14582-2 | SO-B/MW-107-1015 | Total/NA | Solid | 6010D | 27854 |
| MB 620-27854/1-A | Method Blank | Total/NA | Solid | 6010D | 27854 |

## Metals (Continued)

### Analysis Batch: 27926 (Continued)

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| LCSSRM 620-27854/2-A ^5 | Lab Control Sample | Total/NA | Solid | 6010D | 27854 |

### Prep Batch: 27974

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-14582-1 | SO-B/MW-106-1015 | Total/NA | Solid | 7471B | |
| 620-14582-2 | SO-B/MW-107-1015 | Total/NA | Solid | 7471B | |
| 620-14582-3 | SO-B/MW-108-1518 | Total/NA | Solid | 7471B | |
| 620-14582-4 | SO-FD01-101223 | Total/NA | Solid | 7471B | |
| MB 620-27974/1-A | Method Blank | Total/NA | Solid | 7471B | |
| LCSSRM 620-27974/2-A ^10 | Lab Control Sample | Total/NA | Solid | 7471B | |
| 620-14582-2 MS | SO-B/MW-107-1015 | Total/NA | Solid | 7471B | |
| 620-14582-2 MSD | SO-B/MW-107-1015 | Total/NA | Solid | 7471B | |
| 620-14582-2 DU | SO-B/MW-107-1015 | Total/NA | Solid | 7471B | |

### Analysis Batch: 27992

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-14582-1 | SO-B/MW-106-1015 | Total/NA | Solid | 6010D | 27854 |
| 620-14582-3 | SO-B/MW-108-1518 | Total/NA | Solid | 6010D | 27854 |
| 620-14582-4 | SO-FD01-101223 | Total/NA | Solid | 6010D | 27854 |
| 620-14582-2 MS | SO-B/MW-107-1015 | Total/NA | Solid | 6010D | 27854 |
| 620-14582-2 MSD | SO-B/MW-107-1015 | Total/NA | Solid | 6010D | 27854 |
| 620-14582-2 DU | SO-B/MW-107-1015 | Total/NA | Solid | 6010D | 27854 |

### Analysis Batch: 28044

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-14582-1 | SO-B/MW-106-1015 | Total/NA | Solid | 7471A | 27974 |
| 620-14582-2 | SO-B/MW-107-1015 | Total/NA | Solid | 7471A | 27974 |
| 620-14582-3 | SO-B/MW-108-1518 | Total/NA | Solid | 7471A | 27974 |
| 620-14582-4 | SO-FD01-101223 | Total/NA | Solid | 7471A | 27974 |
| MB 620-27974/1-A | Method Blank | Total/NA | Solid | 7471A | 27974 |
| LCSSRM 620-27974/2-A ^10 | Lab Control Sample | Total/NA | Solid | 7471A | 27974 |
| 620-14582-2 MS | SO-B/MW-107-1015 | Total/NA | Solid | 7471A | 27974 |
| 620-14582-2 MSD | SO-B/MW-107-1015 | Total/NA | Solid | 7471A | 27974 |
| 620-14582-2 DU | SO-B/MW-107-1015 | Total/NA | Solid | 7471A | 27974 |

## General Chemistry

### Analysis Batch: 27847

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-14582-1 | SO-B/MW-106-1015 | Total/NA | Solid | Moisture | |
| 620-14582-2 | SO-B/MW-107-1015 | Total/NA | Solid | Moisture | |
| 620-14582-3 | SO-B/MW-108-1518 | Total/NA | Solid | Moisture | |
| 620-14582-4 | SO-FD01-101223 | Total/NA | Solid | Moisture | |
| 620-14582-2 MS | SO-B/MW-107-1015 | Total/NA | Solid | Moisture | |
| 620-14582-2 MSD | SO-B/MW-107-1015 | Total/NA | Solid | Moisture | |
| 620-14582-2 DU | SO-B/MW-107-1015 | Total/NA | Solid | Moisture | |

# Lab Chronicle

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-14582-1

## Client Sample ID: SO-B/MW-106-1015
**Date Collected: 10/12/23 08:50**
**Date Received: 10/13/23 17:11**

## Lab Sample ID: 620-14582-1
**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Moisture | | 1 | 27847 | ODO | EET NE | 10/16/23 09:33 |

## Client Sample ID: SO-B/MW-106-1015
**Date Collected: 10/12/23 08:50**
**Date Received: 10/13/23 17:11**

## Lab Sample ID: 620-14582-1
**Matrix: Solid**
**Percent Solids: 86.2**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 5035 | | | 28025 | BMH | EET NE | 10/18/23 11:23 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 27958 | BMH | EET NE | 10/19/23 02:53 |
| Total/NA | Prep | 5035 | DL | | 28025 | BMH | EET NE | 10/18/23 11:23 |
| Total/NA | Analysis | MAVPH2.1 | DL | 10 | 28182 | BMH | EET NE | 10/25/23 01:10 |
| Total/NA | Prep | 3546 | | | 27844 | JAC | EET NE | 10/16/23 09:16 |
| Total/NA | Fraction | MA EPH Frac | | | 27964 | BJJ | EET NE | 10/18/23 12:27 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 28013 | JS | EET NE | 10/19/23 22:03 |
| Total/NA | Prep | 3050B | | | 27854 | ODO | EET NE | 10/16/23 11:07 |
| Total/NA | Analysis | 6010D | | 1 | 27992 | JPC | EET NE | 10/17/23 17:09 |
| Total/NA | Prep | 7471B | | | 27974 | PRB | EET NE | 10/18/23 13:57 |
| Total/NA | Analysis | 7471A | | 1 | 28044 | PRB | EET NE | 10/19/23 12:50 |

## Client Sample ID: SO-B/MW-107-1015
**Date Collected: 10/12/23 09:30**
**Date Received: 10/13/23 17:11**

## Lab Sample ID: 620-14582-2
**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Moisture | | 1 | 27847 | ODO | EET NE | 10/16/23 09:33 |

## Client Sample ID: SO-B/MW-107-1015
**Date Collected: 10/12/23 09:30**
**Date Received: 10/13/23 17:11**

## Lab Sample ID: 620-14582-2
**Matrix: Solid**
**Percent Solids: 84.3**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 5035 | | | 28025 | BMH | EET NE | 10/18/23 11:23 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 27958 | BMH | EET NE | 10/18/23 19:44 |
| Total/NA | Prep | 3546 | | | 27844 | JAC | EET NE | 10/16/23 09:16 |
| Total/NA | Fraction | MA EPH Frac | | | 27964 | BJJ | EET NE | 10/18/23 12:27 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 28013 | JS | EET NE | 10/19/23 22:30 |
| Total/NA | Prep | 3050B | | | 27854 | ODO | EET NE | 10/16/23 11:07 |
| Total/NA | Analysis | 6010D | | 1 | 27926 | JPC | EET NE | 10/17/23 14:49 |
| Total/NA | Prep | 7471B | | | 27974 | PRB | EET NE | 10/18/23 13:57 |
| Total/NA | Analysis | 7471A | | 1 | 28044 | PRB | EET NE | 10/19/23 12:52 |

# Lab Chronicle

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-14582-1

## Client Sample ID: SO-B/MW-108-1518
**Date Collected: 10/12/23 10:10**
**Date Received: 10/13/23 17:11**

**Lab Sample ID: 620-14582-3**
**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Moisture | | 1 | 27847 | ODO | EET NE | 10/16/23 09:33 |

## Client Sample ID: SO-B/MW-108-1518
**Date Collected: 10/12/23 10:10**
**Date Received: 10/13/23 17:11**

**Lab Sample ID: 620-14582-3**
**Matrix: Solid**
**Percent Solids: 85.3**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 5035 | | | 28025 | BMH | EET NE | 10/18/23 11:23 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 27958 | BMH | EET NE | 10/19/23 03:29 |
| Total/NA | Prep | 3546 | | | 27844 | JAC | EET NE | 10/16/23 09:16 |
| Total/NA | Fraction | MA EPH Frac | | | 27964 | BJJ | EET NE | 10/18/23 12:27 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 28114 | JS | EET NE | 10/23/23 21:35 |
| Total/NA | Prep | 3050B | | | 27854 | ODO | EET NE | 10/16/23 11:07 |
| Total/NA | Analysis | 6010D | | 1 | 27992 | JPC | EET NE | 10/17/23 17:03 |
| Total/NA | Prep | 7471B | | | 27974 | PRB | EET NE | 10/18/23 13:57 |
| Total/NA | Analysis | 7471A | | 1 | 28044 | PRB | EET NE | 10/19/23 13:00 |

## Client Sample ID: SO-FD01-101223
**Date Collected: 10/12/23 08:00**
**Date Received: 10/13/23 17:11**

**Lab Sample ID: 620-14582-4**
**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Moisture | | 1 | 27847 | ODO | EET NE | 10/16/23 09:33 |

## Client Sample ID: SO-FD01-101223
**Date Collected: 10/12/23 08:00**
**Date Received: 10/13/23 17:11**

**Lab Sample ID: 620-14582-4**
**Matrix: Solid**
**Percent Solids: 88.4**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 5035 | | | 28025 | BMH | EET NE | 10/18/23 11:23 |
| Total/NA | Analysis | MAVPH2.1 | | 10 | 27958 | BMH | EET NE | 10/19/23 04:05 |
| Total/NA | Prep | 5035 | DL | | 28025 | BMH | EET NE | 10/18/23 11:23 |
| Total/NA | Analysis | MAVPH2.1 | DL | 100 | 28182 | BMH | EET NE | 10/25/23 00:34 |
| Total/NA | Prep | 3546 | | | 27844 | JAC | EET NE | 10/16/23 09:16 |
| Total/NA | Fraction | MA EPH Frac | | | 27964 | BJJ | EET NE | 10/18/23 12:27 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 28114 | JS | EET NE | 10/23/23 22:03 |
| Total/NA | Prep | 3050B | | | 27854 | ODO | EET NE | 10/16/23 11:07 |
| Total/NA | Analysis | 6010D | | 1 | 27992 | JPC | EET NE | 10/17/23 16:57 |
| Total/NA | Prep | 7471B | | | 27974 | PRB | EET NE | 10/18/23 13:57 |
| Total/NA | Analysis | 7471A | | 1 | 28044 | PRB | EET NE | 10/19/23 13:02 |

# Lab Chronicle

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-14582-1

## Client Sample ID: TB01-101223

**Date Collected: 10/12/23 00:00**
**Date Received: 10/13/23 17:11**

## Lab Sample ID: 620-14582-5

**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 5035 | | | 28262 | BMH | EET NE | 10/24/23 12:28 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 28182 | BMH | EET NE | 10/24/23 22:47 |

**Laboratory References:**

EET NE = Eurofins New England, 646 Camp Ave, North Kingstown, RI 02852, TEL (413)789-9018

# Accreditation/Certification Summary

Client: Nobis Engineering, Inc. Job ID: 620-14582-1
Project/Site: Former L&M - Lunenburg MA

## Laboratory: Eurofins New England

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

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|
| Massachusetts | State | M-RI907 | 06-30-24 |

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

| Analysis Method | Prep Method | Matrix | Analyte |
|---|---|---|---|
| 6010D | 3050B | Solid | Antimony |
| 6010D | 3050B | Solid | Arsenic |
| 6010D | 3050B | Solid | Barium |
| 6010D | 3050B | Solid | Beryllium |
| 6010D | 3050B | Solid | Cadmium |
| 6010D | 3050B | Solid | Chromium |
| 6010D | 3050B | Solid | Lead |
| 6010D | 3050B | Solid | Nickel |
| 6010D | 3050B | Solid | Selenium |
| 6010D | 3050B | Solid | Silver |
| 6010D | 3050B | Solid | Thallium |
| 6010D | 3050B | Solid | Vanadium |
| 6010D | 3050B | Solid | Zinc |
| 7471A | 7471B | Solid | Mercury |
| MAEPH2.1 | 3546 | Solid | 2-Methylnaphthalene |
| MAEPH2.1 | 3546 | Solid | Acenaphthene |
| MAEPH2.1 | 3546 | Solid | Acenaphthylene |
| MAEPH2.1 | 3546 | Solid | Anthracene |
| MAEPH2.1 | 3546 | Solid | Benzo[a]anthracene |
| MAEPH2.1 | 3546 | Solid | Benzo[a]pyrene |
| MAEPH2.1 | 3546 | Solid | Benzo[b]fluoranthene |
| MAEPH2.1 | 3546 | Solid | Benzo[g,h,i]perylene |
| MAEPH2.1 | 3546 | Solid | Benzo[k]fluoranthene |
| MAEPH2.1 | 3546 | Solid | C11-C22 Aromatics |
| MAEPH2.1 | 3546 | Solid | C11-C22 Aromatics (Adjusted) |
| MAEPH2.1 | 3546 | Solid | C19-C36 Aliphatics |
| MAEPH2.1 | 3546 | Solid | C9-C18 Aliphatics |
| MAEPH2.1 | 3546 | Solid | Chrysene |
| MAEPH2.1 | 3546 | Solid | Dibenz(a,h)anthracene |
| MAEPH2.1 | 3546 | Solid | Fluoranthene |
| MAEPH2.1 | 3546 | Solid | Fluorene |
| MAEPH2.1 | 3546 | Solid | Indeno[1,2,3-cd]pyrene |
| MAEPH2.1 | 3546 | Solid | Naphthalene |
| MAEPH2.1 | 3546 | Solid | Phenanthrene |
| MAEPH2.1 | 3546 | Solid | Pyrene |
| MAVPH2.1 | 5035 | Solid | Benzene |
| MAVPH2.1 | 5035 | Solid | C5-C8 Aliphatics (adjusted) |
| MAVPH2.1 | 5035 | Solid | C5-C8 Aliphatics (unadjusted) |
| MAVPH2.1 | 5035 | Solid | C9-C10 Aromatics |
| MAVPH2.1 | 5035 | Solid | C9-C12 Aliphatics (adjusted) |
| MAVPH2.1 | 5035 | Solid | C9-C12 Aliphatics (unadjusted) |
| MAVPH2.1 | 5035 | Solid | Ethylbenzene |
| MAVPH2.1 | 5035 | Solid | m,p-Xylene |
| MAVPH2.1 | 5035 | Solid | Methyl tert-butyl ether |
| MAVPH2.1 | 5035 | Solid | Naphthalene |

# Accreditation/Certification Summary

Client: Nobis Engineering, Inc. Job ID: 620-14582-1
Project/Site: Former L&M - Lunenburg MA

## Laboratory: Eurofins New England (Continued)

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

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

| Analysis Method | Prep Method | Matrix | Analyte |
|---|---|---|---|
| MAVPH2.1 | 5035 | Solid | o-Xylene |
| MAVPH2.1 | 5035 | Solid | Toluene |
| MAVPH2.1 | 5035 | Solid | Xylenes, Total |
| Moisture | | Solid | Percent Moisture |
| Moisture | | Solid | Percent Solids |

# Method Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-14582-1

| Method | Method Description | Protocol | Laboratory |
|---|---|---|---|
| MAVPH2.1 | Massachusetts - Volatile Petroleum Hydrocarbons (GC) | MA DEP | EET NE |
| MAEPH2.1 | Massachusetts - Extractable Petroleum Hydrocarbons (GC) | MA DEP | EET NE |
| 6010D | Metals (ICP) | SW846 | EET NE |
| 7471A | Mercury (CVAA) | SW846 | EET NE |
| Moisture | Percent Moisture | EPA | EET NE |
| 3050B | Preparation, Metals | SW846 | EET NE |
| 3546 | Microwave Extraction | SW846 | EET NE |
| 5035 | Closed System Purge and Trap | SW846 | EET NE |
| 7471B | Preparation, Mercury | SW846 | EET NE |
| MA EPH Frac | Massachusetts - Extractable Petroleum Hydrocarbon Fractionation | MA DEP | EET NE |

**Protocol References:**

EPA = US Environmental Protection Agency

MA DEP = Massachusetts Department Of Environmental Protection

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

**Laboratory References:**

EET NE = Eurofins New England, 646 Camp Ave, North Kingstown, RI 02852, TEL (413)789-9018

# Sample Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-14582-1

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---|---|---|---|---|
| 620-14582-1 | SO-B/MW-106-1015 | Solid | 10/12/23 08:50 | 10/13/23 17:11 |
| 620-14582-2 | SO-B/MW-107-1015 | Solid | 10/12/23 09:30 | 10/13/23 17:11 |
| 620-14582-3 | SO-B/MW-108-1518 | Solid | 10/12/23 10:10 | 10/13/23 17:11 |
| 620-14582-4 | SO-FD01-101223 | Solid | 10/12/23 08:00 | 10/13/23 17:11 |
| 620-14582-5 | TB01-101223 | Solid | 10/12/23 00:00 | 10/13/23 17:11 |

620-14582 Chain of Custody

KFS 10/13

~~14582~~ 14582

# Chain of Custody Record

eurofins | Environment Testing

| | | | | |
|---|---|---|---|---|
| Client Contact: ~~Stephanie Stone~~ Caitlin ODell | Sampler: C. Odell | Lab PM: A. Roy | Carrier Tracking No(s): | COC No: 620-12716-1718 3 |
| Company: Nobis Engineering, Inc | Phone: 203-530-4433 | E-Mail: aroy@nobis-group.com | State of Origin: MA | Page: ~~Page 3 of 4~~ 1 of 1 |
| Address: 585 Middlesex Street | PWSID | Analysis Requested | | Job #: |
| City: Lowell | Due Date Requested: | | | |
| State, Zip: MA, 01851 | TAT Requested (days): Standard | | | |
| Phone: 203-530-4433 | Compliance Project: X Yes △ No MA CAM | | | |
| Email: sstone@nobis-group com | PO #: | | | |
| Project Name: S00001 005 L$M Service Station | WO #: | | | |
| Site: Lunenburg, MA | Project #: S00001.05/400 | | | |
| | SSOW#: | | | |

Preservation Codes:

A - HCl, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)

Other: ~~~~

| | Sample Identification | Sample Date | Sample Time | Sample Type (C=comp, G=grab) | Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air) | Field Filtered Sample (Yes or No) | Perform MS/MSD (Yes or No) | EPH (MassDEP CAM) | Metals (MCP 14) (6010/7471) | VPH (MassDEP CAM) | % Moisture | Trip blank | Total Number of containers | Special Instructions/Note: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Preservation Code: | | | | | | | | | F | | | | |
| 1 | SO-B/MW-106-1015 | 10/12/23 | 0850 | G | Water Solid | | | | | | | | 4 | |
| 2 | SO-B/MW-107-1015 | " | 0930 | " | Water Solid | | X | | | | | | 12 | MS/MSD |
| 3 | SO-B/MW-108-1518 | " | 1010 | " | Water Solid | | | | | | | | 4 | |
| 4 | SO-FD01-101223 | " | 0800 | " | Water Solid | | | | | | | | 4 | |
| 5 | TB01-101223 | " | — | | Solid | | | | | | | X | 1 | |
| | | | | | Solid | | | | | | | | | |
| | | | | | Solid | | | | | | | | | |
| | | | | | Solid | | | | | | | | | |
| | | | | | Solid | | | | | | | | | |
| | | | | | Solid | | | | | | | | | |
| | | | | | Solid | | | | | | | | | |

**Possible Hazard Identification**

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

**Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)**

☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested I, II, III, IV, Other (specify): EDD Report, PDF, & email

Special Instructions/QC Requirements: email EDD to AROY@nobis-group.com; MADEP CAM methods required

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Empty Kit Relinquished by: | | Date | | Time | | Method of Shipment: | |
| Relinquished by: Caitlin ODell | Date/Time: 10/13/23 11:40 | Company: Nobis | Received by: | Date/Time: 10/13/23 1140 | Company: EA | | |
| Relinquished by: | Date/Time: 10/13/23 17:11 | Company: EA | Received by: | Date/Time: 10/13/23 17:11 | Company: | | |
| Relinquished by: | Date/Time: | Company: | Received by: | Date/Time: | Company: | | |

| | | |
|---|---|---|
| Custody Seals Intact: △ Yes △ No | Custody Seal No: | Cooler Temperature(s) °C and Other Remarks: 5.6 to 2.8 +3 |

Ver: 06/08/2021

Page 42 of 43

10/30/2023

# Login Sample Receipt Checklist

Client: Nobis Engineering, Inc.

Job Number: 620-14582-1

**Login Number: 14582**
**List Number: 1**
**Creator: Makhoul, Elie**

**List Source: Eurofins New England**

| Question | Answer | Comment |
|---|---|---|
| Radioactivity wasn't checked or is </= background as measured by a survey meter. | N/A | |
| The cooler's custody seal, if present, is intact. | N/A | |
| Sample custody seals, if present, are intact. | N/A | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| Is the Field Sampler's name present on COC? | True | |
| There are no discrepancies between the containers received and the COC. | True | |
| Samples are received within Holding Time (excluding tests with immediate HTs) | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| Sample Preservation Verified. | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| Containers requiring zero headspace have no headspace or bubble is <6mm (1/4"). | True | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |
| Residual Chlorine Checked. | N/A | |

January 15, 2024
Nobis File No. S00001.05

Ms. Katy Deng
USEPA – Region 1
Land, Chemicals, and Redevelopment Division
5 Post Office Square, Suite 100
Boston, MA 02109-3912

Re: USEPA Contract No. 68HE0122D0001
USEPA Task Order No. 68HE0122F0044
Targeted Brownfields Assessment (TBA)
Former L&M Service Station Site
Lunenburg, Massachusetts
Sample Delivery Group (SDG) No. 620149421
Eurofins New England, North Kingstown, RI

Tier 1 Stage 2A Organic and Inorganic Data Review:

Volatile Petroleum Hydrocarbons (VPH by MassDEP-VPH), Extractable Petroleum Hydrocarbons (EPH by MassDEP-EPH), Massachusetts Contingency Plan (MCP) Metals (MCP-14 Metals by 6010D/7470A)

4/Groundwater Samples: LM-MW106-102623, LM-MW107-102623, LM-MW108-102623, LM-FD01-102623
1/Field Duplicate Pair: LM-MW107-102623 / LM-FD01-102623
1/Aqueous Trip Blank: Trip Blank-102623

Dear Ms. Deng:

Nobis Group (Nobis), under a USEPA contract as a subcontractor to KGSNE JV, LLC, performed a Tier 1 Stage 2A manual data review (S2AVM) on the organic and inorganic analytical data for the samples listed above. The samples were collected by Nobis at the Former L&M Service Station Site located in Lunenburg, Massachusetts on October 26, 2023. The samples were analyzed for VPHs by MassDEP-VPH, EPHs by MassDEP-EPH, and MCP-14 Metals by EPA Methods 6010D/7470A by Eurofins New England in North Kingstown, RI.

The Tier 1 Stage 2A manual data review was performed in accordance with the Region 1 - EPA New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures (September 2020); USEPA's National Functional Guidelines for Organic Superfund Methods Data Review (November 2020); USEPA's National Functional Guidelines for Inorganic Superfund Methods Data Review (November 2020); the Program Quality Assurance Project Plan (Program QAPP) dated October 2022, and the Quality Assurance Project Plan Addendum (QAPPA) (May 2023) for the Former L&M Service Station Site, which appends the October 2022 Program QAPP.

The data were evaluated based on the following parameters:

* • Overall Evaluation of Data and Potential Usability Issues
* • Data Completeness
* • Preservation and Technical Holding Times



Nobis Group®
585 Middlesex Street
Lowell, MA 01851
T (978) 683-0891

| | | |
|---|---|---|
| | • | Blanks |
| * | • | Surrogates (organic analyses only) |
| NA | • | Internal Standards |
| | • | Matrix Spike Analysis |
| * | • | Laboratory Duplicates |
| * | • | Laboratory Control Samples (LCS) |
| | • | Field Duplicates |
| NA | • | ICP Serial Dilutions (metals only) |
| NA | • | Performance Evaluation (PE) Samples |
| NA | • | Target Analyte Identification |
| | • | Reported Quantitation Limits |

* All criteria were met for this parameter or did not require qualification.
NA – Not applicable.

**Overall Evaluation of Data and Potential Usability Issues**

The site sampling objectives are:

- Characterize in-situ soil based on AOCs identified by Fuss & O'Neill in November 2020 Phase I for the presence of possible site-related contamination.
- Evaluate groundwater elevation.
- Evaluate presence/absence of groundwater contamination related to site.

The non-detect reporting limit for silver exceeded the project action limit (PAL) of 0.007 mg/L in sample LM-MW106-102623. Project objectives may be impacted.

The remaining data meet the project quality criteria and can be used without restriction except as summarized below. The attachments provide details and supporting documentation.

**MassDEP-VPH:**
Results were qualified for MS/MSD recoveries and field duplicate imprecision.

**MassDEP-EPH:**
Qualification of the data was not required.

**MCP-14 Metals and Mercury:**
Results were qualified for laboratory blank contamination.

Please contact Linda Terzis at lterzis@nobis-group.com should you have any questions or comments regarding this information.

Sincerely,

NOBIS GROUP®

nobis

Linda Terzis
Data Validator

Gary Glennon
Data Validator

Tables: Data Summary Tables – Tier 1 Stage 2A (S2AVM) Validated Data
Data Qualification Actions Table

Attachments: Data Review Checklist
Support Documentation
COC

cc: Denis McGrath (Nobis Group)
Adam Roy (Nobis Group)

# DATA SUMMARY TABLE

| **Analysis** | | EPH in Groundwater | | | |
|---|---|---|---|---|---|
| **Lab Sample ID** | | 620-14942-1 | 620-14942-2 | 620-14942-3 | 620-14942-4 |
| **Field Sample ID** | | LM-MW106-102623 | LM-MW107-102623 | LM-MW108-102623 | LM-FD01-102623 |
| **Sample Type** | | N | N | N | FD |
| **Parent Sample ID** | | | | | LM-MW107-102623 |
| **Sample Date** | **Units** | 10/26/23 | 10/26/23 | 10/26/23 | 10/26/23 |
| 2-Methylnaphthalene | ug/L | 54 | 1.2 | 1 U | 1.4 |
| Acenaphthene | ug/L | 0.2 J | 1 U | 1 U | 1 U |
| Acenaphthylene | ug/L | 1 U | 1 U | 1 U | 1 U |
| Anthracene | ug/L | 1 U | 1 U | 1 U | 1 U |
| Benzo(a)anthracene | ug/L | 1 U | 1 U | 1 U | 1 U |
| Benzo(a)pyrene | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| Benzo(b)fluoranthene | ug/L | 1 U | 1 U | 1 U | 1 U |
| Benzo(g,h,i)perylene | ug/L | 1 U | 1 U | 1 U | 1 U |
| Benzo(k)fluoranthene | ug/L | 1 U | 1 U | 1 U | 1 U |
| C11-C22 Aromatics | ug/L | 400 | 120 | 100 U | 130 |
| C11-C22 Aromatics (adjusted) | ug/L | 230 | 110 | 100 U | 120 |
| C19-C36 Aliphatics | ug/L | 100 U | 100 U | 100 U | 100 U |
| C9-C18 Aliphatics | ug/L | 290 | 100 U | 100 U | 100 U |
| Chrysene | ug/L | 1 U | 1 U | 1 U | 1 U |
| Dibenz(a,h)anthracene | ug/L | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Fluoranthene | ug/L | 0.16 J | 1 U | 1 U | 1 U |
| Fluorene | ug/L | 1 U | 1 U | 1 U | 1 U |
| Indeno(1,2,3-cd)pyrene | ug/L | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Naphthalene | ug/L | 90 | 8.1 | 1 U | 9.1 |
| Phenanthrene | ug/L | 0.43 J | 1 U | 1 U | 1 U |
| Pyrene | ug/L | 1 U | 1 U | 1 U | 1 U |

## DATA SUMMARY TABLE

| **Analysis** | | Dissolved Metals in Groundwater | | | |
|---|---|---|---|---|---|
| **Lab Sample ID** | | 620-14942-1 | 620-14942-2 | 620-14942-3 | 620-14942-4 |
| **Field Sample ID** | | LM-MW106-102623 | LM-MW107-102623 | LM-MW108-102623 | LM-FD01-102623 |
| **Sample Type** | | N | N | N | FD |
| **Parent Sample ID** | | | | | LM-MW107-102623 |
| **Sample Date** | **Units** | 10/26/23 | 10/26/23 | 10/26/23 | 10/26/23 |
| Antimony | mg/L | 0.006 U | 0.006 U | 0.0019 J | 0.006 U |
| Arsenic | mg/L | 0.044 | 0.065 | 0.004 U | 0.066 |
| Barium | mg/L | 0.054 | 0.05 | 0.14 | 0.05 |
| Beryllium | mg/L | 0.002 U | 0.002 U | 0.002 U | 0.00039 J |
| Cadmium | mg/L | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U |
| Chromium | mg/L | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Lead | mg/L | 0.0075 U | 0.0075 U | 0.0075 U | 0.0075 U |
| Mercury | mg/L | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U |
| Nickel | mg/L | 0.005 U | 0.0026 J | 0.0045 J | 0.0031 J |
| Selenium | mg/L | 0.015 U | 0.015 U | 0.015 U | 0.015 U |
| Silver | mg/L | 0.01 U | 0.005 U | 0.0012 J | 0.005 U |
| Thallium | mg/L | 0.005 U | 0.005 U | 0.0026 J | 0.005 U |
| Vanadium | mg/L | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Zinc | mg/L | 0.025 U | 0.025 U | 0.025 U | 0.025 U |

# DATA SUMMARY TABLE

| **Analysis** | | VPH in Groundwater | | | |
|---|---|---|---|---|---|
| **Lab Sample ID** | | 620-14942-1 | 620-14942-2 | 620-14942-3 | 620-14942-4 |
| **Field Sample ID** | | LM-MW106-102623 | LM-MW107-102623 | LM-MW108-102623 | LM-FD01-102623 |
| **Sample Type** | | N | N | N | FD |
| **Parent Sample ID** | | | | | LM-MW107-102623 |
| **Sample Date** | **Units** | 10/26/23 | 10/26/23 | 10/26/23 | 10/26/23 |
| Benzene | ug/L | 61 | 5 U | 5 U | 5 U |
| C5-C8 Aliphatics (adjusted) | ug/L | 2500 U | 100 U | 100 U | 100 U |
| C5-C8 Aliphatics (unadjusted) | ug/L | 3200 J | 610 J | 100 UJ | 670 J |
| C9-C10 Aromatics | ug/L | 9100 J | 210 J | 100 UJ | 230 J |
| C9-C12 Aliphatics (adjusted) | ug/L | 11000 | 500 | 100 U | 500 U |
| C9-C12 Aliphatics (unadjusted) | ug/L | 23000 J | 980 J | 100 UJ | 670 J |
| Ethylbenzene | ug/L | 650 | 61 | 5 U | 64 |
| m,p-Xylene | ug/L | 1600 | 110 | 10 U | 110 |
| Methyl tert-butyl ether | ug/L | 2300 J | 790 J | 5 UJ | 570 J |
| Naphthalene | ug/L | 210 | 14 | 5 U | 17 |
| o-Xylene | ug/L | 18 | 46 | 5 U | 42 |
| Toluene | ug/L | 5 U | 79 | 5 U | 67 |
| Xylene (total) | ug/L | 1600 | 160 | 15 U | 150 |

# DATA SUMMARY TABLE

| **Analysis** | | VPH in Water Quality Control Matrix |
|---|---|---|
| **Lab Sample ID** | | 620-14942-5 |
| **Field Sample ID** | | Trip Blank-102623 |
| **Sample Type** | | TB |
| **Parent Sample ID** | | |
| **Sample Date** | **Units** | 10/26/23 |
| Benzene | ug/L | 5 U |
| C5-C8 Aliphatics (adjusted) | ug/L | 100 U |
| C5-C8 Aliphatics (unadjusted) | ug/L | 100 U |
| C9-C10 Aromatics | ug/L | 100 U |
| C9-C12 Aliphatics (adjusted) | ug/L | 100 U |
| C9-C12 Aliphatics (unadjusted) | ug/L | 100 U |
| Ethylbenzene | ug/L | 5 U |
| m,p-Xylene | ug/L | 10 U |
| Methyl tert-butyl ether | ug/L | 5 U |
| Naphthalene | ug/L | 5 U |
| o-Xylene | ug/L | 5 U |
| Toluene | ug/L | 5 U |
| Xylene (total) | ug/L | 15 U |

**Data Review Qualification Actions**
**Former L&M Service Station**
**SDG 620149421**

| Parameter | Analyte | Samples | Evaluation Criteria | Action Needed | Comments |
|---|---|---|---|---|---|
| **MassDEP-VPH** | | | | | |
| | Methyl tert-butyl ether | LM-MW106-102623, LM-MW107-102623, LM-MW108-102623, LM-FD01-102326 | Field duplicate precision | J / UJ | |
| | C9-C10 aromatics, C5-C8 aliphatics (unadjusted), C9-C12 aliphatics (unadjusted) | LM-MW106-102623, LM-MW107-102623, LM-MW108-102623, LM-FD01-102326 | MS/MSD recovery | J / UJ | |
| **MassDEP-EPH** | | | | | |
| | Qualification of the data not required. | | | | |
| **MCP-14 Metals / Mercury** | | | | | |
| | Zinc | LM-MW106-102623, LM-MW107-102623, LM-MW108-102623, LM-FD01-102326 | Laboratory blank contamination | RL (U) | |

**Tier 1/Stage 2A Data Review Checklist**

**Project:** Former L&M Service Station, Lunenburg, Massachusetts
Targeted Brownfields Assessment (TBA)
**Project #:** S00001.05

**Date:** 12/28/2023

**Methods:** Volatile Petroleum Hydrocarbons (VPH) (MassDEP-VPH)
Extractable Petroleum Hydrocarbons (EPH) (MassDEP-EPH)
Massachusetts Contingency Plan (MCP) Metals (MCP-14 Metals by 6010D/7470A)

**Laboratory:** Eurofins New England Laboratory, North Kingstown, RI
**Case:** N/A
**SDG:** 620149421
**Reviewer:** Linda Terzis

1. **Case Narrative and Data Package Completeness (COC and Analyte List Review)**
Four (4) groundwater samples and one trip blank sample were listed on the COC for SDG 620149421. The samples were collected on 10/26/2023 and received at the Eurofins New England Laboratory on 10/27/2023 at a maximum temperature of 1.8 °C.

| Sample ID | Laboratory ID | Analyses |
|---|---|---|
| LM-MW106-102623 | 620-14942-1 | MassDEP-VPH, MassDEP-EPH, MCP-14 Metals/Mercury |
| LM-MW107-102623 | 620-14942-2 | |
| LM-MW108-102623 | 620-14942-3 | |
| LM-FD01-102623 | 620-14942-4 | |
| Trip Blank-102623 | 620-14942-5 | MassDEP-VPH |

The data were evaluated using the site-specific Quality Assurance Project Plan Addendum (QAPPA) (dated May 2023) and the Program QAPP (dated October 2022). Both were prepared by KGSNE, LLC. The QAPPA appends and incorporates by reference the procedures and quality control measures detailed in the Program QAPP (October 2022). Therefore, site data for this SDG were evaluated using both the QAPPA of May 2023 and the Program QAPP dated October 2022. The Massachusetts Compendium of Analytical Methods (CAM) and/or SW-846 Methods were used to perform the analyses. Therefore, site data were also evaluated using CAM quality control (QC) limits, where applicable.

The analyte lists reported by the laboratory were compared to the required analyte lists per Table 4 (groundwater) in the QAPPA (May 2023) for the site. Results for all requested analytes were reported and no inconsistencies were noted.

2. **Holding Time and Sample Preservation Compliance**

Receipt temperatures are acceptable (≤ 6°), as specified in the QAPPA (May 2023).

MassDEP-VPH: Holding time criteria (analyzed within 14 days) met.



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MassDEP-EPH: Holding time criteria (extracted within 14 days and analyzed within 40 days of extraction) met.

MCP-14 Metals/Mercury: Holding time criteria (analyzed within 28 days for mercury; within 180 days for all other analytes) were met.

**3. Calibration Issues**

Not assessed for S2AVM data review.

**4. Laboratory and Field Blanks**

MassDEP-VPH: Results for the VPH laboratory method blanks and the trip blank (Trip Blank-102623) were non-detect. No blank actions are required.

MassDEP-EPH: Results for the EPH laboratory method blanks were non-detect. No blank actions are required.

MCP-14 Metals/Mercury: Zinc was detected at < reporting limit (RL) in the method blank associated with the groundwater samples. The method blank is associated with the four groundwater samples in this SDG. Detected concentrations of zinc were < reporting limit (RL) in all samples. Based on the National Functional Guidelines (NFGs, 2020), the detected results for zinc in all groundwater samples are qualified as non-detect (U) at the RL.

Results for mercury in the laboratory method blanks were non-detect. No blank actions are required.

**5. Interference Check Sample (metals only)**

Not assessed for S2AVM data review.

**6. Surrogates**

The Program QAPP (October 2022) was used to evaluate site data for surrogate recovery. If no Program QAPP-specific recovery limits were available for a surrogate, the MCP CAM recovery limits were used.

MassDEP-VPH: Percent surrogate recoveries for the samples were within the Program QAPP limits of 70-130%. No actions are required.

MassDEP-EPH: Percent surrogate recoveries for the samples were within the Program QAPP limits of 40-140%. No actions are required.

MCP-14 Metals/Mercury: Not applicable for this analysis.

**7. Laboratory Control Samples**

MassDEP-VPH: The percent recoveries in the VPH LCS/LCSD pairs met the Program QAPP recovery limits of 70-130% and RPDs ≤ 25%. No actions are required.

MassDEP-EPH: The percent recoveries in the EPH LCS/LCSD pairs meet the Program QAPP recovery limits of 40-140% and RPDs ≤ 25%. No actions are required.

MCP-14 Metals/Mercury: Percent recoveries and RPDs for all metals and mercury LCS/LCSD analyses were within the QAPP limits of 80-120% and ≤ 20%, respectively. No actions are required.

**8. Matrix Spikes**

Based on the Region I EPA New England Environmental Data Review Supplement (Region I Supplement, 2020), MS/MSD qualifications are applied to all field samples with similar matrix, unless otherwise noted.

MS/MSD analyses were performed on sample LM-MW108-102623 (6020-14942-3).

MassDEP-VPH: Recoveries and RPDs met the Program QAPP limits of 70-130% recovery and ≤ 50% RPD except for the recoveries of C9-C10 aromatics, which was reported as spiked but not detected in both the MS and MSD analyses, and the recoveries of C5-C8 aliphatics (unadjusted) and C9-C12 aliphatics (unadjusted), which were also reported as spiked, but with results > spiking level. Percent recoveries were not calculated by the laboratory for these ranges. Results for the parent sample were all non-detect. The laboratory has indicated the recovery failures are due to the way the entire baseline is integrated for samples versus for QC samples (sum of peaks). Professional judgement was used to qualify detected and non-detect results for C9-C10 aromatics, C5-C8 aliphatics (unadjusted), and C9-C12 aliphatics (unadjusted) as estimated (J/UJ) in all groundwater samples due to baseline integration preventing calculation of meaningful recoveries for these ranges. LCS/LCSD recoveries are acceptable as noted above.

MassDEP-EPH: MS/MSD results meet the limits of 70-130% recovery and ≤ 50% RPD as specified in the Program QAPP. No actions are required.

MCP-14 Metals/Mercury: MS/MSD recoveries and RPDs met the Program QAPP limits of 75-125% recovery and ≤ 20% RPD. No actions are required.

**9. Laboratory Duplicates (metals only)**

MCP-14 Metals/Mercury: Laboratory duplicate analysis was performed on sample LM-MW108-102623 (620-14942-3). The QAPP duplicate criterion (≤ 20% RPD) was met for all detected analytes. Mercury was not detected in the sample and a duplicate analysis was not performed for mercury. Laboratory duplicate precision is acceptable and no actions are required.

**10. Serial Dilution (metals only)**

MCP-14 Metals/Mercury: A serial dilution analysis was not performed for this SDG. The Massachusetts CAM requires a serial dilution analysis on samples used for MS/MSD analyses where analytes are detected at > 50x RL. MS/MSD analyses were performed on sample LM-MW108-102623 (620-14942-3). Detected analyte results were < 50x RL in this sample and no actions are required.

**11. Field Duplicate Precision**

Acceptable field duplicate precision is an RPD of ≤ 30% for results > 5x RL and an absolute difference < 2x RL for results < 5x RL, based on the EPA Region I Supplement (2020). Based on the Region I Supplement (2020), qualifications are applied to all field samples with similar matrix, unless otherwise indicated.

Field duplicate pair LM-MW107-102623 / LM-FD01-102623 (620-14942-2 / 620-14942-4) was submitted with the samples of this SDG.

Field duplicate precision criteria were met for the EPH and metals analyses. Field duplicate precision criteria were met for the VPH analysis except for the results for methyl tert-butyl ether, where the RPD exceeded 30% for results > 5x RL. Based on the EPA Region I Supplemental Guidance (2020), the detect and non-detect results for methyl tert-butyl ether are qualified as estimated (J/UJ) in all groundwater samples.

**12. Internal Standards**

Not assessed for S2AVM data review.

**13. Dual Column Precision (PCBs only)**

Not applicable for this SDG.

**14. Performance Evaluation Samples**

Performance Evaluation (PE) samples were not included in this SDG.

**15. Reporting Limits**

RLs for non-detect results for VPH, EPH, and metals/mercury analyses met the project action levels (PALs) for the site except for the non-detect result for silver in sample LM-MW106-102623 (620-14942-1), where the reporting limit (0.01 mg/L) exceeded the PAL (0.007 mg/L).

**16. Other**

EPA Region I Supplement (2020) criterion for percent solids content (> 30%) not applicable for groundwater samples.

Overall bias is considered indeterminate when cumulative nonconformances do not show a consistent bias or in cases of the presence of conflicting high and low biases.

**Field Duplicate Evaluation**

**SDG: 620149421**

| Analyte | Original Result (ug/L) | Qual | Duplicate Result (ug/L) | Qual | RPD ≤ 30% | Abs Diff | Comment[1] |
|---|---|---|---|---|---|---|---|
| **Sample ID** | **LM-MW107-102623** | | **LM-FD01-102623** | | | | |
| | **620-14942-2** | | **620-14942-4** | | | | |
| Benzene | 5 | U | 5 | U | 0.00 | | Ok - both ND |
| C5-C8 Aliphatics (adjusted) | 100 | U | 100 | U | 0.00 | | Ok - both ND |
| C5-C8 Aliphatics (unadjusted) | 610 | | 670 | | 9.38 | | Ok - RPD < 30% |
| C9-C10 Aromatics | 210 | | 230 | | 9.09 | 20.0 | Ok - abs diff < 2x RL |
| C9-C12 Aliphatics (adjusted) | 500 | | 500 | U | 0.00 | 0.00 | Ok - abs diff < 2x RL |
| C9-C12 Aliphatics (unadjusted) | 980 | | 670 | | -37.58 | -310.00 | Ok - abs diff < 2x RL |
| Ethylbenzene | 61 | | 64 | | 4.80 | | Ok - RPD < 30% |
| m,p-Xylene | 110 | | 110 | | 0.00 | | Ok - RPD < 30% |
| **Methyl tert-butyl ether** | 790 | | 570 | | -32.35 | | **RPD > 30% J / UJ** |
| Naphthalene | 14 | | 17 | | 19.35 | 3 | Ok - abs diff < 2x RL |
| o-Xylene | 46 | | 42 | | -9.09 | | Ok - RPD < 30% |
| Toluene | 79 | | 67 | | -16.44 | | Ok - RPD < 30% |

[1] Actions apply to all samples, per EPA Region I Supplemental Review Guidance (2020).

**Field Duplicate Evaluation**

**SDG: 620149421 EPH**

| Analyte | Original Result (ug/L) | Qual | Duplicate Result (ugL) | Qual | RPD ≤ 30% | Abs Diff | Comment[1] |
|---|---|---|---|---|---|---|---|
| **Sample ID** | **LM-MW107-102623** | | **LM-FD01-102623** | | | | |
| | **620-14942-2** | | **620-14942-4** | | | | |
| 2-Methylnaphthalene | 1.2 | | 1.4 | | 15.38 | 0.20 | Ok - abs diff < 2x RL |
| Acenaphthene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Acenaphthylene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Anthracene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Benzo(a)anthracene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Benzo(a)pyrene | 0.2 | U | 0.2 | U | 0.00 | | Ok - both ND |
| Benzo(b)fluoranthene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Benzo(g,h,i)perylene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Benzo(k)fluoranthene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| C11-C22 Aromatics | 120 | | 130 | | 8.00 | 10 | Ok - abs diff < 2x RL |
| C11-C22 Aromatics (adjusted) | 110 | | 120 | | 8.70 | 10 | Ok - abs diff < 2x RL |
| C19-C36 Aliphatics | 100 | U | 100 | U | 0.00 | | Ok - both ND |
| C9-C18 Aliphatics | 100 | U | 100 | U | 0.00 | | Ok - both ND |
| Chrysene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Dibenz(a,h)anthracene | 0.5 | U | 0.5 | U | 0.00 | | Ok - both ND |
| Fluoranthene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Fluorene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Indeno(1,2,3-cd)pyrene | 0.5 | U | 0.5 | U | 0.00 | | Ok - both ND |
| Naphthalene | 8.1 | | 9.1 | | 11.63 | | Ok - RPD < 30% |
| Phenanthrene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Pyrene | 1 | U | 1 | U | 0.00 | | Ok - both ND |

[1] Actions apply to all samples, per EPA Region I Supplemental Review Guidance (2020).

**Field Duplicate Evaluation**

**SDG: 620149421 METALS**

| Analyte | Original Result (mg/L) | Qual | Duplicate Result (mg/L) | Qual | RPD ≤ 30% | Abs Diff | Comment[1] |
|---|---|---|---|---|---|---|---|
| **Sample ID** | **LM-MW107-102623** | | **LM-FD01-102623** | | | | |
| | **620-14942-2** | | **620-14942-4** | | | | |
| Antimony | 0.006 | U | 0.006 | U | 0.0 | | Ok - both ND |
| Arsenic | 0.065 | | 0.066 | | 1.5 | | Ok - RPD < 30% |
| Barium | 0.05 | | 0.05 | | 0.0 | | Ok - RPD < 30% |
| Beryllium | 0.002 | U | 0.00039 | J | -134.7 | | Ok - ND and < RL |
| Cadmium | 0.0025 | U | 0.0025 | U | 0.0 | | Ok - both ND |
| Chromium | 0.005 | U | 0.005 | U | 0.0 | | Ok - both ND |
| Lead | 0.0075 | U | 0.0075 | U | 0.0 | | Ok - both ND |
| Mercury | 0.0002 | U | 0.0002 | U | 0.0 | | Ok - both ND |
| Nickel | 0.0026 | J | 0.0031 | J | 17.5 | | Ok - both < RL |
| Selenium | 0.015 | U | 0.015 | U | 0.0 | | Ok - both ND |
| Silver | 0.005 | U | 0.005 | U | 0.0 | | Ok - both ND |
| Thallium | 0.005 | U | 0.005 | U | 0.0 | | Ok - both ND |
| Vanadium | 0.005 | U | 0.005 | U | 0.0 | | Ok - both ND |
| Zinc | 0.0033 | J | 0.0034 | J | 3.0 | | Ok - both < RL |

[1] Actions apply to all samples, per EPA Region I Supplemental Review Guidance (2020).



620-14942 Chain of Custody

14942

# Chain of Custody Record

eurofins | Environment Testing

| | | | | |
|---|---|---|---|---|
| Client Contact: ~~Stephanie Stone~~ Adam Roy | Sampler: Caroline Belmowiz | Lab PM | Carrier Tracking No(s) | COC No: 620-12716-1718 2 |
| Company: Nobis Engineering, Inc | Phone: 978-888-4404 | E-Mail: CBelmowiz@nobis-group.com | State of Origin | Page: Page 2 of 4 |
| Address: 585 Middlesex Street | PWSID | Analysis Requested | | Job #: |
| City: Lowell | Due Date Requested: | | | |
| State, Zip: MA, 01851 | TAT Requested (days): Standard | | | |
| Phone: 978-703-6014 | Compliance Project: ✓ Yes △ No MASSDEP | | | |
| Email: AROY ~~cstone~~@nobis-group com | PO #: | | | |
| Project Name: S00001 005 LSM | WO #: | | | |
| Site: Lunenburg, MA | Project #: | | | |
| | SSOW#: | | | |

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)
Other:

| | Sample Identification | Sample Date | Sample Time | Sample Type (C=comp, G=grab) | Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air) | Field Filtered Sample (Yes or No) | Perform MS/MSD (Yes or No) | VPH (MASSDEP) | EPH (MASSDEP) | MCP 14-Dissolved Metals | Total Number of containers | Special Instructions/Note: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Preservation Code: | | | | | | | | | | | |
| -1 | LM-MW106-102623 | 10/26/23 | 1335 | G | Water | X | | | | | 6 | |
| -2 | LM-MW107-102623 | 10/26/23 | 1200 | G | Water | X | | | | | 6 | |
| -3 | LM-MW108-102623 | 10/26/23 | 1005 | G | Water | X | X | | | | 8 | MS/MSD |
| -4 | LM-FD01-102623 | 10/26/23 | 0800 | G | Water | X | | | | | 6 | |
| -5 | Trip Blank | | | | Water | | | | | | 2 | |
| | | | | | Water | | | | | | | |
| | | | | | Water | | | | | | | |
| | | | | | Water | | | | | | | |
| | | | | | Water | | | | | | | |
| | | | | | Water | | | | | | | |
| | | | | | Water | | | | | | | |

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month): ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements: email EQuIS EDD to AROY@nobis-group.com

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Empty Kit Relinquished by | | Date | | Time | | Method of Shipment: | |
| Relinquished by: | | Date/Time: 10/27/23 1130 | Company: Nobis | Received by: | | Date/Time: 10/27/23 1130 | Company: ENE |
| Relinquished by: | | Date/Time: 10/27/23 1642 | Company: ENE | Received by: | | Date/Time: 10/27/23 1642 | Company: ENE |
| Relinquished by: | | Date/Time: | Company: | Received by: | | Date/Time: | Company: |

Custody Seals Intact: △ Yes △ No | Custody Seal No

Cooler Temperature(s) °C and Other Remarks: 1.6 to.2 1.8 #6 / 1.4 to.2 1.6 #6

Ver: 06/08/2021

Page 43 of 44

11/13/2023

# ANALYTICAL REPORT

## PREPARED FOR

Attn: Adam Roy
Nobis Engineering, Inc.
585 Middlesex Street
Lowell, Massachusetts 01851

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## JOB DESCRIPTION

Former L&M - Lunenburg MA

## JOB NUMBER

620-14942-1

Eurofins New England
646 Camp Ave
North Kingstown RI 02852

See page two for job notes and contact information.



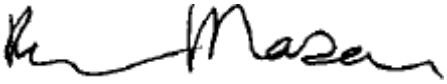
my EOL

## Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northeast, LLC Project Manager.

## Authorization



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# Table of Contents

Cover Page . . . . . 1
Table of Contents . . . . . 3
Definitions/Glossary . . . . . 4
State Forms . . . . . 5
MCP Checklist . . . . . 5
Case Narrative . . . . . 6
Detection Summary . . . . . 7
Client Sample Results . . . . . 9
Surrogate Summary . . . . . 18
QC Sample Results . . . . . 20
QC Association Summary . . . . . 33
Lab Chronicle . . . . . 37
Certification Summary . . . . . 39
Method Summary . . . . . 41
Sample Summary . . . . . 42
Chain of Custody . . . . . 43
Receipt Checklists . . . . . 44

# Definitions/Glossary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-14942-1

## Qualifiers

### GC/MS Semi VOA

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

### GC Semi VOA

| Qualifier | Qualifier Description |
|---|---|
| F1 | MS and/or MSD recovery exceeds control limits. |

### Metals

| Qualifier | Qualifier Description |
|---|---|
| ^3+ | Reporting Limit Check Standard is outside acceptance limits, high biased |
| J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |

## Glossary

| Abbreviation | These commonly used abbreviations may or may not be present in this report. |
|---|---|
| ¤ | Listed under the "D" column to designate that the result is reported on a dry weight basis |
| %R | Percent Recovery |
| CFL | Contains Free Liquid |
| CFU | Colony Forming Unit |
| CNF | Contains No Free Liquid |
| DER | Duplicate Error Ratio (normalized absolute difference) |
| Dil Fac | Dilution Factor |
| DL | Detection Limit (DoD/DOE) |
| DL, RA, RE, IN | Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample |
| DLC | Decision Level Concentration (Radiochemistry) |
| EDL | Estimated Detection Limit (Dioxin) |
| LOD | Limit of Detection (DoD/DOE) |
| LOQ | Limit of Quantitation (DoD/DOE) |
| MCL | EPA recommended "Maximum Contaminant Level" |
| MDA | Minimum Detectable Activity (Radiochemistry) |
| MDC | Minimum Detectable Concentration (Radiochemistry) |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| MPN | Most Probable Number |
| MQL | Method Quantitation Limit |
| NC | Not Calculated |
| ND | Not Detected at the reporting limit (or MDL or EDL if shown) |
| NEG | Negative / Absent |
| POS | Positive / Present |
| PQL | Practical Quantitation Limit |
| PRES | Presumptive |
| QC | Quality Control |
| RER | Relative Error Ratio (Radiochemistry) |
| RL | Reporting Limit or Requested Limit (Radiochemistry) |
| RPD | Relative Percent Difference, a measure of the relative difference between two points |
| TEF | Toxicity Equivalent Factor (Dioxin) |
| TEQ | Toxicity Equivalent Quotient (Dioxin) |
| TNTC | Too Numerous To Count |

# MassDEP Analytical Protocol Certfication Form

Laboratory Name: Eurofins New England | Project #: 620-14942-1

Project Location: Former L&M - Lunenburg MA | RTN:

**This Form provides certifications for the following data set: list Laboratory Sample ID Number(s):**
620-14942-1 through 620-14942-5

Matrices: ☑ Groundwater/Surface Water ☐ Soil/Sediment ☐ Drinking Water ☐ Air ☐ Other:

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

| | | | | | |
|---|---|---|---|---|---|
| 8260 VOC CAM II A ☐ | 7470/7471 Hg CAM III B ☑ | MassDEP VPH (GC/PID/FID) CAM IV A ☑ | 8082 PCB CAM V A ☐ | 9014 Total Cyanide/PAC CAM VI A ☐ | 6860 Perchlorate CAM VIII B ☐ |
| 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 ☐ |
| 6010 Metals CAM III A ☑ | 6020 Metals CAM III D ☐ | MassDEP EPH CAM IV B ☑ | 8151 Herbicides CAM V C ☐ | 8330 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 ☐ No |
| **B** | Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed? | ☑ Yes ☐ 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 ☐ No |
| **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 ☐ No |
| **E** | VPH, EPH, APH, and TO-15 only<br>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).<br>b. APH and TO-15 Methods only: Was the complete analyte list reported for each method? | ☑ Yes ☐ No<br>☐ 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 ☐ 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 protocol(s)? | ☑ Yes ☐ No[1] |

***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[1] |
| **I** | Were results reported for the complete analyte list specified in the selected CAM protocol(s)? | ☑ Yes ☐ No[1] |

*1 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, is accurate and complete.***

**Signature:** _____ **Position:** Project Manager II

**Printed Name:** Becky Mason **Date:** 11/13/2023

## Job ID: 620-14942-1

### Laboratory: Eurofins New England

**Narrative**

**Job Narrative**
**620-14942-1**

**Receipt**
The samples were received on 10/27/2023 4:22 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice.

**GC/MS Semi VOA**
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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

**GC Semi VOA**
Method MAEPH2.1: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 620-28762 and 620-28794 and analytical batch 620-28787 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory sample control duplicate (LCS/LCSD) precision was within acceptance limits.

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

**Metals**
Method 7470A: The matrix spike duplicate (MSD) precision for preparation batch 620-28845 and analytical batch 620-28884 was outside control limits. The sample spike volume was doubled, leading to precision failure; however, recovery was within acceptable limits. No additional sample volume was available, therefore the data have been reported.

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

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

# Detection Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-14942-1

## Client Sample ID: LM-MW106-102623 — Lab Sample ID: 620-14942-1

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | 90 | | 10 | 2.3 | ug/L | 10 | | EPH | Total/NA |
| 2-Methylnaphthalene | 54 | | 10 | 2.9 | ug/L | 10 | | EPH | Total/NA |
| Acenaphthene | 0.20 | J | 1.0 | 0.19 | ug/L | 1 | | EPH | Total/NA |
| Phenanthrene | 0.43 | J | 1.0 | 0.17 | ug/L | 1 | | EPH | Total/NA |
| Fluoranthene | 0.16 | J | 1.0 | 0.15 | ug/L | 1 | | EPH | Total/NA |
| Benzene | 61 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| o-Xylene | 18 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (adjusted) - DL | 11000 | | 2500 | 2500 | ug/L | 25 | | MAVPH2.1 | Total/NA |
| C9-C10 Aromatics - DL | 9100 | | 2500 | 2500 | ug/L | 25 | | MAVPH2.1 | Total/NA |
| C5-C8 Aliphatics (unadjusted) - DL | 3200 | | 2500 | 2500 | ug/L | 25 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (unadjusted) - DL | 23000 | | 2500 | 2500 | ug/L | 25 | | MAVPH2.1 | Total/NA |
| Ethylbenzene - DL | 650 | | 130 | 130 | ug/L | 25 | | MAVPH2.1 | Total/NA |
| Methyl tert-butyl ether - DL | 2300 | | 130 | 130 | ug/L | 25 | | MAVPH2.1 | Total/NA |
| Naphthalene - DL | 210 | | 130 | 130 | ug/L | 25 | | MAVPH2.1 | Total/NA |
| m,p-Xylene - DL | 1600 | | 250 | 250 | ug/L | 25 | | MAVPH2.1 | Total/NA |
| Xylenes, Total - DL | 1600 | | 380 | 380 | ug/L | 25 | | MAVPH2.1 | Total/NA |
| C9-C18 Aliphatics | 290 | | 100 | 100 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics | 400 | | 100 | 100 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics (Adjusted) | 230 | | 100 | 100 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| Arsenic | 0.044 | | 0.0040 | 0.0014 | mg/L | 1 | | 6010D | Dissolved |
| Barium | 0.054 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Zinc | 0.0027 | J | 0.025 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |

## Client Sample ID: LM-MW107-102623 — Lab Sample ID: 620-14942-2

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | 8.1 | | 1.0 | 0.23 | ug/L | 1 | | EPH | Total/NA |
| 2-Methylnaphthalene | 1.2 | | 1.0 | 0.29 | ug/L | 1 | | EPH | Total/NA |
| C9-C10 Aromatics | 210 | | 100 | 100 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C5-C8 Aliphatics (unadjusted) | 610 | | 100 | 100 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Ethylbenzene | 61 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Naphthalene | 14 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Toluene | 79 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| m,p-Xylene | 110 | | 10 | 10 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| o-Xylene | 46 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Xylenes, Total | 160 | | 15 | 15 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (adjusted) - DL | 500 | | 500 | 500 | ug/L | 5 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (unadjusted) - DL | 980 | | 500 | 500 | ug/L | 5 | | MAVPH2.1 | Total/NA |
| Methyl tert-butyl ether - DL | 790 | | 25 | 25 | ug/L | 5 | | MAVPH2.1 | Total/NA |
| C11-C22 Aromatics | 120 | | 100 | 100 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics (Adjusted) | 110 | | 100 | 100 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| Arsenic | 0.065 | | 0.0040 | 0.0014 | mg/L | 1 | | 6010D | Dissolved |
| Barium | 0.050 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Nickel | 0.0026 | J | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |
| Zinc | 0.0033 | J | 0.025 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |

## Client Sample ID: LM-MW108-102623 — Lab Sample ID: 620-14942-3

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.0019 | J | 0.0060 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |
| Barium | 0.14 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Nickel | 0.0045 | J | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |

This Detection Summary does not include radiochemical test results.

Eurofins New England

## Client Sample ID: LM-MW108-102623 (Continued)

## Lab Sample ID: 620-14942-3

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Silver | 0.0012 | J | 0.0050 | 0.00062 | mg/L | 1 | | 6010D | Dissolved |
| Thallium | 0.0026 | J | 0.0050 | 0.0021 | mg/L | 1 | | 6010D | Dissolved |
| Zinc | 0.0020 | J | 0.025 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |

## Client Sample ID: LM-FD01-102623

## Lab Sample ID: 620-14942-4

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | 9.1 | | 1.0 | 0.23 | ug/L | 1 | | EPH | Total/NA |
| 2-Methylnaphthalene | 1.4 | | 1.0 | 0.29 | ug/L | 1 | | EPH | Total/NA |
| C9-C10 Aromatics | 230 | | 100 | 100 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C5-C8 Aliphatics (unadjusted) | 670 | | 100 | 100 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Ethylbenzene | 64 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Naphthalene | 17 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Toluene | 67 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| m,p-Xylene | 110 | | 10 | 10 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| o-Xylene | 42 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Xylenes, Total | 150 | | 15 | 15 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (unadjusted) - DL | 670 | | 500 | 500 | ug/L | 5 | | MAVPH2.1 | Total/NA |
| Methyl tert-butyl ether - DL | 570 | | 25 | 25 | ug/L | 5 | | MAVPH2.1 | Total/NA |
| C11-C22 Aromatics | 130 | | 100 | 100 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics (Adjusted) | 120 | | 100 | 100 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| Arsenic | 0.066 | | 0.0040 | 0.0014 | mg/L | 1 | | 6010D | Dissolved |
| Barium | 0.050 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Beryllium | 0.00039 | J | 0.0020 | 0.00028 | mg/L | 1 | | 6010D | Dissolved |
| Nickel | 0.0031 | J | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |
| Zinc | 0.0034 | J | 0.025 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |

## Client Sample ID: Trip Blank

## Lab Sample ID: 620-14942-5

No Detections.

This Detection Summary does not include radiochemical test results.

## Client Sample ID: LM-MW106-102623

**Date Collected: 10/26/23 13:35**
**Date Received: 10/27/23 16:22**

## Lab Sample ID: 620-14942-1

**Matrix: Water**

### Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Naphthalene** | **90** | | 10 | 2.3 | ug/L | | 11/07/23 09:35 | 11/08/23 13:43 | 10 |
| **2-Methylnaphthalene** | **54** | | 10 | 2.9 | ug/L | | 11/07/23 09:35 | 11/08/23 13:43 | 10 |
| Acenaphthylene | ND | | 1.0 | 0.39 | ug/L | | 11/07/23 09:35 | 11/08/23 11:29 | 1 |
| **Acenaphthene** | **0.20** | **J** | 1.0 | 0.19 | ug/L | | 11/07/23 09:35 | 11/08/23 11:29 | 1 |
| Fluorene | ND | | 1.0 | 0.39 | ug/L | | 11/07/23 09:35 | 11/08/23 11:29 | 1 |
| **Phenanthrene** | **0.43** | **J** | 1.0 | 0.17 | ug/L | | 11/07/23 09:35 | 11/08/23 11:29 | 1 |
| Anthracene | ND | | 1.0 | 0.15 | ug/L | | 11/07/23 09:35 | 11/08/23 11:29 | 1 |
| **Fluoranthene** | **0.16** | **J** | 1.0 | 0.15 | ug/L | | 11/07/23 09:35 | 11/08/23 11:29 | 1 |
| Pyrene | ND | | 1.0 | 0.14 | ug/L | | 11/07/23 09:35 | 11/08/23 11:29 | 1 |
| Benzo[a]anthracene | ND | | 1.0 | 0.070 | ug/L | | 11/07/23 09:35 | 11/08/23 11:29 | 1 |
| Chrysene | ND | | 1.0 | 0.14 | ug/L | | 11/07/23 09:35 | 11/08/23 11:29 | 1 |
| Benzo[b]fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 11/07/23 09:35 | 11/08/23 11:29 | 1 |
| Benzo[k]fluoranthene | ND | | 1.0 | 0.24 | ug/L | | 11/07/23 09:35 | 11/08/23 11:29 | 1 |
| Benzo[a]pyrene | ND | | 0.20 | 0.16 | ug/L | | 11/07/23 09:35 | 11/08/23 11:29 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.50 | 0.46 | ug/L | | 11/07/23 09:35 | 11/08/23 11:29 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.50 | 0.21 | ug/L | | 11/07/23 09:35 | 11/08/23 11:29 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.0 | 0.17 | ug/L | | 11/07/23 09:35 | 11/08/23 11:29 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *65* | | *40 - 140* | *11/07/23 09:35* | *11/08/23 11:29* | *1* |
| *o-Terphenyl (Surr)* | *56* | | *40 - 140* | *11/07/23 09:35* | *11/08/23 13:43* | *10* |
| *2-Fluorobiphenyl (Surr)* | *109* | | *40 - 140* | *11/07/23 09:35* | *11/08/23 11:29* | *1* |
| *2-Fluorobiphenyl (Surr)* | *93* | | *40 - 140* | *11/07/23 09:35* | *11/08/23 13:43* | *10* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Benzene** | **61** | | 5.0 | 5.0 | ug/L | | | 11/01/23 00:16 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 11/01/23 00:16 | 1 |
| **o-Xylene** | **18** | | 5.0 | 5.0 | ug/L | | | 11/01/23 00:16 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *128* | | *70 - 130* | | *11/01/23 00:16* | *1* |
| *2,5-Dibromotoluene (pid)* | *116* | | *70 - 130* | | *11/01/23 00:16* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) - DL

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 2500 | 2500 | ug/L | | | 11/01/23 14:59 | 25 |
| **C9-C12 Aliphatics (adjusted)** | **11000** | | 2500 | 2500 | ug/L | | | 11/01/23 14:59 | 25 |
| **C9-C10 Aromatics** | **9100** | | 2500 | 2500 | ug/L | | | 11/01/23 14:59 | 25 |
| **C5-C8 Aliphatics (unadjusted)** | **3200** | | 2500 | 2500 | ug/L | | | 11/01/23 14:59 | 25 |
| **C9-C12 Aliphatics (unadjusted)** | **23000** | | 2500 | 2500 | ug/L | | | 11/01/23 14:59 | 25 |
| **Ethylbenzene** | **650** | | 130 | 130 | ug/L | | | 11/01/23 14:59 | 25 |
| **Methyl tert-butyl ether** | **2300** | | 130 | 130 | ug/L | | | 11/01/23 14:59 | 25 |
| **Naphthalene** | **210** | | 130 | 130 | ug/L | | | 11/01/23 14:59 | 25 |
| **m,p-Xylene** | **1600** | | 250 | 250 | ug/L | | | 11/01/23 14:59 | 25 |
| **Xylenes, Total** | **1600** | | 380 | 380 | ug/L | | | 11/01/23 14:59 | 25 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *100* | | *70 - 130* | | *11/01/23 14:59* | *25* |
| *2,5-Dibromotoluene (pid)* | *98* | | *70 - 130* | | *11/01/23 14:59* | *25* |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-14942-1

## Client Sample ID: LM-MW106-102623

**Date Collected: 10/26/23 13:35**
**Date Received: 10/27/23 16:22**

## Lab Sample ID: 620-14942-1

**Matrix: Water**

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C9-C18 Aliphatics** | **290** | | 100 | 100 | ug/L | | 11/07/23 09:35 | 11/08/23 12:41 | 1 |
| C19-C36 Aliphatics | ND | | 100 | 100 | ug/L | | 11/07/23 09:35 | 11/08/23 12:41 | 1 |
| **C11-C22 Aromatics** | **400** | | 100 | 100 | ug/L | | 11/07/23 09:35 | 11/08/23 12:41 | 1 |
| **C11-C22 Aromatics (Adjusted)** | **230** | | 100 | 100 | ug/L | | 11/07/23 09:35 | 11/08/23 12:41 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *53* | | *40 - 140* | *11/07/23 09:35* | *11/08/23 12:41* | *1* |
| *o-Terphenyl (Surr)* | *76* | | *40 - 140* | *11/07/23 09:35* | *11/08/23 12:41* | *1* |
| *2-Fluorobiphenyl (Surr)* | *110* | | *40 - 140* | *11/07/23 09:35* | *11/08/23 12:41* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 0.0060 | 0.0016 | mg/L | | 10/30/23 14:59 | 11/02/23 13:52 | 1 |
| **Arsenic** | **0.044** | | 0.0040 | 0.0014 | mg/L | | 10/30/23 14:59 | 11/02/23 13:52 | 1 |
| **Barium** | **0.054** | | 0.0050 | 0.00070 | mg/L | | 10/30/23 14:59 | 11/02/23 13:52 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 10/30/23 14:59 | 11/02/23 13:52 | 1 |
| Cadmium | ND | | 0.0025 | 0.00036 | mg/L | | 10/30/23 14:59 | 11/02/23 13:52 | 1 |
| Chromium | ND | | 0.0050 | 0.00093 | mg/L | | 10/30/23 14:59 | 11/02/23 13:52 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 10/30/23 14:59 | 11/02/23 13:52 | 1 |
| Nickel | ND | | 0.0050 | 0.00087 | mg/L | | 10/30/23 14:59 | 11/02/23 13:52 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 10/30/23 14:59 | 11/02/23 13:52 | 1 |
| Silver | ND | | 0.010 | 0.00062 | mg/L | | 11/07/23 15:24 | 11/08/23 12:52 | 1 |
| Thallium | ND | | 0.0050 | 0.0021 | mg/L | | 10/30/23 14:59 | 11/02/23 13:52 | 1 |
| Vanadium | ND | | 0.0050 | 0.0011 | mg/L | | 10/30/23 14:59 | 11/02/23 13:52 | 1 |
| **Zinc** | **0.0027** | **J** | 0.025 | 0.0016 | mg/L | | 11/07/23 15:24 | 11/08/23 12:52 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 11/09/23 08:42 | 11/09/23 14:40 | 1 |

## Client Sample ID: LM-MW107-102623

**Date Collected: 10/26/23 12:00**
**Date Received: 10/27/23 16:22**

## Lab Sample ID: 620-14942-2

**Matrix: Water**

### Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Naphthalene** | **8.1** | | 1.0 | 0.23 | ug/L | | 11/07/23 09:35 | 11/08/23 11:52 | 1 |
| **2-Methylnaphthalene** | **1.2** | | 1.0 | 0.29 | ug/L | | 11/07/23 09:35 | 11/08/23 11:52 | 1 |
| Acenaphthylene | ND | | 1.0 | 0.39 | ug/L | | 11/07/23 09:35 | 11/08/23 11:52 | 1 |
| Acenaphthene | ND | | 1.0 | 0.19 | ug/L | | 11/07/23 09:35 | 11/08/23 11:52 | 1 |
| Fluorene | ND | | 1.0 | 0.39 | ug/L | | 11/07/23 09:35 | 11/08/23 11:52 | 1 |
| Phenanthrene | ND | | 1.0 | 0.17 | ug/L | | 11/07/23 09:35 | 11/08/23 11:52 | 1 |
| Anthracene | ND | | 1.0 | 0.15 | ug/L | | 11/07/23 09:35 | 11/08/23 11:52 | 1 |
| Fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 11/07/23 09:35 | 11/08/23 11:52 | 1 |
| Pyrene | ND | | 1.0 | 0.14 | ug/L | | 11/07/23 09:35 | 11/08/23 11:52 | 1 |
| Benzo[a]anthracene | ND | | 1.0 | 0.070 | ug/L | | 11/07/23 09:35 | 11/08/23 11:52 | 1 |
| Chrysene | ND | | 1.0 | 0.14 | ug/L | | 11/07/23 09:35 | 11/08/23 11:52 | 1 |
| Benzo[b]fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 11/07/23 09:35 | 11/08/23 11:52 | 1 |
| Benzo[k]fluoranthene | ND | | 1.0 | 0.24 | ug/L | | 11/07/23 09:35 | 11/08/23 11:52 | 1 |
| Benzo[a]pyrene | ND | | 0.20 | 0.16 | ug/L | | 11/07/23 09:35 | 11/08/23 11:52 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.50 | 0.46 | ug/L | | 11/07/23 09:35 | 11/08/23 11:52 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.50 | 0.21 | ug/L | | 11/07/23 09:35 | 11/08/23 11:52 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.0 | 0.17 | ug/L | | 11/07/23 09:35 | 11/08/23 11:52 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *67* | | *40 - 140* | *11/07/23 09:35* | *11/08/23 11:52* | *1* |
| *2-Fluorobiphenyl (Surr)* | *116* | | *40 - 140* | *11/07/23 09:35* | *11/08/23 11:52* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 10/31/23 19:09 | 1 |
| **C9-C10 Aromatics** | **210** | | 100 | 100 | ug/L | | | 10/31/23 19:09 | 1 |
| **C5-C8 Aliphatics (unadjusted)** | **610** | | 100 | 100 | ug/L | | | 10/31/23 19:09 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 10/31/23 19:09 | 1 |
| **Ethylbenzene** | **61** | | 5.0 | 5.0 | ug/L | | | 10/31/23 19:09 | 1 |
| **Naphthalene** | **14** | | 5.0 | 5.0 | ug/L | | | 10/31/23 19:09 | 1 |
| **Toluene** | **79** | | 5.0 | 5.0 | ug/L | | | 10/31/23 19:09 | 1 |
| **m,p-Xylene** | **110** | | 10 | 10 | ug/L | | | 10/31/23 19:09 | 1 |
| **o-Xylene** | **46** | | 5.0 | 5.0 | ug/L | | | 10/31/23 19:09 | 1 |
| **Xylenes, Total** | **160** | | 15 | 15 | ug/L | | | 10/31/23 19:09 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *95* | | *70 - 130* | | *10/31/23 19:09* | *1* |
| *2,5-Dibromotoluene (pid)* | *94* | | *70 - 130* | | *10/31/23 19:09* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) - DL

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C9-C12 Aliphatics (adjusted)** | **500** | | 500 | 500 | ug/L | | | 11/01/23 15:30 | 5 |
| **C9-C12 Aliphatics (unadjusted)** | **980** | | 500 | 500 | ug/L | | | 11/01/23 15:30 | 5 |
| **Methyl tert-butyl ether** | **790** | | 25 | 25 | ug/L | | | 11/01/23 15:30 | 5 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *101* | | *70 - 130* | | *11/01/23 15:30* | *5* |
| *2,5-Dibromotoluene (pid)* | *99* | | *70 - 130* | | *11/01/23 15:30* | *5* |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-14942-1

## Client Sample ID: LM-MW107-102623

**Date Collected: 10/26/23 12:00**
**Date Received: 10/27/23 16:22**

## Lab Sample ID: 620-14942-2

**Matrix: Water**

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 100 | 100 | ug/L | | 11/07/23 09:35 | 11/08/23 13:08 | 1 |
| C19-C36 Aliphatics | ND | | 100 | 100 | ug/L | | 11/07/23 09:35 | 11/08/23 13:08 | 1 |
| **C11-C22 Aromatics** | **120** | | 100 | 100 | ug/L | | 11/07/23 09:35 | 11/08/23 13:08 | 1 |
| **C11-C22 Aromatics (Adjusted)** | **110** | | 100 | 100 | ug/L | | 11/07/23 09:35 | 11/08/23 13:08 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *62* | | *40 - 140* | *11/07/23 09:35* | *11/08/23 13:08* | *1* |
| *o-Terphenyl (Surr)* | *75* | | *40 - 140* | *11/07/23 09:35* | *11/08/23 13:08* | *1* |
| *2-Fluorobiphenyl (Surr)* | *99* | | *40 - 140* | *11/07/23 09:35* | *11/08/23 13:08* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 0.0060 | 0.0016 | mg/L | | 10/30/23 14:59 | 11/02/23 13:58 | 1 |
| **Arsenic** | **0.065** | | 0.0040 | 0.0014 | mg/L | | 10/30/23 14:59 | 11/02/23 13:58 | 1 |
| **Barium** | **0.050** | | 0.0050 | 0.00070 | mg/L | | 10/30/23 14:59 | 11/02/23 13:58 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 10/30/23 14:59 | 11/02/23 13:58 | 1 |
| Cadmium | ND | | 0.0025 | 0.00036 | mg/L | | 10/30/23 14:59 | 11/02/23 13:58 | 1 |
| Chromium | ND | | 0.0050 | 0.00093 | mg/L | | 10/30/23 14:59 | 11/02/23 13:58 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 10/30/23 14:59 | 11/02/23 13:58 | 1 |
| **Nickel** | **0.0026** | **J** | 0.0050 | 0.00087 | mg/L | | 10/30/23 14:59 | 11/02/23 13:58 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 10/30/23 14:59 | 11/02/23 13:58 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 11/07/23 15:24 | 11/08/23 12:58 | 1 |
| Thallium | ND | | 0.0050 | 0.0021 | mg/L | | 10/30/23 14:59 | 11/02/23 13:58 | 1 |
| Vanadium | ND | | 0.0050 | 0.0011 | mg/L | | 10/30/23 14:59 | 11/02/23 13:58 | 1 |
| **Zinc** | **0.0033** | **J** | 0.025 | 0.0016 | mg/L | | 11/07/23 15:24 | 11/08/23 12:58 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 11/09/23 08:42 | 11/09/23 14:42 | 1 |

## Client Sample ID: LM-MW108-102623

**Date Collected: 10/26/23 10:05**
**Date Received: 10/27/23 16:22**

## Lab Sample ID: 620-14942-3

**Matrix: Water**

### Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 1.0 | 0.23 | ug/L | | 11/07/23 09:35 | 11/08/23 12:14 | 1 |
| 2-Methylnaphthalene | ND | | 1.0 | 0.29 | ug/L | | 11/07/23 09:35 | 11/08/23 12:14 | 1 |
| Acenaphthylene | ND | | 1.0 | 0.39 | ug/L | | 11/07/23 09:35 | 11/08/23 12:14 | 1 |
| Acenaphthene | ND | | 1.0 | 0.19 | ug/L | | 11/07/23 09:35 | 11/08/23 12:14 | 1 |
| Fluorene | ND | | 1.0 | 0.39 | ug/L | | 11/07/23 09:35 | 11/08/23 12:14 | 1 |
| Phenanthrene | ND | | 1.0 | 0.17 | ug/L | | 11/07/23 09:35 | 11/08/23 12:14 | 1 |
| Anthracene | ND | | 1.0 | 0.15 | ug/L | | 11/07/23 09:35 | 11/08/23 12:14 | 1 |
| Fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 11/07/23 09:35 | 11/08/23 12:14 | 1 |
| Pyrene | ND | | 1.0 | 0.14 | ug/L | | 11/07/23 09:35 | 11/08/23 12:14 | 1 |
| Benzo[a]anthracene | ND | | 1.0 | 0.070 | ug/L | | 11/07/23 09:35 | 11/08/23 12:14 | 1 |
| Chrysene | ND | | 1.0 | 0.14 | ug/L | | 11/07/23 09:35 | 11/08/23 12:14 | 1 |
| Benzo[b]fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 11/07/23 09:35 | 11/08/23 12:14 | 1 |
| Benzo[k]fluoranthene | ND | | 1.0 | 0.24 | ug/L | | 11/07/23 09:35 | 11/08/23 12:14 | 1 |
| Benzo[a]pyrene | ND | | 0.20 | 0.16 | ug/L | | 11/07/23 09:35 | 11/08/23 12:14 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.50 | 0.46 | ug/L | | 11/07/23 09:35 | 11/08/23 12:14 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.50 | 0.21 | ug/L | | 11/07/23 09:35 | 11/08/23 12:14 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.0 | 0.17 | ug/L | | 11/07/23 09:35 | 11/08/23 12:14 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *55* | | *40 - 140* | *11/07/23 09:35* | *11/08/23 12:14* | *1* |
| *2-Fluorobiphenyl (Surr)* | *93* | | *40 - 140* | *11/07/23 09:35* | *11/08/23 12:14* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 11/03/23 15:22 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 11/03/23 15:22 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 11/03/23 15:22 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 11/03/23 15:22 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 11/03/23 15:22 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 11/03/23 15:22 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 11/03/23 15:22 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 11/03/23 15:22 | 1 |
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 11/03/23 15:22 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 11/03/23 15:22 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 11/03/23 15:22 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 11/03/23 15:22 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 11/03/23 15:22 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *106* | | *70 - 130* | | *11/03/23 15:22* | *1* |
| *2,5-Dibromotoluene (pid)* | *105* | | *70 - 130* | | *11/03/23 15:22* | *1* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | F1 | 100 | 100 | ug/L | | 11/07/23 09:35 | 11/08/23 13:34 | 1 |
| C19-C36 Aliphatics | ND | | 100 | 100 | ug/L | | 11/07/23 09:35 | 11/08/23 13:34 | 1 |
| C11-C22 Aromatics | ND | | 100 | 100 | ug/L | | 11/07/23 09:35 | 11/08/23 13:34 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 100 | 100 | ug/L | | 11/07/23 09:35 | 11/08/23 13:34 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *46* | | *40 - 140* | *11/07/23 09:35* | *11/08/23 13:34* | *1* |

## Client Sample ID: LM-MW108-102623

**Date Collected: 10/26/23 10:05**
**Date Received: 10/27/23 16:22**

## Lab Sample ID: 620-14942-3

**Matrix: Water**

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *75* | | *40 - 140* | *11/07/23 09:35* | *11/08/23 13:34* | *1* |
| *2-Fluorobiphenyl (Surr)* | *98* | | *40 - 140* | *11/07/23 09:35* | *11/08/23 13:34* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Antimony** | **0.0019** | **J** | 0.0060 | 0.0016 | mg/L | | 10/30/23 14:59 | 11/02/23 13:11 | 1 |
| Arsenic | ND | | 0.0040 | 0.0014 | mg/L | | 10/30/23 14:59 | 11/02/23 13:11 | 1 |
| **Barium** | **0.14** | | 0.0050 | 0.00070 | mg/L | | 10/30/23 14:59 | 11/02/23 13:11 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 10/30/23 14:59 | 11/02/23 13:11 | 1 |
| Cadmium | ND | | 0.0025 | 0.00036 | mg/L | | 10/30/23 14:59 | 11/02/23 13:11 | 1 |
| Chromium | ND | | 0.0050 | 0.00093 | mg/L | | 10/30/23 14:59 | 11/02/23 13:11 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 10/30/23 14:59 | 11/02/23 13:11 | 1 |
| **Nickel** | **0.0045** | **J** | 0.0050 | 0.00087 | mg/L | | 10/30/23 14:59 | 11/02/23 13:11 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 10/30/23 14:59 | 11/02/23 13:11 | 1 |
| **Silver** | **0.0012** | **J** | 0.0050 | 0.00062 | mg/L | | 11/07/23 15:24 | 11/08/23 12:28 | 1 |
| **Thallium** | **0.0026** | **J** | 0.0050 | 0.0021 | mg/L | | 10/30/23 14:59 | 11/02/23 13:11 | 1 |
| Vanadium | ND | | 0.0050 | 0.0011 | mg/L | | 10/30/23 14:59 | 11/02/23 13:11 | 1 |
| **Zinc** | **0.0020** | **J** | 0.025 | 0.0016 | mg/L | | 11/07/23 15:24 | 11/08/23 12:28 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 11/09/23 08:42 | 11/09/23 14:45 | 1 |

## Client Sample ID: LM-FD01-102623

**Date Collected: 10/26/23 08:00**
**Date Received: 10/27/23 16:22**

## Lab Sample ID: 620-14942-4

**Matrix: Water**

### Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Naphthalene** | **9.1** | | 1.0 | 0.23 | ug/L | | 11/07/23 09:35 | 11/08/23 13:21 | 1 |
| **2-Methylnaphthalene** | **1.4** | | 1.0 | 0.29 | ug/L | | 11/07/23 09:35 | 11/08/23 13:21 | 1 |
| Acenaphthylene | ND | | 1.0 | 0.39 | ug/L | | 11/07/23 09:35 | 11/08/23 13:21 | 1 |
| Acenaphthene | ND | | 1.0 | 0.19 | ug/L | | 11/07/23 09:35 | 11/08/23 13:21 | 1 |
| Fluorene | ND | | 1.0 | 0.39 | ug/L | | 11/07/23 09:35 | 11/08/23 13:21 | 1 |
| Phenanthrene | ND | | 1.0 | 0.17 | ug/L | | 11/07/23 09:35 | 11/08/23 13:21 | 1 |
| Anthracene | ND | | 1.0 | 0.15 | ug/L | | 11/07/23 09:35 | 11/08/23 13:21 | 1 |
| Fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 11/07/23 09:35 | 11/08/23 13:21 | 1 |
| Pyrene | ND | | 1.0 | 0.14 | ug/L | | 11/07/23 09:35 | 11/08/23 13:21 | 1 |
| Benzo[a]anthracene | ND | | 1.0 | 0.070 | ug/L | | 11/07/23 09:35 | 11/08/23 13:21 | 1 |
| Chrysene | ND | | 1.0 | 0.14 | ug/L | | 11/07/23 09:35 | 11/08/23 13:21 | 1 |
| Benzo[b]fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 11/07/23 09:35 | 11/08/23 13:21 | 1 |
| Benzo[k]fluoranthene | ND | | 1.0 | 0.24 | ug/L | | 11/07/23 09:35 | 11/08/23 13:21 | 1 |
| Benzo[a]pyrene | ND | | 0.20 | 0.16 | ug/L | | 11/07/23 09:35 | 11/08/23 13:21 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.50 | 0.46 | ug/L | | 11/07/23 09:35 | 11/08/23 13:21 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.50 | 0.21 | ug/L | | 11/07/23 09:35 | 11/08/23 13:21 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.0 | 0.17 | ug/L | | 11/07/23 09:35 | 11/08/23 13:21 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *72* | | *40 - 140* | *11/07/23 09:35* | *11/08/23 13:21* | *1* |
| *2-Fluorobiphenyl (Surr)* | *113* | | *40 - 140* | *11/07/23 09:35* | *11/08/23 13:21* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 10/31/23 19:40 | 1 |
| **C9-C10 Aromatics** | **230** | | 100 | 100 | ug/L | | | 10/31/23 19:40 | 1 |
| **C5-C8 Aliphatics (unadjusted)** | **670** | | 100 | 100 | ug/L | | | 10/31/23 19:40 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 10/31/23 19:40 | 1 |
| **Ethylbenzene** | **64** | | 5.0 | 5.0 | ug/L | | | 10/31/23 19:40 | 1 |
| **Naphthalene** | **17** | | 5.0 | 5.0 | ug/L | | | 10/31/23 19:40 | 1 |
| **Toluene** | **67** | | 5.0 | 5.0 | ug/L | | | 10/31/23 19:40 | 1 |
| **m,p-Xylene** | **110** | | 10 | 10 | ug/L | | | 10/31/23 19:40 | 1 |
| **o-Xylene** | **42** | | 5.0 | 5.0 | ug/L | | | 10/31/23 19:40 | 1 |
| **Xylenes, Total** | **150** | | 15 | 15 | ug/L | | | 10/31/23 19:40 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *100* | | *70 - 130* | | *10/31/23 19:40* | *1* |
| *2,5-Dibromotoluene (pid)* | *97* | | *70 - 130* | | *10/31/23 19:40* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) - DL

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C12 Aliphatics (adjusted) | ND | | 500 | 500 | ug/L | | | 11/01/23 16:01 | 5 |
| **C9-C12 Aliphatics (unadjusted)** | **670** | | 500 | 500 | ug/L | | | 11/01/23 16:01 | 5 |
| **Methyl tert-butyl ether** | **570** | | 25 | 25 | ug/L | | | 11/01/23 16:01 | 5 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *101* | | *70 - 130* | | *11/01/23 16:01* | *5* |
| *2,5-Dibromotoluene (pid)* | *99* | | *70 - 130* | | *11/01/23 16:01* | *5* |

## Client Sample ID: LM-FD01-102623

**Date Collected: 10/26/23 08:00**
**Date Received: 10/27/23 16:22**

## Lab Sample ID: 620-14942-4

**Matrix: Water**

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 100 | 100 | ug/L | | 11/07/23 09:35 | 11/08/23 15:39 | 1 |
| C19-C36 Aliphatics | ND | | 100 | 100 | ug/L | | 11/07/23 09:35 | 11/08/23 15:39 | 1 |
| **C11-C22 Aromatics** | **130** | | 100 | 100 | ug/L | | 11/07/23 09:35 | 11/08/23 15:39 | 1 |
| **C11-C22 Aromatics (Adjusted)** | **120** | | 100 | 100 | ug/L | | 11/07/23 09:35 | 11/08/23 15:39 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *52* | | *40 - 140* | *11/07/23 09:35* | *11/08/23 15:39* | *1* |
| *o-Terphenyl (Surr)* | *85* | | *40 - 140* | *11/07/23 09:35* | *11/08/23 15:39* | *1* |
| *2-Fluorobiphenyl (Surr)* | *107* | | *40 - 140* | *11/07/23 09:35* | *11/08/23 15:39* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 0.0060 | 0.0016 | mg/L | | 10/30/23 14:59 | 11/02/23 13:47 | 1 |
| **Arsenic** | **0.066** | | 0.0040 | 0.0014 | mg/L | | 10/30/23 14:59 | 11/02/23 13:47 | 1 |
| **Barium** | **0.050** | | 0.0050 | 0.00070 | mg/L | | 10/30/23 14:59 | 11/02/23 13:47 | 1 |
| **Beryllium** | **0.00039** | **J** | 0.0020 | 0.00028 | mg/L | | 10/30/23 14:59 | 11/02/23 13:47 | 1 |
| Cadmium | ND | | 0.0025 | 0.00036 | mg/L | | 10/30/23 14:59 | 11/02/23 13:47 | 1 |
| Chromium | ND | | 0.0050 | 0.00093 | mg/L | | 10/30/23 14:59 | 11/02/23 13:47 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 10/30/23 14:59 | 11/02/23 13:47 | 1 |
| **Nickel** | **0.0031** | **J** | 0.0050 | 0.00087 | mg/L | | 10/30/23 14:59 | 11/02/23 13:47 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 10/30/23 14:59 | 11/02/23 13:47 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 11/07/23 15:24 | 11/08/23 13:04 | 1 |
| Thallium | ND | | 0.0050 | 0.0021 | mg/L | | 10/30/23 14:59 | 11/02/23 13:47 | 1 |
| Vanadium | ND | | 0.0050 | 0.0011 | mg/L | | 10/30/23 14:59 | 11/02/23 13:47 | 1 |
| **Zinc** | **0.0034** | **J** | 0.025 | 0.0016 | mg/L | | 11/07/23 15:24 | 11/08/23 13:04 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 11/09/23 08:42 | 11/09/23 14:47 | 1 |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-14942-1

## Client Sample ID: Trip Blank

**Date Collected: 10/26/23 00:00**
**Date Received: 10/27/23 16:22**

## Lab Sample ID: 620-14942-5

**Matrix: Water**

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 10/31/23 15:36 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 10/31/23 15:36 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 10/31/23 15:36 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 10/31/23 15:36 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 10/31/23 15:36 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 10/31/23 15:36 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 10/31/23 15:36 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 10/31/23 15:36 | 1 |
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 10/31/23 15:36 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 10/31/23 15:36 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 10/31/23 15:36 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 10/31/23 15:36 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 10/31/23 15:36 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *95* | | *70 - 130* | | *10/31/23 15:36* | *1* |
| *2,5-Dibromotoluene (pid)* | *95* | | *70 - 130* | | *10/31/23 15:36* | *1* |

# Surrogate Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-14942-1

## Method: EPH - Extractable Petroleum Hydrocarbons (GC/MS)

**Matrix: Water**

**Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) | |
|---|---|---|---|
| Lab Sample ID | Client Sample ID | OTPH (40-140) | FBP (40-140) |
| 620-14942-1 | LM-MW106-102623 | 56 | 93 |
| 620-14942-1 | LM-MW106-102623 | 65 | 109 |
| 620-14942-2 | LM-MW107-102623 | 67 | 116 |
| 620-14942-3 | LM-MW108-102623 | 55 | 93 |
| 620-14942-3 MS | LM-MW108-102623 | 66 | 110 |
| 620-14942-3 MSD | LM-MW108-102623 | 64 | 113 |
| 620-14942-4 | LM-FD01-102623 | 72 | 113 |
| LCS 620-28762/4-B | Lab Control Sample | 68 | 112 |
| LCSD 620-28762/5-B | Lab Control Sample Dup | 71 | 117 |
| MB 620-28762/1-B | Method Blank | 71 | 115 |

**Surrogate Legend**

OTPH = o-Terphenyl (Surr)

FBP = 2-Fluorobiphenyl (Surr)

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

**Matrix: Water**

**Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) | |
|---|---|---|---|
| Lab Sample ID | Client Sample ID | 25DBTf1 (70-130) | 25DBTp1 (70-130) |
| 620-14942-1 | LM-MW106-102623 | 128 | 116 |
| 620-14942-1 - DL | LM-MW106-102623 | 100 | 98 |
| 620-14942-2 | LM-MW107-102623 | 95 | 94 |
| 620-14942-2 - DL | LM-MW107-102623 | 101 | 99 |
| 620-14942-3 | LM-MW108-102623 | 106 | 105 |
| 620-14942-3 MS | LM-MW108-102623 | 99 | 101 |
| 620-14942-3 MSD | LM-MW108-102623 | 102 | 103 |
| 620-14942-4 | LM-FD01-102623 | 100 | 97 |
| 620-14942-4 - DL | LM-FD01-102623 | 101 | 99 |
| 620-14942-5 | Trip Blank | 95 | 95 |
| LCS 620-28516/3 | Lab Control Sample | 100 | 100 |
| LCS 620-28559/3 | Lab Control Sample | 103 | 99 |
| LCS 620-28656/3 | Lab Control Sample | 106 | 105 |
| LCSD 620-28516/4 | Lab Control Sample Dup | 103 | 101 |
| LCSD 620-28559/4 | Lab Control Sample Dup | 108 | 107 |
| LCSD 620-28656/4 | Lab Control Sample Dup | 104 | 103 |
| MB 620-28516/5 | Method Blank | 104 | 103 |
| MB 620-28559/5 | Method Blank | 110 | 108 |
| MB 620-28656/5 | Method Blank | 103 | 103 |

**Surrogate Legend**

25DBTf = 2,5-Dibromotoluene (fid)

25DBTp = 2,5-Dibromotoluene (pid)

# Surrogate Summary

Client: Nobis Engineering, Inc.
Job ID: 620-14942-1
Project/Site: Former L&M - Lunenburg MA

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

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

| | | Percent Surrogate Recovery (Acceptance Limits) | | |
|---|---|---|---|---|
| Lab Sample ID | Client Sample ID | 1COD1 (40-140) | OTPH1 (40-140) | FBP1 (40-140) |
| 620-14942-1 | LM-MW106-102623 | 53 | 76 | 110 |
| 620-14942-2 | LM-MW107-102623 | 62 | 75 | 99 |
| 620-14942-3 | LM-MW108-102623 | 46 | 75 | 98 |
| 620-14942-3 MS | LM-MW108-102623 | 57 | 79 | 113 |
| 620-14942-3 MSD | LM-MW108-102623 | 48 | 70 | 105 |
| 620-14942-4 | LM-FD01-102623 | 52 | 85 | 107 |
| LCS 620-28762/2-B | Lab Control Sample | 49 | 80 | 112 |
| LCSD 620-28762/3-B | Lab Control Sample Dup | 67 | 88 | 112 |
| MB 620-28762/1-B | Method Blank | 44 | 65 | 93 |

**Surrogate Legend**

1COD = 1-Chlorooctadecane (Surr)
OTPH = o-Terphenyl (Surr)
FBP = 2-Fluorobiphenyl (Surr)

## Method: EPH - Extractable Petroleum Hydrocarbons (GC/MS)

**Lab Sample ID: MB 620-28762/1-B**
**Matrix: Water**
**Analysis Batch: 28788**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 28762**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 1.0 | 0.23 | ug/L | | 11/07/23 09:35 | 11/08/23 10:22 | 1 |
| 2-Methylnaphthalene | ND | | 1.0 | 0.29 | ug/L | | 11/07/23 09:35 | 11/08/23 10:22 | 1 |
| Acenaphthylene | ND | | 1.0 | 0.39 | ug/L | | 11/07/23 09:35 | 11/08/23 10:22 | 1 |
| Acenaphthene | ND | | 1.0 | 0.19 | ug/L | | 11/07/23 09:35 | 11/08/23 10:22 | 1 |
| Fluorene | ND | | 1.0 | 0.39 | ug/L | | 11/07/23 09:35 | 11/08/23 10:22 | 1 |
| Phenanthrene | ND | | 1.0 | 0.17 | ug/L | | 11/07/23 09:35 | 11/08/23 10:22 | 1 |
| Anthracene | ND | | 1.0 | 0.15 | ug/L | | 11/07/23 09:35 | 11/08/23 10:22 | 1 |
| Fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 11/07/23 09:35 | 11/08/23 10:22 | 1 |
| Pyrene | ND | | 1.0 | 0.14 | ug/L | | 11/07/23 09:35 | 11/08/23 10:22 | 1 |
| Benzo[a]anthracene | ND | | 1.0 | 0.070 | ug/L | | 11/07/23 09:35 | 11/08/23 10:22 | 1 |
| Chrysene | ND | | 1.0 | 0.14 | ug/L | | 11/07/23 09:35 | 11/08/23 10:22 | 1 |
| Benzo[b]fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 11/07/23 09:35 | 11/08/23 10:22 | 1 |
| Benzo[k]fluoranthene | ND | | 1.0 | 0.24 | ug/L | | 11/07/23 09:35 | 11/08/23 10:22 | 1 |
| Benzo[a]pyrene | ND | | 0.20 | 0.16 | ug/L | | 11/07/23 09:35 | 11/08/23 10:22 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.50 | 0.46 | ug/L | | 11/07/23 09:35 | 11/08/23 10:22 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.50 | 0.21 | ug/L | | 11/07/23 09:35 | 11/08/23 10:22 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.0 | 0.17 | ug/L | | 11/07/23 09:35 | 11/08/23 10:22 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *71* | | *40 - 140* | *11/07/23 09:35* | *11/08/23 10:22* | *1* |
| *2-Fluorobiphenyl (Surr)* | *115* | | *40 - 140* | *11/07/23 09:35* | *11/08/23 10:22* | *1* |

**Lab Sample ID: LCS 620-28762/4-B**
**Matrix: Water**
**Analysis Batch: 28788**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 28762**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Naphthalene | 5.00 | 3.10 | | ug/L | | 62 | 40 - 140 |
| 2-Methylnaphthalene | 5.00 | 3.04 | | ug/L | | 61 | 40 - 140 |
| Acenaphthylene | 5.00 | 3.18 | | ug/L | | 64 | 40 - 140 |
| Acenaphthene | 5.00 | 3.16 | | ug/L | | 63 | 40 - 140 |
| Fluorene | 5.00 | 3.06 | | ug/L | | 61 | 40 - 140 |
| Phenanthrene | 5.00 | 3.16 | | ug/L | | 63 | 40 - 140 |
| Anthracene | 5.00 | 2.95 | | ug/L | | 59 | 40 - 140 |
| Fluoranthene | 5.00 | 3.64 | | ug/L | | 73 | 40 - 140 |
| Pyrene | 5.00 | 3.55 | | ug/L | | 71 | 40 - 140 |
| Benzo[a]anthracene | 5.00 | 3.39 | | ug/L | | 68 | 40 - 140 |
| Chrysene | 5.00 | 3.25 | | ug/L | | 65 | 40 - 140 |
| Benzo[b]fluoranthene | 5.00 | 3.13 | | ug/L | | 63 | 40 - 140 |
| Benzo[k]fluoranthene | 5.00 | 3.50 | | ug/L | | 70 | 40 - 140 |
| Benzo[a]pyrene | 5.00 | 2.79 | | ug/L | | 56 | 40 - 140 |
| Indeno[1,2,3-cd]pyrene | 5.00 | 2.94 | | ug/L | | 59 | 40 - 140 |
| Dibenz(a,h)anthracene | 5.00 | 2.85 | | ug/L | | 57 | 40 - 140 |
| Benzo[g,h,i]perylene | 5.00 | 3.18 | | ug/L | | 64 | 40 - 140 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl (Surr)* | *68* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *112* | | *40 - 140* |

## Method: EPH - Extractable Petroleum Hydrocarbons (GC/MS)

**Lab Sample ID: LCSD 620-28762/5-B**
**Matrix: Water**
**Analysis Batch: 28788**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 28762**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | | | 5.00 | 2.96 | | ug/L | | 59 | 40 - 140 | 5 | 25 |
| 2-Methylnaphthalene | | | 5.00 | 2.91 | | ug/L | | 58 | 40 - 140 | 4 | 25 |
| Acenaphthylene | | | 5.00 | 3.15 | | ug/L | | 63 | 40 - 140 | 1 | 25 |
| Acenaphthene | | | 5.00 | 3.08 | | ug/L | | 62 | 40 - 140 | 3 | 25 |
| Fluorene | | | 5.00 | 3.14 | | ug/L | | 63 | 40 - 140 | 2 | 25 |
| Phenanthrene | | | 5.00 | 3.27 | | ug/L | | 65 | 40 - 140 | 4 | 25 |
| Anthracene | | | 5.00 | 3.05 | | ug/L | | 61 | 40 - 140 | 3 | 25 |
| Fluoranthene | | | 5.00 | 3.80 | | ug/L | | 76 | 40 - 140 | 5 | 25 |
| Pyrene | | | 5.00 | 3.76 | | ug/L | | 75 | 40 - 140 | 6 | 25 |
| Benzo[a]anthracene | | | 5.00 | 3.80 | | ug/L | | 76 | 40 - 140 | 11 | 25 |
| Chrysene | | | 5.00 | 3.88 | | ug/L | | 78 | 40 - 140 | 18 | 25 |
| Benzo[b]fluoranthene | | | 5.00 | 3.91 | | ug/L | | 78 | 40 - 140 | 22 | 25 |
| Benzo[k]fluoranthene | | | 5.00 | 4.38 | | ug/L | | 88 | 40 - 140 | 22 | 25 |
| Benzo[a]pyrene | | | 5.00 | 3.25 | | ug/L | | 65 | 40 - 140 | 15 | 25 |
| Indeno[1,2,3-cd]pyrene | | | 5.00 | 3.62 | | ug/L | | 72 | 40 - 140 | 21 | 25 |
| Dibenz(a,h)anthracene | | | 5.00 | 3.60 | | ug/L | | 72 | 40 - 140 | 23 | 25 |
| Benzo[g,h,i]perylene | | | 5.00 | 4.01 | | ug/L | | 80 | 40 - 140 | 23 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl (Surr)* | *71* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *117* | | *40 - 140* |

**Lab Sample ID: 620-14942-3 MS**
**Matrix: Water**
**Analysis Batch: 28788**

**Client Sample ID: LM-MW108-102623**
**Prep Type: Total/NA**
**Prep Batch: 28762**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 5.00 | 2.27 | | ug/L | | 45 | 40 - 140 |
| 2-Methylnaphthalene | ND | | 5.00 | 2.30 | | ug/L | | 46 | 40 - 140 |
| Acenaphthylene | ND | | 5.00 | 2.48 | | ug/L | | 50 | 40 - 140 |
| Acenaphthene | ND | | 5.00 | 2.47 | | ug/L | | 49 | 40 - 140 |
| Fluorene | ND | | 5.00 | 2.49 | | ug/L | | 50 | 40 - 140 |
| Phenanthrene | ND | | 5.00 | 2.96 | | ug/L | | 59 | 40 - 140 |
| Anthracene | ND | | 5.00 | 2.80 | | ug/L | | 56 | 40 - 140 |
| Fluoranthene | ND | | 5.00 | 3.63 | | ug/L | | 73 | 40 - 140 |
| Pyrene | ND | | 5.00 | 3.61 | | ug/L | | 72 | 40 - 140 |
| Benzo[a]anthracene | ND | | 5.00 | 3.42 | | ug/L | | 68 | 40 - 140 |
| Chrysene | ND | | 5.00 | 3.48 | | ug/L | | 70 | 40 - 140 |
| Benzo[b]fluoranthene | ND | | 5.00 | 3.20 | | ug/L | | 64 | 40 - 140 |
| Benzo[k]fluoranthene | ND | | 5.00 | 3.73 | | ug/L | | 75 | 40 - 140 |
| Benzo[a]pyrene | ND | | 5.00 | 2.68 | | ug/L | | 54 | 40 - 140 |
| Indeno[1,2,3-cd]pyrene | ND | | 5.00 | 2.90 | | ug/L | | 58 | 40 - 140 |
| Dibenz(a,h)anthracene | ND | | 5.00 | 2.88 | | ug/L | | 58 | 40 - 140 |
| Benzo[g,h,i]perylene | ND | | 5.00 | 3.16 | | ug/L | | 63 | 40 - 140 |

| *Surrogate* | *MS %Recovery* | *MS Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl (Surr)* | *66* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *110* | | *40 - 140* |

## Method: EPH - Extractable Petroleum Hydrocarbons (GC/MS)

**Lab Sample ID: 620-14942-3 MSD**
**Matrix: Water**
**Analysis Batch: 28788**

**Client Sample ID: LM-MW108-102623**
**Prep Type: Total/NA**
**Prep Batch: 28762**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 5.00 | 2.16 | | ug/L | | 43 | 40 - 140 | 5 | 50 |
| 2-Methylnaphthalene | ND | | 5.00 | 2.21 | | ug/L | | 44 | 40 - 140 | 4 | 50 |
| Acenaphthylene | ND | | 5.00 | 2.45 | | ug/L | | 49 | 40 - 140 | 1 | 50 |
| Acenaphthene | ND | | 5.00 | 2.39 | | ug/L | | 48 | 40 - 140 | 3 | 50 |
| Fluorene | ND | | 5.00 | 2.49 | | ug/L | | 50 | 40 - 140 | 0 | 50 |
| Phenanthrene | ND | | 5.00 | 2.95 | | ug/L | | 59 | 40 - 140 | 0 | 50 |
| Anthracene | ND | | 5.00 | 2.73 | | ug/L | | 55 | 40 - 140 | 3 | 50 |
| Fluoranthene | ND | | 5.00 | 3.49 | | ug/L | | 70 | 40 - 140 | 4 | 50 |
| Pyrene | ND | | 5.00 | 3.41 | | ug/L | | 68 | 40 - 140 | 6 | 50 |
| Benzo[a]anthracene | ND | | 5.00 | 3.13 | | ug/L | | 63 | 40 - 140 | 9 | 50 |
| Chrysene | ND | | 5.00 | 3.20 | | ug/L | | 64 | 40 - 140 | 8 | 50 |
| Benzo[b]fluoranthene | ND | | 5.00 | 2.86 | | ug/L | | 57 | 40 - 140 | 11 | 50 |
| Benzo[k]fluoranthene | ND | | 5.00 | 3.28 | | ug/L | | 66 | 40 - 140 | 13 | 50 |
| Benzo[a]pyrene | ND | | 5.00 | 2.39 | | ug/L | | 48 | 40 - 140 | 12 | 50 |
| Indeno[1,2,3-cd]pyrene | ND | | 5.00 | 2.51 | | ug/L | | 50 | 40 - 140 | 14 | 50 |
| Dibenz(a,h)anthracene | ND | | 5.00 | 2.52 | | ug/L | | 50 | 40 - 140 | 13 | 50 |
| Benzo[g,h,i]perylene | ND | | 5.00 | 2.77 | | ug/L | | 55 | 40 - 140 | 13 | 50 |

| *Surrogate* | *MSD %Recovery* | *MSD Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl (Surr)* | *64* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *113* | | *40 - 140* |

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

**Lab Sample ID: MB 620-28516/5**
**Matrix: Water**
**Analysis Batch: 28516**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 10/31/23 13:17 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 10/31/23 13:17 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 10/31/23 13:17 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 10/31/23 13:17 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 10/31/23 13:17 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 10/31/23 13:17 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 10/31/23 13:17 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 10/31/23 13:17 | 1 |
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 10/31/23 13:17 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 10/31/23 13:17 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 10/31/23 13:17 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 10/31/23 13:17 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 10/31/23 13:17 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *104* | | *70 - 130* | | *10/31/23 13:17* | *1* |
| *2,5-Dibromotoluene (pid)* | *103* | | *70 - 130* | | *10/31/23 13:17* | *1* |

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: LCS 620-28516/3**
**Matrix: Water**
**Analysis Batch: 28516**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | | | 20.0 | ND | | ug/L | | 92 | 70 - 130 | | |
| C5-C8 Aliphatics (unadjusted) | | | 60.0 | ND | | ug/L | | 86 | 70 - 130 | | |
| C9-C12 Aliphatics (unadjusted) | | | 60.0 | ND | | ug/L | | 86 | 70 - 130 | | |
| Benzene | | | 20.0 | 17.4 | | ug/L | | 87 | 70 - 130 | | |
| Ethylbenzene | | | 20.0 | 18.0 | | ug/L | | 90 | 70 - 130 | | |
| Methyl tert-butyl ether | | | 20.0 | 17.9 | | ug/L | | 90 | 70 - 130 | | |
| Naphthalene | | | 20.0 | 19.4 | | ug/L | | 97 | 70 - 130 | | |
| Toluene | | | 20.0 | 17.8 | | ug/L | | 89 | 70 - 130 | | |
| m,p-Xylene | | | 40.0 | 37.2 | | ug/L | | 93 | 70 - 130 | | |
| o-Xylene | | | 20.0 | 18.6 | | ug/L | | 93 | 70 - 130 | | |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *100* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *100* | | *70 - 130* |

**Lab Sample ID: LCSD 620-28516/4**
**Matrix: Water**
**Analysis Batch: 28516**

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

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | | | 20.0 | ND | | ug/L | | 117 | 70 - 130 | 24 | 25 |
| C5-C8 Aliphatics (unadjusted) | | | 60.0 | ND | | ug/L | | 107 | 70 - 130 | 22 | 25 |
| C9-C12 Aliphatics (unadjusted) | | | 60.0 | ND | | ug/L | | 107 | 70 - 130 | 22 | 25 |
| Benzene | | | 20.0 | 21.6 | | ug/L | | 108 | 70 - 130 | 22 | 25 |
| Ethylbenzene | | | 20.0 | 22.7 | | ug/L | | 114 | 70 - 130 | 23 | 25 |
| Methyl tert-butyl ether | | | 20.0 | 22.8 | | ug/L | | 114 | 70 - 130 | 24 | 25 |
| Naphthalene | | | 20.0 | 24.1 | | ug/L | | 121 | 70 - 130 | 22 | 25 |
| Toluene | | | 20.0 | 22.2 | | ug/L | | 111 | 70 - 130 | 22 | 25 |
| m,p-Xylene | | | 40.0 | 47.2 | | ug/L | | 118 | 70 - 130 | 24 | 25 |
| o-Xylene | | | 20.0 | 23.6 | | ug/L | | 118 | 70 - 130 | 24 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *103* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *101* | | *70 - 130* |

**Lab Sample ID: MB 620-28559/5**
**Matrix: Water**
**Analysis Batch: 28559**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 11/01/23 13:27 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 11/01/23 13:27 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 11/01/23 13:27 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 11/01/23 13:27 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 11/01/23 13:27 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 11/01/23 13:27 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 11/01/23 13:27 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 11/01/23 13:27 | 1 |

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: MB 620-28559/5**
**Matrix: Water**
**Analysis Batch: 28559**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 11/01/23 13:27 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 11/01/23 13:27 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 11/01/23 13:27 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 11/01/23 13:27 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 11/01/23 13:27 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *110* | | *70 - 130* | | *11/01/23 13:27* | *1* |
| *2,5-Dibromotoluene (pid)* | *108* | | *70 - 130* | | *11/01/23 13:27* | *1* |

**Lab Sample ID: LCS 620-28559/3**
**Matrix: Water**
**Analysis Batch: 28559**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | | | 20.0 | ND | | ug/L | | 109 | 70 - 130 | | |
| C5-C8 Aliphatics (unadjusted) | | | 60.0 | ND | | ug/L | | 97 | 70 - 130 | | |
| C9-C12 Aliphatics (unadjusted) | | | 60.0 | ND | | ug/L | | 98 | 70 - 130 | | |
| Benzene | | | 20.0 | 19.8 | | ug/L | | 99 | 70 - 130 | | |
| Ethylbenzene | | | 20.0 | 21.1 | | ug/L | | 105 | 70 - 130 | | |
| Methyl tert-butyl ether | | | 20.0 | 20.8 | | ug/L | | 104 | 70 - 130 | | |
| Naphthalene | | | 20.0 | 23.1 | | ug/L | | 116 | 70 - 130 | | |
| Toluene | | | 20.0 | 20.6 | | ug/L | | 103 | 70 - 130 | | |
| m,p-Xylene | | | 40.0 | 43.5 | | ug/L | | 109 | 70 - 130 | | |
| o-Xylene | | | 20.0 | 21.7 | | ug/L | | 109 | 70 - 130 | | |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *103* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *99* | | *70 - 130* |

**Lab Sample ID: LCSD 620-28559/4**
**Matrix: Water**
**Analysis Batch: 28559**

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

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | | | 20.0 | ND | | ug/L | | 112 | 70 - 130 | 2 | 25 |
| C5-C8 Aliphatics (unadjusted) | | | 60.0 | ND | | ug/L | | 98 | 70 - 130 | 1 | 25 |
| C9-C12 Aliphatics (unadjusted) | | | 60.0 | ND | | ug/L | | 98 | 70 - 130 | 0 | 25 |
| Benzene | | | 20.0 | 20.2 | | ug/L | | 101 | 70 - 130 | 2 | 25 |
| Ethylbenzene | | | 20.0 | 21.6 | | ug/L | | 108 | 70 - 130 | 3 | 25 |
| Methyl tert-butyl ether | | | 20.0 | 21.0 | | ug/L | | 105 | 70 - 130 | 1 | 25 |
| Naphthalene | | | 20.0 | 23.8 | | ug/L | | 119 | 70 - 130 | 3 | 25 |
| Toluene | | | 20.0 | 21.0 | | ug/L | | 105 | 70 - 130 | 2 | 25 |
| m,p-Xylene | | | 40.0 | 44.3 | | ug/L | | 111 | 70 - 130 | 2 | 25 |
| o-Xylene | | | 20.0 | 22.2 | | ug/L | | 111 | 70 - 130 | 2 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *108* | | *70 - 130* |

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: LCSD 620-28559/4**
**Matrix: Water**
**Analysis Batch: 28559**

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

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (pid)* | *107* | | *70 - 130* |

**Lab Sample ID: MB 620-28656/5**
**Matrix: Water**
**Analysis Batch: 28656**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 11/03/23 12:49 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 11/03/23 12:49 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 11/03/23 12:49 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 11/03/23 12:49 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 11/03/23 12:49 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 11/03/23 12:49 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 11/03/23 12:49 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 11/03/23 12:49 | 1 |
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 11/03/23 12:49 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 11/03/23 12:49 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 11/03/23 12:49 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 11/03/23 12:49 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 11/03/23 12:49 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *103* | | *70 - 130* | | *11/03/23 12:49* | *1* |
| *2,5-Dibromotoluene (pid)* | *103* | | *70 - 130* | | *11/03/23 12:49* | *1* |

**Lab Sample ID: LCS 620-28656/3**
**Matrix: Water**
**Analysis Batch: 28656**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | 20.0 | ND | | ug/L | | 109 | 70 - 130 |
| C5-C8 Aliphatics (unadjusted) | 60.0 | ND | | ug/L | | 99 | 70 - 130 |
| C9-C12 Aliphatics (unadjusted) | 60.0 | ND | | ug/L | | 100 | 70 - 130 |
| Benzene | 20.0 | 20.0 | | ug/L | | 100 | 70 - 130 |
| Ethylbenzene | 20.0 | 21.2 | | ug/L | | 106 | 70 - 130 |
| Methyl tert-butyl ether | 20.0 | 20.2 | | ug/L | | 101 | 70 - 130 |
| Naphthalene | 20.0 | 23.1 | | ug/L | | 116 | 70 - 130 |
| Toluene | 20.0 | 20.9 | | ug/L | | 104 | 70 - 130 |
| m,p-Xylene | 40.0 | 43.7 | | ug/L | | 109 | 70 - 130 |
| o-Xylene | 20.0 | 21.9 | | ug/L | | 109 | 70 - 130 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *106* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *105* | | *70 - 130* |

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: LCSD 620-28656/4**
**Matrix: Water**
**Analysis Batch: 28656**

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

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | | | 20.0 | ND | | ug/L | | 111 | 70 - 130 | 1 | 25 |
| C5-C8 Aliphatics (unadjusted) | | | 60.0 | ND | | ug/L | | 99 | 70 - 130 | 0 | 25 |
| C9-C12 Aliphatics (unadjusted) | | | 60.0 | ND | | ug/L | | 100 | 70 - 130 | 0 | 25 |
| Benzene | | | 20.0 | 20.1 | | ug/L | | 101 | 70 - 130 | 1 | 25 |
| Ethylbenzene | | | 20.0 | 21.4 | | ug/L | | 107 | 70 - 130 | 1 | 25 |
| Methyl tert-butyl ether | | | 20.0 | 21.0 | | ug/L | | 105 | 70 - 130 | 4 | 25 |
| Naphthalene | | | 20.0 | 23.4 | | ug/L | | 117 | 70 - 130 | 1 | 25 |
| Toluene | | | 20.0 | 20.9 | | ug/L | | 104 | 70 - 130 | 0 | 25 |
| m,p-Xylene | | | 40.0 | 44.2 | | ug/L | | 111 | 70 - 130 | 1 | 25 |
| o-Xylene | | | 20.0 | 22.1 | | ug/L | | 110 | 70 - 130 | 1 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *104* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *103* | | *70 - 130* |

**Lab Sample ID: 620-14942-3 MS**
**Matrix: Water**
**Analysis Batch: 28656**

**Client Sample ID: LM-MW108-102623**
**Prep Type: Total/NA**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | ND | | 20.3 | ND | | ug/L | | NC | 70 - 130 |
| C5-C8 Aliphatics (unadjusted) | ND | | 61.0 | 140 | | ug/L | | NC | 70 - 130 |
| C9-C12 Aliphatics (unadjusted) | ND | | 61.0 | 328 | | ug/L | | NC | 70 - 130 |
| Benzene | ND | | 20.3 | 20.9 | | ug/L | | 103 | 70 - 130 |
| Ethylbenzene | ND | | 20.3 | 22.2 | | ug/L | | 109 | 70 - 130 |
| Methyl tert-butyl ether | ND | | 20.3 | 20.2 | | ug/L | | 99 | 70 - 130 |
| Naphthalene | ND | | 20.3 | 20.5 | | ug/L | | 101 | 70 - 130 |
| Toluene | ND | | 20.3 | 21.7 | | ug/L | | 107 | 70 - 130 |
| m,p-Xylene | ND | | 40.7 | 45.4 | | ug/L | | 112 | 70 - 130 |
| o-Xylene | ND | | 20.3 | 22.4 | | ug/L | | 110 | 70 - 130 |

| *Surrogate* | *MS %Recovery* | *MS Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *99* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *101* | | *70 - 130* |

**Lab Sample ID: 620-14942-3 MSD**
**Matrix: Water**
**Analysis Batch: 28656**

**Client Sample ID: LM-MW108-102623**
**Prep Type: Total/NA**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | ND | | 20.3 | ND | | ug/L | | NC | 70 - 130 | NC | 30 |
| C5-C8 Aliphatics (unadjusted) | ND | | 61.0 | 143 | | ug/L | | NC | 70 - 130 | 3 | 30 |
| C9-C12 Aliphatics (unadjusted) | ND | | 61.0 | 339 | | ug/L | | NC | 70 - 130 | 3 | 30 |
| Benzene | ND | | 20.3 | 21.5 | | ug/L | | 106 | 70 - 130 | 3 | 30 |
| Ethylbenzene | ND | | 20.3 | 23.0 | | ug/L | | 113 | 70 - 130 | 4 | 30 |
| Methyl tert-butyl ether | ND | | 20.3 | 20.3 | | ug/L | | 100 | 70 - 130 | 1 | 30 |
| Naphthalene | ND | | 20.3 | 22.3 | | ug/L | | 110 | 70 - 130 | 8 | 30 |
| Toluene | ND | | 20.3 | 22.3 | | ug/L | | 110 | 70 - 130 | 3 | 30 |

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: 620-14942-3 MSD**
**Matrix: Water**
**Analysis Batch: 28656**

**Client Sample ID: LM-MW108-102623**
**Prep Type: Total/NA**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| m,p-Xylene | ND | | 40.7 | 47.1 | | ug/L | | 116 | 70 - 130 | 4 | 30 |
| o-Xylene | ND | | 20.3 | 23.1 | | ug/L | | 114 | 70 - 130 | 3 | 30 |

| *Surrogate* | *MSD %Recovery* | *MSD Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *102* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *103* | | *70 - 130* |

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

**Lab Sample ID: MB 620-28762/1-B**
**Matrix: Water**
**Analysis Batch: 28787**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 28762**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 100 | 100 | ug/L | | 11/07/23 09:35 | 11/08/23 14:23 | 1 |
| C19-C36 Aliphatics | ND | | 100 | 100 | ug/L | | 11/07/23 09:35 | 11/08/23 14:23 | 1 |
| C11-C22 Aromatics | ND | | 100 | 100 | ug/L | | 11/07/23 09:35 | 11/08/23 14:23 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 100 | 100 | ug/L | | 11/07/23 09:35 | 11/08/23 14:23 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *44* | | *40 - 140* | *11/07/23 09:35* | *11/08/23 14:23* | *1* |
| *o-Terphenyl (Surr)* | *65* | | *40 - 140* | *11/07/23 09:35* | *11/08/23 14:23* | *1* |
| *2-Fluorobiphenyl (Surr)* | *93* | | *40 - 140* | *11/07/23 09:35* | *11/08/23 14:23* | *1* |

**Lab Sample ID: LCS 620-28762/2-B**
**Matrix: Water**
**Analysis Batch: 28787**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 28762**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | 120 | ND | | ug/L | | 50 | 40 - 140 |
| C19-C36 Aliphatics | 160 | 143 | | ug/L | | 90 | 40 - 140 |
| C11-C22 Aromatics | 340 | 330 | | ug/L | | 97 | 40 - 140 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *49* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *80* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *112* | | *40 - 140* |

**Lab Sample ID: LCSD 620-28762/3-B**
**Matrix: Water**
**Analysis Batch: 28787**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 28762**

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | 120 | ND | | ug/L | | 59 | 40 - 140 | 16 | 25 |
| C19-C36 Aliphatics | 160 | 171 | | ug/L | | 107 | 40 - 140 | 18 | 25 |
| C11-C22 Aromatics | 340 | 358 | | ug/L | | 105 | 40 - 140 | 8 | 25 |

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: LCSD 620-28762/3-B**
**Matrix: Water**
**Analysis Batch: 28787**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 28762**

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *67* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *88* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *112* | | *40 - 140* |

**Lab Sample ID: 620-14942-3 MS**
**Matrix: Water**
**Analysis Batch: 28787**

**Client Sample ID: LM-MW108-102623**
**Prep Type: Total/NA**
**Prep Batch: 28762**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | F1 | 114 | 55.3 | | ug/L | | 48 | 40 - 140 |
| C19-C36 Aliphatics | ND | | 152 | 135 | | ug/L | | 88 | 40 - 140 |
| C11-C22 Aromatics | ND | | 324 | 300 | | ug/L | | 93 | 40 - 140 |

| *Surrogate* | *MS %Recovery* | *MS Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *57* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *79* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *113* | | *40 - 140* |

**Lab Sample ID: 620-14942-3 MSD**
**Matrix: Water**
**Analysis Batch: 28787**

**Client Sample ID: LM-MW108-102623**
**Prep Type: Total/NA**
**Prep Batch: 28762**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | F1 | 126 | 61.0 | | ug/L | | 48 | 40 - 140 | 10 | 50 |
| C19-C36 Aliphatics | ND | | 168 | 156 | | ug/L | | 93 | 40 - 140 | 15 | 50 |
| C11-C22 Aromatics | ND | | 358 | 299 | | ug/L | | 84 | 40 - 140 | 0 | 50 |

| *Surrogate* | *MSD %Recovery* | *MSD Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *48* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *70* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *105* | | *40 - 140* |

## Method: 6010D - Metals (ICP)

**Lab Sample ID: MB 620-28470/1-A**
**Matrix: Water**
**Analysis Batch: 28620**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 28470**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 0.0060 | 0.0016 | mg/L | | 10/30/23 14:59 | 11/02/23 12:59 | 1 |
| Arsenic | ND | | 0.0040 | 0.0014 | mg/L | | 10/30/23 14:59 | 11/02/23 12:59 | 1 |
| Barium | ND | | 0.0050 | 0.00070 | mg/L | | 10/30/23 14:59 | 11/02/23 12:59 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 10/30/23 14:59 | 11/02/23 12:59 | 1 |
| Cadmium | ND | | 0.0025 | 0.00036 | mg/L | | 10/30/23 14:59 | 11/02/23 12:59 | 1 |
| Chromium | ND | | 0.0050 | 0.00093 | mg/L | | 10/30/23 14:59 | 11/02/23 12:59 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 10/30/23 14:59 | 11/02/23 12:59 | 1 |
| Nickel | ND | | 0.0050 | 0.00087 | mg/L | | 10/30/23 14:59 | 11/02/23 12:59 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 10/30/23 14:59 | 11/02/23 12:59 | 1 |

## Method: 6010D - Metals (ICP) (Continued)

**Lab Sample ID: MB 620-28470/1-A**
**Matrix: Water**
**Analysis Batch: 28620**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 28470**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Thallium | ND | | 0.0050 | 0.0021 | mg/L | | 10/30/23 14:59 | 11/02/23 12:59 | 1 |
| Vanadium | ND | | 0.0050 | 0.0011 | mg/L | | 10/30/23 14:59 | 11/02/23 12:59 | 1 |
| Zinc | 0.00170 | J ^3+ | 0.025 | 0.0016 | mg/L | | 10/30/23 14:59 | 11/02/23 12:59 | 1 |

**Lab Sample ID: LCS 620-28470/2-A**
**Matrix: Water**
**Analysis Batch: 28620**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 28470**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Antimony | 1.25 | 1.31 | | mg/L | | 104 | 80 - 120 |
| Arsenic | 1.25 | 1.37 | | mg/L | | 110 | 80 - 120 |
| Barium | 1.25 | 1.26 | | mg/L | | 101 | 80 - 120 |
| Beryllium | 1.25 | 1.33 | | mg/L | | 107 | 80 - 120 |
| Cadmium | 1.25 | 1.32 | | mg/L | | 106 | 80 - 120 |
| Chromium | 1.25 | 1.31 | | mg/L | | 104 | 80 - 120 |
| Lead | 1.25 | 1.32 | | mg/L | | 105 | 80 - 120 |
| Nickel | 1.25 | 1.28 | | mg/L | | 102 | 80 - 120 |
| Selenium | 1.25 | 1.42 | | mg/L | | 114 | 80 - 120 |
| Thallium | 1.25 | 1.28 | | mg/L | | 102 | 80 - 120 |
| Vanadium | 1.25 | 1.26 | | mg/L | | 101 | 80 - 120 |
| Zinc | 1.25 | 1.33 | ^3+ | mg/L | | 107 | 80 - 120 |

**Lab Sample ID: MB 620-28780/1-A**
**Matrix: Water**
**Analysis Batch: 28840**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 28780**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 0.012 | 0.0032 | mg/L | | 11/07/23 15:24 | 11/08/23 12:16 | 1 |
| Arsenic | ND | | 0.0080 | 0.0028 | mg/L | | 11/07/23 15:24 | 11/08/23 12:16 | 1 |
| Barium | ND | | 0.010 | 0.0014 | mg/L | | 11/07/23 15:24 | 11/08/23 12:16 | 1 |
| Cadmium | ND | | 0.0050 | 0.00071 | mg/L | | 11/07/23 15:24 | 11/08/23 12:16 | 1 |
| Chromium | ND | | 0.010 | 0.0019 | mg/L | | 11/07/23 15:24 | 11/08/23 12:16 | 1 |
| Lead | ND | | 0.015 | 0.012 | mg/L | | 11/07/23 15:24 | 11/08/23 12:16 | 1 |
| Nickel | ND | | 0.010 | 0.0017 | mg/L | | 11/07/23 15:24 | 11/08/23 12:16 | 1 |
| Selenium | ND | | 0.030 | 0.0083 | mg/L | | 11/07/23 15:24 | 11/08/23 12:16 | 1 |
| Silver | ND | | 0.010 | 0.0012 | mg/L | | 11/07/23 15:24 | 11/08/23 12:16 | 1 |
| Thallium | ND | | 0.010 | 0.0042 | mg/L | | 11/07/23 15:24 | 11/08/23 12:16 | 1 |
| Vanadium | ND | | 0.010 | 0.0022 | mg/L | | 11/07/23 15:24 | 11/08/23 12:16 | 1 |
| Zinc | ND | | 0.050 | 0.0032 | mg/L | | 11/07/23 15:24 | 11/08/23 12:16 | 1 |

**Lab Sample ID: LCS 620-28780/2-A**
**Matrix: Water**
**Analysis Batch: 28840**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 28780**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Antimony | 1.25 | 1.13 | | mg/L | | 91 | 80 - 120 |
| Arsenic | 1.25 | 1.17 | | mg/L | | 93 | 80 - 120 |
| Barium | 1.25 | 1.15 | | mg/L | | 92 | 80 - 120 |
| Cadmium | 1.25 | 1.16 | | mg/L | | 93 | 80 - 120 |

## Method: 6010D - Metals (ICP) (Continued)

**Lab Sample ID: LCS 620-28780/2-A**
**Matrix: Water**
**Analysis Batch: 28840**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 28780**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Chromium | 1.25 | 1.11 | | mg/L | | 89 | 80 - 120 |
| Lead | 1.25 | 1.15 | | mg/L | | 92 | 80 - 120 |
| Nickel | 1.25 | 1.14 | | mg/L | | 92 | 80 - 120 |
| Selenium | 1.25 | 1.18 | | mg/L | | 95 | 80 - 120 |
| Silver | 1.25 | 1.15 | | mg/L | | 92 | 80 - 120 |
| Thallium | 1.25 | 1.16 | | mg/L | | 93 | 80 - 120 |
| Vanadium | 1.25 | 1.14 | | mg/L | | 91 | 80 - 120 |
| Zinc | 1.25 | 1.16 | | mg/L | | 93 | 80 - 120 |

**Lab Sample ID: 620-14942-3 MS**
**Matrix: Water**
**Analysis Batch: 28620**

**Client Sample ID: LM-MW108-102623**
**Prep Type: Dissolved**
**Prep Batch: 28470**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.0019 | J | 1.25 | 1.27 | | mg/L | | 102 | 75 - 125 |
| Arsenic | ND | | 1.25 | 1.38 | | mg/L | | 110 | 75 - 125 |
| Barium | 0.14 | | 1.25 | 1.35 | | mg/L | | 97 | 75 - 125 |
| Beryllium | ND | | 1.25 | 1.32 | | mg/L | | 106 | 75 - 125 |
| Cadmium | ND | | 1.25 | 1.25 | | mg/L | | 100 | 75 - 125 |
| Chromium | ND | | 1.25 | 1.24 | | mg/L | | 99 | 75 - 125 |
| Lead | ND | | 1.25 | 1.22 | | mg/L | | 98 | 75 - 125 |
| Nickel | 0.0045 | J | 1.25 | 1.18 | | mg/L | | 94 | 75 - 125 |
| Selenium | ND | | 1.25 | 1.36 | | mg/L | | 109 | 75 - 125 |
| Thallium | 0.0026 | J | 1.25 | 1.23 | | mg/L | | 98 | 75 - 125 |
| Vanadium | ND | | 1.25 | 1.23 | | mg/L | | 99 | 75 - 125 |

**Lab Sample ID: 620-14942-3 MSD**
**Matrix: Water**
**Analysis Batch: 28620**

**Client Sample ID: LM-MW108-102623**
**Prep Type: Dissolved**
**Prep Batch: 28470**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.0019 | J | 1.25 | 1.35 | | mg/L | | 108 | 75 - 125 | 6 | 20 |
| Arsenic | ND | | 1.25 | 1.45 | | mg/L | | 116 | 75 - 125 | 5 | 20 |
| Barium | 0.14 | | 1.25 | 1.39 | | mg/L | | 100 | 75 - 125 | 3 | 20 |
| Beryllium | ND | | 1.25 | 1.35 | | mg/L | | 108 | 75 - 125 | 2 | 20 |
| Cadmium | ND | | 1.25 | 1.30 | | mg/L | | 104 | 75 - 125 | 4 | 20 |
| Chromium | ND | | 1.25 | 1.29 | | mg/L | | 103 | 75 - 125 | 4 | 20 |
| Lead | ND | | 1.25 | 1.28 | | mg/L | | 102 | 75 - 125 | 4 | 20 |
| Nickel | 0.0045 | J | 1.25 | 1.24 | | mg/L | | 99 | 75 - 125 | 5 | 20 |
| Selenium | ND | | 1.25 | 1.44 | | mg/L | | 115 | 75 - 125 | 5 | 20 |
| Thallium | 0.0026 | J | 1.25 | 1.28 | | mg/L | | 102 | 75 - 125 | 4 | 20 |
| Vanadium | ND | | 1.25 | 1.28 | | mg/L | | 103 | 75 - 125 | 4 | 20 |

**Lab Sample ID: 620-14942-3 DU**
**Matrix: Water**
**Analysis Batch: 28620**

**Client Sample ID: LM-MW108-102623**
**Prep Type: Dissolved**
**Prep Batch: 28470**

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|
| Antimony | 0.0019 | J | ND | | mg/L | | NC | 20 |

## Method: 6010D - Metals (ICP) (Continued)

**Lab Sample ID: 620-14942-3 DU**
**Matrix: Water**
**Analysis Batch: 28620**

**Client Sample ID: LM-MW108-102623**
**Prep Type: Dissolved**
**Prep Batch: 28470**

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|
| Arsenic | ND | | 0.00165 | J | mg/L | | NC | 20 |
| Barium | 0.14 | | 0.150 | | mg/L | | 5 | 20 |
| Beryllium | ND | | ND | | mg/L | | NC | 20 |
| Cadmium | ND | | ND | | mg/L | | NC | 20 |
| Chromium | ND | | ND | | mg/L | | NC | 20 |
| Lead | ND | | ND | | mg/L | | NC | 20 |
| Nickel | 0.0045 | J | 0.00440 | J | mg/L | | 1 | 20 |
| Selenium | ND | | ND | | mg/L | | NC | 20 |
| Thallium | 0.0026 | J | ND | | mg/L | | NC | 20 |
| Vanadium | ND | | ND | | mg/L | | NC | 20 |

**Lab Sample ID: 620-14942-3 MS**
**Matrix: Water**
**Analysis Batch: 28840**

**Client Sample ID: LM-MW108-102623**
**Prep Type: Dissolved**
**Prep Batch: 28780**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| Silver | 0.0012 | J | 1.25 | 1.28 | | mg/L | | 103 | 75 - 125 |
| Zinc | 0.0020 | J | 1.25 | 1.18 | | mg/L | | 94 | 75 - 125 |

**Lab Sample ID: 620-14942-3 MSD**
**Matrix: Water**
**Analysis Batch: 28840**

**Client Sample ID: LM-MW108-102623**
**Prep Type: Dissolved**
**Prep Batch: 28780**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Silver | 0.0012 | J | 1.25 | 1.32 | | mg/L | | 105 | 75 - 125 | 3 | 20 |
| Zinc | 0.0020 | J | 1.25 | 1.21 | | mg/L | | 97 | 75 - 125 | 2 | 20 |

**Lab Sample ID: 620-14942-3 DU**
**Matrix: Water**
**Analysis Batch: 28840**

**Client Sample ID: LM-MW108-102623**
**Prep Type: Dissolved**
**Prep Batch: 28780**

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|
| Silver | 0.0012 | J | ND | | mg/L | | NC | 20 |
| Zinc | 0.0020 | J | 0.00235 | J | mg/L | | 19 | 20 |

## Method: 7470A - Mercury (CVAA)

**Lab Sample ID: MB 620-28845/1-A**
**Matrix: Water**
**Analysis Batch: 28884**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 28845**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 11/09/23 08:42 | 11/09/23 14:15 | 1 |

**Lab Sample ID: LCS 620-28845/2-A**
**Matrix: Water**
**Analysis Batch: 28884**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 28845**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Mercury | 0.00500 | 0.00500 | | mg/L | | 100 | 85 - 115 |

## Method: 7470A - Mercury (CVAA) (Continued)

**Lab Sample ID: LCSD 620-28845/3-A**
**Matrix: Water**
**Analysis Batch: 28884**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 28845**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | | | 0.00500 | 0.00494 | | mg/L | | 99 | 85 - 115 | 1 | 20 |

**Lab Sample ID: MB 620-28897/1-A**
**Matrix: Water**
**Analysis Batch: 28931**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 28897**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 11/10/23 09:18 | 11/10/23 12:54 | 1 |

**Lab Sample ID: LCS 620-28897/2-A**
**Matrix: Water**
**Analysis Batch: 28931**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 28897**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | | | 0.00500 | 0.00500 | | mg/L | | 100 | 85 - 115 | | |

**Lab Sample ID: LCSD 620-28897/3-A**
**Matrix: Water**
**Analysis Batch: 28931**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 28897**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | | | 0.00500 | 0.00500 | | mg/L | | 100 | 85 - 115 | 0 | 20 |

**Lab Sample ID: 620-14942-3 MS**
**Matrix: Water**
**Analysis Batch: 28931**

**Client Sample ID: LM-MW108-102623**
**Prep Type: Dissolved**
**Prep Batch: 28897**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00500 | 0.00536 | | mg/L | | 107 | 80 - 120 | | |

**Lab Sample ID: 620-14942-3 MSD**
**Matrix: Water**
**Analysis Batch: 28931**

**Client Sample ID: LM-MW108-102623**
**Prep Type: Dissolved**
**Prep Batch: 28897**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00500 | 0.00505 | | mg/L | | 101 | 80 - 120 | 6 | 20 |

## GC/MS Semi VOA

### Prep Batch: 28762

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-14942-1 | LM-MW106-102623 | Total/NA | Water | 3510C | |
| 620-14942-2 | LM-MW107-102623 | Total/NA | Water | 3510C | |
| 620-14942-3 | LM-MW108-102623 | Total/NA | Water | 3510C | |
| 620-14942-4 | LM-FD01-102623 | Total/NA | Water | 3510C | |
| MB 620-28762/1-B | Method Blank | Total/NA | Water | 3510C | |
| LCS 620-28762/4-B | Lab Control Sample | Total/NA | Water | 3510C | |
| LCSD 620-28762/5-B | Lab Control Sample Dup | Total/NA | Water | 3510C | |
| 620-14942-3 MS | LM-MW108-102623 | Total/NA | Water | 3510C | |
| 620-14942-3 MSD | LM-MW108-102623 | Total/NA | Water | 3510C | |

### Analysis Batch: 28788

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-14942-1 | LM-MW106-102623 | Total/NA | Water | EPH | 28794 |
| 620-14942-1 | LM-MW106-102623 | Total/NA | Water | EPH | 28794 |
| 620-14942-2 | LM-MW107-102623 | Total/NA | Water | EPH | 28794 |
| 620-14942-3 | LM-MW108-102623 | Total/NA | Water | EPH | 28794 |
| 620-14942-4 | LM-FD01-102623 | Total/NA | Water | EPH | 28794 |
| MB 620-28762/1-B | Method Blank | Total/NA | Water | EPH | 28794 |
| LCS 620-28762/4-B | Lab Control Sample | Total/NA | Water | EPH | 28794 |
| LCSD 620-28762/5-B | Lab Control Sample Dup | Total/NA | Water | EPH | 28794 |
| 620-14942-3 MS | LM-MW108-102623 | Total/NA | Water | EPH | 28794 |
| 620-14942-3 MSD | LM-MW108-102623 | Total/NA | Water | EPH | 28794 |

### Fraction Batch: 28794

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-14942-1 | LM-MW106-102623 | Total/NA | Water | MA EPH Frac | 28762 |
| 620-14942-2 | LM-MW107-102623 | Total/NA | Water | MA EPH Frac | 28762 |
| 620-14942-3 | LM-MW108-102623 | Total/NA | Water | MA EPH Frac | 28762 |
| 620-14942-4 | LM-FD01-102623 | Total/NA | Water | MA EPH Frac | 28762 |
| MB 620-28762/1-B | Method Blank | Total/NA | Water | MA EPH Frac | 28762 |
| LCS 620-28762/4-B | Lab Control Sample | Total/NA | Water | MA EPH Frac | 28762 |
| LCSD 620-28762/5-B | Lab Control Sample Dup | Total/NA | Water | MA EPH Frac | 28762 |
| 620-14942-3 MS | LM-MW108-102623 | Total/NA | Water | MA EPH Frac | 28762 |
| 620-14942-3 MSD | LM-MW108-102623 | Total/NA | Water | MA EPH Frac | 28762 |

## GC VOA

### Analysis Batch: 28516

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-14942-1 | LM-MW106-102623 | Total/NA | Water | MAVPH2.1 | |
| 620-14942-2 | LM-MW107-102623 | Total/NA | Water | MAVPH2.1 | |
| 620-14942-4 | LM-FD01-102623 | Total/NA | Water | MAVPH2.1 | |
| 620-14942-5 | Trip Blank | Total/NA | Water | MAVPH2.1 | |
| MB 620-28516/5 | Method Blank | Total/NA | Water | MAVPH2.1 | |
| LCS 620-28516/3 | Lab Control Sample | Total/NA | Water | MAVPH2.1 | |
| LCSD 620-28516/4 | Lab Control Sample Dup | Total/NA | Water | MAVPH2.1 | |

### Analysis Batch: 28559

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-14942-1 - DL | LM-MW106-102623 | Total/NA | Water | MAVPH2.1 | |
| 620-14942-2 - DL | LM-MW107-102623 | Total/NA | Water | MAVPH2.1 | |

## GC VOA (Continued)

### Analysis Batch: 28559 (Continued)

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-14942-4 - DL | LM-FD01-102623 | Total/NA | Water | MAVPH2.1 | |
| MB 620-28559/5 | Method Blank | Total/NA | Water | MAVPH2.1 | |
| LCS 620-28559/3 | Lab Control Sample | Total/NA | Water | MAVPH2.1 | |
| LCSD 620-28559/4 | Lab Control Sample Dup | Total/NA | Water | MAVPH2.1 | |

### Analysis Batch: 28656

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-14942-3 | LM-MW108-102623 | Total/NA | Water | MAVPH2.1 | |
| MB 620-28656/5 | Method Blank | Total/NA | Water | MAVPH2.1 | |
| LCS 620-28656/3 | Lab Control Sample | Total/NA | Water | MAVPH2.1 | |
| LCSD 620-28656/4 | Lab Control Sample Dup | Total/NA | Water | MAVPH2.1 | |
| 620-14942-3 MS | LM-MW108-102623 | Total/NA | Water | MAVPH2.1 | |
| 620-14942-3 MSD | LM-MW108-102623 | Total/NA | Water | MAVPH2.1 | |

## GC Semi VOA

### Prep Batch: 28762

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-14942-1 | LM-MW106-102623 | Total/NA | Water | 3510C | |
| 620-14942-2 | LM-MW107-102623 | Total/NA | Water | 3510C | |
| 620-14942-3 | LM-MW108-102623 | Total/NA | Water | 3510C | |
| 620-14942-4 | LM-FD01-102623 | Total/NA | Water | 3510C | |
| MB 620-28762/1-B | Method Blank | Total/NA | Water | 3510C | |
| LCS 620-28762/2-B | Lab Control Sample | Total/NA | Water | 3510C | |
| LCSD 620-28762/3-B | Lab Control Sample Dup | Total/NA | Water | 3510C | |
| 620-14942-3 MS | LM-MW108-102623 | Total/NA | Water | 3510C | |
| 620-14942-3 MSD | LM-MW108-102623 | Total/NA | Water | 3510C | |

### Analysis Batch: 28787

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-14942-1 | LM-MW106-102623 | Total/NA | Water | MAEPH2.1 | 28794 |
| 620-14942-2 | LM-MW107-102623 | Total/NA | Water | MAEPH2.1 | 28794 |
| 620-14942-3 | LM-MW108-102623 | Total/NA | Water | MAEPH2.1 | 28794 |
| 620-14942-4 | LM-FD01-102623 | Total/NA | Water | MAEPH2.1 | 28794 |
| MB 620-28762/1-B | Method Blank | Total/NA | Water | MAEPH2.1 | 28794 |
| LCS 620-28762/2-B | Lab Control Sample | Total/NA | Water | MAEPH2.1 | 28794 |
| LCSD 620-28762/3-B | Lab Control Sample Dup | Total/NA | Water | MAEPH2.1 | 28794 |
| 620-14942-3 MS | LM-MW108-102623 | Total/NA | Water | MAEPH2.1 | 28794 |
| 620-14942-3 MSD | LM-MW108-102623 | Total/NA | Water | MAEPH2.1 | 28794 |

### Fraction Batch: 28794

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-14942-1 | LM-MW106-102623 | Total/NA | Water | MA EPH Frac | 28762 |
| 620-14942-2 | LM-MW107-102623 | Total/NA | Water | MA EPH Frac | 28762 |
| 620-14942-3 | LM-MW108-102623 | Total/NA | Water | MA EPH Frac | 28762 |
| 620-14942-4 | LM-FD01-102623 | Total/NA | Water | MA EPH Frac | 28762 |
| MB 620-28762/1-B | Method Blank | Total/NA | Water | MA EPH Frac | 28762 |
| LCS 620-28762/2-B | Lab Control Sample | Total/NA | Water | MA EPH Frac | 28762 |
| LCSD 620-28762/3-B | Lab Control Sample Dup | Total/NA | Water | MA EPH Frac | 28762 |
| 620-14942-3 MS | LM-MW108-102623 | Total/NA | Water | MA EPH Frac | 28762 |
| 620-14942-3 MSD | LM-MW108-102623 | Total/NA | Water | MA EPH Frac | 28762 |

## Metals

### Prep Batch: 28470

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-14942-1 | LM-MW106-102623 | Dissolved | Water | 3005A | |
| 620-14942-2 | LM-MW107-102623 | Dissolved | Water | 3005A | |
| 620-14942-3 | LM-MW108-102623 | Dissolved | Water | 3005A | |
| 620-14942-4 | LM-FD01-102623 | Dissolved | Water | 3005A | |
| MB 620-28470/1-A | Method Blank | Total/NA | Water | 3005A | |
| LCS 620-28470/2-A | Lab Control Sample | Total/NA | Water | 3005A | |
| 620-14942-3 MS | LM-MW108-102623 | Dissolved | Water | 3005A | |
| 620-14942-3 MSD | LM-MW108-102623 | Dissolved | Water | 3005A | |
| 620-14942-3 DU | LM-MW108-102623 | Dissolved | Water | 3005A | |

### Analysis Batch: 28620

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-14942-1 | LM-MW106-102623 | Dissolved | Water | 6010D | 28470 |
| 620-14942-2 | LM-MW107-102623 | Dissolved | Water | 6010D | 28470 |
| 620-14942-3 | LM-MW108-102623 | Dissolved | Water | 6010D | 28470 |
| 620-14942-4 | LM-FD01-102623 | Dissolved | Water | 6010D | 28470 |
| MB 620-28470/1-A | Method Blank | Total/NA | Water | 6010D | 28470 |
| LCS 620-28470/2-A | Lab Control Sample | Total/NA | Water | 6010D | 28470 |
| 620-14942-3 MS | LM-MW108-102623 | Dissolved | Water | 6010D | 28470 |
| 620-14942-3 MSD | LM-MW108-102623 | Dissolved | Water | 6010D | 28470 |
| 620-14942-3 DU | LM-MW108-102623 | Dissolved | Water | 6010D | 28470 |

### Prep Batch: 28780

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-14942-1 | LM-MW106-102623 | Dissolved | Water | 3005A | |
| 620-14942-2 | LM-MW107-102623 | Dissolved | Water | 3005A | |
| 620-14942-3 | LM-MW108-102623 | Dissolved | Water | 3005A | |
| 620-14942-4 | LM-FD01-102623 | Dissolved | Water | 3005A | |
| MB 620-28780/1-A | Method Blank | Total/NA | Water | 3005A | |
| LCS 620-28780/2-A | Lab Control Sample | Total/NA | Water | 3005A | |
| 620-14942-3 MS | LM-MW108-102623 | Dissolved | Water | 3005A | |
| 620-14942-3 MSD | LM-MW108-102623 | Dissolved | Water | 3005A | |
| 620-14942-3 DU | LM-MW108-102623 | Dissolved | Water | 3005A | |

### Analysis Batch: 28840

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-14942-1 | LM-MW106-102623 | Dissolved | Water | 6010D | 28780 |
| 620-14942-2 | LM-MW107-102623 | Dissolved | Water | 6010D | 28780 |
| 620-14942-3 | LM-MW108-102623 | Dissolved | Water | 6010D | 28780 |
| 620-14942-4 | LM-FD01-102623 | Dissolved | Water | 6010D | 28780 |
| MB 620-28780/1-A | Method Blank | Total/NA | Water | 6010D | 28780 |
| LCS 620-28780/2-A | Lab Control Sample | Total/NA | Water | 6010D | 28780 |
| 620-14942-3 MS | LM-MW108-102623 | Dissolved | Water | 6010D | 28780 |
| 620-14942-3 MSD | LM-MW108-102623 | Dissolved | Water | 6010D | 28780 |
| 620-14942-3 DU | LM-MW108-102623 | Dissolved | Water | 6010D | 28780 |

### Prep Batch: 28845

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-14942-1 | LM-MW106-102623 | Dissolved | Water | 7470A | |
| 620-14942-2 | LM-MW107-102623 | Dissolved | Water | 7470A | |
| 620-14942-3 | LM-MW108-102623 | Dissolved | Water | 7470A | |

## Metals (Continued)

### Prep Batch: 28845 (Continued)

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-14942-4 | LM-FD01-102623 | Dissolved | Water | 7470A | |
| MB 620-28845/1-A | Method Blank | Total/NA | Water | 7470A | |
| LCS 620-28845/2-A | Lab Control Sample | Total/NA | Water | 7470A | |
| LCSD 620-28845/3-A | Lab Control Sample Dup | Total/NA | Water | 7470A | |

### Analysis Batch: 28884

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-14942-1 | LM-MW106-102623 | Dissolved | Water | 7470A | 28845 |
| 620-14942-2 | LM-MW107-102623 | Dissolved | Water | 7470A | 28845 |
| 620-14942-3 | LM-MW108-102623 | Dissolved | Water | 7470A | 28845 |
| 620-14942-4 | LM-FD01-102623 | Dissolved | Water | 7470A | 28845 |
| MB 620-28845/1-A | Method Blank | Total/NA | Water | 7470A | 28845 |
| LCS 620-28845/2-A | Lab Control Sample | Total/NA | Water | 7470A | 28845 |
| LCSD 620-28845/3-A | Lab Control Sample Dup | Total/NA | Water | 7470A | 28845 |

### Prep Batch: 28897

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| MB 620-28897/1-A | Method Blank | Total/NA | Water | 7470A | |
| LCS 620-28897/2-A | Lab Control Sample | Total/NA | Water | 7470A | |
| LCSD 620-28897/3-A | Lab Control Sample Dup | Total/NA | Water | 7470A | |
| 620-14942-3 MS | LM-MW108-102623 | Dissolved | Water | 7470A | |
| 620-14942-3 MSD | LM-MW108-102623 | Dissolved | Water | 7470A | |

### Analysis Batch: 28931

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| MB 620-28897/1-A | Method Blank | Total/NA | Water | 7470A | 28897 |
| LCS 620-28897/2-A | Lab Control Sample | Total/NA | Water | 7470A | 28897 |
| LCSD 620-28897/3-A | Lab Control Sample Dup | Total/NA | Water | 7470A | 28897 |
| 620-14942-3 MS | LM-MW108-102623 | Dissolved | Water | 7470A | 28897 |
| 620-14942-3 MSD | LM-MW108-102623 | Dissolved | Water | 7470A | 28897 |

# Lab Chronicle

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-14942-1

## Client Sample ID: LM-MW106-102623

**Lab Sample ID: 620-14942-1**

**Date Collected: 10/26/23 13:35**

**Matrix: Water**

**Date Received: 10/27/23 16:22**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 28762 | AAH | EET NE | 11/07/23 09:35 |
| Total/NA | Fraction | MA EPH Frac | | | 28794 | JJB | EET NE | 11/08/23 08:22 |
| Total/NA | Analysis | EPH | | 1 | 28788 | JS | EET NE | 11/08/23 11:29 |
| Total/NA | Prep | 3510C | | | 28762 | AAH | EET NE | 11/07/23 09:35 |
| Total/NA | Fraction | MA EPH Frac | | | 28794 | JJB | EET NE | 11/08/23 08:22 |
| Total/NA | Analysis | EPH | | 10 | 28788 | JS | EET NE | 11/08/23 13:43 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 28516 | BMH | EET NE | 11/01/23 00:16 |
| Total/NA | Analysis | MAVPH2.1 | DL | 25 | 28559 | BMH | EET NE | 11/01/23 14:59 |
| Total/NA | Prep | 3510C | | | 28762 | AAH | EET NE | 11/07/23 09:35 |
| Total/NA | Fraction | MA EPH Frac | | | 28794 | JJB | EET NE | 11/08/23 08:22 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 28787 | JS | EET NE | 11/08/23 12:41 |
| Dissolved | Prep | 3005A | | | 28470 | ODO | EET NE | 10/30/23 14:59 |
| Dissolved | Analysis | 6010D | | 1 | 28620 | PRB | EET NE | 11/02/23 13:52 |
| Dissolved | Prep | 3005A | | | 28780 | ODO | EET NE | 11/07/23 15:24 |
| Dissolved | Analysis | 6010D | | 1 | 28840 | PRB | EET NE | 11/08/23 12:52 |
| Dissolved | Prep | 7470A | | | 28845 | PRB | EET NE | 11/09/23 08:42 |
| Dissolved | Analysis | 7470A | | 1 | 28884 | PRB | EET NE | 11/09/23 14:40 |

## Client Sample ID: LM-MW107-102623

**Lab Sample ID: 620-14942-2**

**Date Collected: 10/26/23 12:00**

**Matrix: Water**

**Date Received: 10/27/23 16:22**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 28762 | AAH | EET NE | 11/07/23 09:35 |
| Total/NA | Fraction | MA EPH Frac | | | 28794 | JJB | EET NE | 11/08/23 08:22 |
| Total/NA | Analysis | EPH | | 1 | 28788 | JS | EET NE | 11/08/23 11:52 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 28516 | BMH | EET NE | 10/31/23 19:09 |
| Total/NA | Analysis | MAVPH2.1 | DL | 5 | 28559 | BMH | EET NE | 11/01/23 15:30 |
| Total/NA | Prep | 3510C | | | 28762 | AAH | EET NE | 11/07/23 09:35 |
| Total/NA | Fraction | MA EPH Frac | | | 28794 | JJB | EET NE | 11/08/23 08:22 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 28787 | JS | EET NE | 11/08/23 13:08 |
| Dissolved | Prep | 3005A | | | 28470 | ODO | EET NE | 10/30/23 14:59 |
| Dissolved | Analysis | 6010D | | 1 | 28620 | PRB | EET NE | 11/02/23 13:58 |
| Dissolved | Prep | 3005A | | | 28780 | ODO | EET NE | 11/07/23 15:24 |
| Dissolved | Analysis | 6010D | | 1 | 28840 | PRB | EET NE | 11/08/23 12:58 |
| Dissolved | Prep | 7470A | | | 28845 | PRB | EET NE | 11/09/23 08:42 |
| Dissolved | Analysis | 7470A | | 1 | 28884 | PRB | EET NE | 11/09/23 14:42 |

# Lab Chronicle

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-14942-1

## Client Sample ID: LM-MW108-102623

**Lab Sample ID: 620-14942-3**

**Date Collected: 10/26/23 10:05**
**Matrix: Water**
**Date Received: 10/27/23 16:22**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 28762 | AAH | EET NE | 11/07/23 09:35 |
| Total/NA | Fraction | MA EPH Frac | | | 28794 | JJB | EET NE | 11/08/23 08:22 |
| Total/NA | Analysis | EPH | | 1 | 28788 | JS | EET NE | 11/08/23 12:14 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 28656 | BMH | EET NE | 11/03/23 15:22 |
| Total/NA | Prep | 3510C | | | 28762 | AAH | EET NE | 11/07/23 09:35 |
| Total/NA | Fraction | MA EPH Frac | | | 28794 | JJB | EET NE | 11/08/23 08:22 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 28787 | JS | EET NE | 11/08/23 13:34 |
| Dissolved | Prep | 3005A | | | 28470 | ODO | EET NE | 10/30/23 14:59 |
| Dissolved | Analysis | 6010D | | 1 | 28620 | PRB | EET NE | 11/02/23 13:11 |
| Dissolved | Prep | 3005A | | | 28780 | ODO | EET NE | 11/07/23 15:24 |
| Dissolved | Analysis | 6010D | | 1 | 28840 | PRB | EET NE | 11/08/23 12:28 |
| Dissolved | Prep | 7470A | | | 28845 | PRB | EET NE | 11/09/23 08:42 |
| Dissolved | Analysis | 7470A | | 1 | 28884 | PRB | EET NE | 11/09/23 14:45 |

## Client Sample ID: LM-FD01-102623

**Lab Sample ID: 620-14942-4**

**Date Collected: 10/26/23 08:00**
**Matrix: Water**
**Date Received: 10/27/23 16:22**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 28762 | AAH | EET NE | 11/07/23 09:35 |
| Total/NA | Fraction | MA EPH Frac | | | 28794 | JJB | EET NE | 11/08/23 08:22 |
| Total/NA | Analysis | EPH | | 1 | 28788 | JS | EET NE | 11/08/23 13:21 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 28516 | BMH | EET NE | 10/31/23 19:40 |
| Total/NA | Analysis | MAVPH2.1 | DL | 5 | 28559 | BMH | EET NE | 11/01/23 16:01 |
| Total/NA | Prep | 3510C | | | 28762 | AAH | EET NE | 11/07/23 09:35 |
| Total/NA | Fraction | MA EPH Frac | | | 28794 | JJB | EET NE | 11/08/23 08:22 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 28787 | JS | EET NE | 11/08/23 15:39 |
| Dissolved | Prep | 3005A | | | 28470 | ODO | EET NE | 10/30/23 14:59 |
| Dissolved | Analysis | 6010D | | 1 | 28620 | PRB | EET NE | 11/02/23 13:47 |
| Dissolved | Prep | 3005A | | | 28780 | ODO | EET NE | 11/07/23 15:24 |
| Dissolved | Analysis | 6010D | | 1 | 28840 | PRB | EET NE | 11/08/23 13:04 |
| Dissolved | Prep | 7470A | | | 28845 | PRB | EET NE | 11/09/23 08:42 |
| Dissolved | Analysis | 7470A | | 1 | 28884 | PRB | EET NE | 11/09/23 14:47 |

## Client Sample ID: Trip Blank

**Lab Sample ID: 620-14942-5**

**Date Collected: 10/26/23 00:00**
**Matrix: Water**
**Date Received: 10/27/23 16:22**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | MAVPH2.1 | | 1 | 28516 | BMH | EET NE | 10/31/23 15:36 |

**Laboratory References:**

EET NE = Eurofins New England, 646 Camp Ave, North Kingstown, RI 02852, TEL (413)789-9018

# Accreditation/Certification Summary

Client: Nobis Engineering, Inc. Job ID: 620-14942-1
Project/Site: Former L&M - Lunenburg MA

## Laboratory: Eurofins New England

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

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|
| Massachusetts | State | M-RI907 | 06-30-24 |

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

| Analysis Method | Prep Method | Matrix | Analyte |
|---|---|---|---|
| 6010D | 3005A | Water | Antimony |
| 6010D | 3005A | Water | Arsenic |
| 6010D | 3005A | Water | Barium |
| 6010D | 3005A | Water | Beryllium |
| 6010D | 3005A | Water | Cadmium |
| 6010D | 3005A | Water | Chromium |
| 6010D | 3005A | Water | Lead |
| 6010D | 3005A | Water | Nickel |
| 6010D | 3005A | Water | Selenium |
| 6010D | 3005A | Water | Silver |
| 6010D | 3005A | Water | Thallium |
| 6010D | 3005A | Water | Vanadium |
| 6010D | 3005A | Water | Zinc |
| 7470A | 7470A | Water | Mercury |
| EPH | 3510C | Water | 2-Methylnaphthalene |
| EPH | 3510C | Water | Acenaphthene |
| EPH | 3510C | Water | Acenaphthylene |
| EPH | 3510C | Water | Anthracene |
| EPH | 3510C | Water | Benzo[a]anthracene |
| EPH | 3510C | Water | Benzo[a]pyrene |
| EPH | 3510C | Water | Benzo[b]fluoranthene |
| EPH | 3510C | Water | Benzo[g,h,i]perylene |
| EPH | 3510C | Water | Benzo[k]fluoranthene |
| EPH | 3510C | Water | Chrysene |
| EPH | 3510C | Water | Dibenz(a,h)anthracene |
| EPH | 3510C | Water | Fluoranthene |
| EPH | 3510C | Water | Fluorene |
| EPH | 3510C | Water | Indeno[1,2,3-cd]pyrene |
| EPH | 3510C | Water | Naphthalene |
| EPH | 3510C | Water | Phenanthrene |
| EPH | 3510C | Water | Pyrene |
| MAEPH2.1 | 3510C | Water | C11-C22 Aromatics |
| MAEPH2.1 | 3510C | Water | C11-C22 Aromatics (Adjusted) |
| MAEPH2.1 | 3510C | Water | C19-C36 Aliphatics |
| MAEPH2.1 | 3510C | Water | C9-C18 Aliphatics |
| MAVPH2.1 | | Water | Benzene |
| MAVPH2.1 | | Water | C5-C8 Aliphatics (adjusted) |
| MAVPH2.1 | | Water | C5-C8 Aliphatics (unadjusted) |
| MAVPH2.1 | | Water | C9-C10 Aromatics |
| MAVPH2.1 | | Water | C9-C12 Aliphatics (adjusted) |
| MAVPH2.1 | | Water | C9-C12 Aliphatics (unadjusted) |
| MAVPH2.1 | | Water | Ethylbenzene |
| MAVPH2.1 | | Water | m,p-Xylene |
| MAVPH2.1 | | Water | Methyl tert-butyl ether |
| MAVPH2.1 | | Water | Naphthalene |

# Accreditation/Certification Summary

Client: Nobis Engineering, Inc. Job ID: 620-14942-1
Project/Site: Former L&M - Lunenburg MA

## Laboratory: Eurofins New England (Continued)

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

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

| Analysis Method | Prep Method | Matrix | Analyte |
|---|---|---|---|
| MAVPH2.1 | | Water | o-Xylene |
| MAVPH2.1 | | Water | Toluene |
| MAVPH2.1 | | Water | Xylenes, Total |

# Method Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-14942-1

| Method | Method Description | Protocol | Laboratory |
|---|---|---|---|
| EPH | Extractable Petroleum Hydrocarbons (GC/MS) | MA DEP | EET NE |
| MAVPH2.1 | Massachusetts - Volatile Petroleum Hydrocarbons (GC) | MA DEP | EET NE |
| MAEPH2.1 | Massachusetts - Extractable Petroleum Hydrocarbons (GC) | MA DEP | EET NE |
| 6010D | Metals (ICP) | SW846 | EET NE |
| 7470A | Mercury (CVAA) | SW846 | EET NE |
| 3005A | Preparation, Total Metals | SW846 | EET NE |
| 3510C | Liquid-Liquid Extraction (Separatory Funnel) | SW846 | EET NE |
| 5030C | Purge and Trap | SW846 | EET NE |
| 7470A | Preparation, Mercury | SW846 | EET NE |
| MA EPH Frac | Massachusetts - Extractable Petroleum Hydrocarbon Fractionation | MA DEP | EET NE |

**Protocol References:**

MA DEP = Massachusetts Department Of Environmental Protection

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

**Laboratory References:**

EET NE = Eurofins New England, 646 Camp Ave, North Kingstown, RI 02852, TEL (413)789-9018

# Sample Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-14942-1

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---|---|---|---|---|
| 620-14942-1 | LM-MW106-102623 | Water | 10/26/23 13:35 | 10/27/23 16:22 |
| 620-14942-2 | LM-MW107-102623 | Water | 10/26/23 12:00 | 10/27/23 16:22 |
| 620-14942-3 | LM-MW108-102623 | Water | 10/26/23 10:05 | 10/27/23 16:22 |
| 620-14942-4 | LM-FD01-102623 | Water | 10/26/23 08:00 | 10/27/23 16:22 |
| 620-14942-5 | Trip Blank | Water | 10/26/23 00:00 | 10/27/23 16:22 |



620-14942 Chain of Custody

14942

# Chain of Custody Record

eurofins | Environment Testing

| | | | | |
|---|---|---|---|---|
| Client Contact: ~~Stephanie Stone~~ Adam Roy | Sampler: Caroline Belmowiz | Lab PM | Carrier Tracking No(s) | COC No: 620-12716-1718 2 |
| Company: Nobis Engineering, Inc | Phone: 978-888-4404 | E-Mail: CBelmowiz@nobis-group.com | State of Origin | Page: Page 2 of 4 |
| Address: 585 Middlesex Street | PWSID | Analysis Requested | | Job #: |
| City: Lowell | Due Date Requested: | | | |
| State, Zip: MA, 01851 | TAT Requested (days): Standard | | | |
| Phone: 978-703-6014 | Compliance Project: ✓ Yes △ No MASSDEP | | | |
| Email: AROY ~~cstone~~@nobis-group com | PO #: | | | |
| Project Name: S00001 005 LSM | WO #: | | | |
| Site: Lunenburg, MA | Project #: | | | |
| | SSOW#: | | | |

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)
Other:

| | Sample Identification | Sample Date | Sample Time | Sample Type (C=comp, G=grab) | Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air) | Field Filtered Sample (Yes or No) | Perform MS/MSD (Yes or No) | VPH (MASSDEP) | EPH (MASSDEP) | MCP 14-Dissolved Metals | Total Number of containers | Special Instructions/Note: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Preservation Code: | | | | | | | | | | | |
| -1 | LM-MW106-102623 | 10/26/23 | 1335 | G | Water | X | | | | | 6 | |
| -2 | LM-MW107-102623 | 10/26/23 | 1200 | G | Water | X | | | | | 6 | |
| -3 | LM-MW108-102623 | 10/26/23 | 1005 | G | Water | X | X | | | | 8 | MS/MSD |
| -4 | LM-FD01-102623 | 10/26/23 | 0800 | G | Water | X | | | | | 6 | |
| -5 | Trip Blank | | | | Water | | | | | | 2 | |
| | | | | | Water | | | | | | | |
| | | | | | Water | | | | | | | |
| | | | | | Water | | | | | | | |
| | | | | | Water | | | | | | | |
| | | | | | Water | | | | | | | |
| | | | | | Water | | | | | | | |

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month): ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements: email EQuIS EDD to AROY@nobis-group.com

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Empty Kit Relinquished by | | Date | | Time | | Method of Shipment: | |
| Relinquished by: | | Date/Time: 10/27/23 1130 | Company: Nobis | Received by: | | Date/Time: 10/27/23 1130 | Company: ENE |
| Relinquished by: | | Date/Time: 10/27/23 1642 | Company: ENE | Received by: | | Date/Time: 10/27/23 1642 | Company: ENE |
| Relinquished by: | | Date/Time: | Company: | Received by: | | Date/Time: | Company: |

Custody Seals Intact: △ Yes △ No | Custody Seal No

Cooler Temperature(s) °C and Other Remarks: 1.6 to.2 1.8 #6 / 1.4 to.2 1.6 #6

Ver: 06/08/2021

Page 43 of 44

11/13/2023

# Login Sample Receipt Checklist

Client: Nobis Engineering, Inc.

Job Number: 620-14942-1

**Login Number: 14942**
**List Number: 1**
**Creator: Makhoul, Elie**

**List Source: Eurofins New England**

| Question | Answer | Comment |
|---|---|---|
| Radioactivity wasn't checked or is </= background as measured by a survey meter. | N/A | |
| The cooler's custody seal, if present, is intact. | N/A | |
| Sample custody seals, if present, are intact. | N/A | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| Is the Field Sampler's name present on COC? | True | |
| There are no discrepancies between the containers received and the COC. | True | |
| Samples are received within Holding Time (excluding tests with immediate HTs) | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| Sample Preservation Verified. | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| Containers requiring zero headspace have no headspace or bubble is <6mm (1/4"). | True | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |
| Residual Chlorine Checked. | N/A | |

January 15, 2024
Nobis File No. S00001.05

Ms. Katy Deng
USEPA – Region 1
Land, Chemicals, and Redevelopment Division
5 Post Office Square, Suite 100
Boston, MA 02109-3912

Re: USEPA Contract No. 68HE0122D0001
USEPA Task Order No. 68HE0122F0044
Targeted Brownfields Assessment (TBA)
Former L&M Service Station Site
Lunenburg, Massachusetts
Sample Delivery Group (SDG) No. 620150851
Eurofins New England, North Kingstown, RI

Tier 1 Stage 2A Organic and Inorganic Data Review:

Volatile Petroleum Hydrocarbons (VPH by MassDEP-VPH), Extractable Petroleum Hydrocarbons (EPH by MasDEP-EPH), Polychlorinated Biphenyls (PCBs by 8082), Massachusetts Contingency Plan (MCP) Metals (MCP-14 Metals by 6010D/7471A)

2/Soil Samples: HYDLIFT-0608, HOLDTANK-0410

Dear Ms. Deng:

Nobis Group (Nobis), under a USEPA contract as a subcontractor to KGSNE JV, LLC, performed a Tier 1 Stage 2A manual data review (S2AVM) on the organic and inorganic analytical data for the samples listed above. The samples were collected by Nobis at the Former L&M Service Station Site located in Lunenburg, Massachusetts on October 31, 2023 and November 1, 2023. The samples were analyzed for VPHs by MassDEP-VPH, EPHs by MassDEP-EPH, PCBs by 8082, and MCP-14 Metals by 6010D/7471A by Eurofins New England in North Kingstown, RI.

The Tier 1 Stage 2A manual data review was performed in accordance with the Region 1 - EPA New England Environmental Data Review Supplement for Region I Data Review Elements and Superfund Specific Guidance/Procedures (September 2020); USEPA's National Functional Guidelines for Organic Superfund Methods Data Review (November 2020); USEPA's National Functional Guidelines for Inorganic Superfund Methods Data Review (November 2020); the Program Quality Assurance Project Plan (Program QAPP) dated October 2022, and the Quality Assurance Project Plan Addendum (QAPPA) (May 2023) for the Former L&M Service Station Site, which appends the October 2022 Program QAPP.

The data were evaluated based on the following parameters:

| | |
|---|---|
| * | • Overall Evaluation of Data and Potential Usability Issues |
| * | • Data Completeness |
| * | • Preservation and Technical Holding Times |
| * | • Blanks |
| | • Surrogates (organic analyses only) |
| NA | • Internal Standards |



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| | | |
|---|---|---|
| NA | • | Matrix Spike Analysis |
| NA | • | Laboratory Duplicates |
| | • | Laboratory Control Samples (LCS) |
| NA | • | Field Duplicates |
| NA | • | ICP Serial Dilutions (metals only) |
| NA | • | Performance Evaluation (PE) Samples |
| * | • | Target Analyte Identification |
| * | • | Reported Quantitation Limits |

* All criteria were met for this parameter or did not require qualification.
NA – Not applicable.

**Overall Evaluation of Data and Potential Usability Issues**

The site sampling objectives are:

- Characterize in-situ soil based on AOCs identified by Fuss & O'Neill in November 2020 Phase I for the presence of possible site-related contamination.
- Evaluate groundwater elevation.
- Evaluate presence/absence of groundwater contamination related to site.

The data meet the project quality criteria and can be used without restriction except as summarized below. The attachments provide details and supporting documentation.

**MassDEP-VPH**:
Results were qualified for surrogate recovery.

**MassDEP-EPH:**
Results were qualified for surrogate recovery.

**PCBs:**
Qualification of the data was not required.

**MCP-14 Metals:**
Results were qualified for LCS recovery.

Please contact Linda Terzis at lterzis@nobis-group.com should you have any questions or comments regarding this information.

Sincerely,

NOBIS GROUP®

Linda Terzis
Data Validator

Gary Glennon
Data Validator

Tables: Data Summary Tables – Tier 1 Stage 2A (S2AVM) Validated Data
Data Qualification Actions Table

Attachments: Data Review Checklist
Support Documentation
COC

cc: Denis McGrath (Nobis Group)
Adam Roy (Nobis Group)

# DATA SUMMARY TABLE

| **Analysis** | | EPH in Soil | |
|---|---|---|---|
| **Lab Sample ID** | | 620-15085-1 | 620-15085-2 |
| **Field Sample ID** | | HYDLIFT-0608 | HOLDTANK-0410 |
| **Sample Type** | | N | N |
| **Parent Sample ID** | | | |
| **Sample Date** | **Units** | 10/31/23 | 11/01/23 |
| 2-Methylnaphthalene | mg/kg | 0.35 UJ | 3.5 |
| Acenaphthene | mg/kg | 0.35 UJ | 0.36 U |
| Acenaphthylene | mg/kg | 0.35 UJ | 0.36 U |
| Anthracene | mg/kg | 0.35 UJ | 0.36 U |
| Benzo(a)anthracene | mg/kg | 0.35 UJ | 0.36 U |
| Benzo(a)pyrene | mg/kg | 0.35 UJ | 0.36 U |
| Benzo(b)fluoranthene | mg/kg | 0.35 UJ | 0.36 U |
| Benzo(g,h,i)perylene | mg/kg | 0.35 UJ | 0.36 U |
| Benzo(k)fluoranthene | mg/kg | 0.35 UJ | 0.36 U |
| C11-C22 Aromatics | mg/kg | 1500 J- | 310 |
| C11-C22 Aromatics (adjusted) | mg/kg | 1500 J- | 310 |
| C19-C36 Aliphatics | mg/kg | 880 J- | 380 J- |
| C9-C18 Aliphatics | mg/kg | 52 J- | 51 J- |
| Chrysene | mg/kg | 0.35 UJ | 0.36 U |
| Dibenz(a,h)anthracene | mg/kg | 0.35 UJ | 0.36 U |
| Fluoranthene | mg/kg | 0.35 UJ | 0.36 U |
| Fluorene | mg/kg | 0.35 UJ | 0.36 U |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.35 UJ | 0.36 U |
| Naphthalene | mg/kg | 0.35 UJ | 1.3 |
| Phenanthrene | mg/kg | 0.35 UJ | 0.53 |
| Pyrene | mg/kg | 0.35 UJ | 0.36 U |

# DATA SUMMARY TABLE

| **Analysis** | | Metals in Soil | |
|---|---|---|---|
| **Lab Sample ID** | | 620-15085-1 | 620-15085-2 |
| **Field Sample ID** | | HYDLIFT-0608 | HOLDTANK-0410 |
| **Sample Type** | | N | N |
| **Parent Sample ID** | | | |
| **Sample Date** | **Units** | 10/31/23 | 11/01/23 |
| Antimony | mg/kg | 0.54 J | 1.6 J |
| Arsenic | mg/kg | 4.1 J- | 4.6 J- |
| Barium | mg/kg | 19 | 49 |
| Beryllium | mg/kg | 0.52 U | 0.52 U |
| Cadmium | mg/kg | 0.52 U | 0.073 J |
| Chromium | mg/kg | 9.5 | 16 |
| Lead | mg/kg | 7 | 14 |
| Mercury | mg/kg | 0.066 UJ | 0.013 J |
| Nickel | mg/kg | 7.4 | 9.6 |
| Selenium | mg/kg | 1.6 U | 1.6 U |
| Silver | mg/kg | 1.6 U | 1.6 U |
| Thallium | mg/kg | 3.1 U | 3.1 U |
| Vanadium | mg/kg | 7.5 | 25 |
| Zinc | mg/kg | 33 | 31 |

## DATA SUMMARY TABLE

| **Analysis** | | Pesticides/PCBs in Soil |
|---|---|---|
| **Lab Sample ID** | | 620-15085-1 |
| **Field Sample ID** | | HYDLIFT-0608 |
| **Sample Type** | | N |
| **Parent Sample ID** | | |
| **Sample Date** | **Units** | 10/31/23 |
| Aroclor 1016 | ug/kg | 21 U |
| Aroclor 1221 | ug/kg | 21 U |
| Aroclor 1232 | ug/kg | 21 U |
| Aroclor 1242 | ug/kg | 21 U |
| Aroclor 1248 | ug/kg | 21 U |
| Aroclor 1254 | ug/kg | 21 U |
| Aroclor 1260 | ug/kg | 21 U |
| Aroclor 1262 | ug/kg | 21 U |
| Aroclor 1268 | ug/kg | 21 U |

# DATA SUMMARY TABLE

| **Analysis** | | VPH in Soil | |
|---|---|---|---|
| **Lab Sample ID** | | 620-15085-1 | 620-15085-2 |
| **Field Sample ID** | | HYDLIFT-0608 | HOLDTANK-0410 |
| **Sample Type** | | N | N |
| **Parent Sample ID** | | | |
| **Sample Date** | **Units** | 10/31/23 | 11/01/23 |
| Benzene | mg/kg | 0.33 UJ | 0.26 U |
| C5-C8 Aliphatics (adjusted) | mg/kg | 6.6 UJ | 15 |
| C5-C8 Aliphatics (unadjusted) | mg/kg | 6.6 UJ | 15 |
| C9-C10 Aromatics | mg/kg | 6.6 UJ | 76 |
| C9-C12 Aliphatics (adjusted) | mg/kg | 6.6 UJ | 78 |
| C9-C12 Aliphatics (unadjusted) | mg/kg | 6.6 UJ | 160 |
| Ethylbenzene | mg/kg | 0.33 UJ | 0.45 |
| m,p-Xylene | mg/kg | 0.66 UJ | 1.2 |
| Methyl tert-butyl ether | mg/kg | 0.066 UJ | 0.053 U |
| Naphthalene | mg/kg | 1.3 UJ | 6.4 |
| o-Xylene | mg/kg | 0.33 UJ | 1.2 |
| Toluene | mg/kg | 0.33 UJ | 0.28 |
| Xylene (total) | mg/kg | 0.99 UJ | 2.4 |

**Data Review Qualification Actions**
**Former L&M Service Station**
**SDG 620150851**

| Parameter | Analyte | Samples | Evaluation Criteria | Action Needed | Comments |
|---|---|---|---|---|---|
| **VPH** | | | | | |
| | All VPH compounds | HYDLIFT-0608 | Surrogate recovery | UJ | |
| **EPH** | | | | | |
| | C9-C18 and C19-C36 aliphatic hydrocarbons, C11-C22 aromatic hydrocarbons (adjusted and unadjusted) | HYDLIFT-0608 | Surrogate recovery | J- | |
| | All target PAH compounds | HYDLIFT-0608 | Surrogate recovery | UJ | |
| | C9-C18 and C19-C36 aliphatic hydrocarbons | HOLDTANK-0410 | Surrogate recovery | J- | |
| **PCBs** | | | | | |
| | Qualification of the data was not required. | | | | |
| **MCP-14 Metals** | | | | | |
| | Antimony | HYDLIFT-0608, HOLDTANK-0410 | LCS recovery | J- | Final qual J, indeterminate bias, both samples due to being < RL |
| | Arsenic | HYDLIFT-0608, HOLDTANK-0410 | LCS recovery | J- | |
| | Mercury | HYDLIFT-0608, HOLDTANK-0410 | LCS recovery | J- / UJ | Final qual J, indeterminate bias, sample HOLDTANK-0410 due to < RL. |

**Tier 1/Stage 2A Data Review Checklist**

**Project:** Former L&M Service Station, Lunenburg, Massachusetts
Targeted Brownfields Assessment (TBA)
**Project #:** S00001.05

**Date:** 01/02/2024

**Methods:** Volatile Petroleum Hydrocarbons (VPH) (MassDEP-VPH)
Polychlorinated Biphenyls (PCBs by 8082)
Extractable Petroleum Hydrocarbons (EPH) (MassDEP-EPH)
Massachusetts Contingency Plan (MCP) Metals (MCP-14 Metals by 6010D/7471A)

**Laboratory:** Eurofins New England Laboratory, North Kingstown, RI
**Case:** N/A
**SDG:** 620150851
**Reviewer:** Linda Terzis

1. **Case Narrative and Data Package Completeness (COC and Analyte List Review)**
Two (2) soil samples were listed on the COC for SDG 620158051. The samples were collected on 10/31/2023 and 11/01/2023 and received at the Eurofins New England Laboratory on 11/03/2023 at a maximum temperature of 4.0 °C.

| Sample ID | Laboratory ID | Analyses |
|---|---|---|
| HYDLIFT-0608 | 620-15085-1 | MassDEP-VPH, MassDEP-EPH, PCBs, MCP-14 Metals/Mercury |
| HOLDTANK-0410 | 620-15085-2 | MassDEP-VPH, MassDEP-EPH, MCP-14 Metals/Mercury |

The data were evaluated using the site-specific Quality Assurance Project Plan Addendum (QAPPA) (dated May 2023) and the Program QAPP (dated October 2022). Both were prepared by KGSNE, LLC. The QAPPA appends and incorporates by reference the procedures and quality control measures detailed in the Program QAPP (October 2022). Therefore, site data for this SDG were evaluated using both the QAPPA of May 2023 and the Program QAPP dated October 2022. The Massachusetts Compendium of Analytical Methods (CAM) and/or SW-846 Methods were used to perform the analyses. Therefore, site data were also evaluated using CAM quality control (QC) limits, where applicable.

The analyte lists reported by the laboratory were compared to the required analyte lists per Table 3 (soil) in the QAPPA (May 2023) for the site. Results for all requested analytes were reported and no inconsistencies were noted.

2. **Holding Time and Sample Preservation Compliance**

Receipt temperatures are acceptable (≤ 6°), as specified in the QAPPA (May 2023).

MassDEP-VPH: Holding time criteria (analyzed within 14 days) met.



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MassDEP-EPH: Holding time criteria (extracted within 14 days and analyzed within 40 days of extraction) met.

PCBs: Holding time criteria (extracted within 14 days and analyzed within 40 days of extraction) met.

MCP-14 Metals/Mercury: Holding time criteria (analyzed within 28 days for mercury; within 180 days for all other analytes) were met.

**3. Calibration Issues**

Not assessed for S2AVM data review.

**4. Laboratory and Field Blanks**

MassDEP VPH: Results for the VPH laboratory method blank were non-detect. No blank actions are required.

MassDEP-EPH: Results for the EPH laboratory method blank were non-detect. No blank actions are required.

PCBs: Results for the PCB laboratory method blank were non-detect. No blank actions are required.

MCP-14 Metals/Mercury: Results for the metals and mercury laboratory method blanks were non-detect. No blank actions are required.

Field blanks were not submitted with the samples of this SDG. No actions are required.

**5. Interference Check Sample (metals only)**

Not assessed for S2AVM data review.

**6. Surrogates**

The Program QAPP (October 2022) was used to evaluate site data for surrogate recovery. If no Program QAPP-specific recovery limits were available for a surrogate, the MCP CAM recovery limits were used.

MassDEP-VPH: Percent recoveries for both surrogates were below the Program QAPP limits of 70-130% but > 10% in sample HYDLIFT-0608 (620-15085-1). The low surrogate recoveries were confirmed by re-analysis and results from the original analysis are reported. VPH results were all non-detect in the sample. Based on professional judgment, the National Functional Guidelines (NFGs, 2020) for the VOC surrogate guidance was used to qualify the non-detect results for all VPH compounds as estimated (UJ) in sample HYDLIFT-0608 due to the low surrogate recoveries. Surrogate recoveries were within limits for sample HOLDTANK-0410.

MassDEP-EPH: Two of three percent surrogate recoveries (1-chlorooctadecane and o-terphenyl) were below the Program QAPP limits of 40-140% in sample HYDLIFT-0608 (620-15085-1). The recovery of 1-chlorooctadecane was < 10%. Based on the MCP CAM method for EPH, the surrogate 1-chlorooctadecane is associated with C9-C18 and C19-C36 aliphatic hydrocarbons. The surrogate o-terphenyl is associated with the target PAH compounds and C11-C22 aromatic

hydrocarbons. Based on professional judgment, the NFGs (2020) for the SVOC surrogate guidance was used to qualify the detected results for C9-C18 and C19-C36 aliphatic hydrocarbons as estimated with a potential low bias (J-) in sample HYDLIFT-0608. The detected results for C11-C22 aromatic hydrocarbons (adjusted and unadjusted) are qualified as estimated with a potential low bias (J-) and the non-detect results for all target PAH compounds are qualified as estimated (UJ) in sample HYDLIFT-0608 due to low surrogate recoveries.

The recovery of the surrogate 1-chlorooctadecane in sample HOLDTANK-0410 (620-15085-2) was below the 40-140% limits but > 10%. Therefore, the detected results for C9-C18 and C19-C36 aliphatic hydrocarbons are qualified as estimated with a potential low bias (J-) in sample HOLDTANK-0410 due to low surrogate recoveries.

The laboratory's case narrative indicated evidence of interference was present in sample HOLDTANK-0410 and therefore, the samples were not re-extracted and/or re-analyzed.

PCBs: Percent surrogate recoveries were within the Program QAPP limits of 30-150%. No actions are required.

Surrogate recovery is not applicable for the MCP-14 metals/mercury analysis.

**7. Laboratory Control Samples**

MassDEP-VPH: The percent recoveries for the VPH LCS/LCSD pair met the Program QAPP limits of 70-130% recovery and RPDs ≤ 25%. No actions are required.

MassDEP-EPH: The percent recoveries for the EPH LCS/LCSD pair met the Program QAPP limits of 40-140% and RPDs ≤ 25%. No actions are required.

PCBs: Percent recoveries and RPDs for the PCB LCS/LCSD analyses were within the QAPP recovery limits of 40-140% and RPD ≤ 30%. No actions are required.

MCP-14 Metals/Mercury: The recoveries of antimony (45.9%), arsenic (77.2%), and mercury (55.9%) were below the 80-120% recovery limits in the LCS analyses associated with the samples. The Program QAPP and MCP CAM require that soil LCS/LCSD recoveries be "within vendor 95% confidence limits". Vendor limits were not presented in the laboratory report; therefore, the MassDEP CAM Method 6010D recovery limits for aqueous samples (80-120%) were conservatively used to evaluate the solid LCS results during this review.

Antimony was detected in both soil samples. Based on the NFGs (2020), the detected results for antimony are qualified as estimated with a potential low bias (J-) in both samples due to the low LCS recovery. Note that the final qualification for the samples is estimated (J) with an indeterminate bias since sample results were both reported by the laboratory as estimated (J) due to results being < reporting limit (RL).

Arsenic was detected in both samples at concentrations > RL. Based on the NFGs (2020), the detected results for arsenic are qualified as estimated with a potential low bias (J-) due to the low LCS recovery.

The detect and non-detected results for mercury are qualified as estimated with a potential low bias (J-/UJ) in the samples due to the low LCS recovery. Note that mercury was detected at < RL in sample HOLDTANK-0410 and reported by the laboratory with a J qualifier. Therefore, the final

qualifier for the mercury result in sample HOLDTANK-0410 is estimated (J) with an indeterminate bias.

**8. Matrix Spikes**

Based on the Region I EPA New England Environmental Data Review Supplement (Region I Supplement, 2020), MS/MSD qualifications are applied to all field samples with similar matrix, unless otherwise noted.

MS/MSD analyses were not performed on the samples of this SDG. No action is required.

**9. Laboratory Duplicates (metals only)**

MCP-14 Metals/Mercury: A laboratory duplicate analysis was not performed for this SDG. No action is required.

**10. Serial Dilution (metals only)**

A serial dilution analysis was not performed for this SDG. No actions are required.

**11. Field Duplicate Precision**

Acceptable field duplicate precision is an RPD of ≤ 50% for results > 5x RL and an absolute difference < 4x RL for results < 5x RL, based on the EPA Region I Supplement (2020).

Based on the Region I Supplement (2020), qualifications are applied to all field samples with similar matrix, unless otherwise indicated.

A field duplicate sample was not submitted with the samples of this SDG. No action is required.

**12. Internal Standards**

Not assessed for S2AVM data review.

**13. Dual Column Precision (PCBs only)**

Results for all PCB Aroclors are non-detect; therefore, dual column precision is not evaluated. No actions are required.

**14. Performance Evaluation Samples**

Performance Evaluation (PE) samples were not included in this SDG.

**15. Reporting Limits**

Laboratory RLs for non-detect results met the project action levels (PALs) for the VPH, EPH, PCB, and MCP-14 metals analyses, as listed in Table 3 of the QAPPA.

**16. Other**

EPA Region I Supplement (2020) criterion for percent solids content (> 30%) was met for the soil samples.

Overall bias is considered indeterminate when cumulative nonconformances do not show a consistent bias or in cases of the presence of conflicting high and low biases.

620-15085 Chain of Custody

15085

# Chain of Custody Record

eurofins | Environment Testing

| | | | | |
|---|---|---|---|---|
| Client Information | Sampler: P. Moran | Lab PM | Carrier Tracking No(s) | COC No: 620-12716-1718 1 |
| Client Contact: ~~Stephanie Stone~~ Adam Roy | Phone | E-Mail | State of Origin: MA | Page: Page 1 of 4 |
| Company: Nobis Engineering, Inc | PWSID | | | Job #: |

| | | |
|---|---|---|
| Address: 585 Middlesex Street | Due Date Requested: | |
| City: Lowell | TAT Requested (days): standard | |
| State, Zip: MA, 01851 | Compliance Project: Δ Yes Δ No | |
| Phone | PO #: | |
| Email: ~~sstone@nobis-group.com~~ aroy@nobis-group.com | WO #: | |
| Project Name: S00001 005 | Project #: | |
| Site: Former L&M | SSOW#: | |

**Analysis Requested**

**Preservation Codes:**

A - HCL; B - NaOH; C - Zn Acetate; D - Nitric Acid; E - NaHSO4; F - MeOH; G - Amchlor; H - Ascorbic Acid; I - Ice; J - DI Water; K - EDTA; L - EDA; M - Hexane; N - None; O - AsNaO2; P - Na2O4S; Q - Na2SO3; R - Na2S2O3; S - H2SO4; T - TSP Dodecahydrate; U - Acetone; V - MCAA; W - pH 4-5; Y - Trizma; Z - other (specify)

Other:

| | Sample Identification | Sample Date | Sample Time | Sample Type (C=Comp, G=grab) | Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air) | Field Filtered Sample (Yes or No) | Perform MS/MSD (Yes or No) | VPH | EPH | MCP Metals | PCBs | | | | | | | | | | | | Total Number of containers | Special Instructions/Note: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Preservation Code: | | | | | N | N | F | I | I | * | | | | | | | | | | | | | |
| 1 | HYDLIFT-0608 | 10/31/23 | 0910 | C | Solid | N | N | X | X | X | X | | | | | | | | | | | | 4 | |
| 2 | HOLDTANK-0410 | 11/1/23 | 1445 | C | Solid | N | N | X | X | X | | | | | | | | | | | | | 3 | |
| | | | | | Solid | | | | | | | | | | | | | | | | | | | |
| | | | | | Solid | | | | | | | | | | | | | | | | | | | |
| | | | | | Solid | | | | | | | | | | | | | | | | | | | |
| | | | | | Solid | | | | | | | | | | | | | | | | | | | |
| | | | | | Solid | | | | | | | | | | | | | | | | | | | |
| | | | | | Solid | | | | | | | | | | | | | | | | | | | |
| | | | | | Solid | | | | | | | | | | | | | | | | | | | |
| | | | | | Solid | | | | | | | | | | | | | | | | | | | |
| | | | | | Water | | | | | | | | | | | | | | | | | | | |

**Possible Hazard Identification**

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

**Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)**

☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested. I, II, III, IV, Other (specify)

Special Instructions/QC Requirements: Email EDD to aroy@nobis-group.com

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

| | | | | | |
|---|---|---|---|---|---|
| Relinquished by: | Date/Time: 11/3/23 11:53 | Company | Received by: | Date/Time: 11/3/23 1153 | Company: EA |
| Relinquished by: | Date/Time: 11/3/23 16:13 | Company: EA | Received by: | Date/Time: 11/3/23 16:13 | Company: Eurofins |
| Relinquished by: | Date/Time | Company | Received by: | Date/Time | Company |

| | | |
|---|---|---|
| Custody Seals Intact. Δ Yes Δ No | Custody Seal No | Cooler Temperature(s) °C and Other Remarks: 3.8-0.2 4.0-0.6 |

Ver: 06/08/2021

Page 27 of 28

11/14/2023

# ANALYTICAL REPORT

## PREPARED FOR

Attn: Adam Roy
Nobis Engineering, Inc.
585 Middlesex Street
Lowell, Massachusetts 01851

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## JOB DESCRIPTION

Former L&M - Lunenburg MA

## JOB NUMBER

620-15085-1

Eurofins New England
646 Camp Ave
North Kingstown RI 02852

See page two for job notes and contact information.



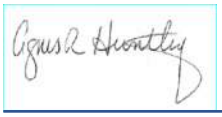
my EOL

## Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northeast, LLC Project Manager.

## Authorization



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Authorized for release by
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(401)372-3482

# Table of Contents

Cover Page . . . . . 1
Table of Contents . . . . . 3
Definitions/Glossary . . . . . 4
State Forms . . . . . 5
MCP Checklist . . . . . 5
Case Narrative . . . . . 6
Detection Summary . . . . . 7
Client Sample Results . . . . . 8
Surrogate Summary . . . . . 13
QC Sample Results . . . . . 14
QC Association Summary . . . . . 20
Lab Chronicle . . . . . 22
Certification Summary . . . . . 23
Method Summary . . . . . 25
Sample Summary . . . . . 26
Chain of Custody . . . . . 27
Receipt Checklists . . . . . 28

# Definitions/Glossary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-15085-1

## Qualifiers

### GC VOA

| Qualifier | Qualifier Description |
|---|---|
| S1- | Surrogate recovery exceeds control limits, low biased. |

### GC Semi VOA

| Qualifier | Qualifier Description |
|---|---|
| S1- | Surrogate recovery exceeds control limits, low biased. |

### Metals

| Qualifier | Qualifier Description |
|---|---|
| ^3+ | Reporting Limit Check Standard is outside acceptance limits, high biased |
| J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |

## Glossary

| Abbreviation | These commonly used abbreviations may or may not be present in this report. |
|---|---|
| ¤ | Listed under the "D" column to designate that the result is reported on a dry weight basis |
| %R | Percent Recovery |
| CFL | Contains Free Liquid |
| CFU | Colony Forming Unit |
| CNF | Contains No Free Liquid |
| DER | Duplicate Error Ratio (normalized absolute difference) |
| Dil Fac | Dilution Factor |
| DL | Detection Limit (DoD/DOE) |
| DL, RA, RE, IN | Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample |
| DLC | Decision Level Concentration (Radiochemistry) |
| EDL | Estimated Detection Limit (Dioxin) |
| LOD | Limit of Detection (DoD/DOE) |
| LOQ | Limit of Quantitation (DoD/DOE) |
| MCL | EPA recommended "Maximum Contaminant Level" |
| MDA | Minimum Detectable Activity (Radiochemistry) |
| MDC | Minimum Detectable Concentration (Radiochemistry) |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| MPN | Most Probable Number |
| MQL | Method Quantitation Limit |
| NC | Not Calculated |
| ND | Not Detected at the reporting limit (or MDL or EDL if shown) |
| NEG | Negative / Absent |
| POS | Positive / Present |
| PQL | Practical Quantitation Limit |
| PRES | Presumptive |
| QC | Quality Control |
| RER | Relative Error Ratio (Radiochemistry) |
| RL | Reporting Limit or Requested Limit (Radiochemistry) |
| RPD | Relative Percent Difference, a measure of the relative difference between two points |
| TEF | Toxicity Equivalent Factor (Dioxin) |
| TEQ | Toxicity Equivalent Quotient (Dioxin) |
| TNTC | Too Numerous To Count |

# MassDEP Analytical Protocol Certfication Form

Laboratory Name: Eurofins New England | Project #: 620-15085-1

Project Location: Former L&M - Lunenburg MA | RTN:

**This Form provides certifications for the following data set: list Laboratory Sample ID Number(s):**
620-15085-1, 620-15085-2

Matrices: ☐ Groundwater/Surface Water ☑ Soil/Sediment ☐ Drinking Water ☐ Air ☐ Other:

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

| | | | | | |
|---|---|---|---|---|---|
| 8260 VOC CAM II A ☐ | 7470/7471 Hg CAM III B ☑ | MassDEP VPH (GC/PID/FID) CAM IV A ☑ | 8082 PCB CAM V A ☑ | 9014 Total Cyanide/PAC CAM VI A ☐ | 6860 Perchlorate CAM VIII B ☐ |
| 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 ☐ |
| 6010 Metals CAM III A ☑ | 6020 Metals CAM III D ☐ | MassDEP EPH CAM IV B ☑ | 8151 Herbicides CAM V C ☐ | 8330 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 ☐ No |
| **B** | Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed? | ☑ Yes ☐ 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 ☐ No |
| **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 ☐ No |
| **E** | VPH, EPH, APH, and TO-15 only<br>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).<br>b. APH and TO-15 Methods only: Was the complete analyte list reported for each method? | ☑ Yes ☐ No<br>☐ 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 ☐ 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 protocol(s)? | ☑ Yes ☐ No[1] |

***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[1] |
| **I** | Were results reported for the complete analyte list specified in the selected CAM protocol(s)? | ☑ Yes ☐ No[1] |

*1 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, is accurate and complete.***

**Signature:** Agnes R Huntley **Position:** Project Manager

**Printed Name:** Agnes Huntley **Date:** 11/14/2023

## Job ID: 620-15085-1

### Laboratory: Eurofins New England

**Narrative**

**Job Narrative**
**620-15085-1**

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

**Receipt**
The samples were received on 11/3/2023 4:13 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 4.0°C

**GC VOA**
Method MAVPH2.1: Surrogate recovery for the following sample was outside control limits: HYDLIFT-0608 (620-15085-1). Evidence of matrix interferences is not obvious. Sample reanalyzed for matrix interference confirmation.

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

**GC Semi VOA**
Method MAEPH2.1: Surrogate recovery for the following samples were outside control limits: HYDLIFT-0608 (620-15085-1) and HOLDTANK-0410 (620-15085-2). Evidence of pattern interference is present; therefore, re-extraction and/or re-analysis was not performed.

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

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

**Metals**
Method 6010MCP: The low level check standard recovery associated with batch 620-28770 is outside the acceptance criteria for the following analyte(s): Zinc. All associated field samples have the analyte in quantities greater than 10x the reporting limit (RL), therefore the data have been reported.

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

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

# Detection Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-15085-1

## Client Sample ID: HYDLIFT-0608 — Lab Sample ID: 620-15085-1

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | 52 | | 7.0 | 7.0 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| C19-C36 Aliphatics | 880 | | 7.0 | 7.0 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics | 1500 | | 7.0 | 7.0 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics (Adjusted) | 1500 | | 7.0 | 7.0 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| Antimony | 0.54 | J | 5.2 | 0.39 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Arsenic | 4.1 | | 1.6 | 0.20 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Barium | 19 | | 1.0 | 0.12 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Chromium | 9.5 | | 1.0 | 0.14 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Lead | 7.0 | | 1.6 | 0.22 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Nickel | 7.4 | | 1.0 | 0.12 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Vanadium | 7.5 | | 1.6 | 0.28 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Zinc | 33 | ^3+ | 3.1 | 0.81 | mg/Kg | 1 | ☼ | 6010D | Total/NA |

## Client Sample ID: HOLDTANK-0410 — Lab Sample ID: 620-15085-2

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | 15 | | 5.3 | 5.3 | mg/Kg | 1 | ☼ | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (adjusted) | 78 | | 5.3 | 5.3 | mg/Kg | 1 | ☼ | MAVPH2.1 | Total/NA |
| C9-C10 Aromatics | 76 | | 5.3 | 5.3 | mg/Kg | 1 | ☼ | MAVPH2.1 | Total/NA |
| C5-C8 Aliphatics (unadjusted) | 15 | | 5.3 | 5.3 | mg/Kg | 1 | ☼ | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (unadjusted) | 160 | | 5.3 | 5.3 | mg/Kg | 1 | ☼ | MAVPH2.1 | Total/NA |
| Ethylbenzene | 0.45 | | 0.26 | 0.26 | mg/Kg | 1 | ☼ | MAVPH2.1 | Total/NA |
| Naphthalene | 6.4 | | 1.1 | 1.1 | mg/Kg | 1 | ☼ | MAVPH2.1 | Total/NA |
| Toluene | 0.28 | | 0.26 | 0.26 | mg/Kg | 1 | ☼ | MAVPH2.1 | Total/NA |
| m,p-Xylene | 1.2 | | 0.53 | 0.53 | mg/Kg | 1 | ☼ | MAVPH2.1 | Total/NA |
| o-Xylene | 1.2 | | 0.26 | 0.26 | mg/Kg | 1 | ☼ | MAVPH2.1 | Total/NA |
| Xylenes, Total | 2.4 | | 0.79 | 0.79 | mg/Kg | 1 | ☼ | MAVPH2.1 | Total/NA |
| C9-C18 Aliphatics | 51 | | 7.2 | 7.2 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| C19-C36 Aliphatics | 380 | | 7.2 | 7.2 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics | 310 | | 7.2 | 7.2 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics (Adjusted) | 310 | | 7.2 | 7.2 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| Naphthalene | 1.3 | | 0.36 | 0.36 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| 2-Methylnaphthalene | 3.5 | | 0.36 | 0.36 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| Phenanthrene | 0.53 | | 0.36 | 0.36 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| Antimony | 1.6 | J | 5.2 | 0.39 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Arsenic | 4.6 | | 1.6 | 0.20 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Barium | 49 | | 1.0 | 0.12 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Cadmium | 0.073 | J | 0.52 | 0.027 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Chromium | 16 | | 1.0 | 0.14 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Lead | 14 | | 1.6 | 0.22 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Nickel | 9.6 | | 1.0 | 0.12 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Vanadium | 25 | | 1.6 | 0.28 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Zinc | 31 | ^3+ | 3.1 | 0.80 | mg/Kg | 1 | ☼ | 6010D | Total/NA |
| Mercury | 0.013 | J | 0.067 | 0.011 | mg/Kg | 1 | ☼ | 7471A | Total/NA |

This Detection Summary does not include radiochemical test results.

## Client Sample ID: HYDLIFT-0608

**Date Collected: 10/31/23 09:10**
**Date Received: 11/03/23 16:13**

## Lab Sample ID: 620-15085-1

**Matrix: Solid**
**Percent Solids: 93.3**

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 6.6 | 6.6 | mg/Kg | ☼ | 11/09/23 14:14 | 11/09/23 20:04 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 6.6 | 6.6 | mg/Kg | ☼ | 11/09/23 14:14 | 11/09/23 20:04 | 1 |
| C9-C10 Aromatics | ND | | 6.6 | 6.6 | mg/Kg | ☼ | 11/09/23 14:14 | 11/09/23 20:04 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 6.6 | 6.6 | mg/Kg | ☼ | 11/09/23 14:14 | 11/09/23 20:04 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 6.6 | 6.6 | mg/Kg | ☼ | 11/09/23 14:14 | 11/09/23 20:04 | 1 |
| Benzene | ND | | 0.33 | 0.33 | mg/Kg | ☼ | 11/09/23 14:14 | 11/09/23 20:04 | 1 |
| Ethylbenzene | ND | | 0.33 | 0.33 | mg/Kg | ☼ | 11/09/23 14:14 | 11/09/23 20:04 | 1 |
| Methyl tert-butyl ether | ND | | 0.066 | 0.066 | mg/Kg | ☼ | 11/09/23 14:14 | 11/09/23 20:04 | 1 |
| Naphthalene | ND | | 1.3 | 1.3 | mg/Kg | ☼ | 11/09/23 14:14 | 11/09/23 20:04 | 1 |
| Toluene | ND | | 0.33 | 0.33 | mg/Kg | ☼ | 11/09/23 14:14 | 11/09/23 20:04 | 1 |
| m,p-Xylene | ND | | 0.66 | 0.66 | mg/Kg | ☼ | 11/09/23 14:14 | 11/09/23 20:04 | 1 |
| o-Xylene | ND | | 0.33 | 0.33 | mg/Kg | ☼ | 11/09/23 14:14 | 11/09/23 20:04 | 1 |
| Xylenes, Total | ND | | 0.99 | 0.99 | mg/Kg | ☼ | 11/09/23 14:14 | 11/09/23 20:04 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *23* | *S1-* | *70 - 130* | *11/09/23 14:14* | *11/09/23 20:04* | *1* |
| *2,5-Dibromotoluene (pid)* | *18* | *S1-* | *70 - 130* | *11/09/23 14:14* | *11/09/23 20:04* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) - RA

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 6.6 | 6.6 | mg/Kg | ☼ | 11/09/23 14:14 | 11/10/23 14:05 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 6.6 | 6.6 | mg/Kg | ☼ | 11/09/23 14:14 | 11/10/23 14:05 | 1 |
| C9-C10 Aromatics | ND | | 6.6 | 6.6 | mg/Kg | ☼ | 11/09/23 14:14 | 11/10/23 14:05 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 6.6 | 6.6 | mg/Kg | ☼ | 11/09/23 14:14 | 11/10/23 14:05 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 6.6 | 6.6 | mg/Kg | ☼ | 11/09/23 14:14 | 11/10/23 14:05 | 1 |
| Benzene | ND | | 0.33 | 0.33 | mg/Kg | ☼ | 11/09/23 14:14 | 11/10/23 14:05 | 1 |
| Ethylbenzene | ND | | 0.33 | 0.33 | mg/Kg | ☼ | 11/09/23 14:14 | 11/10/23 14:05 | 1 |
| Methyl tert-butyl ether | ND | | 0.066 | 0.066 | mg/Kg | ☼ | 11/09/23 14:14 | 11/10/23 14:05 | 1 |
| Naphthalene | ND | | 1.3 | 1.3 | mg/Kg | ☼ | 11/09/23 14:14 | 11/10/23 14:05 | 1 |
| Toluene | ND | | 0.33 | 0.33 | mg/Kg | ☼ | 11/09/23 14:14 | 11/10/23 14:05 | 1 |
| m,p-Xylene | ND | | 0.66 | 0.66 | mg/Kg | ☼ | 11/09/23 14:14 | 11/10/23 14:05 | 1 |
| o-Xylene | ND | | 0.33 | 0.33 | mg/Kg | ☼ | 11/09/23 14:14 | 11/10/23 14:05 | 1 |
| Xylenes, Total | ND | | 0.99 | 0.99 | mg/Kg | ☼ | 11/09/23 14:14 | 11/10/23 14:05 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *7* | *S1-* | *70 - 130* | *11/09/23 14:14* | *11/10/23 14:05* | *1* |
| *2,5-Dibromotoluene (pid)* | *6* | *S1-* | *70 - 130* | *11/09/23 14:14* | *11/10/23 14:05* | *1* |

### Method: MA DEP 8082 - Polychlorinated Biphenyls (GC/ECD)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| PCB-1016 | ND | | 21 | 15 | ug/Kg | ☼ | 11/07/23 13:04 | 11/09/23 02:11 | 1 |
| PCB-1221 | ND | | 21 | 6.3 | ug/Kg | ☼ | 11/07/23 13:04 | 11/09/23 02:11 | 1 |
| PCB-1232 | ND | | 21 | 5.9 | ug/Kg | ☼ | 11/07/23 13:04 | 11/09/23 02:11 | 1 |
| PCB-1242 | ND | | 21 | 3.4 | ug/Kg | ☼ | 11/07/23 13:04 | 11/09/23 02:11 | 1 |
| PCB-1248 | ND | | 21 | 6.7 | ug/Kg | ☼ | 11/07/23 13:04 | 11/09/23 02:11 | 1 |
| PCB-1254 | ND | | 21 | 17 | ug/Kg | ☼ | 11/07/23 13:04 | 11/09/23 02:11 | 1 |
| PCB-1262 | ND | | 21 | 5.0 | ug/Kg | ☼ | 11/07/23 13:04 | 11/09/23 02:11 | 1 |
| PCB-1260 | ND | | 21 | 4.6 | ug/Kg | ☼ | 11/07/23 13:04 | 11/09/23 02:11 | 1 |
| PCB-1268 | ND | | 21 | 4.6 | ug/Kg | ☼ | 11/07/23 13:04 | 11/09/23 02:11 | 1 |

## Client Sample ID: HYDLIFT-0608

**Date Collected: 10/31/23 09:10**
**Date Received: 11/03/23 16:13**

## Lab Sample ID: 620-15085-1

**Matrix: Solid**
**Percent Solids: 93.3**

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|
| Tetrachloro-m-xylene | 79 | | 30 - 150 | 11/07/23 13:04 | 11/09/23 02:11 | 1 |
| Tetrachloro-m-xylene | 91 | | 30 - 150 | 11/07/23 13:04 | 11/09/23 02:11 | 1 |
| DCB Decachlorobiphenyl (Surr) | 116 | | 30 - 150 | 11/07/23 13:04 | 11/09/23 02:11 | 1 |
| DCB Decachlorobiphenyl (Surr) | 100 | | 30 - 150 | 11/07/23 13:04 | 11/09/23 02:11 | 1 |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C9-C18 Aliphatics** | **52** | | 7.0 | 7.0 | mg/Kg | ☼ | 11/07/23 09:19 | 11/08/23 22:04 | 1 |
| **C19-C36 Aliphatics** | **880** | | 7.0 | 7.0 | mg/Kg | ☼ | 11/07/23 09:19 | 11/08/23 22:04 | 1 |
| **C11-C22 Aromatics** | **1500** | | 7.0 | 7.0 | mg/Kg | ☼ | 11/07/23 09:19 | 11/08/23 22:04 | 1 |
| **C11-C22 Aromatics (Adjusted)** | **1500** | | 7.0 | 7.0 | mg/Kg | ☼ | 11/07/23 09:19 | 11/08/23 22:04 | 1 |
| Naphthalene | ND | | 0.35 | 0.35 | mg/Kg | ☼ | 11/07/23 09:19 | 11/08/23 22:04 | 1 |
| 2-Methylnaphthalene | ND | | 0.35 | 0.35 | mg/Kg | ☼ | 11/07/23 09:19 | 11/08/23 22:04 | 1 |
| Acenaphthylene | ND | | 0.35 | 0.35 | mg/Kg | ☼ | 11/07/23 09:19 | 11/08/23 22:04 | 1 |
| Acenaphthene | ND | | 0.35 | 0.35 | mg/Kg | ☼ | 11/07/23 09:19 | 11/08/23 22:04 | 1 |
| Fluorene | ND | | 0.35 | 0.35 | mg/Kg | ☼ | 11/07/23 09:19 | 11/08/23 22:04 | 1 |
| Phenanthrene | ND | | 0.35 | 0.35 | mg/Kg | ☼ | 11/07/23 09:19 | 11/08/23 22:04 | 1 |
| Anthracene | ND | | 0.35 | 0.35 | mg/Kg | ☼ | 11/07/23 09:19 | 11/08/23 22:04 | 1 |
| Fluoranthene | ND | | 0.35 | 0.35 | mg/Kg | ☼ | 11/07/23 09:19 | 11/08/23 22:04 | 1 |
| Pyrene | ND | | 0.35 | 0.35 | mg/Kg | ☼ | 11/07/23 09:19 | 11/08/23 22:04 | 1 |
| Benzo[a]anthracene | ND | | 0.35 | 0.35 | mg/Kg | ☼ | 11/07/23 09:19 | 11/08/23 22:04 | 1 |
| Chrysene | ND | | 0.35 | 0.35 | mg/Kg | ☼ | 11/07/23 09:19 | 11/08/23 22:04 | 1 |
| Benzo[b]fluoranthene | ND | | 0.35 | 0.35 | mg/Kg | ☼ | 11/07/23 09:19 | 11/08/23 22:04 | 1 |
| Benzo[k]fluoranthene | ND | | 0.35 | 0.35 | mg/Kg | ☼ | 11/07/23 09:19 | 11/08/23 22:04 | 1 |
| Benzo[a]pyrene | ND | | 0.35 | 0.35 | mg/Kg | ☼ | 11/07/23 09:19 | 11/08/23 22:04 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.35 | 0.35 | mg/Kg | ☼ | 11/07/23 09:19 | 11/08/23 22:04 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.35 | 0.35 | mg/Kg | ☼ | 11/07/23 09:19 | 11/08/23 22:04 | 1 |
| Benzo[g,h,i]perylene | ND | | 0.35 | 0.35 | mg/Kg | ☼ | 11/07/23 09:19 | 11/08/23 22:04 | 1 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|
| 1-Chlorooctadecane (Surr) | 5 | S1- | 40 - 140 | 11/07/23 09:19 | 11/08/23 22:04 | 1 |
| o-Terphenyl (Surr) | 27 | S1- | 40 - 140 | 11/07/23 09:19 | 11/08/23 22:04 | 1 |
| 2-Fluorobiphenyl (Surr) | 66 | | 40 - 140 | 11/07/23 09:19 | 11/08/23 22:04 | 1 |

### Method: SW846 6010D - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Antimony** | **0.54** | **J** | 5.2 | 0.39 | mg/Kg | ☼ | 11/06/23 13:39 | 11/07/23 11:38 | 1 |
| **Arsenic** | **4.1** | | 1.6 | 0.20 | mg/Kg | ☼ | 11/06/23 13:39 | 11/07/23 11:38 | 1 |
| **Barium** | **19** | | 1.0 | 0.12 | mg/Kg | ☼ | 11/06/23 13:39 | 11/07/23 11:38 | 1 |
| Beryllium | ND | | 0.52 | 0.026 | mg/Kg | ☼ | 11/06/23 13:39 | 11/07/23 11:38 | 1 |
| Cadmium | ND | | 0.52 | 0.027 | mg/Kg | ☼ | 11/06/23 13:39 | 11/07/23 11:38 | 1 |
| **Chromium** | **9.5** | | 1.0 | 0.14 | mg/Kg | ☼ | 11/06/23 13:39 | 11/07/23 11:38 | 1 |
| **Lead** | **7.0** | | 1.6 | 0.22 | mg/Kg | ☼ | 11/06/23 13:39 | 11/07/23 11:38 | 1 |
| **Nickel** | **7.4** | | 1.0 | 0.12 | mg/Kg | ☼ | 11/06/23 13:39 | 11/07/23 11:38 | 1 |
| Selenium | ND | | 1.6 | 0.30 | mg/Kg | ☼ | 11/06/23 13:39 | 11/07/23 11:38 | 1 |
| Silver | ND | | 1.6 | 0.17 | mg/Kg | ☼ | 11/06/23 13:39 | 11/07/23 11:38 | 1 |
| Thallium | ND | | 3.1 | 1.1 | mg/Kg | ☼ | 11/06/23 13:39 | 11/07/23 11:38 | 1 |
| **Vanadium** | **7.5** | | 1.6 | 0.28 | mg/Kg | ☼ | 11/06/23 13:39 | 11/07/23 11:38 | 1 |
| **Zinc** | **33** | **^3+** | 3.1 | 0.81 | mg/Kg | ☼ | 11/06/23 13:39 | 11/07/23 11:38 | 1 |

# Client Sample Results

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-15085-1

**Client Sample ID: HYDLIFT-0608**
**Date Collected: 10/31/23 09:10**
**Date Received: 11/03/23 16:13**

**Lab Sample ID: 620-15085-1**
**Matrix: Solid**
**Percent Solids: 93.3**

## Method: SW846 7471A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.066 | 0.011 | mg/Kg | ☼ | 11/07/23 13:04 | 11/08/23 12:07 | 1 |

## General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Percent Moisture (EPA Moisture) | 6.7 | | 0.1 | 0.1 | % | | | 11/06/23 14:14 | 1 |
| Percent Solids (EPA Moisture) | 93.3 | | 0.1 | 0.1 | % | | | 11/06/23 14:14 | 1 |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-15085-1

## Client Sample ID: HOLDTANK-0410

**Date Collected: 11/01/23 14:45**
**Date Received: 11/03/23 16:13**

## Lab Sample ID: 620-15085-2

**Matrix: Solid**
**Percent Solids: 91.2**

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | 15 | | 5.3 | 5.3 | mg/Kg | ☼ | 11/09/23 14:14 | 11/09/23 20:40 | 1 |
| C9-C12 Aliphatics (adjusted) | 78 | | 5.3 | 5.3 | mg/Kg | ☼ | 11/09/23 14:14 | 11/09/23 20:40 | 1 |
| C9-C10 Aromatics | 76 | | 5.3 | 5.3 | mg/Kg | ☼ | 11/09/23 14:14 | 11/09/23 20:40 | 1 |
| C5-C8 Aliphatics (unadjusted) | 15 | | 5.3 | 5.3 | mg/Kg | ☼ | 11/09/23 14:14 | 11/09/23 20:40 | 1 |
| C9-C12 Aliphatics (unadjusted) | 160 | | 5.3 | 5.3 | mg/Kg | ☼ | 11/09/23 14:14 | 11/09/23 20:40 | 1 |
| Benzene | ND | | 0.26 | 0.26 | mg/Kg | ☼ | 11/09/23 14:14 | 11/09/23 20:40 | 1 |
| Ethylbenzene | 0.45 | | 0.26 | 0.26 | mg/Kg | ☼ | 11/09/23 14:14 | 11/09/23 20:40 | 1 |
| Methyl tert-butyl ether | ND | | 0.053 | 0.053 | mg/Kg | ☼ | 11/09/23 14:14 | 11/09/23 20:40 | 1 |
| Naphthalene | 6.4 | | 1.1 | 1.1 | mg/Kg | ☼ | 11/09/23 14:14 | 11/09/23 20:40 | 1 |
| Toluene | 0.28 | | 0.26 | 0.26 | mg/Kg | ☼ | 11/09/23 14:14 | 11/09/23 20:40 | 1 |
| m,p-Xylene | 1.2 | | 0.53 | 0.53 | mg/Kg | ☼ | 11/09/23 14:14 | 11/09/23 20:40 | 1 |
| o-Xylene | 1.2 | | 0.26 | 0.26 | mg/Kg | ☼ | 11/09/23 14:14 | 11/09/23 20:40 | 1 |
| Xylenes, Total | 2.4 | | 0.79 | 0.79 | mg/Kg | ☼ | 11/09/23 14:14 | 11/09/23 20:40 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *95* | | *70 - 130* | *11/09/23 14:14* | *11/09/23 20:40* | *1* |
| *2,5-Dibromotoluene (pid)* | *90* | | *70 - 130* | *11/09/23 14:14* | *11/09/23 20:40* | *1* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | 51 | | 7.2 | 7.2 | mg/Kg | ☼ | 11/07/23 09:19 | 11/08/23 22:31 | 1 |
| C19-C36 Aliphatics | 380 | | 7.2 | 7.2 | mg/Kg | ☼ | 11/07/23 09:19 | 11/08/23 22:31 | 1 |
| C11-C22 Aromatics | 310 | | 7.2 | 7.2 | mg/Kg | ☼ | 11/07/23 09:19 | 11/08/23 22:31 | 1 |
| C11-C22 Aromatics (Adjusted) | 310 | | 7.2 | 7.2 | mg/Kg | ☼ | 11/07/23 09:19 | 11/08/23 22:31 | 1 |
| Naphthalene | 1.3 | | 0.36 | 0.36 | mg/Kg | ☼ | 11/07/23 09:19 | 11/08/23 22:31 | 1 |
| 2-Methylnaphthalene | 3.5 | | 0.36 | 0.36 | mg/Kg | ☼ | 11/07/23 09:19 | 11/08/23 22:31 | 1 |
| Acenaphthylene | ND | | 0.36 | 0.36 | mg/Kg | ☼ | 11/07/23 09:19 | 11/08/23 22:31 | 1 |
| Acenaphthene | ND | | 0.36 | 0.36 | mg/Kg | ☼ | 11/07/23 09:19 | 11/08/23 22:31 | 1 |
| Fluorene | ND | | 0.36 | 0.36 | mg/Kg | ☼ | 11/07/23 09:19 | 11/08/23 22:31 | 1 |
| Phenanthrene | 0.53 | | 0.36 | 0.36 | mg/Kg | ☼ | 11/07/23 09:19 | 11/08/23 22:31 | 1 |
| Anthracene | ND | | 0.36 | 0.36 | mg/Kg | ☼ | 11/07/23 09:19 | 11/08/23 22:31 | 1 |
| Fluoranthene | ND | | 0.36 | 0.36 | mg/Kg | ☼ | 11/07/23 09:19 | 11/08/23 22:31 | 1 |
| Pyrene | ND | | 0.36 | 0.36 | mg/Kg | ☼ | 11/07/23 09:19 | 11/08/23 22:31 | 1 |
| Benzo[a]anthracene | ND | | 0.36 | 0.36 | mg/Kg | ☼ | 11/07/23 09:19 | 11/08/23 22:31 | 1 |
| Chrysene | ND | | 0.36 | 0.36 | mg/Kg | ☼ | 11/07/23 09:19 | 11/08/23 22:31 | 1 |
| Benzo[b]fluoranthene | ND | | 0.36 | 0.36 | mg/Kg | ☼ | 11/07/23 09:19 | 11/08/23 22:31 | 1 |
| Benzo[k]fluoranthene | ND | | 0.36 | 0.36 | mg/Kg | ☼ | 11/07/23 09:19 | 11/08/23 22:31 | 1 |
| Benzo[a]pyrene | ND | | 0.36 | 0.36 | mg/Kg | ☼ | 11/07/23 09:19 | 11/08/23 22:31 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.36 | 0.36 | mg/Kg | ☼ | 11/07/23 09:19 | 11/08/23 22:31 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.36 | 0.36 | mg/Kg | ☼ | 11/07/23 09:19 | 11/08/23 22:31 | 1 |
| Benzo[g,h,i]perylene | ND | | 0.36 | 0.36 | mg/Kg | ☼ | 11/07/23 09:19 | 11/08/23 22:31 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *35* | *S1-* | *40 - 140* | *11/07/23 09:19* | *11/08/23 22:31* | *1* |
| *o-Terphenyl (Surr)* | *59* | | *40 - 140* | *11/07/23 09:19* | *11/08/23 22:31* | *1* |
| *2-Fluorobiphenyl (Surr)* | *132* | | *40 - 140* | *11/07/23 09:19* | *11/08/23 22:31* | *1* |

### Method: SW846 6010D - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 1.6 | J | 5.2 | 0.39 | mg/Kg | ☼ | 11/06/23 13:39 | 11/07/23 11:43 | 1 |

## Client Sample ID: HOLDTANK-0410

**Date Collected: 11/01/23 14:45**
**Date Received: 11/03/23 16:13**

## Lab Sample ID: 620-15085-2

**Matrix: Solid**
**Percent Solids: 91.2**

### Method: SW846 6010D - Metals (ICP) (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 4.6 | | 1.6 | 0.20 | mg/Kg | ☼ | 11/06/23 13:39 | 11/07/23 11:43 | 1 |
| Barium | 49 | | 1.0 | 0.12 | mg/Kg | ☼ | 11/06/23 13:39 | 11/07/23 11:43 | 1 |
| Beryllium | ND | | 0.52 | 0.026 | mg/Kg | ☼ | 11/06/23 13:39 | 11/07/23 11:43 | 1 |
| Cadmium | 0.073 | J | 0.52 | 0.027 | mg/Kg | ☼ | 11/06/23 13:39 | 11/07/23 11:43 | 1 |
| Chromium | 16 | | 1.0 | 0.14 | mg/Kg | ☼ | 11/06/23 13:39 | 11/07/23 11:43 | 1 |
| Lead | 14 | | 1.6 | 0.22 | mg/Kg | ☼ | 11/06/23 13:39 | 11/07/23 11:43 | 1 |
| Nickel | 9.6 | | 1.0 | 0.12 | mg/Kg | ☼ | 11/06/23 13:39 | 11/07/23 11:43 | 1 |
| Selenium | ND | | 1.6 | 0.30 | mg/Kg | ☼ | 11/06/23 13:39 | 11/07/23 11:43 | 1 |
| Silver | ND | | 1.6 | 0.17 | mg/Kg | ☼ | 11/06/23 13:39 | 11/07/23 11:43 | 1 |
| Thallium | ND | | 3.1 | 1.1 | mg/Kg | ☼ | 11/06/23 13:39 | 11/07/23 11:43 | 1 |
| Vanadium | 25 | | 1.6 | 0.28 | mg/Kg | ☼ | 11/06/23 13:39 | 11/07/23 11:43 | 1 |
| Zinc | 31 | ^3+ | 3.1 | 0.80 | mg/Kg | ☼ | 11/06/23 13:39 | 11/07/23 11:43 | 1 |

### Method: SW846 7471A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.013 | J | 0.067 | 0.011 | mg/Kg | ☼ | 11/07/23 13:09 | 11/08/23 12:09 | 1 |

### General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Percent Moisture (EPA Moisture) | 8.8 | | 0.1 | 0.1 | % | | | 11/06/23 14:14 | 1 |
| Percent Solids (EPA Moisture) | 91.2 | | 0.1 | 0.1 | % | | | 11/06/23 14:14 | 1 |

# Surrogate Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-15085-1

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

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

| | | Percent Surrogate Recovery (Acceptance Limits) | |
|---|---|---|---|
| | | 25DBTf1 | 25DBTp1 |
| Lab Sample ID | Client Sample ID | (70-130) | (70-130) |
| 620-15085-1 | HYDLIFT-0608 | 23 S1- | 18 S1- |
| 620-15085-1 - RA | HYDLIFT-0608 | 7 S1- | 6 S1- |
| 620-15085-2 | HOLDTANK-0410 | 95 | 90 |
| LCS 620-28924/1-A | Lab Control Sample | 98 | 98 |
| LCSD 620-28924/2-A | Lab Control Sample Dup | 96 | 96 |
| MB 620-28924/3-A | Method Blank | 89 | 92 |

**Surrogate Legend**

25DBTf = 2,5-Dibromotoluene (fid)
25DBTp = 2,5-Dibromotoluene (pid)

## Method: 8082 - Polychlorinated Biphenyls (GC/ECD)

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

| | | Percent Surrogate Recovery (Acceptance Limits) | | | |
|---|---|---|---|---|---|
| | | TCX1 | TCX2 | DCB1 | DCB2 |
| Lab Sample ID | Client Sample ID | (30-150) | (30-150) | (30-150) | (30-150) |
| 620-15085-1 | HYDLIFT-0608 | 79 | 91 | 116 | 100 |
| LCS 620-28771/7-A | Lab Control Sample | 86 | 87 | 128 | 103 |
| LCSD 620-28771/8-A | Lab Control Sample Dup | 85 | 87 | 135 | 111 |
| MB 620-28771/1-A | Method Blank | 70 | 72 | 111 | 92 |

**Surrogate Legend**

TCX = Tetrachloro-m-xylene
DCB = DCB Decachlorobiphenyl (Surr)

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

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

| | | Percent Surrogate Recovery (Acceptance Limits) | | |
|---|---|---|---|---|
| | | 1COD1 | OTPH1 | FBP1 |
| Lab Sample ID | Client Sample ID | (40-140) | (40-140) | (40-140) |
| 620-15085-1 | HYDLIFT-0608 | 5 S1- | 27 S1- | 66 |
| 620-15085-2 | HOLDTANK-0410 | 35 S1- | 59 | 132 |
| LCS 620-28761/2-B | Lab Control Sample | 50 | 81 | 111 |
| LCSD 620-28761/3-B | Lab Control Sample Dup | 59 | 93 | 127 |
| MB 620-28761/1-B | Method Blank | 45 | 67 | 91 |

**Surrogate Legend**

1COD = 1-Chlorooctadecane (Surr)
OTPH = o-Terphenyl (Surr)
FBP = 2-Fluorobiphenyl (Surr)

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

**Lab Sample ID: MB 620-28924/3-A**
**Matrix: Solid**
**Analysis Batch: 28871**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 28924**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 5.0 | 5.0 | mg/Kg | | 11/09/23 14:14 | 11/09/23 19:29 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 5.0 | 5.0 | mg/Kg | | 11/09/23 14:14 | 11/09/23 19:29 | 1 |
| C9-C10 Aromatics | ND | | 5.0 | 5.0 | mg/Kg | | 11/09/23 14:14 | 11/09/23 19:29 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 5.0 | 5.0 | mg/Kg | | 11/09/23 14:14 | 11/09/23 19:29 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 5.0 | 5.0 | mg/Kg | | 11/09/23 14:14 | 11/09/23 19:29 | 1 |
| Benzene | ND | | 0.25 | 0.25 | mg/Kg | | 11/09/23 14:14 | 11/09/23 19:29 | 1 |
| Ethylbenzene | ND | | 0.25 | 0.25 | mg/Kg | | 11/09/23 14:14 | 11/09/23 19:29 | 1 |
| Methyl tert-butyl ether | ND | | 0.050 | 0.050 | mg/Kg | | 11/09/23 14:14 | 11/09/23 19:29 | 1 |
| Naphthalene | ND | | 1.0 | 1.0 | mg/Kg | | 11/09/23 14:14 | 11/09/23 19:29 | 1 |
| Toluene | ND | | 0.25 | 0.25 | mg/Kg | | 11/09/23 14:14 | 11/09/23 19:29 | 1 |
| m,p-Xylene | ND | | 0.50 | 0.50 | mg/Kg | | 11/09/23 14:14 | 11/09/23 19:29 | 1 |
| o-Xylene | ND | | 0.25 | 0.25 | mg/Kg | | 11/09/23 14:14 | 11/09/23 19:29 | 1 |
| Xylenes, Total | ND | | 0.75 | 0.75 | mg/Kg | | 11/09/23 14:14 | 11/09/23 19:29 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *89* | | *70 - 130* | *11/09/23 14:14* | *11/09/23 19:29* | *1* |
| *2,5-Dibromotoluene (pid)* | *92* | | *70 - 130* | *11/09/23 14:14* | *11/09/23 19:29* | *1* |

**Lab Sample ID: LCS 620-28924/1-A**
**Matrix: Solid**
**Analysis Batch: 28871**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 28924**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | 1.00 | ND | | mg/Kg | | 104 | 70 - 130 |
| C5-C8 Aliphatics (unadjusted) | 3.00 | ND | | mg/Kg | | 97 | 70 - 130 |
| C9-C12 Aliphatics (unadjusted) | 3.00 | ND | | mg/Kg | | 99 | 70 - 130 |
| Benzene | 1.00 | 1.01 | | mg/Kg | | 101 | 70 - 130 |
| Ethylbenzene | 1.00 | 1.04 | | mg/Kg | | 104 | 70 - 130 |
| Methyl tert-butyl ether | 1.00 | 1.02 | | mg/Kg | | 102 | 70 - 130 |
| Naphthalene | 1.00 | 1.01 | | mg/Kg | | 101 | 70 - 130 |
| Toluene | 1.00 | 1.03 | | mg/Kg | | 103 | 70 - 130 |
| m,p-Xylene | 2.00 | 2.10 | | mg/Kg | | 105 | 70 - 130 |
| o-Xylene | 1.00 | 1.04 | | mg/Kg | | 104 | 70 - 130 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *98* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *98* | | *70 - 130* |

**Lab Sample ID: LCSD 620-28924/2-A**
**Matrix: Solid**
**Analysis Batch: 28871**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 28924**

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | 1.00 | ND | | mg/Kg | | 104 | 70 - 130 | 1 | 25 |
| C5-C8 Aliphatics (unadjusted) | 3.00 | ND | | mg/Kg | | 97 | 70 - 130 | 1 | 25 |
| C9-C12 Aliphatics (unadjusted) | 3.00 | ND | | mg/Kg | | 101 | 70 - 130 | 2 | 25 |
| Benzene | 1.00 | 1.02 | | mg/Kg | | 102 | 70 - 130 | 1 | 25 |
| Ethylbenzene | 1.00 | 1.04 | | mg/Kg | | 104 | 70 - 130 | 0 | 25 |

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: LCSD 620-28924/2-A**
**Matrix: Solid**
**Analysis Batch: 28871**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 28924**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Methyl tert-butyl ether | | | 1.00 | 1.01 | | mg/Kg | | 101 | 70 - 130 | 0 | 25 |
| Naphthalene | | | 1.00 | 1.04 | | mg/Kg | | 104 | 70 - 130 | 3 | 25 |
| Toluene | | | 1.00 | 1.02 | | mg/Kg | | 102 | 70 - 130 | 0 | 25 |
| m,p-Xylene | | | 2.00 | 2.10 | | mg/Kg | | 105 | 70 - 130 | 0 | 25 |
| o-Xylene | | | 1.00 | 1.04 | | mg/Kg | | 104 | 70 - 130 | 0 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *96* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *96* | | *70 - 130* |

## Method: 8082 - Polychlorinated Biphenyls (GC/ECD)

**Lab Sample ID: MB 620-28771/1-A**
**Matrix: Solid**
**Analysis Batch: 28791**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 28771**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| PCB-1016 | ND | | 20 | 14 | ug/Kg | | 11/07/23 13:04 | 11/09/23 01:02 | 1 |
| PCB-1221 | ND | | 20 | 5.9 | ug/Kg | | 11/07/23 13:04 | 11/09/23 01:02 | 1 |
| PCB-1232 | ND | | 20 | 5.5 | ug/Kg | | 11/07/23 13:04 | 11/09/23 01:02 | 1 |
| PCB-1242 | ND | | 20 | 3.2 | ug/Kg | | 11/07/23 13:04 | 11/09/23 01:02 | 1 |
| PCB-1248 | ND | | 20 | 6.3 | ug/Kg | | 11/07/23 13:04 | 11/09/23 01:02 | 1 |
| PCB-1254 | ND | | 20 | 16 | ug/Kg | | 11/07/23 13:04 | 11/09/23 01:02 | 1 |
| PCB-1262 | ND | | 20 | 4.7 | ug/Kg | | 11/07/23 13:04 | 11/09/23 01:02 | 1 |
| PCB-1260 | ND | | 20 | 4.3 | ug/Kg | | 11/07/23 13:04 | 11/09/23 01:02 | 1 |
| PCB-1268 | ND | | 20 | 4.3 | ug/Kg | | 11/07/23 13:04 | 11/09/23 01:02 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *Tetrachloro-m-xylene* | *70* | | *30 - 150* | *11/07/23 13:04* | *11/09/23 01:02* | *1* |
| *Tetrachloro-m-xylene* | *72* | | *30 - 150* | *11/07/23 13:04* | *11/09/23 01:02* | *1* |
| *DCB Decachlorobiphenyl (Surr)* | *111* | | *30 - 150* | *11/07/23 13:04* | *11/09/23 01:02* | *1* |
| *DCB Decachlorobiphenyl (Surr)* | *92* | | *30 - 150* | *11/07/23 13:04* | *11/09/23 01:02* | *1* |

**Lab Sample ID: LCS 620-28771/7-A**
**Matrix: Solid**
**Analysis Batch: 28791**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 28771**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| PCB-1016 | | | 167 | 146 | | ug/Kg | | 87 | 40 - 140 |
| PCB-1016 | | | 167 | 146 | | ug/Kg | | 87 | 40 - 140 |
| PCB-1260 | | | 167 | 148 | | ug/Kg | | 89 | 40 - 140 |
| PCB-1260 | | | 167 | 148 | | ug/Kg | | 89 | 40 - 140 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *Tetrachloro-m-xylene* | *86* | | *30 - 150* |
| *Tetrachloro-m-xylene* | *87* | | *30 - 150* |
| *DCB Decachlorobiphenyl (Surr)* | *128* | | *30 - 150* |
| *DCB Decachlorobiphenyl (Surr)* | *103* | | *30 - 150* |

## Method: 8082 - Polychlorinated Biphenyls (GC/ECD)

**Lab Sample ID: LCSD 620-28771/8-A**
**Matrix: Solid**
**Analysis Batch: 28791**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 28771**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PCB-1016 | | | 167 | 152 | | ug/Kg | | 91 | 40 - 140 | 4 | 30 |
| PCB-1016 | | | 167 | 152 | | ug/Kg | | 91 | 40 - 140 | 4 | 30 |
| PCB-1260 | | | 167 | 160 | | ug/Kg | | 96 | 40 - 140 | 8 | 30 |
| PCB-1260 | | | 167 | 159 | | ug/Kg | | 96 | 40 - 140 | 8 | 30 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *Tetrachloro-m-xylene* | *85* | | *30 - 150* |
| *Tetrachloro-m-xylene* | *87* | | *30 - 150* |
| *DCB Decachlorobiphenyl (Surr)* | *135* | | *30 - 150* |
| *DCB Decachlorobiphenyl (Surr)* | *111* | | *30 - 150* |

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

**Lab Sample ID: MB 620-28761/1-B**
**Matrix: Solid**
**Analysis Batch: 28787**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 28761**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 6.7 | 6.7 | mg/Kg | | 11/07/23 09:19 | 11/08/23 20:16 | 1 |
| C19-C36 Aliphatics | ND | | 6.7 | 6.7 | mg/Kg | | 11/07/23 09:19 | 11/08/23 20:16 | 1 |
| C11-C22 Aromatics | ND | | 6.7 | 6.7 | mg/Kg | | 11/07/23 09:19 | 11/08/23 20:16 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 6.7 | 6.7 | mg/Kg | | 11/07/23 09:19 | 11/08/23 20:16 | 1 |
| Naphthalene | ND | | 0.33 | 0.33 | mg/Kg | | 11/07/23 09:19 | 11/08/23 20:16 | 1 |
| 2-Methylnaphthalene | ND | | 0.33 | 0.33 | mg/Kg | | 11/07/23 09:19 | 11/08/23 20:16 | 1 |
| Acenaphthylene | ND | | 0.33 | 0.33 | mg/Kg | | 11/07/23 09:19 | 11/08/23 20:16 | 1 |
| Acenaphthene | ND | | 0.33 | 0.33 | mg/Kg | | 11/07/23 09:19 | 11/08/23 20:16 | 1 |
| Fluorene | ND | | 0.33 | 0.33 | mg/Kg | | 11/07/23 09:19 | 11/08/23 20:16 | 1 |
| Phenanthrene | ND | | 0.33 | 0.33 | mg/Kg | | 11/07/23 09:19 | 11/08/23 20:16 | 1 |
| Anthracene | ND | | 0.33 | 0.33 | mg/Kg | | 11/07/23 09:19 | 11/08/23 20:16 | 1 |
| Fluoranthene | ND | | 0.33 | 0.33 | mg/Kg | | 11/07/23 09:19 | 11/08/23 20:16 | 1 |
| Pyrene | ND | | 0.33 | 0.33 | mg/Kg | | 11/07/23 09:19 | 11/08/23 20:16 | 1 |
| Benzo[a]anthracene | ND | | 0.33 | 0.33 | mg/Kg | | 11/07/23 09:19 | 11/08/23 20:16 | 1 |
| Chrysene | ND | | 0.33 | 0.33 | mg/Kg | | 11/07/23 09:19 | 11/08/23 20:16 | 1 |
| Benzo[b]fluoranthene | ND | | 0.33 | 0.33 | mg/Kg | | 11/07/23 09:19 | 11/08/23 20:16 | 1 |
| Benzo[k]fluoranthene | ND | | 0.33 | 0.33 | mg/Kg | | 11/07/23 09:19 | 11/08/23 20:16 | 1 |
| Benzo[a]pyrene | ND | | 0.33 | 0.33 | mg/Kg | | 11/07/23 09:19 | 11/08/23 20:16 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.33 | 0.33 | mg/Kg | | 11/07/23 09:19 | 11/08/23 20:16 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.33 | 0.33 | mg/Kg | | 11/07/23 09:19 | 11/08/23 20:16 | 1 |
| Benzo[g,h,i]perylene | ND | | 0.33 | 0.33 | mg/Kg | | 11/07/23 09:19 | 11/08/23 20:16 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *45* | | *40 - 140* | *11/07/23 09:19* | *11/08/23 20:16* | *1* |
| *o-Terphenyl (Surr)* | *67* | | *40 - 140* | *11/07/23 09:19* | *11/08/23 20:16* | *1* |
| *2-Fluorobiphenyl (Surr)* | *91* | | *40 - 140* | *11/07/23 09:19* | *11/08/23 20:16* | *1* |

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: LCS 620-28761/2-B**
**Matrix: Solid**
**Analysis Batch: 28787**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 28761**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | | | 8.00 | ND | | mg/Kg | | 45 | 40 - 140 | | |
| C19-C36 Aliphatics | | | 10.7 | 8.72 | | mg/Kg | | 82 | 40 - 140 | | |
| C11-C22 Aromatics | | | 22.7 | 20.7 | | mg/Kg | | 91 | 40 - 140 | | |
| Naphthalene | | | 1.33 | 0.693 | | mg/Kg | | 52 | 40 - 140 | | |
| 2-Methylnaphthalene | | | 1.33 | 1.18 | | mg/Kg | | 88 | 40 - 140 | | |
| Acenaphthylene | | | 1.33 | 0.877 | | mg/Kg | | 66 | 40 - 140 | | |
| Acenaphthene | | | 1.33 | 0.895 | | mg/Kg | | 67 | 40 - 140 | | |
| Fluorene | | | 1.33 | 0.706 | | mg/Kg | | 53 | 40 - 140 | | |
| Phenanthrene | | | 1.33 | 0.900 | | mg/Kg | | 68 | 40 - 140 | | |
| Anthracene | | | 1.33 | 0.794 | | mg/Kg | | 60 | 40 - 140 | | |
| Fluoranthene | | | 1.33 | 1.12 | | mg/Kg | | 84 | 40 - 140 | | |
| Pyrene | | | 1.33 | 1.20 | | mg/Kg | | 90 | 40 - 140 | | |
| Benzo[a]anthracene | | | 1.33 | 0.878 | | mg/Kg | | 66 | 40 - 140 | | |
| Chrysene | | | 1.33 | 1.24 | | mg/Kg | | 93 | 40 - 140 | | |
| Benzo[b]fluoranthene | | | 1.33 | 0.924 | | mg/Kg | | 69 | 40 - 140 | | |
| Benzo[k]fluoranthene | | | 1.33 | 1.31 | | mg/Kg | | 99 | 40 - 140 | | |
| Benzo[a]pyrene | | | 1.33 | 1.13 | | mg/Kg | | 84 | 40 - 140 | | |
| Indeno[1,2,3-cd]pyrene | | | 1.33 | 0.788 | | mg/Kg | | 59 | 40 - 140 | | |
| Dibenz(a,h)anthracene | | | 1.33 | 1.11 | | mg/Kg | | 83 | 40 - 140 | | |
| Benzo[g,h,i]perylene | | | 1.33 | 1.08 | | mg/Kg | | 81 | 40 - 140 | | |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *50* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *81* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *111* | | *40 - 140* |

**Lab Sample ID: LCSD 620-28761/3-B**
**Matrix: Solid**
**Analysis Batch: 28787**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 28761**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | | | 8.00 | ND | | mg/Kg | | 40 | 40 - 140 | 11 | 25 |
| C19-C36 Aliphatics | | | 10.7 | 7.93 | | mg/Kg | | 74 | 40 - 140 | 9 | 25 |
| C11-C22 Aromatics | | | 22.7 | 24.7 | | mg/Kg | | 109 | 40 - 140 | 17 | 25 |
| Naphthalene | | | 1.33 | 0.889 | | mg/Kg | | 67 | 40 - 140 | 25 | 25 |
| 2-Methylnaphthalene | | | 1.33 | 1.38 | | mg/Kg | | 104 | 40 - 140 | 16 | 25 |
| Acenaphthylene | | | 1.33 | 1.05 | | mg/Kg | | 79 | 40 - 140 | 18 | 25 |
| Acenaphthene | | | 1.33 | 1.11 | | mg/Kg | | 83 | 40 - 140 | 21 | 25 |
| Fluorene | | | 1.33 | 0.866 | | mg/Kg | | 65 | 40 - 140 | 20 | 25 |
| Phenanthrene | | | 1.33 | 1.04 | | mg/Kg | | 78 | 40 - 140 | 15 | 25 |
| Anthracene | | | 1.33 | 0.960 | | mg/Kg | | 72 | 40 - 140 | 19 | 25 |
| Fluoranthene | | | 1.33 | 1.30 | | mg/Kg | | 97 | 40 - 140 | 15 | 25 |
| Pyrene | | | 1.33 | 1.34 | | mg/Kg | | 100 | 40 - 140 | 10 | 25 |
| Benzo[a]anthracene | | | 1.33 | 1.08 | | mg/Kg | | 81 | 40 - 140 | 21 | 25 |
| Chrysene | | | 1.33 | 1.34 | | mg/Kg | | 101 | 40 - 140 | 8 | 25 |
| Benzo[b]fluoranthene | | | 1.33 | 1.02 | | mg/Kg | | 77 | 40 - 140 | 10 | 25 |
| Benzo[k]fluoranthene | | | 1.33 | 1.52 | | mg/Kg | | 114 | 40 - 140 | 15 | 25 |
| Benzo[a]pyrene | | | 1.33 | 1.20 | | mg/Kg | | 90 | 40 - 140 | 6 | 25 |

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: LCSD 620-28761/3-B**
**Matrix: Solid**
**Analysis Batch: 28787**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 28761**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Indeno[1,2,3-cd]pyrene | | | 1.33 | 1.00 | | mg/Kg | | 75 | 40 - 140 | 24 | 25 |
| Dibenz(a,h)anthracene | | | 1.33 | 1.34 | | mg/Kg | | 101 | 40 - 140 | 19 | 25 |
| Benzo[g,h,i]perylene | | | 1.33 | 1.37 | | mg/Kg | | 103 | 40 - 140 | 24 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *59* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *93* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *127* | | *40 - 140* |

## Method: 6010D - Metals (ICP)

**Lab Sample ID: MB 620-28725/1-A**
**Matrix: Solid**
**Analysis Batch: 28770**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 28725**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 4.7 | 0.35 | mg/Kg | | 11/06/23 13:39 | 11/07/23 10:56 | 1 |
| Arsenic | ND | | 1.4 | 0.18 | mg/Kg | | 11/06/23 13:39 | 11/07/23 10:56 | 1 |
| Barium | ND | | 0.93 | 0.11 | mg/Kg | | 11/06/23 13:39 | 11/07/23 10:56 | 1 |
| Beryllium | ND | | 0.47 | 0.023 | mg/Kg | | 11/06/23 13:39 | 11/07/23 10:56 | 1 |
| Cadmium | ND | | 0.47 | 0.024 | mg/Kg | | 11/06/23 13:39 | 11/07/23 10:56 | 1 |
| Chromium | ND | | 0.93 | 0.12 | mg/Kg | | 11/06/23 13:39 | 11/07/23 10:56 | 1 |
| Lead | ND | | 1.4 | 0.20 | mg/Kg | | 11/06/23 13:39 | 11/07/23 10:56 | 1 |
| Nickel | ND | | 0.93 | 0.11 | mg/Kg | | 11/06/23 13:39 | 11/07/23 10:56 | 1 |
| Selenium | ND | | 1.4 | 0.27 | mg/Kg | | 11/06/23 13:39 | 11/07/23 10:56 | 1 |
| Silver | ND | | 1.4 | 0.15 | mg/Kg | | 11/06/23 13:39 | 11/07/23 10:56 | 1 |
| Thallium | ND | | 2.8 | 1.0 | mg/Kg | | 11/06/23 13:39 | 11/07/23 10:56 | 1 |
| Vanadium | ND | | 1.4 | 0.25 | mg/Kg | | 11/06/23 13:39 | 11/07/23 10:56 | 1 |
| Zinc | ND | ^3+ | 2.8 | 0.72 | mg/Kg | | 11/06/23 13:39 | 11/07/23 10:56 | 1 |

**Lab Sample ID: LCSSRM 620-28725/2-A**
**Matrix: Solid**
**Analysis Batch: 28770**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 28725**

| Analyte | | | Spike Added | LCSSRM Result | LCSSRM Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | | | 270 | 124 | | mg/Kg | | 45.9 | 3.3 - 103.3 | | |
| Arsenic | | | 218 | 168 | | mg/Kg | | 77.2 | 67.0 - 98.6 | | |
| Barium | | | 388 | 366 | | mg/Kg | | 94.3 | 74.5 - 107.7 | | |
| Beryllium | | | 165 | 153 | | mg/Kg | | 92.8 | 76.4 - 108.5 | | |
| Cadmium | | | 118 | 102 | | mg/Kg | | 86.2 | 73.6 - 105.1 | | |
| Chromium | | | 255 | 230 | | mg/Kg | | 90.0 | 74.1 - 107.8 | | |
| Lead | | | 155 | 139 | | mg/Kg | | 89.8 | 76.8 - 110.3 | | |
| Nickel | | | 120 | 106 | | mg/Kg | | 88.6 | 74.3 - 105.8 | | |

## Method: 6010D - Metals (ICP) (Continued)

**Lab Sample ID: LCSSRM 620-28725/2-A**
**Matrix: Solid**
**Analysis Batch: 28770**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 28725**

| Analyte | Spike Added | LCSSRM Result | LCSSRM Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Selenium | 107 | 90.0 | | mg/Kg | | 84.1 | 70.9 - 109.3 |
| Silver | 51.0 | 43.3 | | mg/Kg | | 85.0 | 73.7 - 111.8 |
| Thallium | 188 | 166 | | mg/Kg | | 88.3 | 73.9 - 108.5 |
| Vanadium | 133 | 122 | | mg/Kg | | 91.8 | 69.1 - 108.3 |
| Zinc | 406 | 357 | ^3+ | mg/Kg | | 87.8 | 72.9 - 109.1 |

## Method: 7471A - Mercury (CVAA)

**Lab Sample ID: MB 620-28772/1-A**
**Matrix: Solid**
**Analysis Batch: 28817**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 28772**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.064 | 0.011 | mg/Kg | | 11/07/23 13:04 | 11/08/23 11:35 | 1 |

**Lab Sample ID: LCSSRM 620-28772/2-A ^10**
**Matrix: Solid**
**Analysis Batch: 28817**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 28772**

| Analyte | Spike Added | LCSSRM Result | LCSSRM Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Mercury | 17.1 | 9.56 | | mg/Kg | | 55.9 | 33.1 - 86.5 |

# QC Association Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-15085-1

## GC VOA

### Analysis Batch: 28871

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-15085-1 | HYDLIFT-0608 | Total/NA | Solid | MAVPH2.1 | 28924 |
| 620-15085-1 - RA | HYDLIFT-0608 | Total/NA | Solid | MAVPH2.1 | 28924 |
| 620-15085-2 | HOLDTANK-0410 | Total/NA | Solid | MAVPH2.1 | 28924 |
| MB 620-28924/3-A | Method Blank | Total/NA | Solid | MAVPH2.1 | 28924 |
| LCS 620-28924/1-A | Lab Control Sample | Total/NA | Solid | MAVPH2.1 | 28924 |
| LCSD 620-28924/2-A | Lab Control Sample Dup | Total/NA | Solid | MAVPH2.1 | 28924 |

### Prep Batch: 28924

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-15085-1 - RA | HYDLIFT-0608 | Total/NA | Solid | 5035 | |
| 620-15085-1 | HYDLIFT-0608 | Total/NA | Solid | 5035 | |
| 620-15085-2 | HOLDTANK-0410 | Total/NA | Solid | 5035 | |
| MB 620-28924/3-A | Method Blank | Total/NA | Solid | 5035 | |
| LCS 620-28924/1-A | Lab Control Sample | Total/NA | Solid | 5035 | |
| LCSD 620-28924/2-A | Lab Control Sample Dup | Total/NA | Solid | 5035 | |

## GC Semi VOA

### Prep Batch: 28761

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-15085-1 | HYDLIFT-0608 | Total/NA | Solid | 3546 | |
| 620-15085-2 | HOLDTANK-0410 | Total/NA | Solid | 3546 | |
| MB 620-28761/1-B | Method Blank | Total/NA | Solid | 3546 | |
| LCS 620-28761/2-B | Lab Control Sample | Total/NA | Solid | 3546 | |
| LCSD 620-28761/3-B | Lab Control Sample Dup | Total/NA | Solid | 3546 | |

### Prep Batch: 28771

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-15085-1 | HYDLIFT-0608 | Total/NA | Solid | 3546 | |
| MB 620-28771/1-A | Method Blank | Total/NA | Solid | 3546 | |
| LCS 620-28771/7-A | Lab Control Sample | Total/NA | Solid | 3546 | |
| LCSD 620-28771/8-A | Lab Control Sample Dup | Total/NA | Solid | 3546 | |

### Analysis Batch: 28787

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-15085-1 | HYDLIFT-0608 | Total/NA | Solid | MAEPH2.1 | 28809 |
| 620-15085-2 | HOLDTANK-0410 | Total/NA | Solid | MAEPH2.1 | 28809 |
| MB 620-28761/1-B | Method Blank | Total/NA | Solid | MAEPH2.1 | 28809 |
| LCS 620-28761/2-B | Lab Control Sample | Total/NA | Solid | MAEPH2.1 | 28809 |
| LCSD 620-28761/3-B | Lab Control Sample Dup | Total/NA | Solid | MAEPH2.1 | 28809 |

### Analysis Batch: 28791

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-15085-1 | HYDLIFT-0608 | Total/NA | Solid | 8082 | 28771 |
| MB 620-28771/1-A | Method Blank | Total/NA | Solid | 8082 | 28771 |
| LCS 620-28771/7-A | Lab Control Sample | Total/NA | Solid | 8082 | 28771 |
| LCSD 620-28771/8-A | Lab Control Sample Dup | Total/NA | Solid | 8082 | 28771 |

### Fraction Batch: 28809

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-15085-1 | HYDLIFT-0608 | Total/NA | Solid | MA EPH Frac | 28761 |

## GC Semi VOA (Continued)

### Fraction Batch: 28809 (Continued)

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-15085-2 | HOLDTANK-0410 | Total/NA | Solid | MA EPH Frac | 28761 |
| MB 620-28761/1-B | Method Blank | Total/NA | Solid | MA EPH Frac | 28761 |
| LCS 620-28761/2-B | Lab Control Sample | Total/NA | Solid | MA EPH Frac | 28761 |
| LCSD 620-28761/3-B | Lab Control Sample Dup | Total/NA | Solid | MA EPH Frac | 28761 |

## Metals

### Prep Batch: 28725

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-15085-1 | HYDLIFT-0608 | Total/NA | Solid | 3050B | |
| 620-15085-2 | HOLDTANK-0410 | Total/NA | Solid | 3050B | |
| MB 620-28725/1-A | Method Blank | Total/NA | Solid | 3050B | |
| LCSSRM 620-28725/2-A | Lab Control Sample | Total/NA | Solid | 3050B | |

### Analysis Batch: 28770

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-15085-1 | HYDLIFT-0608 | Total/NA | Solid | 6010D | 28725 |
| 620-15085-2 | HOLDTANK-0410 | Total/NA | Solid | 6010D | 28725 |
| MB 620-28725/1-A | Method Blank | Total/NA | Solid | 6010D | 28725 |
| LCSSRM 620-28725/2-A | Lab Control Sample | Total/NA | Solid | 6010D | 28725 |

### Prep Batch: 28772

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-15085-1 | HYDLIFT-0608 | Total/NA | Solid | 7471B | |
| 620-15085-2 | HOLDTANK-0410 | Total/NA | Solid | 7471B | |
| MB 620-28772/1-A | Method Blank | Total/NA | Solid | 7471B | |
| LCSSRM 620-28772/2-A ^10 | Lab Control Sample | Total/NA | Solid | 7471B | |

### Analysis Batch: 28817

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-15085-1 | HYDLIFT-0608 | Total/NA | Solid | 7471A | 28772 |
| 620-15085-2 | HOLDTANK-0410 | Total/NA | Solid | 7471A | 28772 |
| MB 620-28772/1-A | Method Blank | Total/NA | Solid | 7471A | 28772 |
| LCSSRM 620-28772/2-A ^10 | Lab Control Sample | Total/NA | Solid | 7471A | 28772 |

## General Chemistry

### Analysis Batch: 28726

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-15085-1 | HYDLIFT-0608 | Total/NA | Solid | Moisture | |
| 620-15085-2 | HOLDTANK-0410 | Total/NA | Solid | Moisture | |

# Lab Chronicle

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-15085-1

## Client Sample ID: HYDLIFT-0608
**Date Collected: 10/31/23 09:10**
**Date Received: 11/03/23 16:13**

**Lab Sample ID: 620-15085-1**
**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Moisture | | 1 | 28726 | ODO | EET NE | 11/06/23 14:14 |

## Client Sample ID: HYDLIFT-0608
**Date Collected: 10/31/23 09:10**
**Date Received: 11/03/23 16:13**

**Lab Sample ID: 620-15085-1**
**Matrix: Solid**
**Percent Solids: 93.3**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 5035 | | | 28924 | BMH | EET NE | 11/09/23 14:14 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 28871 | BMH | EET NE | 11/09/23 20:04 |
| Total/NA | Prep | 5035 | RA | | 28924 | BMH | EET NE | 11/09/23 14:14 |
| Total/NA | Analysis | MAVPH2.1 | RA | 1 | 28871 | BMH | EET NE | 11/10/23 14:05 |
| Total/NA | Prep | 3546 | | | 28771 | JAC | EET NE | 11/07/23 13:04 |
| Total/NA | Analysis | 8082 | | 1 | 28791 | SFL | EET NE | 11/09/23 02:11 |
| Total/NA | Prep | 3546 | | | 28761 | JAC | EET NE | 11/07/23 09:19 |
| Total/NA | Fraction | MA EPH Frac | | | 28809 | JJB | EET NE | 11/08/23 10:17 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 28787 | JS | EET NE | 11/08/23 22:04 |
| Total/NA | Prep | 3050B | | | 28725 | ODO | EET NE | 11/06/23 13:39 |
| Total/NA | Analysis | 6010D | | 1 | 28770 | PRB | EET NE | 11/07/23 11:38 |
| Total/NA | Prep | 7471B | | | 28772 | ODO | EET NE | 11/07/23 13:04 |
| Total/NA | Analysis | 7471A | | 1 | 28817 | PRB | EET NE | 11/08/23 12:07 |

## Client Sample ID: HOLDTANK-0410
**Date Collected: 11/01/23 14:45**
**Date Received: 11/03/23 16:13**

**Lab Sample ID: 620-15085-2**
**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Moisture | | 1 | 28726 | ODO | EET NE | 11/06/23 14:14 |

## Client Sample ID: HOLDTANK-0410
**Date Collected: 11/01/23 14:45**
**Date Received: 11/03/23 16:13**

**Lab Sample ID: 620-15085-2**
**Matrix: Solid**
**Percent Solids: 91.2**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 5035 | | | 28924 | BMH | EET NE | 11/09/23 14:14 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 28871 | BMH | EET NE | 11/09/23 20:40 |
| Total/NA | Prep | 3546 | | | 28761 | JAC | EET NE | 11/07/23 09:19 |
| Total/NA | Fraction | MA EPH Frac | | | 28809 | JJB | EET NE | 11/08/23 10:17 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 28787 | JS | EET NE | 11/08/23 22:31 |
| Total/NA | Prep | 3050B | | | 28725 | ODO | EET NE | 11/06/23 13:39 |
| Total/NA | Analysis | 6010D | | 1 | 28770 | PRB | EET NE | 11/07/23 11:43 |
| Total/NA | Prep | 7471B | | | 28772 | ODO | EET NE | 11/07/23 13:09 |
| Total/NA | Analysis | 7471A | | 1 | 28817 | PRB | EET NE | 11/08/23 12:09 |

**Laboratory References:**
EET NE = Eurofins New England, 646 Camp Ave, North Kingstown, RI 02852, TEL (413)789-9018

# Accreditation/Certification Summary

Client: Nobis Engineering, Inc. Job ID: 620-15085-1
Project/Site: Former L&M - Lunenburg MA

## Laboratory: Eurofins New England

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

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|
| Massachusetts | State | M-RI907 | 06-30-24 |

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

| Analysis Method | Prep Method | Matrix | Analyte |
|---|---|---|---|
| 6010D | 3050B | Solid | Antimony |
| 6010D | 3050B | Solid | Arsenic |
| 6010D | 3050B | Solid | Barium |
| 6010D | 3050B | Solid | Beryllium |
| 6010D | 3050B | Solid | Cadmium |
| 6010D | 3050B | Solid | Chromium |
| 6010D | 3050B | Solid | Lead |
| 6010D | 3050B | Solid | Nickel |
| 6010D | 3050B | Solid | Selenium |
| 6010D | 3050B | Solid | Silver |
| 6010D | 3050B | Solid | Thallium |
| 6010D | 3050B | Solid | Vanadium |
| 6010D | 3050B | Solid | Zinc |
| 7471A | 7471B | Solid | Mercury |
| 8082 | 3546 | Solid | PCB-1016 |
| 8082 | 3546 | Solid | PCB-1221 |
| 8082 | 3546 | Solid | PCB-1232 |
| 8082 | 3546 | Solid | PCB-1242 |
| 8082 | 3546 | Solid | PCB-1248 |
| 8082 | 3546 | Solid | PCB-1254 |
| 8082 | 3546 | Solid | PCB-1260 |
| 8082 | 3546 | Solid | PCB-1262 |
| 8082 | 3546 | Solid | PCB-1268 |
| MAEPH2.1 | 3546 | Solid | 2-Methylnaphthalene |
| MAEPH2.1 | 3546 | Solid | Acenaphthene |
| MAEPH2.1 | 3546 | Solid | Acenaphthylene |
| MAEPH2.1 | 3546 | Solid | Anthracene |
| MAEPH2.1 | 3546 | Solid | Benzo[a]anthracene |
| MAEPH2.1 | 3546 | Solid | Benzo[a]pyrene |
| MAEPH2.1 | 3546 | Solid | Benzo[b]fluoranthene |
| MAEPH2.1 | 3546 | Solid | Benzo[g,h,i]perylene |
| MAEPH2.1 | 3546 | Solid | Benzo[k]fluoranthene |
| MAEPH2.1 | 3546 | Solid | C11-C22 Aromatics |
| MAEPH2.1 | 3546 | Solid | C11-C22 Aromatics (Adjusted) |
| MAEPH2.1 | 3546 | Solid | C19-C36 Aliphatics |
| MAEPH2.1 | 3546 | Solid | C9-C18 Aliphatics |
| MAEPH2.1 | 3546 | Solid | Chrysene |
| MAEPH2.1 | 3546 | Solid | Dibenz(a,h)anthracene |
| MAEPH2.1 | 3546 | Solid | Fluoranthene |
| MAEPH2.1 | 3546 | Solid | Fluorene |
| MAEPH2.1 | 3546 | Solid | Indeno[1,2,3-cd]pyrene |
| MAEPH2.1 | 3546 | Solid | Naphthalene |
| MAEPH2.1 | 3546 | Solid | Phenanthrene |
| MAEPH2.1 | 3546 | Solid | Pyrene |
| MAVPH2.1 | 5035 | Solid | Benzene |

# Accreditation/Certification Summary

Client: Nobis Engineering, Inc. Job ID: 620-15085-1
Project/Site: Former L&M - Lunenburg MA

## Laboratory: Eurofins New England (Continued)

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

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

| Analysis Method | Prep Method | Matrix | Analyte |
|---|---|---|---|
| MAVPH2.1 | 5035 | Solid | C5-C8 Aliphatics (adjusted) |
| MAVPH2.1 | 5035 | Solid | C5-C8 Aliphatics (unadjusted) |
| MAVPH2.1 | 5035 | Solid | C9-C10 Aromatics |
| MAVPH2.1 | 5035 | Solid | C9-C12 Aliphatics (adjusted) |
| MAVPH2.1 | 5035 | Solid | C9-C12 Aliphatics (unadjusted) |
| MAVPH2.1 | 5035 | Solid | Ethylbenzene |
| MAVPH2.1 | 5035 | Solid | m,p-Xylene |
| MAVPH2.1 | 5035 | Solid | Methyl tert-butyl ether |
| MAVPH2.1 | 5035 | Solid | Naphthalene |
| MAVPH2.1 | 5035 | Solid | o-Xylene |
| MAVPH2.1 | 5035 | Solid | Toluene |
| MAVPH2.1 | 5035 | Solid | Xylenes, Total |
| Moisture | | Solid | Percent Moisture |
| Moisture | | Solid | Percent Solids |

# Method Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-15085-1

| Method | Method Description | Protocol | Laboratory |
|---|---|---|---|
| MAVPH2.1 | Massachusetts - Volatile Petroleum Hydrocarbons (GC) | MA DEP | EET NE |
| 8082 | Polychlorinated Biphenyls (GC/ECD) | MA DEP | EET NE |
| MAEPH2.1 | Massachusetts - Extractable Petroleum Hydrocarbons (GC) | MA DEP | EET NE |
| 6010D | Metals (ICP) | SW846 | EET NE |
| 7471A | Mercury (CVAA) | SW846 | EET NE |
| Moisture | Percent Moisture | EPA | EET NE |
| 3050B | Preparation, Metals | SW846 | EET NE |
| 3546 | Microwave Extraction | SW846 | EET NE |
| 5035 | Closed System Purge and Trap | SW846 | EET NE |
| 7471B | Preparation, Mercury | SW846 | EET NE |
| MA EPH Frac | Massachusetts - Extractable Petroleum Hydrocarbon Fractionation | MA DEP | EET NE |

**Protocol References:**

EPA = US Environmental Protection Agency

MA DEP = Massachusetts Department Of Environmental Protection

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

**Laboratory References:**

EET NE = Eurofins New England, 646 Camp Ave, North Kingstown, RI 02852, TEL (413)789-9018

# Sample Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-15085-1

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---|---|---|---|---|
| 620-15085-1 | HYDLIFT-0608 | Solid | 10/31/23 09:10 | 11/03/23 16:13 |
| 620-15085-2 | HOLDTANK-0410 | Solid | 11/01/23 14:45 | 11/03/23 16:13 |

620-15085 Chain of Custody

15085

# Chain of Custody Record

eurofins | Environment Testing

| | | | | |
|---|---|---|---|---|
| Client Information | Sampler: P. Moran | Lab PM | Carrier Tracking No(s) | COC No: 620-12716-1718 1 |
| Client Contact: ~~Stephanie Stone~~ Adam Roy | Phone | E-Mail | State of Origin: MA | Page: Page 1 of 4 |
| Company: Nobis Engineering, Inc | PWSID | | | Job #: |

| | | |
|---|---|---|
| Address: 585 Middlesex Street | Due Date Requested: | |
| City: Lowell | TAT Requested (days): standard | |
| State, Zip: MA, 01851 | Compliance Project: Δ Yes Δ No | |
| Phone | PO #: | |
| Email: ~~sstone@nobis-group.com~~ aroy@nobis-group.com | WO #: | |
| Project Name: S00001 005 | Project #: | |
| Site: Former L&M | SSOW#: | |

**Analysis Requested**

**Preservation Codes:**

A - HCL; B - NaOH; C - Zn Acetate; D - Nitric Acid; E - NaHSO4; F - MeOH; G - Amchlor; H - Ascorbic Acid; I - Ice; J - DI Water; K - EDTA; L - EDA; M - Hexane; N - None; O - AsNaO2; P - Na2O4S; Q - Na2SO3; R - Na2S2O3; S - H2SO4; T - TSP Dodecahydrate; U - Acetone; V - MCAA; W - pH 4-5; Y - Trizma; Z - other (specify)

Other:

| | Sample Identification | Sample Date | Sample Time | Sample Type (C=Comp, G=grab) | Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air) | Field Filtered Sample (Yes or No) | Perform MS/MSD (Yes or No) | VPH | EPH | MCP Metals | PCBs | | | | | | | | | | | | Total Number of containers | Special Instructions/Note: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Preservation Code: | | | | | N | N | F | I | I | * | | | | | | | | | | | | | |
| 1 | HYDLIFT-0608 | 10/31/23 | 0910 | C | Solid | N | N | X | X | X | X | | | | | | | | | | | | 4 | |
| 2 | HOLDTANK-0410 | 11/1/23 | 1445 | C | Solid | N | N | X | X | X | | | | | | | | | | | | | 3 | |
| | | | | | Solid | | | | | | | | | | | | | | | | | | | |
| | | | | | Solid | | | | | | | | | | | | | | | | | | | |
| | | | | | Solid | | | | | | | | | | | | | | | | | | | |
| | | | | | Solid | | | | | | | | | | | | | | | | | | | |
| | | | | | Solid | | | | | | | | | | | | | | | | | | | |
| | | | | | Solid | | | | | | | | | | | | | | | | | | | |
| | | | | | Solid | | | | | | | | | | | | | | | | | | | |
| | | | | | Solid | | | | | | | | | | | | | | | | | | | |
| | | | | | Water | | | | | | | | | | | | | | | | | | | |

**Possible Hazard Identification**

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

**Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)**

☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested. I, II, III, IV, Other (specify)

Special Instructions/QC Requirements: Email EDD to aroy@nobis-group.com

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

| | | | | | |
|---|---|---|---|---|---|
| Relinquished by: | Date/Time: 11/3/23 11:53 | Company | Received by: | Date/Time: 11/3/23 1153 | Company: EA |
| Relinquished by: | Date/Time: 11/3/23 16:13 | Company: EA | Received by: | Date/Time: 11/3/23 16:13 | Company: Eurofins |
| Relinquished by: | Date/Time | Company | Received by: | Date/Time | Company |

| | | |
|---|---|---|
| Custody Seals Intact. Δ Yes Δ No | Custody Seal No | Cooler Temperature(s) °C and Other Remarks: 3.8-0.2 4.0-0.6 |

Ver: 06/08/2021

Page 27 of 28

11/14/2023

# Login Sample Receipt Checklist

Client: Nobis Engineering, Inc.

Job Number: 620-15085-1

**Login Number: 15085**
**List Number: 1**
**Creator: Makhoul, Elie**

**List Source: Eurofins New England**

| Question | Answer | Comment |
|---|---|---|
| Radioactivity wasn't checked or is </= background as measured by a survey meter. | N/A | |
| The cooler's custody seal, if present, is intact. | N/A | |
| Sample custody seals, if present, are intact. | N/A | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| Is the Field Sampler's name present on COC? | True | |
| There are no discrepancies between the containers received and the COC. | True | |
| Samples are received within Holding Time (excluding tests with immediate HTs) | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| Sample Preservation Verified. | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| Containers requiring zero headspace have no headspace or bubble is <6mm (1/4"). | True | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |
| Residual Chlorine Checked. | N/A | |

May 28, 2024
Nobis File No. S00001.05

Ms. Katy Deng
USEPA – Region 1
Land, Chemicals, and Redevelopment Division
5 Post Office Square, Suite 100
Boston, MA 02109-3912

Re: USEPA Contract No. 68HE0122D0001
USEPA Task Order No. 68HE0122F0044
Targeted Brownfields Assessment (TBA)
Former L&M Service Station Site
Lunenburg, Massachusetts
Sample Delivery Group (SDG) No. 620179851
Eurofins New England, North Kingstown, RI

Tier 1 Stage 2A Organic and Inorganic Data Review:

Volatile Petroleum Hydrocarbons (VPH by MassDEP-VPH), Extractable Petroleum Hydrocarbons (EPH by MasDEP-EPH), Massachusetts Contingency Plan (MCP) Metals (MCP-14 Metals by 6010D/7471A)

1/Soil Sample: SO-MW109-1315
1/Trip Blank: TB-01

Dear Ms. Deng:

Nobis Group (Nobis), under a USEPA contract as a subcontractor to KGSNE JV, LLC, performed a Tier 1 Stage 2A manual data review (S2AVM) on the organic and inorganic analytical data for the samples listed above. The samples were collected by Nobis at the Former L&M Service Station Site located in Lunenburg, Massachusetts on April 8 and 12, 2024. The samples were analyzed for VPHs by MassDEP-VPH, EPHs by MassDEP-EPH, and MCP-14 Metals by 6010D/7471A by Eurofins New England in North Kingstown, RI.

The Tier 1 Stage 2A manual data review was performed in accordance with the Region 1 - EPA New England Environmental Data Review Supplement for Region I Data Review Elements and Superfund Specific Guidance/Procedures (September 2020); USEPA's National Functional Guidelines for Organic Superfund Methods Data Review (November 2020); USEPA's National Functional Guidelines for Inorganic Superfund Methods Data Review (November 2020); the Program Quality Assurance Project Plan (Program QAPP) dated October 2022, and the Quality Assurance Project Plan Addendum (QAPPA) (May 2023) for the Former L&M Service Station Site, which appends the October 2022 Program QAPP.

The data were evaluated based on the following parameters:

| | |
|---|---|
| * | • Overall Evaluation of Data and Potential Usability Issues |
| * | • Data Completeness |
| * | • Preservation and Technical Holding Times |
| * | • Blanks |
| * | • Surrogates (organic analyses only) |
| NA | • Internal Standards |



Nobis Group®
585 Middlesex Street
Lowell, MA 01851
T (978) 683-0891

| | | |
|---|---|---|
| NA | • | Matrix Spike Analysis |
| NA | • | Laboratory Duplicates |
| * | • | Laboratory Control Samples (LCS) |
| NA | • | Field Duplicates |
| NA | • | ICP Serial Dilutions (metals only) |
| NA | • | Performance Evaluation (PE) Samples |
| * | • | Target Analyte Identification |
| * | • | Reported Quantitation Limits |

* All criteria were met for this parameter or did not require qualification.
NA – Not applicable.

**Overall Evaluation of Data and Potential Usability Issues**

The site sampling objectives are:

- Characterize in-situ soil based on AOCs identified by Fuss & O'Neill in November 2020 Phase I for the presence of possible site-related contamination.
- Evaluate groundwater elevation.
- Evaluate presence/absence of groundwater contamination related to site.

The data meet the project quality criteria and can be used without restriction except as summarized below. The attachments provide details and supporting documentation.

**MassDEP-VPH**:
Qualification of the data was not required.

**MassDEP-EPH:**
Qualification of the data was not required.

**MCP-14 Metals:**
Qualification of the data was not required.

Please contact Linda Terzis at lterzis@nobis-group.com should you have any questions or comments regarding this information.

Sincerely,

NOBIS GROUP®

Linda Terzis
Data Validator

Gary Glennon
Data Validator

Tables: Data Summary Tables – Tier 1 Stage 2A (S2AVM) Validated Data
Data Qualification Actions Table

Attachments: Data Review Checklist
Support Documentation
COC

cc: Denis McGrath (Nobis Group)
Adam Roy (Nobis Group)

# DATA SUMMARY TABLE

| **Analysis** | | EPH in Soil |
|---|---|---|
| **Lab Sample ID** | | 620-17985-1 |
| **Field Sample ID** | | SO-MW109-1315 |
| **Sample Type** | | N |
| **Parent Sample ID** | | |
| **Sample Date** | **Units** | 04/12/24 |
| 2-Methylnaphthalene | mg/kg | 0.6 U |
| Acenaphthene | mg/kg | 0.6 U |
| Acenaphthylene | mg/kg | 0.6 U |
| Anthracene | mg/kg | 0.6 U |
| Benzo(a)anthracene | mg/kg | 0.6 U |
| Benzo(a)pyrene | mg/kg | 0.6 U |
| Benzo(b)fluoranthene | mg/kg | 0.6 U |
| Benzo(g,h,i)perylene | mg/kg | 0.6 U |
| Benzo(k)fluoranthene | mg/kg | 0.6 U |
| C11-C22 Aromatics | mg/kg | 12 U |
| C11-C22 Aromatics (adjusted) | mg/kg | 12 U |
| C19-C36 Aliphatics | mg/kg | 12 U |
| C9-C18 Aliphatics | mg/kg | 12 U |
| Chrysene | mg/kg | 0.6 U |
| Dibenz(a,h)anthracene | mg/kg | 0.6 U |
| Fluoranthene | mg/kg | 0.6 U |
| Fluorene | mg/kg | 0.6 U |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.6 U |
| Naphthalene | mg/kg | 0.6 U |
| Phenanthrene | mg/kg | 0.6 U |
| Pyrene | mg/kg | 0.6 U |

# DATA SUMMARY TABLE

| **Analysis** | | Metals in Soil |
|---|---|---|
| **Lab Sample ID** | | 620-17985-1 |
| **Field Sample ID** | | SO-MW109-1315 |
| **Sample Type** | | N |
| **Parent Sample ID** | | |
| **Sample Date** | **Units** | 04/12/24 |
| Antimony | mg/kg | 13 U |
| Arsenic | mg/kg | 3 J |
| Barium | mg/kg | 16 |
| Beryllium | mg/kg | 1.3 U |
| Cadmium | mg/kg | 1.3 U |
| Chromium | mg/kg | 9.9 |
| Lead | mg/kg | 1.9 J |
| Mercury | mg/kg | 0.047 U |
| Nickel | mg/kg | 5.8 |
| Selenium | mg/kg | 3.8 U |
| Silver | mg/kg | 3.8 U |
| Thallium | mg/kg | 7.5 U |
| Vanadium | mg/kg | 7.6 |
| Zinc | mg/kg | 8.4 |

# DATA SUMMARY TABLE

| **Analysis** | | VPH in Soil | |
|---|---|---|---|
| **Lab Sample ID** | | 620-17985-1 | 620-17985-2 |
| **Field Sample ID** | | SO-MW109-1315 | TB-01 |
| **Sample Type** | | N | TB |
| **Parent Sample ID** | | | |
| **Sample Date** | **Units** | 04/12/24 | 04/12/24 |
| Benzene | mg/kg | 0.28 U | 0.25 U |
| C5-C8 Aliphatics (adjusted) | mg/kg | 5.5 U | 5 U |
| C5-C8 Aliphatics (unadjusted) | mg/kg | 5.5 U | 5 U |
| C9-C10 Aromatics | mg/kg | 5.5 U | 5 U |
| C9-C12 Aliphatics (adjusted) | mg/kg | 5.5 U | 5 U |
| C9-C12 Aliphatics (unadjusted) | mg/kg | 5.5 U | 5 U |
| Ethylbenzene | mg/kg | 0.28 U | 0.25 U |
| m,p-Xylene | mg/kg | 0.55 U | 0.5 U |
| Methyl tert-butyl ether | mg/kg | 0.055 U | 0.05 U |
| Naphthalene | mg/kg | 1.1 U | 1 U |
| o-Xylene | mg/kg | 0.28 U | 0.25 U |
| Toluene | mg/kg | 0.28 U | 0.25 U |
| Xylene (total) | mg/kg | 0.83 U | 0.75 U |

**Data Review Qualification Actions**
**Former L&M Service Station**
**SDG 620179851**

| Parameter | Analyte | Samples | Evaluation Criteria | Action Needed | Comments |
|---|---|---|---|---|---|
| **VPH** | | | | | |
| | Qualification of the data was not required. | | | | |
| **EPH** | | | | | |
| | Qualification of the data was not required. | | | | |
| **MCP-14 Metals** | | | | | |
| | Qualification of the data was not required. | | | | |

**Tier 1/Stage 2A Data Review Checklist**

**Project:** Former L&M Service Station, Lunenburg, Massachusetts
Targeted Brownfields Assessment (TBA)
**Project #:** S00001.05

**Date:** 05/22/2024

**Methods:** Volatile Petroleum Hydrocarbons (VPH) (MassDEP-VPH)
Extractable Petroleum Hydrocarbons (EPH) (MassDEP-EPH)
Massachusetts Contingency Plan (MCP) Metals (MCP-14 Metals by 6010D/7471A)

**Laboratory:** Eurofins New England Laboratory, North Kingstown, RI
**Case:** N/A
**SDG:** 620179851
**Reviewer:** Linda Terzis

1. **Case Narrative and Data Package Completeness (COC and Analyte List Review)**
One (1) soil sample was listed on the COC for SDG 620179851. A trip blank sample was also included on the COC. The samples were collected on 04/08/2024 and 04/12/2024 and received at the Eurofins New England Laboratory on 04/12/2024 at a temperature of 0.8 °C.

| Sample ID | Laboratory ID | Analyses |
|---|---|---|
| SO-MW109-1315 | 620-17985-1 | MassDEP-VPH, MassDEP-EPH, MCP-14 Metals/Mercury |
| TB-01 | 620-17985-2 | MassDEP-VPH |

The data were evaluated using the site-specific Quality Assurance Project Plan Addendum (QAPPA) (dated May 2023) and the Program QAPP (dated October 2022). Both were prepared by KGSNE, LLC. The QAPPA appends and incorporates by reference the procedures and quality control measures detailed in the Program QAPP (October 2022). Therefore, site data for this SDG were evaluated using both the QAPPA of May 2023 and the Program QAPP dated October 2022. The Massachusetts Compendium of Analytical Methods (CAM) and/or SW-846 Methods were used to perform the analyses. Therefore, site data were also evaluated using CAM quality control (QC) limits, where applicable.

The analyte lists reported by the laboratory were compared to the required analyte lists per Table 3 (soil) in the QAPPA (May 2023) for the site. Results for all requested analytes were reported and no inconsistencies were noted.

2. **Holding Time and Sample Preservation Compliance**

Receipt temperatures are acceptable (≤ 6°), as specified in the QAPPA (May 2023).

MassDEP-VPH: Holding time criteria (analyzed within 14 days) met.

MassDEP-EPH: Holding time criteria (extracted within 14 days and analyzed within 40 days of extraction) met.



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MCP-14 Metals/Mercury: Holding time criteria (analyzed within 28 days for mercury; within 180 days for all other analytes) were met.

3. **Calibration Issues**

Not assessed for S2AVM data review.

4. **Laboratory and Field Blanks**

MassDEP VPH: Results for the VPH laboratory method blank were non-detect. No blank actions are required.

MassDEP-EPH: Results for the EPH laboratory method blank were non-detect. No blank actions are required.

MCP-14 Metals/Mercury: Results for the metals and mercury laboratory method blanks were non-detect except for nickel, which was detected at a concentration below the reporting limit (RL). Nickel was detected in the soil sample at > 5x the blank level and therefore, no blank actions are taken.

5. **Interference Check Sample (metals only)**

Not assessed for S2AVM data review.

6. **Surrogates**

The Program QAPP (October 2022) was used to evaluate site data for surrogate recovery. If no Program QAPP-specific recovery limits were available for a surrogate, the MCP CAM recovery limits were used.

MassDEP-VPH: Percent recoveries for surrogates were within the Program QAPP limits of 70-130% for soil sample SO-MW109-1315 and TB-01. No actions are required.

MassDEP-EPH: Surrogate recoveries were within the Program QAPP limits of 40-140% in soil sample SO-MW109-1315. No actions are required.

MCP-14 Metals/Mercury: Not applicable for this analysis.

7. **Laboratory Control Samples**

MassDEP-VPH: The percent recoveries for the VPH LCS/LCSD pair met the Program QAPP limits of 70-130% recovery and RPDs ≤ 25%. No actions are required.

MassDEP-EPH: The percent recoveries for the EPH LCS/LCSD pair met the Program QAPP limits of 40-140%. RPDs for C11-C22 aromatics, naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, and indeno(1,2,3-cd)pyrene exceeded the Program QAPP limit of ≤ 25%. Results for these compounds are non-detect in sample SO-MW109-1315. Based on the National Functional Guidelines (2020) actions for MS/MSD RPDs, the non-detect results for these compounds are accepted unqualified. No actions are required.

MCP-14 Metals/Mercury: The Program QAPP and MCP CAM require that soil LCS/LCSD recoveries be within vendor 95% confidence limits. Therefore, the analyte-specific limits reported

by the laboratory were used to evaluate the LCSSRM recoveries. Recoveries for all analytes and mercury were within the limits shown in the laboratory report. No actions are required.

**8. Matrix Spikes**

Based on the Region I EPA New England Environmental Data Review Supplement (Region I Supplement, 2020), MS/MSD qualifications are applied to all field samples with similar matrix, unless otherwise noted.

MS/MSD analyses were not performed on the sample of this SDG. No action is required.

**9. Laboratory Duplicates (metals only)**

A laboratory duplicate analysis was not performed for this SDG. No action is required.

**10. Serial Dilution (metals only)**

A serial dilution analysis was not performed for this SDG. No actions are required.

**11. Field Duplicate Precision**

Acceptable field duplicate precision is an RPD of ≤ 50% for results > 5x RL and an absolute difference ≤ 4x RL for results < 5x RL, based on the EPA Region I Environmental Data Review Supplement (2020).

Based on the Region I Environmental Data Review Supplement (2020), qualifications are applied to all field samples with similar matrix, unless otherwise indicated.

A field duplicate sample was not submitted with the sample of this SDG. No action is required.

**12. Internal Standards**

Not assessed for S2AVM data review.

**13. Dual Column Precision (PCBs only)**

Not applicable for this SDG.

**14. Performance Evaluation Samples**

Performance Evaluation (PE) samples were not included in this SDG.

**15. Reporting Limits**

Laboratory RLs for non-detect results met the project action levels (PALs) for the VPH, EPH, and MCP-14 metals and mercury analyses, as listed in Table 3 of the QAPPA.

**16. Other**

EPA Region I Environmental Data Review Supplement (2020) criterion for percent solids content (> 30%) was met for the soil sample.

Overall bias is considered indeterminate when cumulative nonconformances do not show a consistent bias or in cases of the presence of conflicting high and low biases.

17985

620-17985 Chain of Custody

# Chain of Custody Record

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| | | | |
|---|---|---|---|
| Client Info | Sampler: C. Bellmonz | Lab PM | Carrier Tracking No(s) | COC No: 620-16343-2161 1 |
| Client Contact: Adam Roy | Phone: 978-888-4404 | E-Mail: cbellmonz@nobis-group.com | State of Origin: | Page: Page 1 of 1 |
| Company: Nobis Engineering, Inc. | PWSID | | | Job #: |

| | | |
|---|---|---|
| Address: 585 Middlesex Street | Due Date Requested: Standard | Analysis Requested |
| City: Lowell | TAT Requested (days): | |
| State, Zip: MA, 01851 | Compliance Project: X Yes △ No MA MCP | |
| Phone | PO #: | |
| Email: aroy@nobis-group.com | WO #: | |
| Project Name: Former L & M Service Station | Project #: 500001.05 | |
| Site: Lunenburg, MA | SSOW#: | |

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)
Other:

| Sample Identification | Sample Date | Sample Time | Sample Type (C=comp, G=grab) | Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air) | Field Filtered Sample (Yes or No) | Perform MS/MSD (Yes or No) | MCP Metals | VPH | EPH | Total Number of containers | Special Instructions/Note: |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preservation Code: | | | | N | F | N | | |
| 1) SO-MW209-1315 | 4/12/24 | 830 | G | Solid | | | X | X | X | | |
| 2) TB-01 | 4/8/24 | 800 | | ~~Solid~~ | | | | | | | |

**Possible Hazard Identification**
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

**Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)**
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested. I, II, III, IV, Other (specify)

Special Instructions/QC Requirements: email edd to aroy@nobis-group.com

| | | | |
|---|---|---|---|
| Empty Kit Relinquished by: | Date. | Time | Method of Shipment: |
| Relinquished by: Caroline Bellmonz | Date/Time | Company: Nobis | Received by: | Date/Time: 4/12/24 13:40 | Company: EAT |
| Relinquished by: | Date/Time: 4/18/24 17:22 | Company: GRI | Received by: | Date/Time: 4/18/24 17:22 | Company: GRI |
| Relinquished by: | Date/Time | Company | Received by: | Date/Time. | Company |

| | | |
|---|---|---|
| Custody Seals Intact: △ Yes △ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks: 1.0 -0.2 0.8 #6 |

Page 24 of 25

4/24/2024

Ver: 06/08/2021

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# ANALYTICAL REPORT

## PREPARED FOR

Attn: Adam Roy
Nobis Engineering, Inc.
585 Middlesex Street
Lowell, Massachusetts 01851

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## JOB DESCRIPTION

Former L&M - Lunenburg MA

## JOB NUMBER

620-17985-1

Eurofins Rhode Island
646 Camp Ave
North Kingstown RI 02852

See page two for job notes and contact information.



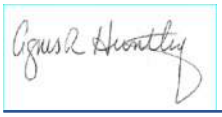
my EOL

## Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northeast, LLC Project Manager.

## Authorization



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Authorized for release by
Agnes Huntley, Project Manager
Agnes.Huntley@et.eurofinsus.com
(401)372-3482

# Table of Contents

Cover Page . . . . . 1
Table of Contents . . . . . 3
Definitions/Glossary . . . . . 4
State Forms . . . . . 5
MCP Checklist . . . . . 5
Case Narrative . . . . . 6
Detection Summary . . . . . 7
Client Sample Results . . . . . 8
Surrogate Summary . . . . . 11
QC Sample Results . . . . . 12
QC Association Summary . . . . . 17
Lab Chronicle . . . . . 19
Certification Summary . . . . . 20
Method Summary . . . . . 22
Sample Summary . . . . . 23
Chain of Custody . . . . . 24
Receipt Checklists . . . . . 25

# Definitions/Glossary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-17985-1

## Qualifiers

### GC Semi VOA

| Qualifier | Qualifier Description |
|---|---|
| *1 | LCS/LCSD RPD exceeds control limits. |

### Metals

| Qualifier | Qualifier Description |
|---|---|
| B | Compound was found in the blank and sample. |
| J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |

## Glossary

| Abbreviation | These commonly used abbreviations may or may not be present in this report. |
|---|---|
| ¤ | Listed under the "D" column to designate that the result is reported on a dry weight basis |
| %R | Percent Recovery |
| CFL | Contains Free Liquid |
| CFU | Colony Forming Unit |
| CNF | Contains No Free Liquid |
| DER | Duplicate Error Ratio (normalized absolute difference) |
| Dil Fac | Dilution Factor |
| DL | Detection Limit (DoD/DOE) |
| DL, RA, RE, IN | Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample |
| DLC | Decision Level Concentration (Radiochemistry) |
| EDL | Estimated Detection Limit (Dioxin) |
| LOD | Limit of Detection (DoD/DOE) |
| LOQ | Limit of Quantitation (DoD/DOE) |
| MCL | EPA recommended "Maximum Contaminant Level" |
| MDA | Minimum Detectable Activity (Radiochemistry) |
| MDC | Minimum Detectable Concentration (Radiochemistry) |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| MPN | Most Probable Number |
| MQL | Method Quantitation Limit |
| NC | Not Calculated |
| ND | Not Detected at the reporting limit (or MDL or EDL if shown) |
| NEG | Negative / Absent |
| POS | Positive / Present |
| PQL | Practical Quantitation Limit |
| PRES | Presumptive |
| QC | Quality Control |
| RER | Relative Error Ratio (Radiochemistry) |
| RL | Reporting Limit or Requested Limit (Radiochemistry) |
| RPD | Relative Percent Difference, a measure of the relative difference between two points |
| TEF | Toxicity Equivalent Factor (Dioxin) |
| TEQ | Toxicity Equivalent Quotient (Dioxin) |
| TNTC | Too Numerous To Count |

# MassDEP Analytical Protocol Certfication Form

Laboratory Name: Eurofins Rhode Island | Project #: 620-17985-1

Project Location: Former L&M - Lunenburg MA | RTN:

**This Form provides certifications for the following data set: list Laboratory Sample ID Number(s):**
620-17985-1, 620-17985-2

Matrices: ☐ Groundwater/Surface Water ☑ Soil/Sediment ☐ Drinking Water ☐ Air ☐ Other:

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

| | | | | | |
|---|---|---|---|---|---|
| 8260 VOC CAM II A ☐ | 7470/7471 Hg CAM III B ☑ | MassDEP VPH (GC/PID/FID) CAM IV A ☑ | 8082 PCB CAM V A ☐ | 9014 Total Cyanide/PAC CAM VI A ☐ | 6860 Perchlorate CAM VIII B ☐ |
| 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 ☐ |
| 6010 Metals CAM III A ☑ | 6020 Metals CAM III D ☐ | MassDEP EPH CAM IV B ☑ | 8151 Herbicides CAM V C ☐ | 8330 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 ☐ No |
| **B** | Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed? | ☑ Yes ☐ 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 ☐ No |
| **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 ☐ No |
| **E** | VPH, EPH, APH, and TO-15 only<br>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).<br>b. APH and TO-15 Methods only: Was the complete analyte list reported for each method? | ☑ Yes ☐ No<br>☐ 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 ☐ 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 protocol(s)? | ☑ Yes ☐ No[1] |

***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[1] |
| **I** | Were results reported for the complete analyte list specified in the selected CAM protocol(s)? | ☑ Yes ☐ No[1] |

*1 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, is accurate and complete.***

**Signature:** Agnes R Huntley **Position:** Project Manager

**Printed Name:** Agnes Huntley **Date:** 04/24/2024

## Job ID: 620-17985-1 Eurofins Rhode Island

**Job Narrative**
**620-17985-1**

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

**Receipt**
The samples were received on 4/12/2024 5:22 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.8°C.

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

**GC Semi VOA**
Method MAEPH2.1: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 620-33981 and 620-34043 and analytical batch 620-34073 recovered outside control limits for the following analytes: 2-Methylnaphthalene, Acenaphthylene, Acenaphthene, Anthracene, Fluorene, Indeno[1,2,3-cd]pyrene, Naphthalene and Phenanthrene. The individual percent recoveries are within acceptance criteria.

Method MAEPH2.1: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 620-33981 and 620-34043 and analytical batch 620-34073 recovered outside control limits for the following range: C11-C22 Aromatics. The individual percent recoveries of the range are within acceptance criteria.

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

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

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

# Detection Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-17985-1

## Client Sample ID: SO-MW109-1315 — Lab Sample ID: 620-17985-1

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 3.0 | J | 3.8 | 0.48 | mg/Kg | 2 | ☼ | 6010D | Total/NA |
| Barium | 16 | | 2.5 | 0.30 | mg/Kg | 2 | ☼ | 6010D | Total/NA |
| Chromium | 9.9 | | 2.5 | 0.33 | mg/Kg | 2 | ☼ | 6010D | Total/NA |
| Lead | 1.9 | J | 3.8 | 0.53 | mg/Kg | 2 | ☼ | 6010D | Total/NA |
| Nickel | 5.8 | B | 2.5 | 0.29 | mg/Kg | 2 | ☼ | 6010D | Total/NA |
| Vanadium | 7.6 | | 3.8 | 0.67 | mg/Kg | 2 | ☼ | 6010D | Total/NA |
| Zinc | 8.4 | | 7.5 | 1.9 | mg/Kg | 2 | ☼ | 6010D | Total/NA |

## Client Sample ID: TB-01 — Lab Sample ID: 620-17985-2

No Detections.

This Detection Summary does not include radiochemical test results.

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-17985-1

## Client Sample ID: SO-MW109-1315

**Date Collected: 04/12/24 08:30**
**Date Received: 04/12/24 17:22**

## Lab Sample ID: 620-17985-1

**Matrix: Solid**
**Percent Solids: 80.6**

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 5.5 | 5.5 | mg/Kg | ☼ | 04/15/24 11:06 | 04/18/24 01:38 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 5.5 | 5.5 | mg/Kg | ☼ | 04/15/24 11:06 | 04/18/24 01:38 | 1 |
| C9-C10 Aromatics | ND | | 5.5 | 5.5 | mg/Kg | ☼ | 04/15/24 11:06 | 04/18/24 01:38 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 5.5 | 5.5 | mg/Kg | ☼ | 04/15/24 11:06 | 04/18/24 01:38 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 5.5 | 5.5 | mg/Kg | ☼ | 04/15/24 11:06 | 04/18/24 01:38 | 1 |
| Benzene | ND | | 0.28 | 0.28 | mg/Kg | ☼ | 04/15/24 11:06 | 04/18/24 01:38 | 1 |
| Ethylbenzene | ND | | 0.28 | 0.28 | mg/Kg | ☼ | 04/15/24 11:06 | 04/18/24 01:38 | 1 |
| Methyl tert-butyl ether | ND | | 0.055 | 0.055 | mg/Kg | ☼ | 04/15/24 11:06 | 04/18/24 01:38 | 1 |
| Naphthalene | ND | | 1.1 | 1.1 | mg/Kg | ☼ | 04/15/24 11:06 | 04/18/24 01:38 | 1 |
| Toluene | ND | | 0.28 | 0.28 | mg/Kg | ☼ | 04/15/24 11:06 | 04/18/24 01:38 | 1 |
| m,p-Xylene | ND | | 0.55 | 0.55 | mg/Kg | ☼ | 04/15/24 11:06 | 04/18/24 01:38 | 1 |
| o-Xylene | ND | | 0.28 | 0.28 | mg/Kg | ☼ | 04/15/24 11:06 | 04/18/24 01:38 | 1 |
| Xylenes, Total | ND | | 0.83 | 0.83 | mg/Kg | ☼ | 04/15/24 11:06 | 04/18/24 01:38 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *93* | | *70 - 130* | *04/15/24 11:06* | *04/18/24 01:38* | *1* |
| *2,5-Dibromotoluene (pid)* | *91* | | *70 - 130* | *04/15/24 11:06* | *04/18/24 01:38* | *1* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | *1 | 12 | 12 | mg/Kg | ☼ | 04/22/24 10:24 | 04/23/24 21:16 | 1 |
| C19-C36 Aliphatics | ND | | 12 | 12 | mg/Kg | ☼ | 04/22/24 10:24 | 04/23/24 21:16 | 1 |
| C11-C22 Aromatics | ND | *1 | 12 | 12 | mg/Kg | ☼ | 04/22/24 10:24 | 04/23/24 21:16 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 12 | 12 | mg/Kg | ☼ | 04/22/24 10:24 | 04/23/24 21:16 | 1 |
| Naphthalene | ND | *1 | 0.60 | 0.60 | mg/Kg | ☼ | 04/22/24 10:24 | 04/23/24 21:16 | 1 |
| 2-Methylnaphthalene | ND | *1 | 0.60 | 0.60 | mg/Kg | ☼ | 04/22/24 10:24 | 04/23/24 21:16 | 1 |
| Acenaphthylene | ND | *1 | 0.60 | 0.60 | mg/Kg | ☼ | 04/22/24 10:24 | 04/23/24 21:16 | 1 |
| Acenaphthene | ND | *1 | 0.60 | 0.60 | mg/Kg | ☼ | 04/22/24 10:24 | 04/23/24 21:16 | 1 |
| Fluorene | ND | *1 | 0.60 | 0.60 | mg/Kg | ☼ | 04/22/24 10:24 | 04/23/24 21:16 | 1 |
| Phenanthrene | ND | *1 | 0.60 | 0.60 | mg/Kg | ☼ | 04/22/24 10:24 | 04/23/24 21:16 | 1 |
| Anthracene | ND | *1 | 0.60 | 0.60 | mg/Kg | ☼ | 04/22/24 10:24 | 04/23/24 21:16 | 1 |
| Fluoranthene | ND | | 0.60 | 0.60 | mg/Kg | ☼ | 04/22/24 10:24 | 04/23/24 21:16 | 1 |
| Pyrene | ND | | 0.60 | 0.60 | mg/Kg | ☼ | 04/22/24 10:24 | 04/23/24 21:16 | 1 |
| Benzo[a]anthracene | ND | | 0.60 | 0.60 | mg/Kg | ☼ | 04/22/24 10:24 | 04/23/24 21:16 | 1 |
| Chrysene | ND | | 0.60 | 0.60 | mg/Kg | ☼ | 04/22/24 10:24 | 04/23/24 21:16 | 1 |
| Benzo[b]fluoranthene | ND | | 0.60 | 0.60 | mg/Kg | ☼ | 04/22/24 10:24 | 04/23/24 21:16 | 1 |
| Benzo[k]fluoranthene | ND | | 0.60 | 0.60 | mg/Kg | ☼ | 04/22/24 10:24 | 04/23/24 21:16 | 1 |
| Benzo[a]pyrene | ND | | 0.60 | 0.60 | mg/Kg | ☼ | 04/22/24 10:24 | 04/23/24 21:16 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | *1 | 0.60 | 0.60 | mg/Kg | ☼ | 04/22/24 10:24 | 04/23/24 21:16 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.60 | 0.60 | mg/Kg | ☼ | 04/22/24 10:24 | 04/23/24 21:16 | 1 |
| Benzo[g,h,i]perylene | ND | | 0.60 | 0.60 | mg/Kg | ☼ | 04/22/24 10:24 | 04/23/24 21:16 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *68* | | *40 - 140* | *04/22/24 10:24* | *04/23/24 21:16* | *1* |
| *o-Terphenyl (Surr)* | *66* | | *40 - 140* | *04/22/24 10:24* | *04/23/24 21:16* | *1* |
| *2-Fluorobiphenyl (Surr)* | *87* | | *40 - 140* | *04/22/24 10:24* | *04/23/24 21:16* | *1* |

### Method: SW846 6010D - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 13 | 0.94 | mg/Kg | ☼ | 04/15/24 12:52 | 04/16/24 15:52 | 2 |

## Client Sample ID: SO-MW109-1315

**Date Collected: 04/12/24 08:30**
**Date Received: 04/12/24 17:22**

## Lab Sample ID: 620-17985-1

**Matrix: Solid**
**Percent Solids: 80.6**

### Method: SW846 6010D - Metals (ICP) (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Arsenic** | **3.0** | **J** | 3.8 | 0.48 | mg/Kg | ☼ | 04/15/24 12:52 | 04/16/24 15:52 | 2 |
| **Barium** | **16** | | 2.5 | 0.30 | mg/Kg | ☼ | 04/15/24 12:52 | 04/17/24 13:00 | 2 |
| Beryllium | ND | | 1.3 | 0.063 | mg/Kg | ☼ | 04/15/24 12:52 | 04/17/24 13:00 | 2 |
| Cadmium | ND | | 1.3 | 0.065 | mg/Kg | ☼ | 04/15/24 12:52 | 04/16/24 15:52 | 2 |
| **Chromium** | **9.9** | | 2.5 | 0.33 | mg/Kg | ☼ | 04/15/24 12:52 | 04/16/24 15:52 | 2 |
| **Lead** | **1.9** | **J** | 3.8 | 0.53 | mg/Kg | ☼ | 04/15/24 12:52 | 04/16/24 15:52 | 2 |
| **Nickel** | **5.8** | **B** | 2.5 | 0.29 | mg/Kg | ☼ | 04/15/24 12:52 | 04/16/24 15:52 | 2 |
| Selenium | ND | | 3.8 | 0.72 | mg/Kg | ☼ | 04/15/24 12:52 | 04/16/24 15:52 | 2 |
| Silver | ND | | 3.8 | 0.41 | mg/Kg | ☼ | 04/15/24 12:52 | 04/16/24 15:52 | 2 |
| Thallium | ND | | 7.5 | 2.8 | mg/Kg | ☼ | 04/15/24 12:52 | 04/17/24 13:00 | 2 |
| **Vanadium** | **7.6** | | 3.8 | 0.67 | mg/Kg | ☼ | 04/15/24 12:52 | 04/16/24 15:52 | 2 |
| **Zinc** | **8.4** | | 7.5 | 1.9 | mg/Kg | ☼ | 04/15/24 12:52 | 04/16/24 15:52 | 2 |

### Method: SW846 7471A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.047 | 0.0078 | mg/Kg | ☼ | 04/22/24 09:01 | 04/22/24 16:36 | 1 |

### General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Percent Moisture (EPA Moisture)** | **19.4** | | 0.1 | 0.1 | % | | | 04/15/24 11:37 | 1 |
| **Percent Solids (EPA Moisture)** | **80.6** | | 0.1 | 0.1 | % | | | 04/15/24 11:37 | 1 |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-17985-1

**Client Sample ID: TB-01**
**Date Collected: 04/12/24 08:00**
**Date Received: 04/12/24 17:22**

**Lab Sample ID: 620-17985-2**
**Matrix: Solid**

**Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)**

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 5.0 | 5.0 | mg/Kg | | 04/15/24 11:06 | 04/17/24 20:17 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 5.0 | 5.0 | mg/Kg | | 04/15/24 11:06 | 04/17/24 20:17 | 1 |
| C9-C10 Aromatics | ND | | 5.0 | 5.0 | mg/Kg | | 04/15/24 11:06 | 04/17/24 20:17 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 5.0 | 5.0 | mg/Kg | | 04/15/24 11:06 | 04/17/24 20:17 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 5.0 | 5.0 | mg/Kg | | 04/15/24 11:06 | 04/17/24 20:17 | 1 |
| Benzene | ND | | 0.25 | 0.25 | mg/Kg | | 04/15/24 11:06 | 04/17/24 20:17 | 1 |
| Ethylbenzene | ND | | 0.25 | 0.25 | mg/Kg | | 04/15/24 11:06 | 04/17/24 20:17 | 1 |
| Methyl tert-butyl ether | ND | | 0.050 | 0.050 | mg/Kg | | 04/15/24 11:06 | 04/17/24 20:17 | 1 |
| Naphthalene | ND | | 1.0 | 1.0 | mg/Kg | | 04/15/24 11:06 | 04/17/24 20:17 | 1 |
| Toluene | ND | | 0.25 | 0.25 | mg/Kg | | 04/15/24 11:06 | 04/17/24 20:17 | 1 |
| m,p-Xylene | ND | | 0.50 | 0.50 | mg/Kg | | 04/15/24 11:06 | 04/17/24 20:17 | 1 |
| o-Xylene | ND | | 0.25 | 0.25 | mg/Kg | | 04/15/24 11:06 | 04/17/24 20:17 | 1 |
| Xylenes, Total | ND | | 0.75 | 0.75 | mg/Kg | | 04/15/24 11:06 | 04/17/24 20:17 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *95* | | *70 - 130* | *04/15/24 11:06* | *04/17/24 20:17* | *1* |
| *2,5-Dibromotoluene (pid)* | *94* | | *70 - 130* | *04/15/24 11:06* | *04/17/24 20:17* | *1* |

# Surrogate Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-17985-1

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

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

| | | Percent Surrogate Recovery (Acceptance Limits) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab Sample ID | Client Sample ID | 25DBTf1 (70-130) | 25DBTp1 (70-130) | | | | | | | | |
| 620-17985-1 | SO-MW109-1315 | 93 | 91 | | | | | | | | |
| 620-17985-2 | TB-01 | 95 | 94 | | | | | | | | |
| LCS 620-33831/1-A | Lab Control Sample | 99 | 96 | | | | | | | | |
| LCSD 620-33831/2-A | Lab Control Sample Dup | 102 | 99 | | | | | | | | |
| MB 620-33831/3-A | Method Blank | 96 | 95 | | | | | | | | |

**Surrogate Legend**

25DBTf = 2,5-Dibromotoluene (fid)
25DBTp = 2,5-Dibromotoluene (pid)

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

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

| | | Percent Surrogate Recovery (Acceptance Limits) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab Sample ID | Client Sample ID | 1COD1 (40-140) | OTPH1 (40-140) | FBP1 (40-140) | | | | | | | |
| 620-17985-1 | SO-MW109-1315 | 68 | 66 | 87 | | | | | | | |
| LCS 620-33981/2-B | Lab Control Sample | 61 | 65 | 112 | | | | | | | |
| LCSD 620-33981/3-B | Lab Control Sample Dup | 69 | 91 | 130 | | | | | | | |
| MB 620-33981/1-B | Method Blank | 58 | 63 | 80 | | | | | | | |

**Surrogate Legend**

1COD = 1-Chlorooctadecane (Surr)
OTPH = o-Terphenyl (Surr)
FBP = 2-Fluorobiphenyl (Surr)

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

**Lab Sample ID: MB 620-33831/3-A**
**Matrix: Solid**
**Analysis Batch: 33818**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 33831**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 5.0 | 5.0 | mg/Kg | | 04/17/24 10:42 | 04/17/24 19:41 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 5.0 | 5.0 | mg/Kg | | 04/17/24 10:42 | 04/17/24 19:41 | 1 |
| C9-C10 Aromatics | ND | | 5.0 | 5.0 | mg/Kg | | 04/17/24 10:42 | 04/17/24 19:41 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 5.0 | 5.0 | mg/Kg | | 04/17/24 10:42 | 04/17/24 19:41 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 5.0 | 5.0 | mg/Kg | | 04/17/24 10:42 | 04/17/24 19:41 | 1 |
| Benzene | ND | | 0.25 | 0.25 | mg/Kg | | 04/17/24 10:42 | 04/17/24 19:41 | 1 |
| Ethylbenzene | ND | | 0.25 | 0.25 | mg/Kg | | 04/17/24 10:42 | 04/17/24 19:41 | 1 |
| Methyl tert-butyl ether | ND | | 0.050 | 0.050 | mg/Kg | | 04/17/24 10:42 | 04/17/24 19:41 | 1 |
| Naphthalene | ND | | 1.0 | 1.0 | mg/Kg | | 04/17/24 10:42 | 04/17/24 19:41 | 1 |
| Toluene | ND | | 0.25 | 0.25 | mg/Kg | | 04/17/24 10:42 | 04/17/24 19:41 | 1 |
| m,p-Xylene | ND | | 0.50 | 0.50 | mg/Kg | | 04/17/24 10:42 | 04/17/24 19:41 | 1 |
| o-Xylene | ND | | 0.25 | 0.25 | mg/Kg | | 04/17/24 10:42 | 04/17/24 19:41 | 1 |
| Xylenes, Total | ND | | 0.75 | 0.75 | mg/Kg | | 04/17/24 10:42 | 04/17/24 19:41 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *96* | | *70 - 130* | *04/17/24 10:42* | *04/17/24 19:41* | *1* |
| *2,5-Dibromotoluene (pid)* | *95* | | *70 - 130* | *04/17/24 10:42* | *04/17/24 19:41* | *1* |

**Lab Sample ID: LCS 620-33831/1-A**
**Matrix: Solid**
**Analysis Batch: 33818**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 33831**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | 1.00 | ND | | mg/Kg | | 101 | 70 - 130 |
| C5-C8 Aliphatics (unadjusted) | 3.00 | ND | | mg/Kg | | 105 | 70 - 130 |
| C9-C12 Aliphatics (unadjusted) | 3.00 | ND | | mg/Kg | | 100 | 70 - 130 |
| Benzene | 1.00 | 1.02 | | mg/Kg | | 102 | 70 - 130 |
| Ethylbenzene | 1.00 | 0.999 | | mg/Kg | | 100 | 70 - 130 |
| Methyl tert-butyl ether | 1.00 | 0.972 | | mg/Kg | | 97 | 70 - 130 |
| Naphthalene | 1.00 | 1.00 | | mg/Kg | | 100 | 70 - 130 |
| Toluene | 1.00 | 1.03 | | mg/Kg | | 103 | 70 - 130 |
| m,p-Xylene | 2.00 | 2.09 | | mg/Kg | | 104 | 70 - 130 |
| o-Xylene | 1.00 | 1.01 | | mg/Kg | | 101 | 70 - 130 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *99* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *96* | | *70 - 130* |

**Lab Sample ID: LCSD 620-33831/2-A**
**Matrix: Solid**
**Analysis Batch: 33818**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 33831**

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | 1.00 | ND | | mg/Kg | | 101 | 70 - 130 | 1 | 25 |
| C5-C8 Aliphatics (unadjusted) | 3.00 | ND | | mg/Kg | | 107 | 70 - 130 | 1 | 25 |
| C9-C12 Aliphatics (unadjusted) | 3.00 | ND | | mg/Kg | | 101 | 70 - 130 | 1 | 25 |
| Benzene | 1.00 | 1.02 | | mg/Kg | | 102 | 70 - 130 | 1 | 25 |
| Ethylbenzene | 1.00 | 1.02 | | mg/Kg | | 102 | 70 - 130 | 2 | 25 |

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: LCSD 620-33831/2-A**
**Matrix: Solid**
**Analysis Batch: 33818**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 33831**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Methyl tert-butyl ether | | | 1.00 | 1.01 | | mg/Kg | | 101 | 70 - 130 | 4 | 25 |
| Naphthalene | | | 1.00 | ND | | mg/Kg | | 100 | 70 - 130 | 0 | 25 |
| Toluene | | | 1.00 | 1.03 | | mg/Kg | | 103 | 70 - 130 | 0 | 25 |
| m,p-Xylene | | | 2.00 | 2.08 | | mg/Kg | | 104 | 70 - 130 | 0 | 25 |
| o-Xylene | | | 1.00 | 1.01 | | mg/Kg | | 101 | 70 - 130 | 0 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *102* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *99* | | *70 - 130* |

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

**Lab Sample ID: MB 620-33981/1-B**
**Matrix: Solid**
**Analysis Batch: 34073**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 33981**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 6.7 | 6.7 | mg/Kg | | 04/22/24 10:24 | 04/24/24 11:00 | 1 |
| C19-C36 Aliphatics | ND | | 6.7 | 6.7 | mg/Kg | | 04/22/24 10:24 | 04/24/24 11:00 | 1 |
| C11-C22 Aromatics | ND | | 6.7 | 6.7 | mg/Kg | | 04/22/24 10:24 | 04/24/24 11:00 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 6.7 | 6.7 | mg/Kg | | 04/22/24 10:24 | 04/24/24 11:00 | 1 |
| Naphthalene | ND | | 0.33 | 0.33 | mg/Kg | | 04/22/24 10:24 | 04/24/24 11:00 | 1 |
| 2-Methylnaphthalene | ND | | 0.33 | 0.33 | mg/Kg | | 04/22/24 10:24 | 04/24/24 11:00 | 1 |
| Acenaphthylene | ND | | 0.33 | 0.33 | mg/Kg | | 04/22/24 10:24 | 04/24/24 11:00 | 1 |
| Acenaphthene | ND | | 0.33 | 0.33 | mg/Kg | | 04/22/24 10:24 | 04/24/24 11:00 | 1 |
| Fluorene | ND | | 0.33 | 0.33 | mg/Kg | | 04/22/24 10:24 | 04/24/24 11:00 | 1 |
| Phenanthrene | ND | | 0.33 | 0.33 | mg/Kg | | 04/22/24 10:24 | 04/24/24 11:00 | 1 |
| Anthracene | ND | | 0.33 | 0.33 | mg/Kg | | 04/22/24 10:24 | 04/24/24 11:00 | 1 |
| Fluoranthene | ND | | 0.33 | 0.33 | mg/Kg | | 04/22/24 10:24 | 04/24/24 11:00 | 1 |
| Pyrene | ND | | 0.33 | 0.33 | mg/Kg | | 04/22/24 10:24 | 04/24/24 11:00 | 1 |
| Benzo[a]anthracene | ND | | 0.33 | 0.33 | mg/Kg | | 04/22/24 10:24 | 04/24/24 11:00 | 1 |
| Chrysene | ND | | 0.33 | 0.33 | mg/Kg | | 04/22/24 10:24 | 04/24/24 11:00 | 1 |
| Benzo[b]fluoranthene | ND | | 0.33 | 0.33 | mg/Kg | | 04/22/24 10:24 | 04/24/24 11:00 | 1 |
| Benzo[k]fluoranthene | ND | | 0.33 | 0.33 | mg/Kg | | 04/22/24 10:24 | 04/24/24 11:00 | 1 |
| Benzo[a]pyrene | ND | | 0.33 | 0.33 | mg/Kg | | 04/22/24 10:24 | 04/24/24 11:00 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.33 | 0.33 | mg/Kg | | 04/22/24 10:24 | 04/24/24 11:00 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.33 | 0.33 | mg/Kg | | 04/22/24 10:24 | 04/24/24 11:00 | 1 |
| Benzo[g,h,i]perylene | ND | | 0.33 | 0.33 | mg/Kg | | 04/22/24 10:24 | 04/24/24 11:00 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *58* | | *40 - 140* | *04/22/24 10:24* | *04/24/24 11:00* | *1* |
| *o-Terphenyl (Surr)* | *63* | | *40 - 140* | *04/22/24 10:24* | *04/24/24 11:00* | *1* |
| *2-Fluorobiphenyl (Surr)* | *80* | | *40 - 140* | *04/22/24 10:24* | *04/24/24 11:00* | *1* |

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: LCS 620-33981/2-B**
**Matrix: Solid**
**Analysis Batch: 34073**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 33981**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | | | 8.00 | ND | | mg/Kg | | 54 | 40 - 140 | | |
| C19-C36 Aliphatics | | | 10.7 | 8.96 | | mg/Kg | | 84 | 40 - 140 | | |
| C11-C22 Aromatics | | | 22.7 | 18.2 | | mg/Kg | | 80 | 40 - 140 | | |
| Naphthalene | | | 1.33 | 0.591 | | mg/Kg | | 44 | 40 - 140 | | |
| 2-Methylnaphthalene | | | 1.33 | 0.778 | | mg/Kg | | 58 | 40 - 140 | | |
| Acenaphthylene | | | 1.33 | 0.742 | | mg/Kg | | 56 | 40 - 140 | | |
| Acenaphthene | | | 1.33 | 0.727 | | mg/Kg | | 55 | 40 - 140 | | |
| Fluorene | | | 1.33 | 0.696 | | mg/Kg | | 52 | 40 - 140 | | |
| Phenanthrene | | | 1.33 | 0.808 | | mg/Kg | | 61 | 40 - 140 | | |
| Anthracene | | | 1.33 | 0.654 | | mg/Kg | | 49 | 40 - 140 | | |
| Fluoranthene | | | 1.33 | 1.07 | | mg/Kg | | 80 | 40 - 140 | | |
| Pyrene | | | 1.33 | 1.15 | | mg/Kg | | 86 | 40 - 140 | | |
| Benzo[a]anthracene | | | 1.33 | 0.954 | | mg/Kg | | 72 | 40 - 140 | | |
| Chrysene | | | 1.33 | 1.02 | | mg/Kg | | 77 | 40 - 140 | | |
| Benzo[b]fluoranthene | | | 1.33 | 1.01 | | mg/Kg | | 76 | 40 - 140 | | |
| Benzo[k]fluoranthene | | | 1.33 | 1.08 | | mg/Kg | | 81 | 40 - 140 | | |
| Benzo[a]pyrene | | | 1.33 | 1.06 | | mg/Kg | | 79 | 40 - 140 | | |
| Indeno[1,2,3-cd]pyrene | | | 1.33 | 0.950 | | mg/Kg | | 71 | 40 - 140 | | |
| Dibenz(a,h)anthracene | | | 1.33 | 1.05 | | mg/Kg | | 79 | 40 - 140 | | |
| Benzo[g,h,i]perylene | | | 1.33 | 1.11 | | mg/Kg | | 83 | 40 - 140 | | |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *61* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *65* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *112* | | *40 - 140* |

**Lab Sample ID: LCSD 620-33981/3-B**
**Matrix: Solid**
**Analysis Batch: 34073**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 33981**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | | | 8.00 | ND | | mg/Kg | | 66 | 40 - 140 | 20 | 25 |
| C19-C36 Aliphatics | | | 10.7 | 11.5 | | mg/Kg | | 108 | 40 - 140 | 25 | 25 |
| C11-C22 Aromatics | | | 22.7 | 25.9 | *1 | mg/Kg | | 114 | 40 - 140 | 35 | 25 |
| Naphthalene | | | 1.33 | 0.860 | *1 | mg/Kg | | 65 | 40 - 140 | 37 | 25 |
| 2-Methylnaphthalene | | | 1.33 | 0.900 | | mg/Kg | | 67 | 40 - 140 | 15 | 25 |
| Acenaphthylene | | | 1.33 | 0.999 | *1 | mg/Kg | | 75 | 40 - 140 | 30 | 25 |
| Acenaphthene | | | 1.33 | 1.07 | *1 | mg/Kg | | 80 | 40 - 140 | 38 | 25 |
| Fluorene | | | 1.33 | 0.961 | *1 | mg/Kg | | 72 | 40 - 140 | 32 | 25 |
| Phenanthrene | | | 1.33 | 1.10 | *1 | mg/Kg | | 82 | 40 - 140 | 31 | 25 |
| Anthracene | | | 1.33 | 0.858 | *1 | mg/Kg | | 64 | 40 - 140 | 27 | 25 |
| Fluoranthene | | | 1.33 | 1.28 | | mg/Kg | | 96 | 40 - 140 | 19 | 25 |
| Pyrene | | | 1.33 | 1.25 | | mg/Kg | | 94 | 40 - 140 | 8 | 25 |
| Benzo[a]anthracene | | | 1.33 | 1.17 | | mg/Kg | | 88 | 40 - 140 | 20 | 25 |
| Chrysene | | | 1.33 | 1.20 | | mg/Kg | | 90 | 40 - 140 | 16 | 25 |
| Benzo[b]fluoranthene | | | 1.33 | 1.27 | | mg/Kg | | 95 | 40 - 140 | 23 | 25 |
| Benzo[k]fluoranthene | | | 1.33 | 1.20 | | mg/Kg | | 90 | 40 - 140 | 10 | 25 |
| Benzo[a]pyrene | | | 1.33 | 1.17 | | mg/Kg | | 88 | 40 - 140 | 10 | 25 |

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: LCSD 620-33981/3-B**
**Matrix: Solid**
**Analysis Batch: 34073**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 33981**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Indeno[1,2,3-cd]pyrene | | | 1.33 | 1.24 | *1 | mg/Kg | | 93 | 40 - 140 | 26 | 25 |
| Dibenz(a,h)anthracene | | | 1.33 | 1.31 | | mg/Kg | | 99 | 40 - 140 | 22 | 25 |
| Benzo[g,h,i]perylene | | | 1.33 | 1.37 | | mg/Kg | | 103 | 40 - 140 | 21 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *69* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *91* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *130* | | *40 - 140* |

## Method: 6010D - Metals (ICP)

**Lab Sample ID: MB 620-33773/1-A**
**Matrix: Solid**
**Analysis Batch: 33821**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 33773**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 4.8 | 0.36 | mg/Kg | | 04/15/24 12:51 | 04/16/24 13:04 | 1 |
| Arsenic | ND | | 1.4 | 0.18 | mg/Kg | | 04/15/24 12:51 | 04/16/24 13:04 | 1 |
| Barium | ND | | 0.97 | 0.11 | mg/Kg | | 04/15/24 12:51 | 04/16/24 13:04 | 1 |
| Beryllium | ND | | 0.48 | 0.024 | mg/Kg | | 04/15/24 12:51 | 04/16/24 13:04 | 1 |
| Cadmium | ND | | 0.48 | 0.025 | mg/Kg | | 04/15/24 12:51 | 04/16/24 13:04 | 1 |
| Chromium | ND | | 0.97 | 0.13 | mg/Kg | | 04/15/24 12:51 | 04/16/24 13:04 | 1 |
| Lead | ND | | 1.4 | 0.20 | mg/Kg | | 04/15/24 12:51 | 04/16/24 13:04 | 1 |
| Nickel | 0.116 | J | 0.97 | 0.11 | mg/Kg | | 04/15/24 12:51 | 04/16/24 13:04 | 1 |
| Selenium | ND | | 1.4 | 0.28 | mg/Kg | | 04/15/24 12:51 | 04/16/24 13:04 | 1 |
| Silver | ND | | 1.4 | 0.16 | mg/Kg | | 04/15/24 12:51 | 04/16/24 13:04 | 1 |
| Thallium | ND | | 2.9 | 1.1 | mg/Kg | | 04/15/24 12:51 | 04/16/24 13:04 | 1 |
| Vanadium | ND | | 1.4 | 0.26 | mg/Kg | | 04/15/24 12:51 | 04/16/24 13:04 | 1 |
| Zinc | ND | | 2.9 | 0.75 | mg/Kg | | 04/15/24 12:51 | 04/16/24 13:04 | 1 |

**Lab Sample ID: LCSSRM 620-33773/2-A**
**Matrix: Solid**
**Analysis Batch: 33821**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 33773**

| Analyte | | | Spike Added | LCSSRM Result | LCSSRM Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | | | 276 | 101 | | mg/Kg | | 36.7 | 2.2 - 110.1 | | |
| Arsenic | | | 223 | 168 | | mg/Kg | | 75.4 | 70.4 - 102.2 | | |
| Barium | | | 445 | 374 | | mg/Kg | | 84.1 | 78.0 - 110.8 | | |
| Beryllium | | | 131 | 109 | | mg/Kg | | 83.1 | 76.3 - 107.6 | | |
| Cadmium | | | 226 | 183 | | mg/Kg | | 81.0 | 73.9 - 104.9 | | |
| Chromium | | | 230 | 179 | | mg/Kg | | 77.7 | 73.5 - 107.0 | | |
| Lead | | | 275 | 235 | | mg/Kg | | 85.4 | 74.2 - 108.0 | | |
| Nickel | | | 118 | 99.8 | | mg/Kg | | 84.6 | 72.0 - 104.2 | | |

## Method: 6010D - Metals (ICP) (Continued)

**Lab Sample ID: LCSSRM 620-33773/2-A**
**Matrix: Solid**
**Analysis Batch: 33821**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 33773**

| Analyte | Spike Added | LCSSRM Result | LCSSRM Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Selenium | 137 | 112 | | mg/Kg | | 81.7 | 70.9 - 108.8 |
| Silver | 75.3 | 57.3 | | mg/Kg | | 76.1 | 72.0 - 110.1 |
| Thallium | 165 | 137 | | mg/Kg | | 83.2 | 70.9 - 106.7 |
| Vanadium | 183 | 145 | | mg/Kg | | 79.4 | 67.2 - 106.6 |
| Zinc | 286 | 239 | | mg/Kg | | 83.6 | 75.9 - 111.5 |

## Method: 7471A - Mercury (CVAA)

**Lab Sample ID: MB 620-33963/1-A**
**Matrix: Solid**
**Analysis Batch: 34007**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 33963**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.050 | 0.0083 | mg/Kg | | 04/22/24 09:01 | 04/22/24 16:10 | 1 |

**Lab Sample ID: LCSSRM 620-33963/2-A ^20**
**Matrix: Solid**
**Analysis Batch: 34007**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 33963**

| Analyte | Spike Added | LCSSRM Result | LCSSRM Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Mercury | 25.5 | 24.9 | | mg/Kg | | 97.7 | 71.4 - 125.1 |

## GC VOA

### Prep Batch: 33765

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-17985-1 | SO-MW109-1315 | Total/NA | Solid | 5035 | |
| 620-17985-2 | TB-01 | Total/NA | Solid | 5035 | |

### Analysis Batch: 33818

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-17985-1 | SO-MW109-1315 | Total/NA | Solid | MAVPH2.1 | 33765 |
| 620-17985-2 | TB-01 | Total/NA | Solid | MAVPH2.1 | 33765 |
| MB 620-33831/3-A | Method Blank | Total/NA | Solid | MAVPH2.1 | 33831 |
| LCS 620-33831/1-A | Lab Control Sample | Total/NA | Solid | MAVPH2.1 | 33831 |
| LCSD 620-33831/2-A | Lab Control Sample Dup | Total/NA | Solid | MAVPH2.1 | 33831 |

### Prep Batch: 33831

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| MB 620-33831/3-A | Method Blank | Total/NA | Solid | 5035 | |
| LCS 620-33831/1-A | Lab Control Sample | Total/NA | Solid | 5035 | |
| LCSD 620-33831/2-A | Lab Control Sample Dup | Total/NA | Solid | 5035 | |

## GC Semi VOA

### Prep Batch: 33981

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-17985-1 | SO-MW109-1315 | Total/NA | Solid | 3546 | |
| MB 620-33981/1-B | Method Blank | Total/NA | Solid | 3546 | |
| LCS 620-33981/2-B | Lab Control Sample | Total/NA | Solid | 3546 | |
| LCSD 620-33981/3-B | Lab Control Sample Dup | Total/NA | Solid | 3546 | |

### Analysis Batch: 34020

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-17985-1 | SO-MW109-1315 | Total/NA | Solid | MAEPH2.1 | 34043 |

### Fraction Batch: 34043

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-17985-1 | SO-MW109-1315 | Total/NA | Solid | MA EPH Frac | 33981 |
| MB 620-33981/1-B | Method Blank | Total/NA | Solid | MA EPH Frac | 33981 |
| LCS 620-33981/2-B | Lab Control Sample | Total/NA | Solid | MA EPH Frac | 33981 |
| LCSD 620-33981/3-B | Lab Control Sample Dup | Total/NA | Solid | MA EPH Frac | 33981 |

### Analysis Batch: 34073

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| MB 620-33981/1-B | Method Blank | Total/NA | Solid | MAEPH2.1 | 34043 |
| LCS 620-33981/2-B | Lab Control Sample | Total/NA | Solid | MAEPH2.1 | 34043 |
| LCSD 620-33981/3-B | Lab Control Sample Dup | Total/NA | Solid | MAEPH2.1 | 34043 |

## Metals

### Prep Batch: 33773

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-17985-1 | SO-MW109-1315 | Total/NA | Solid | 3050B | |
| MB 620-33773/1-A | Method Blank | Total/NA | Solid | 3050B | |
| LCSSRM 620-33773/2-A | Lab Control Sample | Total/NA | Solid | 3050B | |

# QC Association Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-17985-1

## Metals

### Analysis Batch: 33821

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-17985-1 | SO-MW109-1315 | Total/NA | Solid | 6010D | 33773 |
| MB 620-33773/1-A | Method Blank | Total/NA | Solid | 6010D | 33773 |
| LCSSRM 620-33773/2-A | Lab Control Sample | Total/NA | Solid | 6010D | 33773 |

### Analysis Batch: 33865

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-17985-1 | SO-MW109-1315 | Total/NA | Solid | 6010D | 33773 |

### Prep Batch: 33963

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-17985-1 | SO-MW109-1315 | Total/NA | Solid | 7471B | |
| MB 620-33963/1-A | Method Blank | Total/NA | Solid | 7471B | |
| LCSSRM 620-33963/2-A ^20 | Lab Control Sample | Total/NA | Solid | 7471B | |

### Analysis Batch: 34007

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-17985-1 | SO-MW109-1315 | Total/NA | Solid | 7471A | 33963 |
| MB 620-33963/1-A | Method Blank | Total/NA | Solid | 7471A | 33963 |
| LCSSRM 620-33963/2-A ^20 | Lab Control Sample | Total/NA | Solid | 7471A | 33963 |

## General Chemistry

### Analysis Batch: 33768

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-17985-1 | SO-MW109-1315 | Total/NA | Solid | Moisture | |

# Lab Chronicle

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-17985-1

## Client Sample ID: SO-MW109-1315
**Date Collected: 04/12/24 08:30**
**Date Received: 04/12/24 17:22**

**Lab Sample ID: 620-17985-1**
**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Moisture | | 1 | 33768 | MEM | EET RI | 04/15/24 11:37 |

## Client Sample ID: SO-MW109-1315
**Date Collected: 04/12/24 08:30**
**Date Received: 04/12/24 17:22**

**Lab Sample ID: 620-17985-1**
**Matrix: Solid**
**Percent Solids: 80.6**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 5035 | | | 33765 | JJB | EET RI | 04/15/24 11:06 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 33818 | JJB | EET RI | 04/18/24 01:38 |
| Total/NA | Prep | 3546 | | | 33981 | JAC | EET RI | 04/22/24 10:24 |
| Total/NA | Fraction | MA EPH Frac | | | 34043 | BJJ | EET RI | 04/23/24 12:23 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 34020 | JS | EET RI | 04/23/24 21:16 |
| Total/NA | Prep | 3050B | | | 33773 | JPC | EET RI | 04/15/24 12:52 |
| Total/NA | Analysis | 6010D | | 2 | 33821 | JPC | EET RI | 04/16/24 15:52 |
| Total/NA | Prep | 3050B | | | 33773 | JPC | EET RI | 04/15/24 12:52 |
| Total/NA | Analysis | 6010D | | 2 | 33865 | JPC | EET RI | 04/17/24 13:00 |
| Total/NA | Prep | 7471B | | | 33963 | PRB | EET RI | 04/22/24 09:01 |
| Total/NA | Analysis | 7471A | | 1 | 34007 | PRB | EET RI | 04/22/24 16:36 |

## Client Sample ID: TB-01
**Date Collected: 04/12/24 08:00**
**Date Received: 04/12/24 17:22**

**Lab Sample ID: 620-17985-2**
**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 5035 | | | 33765 | JJB | EET RI | 04/15/24 11:06 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 33818 | JJB | EET RI | 04/17/24 20:17 |

**Laboratory References:**

EET RI = Eurofins Rhode Island, 646 Camp Ave, North Kingstown, RI 02852, TEL (413)789-9018

# Accreditation/Certification Summary

Client: Nobis Engineering, Inc. Job ID: 620-17985-1
Project/Site: Former L&M - Lunenburg MA

## Laboratory: Eurofins Rhode Island

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

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|
| Massachusetts | State | M-RI907 | 06-30-24 |

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

| Analysis Method | Prep Method | Matrix | Analyte |
|---|---|---|---|
| 6010D | 3050B | Solid | Antimony |
| 6010D | 3050B | Solid | Arsenic |
| 6010D | 3050B | Solid | Barium |
| 6010D | 3050B | Solid | Beryllium |
| 6010D | 3050B | Solid | Cadmium |
| 6010D | 3050B | Solid | Chromium |
| 6010D | 3050B | Solid | Lead |
| 6010D | 3050B | Solid | Nickel |
| 6010D | 3050B | Solid | Selenium |
| 6010D | 3050B | Solid | Silver |
| 6010D | 3050B | Solid | Thallium |
| 6010D | 3050B | Solid | Vanadium |
| 6010D | 3050B | Solid | Zinc |
| 7471A | 7471B | Solid | Mercury |
| MAEPH2.1 | 3546 | Solid | 2-Methylnaphthalene |
| MAEPH2.1 | 3546 | Solid | Acenaphthene |
| MAEPH2.1 | 3546 | Solid | Acenaphthylene |
| MAEPH2.1 | 3546 | Solid | Anthracene |
| MAEPH2.1 | 3546 | Solid | Benzo[a]anthracene |
| MAEPH2.1 | 3546 | Solid | Benzo[a]pyrene |
| MAEPH2.1 | 3546 | Solid | Benzo[b]fluoranthene |
| MAEPH2.1 | 3546 | Solid | Benzo[g,h,i]perylene |
| MAEPH2.1 | 3546 | Solid | Benzo[k]fluoranthene |
| MAEPH2.1 | 3546 | Solid | C11-C22 Aromatics |
| MAEPH2.1 | 3546 | Solid | C11-C22 Aromatics (Adjusted) |
| MAEPH2.1 | 3546 | Solid | C19-C36 Aliphatics |
| MAEPH2.1 | 3546 | Solid | C9-C18 Aliphatics |
| MAEPH2.1 | 3546 | Solid | Chrysene |
| MAEPH2.1 | 3546 | Solid | Dibenz(a,h)anthracene |
| MAEPH2.1 | 3546 | Solid | Fluoranthene |
| MAEPH2.1 | 3546 | Solid | Fluorene |
| MAEPH2.1 | 3546 | Solid | Indeno[1,2,3-cd]pyrene |
| MAEPH2.1 | 3546 | Solid | Naphthalene |
| MAEPH2.1 | 3546 | Solid | Phenanthrene |
| MAEPH2.1 | 3546 | Solid | Pyrene |
| MAVPH2.1 | 5035 | Solid | Benzene |
| MAVPH2.1 | 5035 | Solid | C5-C8 Aliphatics (adjusted) |
| MAVPH2.1 | 5035 | Solid | C5-C8 Aliphatics (unadjusted) |
| MAVPH2.1 | 5035 | Solid | C9-C10 Aromatics |
| MAVPH2.1 | 5035 | Solid | C9-C12 Aliphatics (adjusted) |
| MAVPH2.1 | 5035 | Solid | C9-C12 Aliphatics (unadjusted) |
| MAVPH2.1 | 5035 | Solid | Ethylbenzene |
| MAVPH2.1 | 5035 | Solid | m,p-Xylene |
| MAVPH2.1 | 5035 | Solid | Methyl tert-butyl ether |
| MAVPH2.1 | 5035 | Solid | Naphthalene |

# Accreditation/Certification Summary

Client: Nobis Engineering, Inc. Job ID: 620-17985-1
Project/Site: Former L&M - Lunenburg MA

## Laboratory: Eurofins Rhode Island (Continued)

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

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

| Analysis Method | Prep Method | Matrix | Analyte |
|---|---|---|---|
| MAVPH2.1 | 5035 | Solid | o-Xylene |
| MAVPH2.1 | 5035 | Solid | Toluene |
| MAVPH2.1 | 5035 | Solid | Xylenes, Total |
| Moisture | | Solid | Percent Moisture |
| Moisture | | Solid | Percent Solids |

# Method Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-17985-1

| Method | Method Description | Protocol | Laboratory |
|---|---|---|---|
| MAVPH2.1 | Massachusetts - Volatile Petroleum Hydrocarbons (GC) | MA DEP | EET RI |
| MAEPH2.1 | Massachusetts - Extractable Petroleum Hydrocarbons (GC) | MA DEP | EET RI |
| 6010D | Metals (ICP) | SW846 | EET RI |
| 7471A | Mercury (CVAA) | SW846 | EET RI |
| Moisture | Percent Moisture | EPA | EET RI |
| 3050B | Preparation, Metals | SW846 | EET RI |
| 3546 | Microwave Extraction | SW846 | EET RI |
| 5035 | Closed System Purge and Trap | SW846 | EET RI |
| 7471B | Preparation, Mercury | SW846 | EET RI |
| MA EPH Frac | Massachusetts - Extractable Petroleum Hydrocarbon Fractionation | MA DEP | EET RI |

**Protocol References:**

EPA = US Environmental Protection Agency

MA DEP = Massachusetts Department Of Environmental Protection

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

**Laboratory References:**

EET RI = Eurofins Rhode Island, 646 Camp Ave, North Kingstown, RI 02852, TEL (413)789-9018

# Sample Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-17985-1

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---|---|---|---|---|
| 620-17985-1 | SO-MW109-1315 | Solid | 04/12/24 08:30 | 04/12/24 17:22 |
| 620-17985-2 | TB-01 | Solid | 04/12/24 08:00 | 04/12/24 17:22 |

17985

620-17985 Chain of Custody

# Chain of Custody Record

eurofins | Environment Testing

| | | | |
|---|---|---|---|
| Client Info | Sampler: C. Bellmonz | Lab PM | Carrier Tracking No(s) | COC No: 620-16343-2161 1 |
| Client Contact: Adam Roy | Phone: 978-888-4404 | E-Mail: cbellmonz@nobis-group.com | State of Origin: | Page: Page 1 of 1 |
| Company: Nobis Engineering, Inc. | PWSID | | | Job #: |

| | | |
|---|---|---|
| Address: 585 Middlesex Street | Due Date Requested: Standard | Analysis Requested |
| City: Lowell | TAT Requested (days): | |
| State, Zip: MA, 01851 | Compliance Project: X Yes △ No MA MCP | |
| Phone | PO #: | |
| Email: aroy@nobis-group.com | WO #: | |
| Project Name: Former L & M Service Station | Project #: 500001.05 | |
| Site: Lunenburg, MA | SSOW#: | |

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)
Other:

| Sample Identification | Sample Date | Sample Time | Sample Type (C=comp, G=grab) | Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air) | Field Filtered Sample (Yes or No) | Perform MS/MSD (Yes or No) | MCP Metals | VPH | EPH | Total Number of containers | Special Instructions/Note: |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preservation Code: | | | | N | F | N | | |
| 1) SO-MW209-1315 | 4/12/24 | 830 | G | Solid | | | X | X | X | | |
| 2) TB-01 | 4/8/24 | 800 | | ~~Solid~~ | | | | | | | |

**Possible Hazard Identification**
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

**Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)**
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested. I, II, III, IV, Other (specify)

Special Instructions/QC Requirements: email edd to aroy@nobis-group.com

| | | | |
|---|---|---|---|
| Empty Kit Relinquished by: | Date. | Time | Method of Shipment: |
| Relinquished by: Caroline Bellmonz | Date/Time | Company: Nobis | Received by: | Date/Time: 4/12/24 13:40 | Company: EAT |
| Relinquished by: | Date/Time: 4/18/24 17:22 | Company: GRI | Received by: | Date/Time: 4/18/24 17:22 | Company: GRI |
| Relinquished by: | Date/Time | Company | Received by: | Date/Time. | Company |

| | | |
|---|---|---|
| Custody Seals Intact: △ Yes △ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks: 1.0 -0.2 0.8 #6 |

Page 24 of 25

4/24/2024

Ver: 06/08/2021

# Login Sample Receipt Checklist

Client: Nobis Engineering, Inc.

Job Number: 620-17985-1

**Login Number: 17985**
**List Number: 1**
**Creator: Makhoul, Elie**

**List Source: Eurofins Rhode Island**

| Question | Answer | Comment |
|---|---|---|
| Radioactivity wasn't checked or is </= background as measured by a survey meter. | N/A | |
| The cooler's custody seal, if present, is intact. | N/A | |
| Sample custody seals, if present, are intact. | N/A | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| Is the Field Sampler's name present on COC? | True | |
| There are no discrepancies between the containers received and the COC. | True | |
| Samples are received within Holding Time (excluding tests with immediate HTs) | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| Sample Preservation Verified. | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| Containers requiring zero headspace have no headspace or bubble is <6mm (1/4"). | True | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |
| Residual Chlorine Checked. | N/A | |

May 28, 2024
Nobis File No. S00001.05

Ms. Katy Deng
USEPA – Region 1
Land, Chemicals, and Redevelopment Division
5 Post Office Square, Suite 100
Boston, MA 02109-3912

Re: USEPA Contract No. 68HE0122D0001
USEPA Task Order No. 68HE0122F0044
Targeted Brownfields Assessment (TBA)
Former L&M Service Station Site
Lunenburg, Massachusetts
Sample Delivery Group (SDG) No. 620182231
Eurofins New England, North Kingstown, RI

Tier 1 Stage 2A Organic and Inorganic Data Review:

Volatile Petroleum Hydrocarbons (VPH by MassDEP-VPH), Extractable Petroleum Hydrocarbons (EPH by MassDEP-EPH), Massachusetts Contingency Plan (MCP) Metals (MCP-14 Metals by 6010D/7470A)

10/Groundwater Samples: GW-MW101-042324, GW-MW102R-042324, GW-MW103-042324, GW-MW104-042324, GW-MW105-042324, GW-MW106-042324, GW-MW107-042324, GW-MW108-042324, GW-MW109-042324, FD-01-042324
1/Field Duplicate Pair: GW-MW105-042324 / FD-01-042324
1/Aqueous Trip Blank: TB-01-042224

Dear Ms. Deng:

Nobis Group (Nobis), under a USEPA contract as a subcontractor to KGSNE JV, LLC, performed a Tier 1 Stage 2A manual data review (S2AVM) on the organic and inorganic analytical data for the samples listed above. The samples were collected by Nobis at the Former L&M Service Station Site located in Lunenburg, Massachusetts on April 22 and 23, 2024. The samples were analyzed for VPHs by MassDEP-VPH, EPHs by MassDEP-EPH, and MCP-14 Metals by EPA Methods 6010D/7470A by Eurofins New England in North Kingstown, RI.

The Tier 1 Stage 2A manual data review was performed in accordance with the Region 1 - EPA New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures (September 2020); USEPA's National Functional Guidelines for Organic Superfund Methods Data Review (November 2020); USEPA's National Functional Guidelines for Inorganic Superfund Methods Data Review (November 2020); the Program Quality Assurance Project Plan (Program QAPP) dated October 2022, and the Quality Assurance Project Plan Addendum (QAPPA) (May 2023) for the Former L&M Service Station Site, which appends the October 2022 Program QAPP.

The data were evaluated based on the following parameters:

* • Overall Evaluation of Data and Potential Usability Issues
* • Data Completeness



Nobis Group®
585 Middlesex Street
Lowell, MA 01851
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| | | |
|---|---|---|
| * | • | Preservation and Technical Holding Times |
| | • | Blanks |
| * | • | Surrogates (organic analyses only) |
| NA | • | Internal Standards |
| | • | Matrix Spike Analysis |
| * | • | Laboratory Duplicates |
| | • | Laboratory Control Samples (LCS) |
| * | • | Field Duplicates |
| NA | • | ICP Serial Dilutions (metals only) |
| NA | • | Performance Evaluation (PE) Samples |
| NA | • | Target Analyte Identification |
| * | • | Reported Quantitation Limits |

* All criteria were met for this parameter or did not require qualification.
NA – Not applicable.

**Overall Evaluation of Data and Potential Usability Issues**

The site sampling objectives are:

- Characterize in-situ soil based on AOCs identified by Fuss & O'Neill in November 2020 Phase I for the presence of possible site-related contamination.
- Evaluate groundwater elevation.
- Evaluate presence/absence of groundwater contamination related to site.

The data meet the project quality criteria and can be used without restriction except as summarized below. The attachments provide details and supporting documentation.

**MassDEP-VPH:**
Results were qualified for MS/MSD recoveries and laboratory blank contamination.

**MassDEP-EPH:**
Results were qualified for MS recovery and LCS/LCSD exceedances.

**MCP-14 Metals and Mercury:**
Results were qualified for MS/MSD RPD exceedances.

Please contact Linda Terzis at lterzis@nobis-group.com should you have any questions or comments regarding this information.

Sincerely,

NOBIS GROUP®

Linda Terzis
Data Validator

Gary Glennon
Data Validator

Tables: Data Summary Tables – Tier 1 Stage 2A (S2AVM) Validated Data
Data Qualification Actions Table

Attachments: Data Review Checklist
Support Documentation
COC

cc: Denis McGrath (Nobis Group)
Adam Roy (Nobis Group)

# DATA SUMMARY TABLE

| **Analysis** | | EPH in Groundwater | | | | |
|---|---|---|---|---|---|---|
| **Lab Sample ID** | | 620-18223-1 | 620-18223-10 | 620-18223-2 | 620-18223-3 | 620-18223-4 |
| **Field Sample ID** | | GW-MW101-042324 | FD-01-042324 | GW-MW102R-042324 | GW-MW103-042324 | GW-MW104-042324 |
| **Sample Type** | | N | FD | N | N | N |
| **Parent Sample ID** | | | GW-MW105-042324 | | | |
| **Sample Date** | **Units** | 04/23/24 | 04/23/24 | 04/23/24 | 04/23/24 | 04/23/24 |
| 2-Methylnaphthalene | ug/L | 1 UJ | 1 U | 32 J | 1 UJ | 1.1 UJ |
| Acenaphthene | ug/L | 1 U | 1 U | 0.22 J | 1 U | 1.1 U |
| Acenaphthylene | ug/L | 1 UJ | 1 UJ | 1 UJ | 1 UJ | 1.1 UJ |
| Anthracene | ug/L | 1 U | 1 U | 1 U | 1 U | 1.1 U |
| Benzo(a)anthracene | ug/L | 1 U | 1 U | 1 U | 1 U | 1.1 U |
| Benzo(a)pyrene | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.21 U |
| Benzo(b)fluoranthene | ug/L | 1 U | 1 U | 1 U | 1 U | 1.1 U |
| Benzo(g,h,i)perylene | ug/L | 1 U | 1 U | 1 U | 1 U | 1.1 U |
| Benzo(k)fluoranthene | ug/L | 1 U | 1 U | 1 U | 1 U | 1.1 U |
| C11-C22 Aromatics | ug/L | 100 U | 100 U | 300 | 100 U | 110 U |
| C11-C22 Aromatics (adjusted) | ug/L | 100 U | 100 U | 150 | 100 U | 110 U |
| C19-C36 Aliphatics | ug/L | 100 U | 100 U | 100 U | 100 U | 110 U |
| C9-C18 Aliphatics | ug/L | 100 U | 100 U | 100 U | 100 U | 110 U |
| Chrysene | ug/L | 1 U | 1 U | 1 U | 1 U | 1.1 U |
| Dibenz(a,h)anthracene | ug/L | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.53 U |
| Fluoranthene | ug/L | 1 U | 1 U | 1 U | 1 U | 1.1 U |
| Fluorene | ug/L | 1 UJ | 1 U | 0.4 J | 1 UJ | 1.1 UJ |
| Indeno(1,2,3-cd)pyrene | ug/L | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.53 U |
| Naphthalene | ug/L | 1 UJ | 1 U | 130 J | 1 UJ | 1.1 UJ |
| Phenanthrene | ug/L | 1 U | 1 U | 0.4 J | 1 U | 1.1 U |
| Pyrene | ug/L | 1 U | 1 U | 1 U | 1 U | 1.1 U |



U – not detected; J – estimated value; R – rejected; EB – detected in equipment blank; N – tentatively identified; + biased high; - biased low

# DATA SUMMARY TABLE

| **Analysis** | | EPH in Groundwater | | | | |
|---|---|---|---|---|---|---|
| **Lab Sample ID** | | 620-18223-5 | 620-18223-6 | 620-18223-7 | 620-18223-8 | 620-18223-9 |
| **Field Sample ID** | | GW-MW105-042324 | GW-MW106-042324 | GW-MW107-042324 | GW-MW108-042324 | GW-MW109-042324 |
| **Sample Type** | | N | N | N | N | N |
| **Parent Sample ID** | | | | | | |
| **Sample Date** | **Units** | 04/23/24 | 04/23/24 | 04/23/24 | 04/23/24 | 04/23/24 |
| 2-Methylnaphthalene | ug/L | 1 U | 44 | 0.77 J | 1 U | 28 |
| Acenaphthene | ug/L | 1 U | 1 U | 1 U | 1 U | 1 U |
| Acenaphthylene | ug/L | 1 UJ | 1 UJ | 1 UJ | 1 UJ | 1 UJ |
| Anthracene | ug/L | 1 U | 1 U | 1 U | 1 U | 1 U |
| Benzo(a)anthracene | ug/L | 1 U | 1 U | 1 U | 1 U | 1 U |
| Benzo(a)pyrene | ug/L | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| Benzo(b)fluoranthene | ug/L | 1 U | 1 U | 1 U | 1 U | 1 U |
| Benzo(g,h,i)perylene | ug/L | 1 U | 1 U | 1 U | 1 U | 1 U |
| Benzo(k)fluoranthene | ug/L | 1 U | 1 U | 1 U | 1 U | 1 U |
| C11-C22 Aromatics | ug/L | 100 U | 190 | 100 U | 100 U | 200 |
| C11-C22 Aromatics (adjusted) | ug/L | 100 U | 110 | 100 U | 100 U | 130 |
| C19-C36 Aliphatics | ug/L | 100 U | 100 U | 100 U | 100 U | 100 U |
| C9-C18 Aliphatics | ug/L | 100 U | 730 | 100 U | 100 U | 360 |
| Chrysene | ug/L | 1 U | 1 U | 1 U | 1 U | 1 U |
| Dibenz(a,h)anthracene | ug/L | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Fluoranthene | ug/L | 1 U | 0.21 J | 1 U | 1 U | 1 U |
| Fluorene | ug/L | 1 U | 1 U | 1 U | 1 U | 1 U |
| Indeno(1,2,3-cd)pyrene | ug/L | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Naphthalene | ug/L | 1 U | 40 | 3.9 | 1 U | 36 |
| Phenanthrene | ug/L | 1 U | 0.42 J | 1 U | 1 U | 1 U |
| Pyrene | ug/L | 1 U | 0.15 J | 1 U | 1 U | 1 U |

## DATA SUMMARY TABLE

| **Analysis** | | Dissolved Metals in Groundwater | | | | |
|---|---|---|---|---|---|---|
| **Lab Sample ID** | | 620-18223-1 | 620-18223-10 | 620-18223-2 | 620-18223-3 | 620-18223-4 |
| **Field Sample ID** | | GW-MW101-042324 | FD-01-042324 | GW-MW102R-042324 | GW-MW103-042324 | GW-MW104-042324 |
| **Sample Type** | | N | FD | N | N | N |
| **Parent Sample ID** | | | GW-MW105-042324 | | | |
| **Sample Date** | **Units** | 04/23/24 | 04/23/24 | 04/23/24 | 04/23/24 | 04/23/24 |
| Antimony | mg/L | 0.0031 J | 0.0037 J | 0.002 J | 0.006 U | 0.0047 J |
| Arsenic | mg/L | 0.004 U | 0.004 U | 0.021 J | 0.004 U | 0.0054 J |
| Barium | mg/L | 0.21 J | 0.14 J | 0.17 J | 0.053 J | 0.028 J |
| Beryllium | mg/L | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Cadmium | mg/L | 0.00069 J | 0.0025 U | 0.00067 J | 0.00059 J | 0.00069 J |
| Chromium | mg/L | 0.005 U | 0.005 U | 0.0018 J | 0.005 U | 0.005 U |
| Lead | mg/L | 0.036 J | 0.0075 U | 0.0075 U | 0.0075 U | 0.0075 U |
| Mercury | mg/L | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U |
| Nickel | mg/L | 0.0052 J | 0.0014 J | 0.0029 J | 0.0024 J | 0.01 J |
| Selenium | mg/L | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U |
| Silver | mg/L | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Thallium | mg/L | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Vanadium | mg/L | 0.005 U | 0.005 U | 0.0014 J | 0.005 U | 0.005 U |
| Zinc | mg/L | 0.19 J | 0.051 J | 0.044 J | 0.23 J | 0.23 J |

# DATA SUMMARY TABLE

| **Analysis** | | Dissolved Metals in Groundwater | | | | |
|---|---|---|---|---|---|---|
| **Lab Sample ID** | | 620-18223-5 | 620-18223-6 | 620-18223-7 | 620-18223-8 | 620-18223-9 |
| **Field Sample ID** | | GW-MW105-042324 | GW-MW106-042324 | GW-MW107-042324 | GW-MW108-042324 | GW-MW109-042324 |
| **Sample Type** | | N | N | N | N | N |
| **Parent Sample ID** | | | | | | |
| **Sample Date** | **Units** | 04/23/24 | 04/23/24 | 04/23/24 | 04/23/24 | 04/23/24 |
| Antimony | mg/L | 0.0051 J | 0.0017 J | 0.006 U | 0.0039 J | 0.0027 J |
| Arsenic | mg/L | 0.004 U | 0.029 J | 0.038 J | 0.004 U | 0.032 J |
| Barium | mg/L | 0.14 J | 0.033 J | 0.023 J | 0.12 J | 0.028 J |
| Beryllium | mg/L | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Cadmium | mg/L | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U |
| Chromium | mg/L | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Lead | mg/L | 0.0075 U | 0.0075 U | 0.0075 U | 0.0075 U | 0.0075 U |
| Mercury | mg/L | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U |
| Nickel | mg/L | 0.0021 J | 0.0021 J | 0.0044 J | 0.0014 J | 0.0017 J |
| Selenium | mg/L | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U |
| Silver | mg/L | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Thallium | mg/L | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.0027 J |
| Vanadium | mg/L | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Zinc | mg/L | 0.053 J | 0.046 J | 0.051 J | 0.045 J | 0.042 J |

## DATA SUMMARY TABLE

| **Analysis** | | VPH in Groundwater | | | | |
|---|---|---|---|---|---|---|
| **Lab Sample ID** | | 620-18223-1 | 620-18223-10 | 620-18223-2 | 620-18223-3 | 620-18223-4 |
| **Field Sample ID** | | GW-MW101-042324 | FD-01-042324 | GW-MW102R-042324 | GW-MW103-042324 | GW-MW104-042324 |
| **Sample Type** | | N | FD | N | N | N |
| **Parent Sample ID** | | | GW-MW105-042324 | | | |
| **Sample Date** | **Units** | 04/23/24 | 04/23/24 | 04/23/24 | 04/23/24 | 04/23/24 |
| Benzene | ug/L | 5 U | 5 U | 120 | 5 U | 5 U |
| C5-C8 Aliphatics (adjusted) | ug/L | 100 U | 100 U | 1200 | 100 U | 100 U |
| C5-C8 Aliphatics (unadjusted) | ug/L | 100 U | 100 U | 1500 J | 100 U | 100 U |
| C9-C10 Aromatics | ug/L | 100 U | 100 U | 4600 | 100 U | 100 U |
| C9-C12 Aliphatics (adjusted) | ug/L | 100 U | 100 U | 14000 | 100 U | 100 U |
| C9-C12 Aliphatics (unadjusted) | ug/L | 100 U | 100 U | 29000 J | 100 U | 100 U |
| Ethylbenzene | ug/L | 5 U | 5 U | 1300 | 5 U | 5 U |
| m,p-Xylene | ug/L | 10 U | 10 U | 4400 | 10 U | 10 U |
| Methyl tert-butyl ether | ug/L | 5 U | 5 U | 86 | 5 U | 5 U |
| Naphthalene | ug/L | 5 UJ | 5 UJ | 300 J | 5 UJ | 5 UJ |
| o-Xylene | ug/L | 5 U | 5 U | 57 | 5 U | 5 U |
| Toluene | ug/L | 5 U | 5 U | 50 U | 5 U | 5 U |
| Xylene (total) | ug/L | 15 U | 15 U | 4400 | 15 U | 15 U |

# DATA SUMMARY TABLE

| **Analysis** | | VPH in Groundwater | | | | |
|---|---|---|---|---|---|---|
| **Lab Sample ID** | | 620-18223-5 | 620-18223-6 | 620-18223-7 | 620-18223-8 | 620-18223-9 |
| **Field Sample ID** | | GW-MW105-042324 | GW-MW106-042324 | GW-MW107-042324 | GW-MW108-042324 | GW-MW109-042324 |
| **Sample Type** | | N | N | N | N | N |
| **Parent Sample ID** | | | | | | |
| **Sample Date** | **Units** | 04/23/24 | 04/23/24 | 04/23/24 | 04/23/24 | 04/23/24 |
| Benzene | ug/L | 5 U | 50 U | 5 U | 5 U | 5 U |
| C5-C8 Aliphatics (adjusted) | ug/L | 100 U | 1500 | 100 U | 100 U | 110 |
| C5-C8 Aliphatics (unadjusted) | ug/L | 100 U | 1700 J | 100 U | 100 U | 210 J |
| C9-C10 Aromatics | ug/L | 100 U | 5100 | 170 J+ | 100 U | 2300 |
| C9-C12 Aliphatics (adjusted) | ug/L | 100 U | 5300 | 270 | 100 U | 2400 |
| C9-C12 Aliphatics (unadjusted) | ug/L | 100 U | 11000 J | 540 J | 100 U | 4900 J |
| Ethylbenzene | ug/L | 5 U | 300 | 46 | 5 U | 100 |
| m,p-Xylene | ug/L | 10 U | 460 | 51 | 10 U | 200 |
| Methyl tert-butyl ether | ug/L | 5 U | 170 | 6.1 | 5 U | 100 |
| Naphthalene | ug/L | 5 UJ | 120 J | 9.3 J | 5 UJ | 120 J |
| o-Xylene | ug/L | 5 U | 50 U | 5 U | 5 U | 5 U |
| Toluene | ug/L | 5 U | 50 U | 5 U | 5 U | 5 U |
| Xylene (total) | ug/L | 15 U | 460 | 51 | 15 U | 200 |



U – not detected; J – estimated value; R – rejected; EB – detected in equipment blank; N – tentatively identified; + biased high; - biased low

# DATA SUMMARY TABLE

| **Analysis** | | VPH in Water Quality Control Matrix |
|---|---|---|
| **Lab Sample ID** | | 620-18223-11 |
| **Field Sample ID** | | TB-01-042224 |
| **Sample Type** | | TB |
| **Parent Sample ID** | | |
| **Sample Date** | **Units** | 04/22/24 |
| Benzene | ug/L | 5 U |
| C5-C8 Aliphatics (adjusted) | ug/L | 100 U |
| C5-C8 Aliphatics (unadjusted) | ug/L | 100 U |
| C9-C10 Aromatics | ug/L | 100 U |
| C9-C12 Aliphatics (adjusted) | ug/L | 100 U |
| C9-C12 Aliphatics (unadjusted) | ug/L | 100 U |
| Ethylbenzene | ug/L | 5 U |
| m,p-Xylene | ug/L | 10 U |
| Methyl tert-butyl ether | ug/L | 5 U |
| Naphthalene | ug/L | 5 U |
| o-Xylene | ug/L | 5 U |
| Toluene | ug/L | 5 U |
| Xylene (total) | ug/L | 15 U |

**Data Review Qualification Actions**
**Former L&M Service Station**
**SDG 620182231**

| Parameter | Analyte | Samples | Evaluation Criteria | Action Needed | Comments |
|---|---|---|---|---|---|
| **MassDEP-VPH** | | | | | |
| | C5-C8 Aliphatics, adjusted and unadjusted | GW-MW101-042324, GW-MW103-042324, GW-MW104-042324, GW-MW105-042324, GW-MW107-042324, GW-MW108-042324, FD-01-042324, TB-01-042224 | Laboratory blank contamination | RL (U) | |
| | C9-C10 Aromatics | GW-MW101-042324, GW-MW103-042324, GW-MW104-042324, GW-MW105-042324, GW-MW108-042324, FD-01-042324, TB-01-042224 | Laboratory blank contamination | RL (U) | |
| | C9-C10 Aromatics | GW-MW107-042324 | Laboratory blank contamination | J+ | Detect > RL < 10x blank level |
| | C9-C12 Aliphatics, unadjusted | GW-MW101-042324, GW-MW103-042324, GW-MW104-042324, GW-MW105-042324, GW-MW108-042324, FD-01-042324, TB-01-042224 | Laboratory blank contamination | RL (U) | |
| | C5-C8 Aliphatics, unadjusted | GW-MW102R-042324, GW-MW106-042324, GW-MW109-042324 | MS/MSD recovery | J | |
| | C9-C12, unadjusted | GW-MW102R-042324, GW-MW106-042324, GW-MW107-042324, GW-MW109-042324 | MS/MSD recovery | J | |
| | Naphthalene | All GW samples | MS/MSD recovery | J / UJ | |

**Data Review Qualification Actions**
**Former L&M Service Station**
**SDG 620182231**

| Parameter | Analyte | Samples | Evaluation Criteria | Action Needed | Comments |
|---|---|---|---|---|---|
| **MassDEP-EPH** | | | | | |
| | Naphthalene, 2-methylnaphthalene, acenaphthylene, fluorene | GW-MW101-042324, GW-MW102R-042324, GW-MW103-042324, GW-MW104-042324 | LCS/LCSD recovery / RPD | J- / UJ | Final qual J for detected results since RPDs exceeded 25%. |
| | Acenaphthylene | All GW samples | MS recovery | J / UJ | |
| **MCP-14 Metals / Mercury** | | | | | |
| | All metals except mercury | All GW samples | MS/MSD RPDs | J | |

**Tier 1/Stage 2A Data Review Checklist**

**Project:** Former L&M Service Station, Lunenburg, Massachusetts
Targeted Brownfields Assessment (TBA)
**Project #:** S00001.05

**Date:** 05/21/2024

**Methods:** Volatile Petroleum Hydrocarbons (VPH) (MassDEP-VPH)
Extractable Petroleum Hydrocarbons (EPH) (MassDEP-EPH)
Massachusetts Contingency Plan (MCP) Metals (MCP-14 Metals by 6010D/7470A)

**Laboratory:** Eurofins New England Laboratory, North Kingstown, RI
**Case:** N/A
**SDG:** 620182231
**Reviewer:** Linda Terzis

1. **Case Narrative and Data Package Completeness (COC and Analyte List Review)**
Ten (10) groundwater samples, including one field duplicate sample, were listed on the COC for SDG 620182231. One trip blank sample was also included on the COC. The samples were collected on 04/22/2024 and 04/23/2024 and received at the Eurofins New England Laboratory on 04/24/2024 at a maximum temperature of 5.0 °C.

| Sample ID | Laboratory ID | Analyses |
|---|---|---|
| GW-MW101-042324 | 620-18223-1 | MassDEP-VPH, MassDEP-EPH, MCP-14 Metals/Mercury |
| GW-MW102R-042324 | 620-18223-2 | |
| GW-MW103-042324 | 620-18223-3 | |
| GW-MW104-042324 | 620-18223-4 | |
| GW-MW105-042324 | 620-18223-5 | |
| GW-MW106-042324 | 620-18223-6 | |
| GW-MW107-042324 | 620-18223-7 | |
| GW-MW108-042324 | 620-18223-8 | |
| GW-MW109-042324 | 620-18223-9 | |
| FD-01-042324 | 620-18223-10 | |
| TB-01-042224 | 620-18223-11 | MassDEP-VPH |

The data were evaluated using the site-specific Quality Assurance Project Plan Addendum (QAPPA) (dated May 2023) and the Program QAPP (dated October 2022). Both were prepared by KGSNE, LLC. The QAPPA appends and incorporates by reference the procedures and quality control measures detailed in the Program QAPP (October 2022). Therefore, site data for this SDG were evaluated using both the QAPPA of May 2023 and the Program QAPP dated October 2022. The Massachusetts Compendium of Analytical Methods (CAM) and/or SW-846 Methods were used to perform the analyses. Therefore, site data were also evaluated using CAM quality control (QC) limits, where applicable.

The analyte lists reported by the laboratory were compared to the required analyte lists per Table 4 (groundwater) in the QAPPA (May 2023) for the site. Results for all requested analytes were reported and no inconsistencies were noted.



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2. **Holding Time and Sample Preservation Compliance**

Receipt temperatures are acceptable (≤ 6°), as specified in the QAPPA (May 2023).

MassDEP-VPH: Holding time criteria (analyzed within 14 days) met.

MassDEP-EPH: Holding time criteria (extracted within 14 days and analyzed within 40 days of extraction) met.

MCP-14 Metals/Mercury: Holding time criteria (analyzed within 28 days for mercury; within 180 days for all other analytes) were met.

3. **Calibration Issues**

Not assessed for S2AVM data review.

4. **Laboratory and Field Blanks**

MassDEP-VPH: Results for the VPH laboratory method blanks were non-detect except for adjusted and unadjusted C5-C8 aliphatic hydrocarbons, C9-C10 aromatic hydrocarbons, and unadjusted C9-C12 aliphatic hydrocarbons, which were detected in both laboratory method blanks at < reporting limit (RL). Based on the National Functional Guidelines (NFGs, 2020), detect results for these hydrocarbon ranges that are < RL are qualified as non-detect at the RL (RL [U]), and detected results > RL but < 10x the maximum blank level are qualified as estimated with a potential high bias (J+) in the groundwater samples. Professional judgment was used to accept unqualified detected results > 10x the maximum blank level.

Hydrocarbon ranges C5-C8 aliphatics (adjusted and unadjusted), C9-C10 aromatics, and C9-C12 aliphatics (unadjusted) were also detected at < RL in the trip blank sample (TB-01-042224). Maximum blank concentrations were detected in the laboratory method blanks; therefore, the detected results in the trip blank sample were qualified as non-detect at the RL (RL [U]).

Refer to the Data Review Qualification Actions table for sample-specific qualifications.

MassDEP-EPH: Results for the EPH laboratory method blanks were non-detect. No blank actions are required.

MCP-14 Metals/Mercury: Zinc was detected at < reporting limit (RL) in the method blank associated with all groundwater samples in this SDG. Zinc was detected in all groundwater samples at concentrations > 10x the blank level. Professional judgment was used to accept the detected results unqualified for blank actions.

Results for mercury in the laboratory method blank was non-detect and no blank actions are required.

5. **Interference Check Sample (metals only)**

Not assessed for S2AVM data review.

## 6. Surrogates

The Program QAPP (October 2022) was used to evaluate site data for surrogate recovery. If no Program QAPP-specific recovery limits were available for a surrogate, the MCP CAM recovery limits were used.

MassDEP-VPH: Percent surrogate recoveries for the samples were within the Program QAPP limits of 70-130%. No actions are required.

MassDEP-EPH: Percent surrogate recoveries for the samples were within the Program QAPP limits of 40-140%. No actions are required.

MCP-14 Metals/Mercury: Not applicable for this analysis.

## 7. Laboratory Control Samples

MassDEP-VPH: The percent recoveries in the VPH LCS/LCSD pairs met the Program QAPP recovery limits of 70-130% and RPDs ≤ 25%. No actions are required.

MassDEP-EPH: The percent recoveries in LCS/LCSD pairs meet the Program QAPP recovery limits of 40-140% except for recoveries of naphthalene, 2-methylnaphthalene, acenaphthylene, and fluorene in the LCS of LCS/LCSD pair 620-34187 / 4-B and 5-B, where recoveries were < 40% but > 10%. This LCS/LCSD pair is associated with samples GW-MW101-042324 (62018223-1), GW-MW102R-042324 (620-18223-2), GW-MW103-042324 (620-18223-3), and GW-MW104-042324 (620-18223-4). Based on the semivolatile organic compound (SVOC) guidance of the NFGs (2020), detected results for the indicated compounds are qualified as estimated with a potential low bias (J-) in the associated samples. Note that the final qualifier for these detected results is estimated (J), with an indeterminate bias, since the RPDs for the compounds exceed 25%. Professional judgment was used to qualify the non-detect results for these compounds as estimated (UJ) rather than rejected (R) since the recoveries were acceptable in the analysis of the LCSD.

Percent recoveries for anthracene, benzo(g,h,i)perylene, and indeno(1,2,3-cd)pyrene were within 40-140% for this LCS/LCSD pair; however, RPDs for the compounds were > 25%. Results for the compounds were non-detect in the associated samples and therefore, based on the SVOC guidance of the NFGs (2020), the non-detect results are accepted unqualified and no actions are required.

Recoveries and RPDs for LCS/LCSD pairs 620-34272 / 4-B and 5-B, 620-34187 / 2-B and 3-B, and 620-34272 / 2-B and 3-B met the limits as specified in the Program QAPP and no actions are required.

MCP-14 Metals/Mercury: Percent recoveries and RPDs for all metals and mercury LCS and/or LCSD analyses were within the QAPP limits of 80-120% and ≤ 20%, respectively. No actions are required.

## 8. Matrix Spikes

Based on the Region I EPA New England Environmental Data Review Supplement (Region I Supplement, 2020), MS/MSD qualifications are applied to all field samples with similar matrix, unless otherwise noted.

MS/MSD analyses were performed on sample GW-MW108-042324 (620-18223-8).

MassDEP-VPH: Recoveries and RPDs met the Program QAPP limits of 70-130% recovery and ≤ 50% RPD except for the recoveries of C5-C8 aliphatics (unadjusted) and C9-C12 aliphatics (unadjusted), where recoveries exceeded 130% in the MS and MSD analyses, and naphthalene, which was recovered < 70% but > 20% in the MS analysis. RPDs were all < 50%. Based on the NFGs (2020), detected results for unadjusted C5-C8 and C9-C12 aliphatics are qualified as estimated (J) in all groundwater samples and non-detect results (after blank actions) are accepted unqualified for MS/MSD recoveries since the potential bias is high. Detected and non-detect results for naphthalene are qualified as estimated (J/UJ) in all groundwater samples due to the low recovery in the MS analysis.

MassDEP-EPH: MS/MSD results meet the limits of 40-140% recovery and ≤ 50% RPD as specified in the Program QAPP except for the recovery of acenaphthylene in the MS analysis, which was < 40% but > 10%. Based on the NFGs (2020), detected and non-detect results for acenaphthylene are qualified as estimated (J/UJ) in all groundwater samples due to the low recovery.

MCP-14 Metals/Mercury: MS/MSD recoveries met the Program QAPP limits of 75-125%. RPDs for all metal analytes exceeded the Program QAPP limit of ≤ 20%. Professional judgment was used to qualify detected results for all analytes as estimated (J) in the groundwater samples due to exceeded precision criteria.

MS/MSD recoveries and RPDs for the mercury MS/MSD analyses met the Program QAPP limits of 75-125% and ≤ 20%, respectively. No actions are required for mercury.

**9. Laboratory Duplicates (metals only)**

MCP-14 Metals/Mercury: Laboratory duplicate analysis was performed on sample GW-MW108-042324 (620-18223-8). The QAPP duplicate criteria (≤ 20% RPD) was met for detected analytes ≥ 5x RL. The absolute difference values for detected results < 5x RL are < the control limit of the RL, as specified in the NFGs (2020). Results for mercury were non-detect in the sample and duplicate sample and an RPD was not calculated. Laboratory duplicate precision is acceptable and no actions are required.

**10. Serial Dilution (metals only)**

MCP-14 Metals/Mercury: A serial dilution analysis was not performed for this SDG. The Massachusetts CAM requires a serial dilution analysis on samples used for MS/MSD analyses where analytes are detected at > 50x RL. MS/MSD analyses were performed on sample GW-MW108-042324 (620-18223-8). Detected analyte results were < 50x RL in this sample and no actions are required.

**11. Field Duplicate Precision**

Acceptable field duplicate precision is an RPD of ≤ 30% for results ≥ 5x RL and an absolute difference ≤ 2x RL for results < 5x RL, based on the EPA Region I Environmental Data Review Supplement (2020). Based on the Region I Supplement, qualifications are applied to all field samples with similar matrix, unless otherwise indicated.

Field duplicate pair GW-MW105-042324 / FD-01-042324 (620-18223-5 / 620-18223-10) was submitted with the samples of this SDG.

Field duplicate precision criteria were met for the VPH, EPH, and metals/mercury analyses. No actions are required.

**12. Internal Standards**

Not assessed for S2AVM data review.

**13. Dual Column Precision (PCBs only)**

Not applicable for this SDG.

**14. Performance Evaluation Samples**

Performance Evaluation (PE) samples were not included in this SDG.

**15. Reporting Limits**

RLs for non-detect results for the VPH, EPH, and metals/mercury analyses met the project action levels (PALs) presented on Table 4 of the QAPPA for the site.

**16. Other**

EPA Region I Environmental Data Review Supplement (2020) criterion for percent solids content (> 30%) not applicable for groundwater samples.

The laboratory noted a strong fuel odor for samples GW-MW102R-042324 and GW-MW106-042324.

Overall bias is considered indeterminate when cumulative nonconformances do not show a consistent bias or in cases of the presence of conflicting high and low biases.

**Field Duplicate Evaluation**

**SDG: 620182231**

| Analyte | Original Result (ug/L) | Qual | Duplicate Result (ug/L) | Qual | RPD ≤ 30% | Abs Diff | Comment[1] |
|---|---|---|---|---|---|---|---|
| **Sample ID** | **GW-MW105-042324** | | **FD-01-042324** | | | | |
| | **620-18223-5** | | **620-18223-10** | | | | |
| Benzene | 5 | U | 5 | U | 0.00 | | Ok - both ND |
| C5-C8 Aliphatics (adjusted) | 10 | J | 9.7 | J | -3.05 | | Ok - both < RL |
| C5-C8 Aliphatics (unadjusted) | 10 | J | 9.7 | J | -3.05 | | Ok - both < RL |
| C9-C10 Aromatics | 24 | J | 25 | J | 4.08 | | Ok - both < RL |
| C9-C12 Aliphatics (adjusted) | 100 | U | 100 | U | 0.00 | | Ok - both ND |
| C9-C12 Aliphatics (unadjusted) | 30 | J | 31 | J | 3.28 | | Ok - both < RL |
| Ethylbenzene | 5 | U | 5 | U | 0.00 | | Ok - both ND |
| m,p-Xylene | 10 | U | 10 | U | 0.00 | | Ok - both ND |
| Methyl tert-butyl ether | 5 | U | 5 | U | 0.00 | | Ok - both ND |
| Naphthalene | 5 | U | 5 | U | 0.00 | | Ok - both ND |
| o-Xylene | 5 | U | 5 | U | 0.00 | | Ok - both ND |
| Toluene | 5 | U | 5 | U | 0.00 | | Ok - both ND |

[1] Actions apply to all samples, per EPA Region I Supplemental Review Guidance (2020).

**Field Duplicate Evaluation**

**SDG: 620182231 EPH**

| Analyte | Original Result (ug/L) | Qual | Duplicate Result (ugL) | Qual | RPD ≤ 30% | Abs Diff | Comment[1] |
|---|---|---|---|---|---|---|---|
| **Sample ID** | **GW-MW105-042324** | | **FD-01-042324** | | | | |
| | **620-18223-5** | | **620-18223-10** | | | | |
| 2-Methylnaphthalene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Acenaphthene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Acenaphthylene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Anthracene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Benzo(a)anthracene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Benzo(a)pyrene | 0.2 | U | 0.2 | U | 0.00 | | Ok - both ND |
| Benzo(b)fluoranthene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Benzo(g,h,i)perylene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Benzo(k)fluoranthene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| C11-C22 Aromatics | 100 | U | 100 | U | 0.00 | | Ok - both ND |
| C11-C22 Aromatics (adjusted) | 100 | U | 100 | U | 0.00 | | Ok - both ND |
| C19-C36 Aliphatics | 100 | U | 100 | U | 0.00 | | Ok - both ND |
| C9-C18 Aliphatics | 100 | U | 100 | U | 0.00 | | Ok - both ND |
| Chrysene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Dibenz(a,h)anthracene | 0.5 | U | 0.5 | U | 0.00 | | Ok - both ND |
| Fluoranthene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Fluorene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Indeno(1,2,3-cd)pyrene | 0.5 | U | 0.5 | U | 0.00 | | Ok - both ND |
| Naphthalene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Phenanthrene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Pyrene | 1 | U | 1 | U | 0.00 | | Ok - both ND |

[1] Actions apply to all samples, per EPA Region I Supplemental Review Guidance (2020).

**Field Duplicate Evaluation**

**SDG: 620182231 METALS**

| Analyte | Original Result (mg/L) | Qual | Duplicate Result (mg/L) | Qual | RPD ≤ 30% | Abs Diff | Comment[1] |
|---|---|---|---|---|---|---|---|
| **Sample ID** | **GW-MW105-042324** | | **FD-01-042324** | | | | |
| | **620-18223-5** | | **620-18223-10** | | | | |
| Antimony | 0.0051 | J | 0.0037 | J | -31.8 | | Ok - both < RL |
| Arsenic | 0.004 | U | 0.004 | U | 0.0 | | Ok - both ND |
| Barium | 0.14 | | 0.14 | | 0.0 | | Ok - RPD < 30% |
| Beryllium | 0.002 | U | 0.002 | U | 0.0 | | Ok - both ND |
| Cadmium | 0.0025 | U | 0.0025 | U | 0.0 | | Ok - both ND |
| Chromium | 0.005 | U | 0.005 | U | 0.0 | | Ok - both ND |
| Lead | 0.0075 | U | 0.0075 | U | 0.0 | | Ok - both ND |
| Mercury | 0.0002 | U | 0.0002 | U | 0.0 | | Ok - both ND |
| Nickel | 0.0021 | J | 0.0014 | J | -40.0 | | Ok - both < RL |
| Selenium | 0.015 | U | 0.015 | U | 0.0 | | Ok - both ND |
| Silver | 0.005 | U | 0.005 | U | 0.0 | | Ok - both ND |
| Thallium | 0.005 | U | 0.005 | U | 0.0 | | Ok - both ND |
| Vanadium | 0.005 | U | 0.005 | U | 0.0 | | Ok - both ND |
| Zinc | 0.053 | | 0.051 | | -3.8 | -0.002 | Ok - abs diff < 2x RL |

[1] Actions apply to all samples, per EPA Region I Supplemental Review Guidance (2020).



620-18223 Chain of Custody

18223

# Chain of Custody Record

eurofins | Environment Testing

| | | | | |
|---|---|---|---|---|
| | Sampler: C. Balmowiz P. Moran | Lab PM. | Carrier Tracking No(s) | COC No: 620-16421-2177 1 |
| Client Contact: Adam Roy | Phone. | E-Mail: CBalmowiz@nobis-group.com | State of Origin. | Page: Page 1 of 2 |
| Company: Nobis Engineering, Inc | PWSID: | Analysis Requested | | Job #: |
| Address: 585 Middlesex Street | Due Date Requested: Standard | | | Preservation Codes: A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify) |
| City: Lowell | TAT Requested (days): | | | |
| State, Zip: MA, 01851 | Compliance Project: ☒ Yes ☐ No MA MCP | | | Other: |
| Phone. | PO #: | | | |
| Email: aroy@nobis-group.com | WO #: | | | |
| Project Name: Former L&M Service Sation | Project #: S66601.65 | | | |
| Site: Lunenberg, MA | SSOW#: | | | |

| Sample Identification | Sample Date | Sample Time | Sample Type (C=Comp, G=grab) | Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air) | Field Filtered Sample (Yes or No) | Perform MS/MSD (Yes or No) | VPH + target VOCs | EPH + target PAHs | MCP Metals | Total Number of containers | Special Instructions/Note: |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preservation Code: | | | | A | A | D | | Metals were field filtered |
| 1 GW-MW101-042324 | 4/23/24 | 1620 | G | Water | | | ✓ | ✓ | ✓ | | |
| 2 GW-MW102R-042324 | | 1230 | | Water | | | ✓ | ✓ | ✓ | | |
| 3 GW-MW103-042324 | | 1020 | | Water | | | ✓ | ✓ | ✓ | | |
| 4 GW-MW104-042324 | | 1335 | | Water | | | ✓ | ✓ | ✓ | | |
| 5 GW-MW105-042324 | | 1025 | | Water | | | ✓ | ✓ | ✓ | | |
| 6 GW-MW106-042324 | | 1020 | | Water | | | ✓ | ✓ | ✓ | | |
| 7 GW-MW107-042324 | | 1440 | | Water | | | ✓ | ✓ | ✓ | | |
| 8 GW-MW108-042324 | | 1200 | | Water | X | | ✓ | ✓ | ✓ | | |
| 9 GW-MW109-042324 | | 1430 | | Water | | | ✓ | ✓ | ✓ | | |
| 10 FD-01 | | 800 | | Water | | | ✓ | ✓ | ✓ | | |
| 11 TB-01 | 4/22/24 | 800 | | Water | | | ✓ | | | | |

**Possible Hazard Identification**
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

**Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)**
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested I, II, III, IV, Other (specify)

Special Instructions/QC Requirements: Email edd to aroy@nobis-group.com & ggiemon@nobis-group.com

| | | | |
|---|---|---|---|
| Empty Kit Relinquished by: | Date. | Time: | Method of Shipment: |
| Relinquished by: Caroline Balmowiz | Date/Time: 4/24/24 | Company: Nobis | Received by: | Date/Time: 4/24/24 13:50 | Company: ESE |
| Relinquished by: | Date/Time: 4/24/24 16:34 | Company: ESE | Received by: | Date/Time: 4/24/24 16:34 | Company: ERI |
| Relinquished by: | Date/Time | Company | Received by: | Date/Time. | Company |

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No..

Cooler Temperature(s) °C and Other Remarks: 4.4 -0.2 #2 #6/4.6 -0.2 4.4 #6/5.2 -0.2 5.0 #6

Ver: 06/08/2021

Page 63 of 64

5/3/2024

eurofins | Environment Testing

# ANALYTICAL REPORT

## PREPARED FOR

Attn: Adam Roy
Nobis Engineering, Inc.
585 Middlesex Street
Lowell, Massachusetts 01851

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## JOB DESCRIPTION

Former L&M - Lunenburg MA

## JOB NUMBER

620-18223-1

Eurofins Rhode Island
646 Camp Ave
North Kingstown RI 02852

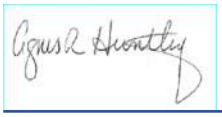
See page two for job notes and contact information.

## Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northeast, LLC Project Manager.

## Authorization



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Authorized for release by
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# Table of Contents

Cover Page . . . . . 1
Table of Contents . . . . . 3
Definitions/Glossary . . . . . 4
State Forms . . . . . 6
MCP Checklist . . . . . 6
Case Narrative . . . . . 7
Detection Summary . . . . . 9
Client Sample Results . . . . . 13
Surrogate Summary . . . . . 34
QC Sample Results . . . . . 36
QC Association Summary . . . . . 49
Lab Chronicle . . . . . 54
Certification Summary . . . . . 59
Method Summary . . . . . 61
Sample Summary . . . . . 62
Chain of Custody . . . . . 63
Receipt Checklists . . . . . 64

# Definitions/Glossary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-18223-1

## Qualifiers

### GC/MS Semi VOA

| Qualifier | Qualifier Description |
|---|---|
| *- | LCS and/or LCSD is outside acceptance limits, low biased. |
| *1 | LCS/LCSD RPD exceeds control limits. |
| F1 | MS and/or MSD recovery exceeds control limits. |
| J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |

### GC VOA

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

### GC Semi VOA

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

### Metals

| Qualifier | Qualifier Description |
|---|---|
| B | Compound was found in the blank and sample. |
| F2 | MS/MSD RPD exceeds control limits |
| F5 | Duplicate RPD exceeds limit, and one or both sample results are less than 5 times RL, and the absolute difference between results is < the upper reporting limits for both. |
| J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |

## Glossary

| Abbreviation | These commonly used abbreviations may or may not be present in this report. |
|---|---|
| ¤ | Listed under the "D" column to designate that the result is reported on a dry weight basis |
| %R | Percent Recovery |
| CFL | Contains Free Liquid |
| CFU | Colony Forming Unit |
| CNF | Contains No Free Liquid |
| DER | Duplicate Error Ratio (normalized absolute difference) |
| Dil Fac | Dilution Factor |
| DL | Detection Limit (DoD/DOE) |
| DL, RA, RE, IN | Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample |
| DLC | Decision Level Concentration (Radiochemistry) |
| EDL | Estimated Detection Limit (Dioxin) |
| LOD | Limit of Detection (DoD/DOE) |
| LOQ | Limit of Quantitation (DoD/DOE) |
| MCL | EPA recommended "Maximum Contaminant Level" |
| MDA | Minimum Detectable Activity (Radiochemistry) |
| MDC | Minimum Detectable Concentration (Radiochemistry) |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| MPN | Most Probable Number |
| MQL | Method Quantitation Limit |
| NC | Not Calculated |
| ND | Not Detected at the reporting limit (or MDL or EDL if shown) |
| NEG | Negative / Absent |
| POS | Positive / Present |
| PQL | Practical Quantitation Limit |
| PRES | Presumptive |
| QC | Quality Control |
| RER | Relative Error Ratio (Radiochemistry) |
| RL | Reporting Limit or Requested Limit (Radiochemistry) |

## Glossary (Continued)

| Abbreviation | These commonly used abbreviations may or may not be present in this report. |
|---|---|
| RPD | Relative Percent Difference, a measure of the relative difference between two points |
| TEF | Toxicity Equivalent Factor (Dioxin) |
| TEQ | Toxicity Equivalent Quotient (Dioxin) |
| TNTC | Too Numerous To Count |

# MassDEP Analytical Protocol Certfication Form

Laboratory Name: Eurofins Rhode Island | Project #: 620-18223-1

Project Location: Former L&M - Lunenburg MA | RTN:

**This Form provides certifications for the following data set: list Laboratory Sample ID Number(s):**
620-18223-1 through 620-18223-11

Matrices: ☑ Groundwater/Surface Water ☐ Soil/Sediment ☐ Drinking Water ☐ Air ☐ Other:

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

| | | | | | |
|---|---|---|---|---|---|
| 8260 VOC CAM II A ☐ | 7470/7471 Hg CAM III B ☑ | MassDEP VPH (GC/PID/FID) CAM IV A ☑ | 8082 PCB CAM V A ☐ | 9014 Total Cyanide/PAC CAM VI A ☐ | 6860 Perchlorate CAM VIII B ☐ |
| 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 ☐ |
| 6010 Metals CAM III A ☑ | 6020 Metals CAM III D ☐ | MassDEP EPH CAM IV B ☑ | 8151 Herbicides CAM V C ☐ | 8330 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 ☐ No |
| **B** | Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed? | ☑ Yes ☐ 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 ☐ No |
| **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 ☐ No |
| **E** | VPH, EPH, APH, and TO-15 only<br>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).<br>b. APH and TO-15 Methods only: Was the complete analyte list reported for each method? | ☑ Yes ☐ No<br>☐ 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 ☐ 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 protocol(s)? | ☐ Yes ☑ No[1] |

***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[1] |
| **I** | Were results reported for the complete analyte list specified in the selected CAM protocol(s)? | ☑ Yes ☐ No[1] |

*1 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, is accurate and complete.***

**Signature:** Agnes R Huntley **Position:** Project Manager

**Printed Name:** Agnes Huntley **Date:** 05/03/2024

## Job ID: 620-18223-1 Eurofins Rhode Island

**Job Narrative**
**620-18223-1**

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

**Receipt**
The samples were received on 4/24/2024 4:34 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 4.2°C, 4.4°C and 5.0°C.

**GC/MS Semi VOA**
Method EPH_MS: The laboratory control sample (LCS) for preparation batch 620-34187 and 620-34232 and analytical batch 620-34336 recovered outside control limits for the following analytes: 2-Methylnaphthalene, Acenaphthylene, Fluorene and Naphthalene. The affected target analytes recovered within acceptance limits in the LCSD, therefore the data have been reported.

Method EPH_MS: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 620-34187 and 620-34232 and analytical batch 620-34336 recovered outside control limits for the following analytes: 2-Methylnaphthalene, Acenaphthylene, Anthracene, Benzo[g,h,i]perylene, Fluorene, Indeno[1,2,3-cd]pyrene and Naphthalene. The individual percent recoveries were within acceptance criteria.

Method EPH_MS: The matrix spike (MS) recovery for preparation batch 620-34272 and 620-34305 and analytical batch 620-34336 were outside control limits for Acenaphthylene. Sample matrix interference is suspected because the associated laboratory control sample / laboratory sample control duplicate (LCS/LCSD) recovery was within acceptance limits.

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

**GC VOA**
Method MAVPH2.1: The following sample was diluted due to the nature of the sample matrix (strong fuel odor): GW-MW106-042324 (620-18223-6). Elevated reporting limits RLs are provided.

Method MAVPH2.1: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for analytical batch 620-34261 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method MAVPH2.1: The following sample was diluted due to the nature of the sample matrix (strong odor): GW-MW102R-042324 (620-18223-2). Elevated reporting limit (RL) is provided.

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

**GC Semi VOA**
Method MAEPH2.1: The 1-Chlorooctadecane (Surr) in the continuing calibration verification (CCV) associated with batch 620-34328 was outside of %D criteria. The recovery was within acceptance criteria, therefore the data was reported.

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

**Metals**
Method 6010MCP - Dissolved: The method blank for preparation batch 620-34190 and analytical batch 620-34202 contained Zinc above the method detection limit. This target analyte concentration was less than half the reporting limit (1/2RL) in the method blank; therefore, re-extraction or re-analysis of samples was not performed.

Method 6010MCP - Dissolved: The sample duplicate (DUP) precision for preparation batch 620-34190 and analytical batch

## Job ID: 620-18223-1 (Continued) Eurofins Rhode Island

620-34202 was outside control limits. Sample matrix interference is suspected.

Method 6010MCP - Dissolved: The matrix spike duplicate (MSD) precision for preparation batch 620-34190 and analytical batch 620-34202 were outside control limits. Sample interference is suspected because the associated laboratory control sample / laboratory sample control duplicate (LCS/LCSD) precision was within acceptance limits.

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

# Detection Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-18223-1

## Client Sample ID: GW-MW101-042324 — Lab Sample ID: 620-18223-1

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | 7.2 | J B | 100 | 6.9 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C9-C10 Aromatics | 20 | J B | 100 | 18 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C5-C8 Aliphatics (unadjusted) | 7.2 | J B | 100 | 6.9 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (unadjusted) | 19 | J B | 100 | 15 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Antimony | 0.0031 | J | 0.0060 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |
| Barium | 0.21 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Cadmium | 0.00069 | J | 0.0025 | 0.00036 | mg/L | 1 | | 6010D | Dissolved |
| Lead | 0.036 | | 0.0075 | 0.0062 | mg/L | 1 | | 6010D | Dissolved |
| Nickel | 0.0052 | | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |
| Zinc | 0.19 | B | 0.025 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |

## Client Sample ID: GW-MW102R-042324 — Lab Sample ID: 620-18223-2

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | 130 | *- *1 | 4.0 | 0.93 | ug/L | 4 | | EPH | Total/NA |
| 2-Methylnaphthalene | 32 | *- *1 | 1.0 | 0.29 | ug/L | 1 | | EPH | Total/NA |
| Acenaphthene | 0.22 | J | 1.0 | 0.19 | ug/L | 1 | | EPH | Total/NA |
| Fluorene | 0.40 | J *- *1 | 1.0 | 0.39 | ug/L | 1 | | EPH | Total/NA |
| Phenanthrene | 0.40 | J | 1.0 | 0.17 | ug/L | 1 | | EPH | Total/NA |
| C5-C8 Aliphatics (adjusted) | 1200 | B | 1000 | 69 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| C5-C8 Aliphatics (unadjusted) | 1500 | B | 1000 | 69 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| Benzene | 120 | | 50 | 1.9 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| Ethylbenzene | 1300 | | 50 | 1.2 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| Methyl tert-butyl ether | 86 | | 50 | 1.9 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| Naphthalene | 300 | | 50 | 2.5 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| o-Xylene | 57 | | 50 | 2.1 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| C9-C10 Aromatics - DL | 4600 | B | 2500 | 450 | ug/L | 25 | | MAVPH2.1 | Total/NA |
| m,p-Xylene - DL | 4400 | | 250 | 9.0 | ug/L | 25 | | MAVPH2.1 | Total/NA |
| Xylenes, Total - DL | 4400 | | 380 | 25 | ug/L | 25 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (adjusted) - DL2 | 14000 | | 10000 | 1500 | ug/L | 100 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (unadjusted) - DL2 | 29000 | B | 10000 | 1500 | ug/L | 100 | | MAVPH2.1 | Total/NA |
| C11-C22 Aromatics | 300 | | 100 | 84 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics (Adjusted) | 150 | | 100 | 84 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| Antimony | 0.0020 | J | 0.0060 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |
| Arsenic | 0.021 | | 0.0040 | 0.0014 | mg/L | 1 | | 6010D | Dissolved |
| Barium | 0.17 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Cadmium | 0.00067 | J | 0.0025 | 0.00036 | mg/L | 1 | | 6010D | Dissolved |
| Chromium | 0.0018 | J | 0.0050 | 0.00093 | mg/L | 1 | | 6010D | Dissolved |
| Nickel | 0.0029 | J | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |
| Vanadium | 0.0014 | J | 0.0050 | 0.0011 | mg/L | 1 | | 6010D | Dissolved |
| Zinc | 0.044 | B | 0.025 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |

## Client Sample ID: GW-MW103-042324 — Lab Sample ID: 620-18223-3

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | 9.7 | J B | 100 | 6.9 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C9-C10 Aromatics | 21 | J B | 100 | 18 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C5-C8 Aliphatics (unadjusted) | 9.7 | J B | 100 | 6.9 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (unadjusted) | 20 | J B | 100 | 15 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Barium | 0.053 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Cadmium | 0.00059 | J | 0.0025 | 0.00036 | mg/L | 1 | | 6010D | Dissolved |
| Nickel | 0.0024 | J | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |

This Detection Summary does not include radiochemical test results.

Eurofins Rhode Island

## Client Sample ID: GW-MW103-042324 (Continued) — Lab Sample ID: 620-18223-3

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Zinc | 0.23 | B | 0.025 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |

## Client Sample ID: GW-MW104-042324 — Lab Sample ID: 620-18223-4

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | 9.7 | J B | 100 | 6.9 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C9-C10 Aromatics | 21 | J B | 100 | 18 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C5-C8 Aliphatics (unadjusted) | 9.7 | J B | 100 | 6.9 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (unadjusted) | 20 | J B | 100 | 15 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Antimony | 0.0047 | J | 0.0060 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |
| Arsenic | 0.0054 | | 0.0040 | 0.0014 | mg/L | 1 | | 6010D | Dissolved |
| Barium | 0.028 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Cadmium | 0.00069 | J | 0.0025 | 0.00036 | mg/L | 1 | | 6010D | Dissolved |
| Nickel | 0.010 | | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |
| Zinc | 0.23 | B | 0.025 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |

## Client Sample ID: GW-MW105-042324 — Lab Sample ID: 620-18223-5

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | 10 | J B | 100 | 6.9 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C9-C10 Aromatics | 24 | J B | 100 | 18 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C5-C8 Aliphatics (unadjusted) | 10 | J B | 100 | 6.9 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (unadjusted) | 30 | J B | 100 | 15 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Antimony | 0.0051 | J | 0.0060 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |
| Barium | 0.14 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Nickel | 0.0021 | J | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |
| Zinc | 0.053 | B | 0.025 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |

## Client Sample ID: GW-MW106-042324 — Lab Sample ID: 620-18223-6

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | 40 | | 1.0 | 0.23 | ug/L | 1 | | EPH | Total/NA |
| 2-Methylnaphthalene | 44 | | 1.0 | 0.29 | ug/L | 1 | | EPH | Total/NA |
| Phenanthrene | 0.42 | J | 1.0 | 0.17 | ug/L | 1 | | EPH | Total/NA |
| Fluoranthene | 0.21 | J | 1.0 | 0.15 | ug/L | 1 | | EPH | Total/NA |
| Pyrene | 0.15 | J | 1.0 | 0.14 | ug/L | 1 | | EPH | Total/NA |
| C5-C8 Aliphatics (adjusted) | 1500 | B | 1000 | 69 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| C5-C8 Aliphatics (unadjusted) | 1700 | B | 1000 | 69 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| Ethylbenzene | 300 | | 50 | 1.2 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| Methyl tert-butyl ether | 170 | | 50 | 1.9 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| Naphthalene | 120 | | 50 | 2.5 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| m,p-Xylene | 460 | | 100 | 3.6 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| Xylenes, Total | 460 | | 150 | 10 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (adjusted) - DL | 5300 | | 2500 | 370 | ug/L | 25 | | MAVPH2.1 | Total/NA |
| C9-C10 Aromatics - DL | 5100 | B | 2500 | 450 | ug/L | 25 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (unadjusted) - DL | 11000 | B | 2500 | 370 | ug/L | 25 | | MAVPH2.1 | Total/NA |
| C9-C18 Aliphatics | 730 | | 400 | 220 | ug/L | 4 | | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics | 190 | | 100 | 84 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics (Adjusted) | 110 | | 100 | 84 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| Antimony | 0.0017 | J | 0.0060 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |
| Arsenic | 0.029 | | 0.0040 | 0.0014 | mg/L | 1 | | 6010D | Dissolved |
| Barium | 0.033 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |

This Detection Summary does not include radiochemical test results.

# Detection Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-18223-1

## Client Sample ID: GW-MW106-042324 (Continued) — Lab Sample ID: 620-18223-6

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Nickel | 0.0021 | J | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |
| Zinc | 0.046 | B | 0.025 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |

## Client Sample ID: GW-MW107-042324 — Lab Sample ID: 620-18223-7

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | 3.9 | | 1.0 | 0.23 | ug/L | 1 | | EPH | Total/NA |
| 2-Methylnaphthalene | 0.77 | J | 1.0 | 0.29 | ug/L | 1 | | EPH | Total/NA |
| C5-C8 Aliphatics (adjusted) | 46 | J B | 100 | 6.9 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (adjusted) | 270 | | 100 | 15 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C9-C10 Aromatics | 170 | B | 100 | 18 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C5-C8 Aliphatics (unadjusted) | 52 | J B | 100 | 6.9 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (unadjusted) | 540 | B | 100 | 15 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Ethylbenzene | 46 | | 5.0 | 0.12 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Methyl tert-butyl ether | 6.1 | | 5.0 | 0.19 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Naphthalene | 9.3 | | 5.0 | 0.25 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| m,p-Xylene | 51 | | 10 | 0.36 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Xylenes, Total | 51 | | 15 | 1.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Arsenic | 0.038 | | 0.0040 | 0.0014 | mg/L | 1 | | 6010D | Dissolved |
| Barium | 0.023 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Nickel | 0.0044 | J | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |
| Zinc | 0.051 | B | 0.025 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |

## Client Sample ID: GW-MW108-042324 — Lab Sample ID: 620-18223-8

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | 8.4 | J B | 100 | 6.9 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C9-C10 Aromatics | 21 | J B | 100 | 18 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C5-C8 Aliphatics (unadjusted) | 8.4 | J B F1 | 100 | 6.9 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (unadjusted) | 20 | J B F1 | 100 | 15 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Antimony | 0.0039 | J F2 | 0.0060 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |
| Barium | 0.12 | F2 | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Nickel | 0.0014 | J F2 | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |
| Zinc | 0.045 | F2 B | 0.025 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |

## Client Sample ID: GW-MW109-042324 — Lab Sample ID: 620-18223-9

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | 36 | | 1.0 | 0.23 | ug/L | 1 | | EPH | Total/NA |
| 2-Methylnaphthalene | 28 | | 1.0 | 0.29 | ug/L | 1 | | EPH | Total/NA |
| C5-C8 Aliphatics (adjusted) | 110 | B | 100 | 6.9 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C5-C8 Aliphatics (unadjusted) | 210 | B | 100 | 6.9 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Ethylbenzene | 100 | | 5.0 | 0.12 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Methyl tert-butyl ether | 100 | | 5.0 | 0.19 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Naphthalene | 120 | | 5.0 | 0.25 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| m,p-Xylene | 200 | | 10 | 0.36 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Xylenes, Total | 200 | | 15 | 1.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (adjusted) - DL | 2400 | | 1000 | 150 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| C9-C10 Aromatics - DL | 2300 | B | 1000 | 180 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (unadjusted) - DL | 4900 | B | 1000 | 150 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| C9-C18 Aliphatics | 360 | | 100 | 56 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics | 200 | | 100 | 84 | ug/L | 1 | | MAEPH2.1 | Total/NA |

This Detection Summary does not include radiochemical test results.

## Client Sample ID: GW-MW109-042324 (Continued)

## Lab Sample ID: 620-18223-9

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| C11-C22 Aromatics (Adjusted) | 130 | | 100 | 84 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| Antimony | 0.0027 | J | 0.0060 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |
| Arsenic | 0.032 | | 0.0040 | 0.0014 | mg/L | 1 | | 6010D | Dissolved |
| Barium | 0.028 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Nickel | 0.0017 | J | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |
| Thallium | 0.0027 | J | 0.0050 | 0.0021 | mg/L | 1 | | 6010D | Dissolved |
| Zinc | 0.042 | B | 0.025 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |

## Client Sample ID: FD-01

## Lab Sample ID: 620-18223-10

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | 9.7 | J B | 100 | 6.9 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C9-C10 Aromatics | 25 | J B | 100 | 18 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C5-C8 Aliphatics (unadjusted) | 9.7 | J B | 100 | 6.9 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (unadjusted) | 31 | J B | 100 | 15 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Antimony | 0.0037 | J | 0.0060 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |
| Barium | 0.14 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Nickel | 0.0014 | J | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |
| Zinc | 0.051 | B | 0.025 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |

## Client Sample ID: TB-01

## Lab Sample ID: 620-18223-11

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | 7.5 | J B | 100 | 6.9 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C9-C10 Aromatics | 21 | J B | 100 | 18 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C5-C8 Aliphatics (unadjusted) | 7.5 | J B | 100 | 6.9 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (unadjusted) | 19 | J B | 100 | 15 | ug/L | 1 | | MAVPH2.1 | Total/NA |

This Detection Summary does not include radiochemical test results.

**Client Sample ID: GW-MW101-042324**
**Date Collected: 04/23/24 16:20**
**Date Received: 04/24/24 16:34**

**Lab Sample ID: 620-18223-1**
**Matrix: Water**

## Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | *- *1 | 1.0 | 0.23 | ug/L | | 04/26/24 12:00 | 05/02/24 13:52 | 1 |
| 2-Methylnaphthalene | ND | *- *1 | 1.0 | 0.29 | ug/L | | 04/26/24 12:00 | 05/02/24 13:52 | 1 |
| Acenaphthylene | ND | *- *1 | 1.0 | 0.39 | ug/L | | 04/26/24 12:00 | 05/02/24 13:52 | 1 |
| Acenaphthene | ND | | 1.0 | 0.19 | ug/L | | 04/26/24 12:00 | 05/02/24 13:52 | 1 |
| Fluorene | ND | *- *1 | 1.0 | 0.39 | ug/L | | 04/26/24 12:00 | 05/02/24 13:52 | 1 |
| Phenanthrene | ND | | 1.0 | 0.17 | ug/L | | 04/26/24 12:00 | 05/02/24 13:52 | 1 |
| Anthracene | ND | *1 | 1.0 | 0.15 | ug/L | | 04/26/24 12:00 | 05/02/24 13:52 | 1 |
| Fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 04/26/24 12:00 | 05/02/24 13:52 | 1 |
| Pyrene | ND | | 1.0 | 0.14 | ug/L | | 04/26/24 12:00 | 05/02/24 13:52 | 1 |
| Benzo[a]anthracene | ND | | 1.0 | 0.070 | ug/L | | 04/26/24 12:00 | 05/02/24 13:52 | 1 |
| Chrysene | ND | | 1.0 | 0.14 | ug/L | | 04/26/24 12:00 | 05/02/24 13:52 | 1 |
| Benzo[b]fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 04/26/24 12:00 | 05/02/24 13:52 | 1 |
| Benzo[k]fluoranthene | ND | | 1.0 | 0.24 | ug/L | | 04/26/24 12:00 | 05/02/24 13:52 | 1 |
| Benzo[a]pyrene | ND | | 0.20 | 0.16 | ug/L | | 04/26/24 12:00 | 05/02/24 13:52 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | *1 | 0.50 | 0.46 | ug/L | | 04/26/24 12:00 | 05/02/24 13:52 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.50 | 0.21 | ug/L | | 04/26/24 12:00 | 05/02/24 13:52 | 1 |
| Benzo[g,h,i]perylene | ND | *1 | 1.0 | 0.17 | ug/L | | 04/26/24 12:00 | 05/02/24 13:52 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *56* | | *40 - 140* | *04/26/24 12:00* | *05/02/24 13:52* | *1* |
| *2-Fluorobiphenyl (Surr)* | *117* | | *40 - 140* | *04/26/24 12:00* | *05/02/24 13:52* | *1* |

## Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C5-C8 Aliphatics (adjusted)** | **7.2** | **J B** | 100 | 6.9 | ug/L | | | 04/30/24 18:52 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 15 | ug/L | | | 04/30/24 18:52 | 1 |
| **C9-C10 Aromatics** | **20** | **J B** | 100 | 18 | ug/L | | | 04/30/24 18:52 | 1 |
| **C5-C8 Aliphatics (unadjusted)** | **7.2** | **J B** | 100 | 6.9 | ug/L | | | 04/30/24 18:52 | 1 |
| **C9-C12 Aliphatics (unadjusted)** | **19** | **J B** | 100 | 15 | ug/L | | | 04/30/24 18:52 | 1 |
| Benzene | ND | | 5.0 | 0.19 | ug/L | | | 04/30/24 18:52 | 1 |
| Ethylbenzene | ND | | 5.0 | 0.12 | ug/L | | | 04/30/24 18:52 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 0.19 | ug/L | | | 04/30/24 18:52 | 1 |
| Naphthalene | ND | | 5.0 | 0.25 | ug/L | | | 04/30/24 18:52 | 1 |
| Toluene | ND | | 5.0 | 0.22 | ug/L | | | 04/30/24 18:52 | 1 |
| m,p-Xylene | ND | | 10 | 0.36 | ug/L | | | 04/30/24 18:52 | 1 |
| o-Xylene | ND | | 5.0 | 0.21 | ug/L | | | 04/30/24 18:52 | 1 |
| Xylenes, Total | ND | | 15 | 1.0 | ug/L | | | 04/30/24 18:52 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *109* | | *70 - 130* | | *04/30/24 18:52* | *1* |
| *2,5-Dibromotoluene (pid)* | *107* | | *70 - 130* | | *04/30/24 18:52* | *1* |

## Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 100 | 56 | ug/L | | 04/26/24 12:00 | 04/30/24 12:05 | 1 |
| C19-C36 Aliphatics | ND | | 100 | 85 | ug/L | | 04/26/24 12:00 | 04/30/24 12:05 | 1 |
| C11-C22 Aromatics | ND | | 100 | 84 | ug/L | | 04/26/24 12:00 | 04/30/24 12:05 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 100 | 84 | ug/L | | 04/26/24 12:00 | 04/30/24 12:05 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *41* | | *40 - 140* | *04/26/24 12:00* | *04/30/24 12:05* | *1* |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-18223-1

## Client Sample ID: GW-MW101-042324

**Date Collected: 04/23/24 16:20**
**Date Received: 04/24/24 16:34**

## Lab Sample ID: 620-18223-1

**Matrix: Water**

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *53* | | *40 - 140* | *04/26/24 12:00* | *04/30/24 12:05* | *1* |
| *2-Fluorobiphenyl (Surr)* | *116* | | *40 - 140* | *04/26/24 12:00* | *04/30/24 12:05* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Antimony** | **0.0031** | **J** | 0.0060 | 0.0016 | mg/L | | 04/26/24 14:42 | 04/28/24 01:06 | 1 |
| Arsenic | ND | | 0.0040 | 0.0014 | mg/L | | 04/26/24 14:42 | 04/28/24 01:06 | 1 |
| **Barium** | **0.21** | | 0.0050 | 0.00070 | mg/L | | 04/26/24 14:42 | 04/28/24 01:06 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 04/26/24 14:42 | 04/28/24 01:06 | 1 |
| **Cadmium** | **0.00069** | **J** | 0.0025 | 0.00036 | mg/L | | 04/26/24 14:42 | 04/28/24 01:06 | 1 |
| Chromium | ND | | 0.0050 | 0.00093 | mg/L | | 04/26/24 14:42 | 04/28/24 01:06 | 1 |
| **Lead** | **0.036** | | 0.0075 | 0.0062 | mg/L | | 04/26/24 14:42 | 04/28/24 01:06 | 1 |
| **Nickel** | **0.0052** | | 0.0050 | 0.00087 | mg/L | | 04/26/24 14:42 | 04/28/24 01:06 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 04/26/24 14:42 | 04/28/24 01:06 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 04/26/24 14:42 | 04/28/24 01:06 | 1 |
| Thallium | ND | | 0.0050 | 0.0021 | mg/L | | 04/26/24 14:42 | 04/28/24 01:06 | 1 |
| Vanadium | ND | | 0.0050 | 0.0011 | mg/L | | 04/26/24 14:42 | 04/28/24 01:06 | 1 |
| **Zinc** | **0.19** | **B** | 0.025 | 0.0016 | mg/L | | 04/26/24 14:42 | 04/28/24 01:06 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 04/30/24 10:36 | 04/30/24 15:38 | 1 |

## Client Sample ID: GW-MW102R-042324

**Date Collected: 04/23/24 12:30**
**Date Received: 04/24/24 16:34**

## Lab Sample ID: 620-18223-2

**Matrix: Water**

### Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Naphthalene** | **130** | ***- *1** | 4.0 | 0.93 | ug/L | | 04/26/24 12:00 | 05/02/24 15:23 | 4 |
| **2-Methylnaphthalene** | **32** | ***- *1** | 1.0 | 0.29 | ug/L | | 04/26/24 12:00 | 05/02/24 14:15 | 1 |
| Acenaphthylene | ND | *- *1 | 1.0 | 0.39 | ug/L | | 04/26/24 12:00 | 05/02/24 14:15 | 1 |
| **Acenaphthene** | **0.22** | **J** | 1.0 | 0.19 | ug/L | | 04/26/24 12:00 | 05/02/24 14:15 | 1 |
| **Fluorene** | **0.40** | **J *- *1** | 1.0 | 0.39 | ug/L | | 04/26/24 12:00 | 05/02/24 14:15 | 1 |
| **Phenanthrene** | **0.40** | **J** | 1.0 | 0.17 | ug/L | | 04/26/24 12:00 | 05/02/24 14:15 | 1 |
| Anthracene | ND | *1 | 1.0 | 0.15 | ug/L | | 04/26/24 12:00 | 05/02/24 14:15 | 1 |
| Fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 04/26/24 12:00 | 05/02/24 14:15 | 1 |
| Pyrene | ND | | 1.0 | 0.14 | ug/L | | 04/26/24 12:00 | 05/02/24 14:15 | 1 |
| Benzo[a]anthracene | ND | | 1.0 | 0.070 | ug/L | | 04/26/24 12:00 | 05/02/24 14:15 | 1 |
| Chrysene | ND | | 1.0 | 0.14 | ug/L | | 04/26/24 12:00 | 05/02/24 14:15 | 1 |
| Benzo[b]fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 04/26/24 12:00 | 05/02/24 14:15 | 1 |
| Benzo[k]fluoranthene | ND | | 1.0 | 0.24 | ug/L | | 04/26/24 12:00 | 05/02/24 14:15 | 1 |
| Benzo[a]pyrene | ND | | 0.20 | 0.16 | ug/L | | 04/26/24 12:00 | 05/02/24 14:15 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | *1 | 0.50 | 0.46 | ug/L | | 04/26/24 12:00 | 05/02/24 14:15 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.50 | 0.21 | ug/L | | 04/26/24 12:00 | 05/02/24 14:15 | 1 |
| Benzo[g,h,i]perylene | ND | *1 | 1.0 | 0.17 | ug/L | | 04/26/24 12:00 | 05/02/24 14:15 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *62* | | *40 - 140* | *04/26/24 12:00* | *05/02/24 14:15* | *1* |
| *o-Terphenyl (Surr)* | *55* | | *40 - 140* | *04/26/24 12:00* | *05/02/24 15:23* | *4* |
| *2-Fluorobiphenyl (Surr)* | *112* | | *40 - 140* | *04/26/24 12:00* | *05/02/24 14:15* | *1* |
| *2-Fluorobiphenyl (Surr)* | *104* | | *40 - 140* | *04/26/24 12:00* | *05/02/24 15:23* | *4* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C5-C8 Aliphatics (adjusted)** | **1200** | **B** | 1000 | 69 | ug/L | | | 05/01/24 11:56 | 10 |
| **C5-C8 Aliphatics (unadjusted)** | **1500** | **B** | 1000 | 69 | ug/L | | | 05/01/24 11:56 | 10 |
| **Benzene** | **120** | | 50 | 1.9 | ug/L | | | 05/01/24 11:56 | 10 |
| **Ethylbenzene** | **1300** | | 50 | 1.2 | ug/L | | | 05/01/24 11:56 | 10 |
| **Methyl tert-butyl ether** | **86** | | 50 | 1.9 | ug/L | | | 05/01/24 11:56 | 10 |
| **Naphthalene** | **300** | | 50 | 2.5 | ug/L | | | 05/01/24 11:56 | 10 |
| Toluene | ND | | 50 | 2.2 | ug/L | | | 05/01/24 11:56 | 10 |
| **o-Xylene** | **57** | | 50 | 2.1 | ug/L | | | 05/01/24 11:56 | 10 |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) - DL

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C9-C10 Aromatics** | **4600** | **B** | 2500 | 450 | ug/L | | | 05/01/24 02:01 | 25 |
| **m,p-Xylene** | **4400** | | 250 | 9.0 | ug/L | | | 05/01/24 02:01 | 25 |
| **Xylenes, Total** | **4400** | | 380 | 25 | ug/L | | | 05/01/24 02:01 | 25 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *108* | | *70 - 130* | | *05/01/24 02:01* | *25* |
| *2,5-Dibromotoluene (pid)* | *108* | | *70 - 130* | | *05/01/24 02:01* | *25* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) - DL2

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C9-C12 Aliphatics (adjusted)** | **14000** | | 10000 | 1500 | ug/L | | | 05/01/24 10:55 | 100 |
| **C9-C12 Aliphatics (unadjusted)** | **29000** | **B** | 10000 | 1500 | ug/L | | | 05/01/24 10:55 | 100 |

## Client Sample ID: GW-MW102R-042324

**Date Collected: 04/23/24 12:30**
**Date Received: 04/24/24 16:34**

## Lab Sample ID: 620-18223-2

**Matrix: Water**

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *96* | | *70 - 130* | | *05/01/24 10:55* | *100* |
| *2,5-Dibromotoluene (pid)* | *96* | | *70 - 130* | | *05/01/24 10:55* | *100* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 100 | 56 | ug/L | | 04/26/24 12:00 | 04/30/24 12:33 | 1 |
| C19-C36 Aliphatics | ND | | 100 | 85 | ug/L | | 04/26/24 12:00 | 04/30/24 12:33 | 1 |
| **C11-C22 Aromatics** | **300** | | 100 | 84 | ug/L | | 04/26/24 12:00 | 04/30/24 12:33 | 1 |
| **C11-C22 Aromatics (Adjusted)** | **150** | | 100 | 84 | ug/L | | 04/26/24 12:00 | 04/30/24 12:33 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *49* | | *40 - 140* | *04/26/24 12:00* | *04/30/24 12:33* | *1* |
| *o-Terphenyl (Surr)* | *58* | | *40 - 140* | *04/26/24 12:00* | *04/30/24 12:33* | *1* |
| *2-Fluorobiphenyl (Surr)* | *110* | | *40 - 140* | *04/26/24 12:00* | *04/30/24 12:33* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Antimony** | **0.0020** | **J** | 0.0060 | 0.0016 | mg/L | | 04/26/24 14:42 | 04/28/24 01:36 | 1 |
| **Arsenic** | **0.021** | | 0.0040 | 0.0014 | mg/L | | 04/26/24 14:42 | 04/28/24 01:36 | 1 |
| **Barium** | **0.17** | | 0.0050 | 0.00070 | mg/L | | 04/26/24 14:42 | 04/28/24 01:36 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 04/26/24 14:42 | 04/28/24 01:36 | 1 |
| **Cadmium** | **0.00067** | **J** | 0.0025 | 0.00036 | mg/L | | 04/26/24 14:42 | 04/28/24 01:36 | 1 |
| **Chromium** | **0.0018** | **J** | 0.0050 | 0.00093 | mg/L | | 04/26/24 14:42 | 04/28/24 01:36 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 04/26/24 14:42 | 04/28/24 01:36 | 1 |
| **Nickel** | **0.0029** | **J** | 0.0050 | 0.00087 | mg/L | | 04/26/24 14:42 | 04/28/24 01:36 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 04/26/24 14:42 | 04/28/24 01:36 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 04/26/24 14:42 | 04/28/24 01:36 | 1 |
| Thallium | ND | | 0.0050 | 0.0021 | mg/L | | 04/26/24 14:42 | 04/28/24 01:36 | 1 |
| **Vanadium** | **0.0014** | **J** | 0.0050 | 0.0011 | mg/L | | 04/26/24 14:42 | 04/28/24 01:36 | 1 |
| **Zinc** | **0.044** | **B** | 0.025 | 0.0016 | mg/L | | 04/26/24 14:42 | 04/28/24 01:36 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 04/30/24 10:36 | 04/30/24 15:41 | 1 |

## Client Sample ID: GW-MW103-042324

**Date Collected: 04/23/24 10:20**
**Date Received: 04/24/24 16:34**

## Lab Sample ID: 620-18223-3

**Matrix: Water**

### Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | *- *1 | 1.0 | 0.23 | ug/L | | 04/26/24 12:00 | 05/02/24 14:38 | 1 |
| 2-Methylnaphthalene | ND | *- *1 | 1.0 | 0.29 | ug/L | | 04/26/24 12:00 | 05/02/24 14:38 | 1 |
| Acenaphthylene | ND | *- *1 | 1.0 | 0.39 | ug/L | | 04/26/24 12:00 | 05/02/24 14:38 | 1 |
| Acenaphthene | ND | | 1.0 | 0.19 | ug/L | | 04/26/24 12:00 | 05/02/24 14:38 | 1 |
| Fluorene | ND | *- *1 | 1.0 | 0.39 | ug/L | | 04/26/24 12:00 | 05/02/24 14:38 | 1 |
| Phenanthrene | ND | | 1.0 | 0.17 | ug/L | | 04/26/24 12:00 | 05/02/24 14:38 | 1 |
| Anthracene | ND | *1 | 1.0 | 0.15 | ug/L | | 04/26/24 12:00 | 05/02/24 14:38 | 1 |
| Fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 04/26/24 12:00 | 05/02/24 14:38 | 1 |
| Pyrene | ND | | 1.0 | 0.14 | ug/L | | 04/26/24 12:00 | 05/02/24 14:38 | 1 |
| Benzo[a]anthracene | ND | | 1.0 | 0.070 | ug/L | | 04/26/24 12:00 | 05/02/24 14:38 | 1 |
| Chrysene | ND | | 1.0 | 0.14 | ug/L | | 04/26/24 12:00 | 05/02/24 14:38 | 1 |
| Benzo[b]fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 04/26/24 12:00 | 05/02/24 14:38 | 1 |
| Benzo[k]fluoranthene | ND | | 1.0 | 0.24 | ug/L | | 04/26/24 12:00 | 05/02/24 14:38 | 1 |
| Benzo[a]pyrene | ND | | 0.20 | 0.16 | ug/L | | 04/26/24 12:00 | 05/02/24 14:38 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | *1 | 0.50 | 0.46 | ug/L | | 04/26/24 12:00 | 05/02/24 14:38 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.50 | 0.21 | ug/L | | 04/26/24 12:00 | 05/02/24 14:38 | 1 |
| Benzo[g,h,i]perylene | ND | *1 | 1.0 | 0.17 | ug/L | | 04/26/24 12:00 | 05/02/24 14:38 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *64* | | *40 - 140* | *04/26/24 12:00* | *05/02/24 14:38* | *1* |
| *2-Fluorobiphenyl (Surr)* | *110* | | *40 - 140* | *04/26/24 12:00* | *05/02/24 14:38* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C5-C8 Aliphatics (adjusted)** | **9.7** | **J B** | 100 | 6.9 | ug/L | | | 04/30/24 19:23 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 15 | ug/L | | | 04/30/24 19:23 | 1 |
| **C9-C10 Aromatics** | **21** | **J B** | 100 | 18 | ug/L | | | 04/30/24 19:23 | 1 |
| **C5-C8 Aliphatics (unadjusted)** | **9.7** | **J B** | 100 | 6.9 | ug/L | | | 04/30/24 19:23 | 1 |
| **C9-C12 Aliphatics (unadjusted)** | **20** | **J B** | 100 | 15 | ug/L | | | 04/30/24 19:23 | 1 |
| Benzene | ND | | 5.0 | 0.19 | ug/L | | | 04/30/24 19:23 | 1 |
| Ethylbenzene | ND | | 5.0 | 0.12 | ug/L | | | 04/30/24 19:23 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 0.19 | ug/L | | | 04/30/24 19:23 | 1 |
| Naphthalene | ND | | 5.0 | 0.25 | ug/L | | | 04/30/24 19:23 | 1 |
| Toluene | ND | | 5.0 | 0.22 | ug/L | | | 04/30/24 19:23 | 1 |
| m,p-Xylene | ND | | 10 | 0.36 | ug/L | | | 04/30/24 19:23 | 1 |
| o-Xylene | ND | | 5.0 | 0.21 | ug/L | | | 04/30/24 19:23 | 1 |
| Xylenes, Total | ND | | 15 | 1.0 | ug/L | | | 04/30/24 19:23 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *101* | | *70 - 130* | | *04/30/24 19:23* | *1* |
| *2,5-Dibromotoluene (pid)* | *99* | | *70 - 130* | | *04/30/24 19:23* | *1* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 100 | 56 | ug/L | | 04/26/24 12:00 | 04/30/24 13:00 | 1 |
| C19-C36 Aliphatics | ND | | 100 | 85 | ug/L | | 04/26/24 12:00 | 04/30/24 13:00 | 1 |
| C11-C22 Aromatics | ND | | 100 | 84 | ug/L | | 04/26/24 12:00 | 04/30/24 13:00 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 100 | 84 | ug/L | | 04/26/24 12:00 | 04/30/24 13:00 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *58* | | *40 - 140* | *04/26/24 12:00* | *04/30/24 13:00* | *1* |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-18223-1

## Client Sample ID: GW-MW103-042324

**Date Collected: 04/23/24 10:20**
**Date Received: 04/24/24 16:34**

## Lab Sample ID: 620-18223-3

**Matrix: Water**

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *68* | | *40 - 140* | *04/26/24 12:00* | *04/30/24 13:00* | *1* |
| *2-Fluorobiphenyl (Surr)* | *117* | | *40 - 140* | *04/26/24 12:00* | *04/30/24 13:00* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 0.0060 | 0.0016 | mg/L | | 04/26/24 14:42 | 04/28/24 01:00 | 1 |
| Arsenic | ND | | 0.0040 | 0.0014 | mg/L | | 04/26/24 14:42 | 04/28/24 01:00 | 1 |
| **Barium** | **0.053** | | 0.0050 | 0.00070 | mg/L | | 04/26/24 14:42 | 04/28/24 01:00 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 04/26/24 14:42 | 04/28/24 01:00 | 1 |
| **Cadmium** | **0.00059** | **J** | 0.0025 | 0.00036 | mg/L | | 04/26/24 14:42 | 04/28/24 01:00 | 1 |
| Chromium | ND | | 0.0050 | 0.00093 | mg/L | | 04/26/24 14:42 | 04/28/24 01:00 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 04/26/24 14:42 | 04/28/24 01:00 | 1 |
| **Nickel** | **0.0024** | **J** | 0.0050 | 0.00087 | mg/L | | 04/26/24 14:42 | 04/28/24 01:00 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 04/26/24 14:42 | 04/28/24 01:00 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 04/26/24 14:42 | 04/28/24 01:00 | 1 |
| Thallium | ND | | 0.0050 | 0.0021 | mg/L | | 04/26/24 14:42 | 04/28/24 01:00 | 1 |
| Vanadium | ND | | 0.0050 | 0.0011 | mg/L | | 04/26/24 14:42 | 04/28/24 01:00 | 1 |
| **Zinc** | **0.23** | **B** | 0.025 | 0.0016 | mg/L | | 04/26/24 14:42 | 04/28/24 01:00 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 04/30/24 10:36 | 04/30/24 15:47 | 1 |

## Client Sample ID: GW-MW104-042324

**Date Collected: 04/23/24 13:35**
**Date Received: 04/24/24 16:34**

## Lab Sample ID: 620-18223-4

**Matrix: Water**

### Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | *- *1 | 1.1 | 0.25 | ug/L | | 04/26/24 12:00 | 05/02/24 15:00 | 1 |
| 2-Methylnaphthalene | ND | *- *1 | 1.1 | 0.31 | ug/L | | 04/26/24 12:00 | 05/02/24 15:00 | 1 |
| Acenaphthylene | ND | *- *1 | 1.1 | 0.41 | ug/L | | 04/26/24 12:00 | 05/02/24 15:00 | 1 |
| Acenaphthene | ND | | 1.1 | 0.20 | ug/L | | 04/26/24 12:00 | 05/02/24 15:00 | 1 |
| Fluorene | ND | *- *1 | 1.1 | 0.41 | ug/L | | 04/26/24 12:00 | 05/02/24 15:00 | 1 |
| Phenanthrene | ND | | 1.1 | 0.18 | ug/L | | 04/26/24 12:00 | 05/02/24 15:00 | 1 |
| Anthracene | ND | *1 | 1.1 | 0.16 | ug/L | | 04/26/24 12:00 | 05/02/24 15:00 | 1 |
| Fluoranthene | ND | | 1.1 | 0.16 | ug/L | | 04/26/24 12:00 | 05/02/24 15:00 | 1 |
| Pyrene | ND | | 1.1 | 0.15 | ug/L | | 04/26/24 12:00 | 05/02/24 15:00 | 1 |
| Benzo[a]anthracene | ND | | 1.1 | 0.074 | ug/L | | 04/26/24 12:00 | 05/02/24 15:00 | 1 |
| Chrysene | ND | | 1.1 | 0.15 | ug/L | | 04/26/24 12:00 | 05/02/24 15:00 | 1 |
| Benzo[b]fluoranthene | ND | | 1.1 | 0.16 | ug/L | | 04/26/24 12:00 | 05/02/24 15:00 | 1 |
| Benzo[k]fluoranthene | ND | | 1.1 | 0.25 | ug/L | | 04/26/24 12:00 | 05/02/24 15:00 | 1 |
| Benzo[a]pyrene | ND | | 0.21 | 0.17 | ug/L | | 04/26/24 12:00 | 05/02/24 15:00 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | *1 | 0.53 | 0.49 | ug/L | | 04/26/24 12:00 | 05/02/24 15:00 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.53 | 0.23 | ug/L | | 04/26/24 12:00 | 05/02/24 15:00 | 1 |
| Benzo[g,h,i]perylene | ND | *1 | 1.1 | 0.18 | ug/L | | 04/26/24 12:00 | 05/02/24 15:00 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *70* | | *40 - 140* | *04/26/24 12:00* | *05/02/24 15:00* | *1* |
| *2-Fluorobiphenyl (Surr)* | *117* | | *40 - 140* | *04/26/24 12:00* | *05/02/24 15:00* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C5-C8 Aliphatics (adjusted)** | **9.7** | **J B** | 100 | 6.9 | ug/L | | | 04/29/24 21:53 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 15 | ug/L | | | 04/29/24 21:53 | 1 |
| **C9-C10 Aromatics** | **21** | **J B** | 100 | 18 | ug/L | | | 04/29/24 21:53 | 1 |
| **C5-C8 Aliphatics (unadjusted)** | **9.7** | **J B** | 100 | 6.9 | ug/L | | | 04/29/24 21:53 | 1 |
| **C9-C12 Aliphatics (unadjusted)** | **20** | **J B** | 100 | 15 | ug/L | | | 04/29/24 21:53 | 1 |
| Benzene | ND | | 5.0 | 0.19 | ug/L | | | 04/29/24 21:53 | 1 |
| Ethylbenzene | ND | | 5.0 | 0.12 | ug/L | | | 04/29/24 21:53 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 0.19 | ug/L | | | 04/29/24 21:53 | 1 |
| Naphthalene | ND | | 5.0 | 0.25 | ug/L | | | 04/29/24 21:53 | 1 |
| Toluene | ND | | 5.0 | 0.22 | ug/L | | | 04/29/24 21:53 | 1 |
| m,p-Xylene | ND | | 10 | 0.36 | ug/L | | | 04/29/24 21:53 | 1 |
| o-Xylene | ND | | 5.0 | 0.21 | ug/L | | | 04/29/24 21:53 | 1 |
| Xylenes, Total | ND | | 15 | 1.0 | ug/L | | | 04/29/24 21:53 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *92* | | *70 - 130* | | *04/29/24 21:53* | *1* |
| *2,5-Dibromotoluene (pid)* | *92* | | *70 - 130* | | *04/29/24 21:53* | *1* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 110 | 59 | ug/L | | 04/26/24 12:00 | 04/30/24 13:27 | 1 |
| C19-C36 Aliphatics | ND | | 110 | 89 | ug/L | | 04/26/24 12:00 | 04/30/24 13:27 | 1 |
| C11-C22 Aromatics | ND | | 110 | 88 | ug/L | | 04/26/24 12:00 | 04/30/24 13:27 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 110 | 88 | ug/L | | 04/26/24 12:00 | 04/30/24 13:27 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *57* | | *40 - 140* | *04/26/24 12:00* | *04/30/24 13:27* | *1* |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-18223-1

## Client Sample ID: GW-MW104-042324

**Date Collected: 04/23/24 13:35**
**Date Received: 04/24/24 16:34**

## Lab Sample ID: 620-18223-4

**Matrix: Water**

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *69* | | *40 - 140* | *04/26/24 12:00* | *04/30/24 13:27* | *1* |
| *2-Fluorobiphenyl (Surr)* | *114* | | *40 - 140* | *04/26/24 12:00* | *04/30/24 13:27* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Antimony** | **0.0047** | **J** | 0.0060 | 0.0016 | mg/L | | 04/26/24 14:42 | 04/28/24 01:24 | 1 |
| **Arsenic** | **0.0054** | | 0.0040 | 0.0014 | mg/L | | 04/26/24 14:42 | 04/28/24 01:24 | 1 |
| **Barium** | **0.028** | | 0.0050 | 0.00070 | mg/L | | 04/26/24 14:42 | 04/28/24 01:24 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 04/26/24 14:42 | 04/28/24 01:24 | 1 |
| **Cadmium** | **0.00069** | **J** | 0.0025 | 0.00036 | mg/L | | 04/26/24 14:42 | 04/28/24 01:24 | 1 |
| Chromium | ND | | 0.0050 | 0.00093 | mg/L | | 04/26/24 14:42 | 04/28/24 01:24 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 04/26/24 14:42 | 04/28/24 01:24 | 1 |
| **Nickel** | **0.010** | | 0.0050 | 0.00087 | mg/L | | 04/26/24 14:42 | 04/28/24 01:24 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 04/26/24 14:42 | 04/28/24 01:24 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 04/26/24 14:42 | 04/28/24 01:24 | 1 |
| Thallium | ND | | 0.0050 | 0.0021 | mg/L | | 04/26/24 14:42 | 04/28/24 01:24 | 1 |
| Vanadium | ND | | 0.0050 | 0.0011 | mg/L | | 04/26/24 14:42 | 04/28/24 01:24 | 1 |
| **Zinc** | **0.23** | **B** | 0.025 | 0.0016 | mg/L | | 04/26/24 14:42 | 04/28/24 01:24 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 04/30/24 10:36 | 04/30/24 15:49 | 1 |

## Client Sample ID: GW-MW105-042324

**Date Collected: 04/23/24 10:25**
**Date Received: 04/24/24 16:34**

## Lab Sample ID: 620-18223-5

**Matrix: Water**

### Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 1.0 | 0.23 | ug/L | | 04/30/24 12:56 | 05/03/24 10:12 | 1 |
| 2-Methylnaphthalene | ND | | 1.0 | 0.29 | ug/L | | 04/30/24 12:56 | 05/03/24 10:12 | 1 |
| Acenaphthylene | ND | | 1.0 | 0.39 | ug/L | | 04/30/24 12:56 | 05/03/24 10:12 | 1 |
| Acenaphthene | ND | | 1.0 | 0.19 | ug/L | | 04/30/24 12:56 | 05/03/24 10:12 | 1 |
| Fluorene | ND | | 1.0 | 0.39 | ug/L | | 04/30/24 12:56 | 05/03/24 10:12 | 1 |
| Phenanthrene | ND | | 1.0 | 0.17 | ug/L | | 04/30/24 12:56 | 05/03/24 10:12 | 1 |
| Anthracene | ND | | 1.0 | 0.15 | ug/L | | 04/30/24 12:56 | 05/03/24 10:12 | 1 |
| Fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 04/30/24 12:56 | 05/03/24 10:12 | 1 |
| Pyrene | ND | | 1.0 | 0.14 | ug/L | | 04/30/24 12:56 | 05/03/24 10:12 | 1 |
| Benzo[a]anthracene | ND | | 1.0 | 0.070 | ug/L | | 04/30/24 12:56 | 05/03/24 10:12 | 1 |
| Chrysene | ND | | 1.0 | 0.14 | ug/L | | 04/30/24 12:56 | 05/03/24 10:12 | 1 |
| Benzo[b]fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 04/30/24 12:56 | 05/03/24 10:12 | 1 |
| Benzo[k]fluoranthene | ND | | 1.0 | 0.24 | ug/L | | 04/30/24 12:56 | 05/03/24 10:12 | 1 |
| Benzo[a]pyrene | ND | | 0.20 | 0.16 | ug/L | | 04/30/24 12:56 | 05/03/24 10:12 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.50 | 0.46 | ug/L | | 04/30/24 12:56 | 05/03/24 10:12 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.50 | 0.21 | ug/L | | 04/30/24 12:56 | 05/03/24 10:12 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.0 | 0.17 | ug/L | | 04/30/24 12:56 | 05/03/24 10:12 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *56* | | *40 - 140* | *04/30/24 12:56* | *05/03/24 10:12* | *1* |
| *2-Fluorobiphenyl (Surr)* | *92* | | *40 - 140* | *04/30/24 12:56* | *05/03/24 10:12* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C5-C8 Aliphatics (adjusted)** | **10** | **J B** | 100 | 6.9 | ug/L | | | 04/29/24 22:24 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 15 | ug/L | | | 04/29/24 22:24 | 1 |
| **C9-C10 Aromatics** | **24** | **J B** | 100 | 18 | ug/L | | | 04/29/24 22:24 | 1 |
| **C5-C8 Aliphatics (unadjusted)** | **10** | **J B** | 100 | 6.9 | ug/L | | | 04/29/24 22:24 | 1 |
| **C9-C12 Aliphatics (unadjusted)** | **30** | **J B** | 100 | 15 | ug/L | | | 04/29/24 22:24 | 1 |
| Benzene | ND | | 5.0 | 0.19 | ug/L | | | 04/29/24 22:24 | 1 |
| Ethylbenzene | ND | | 5.0 | 0.12 | ug/L | | | 04/29/24 22:24 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 0.19 | ug/L | | | 04/29/24 22:24 | 1 |
| Naphthalene | ND | | 5.0 | 0.25 | ug/L | | | 04/29/24 22:24 | 1 |
| Toluene | ND | | 5.0 | 0.22 | ug/L | | | 04/29/24 22:24 | 1 |
| m,p-Xylene | ND | | 10 | 0.36 | ug/L | | | 04/29/24 22:24 | 1 |
| o-Xylene | ND | | 5.0 | 0.21 | ug/L | | | 04/29/24 22:24 | 1 |
| Xylenes, Total | ND | | 15 | 1.0 | ug/L | | | 04/29/24 22:24 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *95* | | *70 - 130* | | *04/29/24 22:24* | *1* |
| *2,5-Dibromotoluene (pid)* | *95* | | *70 - 130* | | *04/29/24 22:24* | *1* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 100 | 56 | ug/L | | 04/30/24 12:56 | 05/02/24 13:01 | 1 |
| C19-C36 Aliphatics | ND | | 100 | 85 | ug/L | | 04/30/24 12:56 | 05/02/24 13:01 | 1 |
| C11-C22 Aromatics | ND | | 100 | 84 | ug/L | | 04/30/24 12:56 | 05/02/24 13:01 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 100 | 84 | ug/L | | 04/30/24 12:56 | 05/02/24 13:01 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *56* | | *40 - 140* | *04/30/24 12:56* | *05/02/24 13:01* | *1* |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-18223-1

**Client Sample ID: GW-MW105-042324**
**Date Collected: 04/23/24 10:25**
**Date Received: 04/24/24 16:34**

**Lab Sample ID: 620-18223-5**
**Matrix: Water**

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *61* | | *40 - 140* | *04/30/24 12:56* | *05/02/24 13:01* | *1* |
| *2-Fluorobiphenyl (Surr)* | *97* | | *40 - 140* | *04/30/24 12:56* | *05/02/24 13:01* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Antimony** | **0.0051** | **J** | 0.0060 | 0.0016 | mg/L | | 04/26/24 14:42 | 04/28/24 01:18 | 1 |
| Arsenic | ND | | 0.0040 | 0.0014 | mg/L | | 04/26/24 14:42 | 04/28/24 01:18 | 1 |
| **Barium** | **0.14** | | 0.0050 | 0.00070 | mg/L | | 04/26/24 14:42 | 04/28/24 01:18 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 04/26/24 14:42 | 04/28/24 01:18 | 1 |
| Cadmium | ND | | 0.0025 | 0.00036 | mg/L | | 04/26/24 14:42 | 04/28/24 01:18 | 1 |
| Chromium | ND | | 0.0050 | 0.00093 | mg/L | | 04/26/24 14:42 | 04/28/24 01:18 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 04/26/24 14:42 | 04/28/24 01:18 | 1 |
| **Nickel** | **0.0021** | **J** | 0.0050 | 0.00087 | mg/L | | 04/26/24 14:42 | 04/28/24 01:18 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 04/26/24 14:42 | 04/28/24 01:18 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 04/26/24 14:42 | 04/28/24 01:18 | 1 |
| Thallium | ND | | 0.0050 | 0.0021 | mg/L | | 04/26/24 14:42 | 04/28/24 01:18 | 1 |
| Vanadium | ND | | 0.0050 | 0.0011 | mg/L | | 04/26/24 14:42 | 04/28/24 01:18 | 1 |
| **Zinc** | **0.053** | **B** | 0.025 | 0.0016 | mg/L | | 04/26/24 14:42 | 04/28/24 01:18 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 04/30/24 10:36 | 04/30/24 15:51 | 1 |

## Client Sample ID: GW-MW106-042324

**Date Collected: 04/23/24 16:20**
**Date Received: 04/24/24 16:34**

## Lab Sample ID: 620-18223-6

**Matrix: Water**

### Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Naphthalene** | **40** | | 1.0 | 0.23 | ug/L | | 04/30/24 12:56 | 05/02/24 16:08 | 1 |
| **2-Methylnaphthalene** | **44** | | 1.0 | 0.29 | ug/L | | 04/30/24 12:56 | 05/02/24 16:08 | 1 |
| Acenaphthylene | ND | | 1.0 | 0.39 | ug/L | | 04/30/24 12:56 | 05/02/24 16:08 | 1 |
| Acenaphthene | ND | | 1.0 | 0.19 | ug/L | | 04/30/24 12:56 | 05/02/24 16:08 | 1 |
| Fluorene | ND | | 1.0 | 0.39 | ug/L | | 04/30/24 12:56 | 05/02/24 16:08 | 1 |
| **Phenanthrene** | **0.42** | **J** | 1.0 | 0.17 | ug/L | | 04/30/24 12:56 | 05/02/24 16:08 | 1 |
| Anthracene | ND | | 1.0 | 0.15 | ug/L | | 04/30/24 12:56 | 05/02/24 16:08 | 1 |
| **Fluoranthene** | **0.21** | **J** | 1.0 | 0.15 | ug/L | | 04/30/24 12:56 | 05/02/24 16:08 | 1 |
| **Pyrene** | **0.15** | **J** | 1.0 | 0.14 | ug/L | | 04/30/24 12:56 | 05/02/24 16:08 | 1 |
| Benzo[a]anthracene | ND | | 1.0 | 0.070 | ug/L | | 04/30/24 12:56 | 05/02/24 16:08 | 1 |
| Chrysene | ND | | 1.0 | 0.14 | ug/L | | 04/30/24 12:56 | 05/02/24 16:08 | 1 |
| Benzo[b]fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 04/30/24 12:56 | 05/02/24 16:08 | 1 |
| Benzo[k]fluoranthene | ND | | 1.0 | 0.24 | ug/L | | 04/30/24 12:56 | 05/02/24 16:08 | 1 |
| Benzo[a]pyrene | ND | | 0.20 | 0.16 | ug/L | | 04/30/24 12:56 | 05/02/24 16:08 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.50 | 0.46 | ug/L | | 04/30/24 12:56 | 05/02/24 16:08 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.50 | 0.21 | ug/L | | 04/30/24 12:56 | 05/02/24 16:08 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.0 | 0.17 | ug/L | | 04/30/24 12:56 | 05/02/24 16:08 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *62* | | *40 - 140* | *04/30/24 12:56* | *05/02/24 16:08* | *1* |
| *2-Fluorobiphenyl (Surr)* | *99* | | *40 - 140* | *04/30/24 12:56* | *05/02/24 16:08* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C5-C8 Aliphatics (adjusted)** | **1500** | **B** | 1000 | 69 | ug/L | | | 04/30/24 01:58 | 10 |
| **C5-C8 Aliphatics (unadjusted)** | **1700** | **B** | 1000 | 69 | ug/L | | | 04/30/24 01:58 | 10 |
| Benzene | ND | | 50 | 1.9 | ug/L | | | 04/30/24 01:58 | 10 |
| **Ethylbenzene** | **300** | | 50 | 1.2 | ug/L | | | 04/30/24 01:58 | 10 |
| **Methyl tert-butyl ether** | **170** | | 50 | 1.9 | ug/L | | | 04/30/24 01:58 | 10 |
| **Naphthalene** | **120** | | 50 | 2.5 | ug/L | | | 04/30/24 01:58 | 10 |
| Toluene | ND | | 50 | 2.2 | ug/L | | | 04/30/24 01:58 | 10 |
| **m,p-Xylene** | **460** | | 100 | 3.6 | ug/L | | | 04/30/24 01:58 | 10 |
| o-Xylene | ND | | 50 | 2.1 | ug/L | | | 04/30/24 01:58 | 10 |
| **Xylenes, Total** | **460** | | 150 | 10 | ug/L | | | 04/30/24 01:58 | 10 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *102* | | *70 - 130* | | *04/30/24 01:58* | *10* |
| *2,5-Dibromotoluene (pid)* | *100* | | *70 - 130* | | *04/30/24 01:58* | *10* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) - DL

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C9-C12 Aliphatics (adjusted)** | **5300** | | 2500 | 370 | ug/L | | | 05/01/24 01:00 | 25 |
| **C9-C10 Aromatics** | **5100** | **B** | 2500 | 450 | ug/L | | | 05/01/24 01:00 | 25 |
| **C9-C12 Aliphatics (unadjusted)** | **11000** | **B** | 2500 | 370 | ug/L | | | 05/01/24 01:00 | 25 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *107* | | *70 - 130* | | *05/01/24 01:00* | *25* |
| *2,5-Dibromotoluene (pid)* | *106* | | *70 - 130* | | *05/01/24 01:00* | *25* |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-18223-1

## Client Sample ID: GW-MW106-042324

**Lab Sample ID: 620-18223-6**

**Date Collected: 04/23/24 16:20**

**Matrix: Water**

**Date Received: 04/24/24 16:34**

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C9-C18 Aliphatics** | **730** | | 400 | 220 | ug/L | | 04/30/24 12:56 | 05/02/24 14:22 | 4 |
| C19-C36 Aliphatics | ND | | 100 | 85 | ug/L | | 04/30/24 12:56 | 05/02/24 13:28 | 1 |
| **C11-C22 Aromatics** | **190** | | 100 | 84 | ug/L | | 04/30/24 12:56 | 05/02/24 13:28 | 1 |
| **C11-C22 Aromatics (Adjusted)** | **110** | | 100 | 84 | ug/L | | 04/30/24 12:56 | 05/02/24 13:28 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *48* | | *40 - 140* | *04/30/24 12:56* | *05/02/24 13:28* | *1* |
| *o-Terphenyl (Surr)* | *62* | | *40 - 140* | *04/30/24 12:56* | *05/02/24 13:28* | *1* |
| *2-Fluorobiphenyl (Surr)* | *98* | | *40 - 140* | *04/30/24 12:56* | *05/02/24 13:28* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Antimony** | **0.0017** | **J** | 0.0060 | 0.0016 | mg/L | | 04/26/24 14:42 | 04/28/24 01:30 | 1 |
| **Arsenic** | **0.029** | | 0.0040 | 0.0014 | mg/L | | 04/26/24 14:42 | 04/28/24 01:30 | 1 |
| **Barium** | **0.033** | | 0.0050 | 0.00070 | mg/L | | 04/26/24 14:42 | 04/28/24 01:30 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 04/26/24 14:42 | 04/28/24 01:30 | 1 |
| Cadmium | ND | | 0.0025 | 0.00036 | mg/L | | 04/26/24 14:42 | 04/28/24 01:30 | 1 |
| Chromium | ND | | 0.0050 | 0.00093 | mg/L | | 04/26/24 14:42 | 04/28/24 01:30 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 04/26/24 14:42 | 04/28/24 01:30 | 1 |
| **Nickel** | **0.0021** | **J** | 0.0050 | 0.00087 | mg/L | | 04/26/24 14:42 | 04/28/24 01:30 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 04/26/24 14:42 | 04/28/24 01:30 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 04/26/24 14:42 | 04/28/24 01:30 | 1 |
| Thallium | ND | | 0.0050 | 0.0021 | mg/L | | 04/26/24 14:42 | 04/28/24 01:30 | 1 |
| Vanadium | ND | | 0.0050 | 0.0011 | mg/L | | 04/26/24 14:42 | 04/28/24 01:30 | 1 |
| **Zinc** | **0.046** | **B** | 0.025 | 0.0016 | mg/L | | 04/26/24 14:42 | 04/28/24 01:30 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 04/30/24 10:36 | 04/30/24 15:54 | 1 |

## Client Sample ID: GW-MW107-042324

**Date Collected: 04/23/24 14:40**
**Date Received: 04/24/24 16:34**

## Lab Sample ID: 620-18223-7

**Matrix: Water**

### Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Naphthalene** | **3.9** | | 1.0 | 0.23 | ug/L | | 04/30/24 12:56 | 05/02/24 15:46 | 1 |
| **2-Methylnaphthalene** | **0.77** | **J** | 1.0 | 0.29 | ug/L | | 04/30/24 12:56 | 05/02/24 15:46 | 1 |
| Acenaphthylene | ND | | 1.0 | 0.39 | ug/L | | 04/30/24 12:56 | 05/02/24 15:46 | 1 |
| Acenaphthene | ND | | 1.0 | 0.19 | ug/L | | 04/30/24 12:56 | 05/02/24 15:46 | 1 |
| Fluorene | ND | | 1.0 | 0.39 | ug/L | | 04/30/24 12:56 | 05/02/24 15:46 | 1 |
| Phenanthrene | ND | | 1.0 | 0.17 | ug/L | | 04/30/24 12:56 | 05/02/24 15:46 | 1 |
| Anthracene | ND | | 1.0 | 0.15 | ug/L | | 04/30/24 12:56 | 05/02/24 15:46 | 1 |
| Fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 04/30/24 12:56 | 05/02/24 15:46 | 1 |
| Pyrene | ND | | 1.0 | 0.14 | ug/L | | 04/30/24 12:56 | 05/02/24 15:46 | 1 |
| Benzo[a]anthracene | ND | | 1.0 | 0.070 | ug/L | | 04/30/24 12:56 | 05/02/24 15:46 | 1 |
| Chrysene | ND | | 1.0 | 0.14 | ug/L | | 04/30/24 12:56 | 05/02/24 15:46 | 1 |
| Benzo[b]fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 04/30/24 12:56 | 05/02/24 15:46 | 1 |
| Benzo[k]fluoranthene | ND | | 1.0 | 0.24 | ug/L | | 04/30/24 12:56 | 05/02/24 15:46 | 1 |
| Benzo[a]pyrene | ND | | 0.20 | 0.16 | ug/L | | 04/30/24 12:56 | 05/02/24 15:46 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.50 | 0.46 | ug/L | | 04/30/24 12:56 | 05/02/24 15:46 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.50 | 0.21 | ug/L | | 04/30/24 12:56 | 05/02/24 15:46 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.0 | 0.17 | ug/L | | 04/30/24 12:56 | 05/02/24 15:46 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *60* | | *40 - 140* | *04/30/24 12:56* | *05/02/24 15:46* | *1* |
| *2-Fluorobiphenyl (Surr)* | *93* | | *40 - 140* | *04/30/24 12:56* | *05/02/24 15:46* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C5-C8 Aliphatics (adjusted)** | **46** | **J B** | 100 | 6.9 | ug/L | | | 04/30/24 19:54 | 1 |
| **C9-C12 Aliphatics (adjusted)** | **270** | | 100 | 15 | ug/L | | | 04/30/24 19:54 | 1 |
| **C9-C10 Aromatics** | **170** | **B** | 100 | 18 | ug/L | | | 04/30/24 19:54 | 1 |
| **C5-C8 Aliphatics (unadjusted)** | **52** | **J B** | 100 | 6.9 | ug/L | | | 04/30/24 19:54 | 1 |
| **C9-C12 Aliphatics (unadjusted)** | **540** | **B** | 100 | 15 | ug/L | | | 04/30/24 19:54 | 1 |
| Benzene | ND | | 5.0 | 0.19 | ug/L | | | 04/30/24 19:54 | 1 |
| **Ethylbenzene** | **46** | | 5.0 | 0.12 | ug/L | | | 04/30/24 19:54 | 1 |
| **Methyl tert-butyl ether** | **6.1** | | 5.0 | 0.19 | ug/L | | | 04/30/24 19:54 | 1 |
| **Naphthalene** | **9.3** | | 5.0 | 0.25 | ug/L | | | 04/30/24 19:54 | 1 |
| Toluene | ND | | 5.0 | 0.22 | ug/L | | | 04/30/24 19:54 | 1 |
| **m,p-Xylene** | **51** | | 10 | 0.36 | ug/L | | | 04/30/24 19:54 | 1 |
| o-Xylene | ND | | 5.0 | 0.21 | ug/L | | | 04/30/24 19:54 | 1 |
| **Xylenes, Total** | **51** | | 15 | 1.0 | ug/L | | | 04/30/24 19:54 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *102* | | *70 - 130* | | *04/30/24 19:54* | *1* |
| *2,5-Dibromotoluene (pid)* | *100* | | *70 - 130* | | *04/30/24 19:54* | *1* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 100 | 56 | ug/L | | 04/30/24 12:56 | 05/02/24 13:55 | 1 |
| C19-C36 Aliphatics | ND | | 100 | 85 | ug/L | | 04/30/24 12:56 | 05/02/24 13:55 | 1 |
| C11-C22 Aromatics | ND | | 100 | 84 | ug/L | | 04/30/24 12:56 | 05/02/24 13:55 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 100 | 84 | ug/L | | 04/30/24 12:56 | 05/02/24 13:55 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *70* | | *40 - 140* | *04/30/24 12:56* | *05/02/24 13:55* | *1* |

## Client Sample ID: GW-MW107-042324

**Lab Sample ID: 620-18223-7**

**Date Collected: 04/23/24 14:40**

**Matrix: Water**

**Date Received: 04/24/24 16:34**

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *61* | | *40 - 140* | *04/30/24 12:56* | *05/02/24 13:55* | *1* |
| *2-Fluorobiphenyl (Surr)* | *77* | | *40 - 140* | *04/30/24 12:56* | *05/02/24 13:55* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 0.0060 | 0.0016 | mg/L | | 04/26/24 14:42 | 04/28/24 00:54 | 1 |
| **Arsenic** | **0.038** | | 0.0040 | 0.0014 | mg/L | | 04/26/24 14:42 | 04/28/24 00:54 | 1 |
| **Barium** | **0.023** | | 0.0050 | 0.00070 | mg/L | | 04/26/24 14:42 | 04/28/24 00:54 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 04/26/24 14:42 | 04/28/24 00:54 | 1 |
| Cadmium | ND | | 0.0025 | 0.00036 | mg/L | | 04/26/24 14:42 | 04/28/24 00:54 | 1 |
| Chromium | ND | | 0.0050 | 0.00093 | mg/L | | 04/26/24 14:42 | 04/28/24 00:54 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 04/26/24 14:42 | 04/28/24 00:54 | 1 |
| **Nickel** | **0.0044** | **J** | 0.0050 | 0.00087 | mg/L | | 04/26/24 14:42 | 04/28/24 00:54 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 04/26/24 14:42 | 04/28/24 00:54 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 04/26/24 14:42 | 04/28/24 00:54 | 1 |
| Thallium | ND | | 0.0050 | 0.0021 | mg/L | | 04/26/24 14:42 | 04/28/24 00:54 | 1 |
| Vanadium | ND | | 0.0050 | 0.0011 | mg/L | | 04/26/24 14:42 | 04/28/24 00:54 | 1 |
| **Zinc** | **0.051** | **B** | 0.025 | 0.0016 | mg/L | | 04/26/24 14:42 | 04/28/24 00:54 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 04/30/24 10:36 | 04/30/24 15:56 | 1 |

## Client Sample ID: GW-MW108-042324

**Date Collected: 04/23/24 12:00**
**Date Received: 04/24/24 16:34**

## Lab Sample ID: 620-18223-8

**Matrix: Water**

### Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 1.0 | 0.23 | ug/L | | 04/30/24 12:56 | 05/02/24 16:54 | 1 |
| 2-Methylnaphthalene | ND | | 1.0 | 0.29 | ug/L | | 04/30/24 12:56 | 05/02/24 16:54 | 1 |
| Acenaphthylene | ND | F1 | 1.0 | 0.39 | ug/L | | 04/30/24 12:56 | 05/02/24 16:54 | 1 |
| Acenaphthene | ND | | 1.0 | 0.19 | ug/L | | 04/30/24 12:56 | 05/02/24 16:54 | 1 |
| Fluorene | ND | | 1.0 | 0.39 | ug/L | | 04/30/24 12:56 | 05/02/24 16:54 | 1 |
| Phenanthrene | ND | | 1.0 | 0.17 | ug/L | | 04/30/24 12:56 | 05/02/24 16:54 | 1 |
| Anthracene | ND | | 1.0 | 0.15 | ug/L | | 04/30/24 12:56 | 05/02/24 16:54 | 1 |
| Fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 04/30/24 12:56 | 05/02/24 16:54 | 1 |
| Pyrene | ND | | 1.0 | 0.14 | ug/L | | 04/30/24 12:56 | 05/02/24 16:54 | 1 |
| Benzo[a]anthracene | ND | | 1.0 | 0.070 | ug/L | | 04/30/24 12:56 | 05/02/24 16:54 | 1 |
| Chrysene | ND | | 1.0 | 0.14 | ug/L | | 04/30/24 12:56 | 05/02/24 16:54 | 1 |
| Benzo[b]fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 04/30/24 12:56 | 05/02/24 16:54 | 1 |
| Benzo[k]fluoranthene | ND | | 1.0 | 0.24 | ug/L | | 04/30/24 12:56 | 05/02/24 16:54 | 1 |
| Benzo[a]pyrene | ND | | 0.20 | 0.16 | ug/L | | 04/30/24 12:56 | 05/02/24 16:54 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.50 | 0.46 | ug/L | | 04/30/24 12:56 | 05/02/24 16:54 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.50 | 0.21 | ug/L | | 04/30/24 12:56 | 05/02/24 16:54 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.0 | 0.17 | ug/L | | 04/30/24 12:56 | 05/02/24 16:54 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *59* | | *40 - 140* | *04/30/24 12:56* | *05/02/24 16:54* | *1* |
| *2-Fluorobiphenyl (Surr)* | *91* | | *40 - 140* | *04/30/24 12:56* | *05/02/24 16:54* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C5-C8 Aliphatics (adjusted)** | **8.4** | **J B** | 100 | 6.9 | ug/L | | | 04/30/24 20:24 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 15 | ug/L | | | 04/30/24 20:24 | 1 |
| **C9-C10 Aromatics** | **21** | **J B** | 100 | 18 | ug/L | | | 04/30/24 20:24 | 1 |
| **C5-C8 Aliphatics (unadjusted)** | **8.4** | **J B F1** | 100 | 6.9 | ug/L | | | 04/30/24 20:24 | 1 |
| **C9-C12 Aliphatics (unadjusted)** | **20** | **J B F1** | 100 | 15 | ug/L | | | 04/30/24 20:24 | 1 |
| Benzene | ND | | 5.0 | 0.19 | ug/L | | | 04/30/24 20:24 | 1 |
| Ethylbenzene | ND | | 5.0 | 0.12 | ug/L | | | 04/30/24 20:24 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 0.19 | ug/L | | | 04/30/24 20:24 | 1 |
| Naphthalene | ND | F1 | 5.0 | 0.25 | ug/L | | | 04/30/24 20:24 | 1 |
| Toluene | ND | | 5.0 | 0.22 | ug/L | | | 04/30/24 20:24 | 1 |
| m,p-Xylene | ND | | 10 | 0.36 | ug/L | | | 04/30/24 20:24 | 1 |
| o-Xylene | ND | | 5.0 | 0.21 | ug/L | | | 04/30/24 20:24 | 1 |
| Xylenes, Total | ND | | 15 | 1.0 | ug/L | | | 04/30/24 20:24 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *99* | | *70 - 130* | | *04/30/24 20:24* | *1* |
| *2,5-Dibromotoluene (pid)* | *97* | | *70 - 130* | | *04/30/24 20:24* | *1* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 100 | 56 | ug/L | | 04/30/24 12:56 | 05/02/24 14:50 | 1 |
| C19-C36 Aliphatics | ND | | 100 | 85 | ug/L | | 04/30/24 12:56 | 05/02/24 14:50 | 1 |
| C11-C22 Aromatics | ND | | 100 | 84 | ug/L | | 04/30/24 12:56 | 05/02/24 14:50 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 100 | 84 | ug/L | | 04/30/24 12:56 | 05/02/24 14:50 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *63* | | *40 - 140* | *04/30/24 12:56* | *05/02/24 14:50* | *1* |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-18223-1

**Client Sample ID: GW-MW108-042324**
**Date Collected: 04/23/24 12:00**
**Date Received: 04/24/24 16:34**

**Lab Sample ID: 620-18223-8**
**Matrix: Water**

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *65* | | *40 - 140* | *04/30/24 12:56* | *05/02/24 14:50* | *1* |
| *2-Fluorobiphenyl (Surr)* | *80* | | *40 - 140* | *04/30/24 12:56* | *05/02/24 14:50* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Antimony** | **0.0039** | **J F2** | 0.0060 | 0.0016 | mg/L | | 04/26/24 14:42 | 04/27/24 23:49 | 1 |
| Arsenic | ND | F2 | 0.0040 | 0.0014 | mg/L | | 04/26/24 14:42 | 04/27/24 23:49 | 1 |
| **Barium** | **0.12** | **F2** | 0.0050 | 0.00070 | mg/L | | 04/26/24 14:42 | 04/27/24 23:49 | 1 |
| Beryllium | ND | F2 | 0.0020 | 0.00028 | mg/L | | 04/26/24 14:42 | 04/27/24 23:49 | 1 |
| Cadmium | ND | F2 | 0.0025 | 0.00036 | mg/L | | 04/26/24 14:42 | 04/27/24 23:49 | 1 |
| Chromium | ND | F2 | 0.0050 | 0.00093 | mg/L | | 04/26/24 14:42 | 04/27/24 23:49 | 1 |
| Lead | ND | F2 | 0.0075 | 0.0062 | mg/L | | 04/26/24 14:42 | 04/27/24 23:49 | 1 |
| **Nickel** | **0.0014** | **J F2** | 0.0050 | 0.00087 | mg/L | | 04/26/24 14:42 | 04/27/24 23:49 | 1 |
| Selenium | ND | F2 | 0.015 | 0.0042 | mg/L | | 04/26/24 14:42 | 04/27/24 23:49 | 1 |
| Silver | ND | F2 | 0.0050 | 0.00062 | mg/L | | 04/26/24 14:42 | 04/27/24 23:49 | 1 |
| Thallium | ND | F2 | 0.0050 | 0.0021 | mg/L | | 04/26/24 14:42 | 04/27/24 23:49 | 1 |
| Vanadium | ND | F2 | 0.0050 | 0.0011 | mg/L | | 04/26/24 14:42 | 04/27/24 23:49 | 1 |
| **Zinc** | **0.045** | **F2 B** | 0.025 | 0.0016 | mg/L | | 04/26/24 14:42 | 04/27/24 23:49 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 04/30/24 10:36 | 04/30/24 15:58 | 1 |

## Client Sample ID: GW-MW109-042324 Lab Sample ID: 620-18223-9

**Date Collected: 04/23/24 14:30** **Matrix: Water**
**Date Received: 04/24/24 16:34**

### Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Naphthalene** | **36** | | 1.0 | 0.23 | ug/L | | 04/30/24 12:56 | 05/02/24 18:02 | 1 |
| **2-Methylnaphthalene** | **28** | | 1.0 | 0.29 | ug/L | | 04/30/24 12:56 | 05/02/24 18:02 | 1 |
| Acenaphthylene | ND | | 1.0 | 0.39 | ug/L | | 04/30/24 12:56 | 05/02/24 18:02 | 1 |
| Acenaphthene | ND | | 1.0 | 0.19 | ug/L | | 04/30/24 12:56 | 05/02/24 18:02 | 1 |
| Fluorene | ND | | 1.0 | 0.39 | ug/L | | 04/30/24 12:56 | 05/02/24 18:02 | 1 |
| Phenanthrene | ND | | 1.0 | 0.17 | ug/L | | 04/30/24 12:56 | 05/02/24 18:02 | 1 |
| Anthracene | ND | | 1.0 | 0.15 | ug/L | | 04/30/24 12:56 | 05/02/24 18:02 | 1 |
| Fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 04/30/24 12:56 | 05/02/24 18:02 | 1 |
| Pyrene | ND | | 1.0 | 0.14 | ug/L | | 04/30/24 12:56 | 05/02/24 18:02 | 1 |
| Benzo[a]anthracene | ND | | 1.0 | 0.070 | ug/L | | 04/30/24 12:56 | 05/02/24 18:02 | 1 |
| Chrysene | ND | | 1.0 | 0.14 | ug/L | | 04/30/24 12:56 | 05/02/24 18:02 | 1 |
| Benzo[b]fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 04/30/24 12:56 | 05/02/24 18:02 | 1 |
| Benzo[k]fluoranthene | ND | | 1.0 | 0.24 | ug/L | | 04/30/24 12:56 | 05/02/24 18:02 | 1 |
| Benzo[a]pyrene | ND | | 0.20 | 0.16 | ug/L | | 04/30/24 12:56 | 05/02/24 18:02 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.50 | 0.46 | ug/L | | 04/30/24 12:56 | 05/02/24 18:02 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.50 | 0.21 | ug/L | | 04/30/24 12:56 | 05/02/24 18:02 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.0 | 0.17 | ug/L | | 04/30/24 12:56 | 05/02/24 18:02 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *55* | | *40 - 140* | *04/30/24 12:56* | *05/02/24 18:02* | *1* |
| *2-Fluorobiphenyl (Surr)* | *87* | | *40 - 140* | *04/30/24 12:56* | *05/02/24 18:02* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C5-C8 Aliphatics (adjusted)** | **110** | **B** | 100 | 6.9 | ug/L | | | 05/01/24 13:32 | 1 |
| **C5-C8 Aliphatics (unadjusted)** | **210** | **B** | 100 | 6.9 | ug/L | | | 05/01/24 13:32 | 1 |
| Benzene | ND | | 5.0 | 0.19 | ug/L | | | 05/01/24 13:32 | 1 |
| **Ethylbenzene** | **100** | | 5.0 | 0.12 | ug/L | | | 05/01/24 13:32 | 1 |
| **Methyl tert-butyl ether** | **100** | | 5.0 | 0.19 | ug/L | | | 05/01/24 13:32 | 1 |
| **Naphthalene** | **120** | | 5.0 | 0.25 | ug/L | | | 05/01/24 13:32 | 1 |
| Toluene | ND | | 5.0 | 0.22 | ug/L | | | 05/01/24 13:32 | 1 |
| **m,p-Xylene** | **200** | | 10 | 0.36 | ug/L | | | 05/01/24 13:32 | 1 |
| o-Xylene | ND | | 5.0 | 0.21 | ug/L | | | 05/01/24 13:32 | 1 |
| **Xylenes, Total** | **200** | | 15 | 1.0 | ug/L | | | 05/01/24 13:32 | 1 |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) - DL

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C9-C12 Aliphatics (adjusted)** | **2400** | | 1000 | 150 | ug/L | | | 05/01/24 01:31 | 10 |
| **C9-C10 Aromatics** | **2300** | **B** | 1000 | 180 | ug/L | | | 05/01/24 01:31 | 10 |
| **C9-C12 Aliphatics (unadjusted)** | **4900** | **B** | 1000 | 150 | ug/L | | | 05/01/24 01:31 | 10 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *110* | | *70 - 130* | | *05/01/24 01:31* | *10* |
| *2,5-Dibromotoluene (pid)* | *107* | | *70 - 130* | | *05/01/24 01:31* | *10* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C9-C18 Aliphatics** | **360** | | 100 | 56 | ug/L | | 04/30/24 12:56 | 05/02/24 16:12 | 1 |
| C19-C36 Aliphatics | ND | | 100 | 85 | ug/L | | 04/30/24 12:56 | 05/02/24 16:12 | 1 |
| **C11-C22 Aromatics** | **200** | | 100 | 84 | ug/L | | 04/30/24 12:56 | 05/02/24 16:12 | 1 |
| **C11-C22 Aromatics (Adjusted)** | **130** | | 100 | 84 | ug/L | | 04/30/24 12:56 | 05/02/24 16:12 | 1 |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-18223-1

## Client Sample ID: GW-MW109-042324

**Date Collected: 04/23/24 14:30**
**Date Received: 04/24/24 16:34**

## Lab Sample ID: 620-18223-9

**Matrix: Water**

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *58* | | *40 - 140* | *04/30/24 12:56* | *05/02/24 16:12* | *1* |
| *o-Terphenyl (Surr)* | *60* | | *40 - 140* | *04/30/24 12:56* | *05/02/24 16:12* | *1* |
| *2-Fluorobiphenyl (Surr)* | *98* | | *40 - 140* | *04/30/24 12:56* | *05/02/24 16:12* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Antimony** | **0.0027** | **J** | 0.0060 | 0.0016 | mg/L | | 04/26/24 14:42 | 04/28/24 01:54 | 1 |
| **Arsenic** | **0.032** | | 0.0040 | 0.0014 | mg/L | | 04/26/24 14:42 | 04/28/24 01:54 | 1 |
| **Barium** | **0.028** | | 0.0050 | 0.00070 | mg/L | | 04/26/24 14:42 | 04/28/24 01:54 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 04/26/24 14:42 | 04/28/24 01:54 | 1 |
| Cadmium | ND | | 0.0025 | 0.00036 | mg/L | | 04/26/24 14:42 | 04/28/24 01:54 | 1 |
| Chromium | ND | | 0.0050 | 0.00093 | mg/L | | 04/26/24 14:42 | 04/28/24 01:54 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 04/26/24 14:42 | 04/28/24 01:54 | 1 |
| **Nickel** | **0.0017** | **J** | 0.0050 | 0.00087 | mg/L | | 04/26/24 14:42 | 04/28/24 01:54 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 04/26/24 14:42 | 04/28/24 01:54 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 04/26/24 14:42 | 04/28/24 01:54 | 1 |
| **Thallium** | **0.0027** | **J** | 0.0050 | 0.0021 | mg/L | | 04/26/24 14:42 | 04/28/24 01:54 | 1 |
| Vanadium | ND | | 0.0050 | 0.0011 | mg/L | | 04/26/24 14:42 | 04/28/24 01:54 | 1 |
| **Zinc** | **0.042** | **B** | 0.025 | 0.0016 | mg/L | | 04/26/24 14:42 | 04/28/24 01:54 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 04/30/24 10:36 | 04/30/24 16:06 | 1 |

## Client Sample ID: FD-01

**Date Collected: 04/23/24 08:00**
**Date Received: 04/24/24 16:34**

## Lab Sample ID: 620-18223-10

**Matrix: Water**

### Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 1.0 | 0.23 | ug/L | | 04/30/24 12:56 | 05/03/24 10:34 | 1 |
| 2-Methylnaphthalene | ND | | 1.0 | 0.29 | ug/L | | 04/30/24 12:56 | 05/03/24 10:34 | 1 |
| Acenaphthylene | ND | | 1.0 | 0.39 | ug/L | | 04/30/24 12:56 | 05/03/24 10:34 | 1 |
| Acenaphthene | ND | | 1.0 | 0.19 | ug/L | | 04/30/24 12:56 | 05/03/24 10:34 | 1 |
| Fluorene | ND | | 1.0 | 0.39 | ug/L | | 04/30/24 12:56 | 05/03/24 10:34 | 1 |
| Phenanthrene | ND | | 1.0 | 0.17 | ug/L | | 04/30/24 12:56 | 05/03/24 10:34 | 1 |
| Anthracene | ND | | 1.0 | 0.15 | ug/L | | 04/30/24 12:56 | 05/03/24 10:34 | 1 |
| Fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 04/30/24 12:56 | 05/03/24 10:34 | 1 |
| Pyrene | ND | | 1.0 | 0.14 | ug/L | | 04/30/24 12:56 | 05/03/24 10:34 | 1 |
| Benzo[a]anthracene | ND | | 1.0 | 0.070 | ug/L | | 04/30/24 12:56 | 05/03/24 10:34 | 1 |
| Chrysene | ND | | 1.0 | 0.14 | ug/L | | 04/30/24 12:56 | 05/03/24 10:34 | 1 |
| Benzo[b]fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 04/30/24 12:56 | 05/03/24 10:34 | 1 |
| Benzo[k]fluoranthene | ND | | 1.0 | 0.24 | ug/L | | 04/30/24 12:56 | 05/03/24 10:34 | 1 |
| Benzo[a]pyrene | ND | | 0.20 | 0.16 | ug/L | | 04/30/24 12:56 | 05/03/24 10:34 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.50 | 0.46 | ug/L | | 04/30/24 12:56 | 05/03/24 10:34 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.50 | 0.21 | ug/L | | 04/30/24 12:56 | 05/03/24 10:34 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.0 | 0.17 | ug/L | | 04/30/24 12:56 | 05/03/24 10:34 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *61* | | *40 - 140* | *04/30/24 12:56* | *05/03/24 10:34* | *1* |
| *2-Fluorobiphenyl (Surr)* | *92* | | *40 - 140* | *04/30/24 12:56* | *05/03/24 10:34* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C5-C8 Aliphatics (adjusted)** | **9.7** | **J B** | 100 | 6.9 | ug/L | | | 04/30/24 21:56 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 15 | ug/L | | | 04/30/24 21:56 | 1 |
| **C9-C10 Aromatics** | **25** | **J B** | 100 | 18 | ug/L | | | 04/30/24 21:56 | 1 |
| **C5-C8 Aliphatics (unadjusted)** | **9.7** | **J B** | 100 | 6.9 | ug/L | | | 04/30/24 21:56 | 1 |
| **C9-C12 Aliphatics (unadjusted)** | **31** | **J B** | 100 | 15 | ug/L | | | 04/30/24 21:56 | 1 |
| Benzene | ND | | 5.0 | 0.19 | ug/L | | | 04/30/24 21:56 | 1 |
| Ethylbenzene | ND | | 5.0 | 0.12 | ug/L | | | 04/30/24 21:56 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 0.19 | ug/L | | | 04/30/24 21:56 | 1 |
| Naphthalene | ND | | 5.0 | 0.25 | ug/L | | | 04/30/24 21:56 | 1 |
| Toluene | ND | | 5.0 | 0.22 | ug/L | | | 04/30/24 21:56 | 1 |
| m,p-Xylene | ND | | 10 | 0.36 | ug/L | | | 04/30/24 21:56 | 1 |
| o-Xylene | ND | | 5.0 | 0.21 | ug/L | | | 04/30/24 21:56 | 1 |
| Xylenes, Total | ND | | 15 | 1.0 | ug/L | | | 04/30/24 21:56 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *100* | | *70 - 130* | | *04/30/24 21:56* | *1* |
| *2,5-Dibromotoluene (pid)* | *99* | | *70 - 130* | | *04/30/24 21:56* | *1* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 100 | 56 | ug/L | | 04/30/24 12:56 | 05/02/24 16:40 | 1 |
| C19-C36 Aliphatics | ND | | 100 | 85 | ug/L | | 04/30/24 12:56 | 05/02/24 16:40 | 1 |
| C11-C22 Aromatics | ND | | 100 | 84 | ug/L | | 04/30/24 12:56 | 05/02/24 16:40 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 100 | 84 | ug/L | | 04/30/24 12:56 | 05/02/24 16:40 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *65* | | *40 - 140* | *04/30/24 12:56* | *05/02/24 16:40* | *1* |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-18223-1

## Client Sample ID: FD-01

**Date Collected: 04/23/24 08:00**
**Date Received: 04/24/24 16:34**

## Lab Sample ID: 620-18223-10

**Matrix: Water**

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *74* | | *40 - 140* | *04/30/24 12:56* | *05/02/24 16:40* | *1* |
| *2-Fluorobiphenyl (Surr)* | *93* | | *40 - 140* | *04/30/24 12:56* | *05/02/24 16:40* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Antimony** | **0.0037** | **J** | 0.0060 | 0.0016 | mg/L | | 04/26/24 14:42 | 04/28/24 01:12 | 1 |
| Arsenic | ND | | 0.0040 | 0.0014 | mg/L | | 04/26/24 14:42 | 04/28/24 01:12 | 1 |
| **Barium** | **0.14** | | 0.0050 | 0.00070 | mg/L | | 04/26/24 14:42 | 04/28/24 01:12 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 04/26/24 14:42 | 04/28/24 01:12 | 1 |
| Cadmium | ND | | 0.0025 | 0.00036 | mg/L | | 04/26/24 14:42 | 04/28/24 01:12 | 1 |
| Chromium | ND | | 0.0050 | 0.00093 | mg/L | | 04/26/24 14:42 | 04/28/24 01:12 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 04/26/24 14:42 | 04/28/24 01:12 | 1 |
| **Nickel** | **0.0014** | **J** | 0.0050 | 0.00087 | mg/L | | 04/26/24 14:42 | 04/28/24 01:12 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 04/26/24 14:42 | 04/28/24 01:12 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 04/26/24 14:42 | 04/28/24 01:12 | 1 |
| Thallium | ND | | 0.0050 | 0.0021 | mg/L | | 04/26/24 14:42 | 04/28/24 01:12 | 1 |
| Vanadium | ND | | 0.0050 | 0.0011 | mg/L | | 04/26/24 14:42 | 04/28/24 01:12 | 1 |
| **Zinc** | **0.051** | **B** | 0.025 | 0.0016 | mg/L | | 04/26/24 14:42 | 04/28/24 01:12 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 04/30/24 10:54 | 04/30/24 16:13 | 1 |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-18223-1

**Client Sample ID: TB-01**
**Date Collected: 04/22/24 08:00**
**Date Received: 04/24/24 16:34**

**Lab Sample ID: 620-18223-11**
**Matrix: Water**

**Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)**

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C5-C8 Aliphatics (adjusted)** | **7.5** | **J B** | 100 | 6.9 | ug/L | | | 04/30/24 18:21 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 15 | ug/L | | | 04/30/24 18:21 | 1 |
| **C9-C10 Aromatics** | **21** | **J B** | 100 | 18 | ug/L | | | 04/30/24 18:21 | 1 |
| **C5-C8 Aliphatics (unadjusted)** | **7.5** | **J B** | 100 | 6.9 | ug/L | | | 04/30/24 18:21 | 1 |
| **C9-C12 Aliphatics (unadjusted)** | **19** | **J B** | 100 | 15 | ug/L | | | 04/30/24 18:21 | 1 |
| Benzene | ND | | 5.0 | 0.19 | ug/L | | | 04/30/24 18:21 | 1 |
| Ethylbenzene | ND | | 5.0 | 0.12 | ug/L | | | 04/30/24 18:21 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 0.19 | ug/L | | | 04/30/24 18:21 | 1 |
| Naphthalene | ND | | 5.0 | 0.25 | ug/L | | | 04/30/24 18:21 | 1 |
| Toluene | ND | | 5.0 | 0.22 | ug/L | | | 04/30/24 18:21 | 1 |
| m,p-Xylene | ND | | 10 | 0.36 | ug/L | | | 04/30/24 18:21 | 1 |
| o-Xylene | ND | | 5.0 | 0.21 | ug/L | | | 04/30/24 18:21 | 1 |
| Xylenes, Total | ND | | 15 | 1.0 | ug/L | | | 04/30/24 18:21 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *93* | | *70 - 130* | | *04/30/24 18:21* | *1* |
| *2,5-Dibromotoluene (pid)* | *94* | | *70 - 130* | | *04/30/24 18:21* | *1* |

# Surrogate Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-18223-1

## Method: EPH - Extractable Petroleum Hydrocarbons (GC/MS)

**Matrix: Water**

**Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab Sample ID | Client Sample ID | OTPH (40-140) | FBP (40-140) | | | | | | | | | | |
| 620-18223-1 | GW-MW101-042324 | 56 | 117 | | | | | | | | | | |
| 620-18223-2 | GW-MW102R-042324 | 62 | 112 | | | | | | | | | | |
| 620-18223-2 | GW-MW102R-042324 | 55 | 104 | | | | | | | | | | |
| 620-18223-3 | GW-MW103-042324 | 64 | 110 | | | | | | | | | | |
| 620-18223-4 | GW-MW104-042324 | 70 | 117 | | | | | | | | | | |
| 620-18223-5 | GW-MW105-042324 | 56 | 92 | | | | | | | | | | |
| 620-18223-6 | GW-MW106-042324 | 62 | 99 | | | | | | | | | | |
| 620-18223-7 | GW-MW107-042324 | 60 | 93 | | | | | | | | | | |
| 620-18223-8 | GW-MW108-042324 | 59 | 91 | | | | | | | | | | |
| 620-18223-8 MS | GW-MW108-042324 | 62 | 94 | | | | | | | | | | |
| 620-18223-8 MSD | GW-MW108-042324 | 70 | 100 | | | | | | | | | | |
| 620-18223-9 | GW-MW109-042324 | 55 | 87 | | | | | | | | | | |
| 620-18223-10 | FD-01 | 61 | 92 | | | | | | | | | | |
| LCS 620-34187/4-B | Lab Control Sample | 62 | 113 | | | | | | | | | | |
| LCS 620-34272/4-B | Lab Control Sample | 58 | 96 | | | | | | | | | | |
| LCSD 620-34187/5-B | Lab Control Sample Dup | 60 | 113 | | | | | | | | | | |
| LCSD 620-34272/5-B | Lab Control Sample Dup | 63 | 98 | | | | | | | | | | |
| MB 620-34187/1-B | Method Blank | 59 | 107 | | | | | | | | | | |
| MB 620-34272/1-B | Method Blank | 49 | 92 | | | | | | | | | | |

**Surrogate Legend**

OTPH = o-Terphenyl (Surr)

FBP = 2-Fluorobiphenyl (Surr)

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

**Matrix: Water**

**Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab Sample ID | Client Sample ID | 25DBTf1 (70-130) | 25DBTp1 (70-130) | | | | | | | | | | |
| 620-18223-1 | GW-MW101-042324 | 109 | 107 | | | | | | | | | | |
| 620-18223-2 - DL | GW-MW102R-042324 | 108 | 108 | | | | | | | | | | |
| 620-18223-2 - DL2 | GW-MW102R-042324 | 96 | 96 | | | | | | | | | | |
| 620-18223-3 | GW-MW103-042324 | 101 | 99 | | | | | | | | | | |
| 620-18223-4 | GW-MW104-042324 | 92 | 92 | | | | | | | | | | |
| 620-18223-5 | GW-MW105-042324 | 95 | 95 | | | | | | | | | | |
| 620-18223-6 | GW-MW106-042324 | 102 | 100 | | | | | | | | | | |
| 620-18223-6 - DL | GW-MW106-042324 | 107 | 106 | | | | | | | | | | |
| 620-18223-7 | GW-MW107-042324 | 102 | 100 | | | | | | | | | | |
| 620-18223-8 | GW-MW108-042324 | 99 | 97 | | | | | | | | | | |
| 620-18223-8 MS | GW-MW108-042324 | 102 | 102 | | | | | | | | | | |
| 620-18223-8 MSD | GW-MW108-042324 | 99 | 97 | | | | | | | | | | |
| 620-18223-9 - DL | GW-MW109-042324 | 110 | 107 | | | | | | | | | | |
| 620-18223-10 | FD-01 | 100 | 99 | | | | | | | | | | |
| 620-18223-11 | TB-01 | 93 | 94 | | | | | | | | | | |
| LCS 620-34227/2 | Lab Control Sample | 91 | 90 | | | | | | | | | | |
| LCS 620-34261/12 | Lab Control Sample | 97 | 97 | | | | | | | | | | |
| LCSD 620-34227/3 | Lab Control Sample Dup | 94 | 91 | | | | | | | | | | |
| LCSD 620-34261/13 | Lab Control Sample Dup | 95 | 96 | | | | | | | | | | |
| MB 620-34227/4 | Method Blank | 94 | 92 | | | | | | | | | | |

# Surrogate Summary

Client: Nobis Engineering, Inc. Job ID: 620-18223-1
Project/Site: Former L&M - Lunenburg MA

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) (Continued)

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

| | | Percent Surrogate Recovery (Acceptance Limits) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab Sample ID | Client Sample ID | 25DBTf1 (70-130) | 25DBTp1 (70-130) | | | | | | | | |
| MB 620-34261/14 | Method Blank | 97 | 95 | | | | | | | | |

**Surrogate Legend**

25DBTf = 2,5-Dibromotoluene (fid)
25DBTp = 2,5-Dibromotoluene (pid)

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

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

| | | Percent Surrogate Recovery (Acceptance Limits) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab Sample ID | Client Sample ID | 1COD1 (40-140) | OTPH1 (40-140) | FBP1 (40-140) | | | | | | | |
| 620-18223-1 | GW-MW101-042324 | 41 | 53 | 116 | | | | | | | |
| 620-18223-2 | GW-MW102R-042324 | 49 | 58 | 110 | | | | | | | |
| 620-18223-3 | GW-MW103-042324 | 58 | 68 | 117 | | | | | | | |
| 620-18223-4 | GW-MW104-042324 | 57 | 69 | 114 | | | | | | | |
| 620-18223-5 | GW-MW105-042324 | 56 | 61 | 97 | | | | | | | |
| 620-18223-6 | GW-MW106-042324 | 48 | 62 | 98 | | | | | | | |
| 620-18223-7 | GW-MW107-042324 | 70 | 61 | 77 | | | | | | | |
| 620-18223-8 | GW-MW108-042324 | 63 | 65 | 80 | | | | | | | |
| 620-18223-8 MS | GW-MW108-042324 | 52 | 44 | 86 | | | | | | | |
| 620-18223-8 MSD | GW-MW108-042324 | 66 | 61 | 104 | | | | | | | |
| 620-18223-9 | GW-MW109-042324 | 58 | 60 | 98 | | | | | | | |
| 620-18223-10 | FD-01 | 65 | 74 | 93 | | | | | | | |
| LCS 620-34187/2-B | Lab Control Sample | 62 | 61 | 119 | | | | | | | |
| LCS 620-34272/2-B | Lab Control Sample | 66 | 62 | 105 | | | | | | | |
| LCSD 620-34187/3-B | Lab Control Sample Dup | 64 | 69 | 118 | | | | | | | |
| LCSD 620-34272/3-B | Lab Control Sample Dup | 68 | 61 | 101 | | | | | | | |
| MB 620-34187/1-B | Method Blank | 50 | 62 | 119 | | | | | | | |
| MB 620-34272/1-B | Method Blank | 57 | 54 | 101 | | | | | | | |

**Surrogate Legend**

1COD = 1-Chlorooctadecane (Surr)
OTPH = o-Terphenyl (Surr)
FBP = 2-Fluorobiphenyl (Surr)

## Method: EPH - Extractable Petroleum Hydrocarbons (GC/MS)

**Lab Sample ID: MB 620-34187/1-B**
**Matrix: Water**
**Analysis Batch: 34336**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 34187**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 1.0 | 0.23 | ug/L | | 04/26/24 12:00 | 05/02/24 11:37 | 1 |
| 2-Methylnaphthalene | ND | | 1.0 | 0.29 | ug/L | | 04/26/24 12:00 | 05/02/24 11:37 | 1 |
| Acenaphthylene | ND | | 1.0 | 0.39 | ug/L | | 04/26/24 12:00 | 05/02/24 11:37 | 1 |
| Acenaphthene | ND | | 1.0 | 0.19 | ug/L | | 04/26/24 12:00 | 05/02/24 11:37 | 1 |
| Fluorene | ND | | 1.0 | 0.39 | ug/L | | 04/26/24 12:00 | 05/02/24 11:37 | 1 |
| Phenanthrene | ND | | 1.0 | 0.17 | ug/L | | 04/26/24 12:00 | 05/02/24 11:37 | 1 |
| Anthracene | ND | | 1.0 | 0.15 | ug/L | | 04/26/24 12:00 | 05/02/24 11:37 | 1 |
| Fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 04/26/24 12:00 | 05/02/24 11:37 | 1 |
| Pyrene | ND | | 1.0 | 0.14 | ug/L | | 04/26/24 12:00 | 05/02/24 11:37 | 1 |
| Benzo[a]anthracene | ND | | 1.0 | 0.070 | ug/L | | 04/26/24 12:00 | 05/02/24 11:37 | 1 |
| Chrysene | ND | | 1.0 | 0.14 | ug/L | | 04/26/24 12:00 | 05/02/24 11:37 | 1 |
| Benzo[b]fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 04/26/24 12:00 | 05/02/24 11:37 | 1 |
| Benzo[k]fluoranthene | ND | | 1.0 | 0.24 | ug/L | | 04/26/24 12:00 | 05/02/24 11:37 | 1 |
| Benzo[a]pyrene | ND | | 0.20 | 0.16 | ug/L | | 04/26/24 12:00 | 05/02/24 11:37 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.50 | 0.46 | ug/L | | 04/26/24 12:00 | 05/02/24 11:37 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.50 | 0.21 | ug/L | | 04/26/24 12:00 | 05/02/24 11:37 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.0 | 0.17 | ug/L | | 04/26/24 12:00 | 05/02/24 11:37 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *59* | | *40 - 140* | *04/26/24 12:00* | *05/02/24 11:37* | *1* |
| *2-Fluorobiphenyl (Surr)* | *107* | | *40 - 140* | *04/26/24 12:00* | *05/02/24 11:37* | *1* |

**Lab Sample ID: LCS 620-34187/4-B**
**Matrix: Water**
**Analysis Batch: 34336**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 34187**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Naphthalene | 5.00 | 1.85 | *- | ug/L | | 37 | 40 - 140 |
| 2-Methylnaphthalene | 5.00 | 1.83 | *- | ug/L | | 37 | 40 - 140 |
| Acenaphthylene | 5.00 | 1.79 | *- | ug/L | | 36 | 40 - 140 |
| Acenaphthene | 5.00 | 1.98 | | ug/L | | 40 | 40 - 140 |
| Fluorene | 5.00 | 1.89 | *- | ug/L | | 38 | 40 - 140 |
| Phenanthrene | 5.00 | 2.54 | | ug/L | | 51 | 40 - 140 |
| Anthracene | 5.00 | 2.07 | | ug/L | | 41 | 40 - 140 |
| Fluoranthene | 5.00 | 4.14 | | ug/L | | 83 | 40 - 140 |
| Pyrene | 5.00 | 4.14 | | ug/L | | 83 | 40 - 140 |
| Benzo[a]anthracene | 5.00 | 4.15 | | ug/L | | 83 | 40 - 140 |
| Chrysene | 5.00 | 3.82 | | ug/L | | 76 | 40 - 140 |
| Benzo[b]fluoranthene | 5.00 | 4.54 | | ug/L | | 91 | 40 - 140 |
| Benzo[k]fluoranthene | 5.00 | 4.41 | | ug/L | | 88 | 40 - 140 |
| Benzo[a]pyrene | 5.00 | 3.40 | | ug/L | | 68 | 40 - 140 |
| Indeno[1,2,3-cd]pyrene | 5.00 | 3.89 | | ug/L | | 78 | 40 - 140 |
| Dibenz(a,h)anthracene | 5.00 | 3.20 | | ug/L | | 64 | 40 - 140 |
| Benzo[g,h,i]perylene | 5.00 | 4.28 | | ug/L | | 86 | 40 - 140 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl (Surr)* | *62* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *113* | | *40 - 140* |

## Method: EPH - Extractable Petroleum Hydrocarbons (GC/MS)

**Lab Sample ID: LCSD 620-34187/5-B**
**Matrix: Water**
**Analysis Batch: 34336**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 34187**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | | | 5.00 | 2.43 | *1 | ug/L | | 49 | 40 - 140 | 27 | 25 |
| 2-Methylnaphthalene | | | 5.00 | 2.41 | *1 | ug/L | | 48 | 40 - 140 | 27 | 25 |
| Acenaphthylene | | | 5.00 | 2.37 | *1 | ug/L | | 47 | 40 - 140 | 28 | 25 |
| Acenaphthene | | | 5.00 | 2.53 | | ug/L | | 51 | 40 - 140 | 24 | 25 |
| Fluorene | | | 5.00 | 2.52 | *1 | ug/L | | 50 | 40 - 140 | 28 | 25 |
| Phenanthrene | | | 5.00 | 2.88 | | ug/L | | 58 | 40 - 140 | 12 | 25 |
| Anthracene | | | 5.00 | 2.76 | *1 | ug/L | | 55 | 40 - 140 | 29 | 25 |
| Fluoranthene | | | 5.00 | 3.80 | | ug/L | | 76 | 40 - 140 | 9 | 25 |
| Pyrene | | | 5.00 | 3.77 | | ug/L | | 75 | 40 - 140 | 9 | 25 |
| Benzo[a]anthracene | | | 5.00 | 3.64 | | ug/L | | 73 | 40 - 140 | 13 | 25 |
| Chrysene | | | 5.00 | 3.13 | | ug/L | | 63 | 40 - 140 | 20 | 25 |
| Benzo[b]fluoranthene | | | 5.00 | 3.70 | | ug/L | | 74 | 40 - 140 | 20 | 25 |
| Benzo[k]fluoranthene | | | 5.00 | 3.71 | | ug/L | | 74 | 40 - 140 | 17 | 25 |
| Benzo[a]pyrene | | | 5.00 | 2.79 | | ug/L | | 56 | 40 - 140 | 20 | 25 |
| Indeno[1,2,3-cd]pyrene | | | 5.00 | 2.97 | *1 | ug/L | | 59 | 40 - 140 | 27 | 25 |
| Dibenz(a,h)anthracene | | | 5.00 | 2.53 | | ug/L | | 51 | 40 - 140 | 23 | 25 |
| Benzo[g,h,i]perylene | | | 5.00 | 3.28 | *1 | ug/L | | 66 | 40 - 140 | 27 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl (Surr)* | *60* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *113* | | *40 - 140* |

**Lab Sample ID: MB 620-34272/1-B**
**Matrix: Water**
**Analysis Batch: 34336**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 34272**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 1.0 | 0.23 | ug/L | | 04/30/24 12:56 | 05/02/24 12:44 | 1 |
| 2-Methylnaphthalene | ND | | 1.0 | 0.29 | ug/L | | 04/30/24 12:56 | 05/02/24 12:44 | 1 |
| Acenaphthylene | ND | | 1.0 | 0.39 | ug/L | | 04/30/24 12:56 | 05/02/24 12:44 | 1 |
| Acenaphthene | ND | | 1.0 | 0.19 | ug/L | | 04/30/24 12:56 | 05/02/24 12:44 | 1 |
| Fluorene | ND | | 1.0 | 0.39 | ug/L | | 04/30/24 12:56 | 05/02/24 12:44 | 1 |
| Phenanthrene | ND | | 1.0 | 0.17 | ug/L | | 04/30/24 12:56 | 05/02/24 12:44 | 1 |
| Anthracene | ND | | 1.0 | 0.15 | ug/L | | 04/30/24 12:56 | 05/02/24 12:44 | 1 |
| Fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 04/30/24 12:56 | 05/02/24 12:44 | 1 |
| Pyrene | ND | | 1.0 | 0.14 | ug/L | | 04/30/24 12:56 | 05/02/24 12:44 | 1 |
| Benzo[a]anthracene | ND | | 1.0 | 0.070 | ug/L | | 04/30/24 12:56 | 05/02/24 12:44 | 1 |
| Chrysene | ND | | 1.0 | 0.14 | ug/L | | 04/30/24 12:56 | 05/02/24 12:44 | 1 |
| Benzo[b]fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 04/30/24 12:56 | 05/02/24 12:44 | 1 |
| Benzo[k]fluoranthene | ND | | 1.0 | 0.24 | ug/L | | 04/30/24 12:56 | 05/02/24 12:44 | 1 |
| Benzo[a]pyrene | ND | | 0.20 | 0.16 | ug/L | | 04/30/24 12:56 | 05/02/24 12:44 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.50 | 0.46 | ug/L | | 04/30/24 12:56 | 05/02/24 12:44 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.50 | 0.21 | ug/L | | 04/30/24 12:56 | 05/02/24 12:44 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.0 | 0.17 | ug/L | | 04/30/24 12:56 | 05/02/24 12:44 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *49* | | *40 - 140* | *04/30/24 12:56* | *05/02/24 12:44* | *1* |
| *2-Fluorobiphenyl (Surr)* | *92* | | *40 - 140* | *04/30/24 12:56* | *05/02/24 12:44* | *1* |

## Method: EPH - Extractable Petroleum Hydrocarbons (GC/MS)

**Lab Sample ID: LCS 620-34272/4-B**
**Matrix: Water**
**Analysis Batch: 34336**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 34272**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | | | 5.00 | 2.39 | | ug/L | | 48 | 40 - 140 | | |
| 2-Methylnaphthalene | | | 5.00 | 2.02 | | ug/L | | 40 | 40 - 140 | | |
| Acenaphthylene | | | 5.00 | 2.12 | | ug/L | | 42 | 40 - 140 | | |
| Acenaphthene | | | 5.00 | 2.26 | | ug/L | | 45 | 40 - 140 | | |
| Fluorene | | | 5.00 | 2.30 | | ug/L | | 46 | 40 - 140 | | |
| Phenanthrene | | | 5.00 | 2.42 | | ug/L | | 48 | 40 - 140 | | |
| Anthracene | | | 5.00 | 2.01 | | ug/L | | 40 | 40 - 140 | | |
| Fluoranthene | | | 5.00 | 3.18 | | ug/L | | 64 | 40 - 140 | | |
| Pyrene | | | 5.00 | 3.22 | | ug/L | | 64 | 40 - 140 | | |
| Benzo[a]anthracene | | | 5.00 | 3.24 | | ug/L | | 65 | 40 - 140 | | |
| Chrysene | | | 5.00 | 3.09 | | ug/L | | 62 | 40 - 140 | | |
| Benzo[b]fluoranthene | | | 5.00 | 3.72 | | ug/L | | 74 | 40 - 140 | | |
| Benzo[k]fluoranthene | | | 5.00 | 3.88 | | ug/L | | 78 | 40 - 140 | | |
| Benzo[a]pyrene | | | 5.00 | 2.79 | | ug/L | | 56 | 40 - 140 | | |
| Indeno[1,2,3-cd]pyrene | | | 5.00 | 3.48 | | ug/L | | 70 | 40 - 140 | | |
| Dibenz(a,h)anthracene | | | 5.00 | 2.86 | | ug/L | | 57 | 40 - 140 | | |
| Benzo[g,h,i]perylene | | | 5.00 | 3.90 | | ug/L | | 78 | 40 - 140 | | |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl (Surr)* | *58* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *96* | | *40 - 140* |

**Lab Sample ID: LCSD 620-34272/5-B**
**Matrix: Water**
**Analysis Batch: 34336**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 34272**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | | | 5.00 | 2.21 | | ug/L | | 44 | 40 - 140 | 8 | 25 |
| 2-Methylnaphthalene | | | 5.00 | 2.24 | | ug/L | | 45 | 40 - 140 | 10 | 25 |
| Acenaphthylene | | | 5.00 | 2.25 | | ug/L | | 45 | 40 - 140 | 6 | 25 |
| Acenaphthene | | | 5.00 | 2.38 | | ug/L | | 48 | 40 - 140 | 5 | 25 |
| Fluorene | | | 5.00 | 2.28 | | ug/L | | 46 | 40 - 140 | 1 | 25 |
| Phenanthrene | | | 5.00 | 2.63 | | ug/L | | 53 | 40 - 140 | 8 | 25 |
| Anthracene | | | 5.00 | 2.28 | | ug/L | | 46 | 40 - 140 | 12 | 25 |
| Fluoranthene | | | 5.00 | 3.52 | | ug/L | | 70 | 40 - 140 | 10 | 25 |
| Pyrene | | | 5.00 | 3.59 | | ug/L | | 72 | 40 - 140 | 11 | 25 |
| Benzo[a]anthracene | | | 5.00 | 3.44 | | ug/L | | 69 | 40 - 140 | 6 | 25 |
| Chrysene | | | 5.00 | 2.95 | | ug/L | | 59 | 40 - 140 | 5 | 25 |
| Benzo[b]fluoranthene | | | 5.00 | 3.86 | | ug/L | | 77 | 40 - 140 | 4 | 25 |
| Benzo[k]fluoranthene | | | 5.00 | 4.05 | | ug/L | | 81 | 40 - 140 | 4 | 25 |
| Benzo[a]pyrene | | | 5.00 | 3.07 | | ug/L | | 61 | 40 - 140 | 10 | 25 |
| Indeno[1,2,3-cd]pyrene | | | 5.00 | 3.44 | | ug/L | | 69 | 40 - 140 | 1 | 25 |
| Dibenz(a,h)anthracene | | | 5.00 | 2.88 | | ug/L | | 58 | 40 - 140 | 1 | 25 |
| Benzo[g,h,i]perylene | | | 5.00 | 3.70 | | ug/L | | 74 | 40 - 140 | 5 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl (Surr)* | *63* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *98* | | *40 - 140* |

## Method: EPH - Extractable Petroleum Hydrocarbons (GC/MS)

**Lab Sample ID: 620-18223-8 MS**
**Matrix: Water**
**Analysis Batch: 34336**

**Client Sample ID: GW-MW108-042324**
**Prep Type: Total/NA**
**Prep Batch: 34272**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 5.00 | 2.09 | | ug/L | | 42 | 40 - 140 |
| 2-Methylnaphthalene | ND | | 5.00 | 2.03 | | ug/L | | 41 | 40 - 140 |
| Acenaphthylene | ND | F1 | 5.00 | 1.96 | F1 | ug/L | | 39 | 40 - 140 |
| Acenaphthene | ND | | 5.00 | 2.04 | | ug/L | | 41 | 40 - 140 |
| Fluorene | ND | | 5.00 | 2.11 | | ug/L | | 42 | 40 - 140 |
| Phenanthrene | ND | | 5.00 | 2.55 | | ug/L | | 51 | 40 - 140 |
| Anthracene | ND | | 5.00 | 2.38 | | ug/L | | 48 | 40 - 140 |
| Fluoranthene | ND | | 5.00 | 3.50 | | ug/L | | 70 | 40 - 140 |
| Pyrene | ND | | 5.00 | 3.40 | | ug/L | | 68 | 40 - 140 |
| Benzo[a]anthracene | ND | | 5.00 | 3.13 | | ug/L | | 63 | 40 - 140 |
| Chrysene | ND | | 5.00 | 2.63 | | ug/L | | 53 | 40 - 140 |
| Benzo[b]fluoranthene | ND | | 5.00 | 3.14 | | ug/L | | 63 | 40 - 140 |
| Benzo[k]fluoranthene | ND | | 5.00 | 3.67 | | ug/L | | 73 | 40 - 140 |
| Benzo[a]pyrene | ND | | 5.00 | 2.50 | | ug/L | | 50 | 40 - 140 |
| Indeno[1,2,3-cd]pyrene | ND | | 5.00 | 2.83 | | ug/L | | 57 | 40 - 140 |
| Dibenz(a,h)anthracene | ND | | 5.00 | 2.37 | | ug/L | | 47 | 40 - 140 |
| Benzo[g,h,i]perylene | ND | | 5.00 | 2.97 | | ug/L | | 59 | 40 - 140 |

| *Surrogate* | *MS %Recovery* | *MS Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl (Surr)* | *62* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *94* | | *40 - 140* |

**Lab Sample ID: 620-18223-8 MSD**
**Matrix: Water**
**Analysis Batch: 34336**

**Client Sample ID: GW-MW108-042324**
**Prep Type: Total/NA**
**Prep Batch: 34272**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 5.00 | 2.25 | | ug/L | | 45 | 40 - 140 | 8 | 50 |
| 2-Methylnaphthalene | ND | | 5.00 | 2.25 | | ug/L | | 45 | 40 - 140 | 10 | 50 |
| Acenaphthylene | ND | F1 | 5.00 | 2.24 | | ug/L | | 45 | 40 - 140 | 13 | 50 |
| Acenaphthene | ND | | 5.00 | 2.39 | | ug/L | | 48 | 40 - 140 | 16 | 50 |
| Fluorene | ND | | 5.00 | 2.39 | | ug/L | | 48 | 40 - 140 | 13 | 50 |
| Phenanthrene | ND | | 5.00 | 3.01 | | ug/L | | 60 | 40 - 140 | 17 | 50 |
| Anthracene | ND | | 5.00 | 2.57 | | ug/L | | 51 | 40 - 140 | 8 | 50 |
| Fluoranthene | ND | | 5.00 | 3.85 | | ug/L | | 77 | 40 - 140 | 10 | 50 |
| Pyrene | ND | | 5.00 | 3.75 | | ug/L | | 75 | 40 - 140 | 10 | 50 |
| Benzo[a]anthracene | ND | | 5.00 | 3.29 | | ug/L | | 66 | 40 - 140 | 5 | 50 |
| Chrysene | ND | | 5.00 | 3.44 | | ug/L | | 69 | 40 - 140 | 27 | 50 |
| Benzo[b]fluoranthene | ND | | 5.00 | 3.56 | | ug/L | | 71 | 40 - 140 | 13 | 50 |
| Benzo[k]fluoranthene | ND | | 5.00 | 3.82 | | ug/L | | 76 | 40 - 140 | 4 | 50 |
| Benzo[a]pyrene | ND | | 5.00 | 2.65 | | ug/L | | 53 | 40 - 140 | 6 | 50 |
| Indeno[1,2,3-cd]pyrene | ND | | 5.00 | 3.21 | | ug/L | | 64 | 40 - 140 | 12 | 50 |
| Dibenz(a,h)anthracene | ND | | 5.00 | 2.41 | | ug/L | | 48 | 40 - 140 | 2 | 50 |
| Benzo[g,h,i]perylene | ND | | 5.00 | 3.36 | | ug/L | | 67 | 40 - 140 | 12 | 50 |

| *Surrogate* | *MSD %Recovery* | *MSD Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl (Surr)* | *70* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *100* | | *40 - 140* |

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

**Lab Sample ID: MB 620-34227/4**
**Matrix: Water**
**Analysis Batch: 34227**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | 7.69 | J | 100 | 6.9 | ug/L | | | 04/29/24 11:38 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 15 | ug/L | | | 04/29/24 11:38 | 1 |
| C9-C10 Aromatics | 22.0 | J | 100 | 18 | ug/L | | | 04/29/24 11:38 | 1 |
| C5-C8 Aliphatics (unadjusted) | 7.69 | J | 100 | 6.9 | ug/L | | | 04/29/24 11:38 | 1 |
| C9-C12 Aliphatics (unadjusted) | 22.2 | J | 100 | 15 | ug/L | | | 04/29/24 11:38 | 1 |
| Benzene | ND | | 5.0 | 0.19 | ug/L | | | 04/29/24 11:38 | 1 |
| Ethylbenzene | ND | | 5.0 | 0.12 | ug/L | | | 04/29/24 11:38 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 0.19 | ug/L | | | 04/29/24 11:38 | 1 |
| Naphthalene | ND | | 5.0 | 0.25 | ug/L | | | 04/29/24 11:38 | 1 |
| Toluene | ND | | 5.0 | 0.22 | ug/L | | | 04/29/24 11:38 | 1 |
| m,p-Xylene | ND | | 10 | 0.36 | ug/L | | | 04/29/24 11:38 | 1 |
| o-Xylene | ND | | 5.0 | 0.21 | ug/L | | | 04/29/24 11:38 | 1 |
| Xylenes, Total | ND | | 15 | 1.0 | ug/L | | | 04/29/24 11:38 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *94* | | *70 - 130* | | *04/29/24 11:38* | *1* |
| *2,5-Dibromotoluene (pid)* | *92* | | *70 - 130* | | *04/29/24 11:38* | *1* |

**Lab Sample ID: LCS 620-34227/2**
**Matrix: Water**
**Analysis Batch: 34227**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | 20.0 | ND | | ug/L | | 101 | 70 - 130 |
| C5-C8 Aliphatics (unadjusted) | 60.0 | ND | | ug/L | | 93 | 70 - 130 |
| C9-C12 Aliphatics (unadjusted) | 60.0 | ND | | ug/L | | 96 | 70 - 130 |
| Benzene | 20.0 | 18.9 | | ug/L | | 94 | 70 - 130 |
| Ethylbenzene | 20.0 | 18.8 | | ug/L | | 94 | 70 - 130 |
| Methyl tert-butyl ether | 20.0 | 18.0 | | ug/L | | 90 | 70 - 130 |
| Naphthalene | 20.0 | 18.1 | | ug/L | | 91 | 70 - 130 |
| Toluene | 20.0 | 19.3 | | ug/L | | 96 | 70 - 130 |
| m,p-Xylene | 40.0 | 38.6 | | ug/L | | 96 | 70 - 130 |
| o-Xylene | 20.0 | 19.2 | | ug/L | | 96 | 70 - 130 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *91* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *90* | | *70 - 130* |

**Lab Sample ID: LCSD 620-34227/3**
**Matrix: Water**
**Analysis Batch: 34227**

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

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | 20.0 | ND | | ug/L | | 97 | 70 - 130 | 5 | 25 |
| C5-C8 Aliphatics (unadjusted) | 60.0 | ND | | ug/L | | 85 | 70 - 130 | 8 | 25 |
| C9-C12 Aliphatics (unadjusted) | 60.0 | ND | | ug/L | | 86 | 70 - 130 | 11 | 25 |
| Benzene | 20.0 | 18.0 | | ug/L | | 90 | 70 - 130 | 5 | 25 |
| Ethylbenzene | 20.0 | 18.0 | | ug/L | | 90 | 70 - 130 | 5 | 25 |

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: LCSD 620-34227/3**
**Matrix: Water**
**Analysis Batch: 34227**

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

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Methyl tert-butyl ether | | | 20.0 | 17.5 | | ug/L | | 87 | 70 - 130 | 3 | 25 |
| Naphthalene | | | 20.0 | 18.6 | | ug/L | | 93 | 70 - 130 | 3 | 25 |
| Toluene | | | 20.0 | 18.4 | | ug/L | | 92 | 70 - 130 | 4 | 25 |
| m,p-Xylene | | | 40.0 | 37.0 | | ug/L | | 92 | 70 - 130 | 4 | 25 |
| o-Xylene | | | 20.0 | 18.4 | | ug/L | | 92 | 70 - 130 | 4 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *94* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *91* | | *70 - 130* |

**Lab Sample ID: MB 620-34261/14**
**Matrix: Water**
**Analysis Batch: 34261**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | 8.37 | J | 100 | 6.9 | ug/L | | | 04/30/24 17:50 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 15 | ug/L | | | 04/30/24 17:50 | 1 |
| C9-C10 Aromatics | 20.9 | J | 100 | 18 | ug/L | | | 04/30/24 17:50 | 1 |
| C5-C8 Aliphatics (unadjusted) | 8.37 | J | 100 | 6.9 | ug/L | | | 04/30/24 17:50 | 1 |
| C9-C12 Aliphatics (unadjusted) | 20.0 | J | 100 | 15 | ug/L | | | 04/30/24 17:50 | 1 |
| Benzene | ND | | 5.0 | 0.19 | ug/L | | | 04/30/24 17:50 | 1 |
| Ethylbenzene | ND | | 5.0 | 0.12 | ug/L | | | 04/30/24 17:50 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 0.19 | ug/L | | | 04/30/24 17:50 | 1 |
| Naphthalene | ND | | 5.0 | 0.25 | ug/L | | | 04/30/24 17:50 | 1 |
| Toluene | ND | | 5.0 | 0.22 | ug/L | | | 04/30/24 17:50 | 1 |
| m,p-Xylene | ND | | 10 | 0.36 | ug/L | | | 04/30/24 17:50 | 1 |
| o-Xylene | ND | | 5.0 | 0.21 | ug/L | | | 04/30/24 17:50 | 1 |
| Xylenes, Total | ND | | 15 | 1.0 | ug/L | | | 04/30/24 17:50 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *97* | | *70 - 130* | | *04/30/24 17:50* | *1* |
| *2,5-Dibromotoluene (pid)* | *95* | | *70 - 130* | | *04/30/24 17:50* | *1* |

**Lab Sample ID: LCS 620-34261/12**
**Matrix: Water**
**Analysis Batch: 34261**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | | | 20.0 | 19.8 | J | ug/L | | 99 | 70 - 130 | | |
| C5-C8 Aliphatics (unadjusted) | | | 60.0 | 52.5 | J | ug/L | | 88 | 70 - 130 | | |
| C9-C12 Aliphatics (unadjusted) | | | 60.0 | 51.6 | J | ug/L | | 86 | 70 - 130 | | |
| Benzene | | | 20.0 | 18.9 | | ug/L | | 94 | 70 - 130 | | |
| Ethylbenzene | | | 20.0 | 19.0 | | ug/L | | 95 | 70 - 130 | | |
| Methyl tert-butyl ether | | | 20.0 | 18.4 | | ug/L | | 92 | 70 - 130 | | |
| Naphthalene | | | 20.0 | 19.2 | | ug/L | | 96 | 70 - 130 | | |
| Toluene | | | 20.0 | 19.0 | | ug/L | | 95 | 70 - 130 | | |
| m,p-Xylene | | | 40.0 | 38.8 | | ug/L | | 97 | 70 - 130 | | |
| o-Xylene | | | 20.0 | 19.5 | | ug/L | | 98 | 70 - 130 | | |

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: LCS 620-34261/12**
**Matrix: Water**
**Analysis Batch: 34261**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**

| Surrogate | LCS %Recovery | LCS Qualifier | Limits |
|---|---|---|---|
| 2,5-Dibromotoluene (fid) | 97 | | 70 - 130 |
| 2,5-Dibromotoluene (pid) | 97 | | 70 - 130 |

**Lab Sample ID: LCSD 620-34261/13**
**Matrix: Water**
**Analysis Batch: 34261**

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

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | | | 20.0 | 20.5 | J | ug/L | | 102 | 70 - 130 | 3 | 25 |
| C5-C8 Aliphatics (unadjusted) | | | 60.0 | 54.2 | J | ug/L | | 90 | 70 - 130 | 3 | 25 |
| C9-C12 Aliphatics (unadjusted) | | | 60.0 | 56.6 | J | ug/L | | 94 | 70 - 130 | 9 | 25 |
| Benzene | | | 20.0 | 19.7 | | ug/L | | 98 | 70 - 130 | 4 | 25 |
| Ethylbenzene | | | 20.0 | 19.8 | | ug/L | | 99 | 70 - 130 | 4 | 25 |
| Methyl tert-butyl ether | | | 20.0 | 18.8 | | ug/L | | 94 | 70 - 130 | 2 | 25 |
| Naphthalene | | | 20.0 | 19.4 | | ug/L | | 97 | 70 - 130 | 1 | 25 |
| Toluene | | | 20.0 | 19.5 | | ug/L | | 97 | 70 - 130 | 3 | 25 |
| m,p-Xylene | | | 40.0 | 40.2 | | ug/L | | 100 | 70 - 130 | 3 | 25 |
| o-Xylene | | | 20.0 | 20.0 | | ug/L | | 100 | 70 - 130 | 3 | 25 |

| Surrogate | LCSD %Recovery | LCSD Qualifier | Limits |
|---|---|---|---|
| 2,5-Dibromotoluene (fid) | 95 | | 70 - 130 |
| 2,5-Dibromotoluene (pid) | 96 | | 70 - 130 |

**Lab Sample ID: 620-18223-8 MS**
**Matrix: Water**
**Analysis Batch: 34261**

**Client Sample ID: GW-MW108-042324**
**Prep Type: Total/NA**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | 21 | J B | 20.3 | 36.7 | J | ug/L | | 77 | 70 - 130 |
| C5-C8 Aliphatics (unadjusted) | 8.4 | J B F1 | 61.0 | 98.6 | J F1 | ug/L | | 148 | 70 - 130 |
| C9-C12 Aliphatics (unadjusted) | 20 | J B F1 | 61.0 | 220 | F1 | ug/L | | 328 | 70 - 130 |
| Benzene | ND | | 20.3 | 15.5 | | ug/L | | 76 | 70 - 130 |
| Ethylbenzene | ND | | 20.3 | 15.0 | | ug/L | | 74 | 70 - 130 |
| Methyl tert-butyl ether | ND | | 20.3 | 14.7 | | ug/L | | 72 | 70 - 130 |
| Naphthalene | ND | F1 | 20.3 | 13.4 | F1 | ug/L | | 66 | 70 - 130 |
| Toluene | ND | | 20.3 | 15.4 | | ug/L | | 76 | 70 - 130 |
| m,p-Xylene | ND | | 40.7 | 30.3 | | ug/L | | 75 | 70 - 130 |
| o-Xylene | ND | | 20.3 | 15.3 | | ug/L | | 75 | 70 - 130 |

| Surrogate | MS %Recovery | MS Qualifier | Limits |
|---|---|---|---|
| 2,5-Dibromotoluene (fid) | 102 | | 70 - 130 |
| 2,5-Dibromotoluene (pid) | 102 | | 70 - 130 |

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: 620-18223-8 MSD**
**Matrix: Water**
**Analysis Batch: 34261**

**Client Sample ID: GW-MW108-042324**
**Prep Type: Total/NA**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | 21 | J B | 20.3 | 41.7 | J | ug/L | | 102 | 70 - 130 | 13 | 30 |
| C5-C8 Aliphatics (unadjusted) | 8.4 | J B F1 | 61.0 | 122 | F1 | ug/L | | 186 | 70 - 130 | 21 | 30 |
| C9-C12 Aliphatics (unadjusted) | 20 | J B F1 | 61.0 | 259 | F1 | ug/L | | 392 | 70 - 130 | 16 | 30 |
| Benzene | ND | | 20.3 | 18.0 | | ug/L | | 89 | 70 - 130 | 15 | 30 |
| Ethylbenzene | ND | | 20.3 | 18.2 | | ug/L | | 89 | 70 - 130 | 19 | 30 |
| Methyl tert-butyl ether | ND | | 20.3 | 17.3 | | ug/L | | 85 | 70 - 130 | 16 | 30 |
| Naphthalene | ND | F1 | 20.3 | 16.9 | | ug/L | | 83 | 70 - 130 | 23 | 30 |
| Toluene | ND | | 20.3 | 17.9 | | ug/L | | 88 | 70 - 130 | 15 | 30 |
| m,p-Xylene | ND | | 40.7 | 36.7 | | ug/L | | 90 | 70 - 130 | 19 | 30 |
| o-Xylene | ND | | 20.3 | 18.2 | | ug/L | | 89 | 70 - 130 | 17 | 30 |

| *Surrogate* | *MSD %Recovery* | *MSD Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *99* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *97* | | *70 - 130* |

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

**Lab Sample ID: MB 620-34187/1-B**
**Matrix: Water**
**Analysis Batch: 34214**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 34187**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 100 | 56 | ug/L | | 04/26/24 12:00 | 04/29/24 16:05 | 1 |
| C19-C36 Aliphatics | ND | | 100 | 85 | ug/L | | 04/26/24 12:00 | 04/29/24 16:05 | 1 |
| C11-C22 Aromatics | ND | | 100 | 84 | ug/L | | 04/26/24 12:00 | 04/29/24 16:05 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 100 | 84 | ug/L | | 04/26/24 12:00 | 04/29/24 16:05 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *50* | | *40 - 140* | *04/26/24 12:00* | *04/29/24 16:05* | *1* |
| *o-Terphenyl (Surr)* | *62* | | *40 - 140* | *04/26/24 12:00* | *04/29/24 16:05* | *1* |
| *2-Fluorobiphenyl (Surr)* | *119* | | *40 - 140* | *04/26/24 12:00* | *04/29/24 16:05* | *1* |

**Lab Sample ID: LCS 620-34187/2-B**
**Matrix: Water**
**Analysis Batch: 34214**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 34187**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | 120 | 61.6 | J | ug/L | | 51 | 40 - 140 |
| C19-C36 Aliphatics | 160 | 159 | | ug/L | | 100 | 40 - 140 |
| C11-C22 Aromatics | 340 | 272 | | ug/L | | 80 | 40 - 140 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *62* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *61* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *119* | | *40 - 140* |

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: LCSD 620-34187/3-B**
**Matrix: Water**
**Analysis Batch: 34214**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 34187**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | | | 120 | 74.5 | J | ug/L | | 62 | 40 - 140 | 19 | 25 |
| C19-C36 Aliphatics | | | 160 | 160 | | ug/L | | 100 | 40 - 140 | 1 | 25 |
| C11-C22 Aromatics | | | 340 | 303 | | ug/L | | 89 | 40 - 140 | 11 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *64* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *69* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *118* | | *40 - 140* |

**Lab Sample ID: MB 620-34272/1-B**
**Matrix: Water**
**Analysis Batch: 34296**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 34272**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 100 | 56 | ug/L | | 04/30/24 12:56 | 05/01/24 14:06 | 1 |
| C19-C36 Aliphatics | ND | | 100 | 85 | ug/L | | 04/30/24 12:56 | 05/01/24 14:06 | 1 |
| C11-C22 Aromatics | ND | | 100 | 84 | ug/L | | 04/30/24 12:56 | 05/01/24 14:06 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 100 | 84 | ug/L | | 04/30/24 12:56 | 05/01/24 14:06 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *57* | | *40 - 140* | *04/30/24 12:56* | *05/01/24 14:06* | *1* |
| *o-Terphenyl (Surr)* | *54* | | *40 - 140* | *04/30/24 12:56* | *05/01/24 14:06* | *1* |
| *2-Fluorobiphenyl (Surr)* | *101* | | *40 - 140* | *04/30/24 12:56* | *05/01/24 14:06* | *1* |

**Lab Sample ID: LCS 620-34272/2-B**
**Matrix: Water**
**Analysis Batch: 34296**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 34272**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | | | 120 | 62.0 | J | ug/L | | 52 | 40 - 140 |
| C19-C36 Aliphatics | | | 160 | 167 | | ug/L | | 104 | 40 - 140 |
| C11-C22 Aromatics | | | 340 | 240 | | ug/L | | 71 | 40 - 140 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *66* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *62* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *105* | | *40 - 140* |

**Lab Sample ID: LCSD 620-34272/3-B**
**Matrix: Water**
**Analysis Batch: 34296**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 34272**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | | | 120 | 70.6 | J | ug/L | | 59 | 40 - 140 | 13 | 25 |
| C19-C36 Aliphatics | | | 160 | 146 | | ug/L | | 91 | 40 - 140 | 13 | 25 |
| C11-C22 Aromatics | | | 340 | 237 | | ug/L | | 70 | 40 - 140 | 1 | 25 |

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: LCSD 620-34272/3-B**
**Matrix: Water**
**Analysis Batch: 34296**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 34272**

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *68* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *61* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *101* | | *40 - 140* |

**Lab Sample ID: 620-18223-8 MS**
**Matrix: Water**
**Analysis Batch: 34328**

**Client Sample ID: GW-MW108-042324**
**Prep Type: Total/NA**
**Prep Batch: 34272**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 120 | 58.4 | | ug/L | | 49 | 40 - 140 |
| C19-C36 Aliphatics | ND | | 160 | 113 | | ug/L | | 71 | 40 - 140 |
| C11-C22 Aromatics | ND | | 340 | 169 | | ug/L | | 50 | 40 - 140 |

| *Surrogate* | *MS %Recovery* | *MS Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *52* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *44* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *86* | | *40 - 140* |

**Lab Sample ID: 620-18223-8 MSD**
**Matrix: Water**
**Analysis Batch: 34328**

**Client Sample ID: GW-MW108-042324**
**Prep Type: Total/NA**
**Prep Batch: 34272**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 120 | 51.0 | | ug/L | | 42 | 40 - 140 | 14 | 50 |
| C19-C36 Aliphatics | ND | | 160 | 148 | | ug/L | | 93 | 40 - 140 | 27 | 50 |
| C11-C22 Aromatics | ND | | 340 | 235 | | ug/L | | 69 | 40 - 140 | 33 | 50 |

| *Surrogate* | *MSD %Recovery* | *MSD Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *66* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *61* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *104* | | *40 - 140* |

## Method: 6010D - Metals (ICP)

**Lab Sample ID: MB 620-34190/1-A**
**Matrix: Water**
**Analysis Batch: 34202**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 34190**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 0.0060 | 0.0016 | mg/L | | 04/26/24 14:42 | 04/27/24 23:37 | 1 |
| Arsenic | ND | | 0.0040 | 0.0014 | mg/L | | 04/26/24 14:42 | 04/27/24 23:37 | 1 |
| Barium | ND | | 0.0050 | 0.00070 | mg/L | | 04/26/24 14:42 | 04/27/24 23:37 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 04/26/24 14:42 | 04/27/24 23:37 | 1 |
| Cadmium | ND | | 0.0025 | 0.00036 | mg/L | | 04/26/24 14:42 | 04/27/24 23:37 | 1 |
| Chromium | ND | | 0.0050 | 0.00093 | mg/L | | 04/26/24 14:42 | 04/27/24 23:37 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 04/26/24 14:42 | 04/27/24 23:37 | 1 |
| Nickel | ND | | 0.0050 | 0.00087 | mg/L | | 04/26/24 14:42 | 04/27/24 23:37 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 04/26/24 14:42 | 04/27/24 23:37 | 1 |

## Method: 6010D - Metals (ICP) (Continued)

**Lab Sample ID: MB 620-34190/1-A**
**Matrix: Water**
**Analysis Batch: 34202**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 34190**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 04/26/24 14:42 | 04/27/24 23:37 | 1 |
| Thallium | ND | | 0.0050 | 0.0021 | mg/L | | 04/26/24 14:42 | 04/27/24 23:37 | 1 |
| Vanadium | ND | | 0.0050 | 0.0011 | mg/L | | 04/26/24 14:42 | 04/27/24 23:37 | 1 |
| Zinc | 0.00215 | J | 0.025 | 0.0016 | mg/L | | 04/26/24 14:42 | 04/27/24 23:37 | 1 |

**Lab Sample ID: LCS 620-34190/2-A**
**Matrix: Water**
**Analysis Batch: 34202**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 34190**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Antimony | 1.00 | 0.958 | | mg/L | | 96 | 80 - 120 |
| Arsenic | 1.00 | 0.984 | | mg/L | | 98 | 80 - 120 |
| Barium | 1.00 | 0.977 | | mg/L | | 98 | 80 - 120 |
| Beryllium | 1.00 | 1.00 | | mg/L | | 100 | 80 - 120 |
| Cadmium | 1.00 | 0.976 | | mg/L | | 98 | 80 - 120 |
| Chromium | 1.00 | 0.963 | | mg/L | | 96 | 80 - 120 |
| Lead | 1.00 | 0.999 | | mg/L | | 100 | 80 - 120 |
| Nickel | 1.00 | 0.979 | | mg/L | | 98 | 80 - 120 |
| Selenium | 1.00 | 0.995 | | mg/L | | 99 | 80 - 120 |
| Silver | 1.00 | 1.02 | | mg/L | | 101 | 80 - 120 |
| Thallium | 1.00 | 0.982 | | mg/L | | 98 | 80 - 120 |
| Vanadium | 1.00 | 0.967 | | mg/L | | 97 | 80 - 120 |
| Zinc | 1.00 | 1.07 | | mg/L | | 107 | 80 - 120 |

**Lab Sample ID: 620-18223-8 MS**
**Matrix: Water**
**Analysis Batch: 34202**

**Client Sample ID: GW-MW108-042324**
**Prep Type: Dissolved**
**Prep Batch: 34190**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.0039 | J F2 | 1.00 | 0.839 | | mg/L | | 83 | 75 - 125 |
| Arsenic | ND | F2 | 1.00 | 0.882 | | mg/L | | 88 | 75 - 125 |
| Barium | 0.12 | F2 | 1.00 | 0.910 | | mg/L | | 79 | 75 - 125 |
| Beryllium | ND | F2 | 1.00 | 0.880 | | mg/L | | 88 | 75 - 125 |
| Cadmium | ND | F2 | 1.00 | 0.810 | | mg/L | | 81 | 75 - 125 |
| Chromium | ND | F2 | 1.00 | 0.815 | | mg/L | | 81 | 75 - 125 |
| Lead | ND | F2 | 1.00 | 0.809 | | mg/L | | 81 | 75 - 125 |
| Nickel | 0.0014 | J F2 | 1.00 | 0.802 | | mg/L | | 80 | 75 - 125 |
| Selenium | ND | F2 | 1.00 | 0.868 | | mg/L | | 87 | 75 - 125 |
| Silver | ND | F2 | 1.00 | 0.883 | | mg/L | | 88 | 75 - 125 |
| Thallium | ND | F2 | 1.00 | 0.830 | | mg/L | | 83 | 75 - 125 |
| Vanadium | ND | F2 | 1.00 | 0.844 | | mg/L | | 84 | 75 - 125 |
| Zinc | 0.045 | F2 B | 1.00 | 0.876 | | mg/L | | 83 | 75 - 125 |

**Lab Sample ID: 620-18223-8 MSD**
**Matrix: Water**
**Analysis Batch: 34202**

**Client Sample ID: GW-MW108-042324**
**Prep Type: Dissolved**
**Prep Batch: 34190**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.0039 | J F2 | 1.00 | 1.09 | F2 | mg/L | | 108 | 75 - 125 | 26 | 20 |

## Method: 6010D - Metals (ICP) (Continued)

**Lab Sample ID: 620-18223-8 MSD**
**Matrix: Water**
**Analysis Batch: 34202**

**Client Sample ID: GW-MW108-042324**
**Prep Type: Dissolved**
**Prep Batch: 34190**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | ND | F2 | 1.00 | 1.13 | F2 | mg/L | | 113 | 75 - 125 | 25 | 20 |
| Barium | 0.12 | F2 | 1.00 | 1.17 | F2 | mg/L | | 104 | 75 - 125 | 25 | 20 |
| Beryllium | ND | F2 | 1.00 | 1.12 | F2 | mg/L | | 112 | 75 - 125 | 24 | 20 |
| Cadmium | ND | F2 | 1.00 | 1.02 | F2 | mg/L | | 102 | 75 - 125 | 23 | 20 |
| Chromium | ND | F2 | 1.00 | 1.03 | F2 | mg/L | | 103 | 75 - 125 | 23 | 20 |
| Lead | ND | F2 | 1.00 | 1.02 | F2 | mg/L | | 102 | 75 - 125 | 24 | 20 |
| Nickel | 0.0014 | J F2 | 1.00 | 1.02 | F2 | mg/L | | 102 | 75 - 125 | 24 | 20 |
| Selenium | ND | F2 | 1.00 | 1.13 | F2 | mg/L | | 113 | 75 - 125 | 26 | 20 |
| Silver | ND | F2 | 1.00 | 1.13 | F2 | mg/L | | 113 | 75 - 125 | 25 | 20 |
| Thallium | ND | F2 | 1.00 | 1.05 | F2 | mg/L | | 105 | 75 - 125 | 23 | 20 |
| Vanadium | ND | F2 | 1.00 | 1.07 | F2 | mg/L | | 107 | 75 - 125 | 24 | 20 |
| Zinc | 0.045 | F2 B | 1.00 | 1.09 | F2 | mg/L | | 104 | 75 - 125 | 21 | 20 |

**Lab Sample ID: 620-18223-8 DU**
**Matrix: Water**
**Analysis Batch: 34202**

**Client Sample ID: GW-MW108-042324**
**Prep Type: Dissolved**
**Prep Batch: 34190**

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|
| Antimony | 0.0039 | J F2 | 0.00160 | J F5 | mg/L | | 84 | 20 |
| Arsenic | ND | F2 | ND | | mg/L | | NC | 20 |
| Barium | 0.12 | F2 | 0.119 | | mg/L | | 4 | 20 |
| Beryllium | ND | F2 | ND | | mg/L | | NC | 20 |
| Cadmium | ND | F2 | ND | | mg/L | | NC | 20 |
| Chromium | ND | F2 | ND | | mg/L | | NC | 20 |
| Lead | ND | F2 | ND | | mg/L | | NC | 20 |
| Nickel | 0.0014 | J F2 | 0.00110 | J F5 | mg/L | | 24 | 20 |
| Selenium | ND | F2 | ND | | mg/L | | NC | 20 |
| Silver | ND | F2 | ND | | mg/L | | NC | 20 |
| Thallium | ND | F2 | ND | | mg/L | | NC | 20 |
| Vanadium | ND | F2 | ND | | mg/L | | NC | 20 |
| Zinc | 0.045 | F2 B | 0.0484 | | mg/L | | 7 | 20 |

## Method: 7470A - Mercury (CVAA)

**Lab Sample ID: MB 620-34263/1-A**
**Matrix: Water**
**Analysis Batch: 34279**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 34263**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 04/30/24 10:36 | 04/30/24 15:21 | 1 |

**Lab Sample ID: LCS 620-34263/2-A**
**Matrix: Water**
**Analysis Batch: 34279**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 34263**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Mercury | 0.00500 | 0.00531 | | mg/L | | 106 | 85 - 115 |

## Method: 7470A - Mercury (CVAA) (Continued)

**Lab Sample ID: LCSD 620-34263/3-A**
**Matrix: Water**
**Analysis Batch: 34279**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 34263**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | | | 0.00500 | 0.00520 | | mg/L | | 104 | 85 - 115 | 2 | 20 |

**Lab Sample ID: 620-18223-8 MS**
**Matrix: Water**
**Analysis Batch: 34279**

**Client Sample ID: GW-MW108-042324**
**Prep Type: Dissolved**
**Prep Batch: 34263**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00500 | 0.00539 | | mg/L | | 108 | 80 - 120 | | |

**Lab Sample ID: 620-18223-8 MSD**
**Matrix: Water**
**Analysis Batch: 34279**

**Client Sample ID: GW-MW108-042324**
**Prep Type: Dissolved**
**Prep Batch: 34263**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00500 | 0.00524 | | mg/L | | 105 | 80 - 120 | 3 | 20 |

**Lab Sample ID: 620-18223-8 DU**
**Matrix: Water**
**Analysis Batch: 34279**

**Client Sample ID: GW-MW108-042324**
**Prep Type: Dissolved**
**Prep Batch: 34263**

| Analyte | Sample Result | Sample Qualifier | | DU Result | DU Qualifier | Unit | D | | | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | | ND | | mg/L | | | | NC | 20 |

## GC/MS Semi VOA

### Prep Batch: 34187

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-18223-1 | GW-MW101-042324 | Total/NA | Water | 3510C | |
| 620-18223-2 | GW-MW102R-042324 | Total/NA | Water | 3510C | |
| 620-18223-3 | GW-MW103-042324 | Total/NA | Water | 3510C | |
| 620-18223-4 | GW-MW104-042324 | Total/NA | Water | 3510C | |
| MB 620-34187/1-B | Method Blank | Total/NA | Water | 3510C | |
| LCS 620-34187/4-B | Lab Control Sample | Total/NA | Water | 3510C | |
| LCSD 620-34187/5-B | Lab Control Sample Dup | Total/NA | Water | 3510C | |

### Fraction Batch: 34232

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-18223-1 | GW-MW101-042324 | Total/NA | Water | MA EPH Frac | 34187 |
| 620-18223-2 | GW-MW102R-042324 | Total/NA | Water | MA EPH Frac | 34187 |
| 620-18223-3 | GW-MW103-042324 | Total/NA | Water | MA EPH Frac | 34187 |
| 620-18223-4 | GW-MW104-042324 | Total/NA | Water | MA EPH Frac | 34187 |
| MB 620-34187/1-B | Method Blank | Total/NA | Water | MA EPH Frac | 34187 |
| LCS 620-34187/4-B | Lab Control Sample | Total/NA | Water | MA EPH Frac | 34187 |
| LCSD 620-34187/5-B | Lab Control Sample Dup | Total/NA | Water | MA EPH Frac | 34187 |

### Prep Batch: 34272

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-18223-5 | GW-MW105-042324 | Total/NA | Water | 3510C | |
| 620-18223-6 | GW-MW106-042324 | Total/NA | Water | 3510C | |
| 620-18223-7 | GW-MW107-042324 | Total/NA | Water | 3510C | |
| 620-18223-8 | GW-MW108-042324 | Total/NA | Water | 3510C | |
| 620-18223-9 | GW-MW109-042324 | Total/NA | Water | 3510C | |
| 620-18223-10 | FD-01 | Total/NA | Water | 3510C | |
| MB 620-34272/1-B | Method Blank | Total/NA | Water | 3510C | |
| LCS 620-34272/4-B | Lab Control Sample | Total/NA | Water | 3510C | |
| LCSD 620-34272/5-B | Lab Control Sample Dup | Total/NA | Water | 3510C | |
| 620-18223-8 MS | GW-MW108-042324 | Total/NA | Water | 3510C | |
| 620-18223-8 MSD | GW-MW108-042324 | Total/NA | Water | 3510C | |

### Fraction Batch: 34305

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-18223-5 | GW-MW105-042324 | Total/NA | Water | MA EPH Frac | 34272 |
| 620-18223-6 | GW-MW106-042324 | Total/NA | Water | MA EPH Frac | 34272 |
| 620-18223-7 | GW-MW107-042324 | Total/NA | Water | MA EPH Frac | 34272 |
| 620-18223-8 | GW-MW108-042324 | Total/NA | Water | MA EPH Frac | 34272 |
| 620-18223-9 | GW-MW109-042324 | Total/NA | Water | MA EPH Frac | 34272 |
| 620-18223-10 | FD-01 | Total/NA | Water | MA EPH Frac | 34272 |
| MB 620-34272/1-B | Method Blank | Total/NA | Water | MA EPH Frac | 34272 |
| LCS 620-34272/4-B | Lab Control Sample | Total/NA | Water | MA EPH Frac | 34272 |
| LCSD 620-34272/5-B | Lab Control Sample Dup | Total/NA | Water | MA EPH Frac | 34272 |
| 620-18223-8 MS | GW-MW108-042324 | Total/NA | Water | MA EPH Frac | 34272 |
| 620-18223-8 MSD | GW-MW108-042324 | Total/NA | Water | MA EPH Frac | 34272 |

### Analysis Batch: 34336

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-18223-1 | GW-MW101-042324 | Total/NA | Water | EPH | 34232 |
| 620-18223-2 | GW-MW102R-042324 | Total/NA | Water | EPH | 34232 |
| 620-18223-2 | GW-MW102R-042324 | Total/NA | Water | EPH | 34232 |

## GC/MS Semi VOA (Continued)

### Analysis Batch: 34336 (Continued)

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-18223-3 | GW-MW103-042324 | Total/NA | Water | EPH | 34232 |
| 620-18223-4 | GW-MW104-042324 | Total/NA | Water | EPH | 34232 |
| 620-18223-6 | GW-MW106-042324 | Total/NA | Water | EPH | 34305 |
| 620-18223-7 | GW-MW107-042324 | Total/NA | Water | EPH | 34305 |
| 620-18223-8 | GW-MW108-042324 | Total/NA | Water | EPH | 34305 |
| 620-18223-9 | GW-MW109-042324 | Total/NA | Water | EPH | 34305 |
| MB 620-34187/1-B | Method Blank | Total/NA | Water | EPH | 34232 |
| MB 620-34272/1-B | Method Blank | Total/NA | Water | EPH | 34305 |
| LCS 620-34187/4-B | Lab Control Sample | Total/NA | Water | EPH | 34232 |
| LCS 620-34272/4-B | Lab Control Sample | Total/NA | Water | EPH | 34305 |
| LCSD 620-34187/5-B | Lab Control Sample Dup | Total/NA | Water | EPH | 34232 |
| LCSD 620-34272/5-B | Lab Control Sample Dup | Total/NA | Water | EPH | 34305 |
| 620-18223-8 MS | GW-MW108-042324 | Total/NA | Water | EPH | 34305 |
| 620-18223-8 MSD | GW-MW108-042324 | Total/NA | Water | EPH | 34305 |

### Analysis Batch: 34360

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-18223-5 | GW-MW105-042324 | Total/NA | Water | EPH | 34305 |
| 620-18223-10 | FD-01 | Total/NA | Water | EPH | 34305 |

## GC VOA

### Analysis Batch: 34227

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-18223-4 | GW-MW104-042324 | Total/NA | Water | MAVPH2.1 | |
| 620-18223-5 | GW-MW105-042324 | Total/NA | Water | MAVPH2.1 | |
| 620-18223-6 | GW-MW106-042324 | Total/NA | Water | MAVPH2.1 | |
| MB 620-34227/4 | Method Blank | Total/NA | Water | MAVPH2.1 | |
| LCS 620-34227/2 | Lab Control Sample | Total/NA | Water | MAVPH2.1 | |
| LCSD 620-34227/3 | Lab Control Sample Dup | Total/NA | Water | MAVPH2.1 | |

### Analysis Batch: 34261

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-18223-1 | GW-MW101-042324 | Total/NA | Water | MAVPH2.1 | |
| 620-18223-2 - DL | GW-MW102R-042324 | Total/NA | Water | MAVPH2.1 | |
| 620-18223-2 - DL2 | GW-MW102R-042324 | Total/NA | Water | MAVPH2.1 | |
| 620-18223-2 | GW-MW102R-042324 | Total/NA | Water | MAVPH2.1 | |
| 620-18223-3 | GW-MW103-042324 | Total/NA | Water | MAVPH2.1 | |
| 620-18223-6 - DL | GW-MW106-042324 | Total/NA | Water | MAVPH2.1 | |
| 620-18223-7 | GW-MW107-042324 | Total/NA | Water | MAVPH2.1 | |
| 620-18223-8 | GW-MW108-042324 | Total/NA | Water | MAVPH2.1 | |
| 620-18223-9 - DL | GW-MW109-042324 | Total/NA | Water | MAVPH2.1 | |
| 620-18223-9 | GW-MW109-042324 | Total/NA | Water | MAVPH2.1 | |
| 620-18223-10 | FD-01 | Total/NA | Water | MAVPH2.1 | |
| 620-18223-11 | TB-01 | Total/NA | Water | MAVPH2.1 | |
| MB 620-34261/14 | Method Blank | Total/NA | Water | MAVPH2.1 | |
| LCS 620-34261/12 | Lab Control Sample | Total/NA | Water | MAVPH2.1 | |
| LCSD 620-34261/13 | Lab Control Sample Dup | Total/NA | Water | MAVPH2.1 | |
| 620-18223-8 MS | GW-MW108-042324 | Total/NA | Water | MAVPH2.1 | |
| 620-18223-8 MSD | GW-MW108-042324 | Total/NA | Water | MAVPH2.1 | |

## GC Semi VOA

### Prep Batch: 34187

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-18223-1 | GW-MW101-042324 | Total/NA | Water | 3510C | |
| 620-18223-2 | GW-MW102R-042324 | Total/NA | Water | 3510C | |
| 620-18223-3 | GW-MW103-042324 | Total/NA | Water | 3510C | |
| 620-18223-4 | GW-MW104-042324 | Total/NA | Water | 3510C | |
| MB 620-34187/1-B | Method Blank | Total/NA | Water | 3510C | |
| LCS 620-34187/2-B | Lab Control Sample | Total/NA | Water | 3510C | |
| LCSD 620-34187/3-B | Lab Control Sample Dup | Total/NA | Water | 3510C | |

### Analysis Batch: 34214

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| MB 620-34187/1-B | Method Blank | Total/NA | Water | MAEPH2.1 | 34232 |
| LCS 620-34187/2-B | Lab Control Sample | Total/NA | Water | MAEPH2.1 | 34232 |
| LCSD 620-34187/3-B | Lab Control Sample Dup | Total/NA | Water | MAEPH2.1 | 34232 |

### Fraction Batch: 34232

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-18223-1 | GW-MW101-042324 | Total/NA | Water | MA EPH Frac | 34187 |
| 620-18223-2 | GW-MW102R-042324 | Total/NA | Water | MA EPH Frac | 34187 |
| 620-18223-3 | GW-MW103-042324 | Total/NA | Water | MA EPH Frac | 34187 |
| 620-18223-4 | GW-MW104-042324 | Total/NA | Water | MA EPH Frac | 34187 |
| MB 620-34187/1-B | Method Blank | Total/NA | Water | MA EPH Frac | 34187 |
| LCS 620-34187/2-B | Lab Control Sample | Total/NA | Water | MA EPH Frac | 34187 |
| LCSD 620-34187/3-B | Lab Control Sample Dup | Total/NA | Water | MA EPH Frac | 34187 |

### Analysis Batch: 34249

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-18223-1 | GW-MW101-042324 | Total/NA | Water | MAEPH2.1 | 34232 |
| 620-18223-2 | GW-MW102R-042324 | Total/NA | Water | MAEPH2.1 | 34232 |
| 620-18223-3 | GW-MW103-042324 | Total/NA | Water | MAEPH2.1 | 34232 |
| 620-18223-4 | GW-MW104-042324 | Total/NA | Water | MAEPH2.1 | 34232 |

### Prep Batch: 34272

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-18223-5 | GW-MW105-042324 | Total/NA | Water | 3510C | |
| 620-18223-6 | GW-MW106-042324 | Total/NA | Water | 3510C | |
| 620-18223-7 | GW-MW107-042324 | Total/NA | Water | 3510C | |
| 620-18223-8 | GW-MW108-042324 | Total/NA | Water | 3510C | |
| 620-18223-9 | GW-MW109-042324 | Total/NA | Water | 3510C | |
| 620-18223-10 | FD-01 | Total/NA | Water | 3510C | |
| MB 620-34272/1-B | Method Blank | Total/NA | Water | 3510C | |
| LCS 620-34272/2-B | Lab Control Sample | Total/NA | Water | 3510C | |
| LCSD 620-34272/3-B | Lab Control Sample Dup | Total/NA | Water | 3510C | |
| 620-18223-8 MS | GW-MW108-042324 | Total/NA | Water | 3510C | |
| 620-18223-8 MSD | GW-MW108-042324 | Total/NA | Water | 3510C | |

### Analysis Batch: 34296

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| MB 620-34272/1-B | Method Blank | Total/NA | Water | MAEPH2.1 | 34305 |
| LCS 620-34272/2-B | Lab Control Sample | Total/NA | Water | MAEPH2.1 | 34305 |
| LCSD 620-34272/3-B | Lab Control Sample Dup | Total/NA | Water | MAEPH2.1 | 34305 |

## GC Semi VOA

### Fraction Batch: 34305

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-18223-5 | GW-MW105-042324 | Total/NA | Water | MA EPH Frac | 34272 |
| 620-18223-6 | GW-MW106-042324 | Total/NA | Water | MA EPH Frac | 34272 |
| 620-18223-7 | GW-MW107-042324 | Total/NA | Water | MA EPH Frac | 34272 |
| 620-18223-8 | GW-MW108-042324 | Total/NA | Water | MA EPH Frac | 34272 |
| 620-18223-9 | GW-MW109-042324 | Total/NA | Water | MA EPH Frac | 34272 |
| 620-18223-10 | FD-01 | Total/NA | Water | MA EPH Frac | 34272 |
| MB 620-34272/1-B | Method Blank | Total/NA | Water | MA EPH Frac | 34272 |
| LCS 620-34272/2-B | Lab Control Sample | Total/NA | Water | MA EPH Frac | 34272 |
| LCSD 620-34272/3-B | Lab Control Sample Dup | Total/NA | Water | MA EPH Frac | 34272 |
| 620-18223-8 MS | GW-MW108-042324 | Total/NA | Water | MA EPH Frac | 34272 |
| 620-18223-8 MSD | GW-MW108-042324 | Total/NA | Water | MA EPH Frac | 34272 |

### Analysis Batch: 34328

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-18223-5 | GW-MW105-042324 | Total/NA | Water | MAEPH2.1 | 34305 |
| 620-18223-6 | GW-MW106-042324 | Total/NA | Water | MAEPH2.1 | 34305 |
| 620-18223-6 | GW-MW106-042324 | Total/NA | Water | MAEPH2.1 | 34305 |
| 620-18223-7 | GW-MW107-042324 | Total/NA | Water | MAEPH2.1 | 34305 |
| 620-18223-8 | GW-MW108-042324 | Total/NA | Water | MAEPH2.1 | 34305 |
| 620-18223-9 | GW-MW109-042324 | Total/NA | Water | MAEPH2.1 | 34305 |
| 620-18223-10 | FD-01 | Total/NA | Water | MAEPH2.1 | 34305 |
| 620-18223-8 MS | GW-MW108-042324 | Total/NA | Water | MAEPH2.1 | 34305 |
| 620-18223-8 MSD | GW-MW108-042324 | Total/NA | Water | MAEPH2.1 | 34305 |

## Metals

### Prep Batch: 34190

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-18223-1 | GW-MW101-042324 | Dissolved | Water | 3005A | |
| 620-18223-2 | GW-MW102R-042324 | Dissolved | Water | 3005A | |
| 620-18223-3 | GW-MW103-042324 | Dissolved | Water | 3005A | |
| 620-18223-4 | GW-MW104-042324 | Dissolved | Water | 3005A | |
| 620-18223-5 | GW-MW105-042324 | Dissolved | Water | 3005A | |
| 620-18223-6 | GW-MW106-042324 | Dissolved | Water | 3005A | |
| 620-18223-7 | GW-MW107-042324 | Dissolved | Water | 3005A | |
| 620-18223-8 | GW-MW108-042324 | Dissolved | Water | 3005A | |
| 620-18223-9 | GW-MW109-042324 | Dissolved | Water | 3005A | |
| 620-18223-10 | FD-01 | Dissolved | Water | 3005A | |
| MB 620-34190/1-A | Method Blank | Total/NA | Water | 3005A | |
| LCS 620-34190/2-A | Lab Control Sample | Total/NA | Water | 3005A | |
| 620-18223-8 MS | GW-MW108-042324 | Dissolved | Water | 3005A | |
| 620-18223-8 MSD | GW-MW108-042324 | Dissolved | Water | 3005A | |
| 620-18223-8 DU | GW-MW108-042324 | Dissolved | Water | 3005A | |

### Analysis Batch: 34202

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-18223-1 | GW-MW101-042324 | Dissolved | Water | 6010D | 34190 |
| 620-18223-2 | GW-MW102R-042324 | Dissolved | Water | 6010D | 34190 |
| 620-18223-3 | GW-MW103-042324 | Dissolved | Water | 6010D | 34190 |
| 620-18223-4 | GW-MW104-042324 | Dissolved | Water | 6010D | 34190 |
| 620-18223-5 | GW-MW105-042324 | Dissolved | Water | 6010D | 34190 |

## Metals (Continued)

### Analysis Batch: 34202 (Continued)

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-18223-6 | GW-MW106-042324 | Dissolved | Water | 6010D | 34190 |
| 620-18223-7 | GW-MW107-042324 | Dissolved | Water | 6010D | 34190 |
| 620-18223-8 | GW-MW108-042324 | Dissolved | Water | 6010D | 34190 |
| 620-18223-9 | GW-MW109-042324 | Dissolved | Water | 6010D | 34190 |
| 620-18223-10 | FD-01 | Dissolved | Water | 6010D | 34190 |
| MB 620-34190/1-A | Method Blank | Total/NA | Water | 6010D | 34190 |
| LCS 620-34190/2-A | Lab Control Sample | Total/NA | Water | 6010D | 34190 |
| 620-18223-8 MS | GW-MW108-042324 | Dissolved | Water | 6010D | 34190 |
| 620-18223-8 MSD | GW-MW108-042324 | Dissolved | Water | 6010D | 34190 |
| 620-18223-8 DU | GW-MW108-042324 | Dissolved | Water | 6010D | 34190 |

### Prep Batch: 34263

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-18223-1 | GW-MW101-042324 | Dissolved | Water | 7470A | |
| 620-18223-2 | GW-MW102R-042324 | Dissolved | Water | 7470A | |
| 620-18223-3 | GW-MW103-042324 | Dissolved | Water | 7470A | |
| 620-18223-4 | GW-MW104-042324 | Dissolved | Water | 7470A | |
| 620-18223-5 | GW-MW105-042324 | Dissolved | Water | 7470A | |
| 620-18223-6 | GW-MW106-042324 | Dissolved | Water | 7470A | |
| 620-18223-7 | GW-MW107-042324 | Dissolved | Water | 7470A | |
| 620-18223-8 | GW-MW108-042324 | Dissolved | Water | 7470A | |
| 620-18223-9 | GW-MW109-042324 | Dissolved | Water | 7470A | |
| 620-18223-10 | FD-01 | Dissolved | Water | 7470A | |
| MB 620-34263/1-A | Method Blank | Total/NA | Water | 7470A | |
| LCS 620-34263/2-A | Lab Control Sample | Total/NA | Water | 7470A | |
| LCSD 620-34263/3-A | Lab Control Sample Dup | Total/NA | Water | 7470A | |
| 620-18223-8 MS | GW-MW108-042324 | Dissolved | Water | 7470A | |
| 620-18223-8 MSD | GW-MW108-042324 | Dissolved | Water | 7470A | |
| 620-18223-8 DU | GW-MW108-042324 | Dissolved | Water | 7470A | |

### Analysis Batch: 34279

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-18223-1 | GW-MW101-042324 | Dissolved | Water | 7470A | 34263 |
| 620-18223-2 | GW-MW102R-042324 | Dissolved | Water | 7470A | 34263 |
| 620-18223-3 | GW-MW103-042324 | Dissolved | Water | 7470A | 34263 |
| 620-18223-4 | GW-MW104-042324 | Dissolved | Water | 7470A | 34263 |
| 620-18223-5 | GW-MW105-042324 | Dissolved | Water | 7470A | 34263 |
| 620-18223-6 | GW-MW106-042324 | Dissolved | Water | 7470A | 34263 |
| 620-18223-7 | GW-MW107-042324 | Dissolved | Water | 7470A | 34263 |
| 620-18223-8 | GW-MW108-042324 | Dissolved | Water | 7470A | 34263 |
| 620-18223-9 | GW-MW109-042324 | Dissolved | Water | 7470A | 34263 |
| 620-18223-10 | FD-01 | Dissolved | Water | 7470A | 34263 |
| MB 620-34263/1-A | Method Blank | Total/NA | Water | 7470A | 34263 |
| LCS 620-34263/2-A | Lab Control Sample | Total/NA | Water | 7470A | 34263 |
| LCSD 620-34263/3-A | Lab Control Sample Dup | Total/NA | Water | 7470A | 34263 |
| 620-18223-8 MS | GW-MW108-042324 | Dissolved | Water | 7470A | 34263 |
| 620-18223-8 MSD | GW-MW108-042324 | Dissolved | Water | 7470A | 34263 |
| 620-18223-8 DU | GW-MW108-042324 | Dissolved | Water | 7470A | 34263 |

# Lab Chronicle

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-18223-1

## Client Sample ID: GW-MW101-042324

**Lab Sample ID: 620-18223-1**

**Date Collected: 04/23/24 16:20**

**Matrix: Water**

**Date Received: 04/24/24 16:34**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 34187 | AAH | EET RI | 04/26/24 12:00 |
| Total/NA | Fraction | MA EPH Frac | | | 34232 | AAH | EET RI | 04/29/24 11:32 |
| Total/NA | Analysis | EPH | | 1 | 34336 | JS | EET RI | 05/02/24 13:52 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 34261 | JJB | EET RI | 04/30/24 18:52 |
| Total/NA | Prep | 3510C | | | 34187 | AAH | EET RI | 04/26/24 12:00 |
| Total/NA | Fraction | MA EPH Frac | | | 34232 | AAH | EET RI | 04/29/24 11:32 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 34249 | JS | EET RI | 04/30/24 12:05 |
| Dissolved | Prep | 3005A | | | 34190 | MEM | EET RI | 04/26/24 14:42 |
| Dissolved | Analysis | 6010D | | 1 | 34202 | JPC | EET RI | 04/28/24 01:06 |
| Dissolved | Prep | 7470A | | | 34263 | PRB | EET RI | 04/30/24 10:36 |
| Dissolved | Analysis | 7470A | | 1 | 34279 | PRB | EET RI | 04/30/24 15:38 |

## Client Sample ID: GW-MW102R-042324

**Lab Sample ID: 620-18223-2**

**Date Collected: 04/23/24 12:30**

**Matrix: Water**

**Date Received: 04/24/24 16:34**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 34187 | AAH | EET RI | 04/26/24 12:00 |
| Total/NA | Fraction | MA EPH Frac | | | 34232 | AAH | EET RI | 04/29/24 11:32 |
| Total/NA | Analysis | EPH | | 1 | 34336 | JS | EET RI | 05/02/24 14:15 |
| Total/NA | Prep | 3510C | | | 34187 | AAH | EET RI | 04/26/24 12:00 |
| Total/NA | Fraction | MA EPH Frac | | | 34232 | AAH | EET RI | 04/29/24 11:32 |
| Total/NA | Analysis | EPH | | 4 | 34336 | JS | EET RI | 05/02/24 15:23 |
| Total/NA | Analysis | MAVPH2.1 | DL | 25 | 34261 | JJB | EET RI | 05/01/24 02:01 |
| Total/NA | Analysis | MAVPH2.1 | DL2 | 100 | 34261 | JJB | EET RI | 05/01/24 10:55 |
| Total/NA | Analysis | MAVPH2.1 | | 10 | 34261 | JJB | EET RI | 05/01/24 11:56 |
| Total/NA | Prep | 3510C | | | 34187 | AAH | EET RI | 04/26/24 12:00 |
| Total/NA | Fraction | MA EPH Frac | | | 34232 | AAH | EET RI | 04/29/24 11:32 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 34249 | JS | EET RI | 04/30/24 12:33 |
| Dissolved | Prep | 3005A | | | 34190 | MEM | EET RI | 04/26/24 14:42 |
| Dissolved | Analysis | 6010D | | 1 | 34202 | JPC | EET RI | 04/28/24 01:36 |
| Dissolved | Prep | 7470A | | | 34263 | PRB | EET RI | 04/30/24 10:36 |
| Dissolved | Analysis | 7470A | | 1 | 34279 | PRB | EET RI | 04/30/24 15:41 |

## Client Sample ID: GW-MW103-042324

**Lab Sample ID: 620-18223-3**

**Date Collected: 04/23/24 10:20**

**Matrix: Water**

**Date Received: 04/24/24 16:34**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 34187 | AAH | EET RI | 04/26/24 12:00 |
| Total/NA | Fraction | MA EPH Frac | | | 34232 | AAH | EET RI | 04/29/24 11:32 |
| Total/NA | Analysis | EPH | | 1 | 34336 | JS | EET RI | 05/02/24 14:38 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 34261 | JJB | EET RI | 04/30/24 19:23 |

# Lab Chronicle

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-18223-1

## Client Sample ID: GW-MW103-042324

**Lab Sample ID: 620-18223-3**

**Date Collected: 04/23/24 10:20**

**Matrix: Water**

**Date Received: 04/24/24 16:34**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 34187 | AAH | EET RI | 04/26/24 12:00 |
| Total/NA | Fraction | MA EPH Frac | | | 34232 | AAH | EET RI | 04/29/24 11:32 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 34249 | JS | EET RI | 04/30/24 13:00 |
| Dissolved | Prep | 3005A | | | 34190 | MEM | EET RI | 04/26/24 14:42 |
| Dissolved | Analysis | 6010D | | 1 | 34202 | JPC | EET RI | 04/28/24 01:00 |
| Dissolved | Prep | 7470A | | | 34263 | PRB | EET RI | 04/30/24 10:36 |
| Dissolved | Analysis | 7470A | | 1 | 34279 | PRB | EET RI | 04/30/24 15:47 |

## Client Sample ID: GW-MW104-042324

**Lab Sample ID: 620-18223-4**

**Date Collected: 04/23/24 13:35**

**Matrix: Water**

**Date Received: 04/24/24 16:34**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 34187 | AAH | EET RI | 04/26/24 12:00 |
| Total/NA | Fraction | MA EPH Frac | | | 34232 | AAH | EET RI | 04/29/24 11:32 |
| Total/NA | Analysis | EPH | | 1 | 34336 | JS | EET RI | 05/02/24 15:00 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 34227 | JJB | EET RI | 04/29/24 21:53 |
| Total/NA | Prep | 3510C | | | 34187 | AAH | EET RI | 04/26/24 12:00 |
| Total/NA | Fraction | MA EPH Frac | | | 34232 | AAH | EET RI | 04/29/24 11:32 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 34249 | JS | EET RI | 04/30/24 13:27 |
| Dissolved | Prep | 3005A | | | 34190 | MEM | EET RI | 04/26/24 14:42 |
| Dissolved | Analysis | 6010D | | 1 | 34202 | JPC | EET RI | 04/28/24 01:24 |
| Dissolved | Prep | 7470A | | | 34263 | PRB | EET RI | 04/30/24 10:36 |
| Dissolved | Analysis | 7470A | | 1 | 34279 | PRB | EET RI | 04/30/24 15:49 |

## Client Sample ID: GW-MW105-042324

**Lab Sample ID: 620-18223-5**

**Date Collected: 04/23/24 10:25**

**Matrix: Water**

**Date Received: 04/24/24 16:34**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 34272 | JTE | EET RI | 04/30/24 12:56 |
| Total/NA | Fraction | MA EPH Frac | | | 34305 | JAC | EET RI | 05/01/24 12:16 |
| Total/NA | Analysis | EPH | | 1 | 34360 | JS | EET RI | 05/03/24 10:12 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 34227 | JJB | EET RI | 04/29/24 22:24 |
| Total/NA | Prep | 3510C | | | 34272 | JTE | EET RI | 04/30/24 12:56 |
| Total/NA | Fraction | MA EPH Frac | | | 34305 | JAC | EET RI | 05/01/24 12:16 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 34328 | JS | EET RI | 05/02/24 13:01 |
| Dissolved | Prep | 3005A | | | 34190 | MEM | EET RI | 04/26/24 14:42 |
| Dissolved | Analysis | 6010D | | 1 | 34202 | JPC | EET RI | 04/28/24 01:18 |
| Dissolved | Prep | 7470A | | | 34263 | PRB | EET RI | 04/30/24 10:36 |
| Dissolved | Analysis | 7470A | | 1 | 34279 | PRB | EET RI | 04/30/24 15:51 |

# Lab Chronicle

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-18223-1

## Client Sample ID: GW-MW106-042324

**Lab Sample ID: 620-18223-6**
**Matrix: Water**
**Date Collected: 04/23/24 16:20**
**Date Received: 04/24/24 16:34**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 34272 | JTE | EET RI | 04/30/24 12:56 |
| Total/NA | Fraction | MA EPH Frac | | | 34305 | JAC | EET RI | 05/01/24 12:16 |
| Total/NA | Analysis | EPH | | 1 | 34336 | JS | EET RI | 05/02/24 16:08 |
| Total/NA | Analysis | MAVPH2.1 | | 10 | 34227 | JJB | EET RI | 04/30/24 01:58 |
| Total/NA | Analysis | MAVPH2.1 | DL | 25 | 34261 | JJB | EET RI | 05/01/24 01:00 |
| Total/NA | Prep | 3510C | | | 34272 | JTE | EET RI | 04/30/24 12:56 |
| Total/NA | Fraction | MA EPH Frac | | | 34305 | JAC | EET RI | 05/01/24 12:16 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 34328 | JS | EET RI | 05/02/24 13:28 |
| Total/NA | Prep | 3510C | | | 34272 | JTE | EET RI | 04/30/24 12:56 |
| Total/NA | Fraction | MA EPH Frac | | | 34305 | JAC | EET RI | 05/01/24 12:16 |
| Total/NA | Analysis | MAEPH2.1 | | 4 | 34328 | JS | EET RI | 05/02/24 14:22 |
| Dissolved | Prep | 3005A | | | 34190 | MEM | EET RI | 04/26/24 14:42 |
| Dissolved | Analysis | 6010D | | 1 | 34202 | JPC | EET RI | 04/28/24 01:30 |
| Dissolved | Prep | 7470A | | | 34263 | PRB | EET RI | 04/30/24 10:36 |
| Dissolved | Analysis | 7470A | | 1 | 34279 | PRB | EET RI | 04/30/24 15:54 |

## Client Sample ID: GW-MW107-042324

**Lab Sample ID: 620-18223-7**
**Matrix: Water**
**Date Collected: 04/23/24 14:40**
**Date Received: 04/24/24 16:34**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 34272 | JTE | EET RI | 04/30/24 12:56 |
| Total/NA | Fraction | MA EPH Frac | | | 34305 | JAC | EET RI | 05/01/24 12:16 |
| Total/NA | Analysis | EPH | | 1 | 34336 | JS | EET RI | 05/02/24 15:46 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 34261 | JJB | EET RI | 04/30/24 19:54 |
| Total/NA | Prep | 3510C | | | 34272 | JTE | EET RI | 04/30/24 12:56 |
| Total/NA | Fraction | MA EPH Frac | | | 34305 | JAC | EET RI | 05/01/24 12:16 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 34328 | JS | EET RI | 05/02/24 13:55 |
| Dissolved | Prep | 3005A | | | 34190 | MEM | EET RI | 04/26/24 14:42 |
| Dissolved | Analysis | 6010D | | 1 | 34202 | JPC | EET RI | 04/28/24 00:54 |
| Dissolved | Prep | 7470A | | | 34263 | PRB | EET RI | 04/30/24 10:36 |
| Dissolved | Analysis | 7470A | | 1 | 34279 | PRB | EET RI | 04/30/24 15:56 |

## Client Sample ID: GW-MW108-042324

**Lab Sample ID: 620-18223-8**
**Matrix: Water**
**Date Collected: 04/23/24 12:00**
**Date Received: 04/24/24 16:34**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 34272 | JTE | EET RI | 04/30/24 12:56 |
| Total/NA | Fraction | MA EPH Frac | | | 34305 | JAC | EET RI | 05/01/24 12:16 |
| Total/NA | Analysis | EPH | | 1 | 34336 | JS | EET RI | 05/02/24 16:54 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 34261 | JJB | EET RI | 04/30/24 20:24 |
| Total/NA | Prep | 3510C | | | 34272 | JTE | EET RI | 04/30/24 12:56 |
| Total/NA | Fraction | MA EPH Frac | | | 34305 | JAC | EET RI | 05/01/24 12:16 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 34328 | JS | EET RI | 05/02/24 14:50 |

# Lab Chronicle

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-18223-1

## Client Sample ID: GW-MW108-042324

**Lab Sample ID: 620-18223-8**

**Date Collected: 04/23/24 12:00**

**Matrix: Water**

**Date Received: 04/24/24 16:34**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Dissolved | Prep | 3005A | | | 34190 | MEM | EET RI | 04/26/24 14:42 |
| Dissolved | Analysis | 6010D | | 1 | 34202 | JPC | EET RI | 04/27/24 23:49 |
| Dissolved | Prep | 7470A | | | 34263 | PRB | EET RI | 04/30/24 10:36 |
| Dissolved | Analysis | 7470A | | 1 | 34279 | PRB | EET RI | 04/30/24 15:58 |

## Client Sample ID: GW-MW109-042324

**Lab Sample ID: 620-18223-9**

**Date Collected: 04/23/24 14:30**

**Matrix: Water**

**Date Received: 04/24/24 16:34**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 34272 | JTE | EET RI | 04/30/24 12:56 |
| Total/NA | Fraction | MA EPH Frac | | | 34305 | JAC | EET RI | 05/01/24 12:16 |
| Total/NA | Analysis | EPH | | 1 | 34336 | JS | EET RI | 05/02/24 18:02 |
| Total/NA | Analysis | MAVPH2.1 | DL | 10 | 34261 | JJB | EET RI | 05/01/24 01:31 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 34261 | JJB | EET RI | 05/01/24 13:32 |
| Total/NA | Prep | 3510C | | | 34272 | JTE | EET RI | 04/30/24 12:56 |
| Total/NA | Fraction | MA EPH Frac | | | 34305 | JAC | EET RI | 05/01/24 12:16 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 34328 | JS | EET RI | 05/02/24 16:12 |
| Dissolved | Prep | 3005A | | | 34190 | MEM | EET RI | 04/26/24 14:42 |
| Dissolved | Analysis | 6010D | | 1 | 34202 | JPC | EET RI | 04/28/24 01:54 |
| Dissolved | Prep | 7470A | | | 34263 | PRB | EET RI | 04/30/24 10:36 |
| Dissolved | Analysis | 7470A | | 1 | 34279 | PRB | EET RI | 04/30/24 16:06 |

## Client Sample ID: FD-01

**Lab Sample ID: 620-18223-10**

**Date Collected: 04/23/24 08:00**

**Matrix: Water**

**Date Received: 04/24/24 16:34**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 34272 | JTE | EET RI | 04/30/24 12:56 |
| Total/NA | Fraction | MA EPH Frac | | | 34305 | JAC | EET RI | 05/01/24 12:16 |
| Total/NA | Analysis | EPH | | 1 | 34360 | JS | EET RI | 05/03/24 10:34 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 34261 | JJB | EET RI | 04/30/24 21:56 |
| Total/NA | Prep | 3510C | | | 34272 | JTE | EET RI | 04/30/24 12:56 |
| Total/NA | Fraction | MA EPH Frac | | | 34305 | JAC | EET RI | 05/01/24 12:16 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 34328 | JS | EET RI | 05/02/24 16:40 |
| Dissolved | Prep | 3005A | | | 34190 | MEM | EET RI | 04/26/24 14:42 |
| Dissolved | Analysis | 6010D | | 1 | 34202 | JPC | EET RI | 04/28/24 01:12 |
| Dissolved | Prep | 7470A | | | 34263 | PRB | EET RI | 04/30/24 10:54 |
| Dissolved | Analysis | 7470A | | 1 | 34279 | PRB | EET RI | 04/30/24 16:13 |

# Lab Chronicle

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-18223-1

## Client Sample ID: TB-01

**Date Collected: 04/22/24 08:00**
**Date Received: 04/24/24 16:34**

## Lab Sample ID: 620-18223-11

**Matrix: Water**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | MAVPH2.1 | | 1 | 34261 | JJB | EET RI | 04/30/24 18:21 |

**Laboratory References:**

EET RI = Eurofins Rhode Island, 646 Camp Ave, North Kingstown, RI 02852, TEL (413)789-9018

# Accreditation/Certification Summary

Client: Nobis Engineering, Inc. Job ID: 620-18223-1
Project/Site: Former L&M - Lunenburg MA

## Laboratory: Eurofins Rhode Island

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

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|
| Massachusetts | State | M-RI907 | 06-30-24 |

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

| Analysis Method | Prep Method | Matrix | Analyte |
|---|---|---|---|
| 6010D | 3005A | Water | Antimony |
| 6010D | 3005A | Water | Arsenic |
| 6010D | 3005A | Water | Barium |
| 6010D | 3005A | Water | Beryllium |
| 6010D | 3005A | Water | Cadmium |
| 6010D | 3005A | Water | Chromium |
| 6010D | 3005A | Water | Lead |
| 6010D | 3005A | Water | Nickel |
| 6010D | 3005A | Water | Selenium |
| 6010D | 3005A | Water | Silver |
| 6010D | 3005A | Water | Thallium |
| 6010D | 3005A | Water | Vanadium |
| 6010D | 3005A | Water | Zinc |
| 7470A | 7470A | Water | Mercury |
| EPH | 3510C | Water | 2-Methylnaphthalene |
| EPH | 3510C | Water | Acenaphthene |
| EPH | 3510C | Water | Acenaphthylene |
| EPH | 3510C | Water | Anthracene |
| EPH | 3510C | Water | Benzo[a]anthracene |
| EPH | 3510C | Water | Benzo[a]pyrene |
| EPH | 3510C | Water | Benzo[b]fluoranthene |
| EPH | 3510C | Water | Benzo[g,h,i]perylene |
| EPH | 3510C | Water | Benzo[k]fluoranthene |
| EPH | 3510C | Water | Chrysene |
| EPH | 3510C | Water | Dibenz(a,h)anthracene |
| EPH | 3510C | Water | Fluoranthene |
| EPH | 3510C | Water | Fluorene |
| EPH | 3510C | Water | Indeno[1,2,3-cd]pyrene |
| EPH | 3510C | Water | Naphthalene |
| EPH | 3510C | Water | Phenanthrene |
| EPH | 3510C | Water | Pyrene |
| MAEPH2.1 | 3510C | Water | C11-C22 Aromatics |
| MAEPH2.1 | 3510C | Water | C11-C22 Aromatics (Adjusted) |
| MAEPH2.1 | 3510C | Water | C19-C36 Aliphatics |
| MAEPH2.1 | 3510C | Water | C9-C18 Aliphatics |
| MAVPH2.1 | | Water | Benzene |
| MAVPH2.1 | | Water | C5-C8 Aliphatics (adjusted) |
| MAVPH2.1 | | Water | C5-C8 Aliphatics (unadjusted) |
| MAVPH2.1 | | Water | C9-C10 Aromatics |
| MAVPH2.1 | | Water | C9-C12 Aliphatics (adjusted) |
| MAVPH2.1 | | Water | C9-C12 Aliphatics (unadjusted) |
| MAVPH2.1 | | Water | Ethylbenzene |
| MAVPH2.1 | | Water | m,p-Xylene |
| MAVPH2.1 | | Water | Methyl tert-butyl ether |
| MAVPH2.1 | | Water | Naphthalene |

Client: Nobis Engineering, Inc. Job ID: 620-18223-1
Project/Site: Former L&M - Lunenburg MA

## Laboratory: Eurofins Rhode Island (Continued)

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

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

| Analysis Method | Prep Method | Matrix | Analyte |
|---|---|---|---|
| MAVPH2.1 | | Water | o-Xylene |
| MAVPH2.1 | | Water | Toluene |
| MAVPH2.1 | | Water | Xylenes, Total |

# Method Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-18223-1

| Method | Method Description | Protocol | Laboratory |
|---|---|---|---|
| EPH | Extractable Petroleum Hydrocarbons (GC/MS) | MA DEP | EET RI |
| MAVPH2.1 | Massachusetts - Volatile Petroleum Hydrocarbons (GC) | MA DEP | EET RI |
| MAEPH2.1 | Massachusetts - Extractable Petroleum Hydrocarbons (GC) | MA DEP | EET RI |
| 6010D | Metals (ICP) | SW846 | EET RI |
| 7470A | Mercury (CVAA) | SW846 | EET RI |
| 3005A | Preparation, Total Metals | SW846 | EET RI |
| 3510C | Liquid-Liquid Extraction (Separatory Funnel) | SW846 | EET RI |
| 5030C | Purge and Trap | SW846 | EET RI |
| 7470A | Preparation, Mercury | SW846 | EET RI |
| MA EPH Frac | Massachusetts - Extractable Petroleum Hydrocarbon Fractionation | MA DEP | EET RI |

**Protocol References:**

MA DEP = Massachusetts Department Of Environmental Protection

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

**Laboratory References:**

EET RI = Eurofins Rhode Island, 646 Camp Ave, North Kingstown, RI 02852, TEL (413)789-9018

# Sample Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-18223-1

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---|---|---|---|---|
| 620-18223-1 | GW-MW101-042324 | Water | 04/23/24 16:20 | 04/24/24 16:34 |
| 620-18223-2 | GW-MW102R-042324 | Water | 04/23/24 12:30 | 04/24/24 16:34 |
| 620-18223-3 | GW-MW103-042324 | Water | 04/23/24 10:20 | 04/24/24 16:34 |
| 620-18223-4 | GW-MW104-042324 | Water | 04/23/24 13:35 | 04/24/24 16:34 |
| 620-18223-5 | GW-MW105-042324 | Water | 04/23/24 10:25 | 04/24/24 16:34 |
| 620-18223-6 | GW-MW106-042324 | Water | 04/23/24 16:20 | 04/24/24 16:34 |
| 620-18223-7 | GW-MW107-042324 | Water | 04/23/24 14:40 | 04/24/24 16:34 |
| 620-18223-8 | GW-MW108-042324 | Water | 04/23/24 12:00 | 04/24/24 16:34 |
| 620-18223-9 | GW-MW109-042324 | Water | 04/23/24 14:30 | 04/24/24 16:34 |
| 620-18223-10 | FD-01 | Water | 04/23/24 08:00 | 04/24/24 16:34 |
| 620-18223-11 | TB-01 | Water | 04/22/24 08:00 | 04/24/24 16:34 |



620-18223 Chain of Custody

18223

# Chain of Custody Record

eurofins | Environment Testing

| | | | | |
|---|---|---|---|---|
| | Sampler: C. Balmowiz P. Moran | Lab PM. | Carrier Tracking No(s) | COC No: 620-16421-2177 1 |
| Client Contact: Adam Roy | Phone. | E-Mail: CBalmowiz@nobis-group.com | State of Origin. | Page: Page 1 of 2 |
| Company: Nobis Engineering, Inc | PWSID: | Analysis Requested | | Job #: |
| Address: 585 Middlesex Street | Due Date Requested: Standard | | | Preservation Codes: A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify) |
| City: Lowell | TAT Requested (days): | | | |
| State, Zip: MA, 01851 | Compliance Project: ☒ Yes ☐ No MA MCP | | | Other: |
| Phone. | PO #: | | | |
| Email: aroy@nobis-group.com | WO #: | | | |
| Project Name: Former L&M Service Sation | Project #: S66601.65 | | | |
| Site: Lunenberg, MA | SSOW#: | | | |

| Sample Identification | Sample Date | Sample Time | Sample Type (C=Comp, G=grab) | Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air) | Field Filtered Sample (Yes or No) | Perform MS/MSD (Yes or No) | VPH + target VOCs | EPH + target PAHs | MCP Metals | Total Number of containers | Special Instructions/Note: |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preservation Code: | | | | A | A | D | | Metals were field filtered |
| 1 GW-MW101-042324 | 4/23/24 | 1620 | G | Water | | | ✓ | ✓ | ✓ | | |
| 2 GW-MW102R-042324 | | 1230 | | Water | | | ✓ | ✓ | ✓ | | |
| 3 GW-MW103-042324 | | 1020 | | Water | | | ✓ | ✓ | ✓ | | |
| 4 GW-MW104-042324 | | 1335 | | Water | | | ✓ | ✓ | ✓ | | |
| 5 GW-MW105-042324 | | 1025 | | Water | | | ✓ | ✓ | ✓ | | |
| 6 GW-MW106-042324 | | 1020 | | Water | | | ✓ | ✓ | ✓ | | |
| 7 GW-MW107-042324 | | 1440 | | Water | | | ✓ | ✓ | ✓ | | |
| 8 GW-MW108-042324 | | 1200 | | Water | X | | ✓ | ✓ | ✓ | | |
| 9 GW-MW109-042324 | | 1430 | | Water | | | ✓ | ✓ | ✓ | | |
| 10 FD-01 | | 800 | | Water | | | ✓ | ✓ | ✓ | | |
| 11 TB-01 | 4/22/24 | 800 | | Water | | | ✓ | | | | |

**Possible Hazard Identification**
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

**Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)**
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested I, II, III, IV, Other (specify)

Special Instructions/QC Requirements: Email edd to aroy@nobis-group.com & ggiemon@nobis-group.com

| | | | |
|---|---|---|---|
| Empty Kit Relinquished by: | Date. | Time: | Method of Shipment: |
| Relinquished by: Caroline Balmowiz | Date/Time: 4/24/24 | Company: Nobis | Received by: | Date/Time: 4/24/24 13:50 | Company: ESE |
| Relinquished by: | Date/Time: 4/24/24 16:34 | Company: ESE | Received by: | Date/Time: 4/24/24 16:34 | Company: ERI |
| Relinquished by: | Date/Time | Company | Received by: | Date/Time. | Company |

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No..

Cooler Temperature(s) °C and Other Remarks: 4.4 -0.2 #2 #6/4.6 -0.2 4.4 #6/5.2 -0.2 5.0 #6

Ver: 06/08/2021

Page 63 of 64

5/3/2024

# Login Sample Receipt Checklist

Client: Nobis Engineering, Inc.

Job Number: 620-18223-1

**Login Number: 18223**
**List Number: 1**
**Creator: Makhoul, Elie**

**List Source: Eurofins Rhode Island**

| Question | Answer | Comment |
|---|---|---|
| Radioactivity wasn't checked or is </= background as measured by a survey meter. | N/A | |
| The cooler's custody seal, if present, is intact. | N/A | |
| Sample custody seals, if present, are intact. | N/A | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| Is the Field Sampler's name present on COC? | True | |
| There are no discrepancies between the containers received and the COC. | True | |
| Samples are received within Holding Time (excluding tests with immediate HTs) | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| Sample Preservation Verified. | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| Containers requiring zero headspace have no headspace or bubble is <6mm (1/4"). | True | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |
| Residual Chlorine Checked. | N/A | |

September 13, 2024
Nobis File No. S00001.05

Ms. Katy Deng
USEPA – Region 1
Land, Chemicals, and Redevelopment Division
5 Post Office Square, Suite 100
Boston, MA 02109-3912

Re: USEPA Contract No. 68HE0122D0001
USEPA Task Order No. 68HE0122F0044
Targeted Brownfields Assessment (TBA)
Former L&M Service Station Site
Lunenburg, Massachusetts
Sample Delivery Group (SDG) No. 620196671
Eurofins New England, North Kingstown, RI

Tier 1 Stage 2A Organic and Inorganic Data Review:

Volatile Petroleum Hydrocarbons (VPH by MassDEP-VPH), Extractable Petroleum Hydrocarbons (EPH by MassDEP-EPH), Massachusetts Contingency Plan (MCP) Dissolved Metals (MCP-14 Metals by 6010D/7470A)

9/Groundwater Samples: GW-MW107-072524, GW-MW104-072524, GW-MW102R-072524, GW-MW103-072524, GW-MW105-072524, FD-01-072524, GW-MW101-072624, GW-MW109-072624, GW-MW108-072624
1/Field Duplicate Pair: GW-MW102R-072524 / FD-01-072524
1/Aqueous Trip Blank: TB-01-072624

Dear Ms. Deng:

Nobis Group (Nobis), under a USEPA contract as a subcontractor to KGSNE JV, LLC, performed a Tier 1 Stage 2A manual data review (S2AVM) on the organic and inorganic analytical data for the samples listed above. The samples were collected by Nobis at the Former L&M Service Station Site located in Lunenburg, Massachusetts on July 25, 2024 and July 26, 2024. The samples were analyzed for VPHs by MassDEP-VPH, EPHs by MassDEP-EPH, and MCP-14 Metals by EPA Methods 6010D/7470A by Eurofins New England in North Kingstown, RI.

The Tier 1 Stage 2A manual data review was performed in accordance with the Region 1 - EPA New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures (September 2020); USEPA's National Functional Guidelines for Organic Superfund Methods Data Review (November 2020); USEPA's National Functional Guidelines for Inorganic Superfund Methods Data Review (November 2020); the Program Quality Assurance Project Plan (Program QAPP) dated October 2022, and the Quality Assurance Project Plan Addendum (QAPPA) (May 2023) for the Former L&M Service Station Site, which appends the October 2022 Program QAPP.

The data were evaluated based on the following parameters:

* • Overall Evaluation of Data and Potential Usability Issues
* • Data Completeness
* • Preservation and Technical Holding Times



Nobis Group®
585 Middlesex Street
Lowell, MA 01851
T (978) 683-0891

| | | |
|---|---|---|
| * | • | Blanks |
| * | • | Surrogates (organic analyses only) |
| NA | • | Internal Standards |
| * | • | Matrix Spike Analysis |
| * | • | Laboratory Duplicates |
| * | • | Laboratory Control Samples (LCS) |
| | • | Field Duplicates |
| NA | • | ICP Serial Dilutions (metals only) |
| NA | • | Performance Evaluation (PE) Samples |
| NA | • | Target Analyte Identification |
| * | • | Reported Quantitation Limits |

* All criteria were met for this parameter or did not require qualification.
NA – Not applicable.

**Overall Evaluation of Data and Potential Usability Issues**

The site sampling objectives are:

- Characterize in-situ soil based on AOCs identified by Fuss & O'Neill in November 2020 Phase I for the presence of possible site-related contamination.
- Evaluate groundwater elevation.
- Evaluate presence/absence of groundwater contamination related to site.

Note that all groundwater samples for metals/mercury analysis were field-filtered and analyzed for dissolved metals/mercury except for sample GW-MW108-072624. The sample was received at the laboratory in a nitric acid bottle with a pH < 2. The laboratory was instructed to analyze the sample for total metals instead.

The data meet the project quality criteria and can be used without restriction except as summarized below. The attachments provide details and supporting documentation.

**MassDEP-VPH:**
Qualification of the data was not required.

**MassDEP-EPH:**
Results were qualified for field duplicate imprecision.

**MCP-14 Metals and Mercury:**
Qualification of the data was not required.

Please contact Linda Terzis at lterzis@nobis-group.com should you have any questions or comments regarding this information.

Sincerely,

NOBIS GROUP®

Linda Terzis

Linda Terzis
Data Validator

Gary Glennon
Data Validator

Tables: Data Summary Tables – Tier 1 Stage 2A (S2AVM) Validated Data
Data Qualification Actions Table

Attachments: Data Review Checklist
Support Documentation
COC

cc: Denis McGrath (Nobis Group)
Adam Roy (Nobis Group)

# DATA SUMMARY TABLE

| **Analysis** | | EPH in Groundwater | | | | |
|---|---|---|---|---|---|---|
| **Lab Sample ID** | | 620-19967-1 | 620-19967-2 | 620-19967-3 | 620-19967-5 | 620-19967-6 |
| **Field Sample ID** | | GW-MW107-072524 | GW-MW104-072524 | GW-MW102R-072524 | GW-MW105-072524 | FD-01-072524 |
| **Sample Type** | | N | N | N | N | FD |
| **Parent Sample ID** | | | | | | GW-MW102R-072524 |
| **Sample Date** | **Units** | 07/25/24 | 07/25/24 | 07/25/24 | 07/25/24 | 07/25/24 |
| 2-Methylnaphthalene | ug/L | 0.95 UJ | 1.1 UJ | 13 J | 0.95 UJ | 7.3 J |
| Acenaphthene | ug/L | 0.95 U | 1.1 U | 1.1 U | 0.95 U | 1.1 U |
| Acenaphthylene | ug/L | 0.95 U | 1.1 U | 1.1 U | 0.95 U | 1.1 U |
| Anthracene | ug/L | 0.95 U | 1.1 U | 1.1 U | 0.95 U | 1.1 U |
| Benzo(a)anthracene | ug/L | 0.95 U | 1.1 U | 1.1 U | 0.95 U | 1.1 U |
| Benzo(a)pyrene | ug/L | 0.19 U | 0.21 U | 0.22 U | 0.19 U | 0.21 U |
| Benzo(b)fluoranthene | ug/L | 0.95 U | 1.1 U | 1.1 U | 0.95 U | 1.1 U |
| Benzo(g,h,i)perylene | ug/L | 0.95 U | 1.1 U | 1.1 U | 0.95 U | 1.1 U |
| Benzo(k)fluoranthene | ug/L | 0.95 U | 1.1 U | 1.1 U | 0.95 U | 1.1 U |
| C11-C22 Aromatics | ug/L | 95 U | 110 U | 200 | 98 | 190 |
| C11-C22 Aromatics (adjusted) | ug/L | 95 U | 110 U | 140 | 98 | 150 |
| C19-C36 Aliphatics | ug/L | 95 U | 110 U | 110 U | 95 U | 110 U |
| C9-C18 Aliphatics | ug/L | 95 U | 110 U | 110 | 95 U | 120 |
| Chrysene | ug/L | 0.95 U | 1.1 U | 1.1 U | 0.95 U | 1.1 U |
| Dibenz(a,h)anthracene | ug/L | 0.48 U | 0.53 U | 0.56 U | 0.48 U | 0.53 U |
| Fluoranthene | ug/L | 0.95 U | 1.1 U | 1.1 U | 0.95 U | 1.1 U |
| Fluorene | ug/L | 0.95 U | 1.1 U | 1.1 U | 0.95 U | 1.1 U |
| Indeno(1,2,3-cd)pyrene | ug/L | 0.48 U | 0.53 U | 0.56 U | 0.48 U | 0.53 U |
| Naphthalene | ug/L | 0.45 J | 1.1 UJ | 87 J | 0.95 UJ | 28 J |
| Phenanthrene | ug/L | 0.95 U | 1.1 U | 1.1 U | 0.95 U | 1.1 U |
| Pyrene | ug/L | 0.95 U | 1.1 U | 1.1 U | 0.95 U | 1.1 U |



U – not detected; J – estimated value; R – rejected; EB – detected in equipment blank; N – tentatively identified; + biased high; - biased low

# DATA SUMMARY TABLE

| **Analysis** | | EPH in Groundwater | | |
|---|---|---|---|---|
| **Lab Sample ID** | | 620-19967-7 | 620-19967-8 | 620-19967-9 |
| **Field Sample ID** | | GW-MW101-072624 | GW-MW109-072624 | GW-MW108-072624 |
| **Sample Type** | | N | N | N |
| **Parent Sample ID** | | | | |
| **Sample Date** | **Units** | 07/26/24 | 07/26/24 | 07/26/24 |
| 2-Methylnaphthalene | ug/L | 1 UJ | 51 J | 1.1 UJ |
| Acenaphthene | ug/L | 1 U | 0.95 U | 1.1 U |
| Acenaphthylene | ug/L | 1 U | 0.95 U | 1.1 U |
| Anthracene | ug/L | 1 U | 0.95 U | 1.1 U |
| Benzo(a)anthracene | ug/L | 1 U | 0.95 U | 1.1 U |
| Benzo(a)pyrene | ug/L | 0.2 U | 0.19 U | 0.22 U |
| Benzo(b)fluoranthene | ug/L | 1 U | 0.95 U | 1.1 U |
| Benzo(g,h,i)perylene | ug/L | 1 U | 0.95 U | 1.1 U |
| Benzo(k)fluoranthene | ug/L | 1 U | 0.95 U | 1.1 U |
| C11-C22 Aromatics | ug/L | 140 | 350 | 120 |
| C11-C22 Aromatics (adjusted) | ug/L | 140 | 240 | 120 |
| C19-C36 Aliphatics | ug/L | 360 | 95 U | 110 U |
| C9-C18 Aliphatics | ug/L | 100 U | 430 | 110 U |
| Chrysene | ug/L | 1 U | 0.95 U | 1.1 U |
| Dibenz(a,h)anthracene | ug/L | 0.5 U | 0.48 U | 0.56 U |
| Fluoranthene | ug/L | 1 U | 0.95 U | 1.1 U |
| Fluorene | ug/L | 1 U | 0.95 U | 1.1 U |
| Indeno(1,2,3-cd)pyrene | ug/L | 0.5 U | 0.48 U | 0.56 U |
| Naphthalene | ug/L | 1 UJ | 150 J | 1.1 UJ |
| Phenanthrene | ug/L | 1 U | 0.95 U | 1.1 U |
| Pyrene | ug/L | 0.2 J | 0.95 U | 1.1 U |

# DATA SUMMARY TABLE

| **Analysis** | | Dissolved Metals in Groundwater | | | | |
|---|---|---|---|---|---|---|
| **Lab Sample ID** | | 620-19967-1 | 620-19967-2 | 620-19967-3 | 620-19967-5 | 620-19967-6 |
| **Field Sample ID** | | GW-MW107-072524 | GW-MW104-072524 | GW-MW102R-072524 | GW-MW105-072524 | FD-01-072524 |
| **Sample Type** | | N | N | N | N | FD |
| **Parent Sample ID** | | | | | | GW-MW102R-072524 |
| **Sample Date** | **Units** | 07/25/24 | 07/25/24 | 07/25/24 | 07/25/24 | 07/25/24 |
| Antimony | mg/L | 0.0018 J | 0.0024 J | 0.0019 J | 0.006 U | 0.0023 J |
| Arsenic | mg/L | 0.043 | 0.0088 | 0.063 | 0.004 U | 0.072 |
| Barium | mg/L | 0.029 | 0.14 | 0.12 | 0.16 | 0.13 |
| Beryllium | mg/L | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Cadmium | mg/L | 0.0025 U | 0.0015 J | 0.00049 J | 0.0025 U | 0.00058 J |
| Chromium | mg/L | 0.005 U | 0.005 U | 0.0013 J | 0.005 U | 0.0016 J |
| Lead | mg/L | 0.0075 U | 0.0075 U | 0.0075 U | 0.0075 U | 0.0075 U |
| Mercury | mg/L | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U |
| Nickel | mg/L | 0.0021 J | 0.023 | 0.0038 J | 0.0009 J | 0.0044 J |
| Selenium | mg/L | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U |
| Silver | mg/L | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Thallium | mg/L | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Vanadium | mg/L | 0.005 U | 0.005 U | 0.0013 J | 0.005 U | 0.0017 J |
| Zinc | mg/L | 0.005 U | 0.12 | 0.005 U | 0.0039 J | 0.005 U |

# DATA SUMMARY TABLE

| **Analysis** | | Dissolved Metals in Groundwater | Metals in Groundwater |
|---|---|---|---|
| **Lab Sample ID** | | 620-19967-8 | 620-19967-9 |
| **Field Sample ID** | | GW-MW109-072624 | GW-MW108-072624 |
| **Sample Type** | | N | N |
| **Parent Sample ID** | | | |
| **Sample Date** | **Units** | 07/26/24 | 07/26/24 |
| Antimony | mg/L | 0.006 U | 0.006 U |
| Arsenic | mg/L | 0.041 | 0.004 U |
| Barium | mg/L | 0.043 | 0.088 |
| Beryllium | mg/L | 0.002 U | 0.002 U |
| Cadmium | mg/L | 0.0025 U | 0.0025 U |
| Chromium | mg/L | 0.005 U | 0.005 U |
| Lead | mg/L | 0.0075 U | 0.0075 U |
| Mercury | mg/L | 0.0002 U | 0.0002 U |
| Nickel | mg/L | 0.0022 J | 0.0026 J |
| Selenium | mg/L | 0.015 U | 0.015 U |
| Silver | mg/L | 0.005 U | 0.005 U |
| Thallium | mg/L | 0.005 U | 0.0021 J |
| Vanadium | mg/L | 0.005 U | 0.005 U |
| Zinc | mg/L | 0.005 U | 0.0096 |

# DATA SUMMARY TABLE

| **Analysis** | | VPH in Groundwater | | | | |
|---|---|---|---|---|---|---|
| **Lab Sample ID** | | 620-19967-1 | 620-19967-2 | 620-19967-3 | 620-19967-4 | 620-19967-5 |
| **Field Sample ID** | | GW-MW107-072524 | GW-MW104-072524 | GW-MW102R-072524 | GW-MW103-072524 | GW-MW105-072524 |
| **Sample Type** | | N | N | N | N | N |
| **Parent Sample ID** | | | | | | |
| **Sample Date** | **Units** | 07/25/24 | 07/25/24 | 07/25/24 | 07/25/24 | 07/25/24 |
| Benzene | ug/L | 5 U | 5 U | 25 | 5 U | 5 U |
| C5-C8 Aliphatics (adjusted) | ug/L | 100 U | 100 U | 530 | 100 U | 100 U |
| C5-C8 Aliphatics (unadjusted) | ug/L | 100 U | 100 U | 740 | 100 U | 100 U |
| C9-C10 Aromatics | ug/L | 100 U | 100 U | 1200 | 100 U | 100 U |
| C9-C12 Aliphatics (adjusted) | ug/L | 100 U | 100 U | 3800 | 100 U | 100 U |
| C9-C12 Aliphatics (unadjusted) | ug/L | 110 | 100 U | 6900 | 100 U | 100 U |
| Ethylbenzene | ug/L | 7.7 | 5 U | 220 | 5 U | 5 U |
| m,p-Xylene | ug/L | 10 U | 10 U | 740 | 10 U | 10 U |
| Methyl tert-butyl ether | ug/L | 5 U | 7 | 190 | 5 U | 5 U |
| Naphthalene | ug/L | 5 U | 5 U | 77 | 5 U | 5 U |
| o-Xylene | ug/L | 5 U | 5 U | 10 U | 5 U | 5 U |
| Toluene | ug/L | 5 U | 5 U | 10 U | 5 U | 5 U |
| Xylene (total) | ug/L | 15 U | 15 U | 740 | 15 U | 15 U |



U – not detected; J – estimated value; R – rejected; EB – detected in equipment blank; N – tentatively identified; + biased high; - biased low

## DATA SUMMARY TABLE

| **Analysis** | | VPH in Groundwater | | | |
|---|---|---|---|---|---|
| **Lab Sample ID** | | 620-19967-6 | 620-19967-7 | 620-19967-8 | 620-19967-9 |
| **Field Sample ID** | | FD-01-072524 | GW-MW101-072624 | GW-MW109-072624 | GW-MW108-072624 |
| **Sample Type** | | FD | N | N | N |
| **Parent Sample ID** | | GW-MW102R-072524 | | | |
| **Sample Date** | **Units** | 07/25/24 | 07/26/24 | 07/26/24 | 07/26/24 |
| Benzene | ug/L | 29 | 5 U | 10 U | 5 U |
| C5-C8 Aliphatics (adjusted) | ug/L | 540 | 100 U | 200 U | 100 U |
| C5-C8 Aliphatics (unadjusted) | ug/L | 760 | 100 U | 200 U | 100 U |
| C9-C10 Aromatics | ug/L | 1200 | 100 U | 3000 | 100 U |
| C9-C12 Aliphatics (adjusted) | ug/L | 3200 | 100 U | 3700 | 100 U |
| C9-C12 Aliphatics (unadjusted) | ug/L | 6000 | 100 U | 7000 | 100 U |
| Ethylbenzene | ug/L | 240 | 5 U | 97 | 5 U |
| m,p-Xylene | ug/L | 810 | 10 U | 290 | 10 U |
| Methyl tert-butyl ether | ug/L | 190 | 5 U | 45 | 5 U |
| Naphthalene | ug/L | 94 | 5 U | 130 | 5 U |
| o-Xylene | ug/L | 10 | 5 U | 10 U | 5 U |
| Toluene | ug/L | 10 U | 5 U | 10 U | 5 U |
| Xylene (total) | ug/L | 830 | 15 U | 290 | 15 U |

# DATA SUMMARY TABLE

| **Analysis** | | VPH in Water Quality Control Matrix |
|---|---|---|
| **Lab Sample ID** | | 620-19967-10 |
| **Field Sample ID** | | TB-01-072624 |
| **Sample Type** | | TB |
| **Parent Sample ID** | | |
| **Sample Date** | **Units** | 07/26/24 |
| Benzene | ug/L | 5 U |
| C5-C8 Aliphatics (adjusted) | ug/L | 100 U |
| C5-C8 Aliphatics (unadjusted) | ug/L | 100 U |
| C9-C10 Aromatics | ug/L | 100 U |
| C9-C12 Aliphatics (adjusted) | ug/L | 100 U |
| C9-C12 Aliphatics (unadjusted) | ug/L | 100 U |
| Ethylbenzene | ug/L | 5 U |
| m,p-Xylene | ug/L | 10 U |
| Methyl tert-butyl ether | ug/L | 5 U |
| Naphthalene | ug/L | 5 U |
| o-Xylene | ug/L | 5 U |
| Toluene | ug/L | 5 U |
| Xylene (total) | ug/L | 15 U |

**Data Review Qualification Actions**
**Former L&M Service Station**
**SDG 620-19967-1**

| Parameter | Analyte | Samples | Evaluation Criteria | Action Needed | Comments |
|---|---|---|---|---|---|
| **MassDEP-VPH** | | | | | |
| | Qualification of the data was not required. | | | | |
| **MassDEP-EPH** | | | | | |
| | 2-Methylnaphthalene, naphthalene | All GW samples | Field duplicate imprecision | J / UJ | |
| **MCP-14 Metals / Mercury** | | | | | |
| | Qualification of the data was not required. | | | | |

**Tier 1/Stage 2A Data Review Checklist**

**Project:** Former L&M Service Station, Lunenburg, Massachusetts
Targeted Brownfields Assessment (TBA)
**Project #:** S00001.05

**Date:** 08/26/2024

**Methods:** Volatile Petroleum Hydrocarbons (VPH) (MassDEP-VPH)
Extractable Petroleum Hydrocarbons (EPH) (MassDEP-EPH)
Massachusetts Contingency Plan (MCP) Dissolved Metals (MCP-14 Metals by 6010D/7470A)

**Laboratory:** Eurofins New England Laboratory, North Kingstown, RI
**Case:** N/A
**SDG:** 620199671
**Reviewer:** Linda Terzis

1. **Case Narrative and Data Package Completeness (COC and Analyte List Review)**
Nine (9) groundwater samples, including one field duplicate sample, were listed on the COC for SDG 620199671. One trip blank sample was also included on the COC. The samples were collected on 07/25/2024 and 07/26/2024 and received at the Eurofins New England Laboratory on 07/26/2024 at a maximum temperature of 4.4 °C.

| Sample ID | Laboratory ID | Analyses |
|---|---|---|
| GW-MW107-072524 | 620-19967-1 | MassDEP-VPH, MassDEP-EPH, MCP-14 Dissolved Metals/Mercury* |
| GW-MW104-072524 | 620-19967-2 | |
| GW-MW102R-072524 | 620-19967-3 | |
| GW-MW103-072524 | 620-19967-4 | |
| GW-MW105-072524 | 620-19967-5 | |
| FD-01-072524 | 620-19967-6 | |
| GW-MW101-072624 | 620-19967-7 | |
| GW-MW109-072624 | 620-19967-8 | |
| GW-MW108-072624 | 620-19967-9* | |
| TB-01-072624 | 620-19967-10 | MassDEP-VPH |

* All groundwater samples were field-filtered and analyzed for dissolved metals/mercury except sample GW-MW108-072624, which was received at the laboratory in a nitric acid bottle with a pH < 2. The laboratory was instructed to analyze the sample for total metals.

The data were evaluated using the site-specific Quality Assurance Project Plan Addendum (QAPPA) (dated May 2023) and the Program QAPP (dated October 2022). Both were prepared by KGSNE, LLC. The QAPPA appends and incorporates by reference the procedures and quality control measures detailed in the Program QAPP (October 2022). Therefore, site data for this SDG were evaluated using both the QAPPA of May 2023 and the Program QAPP dated October 2022. The Massachusetts Compendium of Analytical Methods (CAM) and/or SW-846 Methods were used to perform the analyses. Therefore, site data were also evaluated using CAM quality control (QC) limits, where applicable.



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The analyte lists reported by the laboratory were compared to the required analyte lists per Table 4 (groundwater) in the QAPPA (May 2023) for the site. Results for all requested analytes were reported and no inconsistencies were noted.

**2. Holding Time and Sample Preservation Compliance**

Receipt temperatures are acceptable (≤ 6°), as specified in the QAPPA (May 2023).

MassDEP-VPH: Holding time criteria (analyzed within 14 days) were met.

MassDEP-EPH: Holding time criteria (extracted within 14 days and analyzed within 40 days of extraction) were met.

MCP-14 Metals/Mercury: Holding time criteria (analyzed within 28 days for mercury; within 180 days for all other analytes) were met.

**3. Calibration Issues**

Not assessed for S2AVM data review.

**4. Laboratory and Field Blanks**

MassDEP-VPH: Results for the VPH laboratory method blanks were non-detect. No blank actions are required.

MassDEP-EPH: Results for the EPH laboratory method blanks were non-detect. No blank actions are required.

MCP-14 Metals/Mercury: Results for the metals/mercury method blanks were non-detect. No blank actions are required.

**5. Interference Check Sample (metals only)**

Not assessed for S2AVM data review.

**6. Surrogates**

The Program QAPP (October 2022) was used to evaluate site data for surrogate recovery. If no Program QAPP-specific recovery limits were available for a surrogate, the MCP CAM recovery limits were used.

MassDEP-VPH: Percent surrogate recoveries for the samples were within the Program QAPP limits of 70-130%. No actions are required.

MassDEP-EPH: Percent surrogate recoveries for the samples were within the Program QAPP limits of 40-140% except for sample FD-01-072524 (620-19967-6), where the extraction surrogate o-terphenyl (OTPH) recoveries were below 40% in the EPH GC/MS analysis associated with the reported naphthalene result (31%) and in the EPH GC analysis of the sample. (36%). The laboratory noted the presence of a matrix interference in the sample based on the emulsion that formed during sample extraction. No actions are required.

MCP-14 Metals/Mercury: Not applicable for this analysis.

## 7. Laboratory Control Samples

MassDEP-VPH: The percent recoveries in the VPH LCS/LCSD pair 620-37119/4 and 5 met the Program QAPP recovery limits of 70-130% and RPDs ≤ 25%. No actions are required.

The percent recovery of naphthalene exceeded the limits of 70-130% (136%) in the LCS analysis of LCS/LCSD pair 620-37217/2 and 3. This LCS/LCSD pair is associated with the dilute analyses of samples GW-MW102R-072524 (620-19967-3), FD-01-072524 (620-19967-6), and GW-MW109-072624 (620-19967-8). The dilute analyses were not used to report naphthalene results in these samples. Therefore, no actions are required.

MassDEP-EPH: The percent recoveries in the EPH-GC/MS LCS/LCSD pair 620-37257/4-B and 5-B meet the Program QAPP recovery limits of 40-140% and RPD ≤ 25% except for the RPD for the acenaphthylene, which exceeded the Program QAPP limit of 25% (27%). Results for acenaphthylene were non-detect in all groundwater samples. Professional judgment, based on the SVOC MS/MSD parameter guidance of the NFGs (2020), was used to accept the non-detect results for acenaphthylene unqualified.

Percent recoveries and RPDs for the EPH-GC LCS/LCSD pair 620-37257-2-B and 3-B meet the Program QAPP limits of 40-140% and RPD ≤ 25%. No actions are required.

MCP-14 Metals/Mercury: Percent recoveries for all metals and mercury LCS analyses were within the QAPP limits of 80-120% and ≤ 20%, respectively. No actions are required.

## 8. Matrix Spikes

Based on the Region I EPA New England Environmental Data Review Supplement (Region I Supplement, 2020), MS/MSD qualifications are applied to all field samples with similar matrix, unless otherwise noted.

MassDEP-VPH: MS/MSD analyses were performed on sample GW-MW107-072524 (620-19967-1). Recoveries and RPDs met the Program QAPP limits of 70-130% recovery and ≤ 50% RPD except for the recoveries of C9-C12 aliphatics (unadjusted), where recoveries exceeded 130% in the MS and MSD analyses (430% and 583%, respectively). RPDs were all < 50%. The laboratory noted that the exceedances were due to differences in baseline integration used for QC and field sample analyses (i.e., QC sample results are based on a summation of the peaks whereas field sample results are based on an integration of the entire baseline, including baseline noise and matrix interference). No actions are taken.

MassDEP-EPH: MS/MSD analyses were performed on sample GW-MW107-072524 (620-19967-1) for the EPH-GC/MS and EPH-GC analyses. MS/MSD results meet the limits of 40-140% recovery and ≤ 50% RPD as specified in the Program QAPP. No actions are required.

MCP-14 Metals/Mercury: MS analyses were performed for dissolved metals on samples GW-MW107-072524 (620-19967-1) and GW-MW108-072624 (620-19967-9). Recoveries met the Program QAPP limits of 75-125%. No actions are required.

MS/MSD analyses were performed for mercury on sample GW-MW107-072524 (620-19967-1) and an MS analysis was performed on sample GW-MW102R-072524 (620-19967-3). Percent recoveries and RPDs met the Program QAPP limits of 75-125% and ≤ 20%, respectively. No actions are required for mercury.

**9. Laboratory Duplicates (metals only)**

MCP-14 Metals/Mercury: A metals laboratory duplicate analysis was performed on sample GW-MW108-072624 (620-19967-9). The QAPP duplicate criteria (≤ 20% RPD) were met for detected analytes ≥ 5x RL. The absolute difference values for detected results < 5x RL are < the control limit of the RL, as specified in the NFGs (2020). No actions are required.

A laboratory duplicate analysis was also performed on sample GW-MW107-072524 (620-19967-1). The QAPP duplicate criteria (≤ 20% RPD) were met for detected analytes ≥ 5x RL. The absolute difference values for detected results < 5x RL are < the control limit of the RL, as specified in the NFGs (2020). No actions are required.

A mercury laboratory duplicate analysis was performed for sample GW-102R-072524 (620-19967-3). Results for mercury were non-detect in the sample and duplicate sample and an RPD was not calculated. Laboratory duplicate precision is acceptable and no actions are required.

**10. Serial Dilution (metals only)**

MCP-14 Metals/Mercury: A serial dilution analysis was not performed for this SDG. The Massachusetts CAM requires a serial dilution analysis on samples used for MS/MSD analyses where analytes are detected at > 50x RL. MS/MSD analyses were performed on samples GW-MW107-072524 (620-19967-1), GW-MW102R-072524 (620-19967-3), and GW-MW108-072624 (620-19967-9). Detected analyte results were < 50x RL in these samples and no actions are required.

**11. Field Duplicate Precision**

Acceptable field duplicate precision is an RPD of ≤ 30% for results ≥ 5x RL and an absolute difference ≤ 2x RL for results < 5x RL, based on the EPA Region I Environmental Data Review Supplement (2020). Based on the Region I Supplement, qualifications are applied to all field samples with similar matrix, unless otherwise indicated.

Field duplicate pair GW-MW102R-072524 (620-19967-3) / FD-01-072524 (620-19967-6) was submitted with the samples of this SDG.

Field duplicate precision criteria were met for the VPH and metals/mercury analyses and no actions are required.

Field duplicate precision criteria were exceeded for naphthalene and 2-methylnaphthalene for the EPH analysis. Based on the EPA Region I Supplemental Data Review Guidance (2020), detected and non-detect results for naphthalene and 2-methylnaphthalene are qualified as estimated (J/UJ) in all groundwater samples due to field duplicate imprecision.

**12. Internal Standards**

Not assessed for S2AVM data review.

**13. Dual Column Precision (PCBs only)**

Not applicable for this SDG.

## 14. Performance Evaluation Samples

Performance Evaluation (PE) samples were not included in this SDG.

## 15. Reporting Limits

RLs for non-detect results for the VPH, EPH, and metals/mercury analyses met the project action levels (PALs) presented on Table 4 of the QAPPA for the site.

## 16. Other

EPA Region I Environmental Data Review Supplement (2020) criterion for percent solids content (> 30%) not applicable for groundwater samples.

The laboratory noted a strong fuel odor for samples GW-MW102R-072524 (620-19967-3), FD-01-072524 (620-19967-6), and GW-MW109-072624 (620-19967-8).

Overall bias is considered indeterminate when cumulative nonconformances do not show a consistent bias or in cases of the presence of conflicting high and low biases.

**Field Duplicate Evaluation**

**SDG: 620-19967-1 VPH**

| Analyte | Original Result (ug/L) | Qual | Duplicate Result (ug/L) | Qual | RPD ≤ 30% | Abs Diff | Comment[1] |
|---|---|---|---|---|---|---|---|
| **Sample ID** | **GW-MW102R-072524** | | **FD-01-072524** | | | | |
| | **620-19967-3** | | **620-19967-6** | | | | |
| Benzene | 25 | | 29 | | 14.81 | 4.0 | Ok - abs diff < 2x RL |
| C5-C8 Aliphatics (adjusted) | 530 | | 540 | | 1.87 | 10.00 | Ok - abs diff < 2x RL |
| C5-C8 Aliphatics (unadjusted) | 740 | | 760 | | 2.67 | 20.00 | Ok - abs diff < 2x RL |
| C9-C10 Aromatics | 1200 | | 1200 | | 0.00 | 0.0 | Ok - abs diff < 2x RL |
| C9-C12 Aliphatics (adjusted) | 3800 | | 3200 | | -17.14 | -600.00 | Ok - abs diff < 2x RL |
| C9-C12 Aliphatics (unadjusted) | 6900 | | 6000 | | -13.95 | -900.00 | Ok - abs diff < 2x RL |
| Ethylbenzene | 220 | | 240 | | 8.70 | | Ok - RPD < 30% |
| m,p-Xylene | 740 | | 810 | | 9.03 | | Ok - RPD < 30% |
| Methyl tert-butyl ether | 190 | | 190 | | 0.00 | | Ok - RPD < 30% |
| Naphthalene | 77 | | 94 | | 19.88 | | Ok - RPD < 30% |
| o-Xylene | 10 | U | 10 | | 0.00 | 0 | Ok - abs diff < 2x RL |
| Toluene | 10 | U | 10 | U | | | Ok - both ND |

[1] Actions apply to all samples, per EPA Region I Supplemental Review Guidance (2020).

**Field Duplicate Evaluation**

**SDG: 620-19967-1 EPH**

| Analyte | Original Result (ug/L) | Qual | Duplicate Result (ugL) | Qual | RPD ≤ 30% | Abs Diff | Comment[1] |
|---|---|---|---|---|---|---|---|
| **Sample ID** | **GW-MW102R-072524** | | **FD-01-072524** | | | | |
| | **620-19967-3** | | **620-19967-6** | | | | |
| **2-Methylnaphthalene** | 13 | | 7.3 | | -56.16 | | **J/UJ - RPD > 30%** |
| Acenaphthene | 1.1 | U | 1.1 | U | 0.00 | | Ok - both ND |
| Acenaphthylene | 1.1 | U | 1.1 | U | 0.00 | | Ok - both ND |
| Anthracene | 1.1 | U | 1.1 | U | 0.00 | | Ok - both ND |
| Benzo(a)anthracene | 1.1 | U | 1.1 | U | 0.00 | | Ok - both ND |
| Benzo(a)pyrene | 0.22 | U | 0.21 | U | -4.65 | | Ok - both ND |
| Benzo(b)fluoranthene | 1.1 | U | 1.1 | U | 0.00 | | Ok - both ND |
| Benzo(g,h,i)perylene | 1.1 | U | 1.1 | U | 0.00 | | Ok - both ND |
| Benzo(k)fluoranthene | 1.1 | U | 1.1 | U | 0.00 | | Ok - both ND |
| C11-C22 Aromatics | 200 | | 190 | | -5.13 | -10 | Ok - abs diff < 2x RL |
| C11-C22 Aromatics (adjusted) | 140 | | 150 | | 6.90 | 10 | Ok - abs diff < 2x RL |
| C19-C36 Aliphatics | 110 | U | 110 | U | 0.00 | | Ok - both ND |
| C9-C18 Aliphatics | 110 | | 120 | | 8.70 | 10 | Ok - abs diff < 2x RL |
| Chrysene | 1.1 | U | 1.1 | U | 0.00 | | Ok - both ND |
| Dibenz(a,h)anthracene | 0.56 | U | 0.53 | U | -5.50 | | Ok - both ND |
| Fluoranthene | 1.1 | U | 1.1 | U | 0.00 | | Ok - both ND |
| Fluorene | 1.1 | U | 1.1 | U | 0.00 | | Ok - both ND |
| Indeno(1,2,3-cd)pyrene | 0.56 | U | 0.53 | U | -5.50 | | Ok - both ND |
| **Naphthalene** | 87 | | 28 | | -102.61 | -59 | **J/UJ - abs diff > 2x RL** |
| Phenanthrene | 1.1 | U | 1.1 | U | 0.00 | | Ok - both ND |
| Pyrene | 1.1 | U | 1.1 | U | 0.00 | | Ok - both ND |

[1] Actions apply to all samples, per EPA Region I Supplemental Review Guidance (2020).

**Field Duplicate Evaluation**

**SDG: 620-19967-1 METALS**

| Analyte | Original Result (mg/L) | Qual | Duplicate Result (mg/L) | Qual | RPD ≤ 30% | Abs Diff | Comment[1] |
|---|---|---|---|---|---|---|---|
| **Sample ID** | **GW-MW102R-072524** | | **FD-01-072524** | | | | |
| | **620-19967-3** | | **620-19967-6** | | | | |
| Antimony | 0.0019 | J | 0.0023 | J | 19.0 | | Ok - both < RL |
| Arsenic | 0.063 | | 0.072 | | 13.3 | | Ok - abs diff < 2x RL |
| Barium | 0.12 | | 0.13 | | 8.0 | | Ok - abs diff < 2x RL |
| Beryllium | 0.002 | U | 0.002 | U | 0.0 | | Ok - both ND |
| Cadmium | 0.00049 | J | 0.00058 | J | 16.8 | | Ok - both < RL |
| Chromium | 0.0013 | J | 0.0016 | J | 20.7 | | Ok - both < RL |
| Lead | 0.0075 | U | 0.0075 | U | 0.0 | | Ok - both ND |
| Mercury | 0.0002 | U | 0.0002 | U | 0.0 | | Ok - both ND |
| Nickel | 0.0038 | J | 0.0044 | J | 14.6 | | Ok - both < RL |
| Selenium | 0.015 | U | 0.015 | U | 0.0 | | Ok - both ND |
| Silver | 0.005 | U | 0.005 | U | 0.0 | | Ok - both ND |
| Thallium | 0.005 | U | 0.005 | U | 0.0 | | Ok - both ND |
| Vanadium | 0.0013 | J | 0.0017 | J | 26.7 | | Ok - both < RL |
| Zinc | 0.005 | U | 0.005 | U | 0.0 | | Ok - both ND |

[1] Actions apply to all samples, per EPA Region I Supplemental Review Guidance (2020).

19967

**Eurofins Rhode Island**
646 Camp Ave
North Kingstown, RI 02852
Phone 413-789-9018 Fax: 413-506-3830

# Chain of Custody Record

eurofins | Environment Testing

| Client Information | Sampler: PM, SS | Lab PM: Huntley, Agnes R | Carrier Tracking No(s): | COC No: 620-18227-2520 1 |
|---|---|---|---|---|
| Client Contact: Adam Roy | Phone: | E-Mail: Agnes Huntley@et.eurofinsus com | State of Origin: MA | Page: Page 1 of 2 |
| Company: Nobis Engineering, Inc | PWSID: | Analysis Requested | | Job #: 500001.005 |
| Address: 585 Middlesex Street | Due Date Requested: | | | Preservation Codes: A - HCL, D - HNO3 |
| City: Lowell | TAT Requested (days): Standard | | | |
| State, Zip: MA, 01851 | Compliance Project: Δ Yes Δ No | | | |
| Phone: 603-520-5849(Tel) | PO #: Purchase Order Requested | | | |
| Email: aroy@nobis-group com | WO #: | | | |
| Project Name: Former L&M - Lunenburg MA | Project #: 62002215 | | | |
| Site: | SSOW#: | | | |

620-19967 Chain of Custody

| Sample Identification | Sample Date | Sample Time | Sample Type (C=comp, G=grab) | Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air) | Field Filtered Sample (Yes or No) | MAVPH2.1 - MADEP Volatile Petroleum Hydrocarbons (G | EPH_MS, MAEPH2.1 | 6010MCP, 7470MCP | Total Number | Special Instructions/Note: |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preservation Code: | | | A | A | D | | |
| GW-MW107-072524 | 7/25/24 | 1050 | | Water | Y | X | X | X | 18 | MS/MSD |
| GW-MW104-072524 | | 1130 | | Water | N | X | X | X | 6 | |
| GW-MW102R-072524 | | 1430 | | Water | N | X | X | X | 6 | |
| GW-MW103-072524 | | 1000 | | Water | N | X | X | X | 6 | |
| GW-MW105-072524 | | 1320 | | Water | N | X | X | X | 6 | |
| FD-01 | | 0930 | | Water | N | X | X | X | 6 | |
| GW-MW101-072624 | 7/26/24 | 1230 | | Water | N | X | X | | 5 | |
| GW-MW109-072624 | | 1100 | | Water | N | X | X | X | 6 | |
| GW-MW108-072624 | | 1110 | | Water | N | X | X | X | 6 | Needs to be filtered |
| TB-01-072624 | | 0900 | | Water | | | | | 2 | |
| | | | | Water | | | | | | |

**Possible Hazard Identification**
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

**Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)**
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements

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

| Relinquished by | Date/Time | Company | Received by | Date/Time | Company |
|---|---|---|---|---|---|
| | 7/26/24 14:50 | | | 7/26/24 14:50 | |
| | 7/26/24 16:43 | EDM | | 7/26/24 16:43 | GRA |
| | Date/Time | Company | Received by | Date/Time | Company |

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 4.2 to 1 4.4 #6

Ver: 04/02/2024

Page 57 of 58

8/9/2024

eurofins | Environment Testing

# ANALYTICAL REPORT

## PREPARED FOR

Attn: Adam Roy
Nobis Engineering, Inc.
585 Middlesex Street
Lowell, Massachusetts 01851

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## JOB DESCRIPTION

Former L&M - Lunenburg MA

## JOB NUMBER

620-19967-1

Eurofins Rhode Island
646 Camp Ave
North Kingstown RI 02852

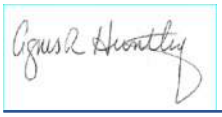
See page two for job notes and contact information.

## Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northeast, LLC Project Manager.

## Authorization



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Authorized for release by
Agnes Huntley, Project Manager
Agnes.Huntley@et.eurofinsus.com
(401)267-4374

# Table of Contents

Cover Page . . . . . 1
Table of Contents . . . . . 3
Definitions/Glossary . . . . . 4
State Forms . . . . . 6
MCP Checklist . . . . . 6
Case Narrative . . . . . 7
Detection Summary . . . . . 9
Client Sample Results . . . . . 12
Surrogate Summary . . . . . 30
QC Sample Results . . . . . 32
QC Association Summary . . . . . 44
Lab Chronicle . . . . . 49
Certification Summary . . . . . 53
Method Summary . . . . . 55
Sample Summary . . . . . 56
Chain of Custody . . . . . 57
Receipt Checklists . . . . . 58

# Definitions/Glossary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-19967-1

## Qualifiers

### GC/MS Semi VOA

| Qualifier | Qualifier Description |
|---|---|
| *1 | LCS/LCSD RPD exceeds control limits. |
| ER | Estimated result. Too high to count. |
| J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |
| S1- | Surrogate recovery exceeds control limits, low biased. |

### GC VOA

| Qualifier | Qualifier Description |
|---|---|
| *+ | LCS and/or LCSD is outside acceptance limits, high biased. |
| F1 | MS and/or MSD recovery exceeds control limits. |

### GC Semi VOA

| Qualifier | Qualifier Description |
|---|---|
| S1- | Surrogate recovery exceeds control limits, low biased. |

### Metals

| Qualifier | Qualifier Description |
|---|---|
| F5 | Duplicate RPD exceeds limit, and one or both sample results are less than 5 times RL, and the absolute difference between results is < the upper reporting limits for both. |
| J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |

## Glossary

| Abbreviation | These commonly used abbreviations may or may not be present in this report. |
|---|---|
| ¤ | Listed under the "D" column to designate that the result is reported on a dry weight basis |
| %R | Percent Recovery |
| CFL | Contains Free Liquid |
| CFU | Colony Forming Unit |
| CNF | Contains No Free Liquid |
| DER | Duplicate Error Ratio (normalized absolute difference) |
| Dil Fac | Dilution Factor |
| DL | Detection Limit (DoD/DOE) |
| DL, RA, RE, IN | Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample |
| DLC | Decision Level Concentration (Radiochemistry) |
| EDL | Estimated Detection Limit (Dioxin) |
| LOD | Limit of Detection (DoD/DOE) |
| LOQ | Limit of Quantitation (DoD/DOE) |
| MCL | EPA recommended "Maximum Contaminant Level" |
| MDA | Minimum Detectable Activity (Radiochemistry) |
| MDC | Minimum Detectable Concentration (Radiochemistry) |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| MPN | Most Probable Number |
| MQL | Method Quantitation Limit |
| NC | Not Calculated |
| ND | Not Detected at the reporting limit (or MDL or EDL if shown) |
| NEG | Negative / Absent |
| POS | Positive / Present |
| PQL | Practical Quantitation Limit |
| PRES | Presumptive |
| QC | Quality Control |
| RER | Relative Error Ratio (Radiochemistry) |
| RL | Reporting Limit or Requested Limit (Radiochemistry) |
| RPD | Relative Percent Difference, a measure of the relative difference between two points |
| TEF | Toxicity Equivalent Factor (Dioxin) |
| TEQ | Toxicity Equivalent Quotient (Dioxin) |

## Glossary (Continued)

| Abbreviation | These commonly used abbreviations may or may not be present in this report. |
|---|---|
| TNTC | Too Numerous To Count |

# MassDEP Analytical Protocol Certfication Form

Laboratory Name: Eurofins Rhode Island | Project #: 620-19967-1

Project Location: Former L&M - Lunenburg MA | RTN:

**This Form provides certifications for the following data set: list Laboratory Sample ID Number(s):**
620-19967-1 through 620-19967-10

Matrices: ☑ Groundwater/Surface Water ☐ Soil/Sediment ☐ Drinking Water ☐ Air ☐ Other:

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

| | | | | | |
|---|---|---|---|---|---|
| 8260 VOC CAM II A ☐ | 7470/7471 Hg CAM III B ☑ | MassDEP VPH (GC/PID/FID) CAM IV A ☑ | 8082 PCB CAM V A ☐ | 9014 Total Cyanide/PAC CAM VI A ☐ | 6860 Perchlorate CAM VIII B ☐ |
| 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 ☐ |
| 6010 Metals CAM III A ☑ | 6020 Metals CAM III D ☐ | MassDEP EPH CAM IV B ☑ | 8151 Herbicides CAM V C ☐ | 8330 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 ☑ No |
| **B** | Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed? | ☑ Yes ☐ 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 ☐ No |
| **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 ☐ No |
| **E** | VPH, EPH, APH, and TO-15 only<br>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).<br>b. APH and TO-15 Methods only: Was the complete analyte list reported for each method? | ☑ Yes ☐ No<br>☐ 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 ☐ 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 protocol(s)? | ☐ Yes ☑ No[1] |

***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[1] |
| **I** | Were results reported for the complete analyte list specified in the selected CAM protocol(s)? | ☑ Yes ☐ No[1] |

*1 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, is accurate and complete.***

**Signature:** Agnes R Huntley **Position:** Project Manager

**Printed Name:** Agnes Huntley **Date:** 08/09/2024

## Job ID: 620-19967-1 Eurofins Rhode Island

**Job Narrative**
**620-19967-1**

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

**Receipt**
The samples were received on 7/26/2024 4:43 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 4.4°C.

**Receipt Exceptions**
The following sample was collected in an improper container: GW-MW108-072624 (620-19967-9). The COC notes the laboratory to filter the sample for dissolved metals. The sample was received in a nitric acid bottle and the pH of the sample is < 2. The client was contacted regarding this issue, and the laboratory was instructed to proceed with total metals analysis.

**GC/MS Semi VOA**
Method EPH_MS: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 620-37257 and 620-37311 and analytical batch 620-37430 recovered outside control limits for the following analyte: Acenaphthylene. The percent recovery values are within control limits.

Method EPH_MS: The 2-Fluorobiphenyl surrogate was outside of acceptance criteria in the EPH-MS initial calibration. Batch: 620-37430. The fractionation check and percent recovery of 2-Fluorobiphenyl (Surr) in each sample can be evaluated based on the MA-EPH FID analysis.

Method EPH_MS: Surrogate recovery for the following sample was outside control limits: FD-01 (620-19967-6). Evidence of matrix interference was present and noted in the extraction process; emulsion; therefore, re-extraction and/or re-analysis was not performed.

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

**Hydrocarbons**
Method MAVPH2.1: he matrix spike / matrix spike duplicate (MS/MSD) recoveries for analytical batch 620-37119 were outside control limits for one or more of the aromatic/aliphatic ranges due to the integration methodology required by the MA-VPH for client samples. QC samples/the LCS(D) are a summation of the peaks, whereas client samples are an integration of the whole baseline and any baseline noise/matrix interference. See QC Sample Results for detail. The associated laboratory control sample (LCS) recovery is within acceptance limits.

Method MAVPH2.1: The following samples were diluted due to the nature of the sample matrix (strong fuel odor): GW-MW102R-072524 (620-19967-3), FD-01 (620-19967-6) and GW-MW109-072624 (620-19967-8). Elevated reporting limits (RLs) are provided.

Method MAVPH2.1: The laboratory control sample (LCS) for analytical batch 620-37217 recovered outside control limits for the following analyte: Naphthalene. This analyte was biased high in the LCS and was not the target for the associated dilutions. According to MCP requirements, analytes are allowed to recover outside control limits as long as the analytes are non-detect or non-target; therefore, the data have been reported.

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

**Hydrocarbons**
Method MAEPH2.1: Surrogate recovery for the following sample was outside control limits: FD-01 (620-19967-6). Evidence of matrix interference was present and noted in the extraction process; emulsion; therefore, re-extraction and/or re-analysis was not

performed.

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

**Metals**
Method 6010MCP: The sample duplicate (DUP) precision for preparation batch 620-37225 and analytical batch 620-37269 was outside control limits. Sample matrix interference is suspected.

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

# Detection Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-19967-1

## Client Sample ID: GW-MW107-072524 — Lab Sample ID: 620-19967-1

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | 0.45 | J | 0.95 | 0.22 | ug/L | 1 | | EPH | Total/NA |
| C9-C12 Aliphatics (unadjusted) | 110 | F1 | 100 | 100 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Ethylbenzene | 7.7 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Antimony | 0.0018 | J | 0.0060 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |
| Arsenic | 0.043 | | 0.0040 | 0.0014 | mg/L | 1 | | 6010D | Dissolved |
| Barium | 0.029 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Nickel | 0.0021 | J | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |

## Client Sample ID: GW-MW104-072524 — Lab Sample ID: 620-19967-2

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Methyl tert-butyl ether | 7.0 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Antimony | 0.0024 | J | 0.0060 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |
| Arsenic | 0.0088 | | 0.0040 | 0.0014 | mg/L | 1 | | 6010D | Dissolved |
| Barium | 0.14 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Cadmium | 0.0015 | J | 0.0025 | 0.00036 | mg/L | 1 | | 6010D | Dissolved |
| Nickel | 0.023 | | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |
| Zinc | 0.12 | | 0.0050 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |

## Client Sample ID: GW-MW102R-072524 — Lab Sample ID: 620-19967-3

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | 87 | | 11 | 2.6 | ug/L | 10 | | EPH | Total/NA |
| 2-Methylnaphthalene | 13 | | 1.1 | 0.32 | ug/L | 1 | | EPH | Total/NA |
| C5-C8 Aliphatics (adjusted) | 530 | | 200 | 200 | ug/L | 2 | | MAVPH2.1 | Total/NA |
| C5-C8 Aliphatics (unadjusted) | 740 | | 200 | 200 | ug/L | 2 | | MAVPH2.1 | Total/NA |
| Benzene | 25 | | 10 | 10 | ug/L | 2 | | MAVPH2.1 | Total/NA |
| Ethylbenzene | 220 | | 10 | 10 | ug/L | 2 | | MAVPH2.1 | Total/NA |
| Methyl tert-butyl ether | 190 | | 10 | 10 | ug/L | 2 | | MAVPH2.1 | Total/NA |
| Naphthalene | 77 | | 10 | 10 | ug/L | 2 | | MAVPH2.1 | Total/NA |
| m,p-Xylene | 740 | | 20 | 20 | ug/L | 2 | | MAVPH2.1 | Total/NA |
| Xylenes, Total | 740 | | 30 | 30 | ug/L | 2 | | MAVPH2.1 | Total/NA |
| C9-C10 Aromatics - DL | 1200 | | 500 | 500 | ug/L | 5 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (adjusted) - DL3 | 3800 | | 2000 | 2000 | ug/L | 20 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (unadjusted) - DL3 | 6900 | | 2000 | 2000 | ug/L | 20 | | MAVPH2.1 | Total/NA |
| C9-C18 Aliphatics | 110 | | 110 | 110 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics | 200 | | 110 | 110 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics (Adjusted) | 140 | | 110 | 110 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| Antimony | 0.0019 | J | 0.0060 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |
| Arsenic | 0.063 | | 0.0040 | 0.0014 | mg/L | 1 | | 6010D | Dissolved |
| Barium | 0.12 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Cadmium | 0.00049 | J | 0.0025 | 0.00036 | mg/L | 1 | | 6010D | Dissolved |
| Chromium | 0.0013 | J | 0.0050 | 0.00093 | mg/L | 1 | | 6010D | Dissolved |
| Nickel | 0.0038 | J | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |
| Vanadium | 0.0013 | J | 0.0050 | 0.0011 | mg/L | 1 | | 6010D | Dissolved |

## Client Sample ID: GW-MW103-072524 — Lab Sample ID: 620-19967-4

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Rhode Island

# Detection Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-19967-1

## Client Sample ID: GW-MW105-072524 — Lab Sample ID: 620-19967-5

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| C11-C22 Aromatics | 98 | | 95 | 95 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics (Adjusted) | 98 | | 95 | 95 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| Barium | 0.16 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Nickel | 0.00090 | J | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |
| Zinc | 0.0039 | J | 0.0050 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |

## Client Sample ID: FD-01 — Lab Sample ID: 620-19967-6

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | 28 | | 5.3 | 1.2 | ug/L | 5 | | EPH | Total/NA |
| 2-Methylnaphthalene | 7.3 | | 1.1 | 0.31 | ug/L | 1 | | EPH | Total/NA |
| C5-C8 Aliphatics (adjusted) | 540 | | 200 | 200 | ug/L | 2 | | MAVPH2.1 | Total/NA |
| C5-C8 Aliphatics (unadjusted) | 760 | | 200 | 200 | ug/L | 2 | | MAVPH2.1 | Total/NA |
| Benzene | 29 | | 10 | 10 | ug/L | 2 | | MAVPH2.1 | Total/NA |
| Ethylbenzene | 240 | | 10 | 10 | ug/L | 2 | | MAVPH2.1 | Total/NA |
| Methyl tert-butyl ether | 190 | | 10 | 10 | ug/L | 2 | | MAVPH2.1 | Total/NA |
| Naphthalene | 94 | | 10 | 10 | ug/L | 2 | | MAVPH2.1 | Total/NA |
| o-Xylene | 10 | | 10 | 10 | ug/L | 2 | | MAVPH2.1 | Total/NA |
| Xylenes, Total | 830 | | 30 | 30 | ug/L | 2 | | MAVPH2.1 | Total/NA |
| C9-C10 Aromatics - DL | 1200 | | 500 | 500 | ug/L | 5 | | MAVPH2.1 | Total/NA |
| m,p-Xylene - DL | 810 | | 50 | 50 | ug/L | 5 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (adjusted) - DL3 | 3200 | | 2000 | 2000 | ug/L | 20 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (unadjusted) - DL3 | 6000 | | 2000 | 2000 | ug/L | 20 | | MAVPH2.1 | Total/NA |
| C9-C18 Aliphatics | 120 | | 110 | 110 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics | 190 | | 110 | 110 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics (Adjusted) | 150 | | 110 | 110 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| Antimony | 0.0023 | J | 0.0060 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |
| Arsenic | 0.072 | | 0.0040 | 0.0014 | mg/L | 1 | | 6010D | Dissolved |
| Barium | 0.13 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Cadmium | 0.00058 | J | 0.0025 | 0.00036 | mg/L | 1 | | 6010D | Dissolved |
| Chromium | 0.0016 | J | 0.0050 | 0.00093 | mg/L | 1 | | 6010D | Dissolved |
| Nickel | 0.0044 | J | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |
| Vanadium | 0.0017 | J | 0.0050 | 0.0011 | mg/L | 1 | | 6010D | Dissolved |

## Client Sample ID: GW-MW101-072624 — Lab Sample ID: 620-19967-7

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Pyrene | 0.20 | J | 1.0 | 0.14 | ug/L | 1 | | EPH | Total/NA |
| C19-C36 Aliphatics | 360 | | 100 | 100 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics | 140 | | 100 | 100 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics (Adjusted) | 140 | | 100 | 100 | ug/L | 1 | | MAEPH2.1 | Total/NA |

## Client Sample ID: GW-MW109-072624 — Lab Sample ID: 620-19967-8

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | 150 | | 9.5 | 2.2 | ug/L | 10 | | EPH | Total/NA |
| 2-Methylnaphthalene | 51 | | 9.5 | 2.8 | ug/L | 10 | | EPH | Total/NA |
| Ethylbenzene | 97 | | 10 | 10 | ug/L | 2 | | MAVPH2.1 | Total/NA |
| Methyl tert-butyl ether | 45 | | 10 | 10 | ug/L | 2 | | MAVPH2.1 | Total/NA |
| Naphthalene | 130 | | 10 | 10 | ug/L | 2 | | MAVPH2.1 | Total/NA |
| m,p-Xylene | 290 | | 20 | 20 | ug/L | 2 | | MAVPH2.1 | Total/NA |
| Xylenes, Total | 290 | | 30 | 30 | ug/L | 2 | | MAVPH2.1 | Total/NA |

This Detection Summary does not include radiochemical test results.

# Detection Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-19967-1

## Client Sample ID: GW-MW109-072624 (Continued)

## Lab Sample ID: 620-19967-8

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| C9-C12 Aliphatics (adjusted) - DL | 3700 | | 1000 | 1000 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| C9-C10 Aromatics - DL | 3000 | | 1000 | 1000 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (unadjusted) - DL | 7000 | | 1000 | 1000 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| C9-C18 Aliphatics | 430 | | 95 | 95 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics | 350 | | 95 | 95 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics (Adjusted) | 240 | | 95 | 95 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| Arsenic | 0.041 | | 0.0040 | 0.0014 | mg/L | 1 | | 6010D | Dissolved |
| Barium | 0.043 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Nickel | 0.0022 | J | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |

## Client Sample ID: GW-MW108-072624

## Lab Sample ID: 620-19967-9

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| C11-C22 Aromatics | 120 | | 110 | 110 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics (Adjusted) | 120 | | 110 | 110 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| Barium | 0.088 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Total/NA |
| Nickel | 0.0026 | J | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Total/NA |
| Thallium | 0.0021 | J | 0.0050 | 0.0021 | mg/L | 1 | | 6010D | Total/NA |
| Zinc | 0.0096 | | 0.0050 | 0.0016 | mg/L | 1 | | 6010D | Total/NA |

## Client Sample ID: TB-01-072624

## Lab Sample ID: 620-19967-10

No Detections.

This Detection Summary does not include radiochemical test results.

## Client Sample ID: GW-MW107-072524 Lab Sample ID: 620-19967-1

**Date Collected: 07/25/24 10:50** **Matrix: Water**
**Date Received: 07/26/24 16:43**

### Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Naphthalene** | **0.45** | **J** | 0.95 | 0.22 | ug/L | | 07/31/24 10:44 | 08/06/24 12:15 | 1 |
| 2-Methylnaphthalene | ND | | 0.95 | 0.28 | ug/L | | 07/31/24 10:44 | 08/06/24 12:15 | 1 |
| Acenaphthylene | ND | *1 | 0.95 | 0.37 | ug/L | | 07/31/24 10:44 | 08/06/24 12:15 | 1 |
| Acenaphthene | ND | | 0.95 | 0.18 | ug/L | | 07/31/24 10:44 | 08/06/24 12:15 | 1 |
| Fluorene | ND | | 0.95 | 0.37 | ug/L | | 07/31/24 10:44 | 08/06/24 12:15 | 1 |
| Phenanthrene | ND | | 0.95 | 0.16 | ug/L | | 07/31/24 10:44 | 08/06/24 12:15 | 1 |
| Anthracene | ND | | 0.95 | 0.15 | ug/L | | 07/31/24 10:44 | 08/06/24 12:15 | 1 |
| Fluoranthene | ND | | 0.95 | 0.14 | ug/L | | 07/31/24 10:44 | 08/06/24 12:15 | 1 |
| Pyrene | ND | | 0.95 | 0.14 | ug/L | | 07/31/24 10:44 | 08/06/24 12:15 | 1 |
| Benzo[a]anthracene | ND | | 0.95 | 0.067 | ug/L | | 07/31/24 10:44 | 08/06/24 12:15 | 1 |
| Chrysene | ND | | 0.95 | 0.13 | ug/L | | 07/31/24 10:44 | 08/06/24 12:15 | 1 |
| Benzo[b]fluoranthene | ND | | 0.95 | 0.14 | ug/L | | 07/31/24 10:44 | 08/06/24 12:15 | 1 |
| Benzo[k]fluoranthene | ND | | 0.95 | 0.23 | ug/L | | 07/31/24 10:44 | 08/06/24 12:15 | 1 |
| Benzo[a]pyrene | ND | | 0.19 | 0.15 | ug/L | | 07/31/24 10:44 | 08/06/24 12:15 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.48 | 0.44 | ug/L | | 07/31/24 10:44 | 08/06/24 12:15 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.48 | 0.20 | ug/L | | 07/31/24 10:44 | 08/06/24 12:15 | 1 |
| Benzo[g,h,i]perylene | ND | | 0.95 | 0.16 | ug/L | | 07/31/24 10:44 | 08/06/24 12:15 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *83* | | *40 - 140* | *07/31/24 10:44* | *08/06/24 12:15* | *1* |
| *2-Fluorobiphenyl (Surr)* | *118* | | *40 - 140* | *07/31/24 10:44* | *08/06/24 12:15* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 07/29/24 14:42 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 07/29/24 14:42 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 07/29/24 14:42 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 07/29/24 14:42 | 1 |
| **C9-C12 Aliphatics (unadjusted)** | **110** | **F1** | 100 | 100 | ug/L | | | 07/29/24 14:42 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 07/29/24 14:42 | 1 |
| **Ethylbenzene** | **7.7** | | 5.0 | 5.0 | ug/L | | | 07/29/24 14:42 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 07/29/24 14:42 | 1 |
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 07/29/24 14:42 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 07/29/24 14:42 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 07/29/24 14:42 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 07/29/24 14:42 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 07/29/24 14:42 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *97* | | *70 - 130* | | *07/29/24 14:42* | *1* |
| *2,5-Dibromotoluene (pid)* | *91* | | *70 - 130* | | *07/29/24 14:42* | *1* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 95 | 95 | ug/L | | 07/31/24 10:44 | 08/01/24 17:16 | 1 |
| C19-C36 Aliphatics | ND | | 95 | 95 | ug/L | | 07/31/24 10:44 | 08/01/24 17:16 | 1 |
| C11-C22 Aromatics | ND | | 95 | 95 | ug/L | | 07/31/24 10:44 | 08/01/24 17:16 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 95 | 95 | ug/L | | 07/31/24 10:44 | 08/01/24 17:16 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *75* | | *40 - 140* | *07/31/24 10:44* | *08/01/24 17:16* | *1* |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-19967-1

## Client Sample ID: GW-MW107-072524

**Date Collected: 07/25/24 10:50**
**Date Received: 07/26/24 16:43**

## Lab Sample ID: 620-19967-1

**Matrix: Water**

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *59* | | *40 - 140* | *07/31/24 10:44* | *08/01/24 17:16* | *1* |
| *2-Fluorobiphenyl (Surr)* | *93* | | *40 - 140* | *07/31/24 10:44* | *08/01/24 17:16* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Antimony** | **0.0018** | **J** | 0.0060 | 0.0016 | mg/L | | 07/29/24 12:21 | 07/30/24 12:06 | 1 |
| **Arsenic** | **0.043** | | 0.0040 | 0.0014 | mg/L | | 07/29/24 12:21 | 07/30/24 12:06 | 1 |
| **Barium** | **0.029** | | 0.0050 | 0.00070 | mg/L | | 07/29/24 12:21 | 07/30/24 12:06 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 07/29/24 12:21 | 07/30/24 12:06 | 1 |
| Cadmium | ND | | 0.0025 | 0.00036 | mg/L | | 07/29/24 12:21 | 07/30/24 12:06 | 1 |
| Chromium | ND | | 0.0050 | 0.00093 | mg/L | | 07/29/24 12:21 | 07/30/24 12:06 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 07/29/24 12:21 | 07/30/24 12:06 | 1 |
| **Nickel** | **0.0021** | **J** | 0.0050 | 0.00087 | mg/L | | 07/29/24 12:21 | 07/30/24 12:06 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 07/29/24 12:21 | 07/30/24 12:06 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 07/29/24 12:21 | 07/30/24 12:06 | 1 |
| Thallium | ND | | 0.0050 | 0.0021 | mg/L | | 07/29/24 12:21 | 07/30/24 12:06 | 1 |
| Vanadium | ND | | 0.0050 | 0.0011 | mg/L | | 07/29/24 12:21 | 07/30/24 12:06 | 1 |
| Zinc | ND | | 0.0050 | 0.0016 | mg/L | | 07/29/24 12:21 | 07/30/24 12:06 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 08/01/24 09:44 | 08/02/24 09:31 | 1 |

## Client Sample ID: GW-MW104-072524

**Date Collected: 07/25/24 11:30**
**Date Received: 07/26/24 16:43**

## Lab Sample ID: 620-19967-2

**Matrix: Water**

### Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 1.1 | 0.25 | ug/L | | 07/31/24 10:44 | 08/06/24 13:23 | 1 |
| 2-Methylnaphthalene | ND | | 1.1 | 0.31 | ug/L | | 07/31/24 10:44 | 08/06/24 13:23 | 1 |
| Acenaphthylene | ND | *1 | 1.1 | 0.41 | ug/L | | 07/31/24 10:44 | 08/06/24 13:23 | 1 |
| Acenaphthene | ND | | 1.1 | 0.20 | ug/L | | 07/31/24 10:44 | 08/06/24 13:23 | 1 |
| Fluorene | ND | | 1.1 | 0.41 | ug/L | | 07/31/24 10:44 | 08/06/24 13:23 | 1 |
| Phenanthrene | ND | | 1.1 | 0.18 | ug/L | | 07/31/24 10:44 | 08/06/24 13:23 | 1 |
| Anthracene | ND | | 1.1 | 0.16 | ug/L | | 07/31/24 10:44 | 08/06/24 13:23 | 1 |
| Fluoranthene | ND | | 1.1 | 0.16 | ug/L | | 07/31/24 10:44 | 08/06/24 13:23 | 1 |
| Pyrene | ND | | 1.1 | 0.15 | ug/L | | 07/31/24 10:44 | 08/06/24 13:23 | 1 |
| Benzo[a]anthracene | ND | | 1.1 | 0.074 | ug/L | | 07/31/24 10:44 | 08/06/24 13:23 | 1 |
| Chrysene | ND | | 1.1 | 0.15 | ug/L | | 07/31/24 10:44 | 08/06/24 13:23 | 1 |
| Benzo[b]fluoranthene | ND | | 1.1 | 0.16 | ug/L | | 07/31/24 10:44 | 08/06/24 13:23 | 1 |
| Benzo[k]fluoranthene | ND | | 1.1 | 0.25 | ug/L | | 07/31/24 10:44 | 08/06/24 13:23 | 1 |
| Benzo[a]pyrene | ND | | 0.21 | 0.17 | ug/L | | 07/31/24 10:44 | 08/06/24 13:23 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.53 | 0.49 | ug/L | | 07/31/24 10:44 | 08/06/24 13:23 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.53 | 0.23 | ug/L | | 07/31/24 10:44 | 08/06/24 13:23 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.1 | 0.18 | ug/L | | 07/31/24 10:44 | 08/06/24 13:23 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *69* | | *40 - 140* | *07/31/24 10:44* | *08/06/24 13:23* | *1* |
| *2-Fluorobiphenyl (Surr)* | *110* | | *40 - 140* | *07/31/24 10:44* | *08/06/24 13:23* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 07/30/24 01:56 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 07/30/24 01:56 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 07/30/24 01:56 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 07/30/24 01:56 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 07/30/24 01:56 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 07/30/24 01:56 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 07/30/24 01:56 | 1 |
| **Methyl tert-butyl ether** | **7.0** | | 5.0 | 5.0 | ug/L | | | 07/30/24 01:56 | 1 |
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 07/30/24 01:56 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 07/30/24 01:56 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 07/30/24 01:56 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 07/30/24 01:56 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 07/30/24 01:56 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *98* | | *70 - 130* | | *07/30/24 01:56* | *1* |
| *2,5-Dibromotoluene (pid)* | *91* | | *70 - 130* | | *07/30/24 01:56* | *1* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 110 | 110 | ug/L | | 07/31/24 10:44 | 08/01/24 18:39 | 1 |
| C19-C36 Aliphatics | ND | | 110 | 110 | ug/L | | 07/31/24 10:44 | 08/01/24 18:39 | 1 |
| C11-C22 Aromatics | ND | | 110 | 110 | ug/L | | 07/31/24 10:44 | 08/01/24 18:39 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 110 | 110 | ug/L | | 07/31/24 10:44 | 08/01/24 18:39 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *68* | | *40 - 140* | *07/31/24 10:44* | *08/01/24 18:39* | *1* |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-19967-1

## Client Sample ID: GW-MW104-072524

**Lab Sample ID: 620-19967-2**

**Date Collected: 07/25/24 11:30**

**Matrix: Water**

**Date Received: 07/26/24 16:43**

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *52* | | *40 - 140* | *07/31/24 10:44* | *08/01/24 18:39* | *1* |
| *2-Fluorobiphenyl (Surr)* | *91* | | *40 - 140* | *07/31/24 10:44* | *08/01/24 18:39* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Antimony** | **0.0024** | **J** | 0.0060 | 0.0016 | mg/L | | 07/29/24 12:21 | 07/30/24 12:30 | 1 |
| **Arsenic** | **0.0088** | | 0.0040 | 0.0014 | mg/L | | 07/29/24 12:21 | 07/30/24 12:30 | 1 |
| **Barium** | **0.14** | | 0.0050 | 0.00070 | mg/L | | 07/29/24 12:21 | 07/30/24 12:30 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 07/29/24 12:21 | 07/30/24 12:30 | 1 |
| **Cadmium** | **0.0015** | **J** | 0.0025 | 0.00036 | mg/L | | 07/29/24 12:21 | 07/30/24 12:30 | 1 |
| Chromium | ND | | 0.0050 | 0.00093 | mg/L | | 07/29/24 12:21 | 07/30/24 12:30 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 07/29/24 12:21 | 07/30/24 12:30 | 1 |
| **Nickel** | **0.023** | | 0.0050 | 0.00087 | mg/L | | 07/29/24 12:21 | 07/30/24 12:30 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 07/29/24 12:21 | 07/30/24 12:30 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 07/29/24 12:21 | 07/30/24 12:30 | 1 |
| Thallium | ND | | 0.0050 | 0.0021 | mg/L | | 07/29/24 12:21 | 07/30/24 12:30 | 1 |
| Vanadium | ND | | 0.0050 | 0.0011 | mg/L | | 07/29/24 12:21 | 07/30/24 12:30 | 1 |
| **Zinc** | **0.12** | | 0.0050 | 0.0016 | mg/L | | 07/29/24 12:21 | 07/30/24 12:30 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 08/01/24 09:44 | 08/02/24 09:37 | 1 |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-19967-1

## Client Sample ID: GW-MW102R-072524

**Date Collected: 07/25/24 14:30**
**Date Received: 07/26/24 16:43**

## Lab Sample ID: 620-19967-3

**Matrix: Water**

### Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Naphthalene** | **87** | | 11 | 2.6 | ug/L | | 07/31/24 10:44 | 08/09/24 11:32 | 10 |
| **2-Methylnaphthalene** | **13** | | 1.1 | 0.32 | ug/L | | 07/31/24 10:44 | 08/06/24 13:45 | 1 |
| Acenaphthylene | ND | *1 | 1.1 | 0.43 | ug/L | | 07/31/24 10:44 | 08/06/24 13:45 | 1 |
| Acenaphthene | ND | | 1.1 | 0.21 | ug/L | | 07/31/24 10:44 | 08/06/24 13:45 | 1 |
| Fluorene | ND | | 1.1 | 0.43 | ug/L | | 07/31/24 10:44 | 08/06/24 13:45 | 1 |
| Phenanthrene | ND | | 1.1 | 0.19 | ug/L | | 07/31/24 10:44 | 08/06/24 13:45 | 1 |
| Anthracene | ND | | 1.1 | 0.17 | ug/L | | 07/31/24 10:44 | 08/06/24 13:45 | 1 |
| Fluoranthene | ND | | 1.1 | 0.17 | ug/L | | 07/31/24 10:44 | 08/06/24 13:45 | 1 |
| Pyrene | ND | | 1.1 | 0.16 | ug/L | | 07/31/24 10:44 | 08/06/24 13:45 | 1 |
| Benzo[a]anthracene | ND | | 1.1 | 0.078 | ug/L | | 07/31/24 10:44 | 08/06/24 13:45 | 1 |
| Chrysene | ND | | 1.1 | 0.16 | ug/L | | 07/31/24 10:44 | 08/06/24 13:45 | 1 |
| Benzo[b]fluoranthene | ND | | 1.1 | 0.17 | ug/L | | 07/31/24 10:44 | 08/06/24 13:45 | 1 |
| Benzo[k]fluoranthene | ND | | 1.1 | 0.26 | ug/L | | 07/31/24 10:44 | 08/06/24 13:45 | 1 |
| Benzo[a]pyrene | ND | | 0.22 | 0.18 | ug/L | | 07/31/24 10:44 | 08/06/24 13:45 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.56 | 0.51 | ug/L | | 07/31/24 10:44 | 08/06/24 13:45 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.56 | 0.24 | ug/L | | 07/31/24 10:44 | 08/06/24 13:45 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.1 | 0.19 | ug/L | | 07/31/24 10:44 | 08/06/24 13:45 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *84* | | *40 - 140* | *07/31/24 10:44* | *08/06/24 13:45* | *1* |
| *o-Terphenyl (Surr)* | *88* | | *40 - 140* | *07/31/24 10:44* | *08/09/24 11:32* | *10* |
| *2-Fluorobiphenyl (Surr)* | *124* | | *40 - 140* | *07/31/24 10:44* | *08/06/24 13:45* | *1* |
| *2-Fluorobiphenyl (Surr)* | *133* | | *40 - 140* | *07/31/24 10:44* | *08/09/24 11:32* | *10* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C5-C8 Aliphatics (adjusted)** | **530** | | 200 | 200 | ug/L | | | 07/30/24 09:07 | 2 |
| **C5-C8 Aliphatics (unadjusted)** | **740** | | 200 | 200 | ug/L | | | 07/30/24 09:07 | 2 |
| **Benzene** | **25** | | 10 | 10 | ug/L | | | 07/30/24 09:07 | 2 |
| **Ethylbenzene** | **220** | | 10 | 10 | ug/L | | | 07/30/24 09:07 | 2 |
| **Methyl tert-butyl ether** | **190** | | 10 | 10 | ug/L | | | 07/30/24 09:07 | 2 |
| **Naphthalene** | **77** | | 10 | 10 | ug/L | | | 07/30/24 09:07 | 2 |
| Toluene | ND | | 10 | 10 | ug/L | | | 07/30/24 09:07 | 2 |
| **m,p-Xylene** | **740** | | 20 | 20 | ug/L | | | 07/30/24 09:07 | 2 |
| o-Xylene | ND | | 10 | 10 | ug/L | | | 07/30/24 09:07 | 2 |
| **Xylenes, Total** | **740** | | 30 | 30 | ug/L | | | 07/30/24 09:07 | 2 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *115* | | *70 - 130* | | *07/30/24 09:07* | *2* |
| *2,5-Dibromotoluene (pid)* | *107* | | *70 - 130* | | *07/30/24 09:07* | *2* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) - DL

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C9-C10 Aromatics** | **1200** | | 500 | 500 | ug/L | | | 07/30/24 18:17 | 5 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *102* | | *70 - 130* | | *07/30/24 18:17* | *5* |
| *2,5-Dibromotoluene (pid)* | *98* | | *70 - 130* | | *07/30/24 18:17* | *5* |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-19967-1

## Client Sample ID: GW-MW102R-072524

**Lab Sample ID: 620-19967-3**

**Date Collected: 07/25/24 14:30**

**Matrix: Water**

**Date Received: 07/26/24 16:43**

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) - DL3

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C9-C12 Aliphatics (adjusted)** | **3800** | | 2000 | 2000 | ug/L | | | 07/31/24 09:42 | 20 |
| **C9-C12 Aliphatics (unadjusted)** | **6900** | | 2000 | 2000 | ug/L | | | 07/31/24 09:42 | 20 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *98* | | *70 - 130* | | *07/31/24 09:42* | *20* |
| *2,5-Dibromotoluene (pid)* | *93* | | *70 - 130* | | *07/31/24 09:42* | *20* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C9-C18 Aliphatics** | **110** | | 110 | 110 | ug/L | | 07/31/24 10:44 | 08/01/24 19:07 | 1 |
| C19-C36 Aliphatics | ND | | 110 | 110 | ug/L | | 07/31/24 10:44 | 08/01/24 19:07 | 1 |
| **C11-C22 Aromatics** | **200** | | 110 | 110 | ug/L | | 07/31/24 10:44 | 08/01/24 19:07 | 1 |
| **C11-C22 Aromatics (Adjusted)** | **140** | | 110 | 110 | ug/L | | 07/31/24 10:44 | 08/01/24 19:07 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *74* | | *40 - 140* | *07/31/24 10:44* | *08/01/24 19:07* | *1* |
| *o-Terphenyl (Surr)* | *65* | | *40 - 140* | *07/31/24 10:44* | *08/01/24 19:07* | *1* |
| *2-Fluorobiphenyl (Surr)* | *99* | | *40 - 140* | *07/31/24 10:44* | *08/01/24 19:07* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Antimony** | **0.0019** | **J** | 0.0060 | 0.0016 | mg/L | | 07/29/24 12:21 | 07/30/24 12:36 | 1 |
| **Arsenic** | **0.063** | | 0.0040 | 0.0014 | mg/L | | 07/29/24 12:21 | 07/30/24 12:36 | 1 |
| **Barium** | **0.12** | | 0.0050 | 0.00070 | mg/L | | 07/29/24 12:21 | 07/30/24 12:36 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 07/29/24 12:21 | 07/30/24 12:36 | 1 |
| **Cadmium** | **0.00049** | **J** | 0.0025 | 0.00036 | mg/L | | 07/29/24 12:21 | 07/30/24 12:36 | 1 |
| **Chromium** | **0.0013** | **J** | 0.0050 | 0.00093 | mg/L | | 07/29/24 12:21 | 07/30/24 12:36 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 07/29/24 12:21 | 07/30/24 12:36 | 1 |
| **Nickel** | **0.0038** | **J** | 0.0050 | 0.00087 | mg/L | | 07/29/24 12:21 | 07/30/24 12:36 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 07/29/24 12:21 | 07/30/24 12:36 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 07/29/24 12:21 | 07/30/24 12:36 | 1 |
| Thallium | ND | | 0.0050 | 0.0021 | mg/L | | 07/29/24 12:21 | 07/30/24 12:36 | 1 |
| **Vanadium** | **0.0013** | **J** | 0.0050 | 0.0011 | mg/L | | 07/29/24 12:21 | 07/30/24 12:36 | 1 |
| Zinc | ND | | 0.0050 | 0.0016 | mg/L | | 07/29/24 12:21 | 07/30/24 12:36 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 08/01/24 09:45 | 08/02/24 09:48 | 1 |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-19967-1

**Client Sample ID: GW-MW103-072524**
**Date Collected: 07/25/24 10:00**
**Date Received: 07/26/24 16:43**

**Lab Sample ID: 620-19967-4**
**Matrix: Water**

**Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)**

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 07/30/24 03:59 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 07/30/24 03:59 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 07/30/24 03:59 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 07/30/24 03:59 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 07/30/24 03:59 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 07/30/24 03:59 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 07/30/24 03:59 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 07/30/24 03:59 | 1 |
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 07/30/24 03:59 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 07/30/24 03:59 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 07/30/24 03:59 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 07/30/24 03:59 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 07/30/24 03:59 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *108* | | *70 - 130* | | *07/30/24 03:59* | *1* |
| *2,5-Dibromotoluene (pid)* | *104* | | *70 - 130* | | *07/30/24 03:59* | *1* |

## Client Sample ID: GW-MW105-072524

**Date Collected: 07/25/24 13:20**
**Date Received: 07/26/24 16:43**

**Lab Sample ID: 620-19967-5**
**Matrix: Water**

### Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 0.95 | 0.22 | ug/L | | 07/31/24 10:44 | 08/06/24 14:08 | 1 |
| 2-Methylnaphthalene | ND | | 0.95 | 0.28 | ug/L | | 07/31/24 10:44 | 08/06/24 14:08 | 1 |
| Acenaphthylene | ND | *1 | 0.95 | 0.37 | ug/L | | 07/31/24 10:44 | 08/06/24 14:08 | 1 |
| Acenaphthene | ND | | 0.95 | 0.18 | ug/L | | 07/31/24 10:44 | 08/06/24 14:08 | 1 |
| Fluorene | ND | | 0.95 | 0.37 | ug/L | | 07/31/24 10:44 | 08/06/24 14:08 | 1 |
| Phenanthrene | ND | | 0.95 | 0.16 | ug/L | | 07/31/24 10:44 | 08/06/24 14:08 | 1 |
| Anthracene | ND | | 0.95 | 0.15 | ug/L | | 07/31/24 10:44 | 08/06/24 14:08 | 1 |
| Fluoranthene | ND | | 0.95 | 0.14 | ug/L | | 07/31/24 10:44 | 08/06/24 14:08 | 1 |
| Pyrene | ND | | 0.95 | 0.14 | ug/L | | 07/31/24 10:44 | 08/06/24 14:08 | 1 |
| Benzo[a]anthracene | ND | | 0.95 | 0.067 | ug/L | | 07/31/24 10:44 | 08/06/24 14:08 | 1 |
| Chrysene | ND | | 0.95 | 0.13 | ug/L | | 07/31/24 10:44 | 08/06/24 14:08 | 1 |
| Benzo[b]fluoranthene | ND | | 0.95 | 0.14 | ug/L | | 07/31/24 10:44 | 08/06/24 14:08 | 1 |
| Benzo[k]fluoranthene | ND | | 0.95 | 0.23 | ug/L | | 07/31/24 10:44 | 08/06/24 14:08 | 1 |
| Benzo[a]pyrene | ND | | 0.19 | 0.15 | ug/L | | 07/31/24 10:44 | 08/06/24 14:08 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.48 | 0.44 | ug/L | | 07/31/24 10:44 | 08/06/24 14:08 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.48 | 0.20 | ug/L | | 07/31/24 10:44 | 08/06/24 14:08 | 1 |
| Benzo[g,h,i]perylene | ND | | 0.95 | 0.16 | ug/L | | 07/31/24 10:44 | 08/06/24 14:08 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *74* | | *40 - 140* | *07/31/24 10:44* | *08/06/24 14:08* | *1* |
| *2-Fluorobiphenyl (Surr)* | *104* | | *40 - 140* | *07/31/24 10:44* | *08/06/24 14:08* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 07/30/24 04:32 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 07/30/24 04:32 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 07/30/24 04:32 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 07/30/24 04:32 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 07/30/24 04:32 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 07/30/24 04:32 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 07/30/24 04:32 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 07/30/24 04:32 | 1 |
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 07/30/24 04:32 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 07/30/24 04:32 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 07/30/24 04:32 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 07/30/24 04:32 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 07/30/24 04:32 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *105* | | *70 - 130* | | *07/30/24 04:32* | *1* |
| *2,5-Dibromotoluene (pid)* | *100* | | *70 - 130* | | *07/30/24 04:32* | *1* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 95 | 95 | ug/L | | 07/31/24 10:44 | 08/01/24 19:34 | 1 |
| C19-C36 Aliphatics | ND | | 95 | 95 | ug/L | | 07/31/24 10:44 | 08/01/24 19:34 | 1 |
| **C11-C22 Aromatics** | **98** | | 95 | 95 | ug/L | | 07/31/24 10:44 | 08/01/24 19:34 | 1 |
| **C11-C22 Aromatics (Adjusted)** | **98** | | 95 | 95 | ug/L | | 07/31/24 10:44 | 08/01/24 19:34 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *72* | | *40 - 140* | *07/31/24 10:44* | *08/01/24 19:34* | *1* |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-19967-1

## Client Sample ID: GW-MW105-072524

**Lab Sample ID: 620-19967-5**

**Date Collected: 07/25/24 13:20**

**Matrix: Water**

**Date Received: 07/26/24 16:43**

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *58* | | *40 - 140* | *07/31/24 10:44* | *08/01/24 19:34* | *1* |
| *2-Fluorobiphenyl (Surr)* | *87* | | *40 - 140* | *07/31/24 10:44* | *08/01/24 19:34* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 0.0060 | 0.0016 | mg/L | | 07/29/24 12:21 | 07/30/24 12:42 | 1 |
| Arsenic | ND | | 0.0040 | 0.0014 | mg/L | | 07/29/24 12:21 | 07/30/24 12:42 | 1 |
| **Barium** | **0.16** | | 0.0050 | 0.00070 | mg/L | | 07/29/24 12:21 | 07/30/24 12:42 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 07/29/24 12:21 | 07/30/24 12:42 | 1 |
| Cadmium | ND | | 0.0025 | 0.00036 | mg/L | | 07/29/24 12:21 | 07/30/24 12:42 | 1 |
| Chromium | ND | | 0.0050 | 0.00093 | mg/L | | 07/29/24 12:21 | 07/30/24 12:42 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 07/29/24 12:21 | 07/30/24 12:42 | 1 |
| **Nickel** | **0.00090** | **J** | 0.0050 | 0.00087 | mg/L | | 07/29/24 12:21 | 07/30/24 12:42 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 07/29/24 12:21 | 07/30/24 12:42 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 07/29/24 12:21 | 07/30/24 12:42 | 1 |
| Thallium | ND | | 0.0050 | 0.0021 | mg/L | | 07/29/24 12:21 | 07/30/24 12:42 | 1 |
| Vanadium | ND | | 0.0050 | 0.0011 | mg/L | | 07/29/24 12:21 | 07/30/24 12:42 | 1 |
| **Zinc** | **0.0039** | **J** | 0.0050 | 0.0016 | mg/L | | 07/29/24 12:21 | 07/30/24 12:42 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 08/01/24 09:45 | 08/02/24 09:54 | 1 |

## Client Sample ID: FD-01

**Date Collected: 07/25/24 09:30**
**Date Received: 07/26/24 16:43**

## Lab Sample ID: 620-19967-6

**Matrix: Water**

### Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Naphthalene** | **28** | | 5.3 | 1.2 | ug/L | | 07/31/24 10:44 | 08/09/24 12:22 | 5 |
| **2-Methylnaphthalene** | **7.3** | | 1.1 | 0.31 | ug/L | | 07/31/24 10:44 | 08/06/24 14:30 | 1 |
| Acenaphthylene | ND | *1 | 1.1 | 0.41 | ug/L | | 07/31/24 10:44 | 08/06/24 14:30 | 1 |
| Acenaphthene | ND | | 1.1 | 0.20 | ug/L | | 07/31/24 10:44 | 08/06/24 14:30 | 1 |
| Fluorene | ND | | 1.1 | 0.41 | ug/L | | 07/31/24 10:44 | 08/06/24 14:30 | 1 |
| Phenanthrene | ND | | 1.1 | 0.18 | ug/L | | 07/31/24 10:44 | 08/06/24 14:30 | 1 |
| Anthracene | ND | | 1.1 | 0.16 | ug/L | | 07/31/24 10:44 | 08/06/24 14:30 | 1 |
| Fluoranthene | ND | | 1.1 | 0.16 | ug/L | | 07/31/24 10:44 | 08/06/24 14:30 | 1 |
| Pyrene | ND | | 1.1 | 0.15 | ug/L | | 07/31/24 10:44 | 08/06/24 14:30 | 1 |
| Benzo[a]anthracene | ND | | 1.1 | 0.074 | ug/L | | 07/31/24 10:44 | 08/06/24 14:30 | 1 |
| Chrysene | ND | | 1.1 | 0.15 | ug/L | | 07/31/24 10:44 | 08/06/24 14:30 | 1 |
| Benzo[b]fluoranthene | ND | | 1.1 | 0.16 | ug/L | | 07/31/24 10:44 | 08/06/24 14:30 | 1 |
| Benzo[k]fluoranthene | ND | | 1.1 | 0.25 | ug/L | | 07/31/24 10:44 | 08/06/24 14:30 | 1 |
| Benzo[a]pyrene | ND | | 0.21 | 0.17 | ug/L | | 07/31/24 10:44 | 08/06/24 14:30 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.53 | 0.49 | ug/L | | 07/31/24 10:44 | 08/06/24 14:30 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.53 | 0.23 | ug/L | | 07/31/24 10:44 | 08/06/24 14:30 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.1 | 0.18 | ug/L | | 07/31/24 10:44 | 08/06/24 14:30 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *56* | | *40 - 140* | *07/31/24 10:44* | *08/06/24 14:30* | *1* |
| *o-Terphenyl (Surr)* | *31* | *S1-* | *40 - 140* | *07/31/24 10:44* | *08/09/24 12:22* | *5* |
| *2-Fluorobiphenyl (Surr)* | *103* | | *40 - 140* | *07/31/24 10:44* | *08/06/24 14:30* | *1* |
| *2-Fluorobiphenyl (Surr)* | *58* | | *40 - 140* | *07/31/24 10:44* | *08/09/24 12:22* | *5* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C5-C8 Aliphatics (adjusted)** | **540** | | 200 | 200 | ug/L | | | 07/30/24 10:08 | 2 |
| **C5-C8 Aliphatics (unadjusted)** | **760** | | 200 | 200 | ug/L | | | 07/30/24 10:08 | 2 |
| **Benzene** | **29** | | 10 | 10 | ug/L | | | 07/30/24 10:08 | 2 |
| **Ethylbenzene** | **240** | | 10 | 10 | ug/L | | | 07/30/24 10:08 | 2 |
| **Methyl tert-butyl ether** | **190** | | 10 | 10 | ug/L | | | 07/30/24 10:08 | 2 |
| **Naphthalene** | **94** | | 10 | 10 | ug/L | | | 07/30/24 10:08 | 2 |
| Toluene | ND | | 10 | 10 | ug/L | | | 07/30/24 10:08 | 2 |
| **o-Xylene** | **10** | | 10 | 10 | ug/L | | | 07/30/24 10:08 | 2 |
| **Xylenes, Total** | **830** | | 30 | 30 | ug/L | | | 07/30/24 10:08 | 2 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *118* | | *70 - 130* | | *07/30/24 10:08* | *2* |
| *2,5-Dibromotoluene (pid)* | *106* | | *70 - 130* | | *07/30/24 10:08* | *2* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) - DL

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C9-C10 Aromatics** | **1200** | | 500 | 500 | ug/L | | | 07/30/24 19:25 | 5 |
| **m,p-Xylene** | **810** | | 50 | 50 | ug/L | | | 07/30/24 19:25 | 5 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *112* | | *70 - 130* | | *07/30/24 19:25* | *5* |
| *2,5-Dibromotoluene (pid)* | *103* | | *70 - 130* | | *07/30/24 19:25* | *5* |

## Client Sample ID: FD-01

**Date Collected: 07/25/24 09:30**
**Date Received: 07/26/24 16:43**

## Lab Sample ID: 620-19967-6

**Matrix: Water**

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) - DL3

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C9-C12 Aliphatics (adjusted)** | **3200** | | 2000 | 2000 | ug/L | | | 07/31/24 10:13 | 20 |
| **C9-C12 Aliphatics (unadjusted)** | **6000** | | 2000 | 2000 | ug/L | | | 07/31/24 10:13 | 20 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *94* | | *70 - 130* | | *07/31/24 10:13* | *20* |
| *2,5-Dibromotoluene (pid)* | *90* | | *70 - 130* | | *07/31/24 10:13* | *20* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C9-C18 Aliphatics** | **120** | | 110 | 110 | ug/L | | 07/31/24 10:44 | 08/01/24 20:02 | 1 |
| C19-C36 Aliphatics | ND | | 110 | 110 | ug/L | | 07/31/24 10:44 | 08/01/24 20:02 | 1 |
| **C11-C22 Aromatics** | **190** | | 110 | 110 | ug/L | | 07/31/24 10:44 | 08/01/24 20:02 | 1 |
| **C11-C22 Aromatics (Adjusted)** | **150** | | 110 | 110 | ug/L | | 07/31/24 10:44 | 08/01/24 20:02 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *55* | | *40 - 140* | *07/31/24 10:44* | *08/01/24 20:02* | *1* |
| *o-Terphenyl (Surr)* | *36* | *S1-* | *40 - 140* | *07/31/24 10:44* | *08/01/24 20:02* | *1* |
| *2-Fluorobiphenyl (Surr)* | *76* | | *40 - 140* | *07/31/24 10:44* | *08/01/24 20:02* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Antimony** | **0.0023** | **J** | 0.0060 | 0.0016 | mg/L | | 07/29/24 12:21 | 07/30/24 12:48 | 1 |
| **Arsenic** | **0.072** | | 0.0040 | 0.0014 | mg/L | | 07/29/24 12:21 | 07/30/24 12:48 | 1 |
| **Barium** | **0.13** | | 0.0050 | 0.00070 | mg/L | | 07/29/24 12:21 | 07/30/24 12:48 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 07/29/24 12:21 | 07/30/24 12:48 | 1 |
| **Cadmium** | **0.00058** | **J** | 0.0025 | 0.00036 | mg/L | | 07/29/24 12:21 | 07/30/24 12:48 | 1 |
| **Chromium** | **0.0016** | **J** | 0.0050 | 0.00093 | mg/L | | 07/29/24 12:21 | 07/30/24 12:48 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 07/29/24 12:21 | 07/30/24 12:48 | 1 |
| **Nickel** | **0.0044** | **J** | 0.0050 | 0.00087 | mg/L | | 07/29/24 12:21 | 07/30/24 12:48 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 07/29/24 12:21 | 07/30/24 12:48 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 07/29/24 12:21 | 07/30/24 12:48 | 1 |
| Thallium | ND | | 0.0050 | 0.0021 | mg/L | | 07/29/24 12:21 | 07/30/24 12:48 | 1 |
| **Vanadium** | **0.0017** | **J** | 0.0050 | 0.0011 | mg/L | | 07/29/24 12:21 | 07/30/24 12:48 | 1 |
| Zinc | ND | | 0.0050 | 0.0016 | mg/L | | 07/29/24 12:21 | 07/30/24 12:48 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 08/01/24 09:45 | 08/02/24 09:57 | 1 |

## Client Sample ID: GW-MW101-072624

**Date Collected: 07/26/24 12:30**
**Date Received: 07/26/24 16:43**

**Lab Sample ID: 620-19967-7**
**Matrix: Water**

### Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 1.0 | 0.23 | ug/L | | 07/31/24 10:44 | 08/06/24 00:25 | 1 |
| 2-Methylnaphthalene | ND | | 1.0 | 0.29 | ug/L | | 07/31/24 10:44 | 08/06/24 00:25 | 1 |
| Acenaphthylene | ND | *1 | 1.0 | 0.39 | ug/L | | 07/31/24 10:44 | 08/06/24 00:25 | 1 |
| Acenaphthene | ND | | 1.0 | 0.19 | ug/L | | 07/31/24 10:44 | 08/06/24 00:25 | 1 |
| Fluorene | ND | | 1.0 | 0.39 | ug/L | | 07/31/24 10:44 | 08/06/24 00:25 | 1 |
| Phenanthrene | ND | | 1.0 | 0.17 | ug/L | | 07/31/24 10:44 | 08/06/24 00:25 | 1 |
| Anthracene | ND | | 1.0 | 0.15 | ug/L | | 07/31/24 10:44 | 08/06/24 00:25 | 1 |
| Fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 07/31/24 10:44 | 08/06/24 00:25 | 1 |
| **Pyrene** | **0.20** | **J** | 1.0 | 0.14 | ug/L | | 07/31/24 10:44 | 08/06/24 00:25 | 1 |
| Benzo[a]anthracene | ND | | 1.0 | 0.070 | ug/L | | 07/31/24 10:44 | 08/06/24 00:25 | 1 |
| Chrysene | ND | | 1.0 | 0.14 | ug/L | | 07/31/24 10:44 | 08/06/24 00:25 | 1 |
| Benzo[b]fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 07/31/24 10:44 | 08/06/24 00:25 | 1 |
| Benzo[k]fluoranthene | ND | | 1.0 | 0.24 | ug/L | | 07/31/24 10:44 | 08/06/24 00:25 | 1 |
| Benzo[a]pyrene | ND | | 0.20 | 0.16 | ug/L | | 07/31/24 10:44 | 08/06/24 00:25 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.50 | 0.46 | ug/L | | 07/31/24 10:44 | 08/06/24 00:25 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.50 | 0.21 | ug/L | | 07/31/24 10:44 | 08/06/24 00:25 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.0 | 0.17 | ug/L | | 07/31/24 10:44 | 08/06/24 00:25 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *61* | | *40 - 140* | *07/31/24 10:44* | *08/06/24 00:25* | *1* |
| *2-Fluorobiphenyl (Surr)* | *99* | *ER* | *40 - 140* | *07/31/24 10:44* | *08/06/24 00:25* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 07/30/24 05:02 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 07/30/24 05:02 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 07/30/24 05:02 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 07/30/24 05:02 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 07/30/24 05:02 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 07/30/24 05:02 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 07/30/24 05:02 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 07/30/24 05:02 | 1 |
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 07/30/24 05:02 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 07/30/24 05:02 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 07/30/24 05:02 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 07/30/24 05:02 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 07/30/24 05:02 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *100* | | *70 - 130* | | *07/30/24 05:02* | *1* |
| *2,5-Dibromotoluene (pid)* | *92* | | *70 - 130* | | *07/30/24 05:02* | *1* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 100 | 100 | ug/L | | 07/31/24 10:44 | 08/01/24 20:29 | 1 |
| **C19-C36 Aliphatics** | **360** | | 100 | 100 | ug/L | | 07/31/24 10:44 | 08/01/24 20:29 | 1 |
| **C11-C22 Aromatics** | **140** | | 100 | 100 | ug/L | | 07/31/24 10:44 | 08/01/24 20:29 | 1 |
| **C11-C22 Aromatics (Adjusted)** | **140** | | 100 | 100 | ug/L | | 07/31/24 10:44 | 08/01/24 20:29 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *57* | | *40 - 140* | *07/31/24 10:44* | *08/01/24 20:29* | *1* |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-19967-1

**Client Sample ID: GW-MW101-072624**
**Date Collected: 07/26/24 12:30**
**Date Received: 07/26/24 16:43**

**Lab Sample ID: 620-19967-7**
**Matrix: Water**

**Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)**

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|
| o-Terphenyl (Surr) | 54 | | 40 - 140 | 07/31/24 10:44 | 08/01/24 20:29 | 1 |
| 2-Fluorobiphenyl (Surr) | 98 | | 40 - 140 | 07/31/24 10:44 | 08/01/24 20:29 | 1 |

**Client Sample ID: GW-MW109-072624**
**Date Collected: 07/26/24 11:00**
**Date Received: 07/26/24 16:43**

**Lab Sample ID: 620-19967-8**
**Matrix: Water**

## Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Naphthalene** | **150** | | 9.5 | 2.2 | ug/L | | 07/31/24 10:44 | 08/06/24 15:25 | 10 |
| **2-Methylnaphthalene** | **51** | | 9.5 | 2.8 | ug/L | | 07/31/24 10:44 | 08/06/24 15:25 | 10 |
| Acenaphthylene | ND | *1 | 0.95 | 0.37 | ug/L | | 07/31/24 10:44 | 08/06/24 00:48 | 1 |
| Acenaphthene | ND | | 0.95 | 0.18 | ug/L | | 07/31/24 10:44 | 08/06/24 00:48 | 1 |
| Fluorene | ND | | 0.95 | 0.37 | ug/L | | 07/31/24 10:44 | 08/06/24 00:48 | 1 |
| Phenanthrene | ND | | 0.95 | 0.16 | ug/L | | 07/31/24 10:44 | 08/06/24 00:48 | 1 |
| Anthracene | ND | | 0.95 | 0.15 | ug/L | | 07/31/24 10:44 | 08/06/24 00:48 | 1 |
| Fluoranthene | ND | | 0.95 | 0.14 | ug/L | | 07/31/24 10:44 | 08/06/24 00:48 | 1 |
| Pyrene | ND | | 0.95 | 0.14 | ug/L | | 07/31/24 10:44 | 08/06/24 00:48 | 1 |
| Benzo[a]anthracene | ND | | 0.95 | 0.067 | ug/L | | 07/31/24 10:44 | 08/06/24 00:48 | 1 |
| Chrysene | ND | | 0.95 | 0.13 | ug/L | | 07/31/24 10:44 | 08/06/24 00:48 | 1 |
| Benzo[b]fluoranthene | ND | | 0.95 | 0.14 | ug/L | | 07/31/24 10:44 | 08/06/24 00:48 | 1 |
| Benzo[k]fluoranthene | ND | | 0.95 | 0.23 | ug/L | | 07/31/24 10:44 | 08/06/24 00:48 | 1 |
| Benzo[a]pyrene | ND | | 0.19 | 0.15 | ug/L | | 07/31/24 10:44 | 08/06/24 00:48 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.48 | 0.44 | ug/L | | 07/31/24 10:44 | 08/06/24 00:48 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.48 | 0.20 | ug/L | | 07/31/24 10:44 | 08/06/24 00:48 | 1 |
| Benzo[g,h,i]perylene | ND | | 0.95 | 0.16 | ug/L | | 07/31/24 10:44 | 08/06/24 00:48 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *56* | | *40 - 140* | *07/31/24 10:44* | *08/06/24 00:48* | *1* |
| *o-Terphenyl (Surr)* | *76* | | *40 - 140* | *07/31/24 10:44* | *08/06/24 15:25* | *10* |
| *2-Fluorobiphenyl (Surr)* | *92* | *ER* | *40 - 140* | *07/31/24 10:44* | *08/06/24 00:48* | *1* |
| *2-Fluorobiphenyl (Surr)* | *126* | | *40 - 140* | *07/31/24 10:44* | *08/06/24 15:25* | *10* |

## Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 200 | 200 | ug/L | | | 07/30/24 09:38 | 2 |
| C5-C8 Aliphatics (unadjusted) | ND | | 200 | 200 | ug/L | | | 07/30/24 09:38 | 2 |
| Benzene | ND | | 10 | 10 | ug/L | | | 07/30/24 09:38 | 2 |
| **Ethylbenzene** | **97** | | 10 | 10 | ug/L | | | 07/30/24 09:38 | 2 |
| **Methyl tert-butyl ether** | **45** | | 10 | 10 | ug/L | | | 07/30/24 09:38 | 2 |
| **Naphthalene** | **130** | | 10 | 10 | ug/L | | | 07/30/24 09:38 | 2 |
| Toluene | ND | | 10 | 10 | ug/L | | | 07/30/24 09:38 | 2 |
| **m,p-Xylene** | **290** | | 20 | 20 | ug/L | | | 07/30/24 09:38 | 2 |
| o-Xylene | ND | | 10 | 10 | ug/L | | | 07/30/24 09:38 | 2 |
| **Xylenes, Total** | **290** | | 30 | 30 | ug/L | | | 07/30/24 09:38 | 2 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *113* | | *70 - 130* | | *07/30/24 09:38* | *2* |
| *2,5-Dibromotoluene (pid)* | *111* | | *70 - 130* | | *07/30/24 09:38* | *2* |

## Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) - DL

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C9-C12 Aliphatics (adjusted)** | **3700** | | 1000 | 1000 | ug/L | | | 07/30/24 19:58 | 10 |
| **C9-C10 Aromatics** | **3000** | | 1000 | 1000 | ug/L | | | 07/30/24 19:58 | 10 |
| **C9-C12 Aliphatics (unadjusted)** | **7000** | | 1000 | 1000 | ug/L | | | 07/30/24 19:58 | 10 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *100* | | *70 - 130* | | *07/30/24 19:58* | *10* |
| *2,5-Dibromotoluene (pid)* | *94* | | *70 - 130* | | *07/30/24 19:58* | *10* |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-19967-1

## Client Sample ID: GW-MW109-072624

**Lab Sample ID: 620-19967-8**

**Date Collected: 07/26/24 11:00**

**Matrix: Water**

**Date Received: 07/26/24 16:43**

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C9-C18 Aliphatics** | **430** | | 95 | 95 | ug/L | | 07/31/24 10:44 | 08/01/24 20:57 | 1 |
| C19-C36 Aliphatics | ND | | 95 | 95 | ug/L | | 07/31/24 10:44 | 08/01/24 20:57 | 1 |
| **C11-C22 Aromatics** | **350** | | 95 | 95 | ug/L | | 07/31/24 10:44 | 08/01/24 20:57 | 1 |
| **C11-C22 Aromatics (Adjusted)** | **240** | | 95 | 95 | ug/L | | 07/31/24 10:44 | 08/01/24 20:57 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *71* | | *40 - 140* | *07/31/24 10:44* | *08/01/24 20:57* | *1* |
| *o-Terphenyl (Surr)* | *53* | | *40 - 140* | *07/31/24 10:44* | *08/01/24 20:57* | *1* |
| *2-Fluorobiphenyl (Surr)* | *92* | | *40 - 140* | *07/31/24 10:44* | *08/01/24 20:57* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 0.0060 | 0.0016 | mg/L | | 07/29/24 12:21 | 07/30/24 12:54 | 1 |
| **Arsenic** | **0.041** | | 0.0040 | 0.0014 | mg/L | | 07/29/24 12:21 | 07/30/24 12:54 | 1 |
| **Barium** | **0.043** | | 0.0050 | 0.00070 | mg/L | | 07/29/24 12:21 | 07/30/24 12:54 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 07/29/24 12:21 | 07/30/24 12:54 | 1 |
| Cadmium | ND | | 0.0025 | 0.00036 | mg/L | | 07/29/24 12:21 | 07/30/24 12:54 | 1 |
| Chromium | ND | | 0.0050 | 0.00093 | mg/L | | 07/29/24 12:21 | 07/30/24 12:54 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 07/29/24 12:21 | 07/30/24 12:54 | 1 |
| **Nickel** | **0.0022** | **J** | 0.0050 | 0.00087 | mg/L | | 07/29/24 12:21 | 07/30/24 12:54 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 07/29/24 12:21 | 07/30/24 12:54 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 07/29/24 12:21 | 07/30/24 12:54 | 1 |
| Thallium | ND | | 0.0050 | 0.0021 | mg/L | | 07/29/24 12:21 | 07/30/24 12:54 | 1 |
| Vanadium | ND | | 0.0050 | 0.0011 | mg/L | | 07/29/24 12:21 | 07/30/24 12:54 | 1 |
| Zinc | ND | | 0.0050 | 0.0016 | mg/L | | 07/29/24 12:21 | 07/30/24 12:54 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 08/01/24 09:45 | 08/02/24 09:59 | 1 |

## Client Sample ID: GW-MW108-072624

**Date Collected: 07/26/24 11:10**
**Date Received: 07/26/24 16:43**

**Lab Sample ID: 620-19967-9**
**Matrix: Water**

### Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 1.1 | 0.26 | ug/L | | 07/31/24 10:44 | 08/06/24 01:11 | 1 |
| 2-Methylnaphthalene | ND | | 1.1 | 0.32 | ug/L | | 07/31/24 10:44 | 08/06/24 01:11 | 1 |
| Acenaphthylene | ND | *1 | 1.1 | 0.43 | ug/L | | 07/31/24 10:44 | 08/06/24 01:11 | 1 |
| Acenaphthene | ND | | 1.1 | 0.21 | ug/L | | 07/31/24 10:44 | 08/06/24 01:11 | 1 |
| Fluorene | ND | | 1.1 | 0.43 | ug/L | | 07/31/24 10:44 | 08/06/24 01:11 | 1 |
| Phenanthrene | ND | | 1.1 | 0.19 | ug/L | | 07/31/24 10:44 | 08/06/24 01:11 | 1 |
| Anthracene | ND | | 1.1 | 0.17 | ug/L | | 07/31/24 10:44 | 08/06/24 01:11 | 1 |
| Fluoranthene | ND | | 1.1 | 0.17 | ug/L | | 07/31/24 10:44 | 08/06/24 01:11 | 1 |
| Pyrene | ND | | 1.1 | 0.16 | ug/L | | 07/31/24 10:44 | 08/06/24 01:11 | 1 |
| Benzo[a]anthracene | ND | | 1.1 | 0.078 | ug/L | | 07/31/24 10:44 | 08/06/24 01:11 | 1 |
| Chrysene | ND | | 1.1 | 0.16 | ug/L | | 07/31/24 10:44 | 08/06/24 01:11 | 1 |
| Benzo[b]fluoranthene | ND | | 1.1 | 0.17 | ug/L | | 07/31/24 10:44 | 08/06/24 01:11 | 1 |
| Benzo[k]fluoranthene | ND | | 1.1 | 0.26 | ug/L | | 07/31/24 10:44 | 08/06/24 01:11 | 1 |
| Benzo[a]pyrene | ND | | 0.22 | 0.18 | ug/L | | 07/31/24 10:44 | 08/06/24 01:11 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.56 | 0.51 | ug/L | | 07/31/24 10:44 | 08/06/24 01:11 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.56 | 0.24 | ug/L | | 07/31/24 10:44 | 08/06/24 01:11 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.1 | 0.19 | ug/L | | 07/31/24 10:44 | 08/06/24 01:11 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *69* | | *40 - 140* | *07/31/24 10:44* | *08/06/24 01:11* | *1* |
| *2-Fluorobiphenyl (Surr)* | *114* | *ER* | *40 - 140* | *07/31/24 10:44* | *08/06/24 01:11* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 07/30/24 05:33 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 07/30/24 05:33 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 07/30/24 05:33 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 07/30/24 05:33 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 07/30/24 05:33 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 07/30/24 05:33 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 07/30/24 05:33 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 07/30/24 05:33 | 1 |
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 07/30/24 05:33 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 07/30/24 05:33 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 07/30/24 05:33 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 07/30/24 05:33 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 07/30/24 05:33 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *102* | | *70 - 130* | | *07/30/24 05:33* | *1* |
| *2,5-Dibromotoluene (pid)* | *95* | | *70 - 130* | | *07/30/24 05:33* | *1* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 110 | 110 | ug/L | | 07/31/24 10:44 | 08/01/24 21:24 | 1 |
| C19-C36 Aliphatics | ND | | 110 | 110 | ug/L | | 07/31/24 10:44 | 08/01/24 21:24 | 1 |
| **C11-C22 Aromatics** | **120** | | 110 | 110 | ug/L | | 07/31/24 10:44 | 08/01/24 21:24 | 1 |
| **C11-C22 Aromatics (Adjusted)** | **120** | | 110 | 110 | ug/L | | 07/31/24 10:44 | 08/01/24 21:24 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *72* | | *40 - 140* | *07/31/24 10:44* | *08/01/24 21:24* | *1* |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-19967-1

## Client Sample ID: GW-MW108-072624

**Lab Sample ID: 620-19967-9**

**Date Collected: 07/26/24 11:10**

**Matrix: Water**

**Date Received: 07/26/24 16:43**

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *56* | | *40 - 140* | *07/31/24 10:44* | *08/01/24 21:24* | *1* |
| *2-Fluorobiphenyl (Surr)* | *92* | | *40 - 140* | *07/31/24 10:44* | *08/01/24 21:24* | *1* |

### Method: SW846 6010D - Metals (ICP)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 0.0060 | 0.0016 | mg/L | | 07/30/24 14:55 | 07/31/24 11:29 | 1 |
| Arsenic | ND | | 0.0040 | 0.0014 | mg/L | | 07/30/24 14:55 | 07/31/24 11:29 | 1 |
| **Barium** | **0.088** | | 0.0050 | 0.00070 | mg/L | | 07/30/24 14:55 | 07/31/24 11:29 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 07/30/24 14:55 | 07/31/24 11:29 | 1 |
| Cadmium | ND | | 0.0025 | 0.00036 | mg/L | | 07/30/24 14:55 | 07/31/24 11:29 | 1 |
| Chromium | ND | | 0.0050 | 0.00093 | mg/L | | 07/30/24 14:55 | 07/31/24 11:29 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 07/30/24 14:55 | 07/31/24 11:29 | 1 |
| **Nickel** | **0.0026** | **J** | 0.0050 | 0.00087 | mg/L | | 07/30/24 14:55 | 07/31/24 11:29 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 07/30/24 14:55 | 07/31/24 11:29 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 07/30/24 14:55 | 07/31/24 11:29 | 1 |
| **Thallium** | **0.0021** | **J** | 0.0050 | 0.0021 | mg/L | | 07/30/24 14:55 | 07/31/24 11:29 | 1 |
| Vanadium | ND | | 0.0050 | 0.0011 | mg/L | | 07/30/24 14:55 | 07/31/24 11:29 | 1 |
| **Zinc** | **0.0096** | | 0.0050 | 0.0016 | mg/L | | 07/30/24 14:55 | 07/31/24 11:29 | 1 |

### Method: SW846 7470A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 08/01/24 09:45 | 08/02/24 10:01 | 1 |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-19967-1

**Client Sample ID: TB-01-072624**
**Date Collected: 07/26/24 09:00**
**Date Received: 07/26/24 16:43**

**Lab Sample ID: 620-19967-10**
**Matrix: Water**

**Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)**

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 07/29/24 14:12 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 07/29/24 14:12 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 07/29/24 14:12 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 07/29/24 14:12 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 07/29/24 14:12 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 07/29/24 14:12 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 07/29/24 14:12 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 07/29/24 14:12 | 1 |
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 07/29/24 14:12 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 07/29/24 14:12 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 07/29/24 14:12 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 07/29/24 14:12 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 07/29/24 14:12 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *96* | | *70 - 130* | | *07/29/24 14:12* | *1* |
| *2,5-Dibromotoluene (pid)* | *91* | | *70 - 130* | | *07/29/24 14:12* | *1* |

# Surrogate Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-19967-1

## Method: EPH - Extractable Petroleum Hydrocarbons (GC/MS)

**Matrix: Water**

**Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) | |
|---|---|---|---|
| Lab Sample ID | Client Sample ID | OTPH (40-140) | FBP (40-140) |
| 620-19967-1 | GW-MW107-072524 | 83 | 118 |
| 620-19967-1 MS | GW-MW107-072524 | 130 | 120 |
| 620-19967-1 MSD | GW-MW107-072524 | 132 | 108 |
| 620-19967-2 | GW-MW104-072524 | 69 | 110 |
| 620-19967-3 | GW-MW102R-072524 | 84 | 124 |
| 620-19967-3 | GW-MW102R-072524 | 88 | 133 |
| 620-19967-5 | GW-MW105-072524 | 74 | 104 |
| 620-19967-6 | FD-01 | 56 | 103 |
| 620-19967-6 | FD-01 | 31 S1- | 58 |
| 620-19967-7 | GW-MW101-072624 | 61 | 99 ER |
| 620-19967-8 | GW-MW109-072624 | 56 | 92 ER |
| 620-19967-8 | GW-MW109-072624 | 76 | 126 |
| 620-19967-9 | GW-MW108-072624 | 69 | 114 ER |
| LCS 620-37257/4-B | Lab Control Sample | 88 | 121 ER |
| LCSD 620-37257/5-B | Lab Control Sample Dup | 96 | 126 ER |
| MB 620-37257/1-B | Method Blank | 81 | 108 |

**Surrogate Legend**

OTPH = o-Terphenyl (Surr)

FBP = 2-Fluorobiphenyl (Surr)

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

**Matrix: Water**

**Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) | |
|---|---|---|---|
| Lab Sample ID | Client Sample ID | 25DBTf1 (70-130) | 25DBTp1 (70-130) |
| 620-19967-1 | GW-MW107-072524 | 97 | 91 |
| 620-19967-1 MS | GW-MW107-072524 | 112 | 106 |
| 620-19967-1 MSD | GW-MW107-072524 | 102 | 94 |
| 620-19967-2 | GW-MW104-072524 | 98 | 91 |
| 620-19967-3 | GW-MW102R-072524 | 115 | 107 |
| 620-19967-3 - DL3 | GW-MW102R-072524 | 98 | 93 |
| 620-19967-3 - DL | GW-MW102R-072524 | 102 | 98 |
| 620-19967-4 | GW-MW103-072524 | 108 | 104 |
| 620-19967-5 | GW-MW105-072524 | 105 | 100 |
| 620-19967-6 | FD-01 | 118 | 106 |
| 620-19967-6 - DL | FD-01 | 112 | 103 |
| 620-19967-6 - DL3 | FD-01 | 94 | 90 |
| 620-19967-7 | GW-MW101-072624 | 100 | 92 |
| 620-19967-8 | GW-MW109-072624 | 113 | 111 |
| 620-19967-8 - DL | GW-MW109-072624 | 100 | 94 |
| 620-19967-9 | GW-MW108-072624 | 102 | 95 |
| 620-19967-10 | TB-01-072624 | 96 | 91 |
| LCS 620-37119/4 | Lab Control Sample | 103 | 97 |
| LCS 620-37217/2 | Lab Control Sample | 98 | 92 |
| LCSD 620-37119/5 | Lab Control Sample Dup | 101 | 95 |
| LCSD 620-37217/3 | Lab Control Sample Dup | 102 | 96 |
| MB 620-37119/6 | Method Blank | 98 | 91 |
| MB 620-37217/4 | Method Blank | 107 | 102 |

# Surrogate Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-19967-1

**Surrogate Legend**

25DBTf = 2,5-Dibromotoluene (fid)
25DBTp = 2,5-Dibromotoluene (pid)

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

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

| | | Percent Surrogate Recovery (Acceptance Limits) | | |
|---|---|---|---|---|
| | | 1COD1 | OTPH1 | FBP1 |
| Lab Sample ID | Client Sample ID | (40-140) | (40-140) | (40-140) |
| 620-19967-1 | GW-MW107-072524 | 75 | 59 | 93 |
| 620-19967-1 MS | GW-MW107-072524 | 78 | 72 | 110 |
| 620-19967-1 MSD | GW-MW107-072524 | 84 | 67 | 92 |
| 620-19967-2 | GW-MW104-072524 | 68 | 52 | 91 |
| 620-19967-3 | GW-MW102R-072524 | 74 | 65 | 99 |
| 620-19967-5 | GW-MW105-072524 | 72 | 58 | 87 |
| 620-19967-6 | FD-01 | 55 | 36 S1- | 76 |
| 620-19967-7 | GW-MW101-072624 | 57 | 54 | 98 |
| 620-19967-8 | GW-MW109-072624 | 71 | 53 | 92 |
| 620-19967-9 | GW-MW108-072624 | 72 | 56 | 92 |
| LCS 620-37257/2-B | Lab Control Sample | 92 | 73 | 105 |
| LCSD 620-37257/3-B | Lab Control Sample Dup | 90 | 76 | 91 |
| MB 620-37257/1-B | Method Blank | 95 | 64 | 88 |

**Surrogate Legend**

1COD = 1-Chlorooctadecane (Surr)
OTPH = o-Terphenyl (Surr)
FBP = 2-Fluorobiphenyl (Surr)

## Method: EPH - Extractable Petroleum Hydrocarbons (GC/MS)

**Lab Sample ID: MB 620-37257/1-B**
**Matrix: Water**
**Analysis Batch: 37430**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 37257**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 1.0 | 0.23 | ug/L | | 07/31/24 10:44 | 08/05/24 18:45 | 1 |
| 2-Methylnaphthalene | ND | | 1.0 | 0.29 | ug/L | | 07/31/24 10:44 | 08/05/24 18:45 | 1 |
| Acenaphthylene | ND | | 1.0 | 0.39 | ug/L | | 07/31/24 10:44 | 08/05/24 18:45 | 1 |
| Acenaphthene | ND | | 1.0 | 0.19 | ug/L | | 07/31/24 10:44 | 08/05/24 18:45 | 1 |
| Fluorene | ND | | 1.0 | 0.39 | ug/L | | 07/31/24 10:44 | 08/05/24 18:45 | 1 |
| Phenanthrene | ND | | 1.0 | 0.17 | ug/L | | 07/31/24 10:44 | 08/05/24 18:45 | 1 |
| Anthracene | ND | | 1.0 | 0.15 | ug/L | | 07/31/24 10:44 | 08/05/24 18:45 | 1 |
| Fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 07/31/24 10:44 | 08/05/24 18:45 | 1 |
| Pyrene | ND | | 1.0 | 0.14 | ug/L | | 07/31/24 10:44 | 08/05/24 18:45 | 1 |
| Benzo[a]anthracene | ND | | 1.0 | 0.070 | ug/L | | 07/31/24 10:44 | 08/05/24 18:45 | 1 |
| Chrysene | ND | | 1.0 | 0.14 | ug/L | | 07/31/24 10:44 | 08/05/24 18:45 | 1 |
| Benzo[b]fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 07/31/24 10:44 | 08/05/24 18:45 | 1 |
| Benzo[k]fluoranthene | ND | | 1.0 | 0.24 | ug/L | | 07/31/24 10:44 | 08/05/24 18:45 | 1 |
| Benzo[a]pyrene | ND | | 0.20 | 0.16 | ug/L | | 07/31/24 10:44 | 08/05/24 18:45 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.50 | 0.46 | ug/L | | 07/31/24 10:44 | 08/05/24 18:45 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.50 | 0.21 | ug/L | | 07/31/24 10:44 | 08/05/24 18:45 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.0 | 0.17 | ug/L | | 07/31/24 10:44 | 08/05/24 18:45 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *81* | | *40 - 140* | *07/31/24 10:44* | *08/05/24 18:45* | *1* |
| *2-Fluorobiphenyl (Surr)* | *108* | | *40 - 140* | *07/31/24 10:44* | *08/05/24 18:45* | *1* |

**Lab Sample ID: LCS 620-37257/4-B**
**Matrix: Water**
**Analysis Batch: 37430**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 37257**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Naphthalene | 5.00 | 2.10 | | ug/L | | 42 | 40 - 140 |
| 2-Methylnaphthalene | 5.00 | 2.17 | | ug/L | | 43 | 40 - 140 |
| Acenaphthylene | 5.00 | 2.37 | | ug/L | | 47 | 40 - 140 |
| Acenaphthene | 5.00 | 2.30 | | ug/L | | 46 | 40 - 140 |
| Fluorene | 5.00 | 2.40 | | ug/L | | 48 | 40 - 140 |
| Phenanthrene | 5.00 | 2.78 | | ug/L | | 56 | 40 - 140 |
| Anthracene | 5.00 | 2.27 | | ug/L | | 45 | 40 - 140 |
| Fluoranthene | 5.00 | 3.18 | | ug/L | | 64 | 40 - 140 |
| Pyrene | 5.00 | 3.22 | | ug/L | | 64 | 40 - 140 |
| Benzo[a]anthracene | 5.00 | 3.50 | | ug/L | | 70 | 40 - 140 |
| Chrysene | 5.00 | 3.24 | | ug/L | | 65 | 40 - 140 |
| Benzo[b]fluoranthene | 5.00 | 4.15 | | ug/L | | 83 | 40 - 140 |
| Benzo[k]fluoranthene | 5.00 | 3.91 | | ug/L | | 78 | 40 - 140 |
| Benzo[a]pyrene | 5.00 | 2.98 | | ug/L | | 60 | 40 - 140 |
| Indeno[1,2,3-cd]pyrene | 5.00 | 3.48 | | ug/L | | 70 | 40 - 140 |
| Dibenz(a,h)anthracene | 5.00 | 3.38 | | ug/L | | 68 | 40 - 140 |
| Benzo[g,h,i]perylene | 5.00 | 3.95 | | ug/L | | 79 | 40 - 140 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl (Surr)* | *88* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *121* | *ER* | *40 - 140* |

## Method: EPH - Extractable Petroleum Hydrocarbons (GC/MS)

**Lab Sample ID: LCSD 620-37257/5-B**
**Matrix: Water**
**Analysis Batch: 37430**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 37257**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | | | 5.00 | 2.66 | | ug/L | | 53 | 40 - 140 | 24 | 25 |
| 2-Methylnaphthalene | | | 5.00 | 2.79 | | ug/L | | 56 | 40 - 140 | 25 | 25 |
| Acenaphthylene | | | 5.00 | 3.10 | *1 | ug/L | | 62 | 40 - 140 | 27 | 25 |
| Acenaphthene | | | 5.00 | 2.97 | | ug/L | | 59 | 40 - 140 | 25 | 25 |
| Fluorene | | | 5.00 | 3.09 | | ug/L | | 62 | 40 - 140 | 25 | 25 |
| Phenanthrene | | | 5.00 | 3.56 | | ug/L | | 71 | 40 - 140 | 25 | 25 |
| Anthracene | | | 5.00 | 2.78 | | ug/L | | 56 | 40 - 140 | 20 | 25 |
| Fluoranthene | | | 5.00 | 3.74 | | ug/L | | 75 | 40 - 140 | 16 | 25 |
| Pyrene | | | 5.00 | 3.83 | | ug/L | | 77 | 40 - 140 | 17 | 25 |
| Benzo[a]anthracene | | | 5.00 | 3.97 | | ug/L | | 79 | 40 - 140 | 13 | 25 |
| Chrysene | | | 5.00 | 4.00 | | ug/L | | 80 | 40 - 140 | 21 | 25 |
| Benzo[b]fluoranthene | | | 5.00 | 4.53 | | ug/L | | 91 | 40 - 140 | 9 | 25 |
| Benzo[k]fluoranthene | | | 5.00 | 4.67 | | ug/L | | 93 | 40 - 140 | 18 | 25 |
| Benzo[a]pyrene | | | 5.00 | 3.47 | | ug/L | | 69 | 40 - 140 | 15 | 25 |
| Indeno[1,2,3-cd]pyrene | | | 5.00 | 4.21 | | ug/L | | 84 | 40 - 140 | 19 | 25 |
| Dibenz(a,h)anthracene | | | 5.00 | 3.86 | | ug/L | | 77 | 40 - 140 | 13 | 25 |
| Benzo[g,h,i]perylene | | | 5.00 | 4.66 | | ug/L | | 93 | 40 - 140 | 17 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl (Surr)* | *96* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *126* | *ER* | *40 - 140* |

**Lab Sample ID: 620-19967-1 MS**
**Matrix: Water**
**Analysis Batch: 37462**

**Client Sample ID: GW-MW107-072524**
**Prep Type: Total/NA**
**Prep Batch: 37257**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | 0.45 | J | 19.0 | 12.9 | | ug/L | | 65 | 40 - 140 |
| 2-Methylnaphthalene | ND | | 19.0 | 12.0 | | ug/L | | 63 | 40 - 140 |
| Acenaphthylene | ND | *1 | 19.0 | 11.9 | | ug/L | | 62 | 40 - 140 |
| Acenaphthene | ND | | 19.0 | 11.8 | | ug/L | | 62 | 40 - 140 |
| Fluorene | ND | | 19.0 | 12.8 | | ug/L | | 67 | 40 - 140 |
| Phenanthrene | ND | | 19.0 | 16.2 | | ug/L | | 85 | 40 - 140 |
| Anthracene | ND | | 19.0 | 13.8 | | ug/L | | 72 | 40 - 140 |
| Fluoranthene | ND | | 19.0 | 18.7 | | ug/L | | 98 | 40 - 140 |
| Pyrene | ND | | 19.0 | 19.0 | | ug/L | | 100 | 40 - 140 |
| Benzo[a]anthracene | ND | | 19.0 | 20.5 | | ug/L | | 107 | 40 - 140 |
| Chrysene | ND | | 19.0 | 18.9 | | ug/L | | 99 | 40 - 140 |
| Benzo[b]fluoranthene | ND | | 19.0 | 24.6 | | ug/L | | 129 | 40 - 140 |
| Benzo[k]fluoranthene | ND | | 19.0 | 22.5 | | ug/L | | 118 | 40 - 140 |
| Benzo[a]pyrene | ND | | 19.0 | 17.4 | | ug/L | | 91 | 40 - 140 |
| Indeno[1,2,3-cd]pyrene | ND | | 19.0 | 20.0 | | ug/L | | 105 | 40 - 140 |
| Dibenz(a,h)anthracene | ND | | 19.0 | 19.3 | | ug/L | | 102 | 40 - 140 |
| Benzo[g,h,i]perylene | ND | | 19.0 | 21.5 | | ug/L | | 113 | 40 - 140 |

| *Surrogate* | *MS %Recovery* | *MS Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl (Surr)* | *130* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *120* | | *40 - 140* |

## Method: EPH - Extractable Petroleum Hydrocarbons (GC/MS)

**Lab Sample ID: 620-19967-1 MSD**
**Matrix: Water**
**Analysis Batch: 37462**

**Client Sample ID: GW-MW107-072524**
**Prep Type: Total/NA**
**Prep Batch: 37257**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | 0.45 | J | 19.0 | 15.7 | | ug/L | | 80 | 40 - 140 | 20 | 50 |
| 2-Methylnaphthalene | ND | | 19.0 | 14.3 | | ug/L | | 75 | 40 - 140 | 17 | 50 |
| Acenaphthylene | ND | *1 | 19.0 | 13.6 | | ug/L | | 72 | 40 - 140 | 14 | 50 |
| Acenaphthene | ND | | 19.0 | 13.3 | | ug/L | | 70 | 40 - 140 | 12 | 50 |
| Fluorene | ND | | 19.0 | 13.9 | | ug/L | | 73 | 40 - 140 | 8 | 50 |
| Phenanthrene | ND | | 19.0 | 17.1 | | ug/L | | 90 | 40 - 140 | 5 | 50 |
| Anthracene | ND | | 19.0 | 13.7 | | ug/L | | 72 | 40 - 140 | 1 | 50 |
| Fluoranthene | ND | | 19.0 | 18.6 | | ug/L | | 97 | 40 - 140 | 1 | 50 |
| Pyrene | ND | | 19.0 | 18.8 | | ug/L | | 99 | 40 - 140 | 1 | 50 |
| Benzo[a]anthracene | ND | | 19.0 | 19.5 | | ug/L | | 102 | 40 - 140 | 5 | 50 |
| Chrysene | ND | | 19.0 | 18.8 | | ug/L | | 99 | 40 - 140 | 1 | 50 |
| Benzo[b]fluoranthene | ND | | 19.0 | 22.1 | | ug/L | | 116 | 40 - 140 | 11 | 50 |
| Benzo[k]fluoranthene | ND | | 19.0 | 23.2 | | ug/L | | 122 | 40 - 140 | 3 | 50 |
| Benzo[a]pyrene | ND | | 19.0 | 17.3 | | ug/L | | 91 | 40 - 140 | 1 | 50 |
| Indeno[1,2,3-cd]pyrene | ND | | 19.0 | 19.3 | | ug/L | | 102 | 40 - 140 | 3 | 50 |
| Dibenz(a,h)anthracene | ND | | 19.0 | 18.4 | | ug/L | | 97 | 40 - 140 | 5 | 50 |
| Benzo[g,h,i]perylene | ND | | 19.0 | 21.4 | | ug/L | | 112 | 40 - 140 | 1 | 50 |

| *Surrogate* | *MSD %Recovery* | *MSD Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl (Surr)* | *132* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *108* | | *40 - 140* |

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

**Lab Sample ID: MB 620-37119/6**
**Matrix: Water**
**Analysis Batch: 37119**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 07/29/24 12:20 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 07/29/24 12:20 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 07/29/24 12:20 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 07/29/24 12:20 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 07/29/24 12:20 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 07/29/24 12:20 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 07/29/24 12:20 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 07/29/24 12:20 | 1 |
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 07/29/24 12:20 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 07/29/24 12:20 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 07/29/24 12:20 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 07/29/24 12:20 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 07/29/24 12:20 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *98* | | *70 - 130* | | *07/29/24 12:20* | *1* |
| *2,5-Dibromotoluene (pid)* | *91* | | *70 - 130* | | *07/29/24 12:20* | *1* |

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: LCS 620-37119/4**
**Matrix: Water**
**Analysis Batch: 37119**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | 20.0 | ND | | ug/L | | 97 | 70 - 130 |
| C5-C8 Aliphatics (unadjusted) | 60.0 | ND | | ug/L | | 98 | 70 - 130 |
| C9-C12 Aliphatics (unadjusted) | 60.0 | ND | | ug/L | | 97 | 70 - 130 |
| Benzene | 20.0 | 19.6 | | ug/L | | 98 | 70 - 130 |
| Ethylbenzene | 20.0 | 20.2 | | ug/L | | 101 | 70 - 130 |
| Methyl tert-butyl ether | 20.0 | 19.0 | | ug/L | | 95 | 70 - 130 |
| Naphthalene | 20.0 | 18.1 | | ug/L | | 91 | 70 - 130 |
| Toluene | 20.0 | 19.7 | | ug/L | | 98 | 70 - 130 |
| m,p-Xylene | 40.0 | 42.8 | | ug/L | | 107 | 70 - 130 |
| o-Xylene | 20.0 | 21.8 | | ug/L | | 109 | 70 - 130 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *103* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *97* | | *70 - 130* |

**Lab Sample ID: LCSD 620-37119/5**
**Matrix: Water**
**Analysis Batch: 37119**

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

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | 20.0 | ND | | ug/L | | 97 | 70 - 130 | 0 | 25 |
| C5-C8 Aliphatics (unadjusted) | 60.0 | ND | | ug/L | | 95 | 70 - 130 | 3 | 25 |
| C9-C12 Aliphatics (unadjusted) | 60.0 | ND | | ug/L | | 92 | 70 - 130 | 5 | 25 |
| Benzene | 20.0 | 19.7 | | ug/L | | 99 | 70 - 130 | 1 | 25 |
| Ethylbenzene | 20.0 | 20.6 | | ug/L | | 103 | 70 - 130 | 2 | 25 |
| Methyl tert-butyl ether | 20.0 | 19.7 | | ug/L | | 98 | 70 - 130 | 3 | 25 |
| Naphthalene | 20.0 | 19.3 | | ug/L | | 96 | 70 - 130 | 6 | 25 |
| Toluene | 20.0 | 19.8 | | ug/L | | 99 | 70 - 130 | 1 | 25 |
| m,p-Xylene | 40.0 | 43.5 | | ug/L | | 109 | 70 - 130 | 2 | 25 |
| o-Xylene | 20.0 | 22.1 | | ug/L | | 111 | 70 - 130 | 1 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *101* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *95* | | *70 - 130* |

**Lab Sample ID: 620-19967-1 MS**
**Matrix: Water**
**Analysis Batch: 37119**

**Client Sample ID: GW-MW107-072524**
**Prep Type: Total/NA**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | ND | | 20.3 | ND | | ug/L | | NC | 70 - 130 |
| C5-C8 Aliphatics (unadjusted) | ND | | 61.0 | 168 | | ug/L | | NC | 70 - 130 |
| C9-C12 Aliphatics (unadjusted) | 110 | F1 | 61.0 | 373 | F1 | ug/L | | 430 | 70 - 130 |
| Benzene | ND | | 20.3 | 22.4 | | ug/L | | 110 | 70 - 130 |
| Ethylbenzene | 7.7 | | 20.3 | 31.1 | | ug/L | | 115 | 70 - 130 |
| Methyl tert-butyl ether | ND | | 20.3 | 24.0 | | ug/L | | 118 | 70 - 130 |
| Naphthalene | ND | | 20.3 | 21.9 | | ug/L | | 107 | 70 - 130 |
| Toluene | ND | | 20.3 | 21.8 | | ug/L | | 107 | 70 - 130 |

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: 620-19967-1 MS**
**Matrix: Water**
**Analysis Batch: 37119**

**Client Sample ID: GW-MW107-072524**
**Prep Type: Total/NA**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| m,p-Xylene | ND | | 40.7 | 44.2 | | ug/L | | 109 | 70 - 130 |
| o-Xylene | ND | | 20.3 | 19.8 | | ug/L | | 97 | 70 - 130 |

| *Surrogate* | *MS %Recovery* | *MS Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *112* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *106* | | *70 - 130* |

**Lab Sample ID: 620-19967-1 MSD**
**Matrix: Water**
**Analysis Batch: 37119**

**Client Sample ID: GW-MW107-072524**
**Prep Type: Total/NA**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | ND | | 20.3 | ND | | ug/L | | NC | 70 - 130 | NC | 30 |
| C5-C8 Aliphatics (unadjusted) | ND | | 61.0 | 174 | | ug/L | | NC | 70 - 130 | 3 | 30 |
| C9-C12 Aliphatics (unadjusted) | 110 | F1 | 61.0 | 466 | F1 | ug/L | | 583 | 70 - 130 | 22 | 30 |
| Benzene | ND | | 20.3 | 24.2 | | ug/L | | 119 | 70 - 130 | 7 | 30 |
| Ethylbenzene | 7.7 | | 20.3 | 30.8 | | ug/L | | 114 | 70 - 130 | 1 | 30 |
| Methyl tert-butyl ether | ND | | 20.3 | 25.2 | | ug/L | | 124 | 70 - 130 | 5 | 30 |
| Naphthalene | ND | | 20.3 | 20.8 | | ug/L | | 102 | 70 - 130 | 5 | 30 |
| Toluene | ND | | 20.3 | 23.2 | | ug/L | | 114 | 70 - 130 | 6 | 30 |
| m,p-Xylene | ND | | 40.7 | 52.0 | | ug/L | | 128 | 70 - 130 | 16 | 30 |
| o-Xylene | ND | | 20.3 | 25.7 | | ug/L | | 126 | 70 - 130 | 26 | 30 |

| *Surrogate* | *MSD %Recovery* | *MSD Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *102* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *94* | | *70 - 130* |

**Lab Sample ID: MB 620-37217/4**
**Matrix: Water**
**Analysis Batch: 37217**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 07/30/24 16:08 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 07/30/24 16:08 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 07/30/24 16:08 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 07/30/24 16:08 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 07/30/24 16:08 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 07/30/24 16:08 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 07/30/24 16:08 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 07/30/24 16:08 | 1 |
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 07/30/24 16:08 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 07/30/24 16:08 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 07/30/24 16:08 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 07/30/24 16:08 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 07/30/24 16:08 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *107* | | *70 - 130* | | *07/30/24 16:08* | *1* |

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: MB 620-37217/4**
**Matrix: Water**
**Analysis Batch: 37217**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**

| Surrogate | MB %Recovery | MB Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|
| 2,5-Dibromotoluene (pid) | 102 | | 70 - 130 | | 07/30/24 16:08 | 1 |

**Lab Sample ID: LCS 620-37217/2**
**Matrix: Water**
**Analysis Batch: 37217**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | | | 20.0 | ND | | ug/L | | 103 | 70 - 130 | | |
| C5-C8 Aliphatics (unadjusted) | | | 60.0 | ND | | ug/L | | 93 | 70 - 130 | | |
| C9-C12 Aliphatics (unadjusted) | | | 60.0 | ND | | ug/L | | 97 | 70 - 130 | | |
| Benzene | | | 20.0 | 19.1 | | ug/L | | 96 | 70 - 130 | | |
| Ethylbenzene | | | 20.0 | 19.4 | | ug/L | | 97 | 70 - 130 | | |
| Methyl tert-butyl ether | | | 20.0 | 20.1 | | ug/L | | 101 | 70 - 130 | | |
| Naphthalene | | | 20.0 | 27.2 | *+ | ug/L | | 136 | 70 - 130 | | |
| Toluene | | | 20.0 | 19.0 | | ug/L | | 95 | 70 - 130 | | |
| m,p-Xylene | | | 40.0 | 41.4 | | ug/L | | 104 | 70 - 130 | | |
| o-Xylene | | | 20.0 | 21.0 | | ug/L | | 105 | 70 - 130 | | |

| Surrogate | LCS %Recovery | LCS Qualifier | Limits |
|---|---|---|---|
| 2,5-Dibromotoluene (fid) | 98 | | 70 - 130 |
| 2,5-Dibromotoluene (pid) | 92 | | 70 - 130 |

**Lab Sample ID: LCSD 620-37217/3**
**Matrix: Water**
**Analysis Batch: 37217**

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

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | | | 20.0 | ND | | ug/L | | 103 | 70 - 130 | 1 | 25 |
| C5-C8 Aliphatics (unadjusted) | | | 60.0 | ND | | ug/L | | 97 | 70 - 130 | 5 | 25 |
| C9-C12 Aliphatics (unadjusted) | | | 60.0 | ND | | ug/L | | 94 | 70 - 130 | 3 | 25 |
| Benzene | | | 20.0 | 19.8 | | ug/L | | 99 | 70 - 130 | 4 | 25 |
| Ethylbenzene | | | 20.0 | 20.2 | | ug/L | | 101 | 70 - 130 | 4 | 25 |
| Methyl tert-butyl ether | | | 20.0 | 20.1 | | ug/L | | 101 | 70 - 130 | 0 | 25 |
| Naphthalene | | | 20.0 | 22.0 | | ug/L | | 110 | 70 - 130 | 21 | 25 |
| Toluene | | | 20.0 | 19.9 | | ug/L | | 99 | 70 - 130 | 5 | 25 |
| m,p-Xylene | | | 40.0 | 43.0 | | ug/L | | 107 | 70 - 130 | 4 | 25 |
| o-Xylene | | | 20.0 | 22.0 | | ug/L | | 110 | 70 - 130 | 4 | 25 |

| Surrogate | LCSD %Recovery | LCSD Qualifier | Limits |
|---|---|---|---|
| 2,5-Dibromotoluene (fid) | 102 | | 70 - 130 |
| 2,5-Dibromotoluene (pid) | 96 | | 70 - 130 |

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

**Lab Sample ID: MB 620-37257/1-B**
**Matrix: Water**
**Analysis Batch: 37296**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 37257**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 100 | 100 | ug/L | | 07/31/24 10:44 | 08/01/24 15:51 | 1 |
| C19-C36 Aliphatics | ND | | 100 | 100 | ug/L | | 07/31/24 10:44 | 08/01/24 15:51 | 1 |
| C11-C22 Aromatics | ND | | 100 | 100 | ug/L | | 07/31/24 10:44 | 08/01/24 15:51 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 100 | 100 | ug/L | | 07/31/24 10:44 | 08/01/24 15:51 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *95* | | *40 - 140* | *07/31/24 10:44* | *08/01/24 15:51* | *1* |
| *o-Terphenyl (Surr)* | *64* | | *40 - 140* | *07/31/24 10:44* | *08/01/24 15:51* | *1* |
| *2-Fluorobiphenyl (Surr)* | *88* | | *40 - 140* | *07/31/24 10:44* | *08/01/24 15:51* | *1* |

**Lab Sample ID: LCS 620-37257/2-B**
**Matrix: Water**
**Analysis Batch: 37296**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 37257**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | | | 120 | ND | | ug/L | | 71 | 40 - 140 | | |
| C19-C36 Aliphatics | | | 160 | 214 | | ug/L | | 134 | 40 - 140 | | |
| C11-C22 Aromatics | | | 340 | 300 | | ug/L | | 88 | 40 - 140 | | |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *92* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *73* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *105* | | *40 - 140* |

**Lab Sample ID: LCSD 620-37257/3-B**
**Matrix: Water**
**Analysis Batch: 37296**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 37257**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | | | 120 | 102 | | ug/L | | 85 | 40 - 140 | 18 | 25 |
| C19-C36 Aliphatics | | | 160 | 208 | | ug/L | | 130 | 40 - 140 | 3 | 25 |
| C11-C22 Aromatics | | | 340 | 313 | | ug/L | | 92 | 40 - 140 | 4 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *90* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *76* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *91* | | *40 - 140* |

**Lab Sample ID: 620-19967-1 MS**
**Matrix: Water**
**Analysis Batch: 37296**

**Client Sample ID: GW-MW107-072524**
**Prep Type: Total/NA**
**Prep Batch: 37257**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 114 | 69.2 | | ug/L | | 61 | 40 - 140 | | |
| C19-C36 Aliphatics | ND | | 152 | 186 | | ug/L | | 122 | 40 - 140 | | |
| C11-C22 Aromatics | ND | | 324 | 293 | | ug/L | | 90 | 40 - 140 | | |

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: 620-19967-1 MS**
**Matrix: Water**
**Analysis Batch: 37296**

**Client Sample ID: GW-MW107-072524**
**Prep Type: Total/NA**
**Prep Batch: 37257**

| *Surrogate* | *MS %Recovery* | *MS Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *78* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *72* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *110* | | *40 - 140* |

**Lab Sample ID: 620-19967-1 MSD**
**Matrix: Water**
**Analysis Batch: 37296**

**Client Sample ID: GW-MW107-072524**
**Prep Type: Total/NA**
**Prep Batch: 37257**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 114 | 87.0 | | ug/L | | 76 | 40 - 140 | 23 | 50 |
| C19-C36 Aliphatics | ND | | 152 | 200 | | ug/L | | 131 | 40 - 140 | 7 | 50 |
| C11-C22 Aromatics | ND | | 324 | 283 | | ug/L | | 87 | 40 - 140 | 4 | 50 |

| *Surrogate* | *MSD %Recovery* | *MSD Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *84* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *67* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *92* | | *40 - 140* |

## Method: 6010D - Metals (ICP)

**Lab Sample ID: MB 620-37156/1-A**
**Matrix: Water**
**Analysis Batch: 37222**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 37156**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 0.0060 | 0.0016 | mg/L | | 07/29/24 12:21 | 07/30/24 10:54 | 1 |
| Arsenic | ND | | 0.0040 | 0.0014 | mg/L | | 07/29/24 12:21 | 07/30/24 10:54 | 1 |
| Barium | ND | | 0.0050 | 0.00070 | mg/L | | 07/29/24 12:21 | 07/30/24 10:54 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 07/29/24 12:21 | 07/30/24 10:54 | 1 |
| Cadmium | ND | | 0.0025 | 0.00036 | mg/L | | 07/29/24 12:21 | 07/30/24 10:54 | 1 |
| Chromium | ND | | 0.0050 | 0.00093 | mg/L | | 07/29/24 12:21 | 07/30/24 10:54 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 07/29/24 12:21 | 07/30/24 10:54 | 1 |
| Nickel | ND | | 0.0050 | 0.00087 | mg/L | | 07/29/24 12:21 | 07/30/24 10:54 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 07/29/24 12:21 | 07/30/24 10:54 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 07/29/24 12:21 | 07/30/24 10:54 | 1 |
| Thallium | ND | | 0.0050 | 0.0021 | mg/L | | 07/29/24 12:21 | 07/30/24 10:54 | 1 |
| Vanadium | ND | | 0.0050 | 0.0011 | mg/L | | 07/29/24 12:21 | 07/30/24 10:54 | 1 |
| Zinc | ND | | 0.0050 | 0.0016 | mg/L | | 07/29/24 12:21 | 07/30/24 10:54 | 1 |

**Lab Sample ID: LCS 620-37156/2-A**
**Matrix: Water**
**Analysis Batch: 37222**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 37156**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Antimony | 1.00 | 1.01 | | mg/L | | 101 | 80 - 120 |
| Arsenic | 1.00 | 1.06 | | mg/L | | 106 | 80 - 120 |
| Barium | 1.00 | 1.11 | | mg/L | | 111 | 80 - 120 |
| Beryllium | 1.00 | 1.05 | | mg/L | | 105 | 80 - 120 |
| Cadmium | 1.00 | 0.996 | | mg/L | | 100 | 80 - 120 |

## Method: 6010D - Metals (ICP) (Continued)

**Lab Sample ID: LCS 620-37156/2-A**
**Matrix: Water**
**Analysis Batch: 37222**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 37156**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Chromium | 1.00 | 0.993 | | mg/L | | 99 | 80 - 120 |
| Lead | 1.00 | 1.06 | | mg/L | | 106 | 80 - 120 |
| Nickel | 1.00 | 1.02 | | mg/L | | 102 | 80 - 120 |
| Selenium | 1.00 | 1.03 | | mg/L | | 103 | 80 - 120 |
| Silver | 1.00 | 0.975 | | mg/L | | 97 | 80 - 120 |
| Thallium | 1.00 | 0.925 | | mg/L | | 93 | 80 - 120 |
| Vanadium | 1.00 | 0.946 | | mg/L | | 95 | 80 - 120 |
| Zinc | 1.00 | 0.994 | | mg/L | | 99 | 80 - 120 |

**Lab Sample ID: MB 620-37225/1-A**
**Matrix: Water**
**Analysis Batch: 37269**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 37225**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 0.0060 | 0.0016 | mg/L | | 07/30/24 14:55 | 07/31/24 08:50 | 1 |
| Arsenic | ND | | 0.0040 | 0.0014 | mg/L | | 07/30/24 14:55 | 07/31/24 08:50 | 1 |
| Barium | ND | | 0.0050 | 0.00070 | mg/L | | 07/30/24 14:55 | 07/31/24 08:50 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 07/30/24 14:55 | 07/31/24 08:50 | 1 |
| Cadmium | ND | | 0.0025 | 0.00036 | mg/L | | 07/30/24 14:55 | 07/31/24 08:50 | 1 |
| Chromium | ND | | 0.0050 | 0.00093 | mg/L | | 07/30/24 14:55 | 07/31/24 08:50 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 07/30/24 14:55 | 07/31/24 08:50 | 1 |
| Nickel | ND | | 0.0050 | 0.00087 | mg/L | | 07/30/24 14:55 | 07/31/24 08:50 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 07/30/24 14:55 | 07/31/24 08:50 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 07/30/24 14:55 | 07/31/24 08:50 | 1 |
| Thallium | ND | | 0.0050 | 0.0021 | mg/L | | 07/30/24 14:55 | 07/31/24 08:50 | 1 |
| Vanadium | ND | | 0.0050 | 0.0011 | mg/L | | 07/30/24 14:55 | 07/31/24 08:50 | 1 |
| Zinc | ND | | 0.0050 | 0.0016 | mg/L | | 07/30/24 14:55 | 07/31/24 08:50 | 1 |

**Lab Sample ID: LCS 620-37225/2-A**
**Matrix: Water**
**Analysis Batch: 37269**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 37225**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Antimony | 1.00 | 0.911 | | mg/L | | 91 | 80 - 120 |
| Arsenic | 1.00 | 0.944 | | mg/L | | 94 | 80 - 120 |
| Barium | 1.00 | 0.950 | | mg/L | | 95 | 80 - 120 |
| Beryllium | 1.00 | 1.02 | | mg/L | | 102 | 80 - 120 |
| Cadmium | 1.00 | 0.949 | | mg/L | | 95 | 80 - 120 |
| Chromium | 1.00 | 0.951 | | mg/L | | 95 | 80 - 120 |
| Lead | 1.00 | 0.945 | | mg/L | | 94 | 80 - 120 |
| Nickel | 1.00 | 0.920 | | mg/L | | 92 | 80 - 120 |
| Selenium | 1.00 | 0.959 | | mg/L | | 96 | 80 - 120 |
| Silver | 1.00 | 0.978 | | mg/L | | 98 | 80 - 120 |
| Thallium | 1.00 | 0.961 | | mg/L | | 96 | 80 - 120 |
| Vanadium | 1.00 | 0.938 | | mg/L | | 94 | 80 - 120 |
| Zinc | 1.00 | 0.965 | | mg/L | | 96 | 80 - 120 |

## Method: 6010D - Metals (ICP) (Continued)

**Lab Sample ID: 620-19967-9 MS**
**Matrix: Water**
**Analysis Batch: 37269**

**Client Sample ID: GW-MW108-072624**
**Prep Type: Total/NA**
**Prep Batch: 37225**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 1.00 | 1.12 | | mg/L | | 112 | 75 - 125 |
| Arsenic | ND | | 1.00 | 1.25 | | mg/L | | 125 | 75 - 125 |
| Barium | 0.088 | | 1.00 | 1.01 | | mg/L | | 92 | 75 - 125 |
| Beryllium | ND | | 1.00 | 1.03 | | mg/L | | 103 | 75 - 125 |
| Cadmium | ND | | 1.00 | 1.15 | | mg/L | | 115 | 75 - 125 |
| Chromium | ND | | 1.00 | 1.00 | | mg/L | | 100 | 75 - 125 |
| Lead | ND | | 1.00 | 1.05 | | mg/L | | 105 | 75 - 125 |
| Nickel | 0.0026 | J | 1.00 | 1.19 | | mg/L | | 119 | 75 - 125 |
| Selenium | ND | | 1.00 | 1.18 | | mg/L | | 118 | 75 - 125 |
| Silver | ND | | 1.00 | 1.03 | | mg/L | | 103 | 75 - 125 |
| Thallium | 0.0021 | J | 1.00 | 0.989 | | mg/L | | 99 | 75 - 125 |
| Vanadium | ND | | 1.00 | 1.12 | | mg/L | | 112 | 75 - 125 |
| Zinc | 0.0096 | | 1.00 | 1.18 | | mg/L | | 117 | 75 - 125 |

**Lab Sample ID: 620-19967-9 DU**
**Matrix: Water**
**Analysis Batch: 37269**

**Client Sample ID: GW-MW108-072624**
**Prep Type: Total/NA**
**Prep Batch: 37225**

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | ND | | mg/L | | NC | 20 |
| Arsenic | ND | | 0.00180 | J | mg/L | | NC | 20 |
| Barium | 0.088 | | 0.0883 | | mg/L | | 0.7 | 20 |
| Beryllium | ND | | ND | | mg/L | | NC | 20 |
| Cadmium | ND | | ND | | mg/L | | NC | 20 |
| Chromium | ND | | ND | | mg/L | | NC | 20 |
| Lead | ND | | ND | | mg/L | | NC | 20 |
| Nickel | 0.0026 | J | 0.00200 | J F5 | mg/L | | 26 | 20 |
| Selenium | ND | | ND | | mg/L | | NC | 20 |
| Silver | ND | | ND | | mg/L | | NC | 20 |
| Thallium | 0.0021 | J | 0.00370 | J F5 | mg/L | | 55 | 20 |
| Vanadium | ND | | ND | | mg/L | | NC | 20 |
| Zinc | 0.0096 | | 0.00980 | | mg/L | | 2 | 20 |

**Lab Sample ID: 620-19967-1 MS**
**Matrix: Water**
**Analysis Batch: 37222**

**Client Sample ID: GW-MW107-072524**
**Prep Type: Dissolved**
**Prep Batch: 37156**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.0018 | J | 1.00 | 1.00 | | mg/L | | 100 | 75 - 125 |
| Arsenic | 0.043 | | 1.00 | 1.12 | | mg/L | | 107 | 75 - 125 |
| Barium | 0.029 | | 1.00 | 1.16 | | mg/L | | 113 | 75 - 125 |
| Beryllium | ND | | 1.00 | 1.03 | | mg/L | | 103 | 75 - 125 |
| Cadmium | ND | | 1.00 | 0.953 | | mg/L | | 95 | 75 - 125 |
| Chromium | ND | | 1.00 | 0.955 | | mg/L | | 95 | 75 - 125 |
| Lead | ND | | 1.00 | 1.01 | | mg/L | | 101 | 75 - 125 |
| Nickel | 0.0021 | J | 1.00 | 0.972 | | mg/L | | 97 | 75 - 125 |
| Selenium | ND | | 1.00 | 1.02 | | mg/L | | 102 | 75 - 125 |
| Silver | ND | | 1.00 | 0.932 | | mg/L | | 93 | 75 - 125 |
| Thallium | ND | | 1.00 | 0.858 | | mg/L | | 86 | 75 - 125 |

## Method: 6010D - Metals (ICP) (Continued)

**Lab Sample ID: 620-19967-1 MS**
**Matrix: Water**
**Analysis Batch: 37222**

**Client Sample ID: GW-MW107-072524**
**Prep Type: Dissolved**
**Prep Batch: 37156**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| Vanadium | ND | | 1.00 | 0.900 | | mg/L | | 90 | 75 - 125 |
| Zinc | ND | | 1.00 | 0.931 | | mg/L | | 93 | 75 - 125 |

**Lab Sample ID: 620-19967-1 MSD**
**Matrix: Water**
**Analysis Batch: 37222**

**Client Sample ID: GW-MW107-072524**
**Prep Type: Dissolved**
**Prep Batch: 37156**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.0018 | J | 1.00 | 1.02 | | mg/L | | 102 | 75 - 125 | 1 | 20 |
| Arsenic | 0.043 | | 1.00 | 1.14 | | mg/L | | 109 | 75 - 125 | 2 | 20 |
| Barium | 0.029 | | 1.00 | 1.18 | | mg/L | | 115 | 75 - 125 | 2 | 20 |
| Beryllium | ND | | 1.00 | 1.06 | | mg/L | | 106 | 75 - 125 | 3 | 20 |
| Cadmium | ND | | 1.00 | 0.976 | | mg/L | | 98 | 75 - 125 | 2 | 20 |
| Chromium | ND | | 1.00 | 0.980 | | mg/L | | 98 | 75 - 125 | 3 | 20 |
| Lead | ND | | 1.00 | 1.04 | | mg/L | | 104 | 75 - 125 | 2 | 20 |
| Nickel | 0.0021 | J | 1.00 | 0.992 | | mg/L | | 99 | 75 - 125 | 2 | 20 |
| Selenium | ND | | 1.00 | 1.03 | | mg/L | | 103 | 75 - 125 | 1 | 20 |
| Silver | ND | | 1.00 | 0.950 | | mg/L | | 95 | 75 - 125 | 2 | 20 |
| Thallium | ND | | 1.00 | 0.875 | | mg/L | | 88 | 75 - 125 | 2 | 20 |
| Vanadium | ND | | 1.00 | 0.918 | | mg/L | | 92 | 75 - 125 | 2 | 20 |
| Zinc | ND | | 1.00 | 0.955 | | mg/L | | 96 | 75 - 125 | 3 | 20 |

**Lab Sample ID: 620-19967-1 DU**
**Matrix: Water**
**Analysis Batch: 37222**

**Client Sample ID: GW-MW107-072524**
**Prep Type: Dissolved**
**Prep Batch: 37156**

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|
| Antimony | 0.0018 | J | ND | | mg/L | | NC | 20 |
| Arsenic | 0.043 | | 0.0421 | | mg/L | | 3 | 20 |
| Barium | 0.029 | | 0.0306 | | mg/L | | 5 | 20 |
| Beryllium | ND | | ND | | mg/L | | NC | 20 |
| Cadmium | ND | | ND | | mg/L | | NC | 20 |
| Chromium | ND | | ND | | mg/L | | NC | 20 |
| Lead | ND | | ND | | mg/L | | NC | 20 |
| Nickel | 0.0021 | J | 0.00195 | J | mg/L | | 7 | 20 |
| Selenium | ND | | ND | | mg/L | | NC | 20 |
| Silver | ND | | ND | | mg/L | | NC | 20 |
| Thallium | ND | | ND | | mg/L | | NC | 20 |
| Vanadium | ND | | ND | | mg/L | | NC | 20 |
| Zinc | ND | | ND | | mg/L | | NC | 20 |

## Method: 7470A - Mercury (CVAA)

**Lab Sample ID: MB 620-37306/1-A**
**Matrix: Water**
**Analysis Batch: 37369**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 37306**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 08/01/24 09:44 | 08/02/24 08:31 | 1 |

## Method: 7470A - Mercury (CVAA) (Continued)

**Lab Sample ID: LCS 620-37306/2-A**
**Matrix: Water**
**Analysis Batch: 37369**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 37306**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Mercury | 0.00500 | 0.00542 | | mg/L | | 108 | 85 - 115 |

**Lab Sample ID: MB 620-37307/1-A**
**Matrix: Water**
**Analysis Batch: 37369**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 37307**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 08/01/24 09:45 | 08/02/24 09:39 | 1 |

**Lab Sample ID: LCS 620-37307/2-A**
**Matrix: Water**
**Analysis Batch: 37369**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 37307**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Mercury | 0.00500 | 0.00526 | | mg/L | | 105 | 85 - 115 |

**Lab Sample ID: LB 620-37213/1-C**
**Matrix: Water**
**Analysis Batch: 37369**

**Client Sample ID: Method Blank**
**Prep Type: Dissolved**
**Prep Batch: 37306**

| Analyte | LB Result | LB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 08/01/24 09:44 | 08/02/24 08:35 | 1 |

**Lab Sample ID: 620-19967-1 MS**
**Matrix: Water**
**Analysis Batch: 37369**

**Client Sample ID: GW-MW107-072524**
**Prep Type: Dissolved**
**Prep Batch: 37306**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00500 | 0.00561 | | mg/L | | 112 | 80 - 120 |

**Lab Sample ID: 620-19967-1 MSD**
**Matrix: Water**
**Analysis Batch: 37369**

**Client Sample ID: GW-MW107-072524**
**Prep Type: Dissolved**
**Prep Batch: 37306**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00500 | 0.00544 | | mg/L | | 109 | 80 - 120 | 3 | 20 |

**Lab Sample ID: 620-19967-3 MS**
**Matrix: Water**
**Analysis Batch: 37369**

**Client Sample ID: GW-MW102R-072524**
**Prep Type: Dissolved**
**Prep Batch: 37307**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00500 | 0.00562 | | mg/L | | 112 | 80 - 120 |

**Lab Sample ID: 620-19967-3 DU**
**Matrix: Water**
**Analysis Batch: 37369**

**Client Sample ID: GW-MW102R-072524**
**Prep Type: Dissolved**
**Prep Batch: 37307**

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | ND | | mg/L | | NC | 20 |

## GC/MS Semi VOA

### Prep Batch: 37257

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-19967-1 | GW-MW107-072524 | Total/NA | Water | 3510C | |
| 620-19967-2 | GW-MW104-072524 | Total/NA | Water | 3510C | |
| 620-19967-3 | GW-MW102R-072524 | Total/NA | Water | 3510C | |
| 620-19967-5 | GW-MW105-072524 | Total/NA | Water | 3510C | |
| 620-19967-6 | FD-01 | Total/NA | Water | 3510C | |
| 620-19967-7 | GW-MW101-072624 | Total/NA | Water | 3510C | |
| 620-19967-8 | GW-MW109-072624 | Total/NA | Water | 3510C | |
| 620-19967-9 | GW-MW108-072624 | Total/NA | Water | 3510C | |
| MB 620-37257/1-B | Method Blank | Total/NA | Water | 3510C | |
| LCS 620-37257/4-B | Lab Control Sample | Total/NA | Water | 3510C | |
| LCSD 620-37257/5-B | Lab Control Sample Dup | Total/NA | Water | 3510C | |
| 620-19967-1 MS | GW-MW107-072524 | Total/NA | Water | 3510C | |
| 620-19967-1 MSD | GW-MW107-072524 | Total/NA | Water | 3510C | |

### Fraction Batch: 37311

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-19967-1 | GW-MW107-072524 | Total/NA | Water | MA EPH Frac | 37257 |
| 620-19967-2 | GW-MW104-072524 | Total/NA | Water | MA EPH Frac | 37257 |
| 620-19967-3 | GW-MW102R-072524 | Total/NA | Water | MA EPH Frac | 37257 |
| 620-19967-5 | GW-MW105-072524 | Total/NA | Water | MA EPH Frac | 37257 |
| 620-19967-6 | FD-01 | Total/NA | Water | MA EPH Frac | 37257 |
| 620-19967-7 | GW-MW101-072624 | Total/NA | Water | MA EPH Frac | 37257 |
| 620-19967-8 | GW-MW109-072624 | Total/NA | Water | MA EPH Frac | 37257 |
| 620-19967-9 | GW-MW108-072624 | Total/NA | Water | MA EPH Frac | 37257 |
| MB 620-37257/1-B | Method Blank | Total/NA | Water | MA EPH Frac | 37257 |
| LCS 620-37257/4-B | Lab Control Sample | Total/NA | Water | MA EPH Frac | 37257 |
| LCSD 620-37257/5-B | Lab Control Sample Dup | Total/NA | Water | MA EPH Frac | 37257 |
| 620-19967-1 MS | GW-MW107-072524 | Total/NA | Water | MA EPH Frac | 37257 |
| 620-19967-1 MSD | GW-MW107-072524 | Total/NA | Water | MA EPH Frac | 37257 |

### Analysis Batch: 37430

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-19967-7 | GW-MW101-072624 | Total/NA | Water | EPH | 37311 |
| 620-19967-8 | GW-MW109-072624 | Total/NA | Water | EPH | 37311 |
| 620-19967-9 | GW-MW108-072624 | Total/NA | Water | EPH | 37311 |
| MB 620-37257/1-B | Method Blank | Total/NA | Water | EPH | 37311 |
| LCS 620-37257/4-B | Lab Control Sample | Total/NA | Water | EPH | 37311 |
| LCSD 620-37257/5-B | Lab Control Sample Dup | Total/NA | Water | EPH | 37311 |

### Analysis Batch: 37462

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-19967-1 | GW-MW107-072524 | Total/NA | Water | EPH | 37311 |
| 620-19967-2 | GW-MW104-072524 | Total/NA | Water | EPH | 37311 |
| 620-19967-3 | GW-MW102R-072524 | Total/NA | Water | EPH | 37311 |
| 620-19967-5 | GW-MW105-072524 | Total/NA | Water | EPH | 37311 |
| 620-19967-6 | FD-01 | Total/NA | Water | EPH | 37311 |
| 620-19967-8 | GW-MW109-072624 | Total/NA | Water | EPH | 37311 |
| 620-19967-1 MS | GW-MW107-072524 | Total/NA | Water | EPH | 37311 |
| 620-19967-1 MSD | GW-MW107-072524 | Total/NA | Water | EPH | 37311 |

## GC/MS Semi VOA

### Analysis Batch: 37606

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-19967-3 | GW-MW102R-072524 | Total/NA | Water | EPH | 37311 |
| 620-19967-6 | FD-01 | Total/NA | Water | EPH | 37311 |

## GC VOA

### Analysis Batch: 37119

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-19967-1 | GW-MW107-072524 | Total/NA | Water | MAVPH2.1 | |
| 620-19967-2 | GW-MW104-072524 | Total/NA | Water | MAVPH2.1 | |
| 620-19967-3 | GW-MW102R-072524 | Total/NA | Water | MAVPH2.1 | |
| 620-19967-4 | GW-MW103-072524 | Total/NA | Water | MAVPH2.1 | |
| 620-19967-5 | GW-MW105-072524 | Total/NA | Water | MAVPH2.1 | |
| 620-19967-6 | FD-01 | Total/NA | Water | MAVPH2.1 | |
| 620-19967-7 | GW-MW101-072624 | Total/NA | Water | MAVPH2.1 | |
| 620-19967-8 | GW-MW109-072624 | Total/NA | Water | MAVPH2.1 | |
| 620-19967-9 | GW-MW108-072624 | Total/NA | Water | MAVPH2.1 | |
| 620-19967-10 | TB-01-072624 | Total/NA | Water | MAVPH2.1 | |
| MB 620-37119/6 | Method Blank | Total/NA | Water | MAVPH2.1 | |
| LCS 620-37119/4 | Lab Control Sample | Total/NA | Water | MAVPH2.1 | |
| LCSD 620-37119/5 | Lab Control Sample Dup | Total/NA | Water | MAVPH2.1 | |
| 620-19967-1 MS | GW-MW107-072524 | Total/NA | Water | MAVPH2.1 | |
| 620-19967-1 MSD | GW-MW107-072524 | Total/NA | Water | MAVPH2.1 | |

### Analysis Batch: 37217

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-19967-3 - DL | GW-MW102R-072524 | Total/NA | Water | MAVPH2.1 | |
| 620-19967-3 - DL3 | GW-MW102R-072524 | Total/NA | Water | MAVPH2.1 | |
| 620-19967-6 - DL | FD-01 | Total/NA | Water | MAVPH2.1 | |
| 620-19967-6 - DL3 | FD-01 | Total/NA | Water | MAVPH2.1 | |
| 620-19967-8 - DL | GW-MW109-072624 | Total/NA | Water | MAVPH2.1 | |
| MB 620-37217/4 | Method Blank | Total/NA | Water | MAVPH2.1 | |
| LCS 620-37217/2 | Lab Control Sample | Total/NA | Water | MAVPH2.1 | |
| LCSD 620-37217/3 | Lab Control Sample Dup | Total/NA | Water | MAVPH2.1 | |

## GC Semi VOA

### Prep Batch: 37257

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-19967-1 | GW-MW107-072524 | Total/NA | Water | 3510C | |
| 620-19967-2 | GW-MW104-072524 | Total/NA | Water | 3510C | |
| 620-19967-3 | GW-MW102R-072524 | Total/NA | Water | 3510C | |
| 620-19967-5 | GW-MW105-072524 | Total/NA | Water | 3510C | |
| 620-19967-6 | FD-01 | Total/NA | Water | 3510C | |
| 620-19967-7 | GW-MW101-072624 | Total/NA | Water | 3510C | |
| 620-19967-8 | GW-MW109-072624 | Total/NA | Water | 3510C | |
| 620-19967-9 | GW-MW108-072624 | Total/NA | Water | 3510C | |
| MB 620-37257/1-B | Method Blank | Total/NA | Water | 3510C | |
| LCS 620-37257/2-B | Lab Control Sample | Total/NA | Water | 3510C | |
| LCSD 620-37257/3-B | Lab Control Sample Dup | Total/NA | Water | 3510C | |
| 620-19967-1 MS | GW-MW107-072524 | Total/NA | Water | 3510C | |
| 620-19967-1 MSD | GW-MW107-072524 | Total/NA | Water | 3510C | |

## GC Semi VOA

### Analysis Batch: 37296

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-19967-1 | GW-MW107-072524 | Total/NA | Water | MAEPH2.1 | 37311 |
| 620-19967-2 | GW-MW104-072524 | Total/NA | Water | MAEPH2.1 | 37311 |
| 620-19967-3 | GW-MW102R-072524 | Total/NA | Water | MAEPH2.1 | 37311 |
| 620-19967-5 | GW-MW105-072524 | Total/NA | Water | MAEPH2.1 | 37311 |
| 620-19967-6 | FD-01 | Total/NA | Water | MAEPH2.1 | 37311 |
| 620-19967-7 | GW-MW101-072624 | Total/NA | Water | MAEPH2.1 | 37311 |
| 620-19967-8 | GW-MW109-072624 | Total/NA | Water | MAEPH2.1 | 37311 |
| 620-19967-9 | GW-MW108-072624 | Total/NA | Water | MAEPH2.1 | 37311 |
| MB 620-37257/1-B | Method Blank | Total/NA | Water | MAEPH2.1 | 37311 |
| LCS 620-37257/2-B | Lab Control Sample | Total/NA | Water | MAEPH2.1 | 37311 |
| LCSD 620-37257/3-B | Lab Control Sample Dup | Total/NA | Water | MAEPH2.1 | 37311 |
| 620-19967-1 MS | GW-MW107-072524 | Total/NA | Water | MAEPH2.1 | 37311 |
| 620-19967-1 MSD | GW-MW107-072524 | Total/NA | Water | MAEPH2.1 | 37311 |

### Fraction Batch: 37311

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-19967-1 | GW-MW107-072524 | Total/NA | Water | MA EPH Frac | 37257 |
| 620-19967-2 | GW-MW104-072524 | Total/NA | Water | MA EPH Frac | 37257 |
| 620-19967-3 | GW-MW102R-072524 | Total/NA | Water | MA EPH Frac | 37257 |
| 620-19967-5 | GW-MW105-072524 | Total/NA | Water | MA EPH Frac | 37257 |
| 620-19967-6 | FD-01 | Total/NA | Water | MA EPH Frac | 37257 |
| 620-19967-7 | GW-MW101-072624 | Total/NA | Water | MA EPH Frac | 37257 |
| 620-19967-8 | GW-MW109-072624 | Total/NA | Water | MA EPH Frac | 37257 |
| 620-19967-9 | GW-MW108-072624 | Total/NA | Water | MA EPH Frac | 37257 |
| MB 620-37257/1-B | Method Blank | Total/NA | Water | MA EPH Frac | 37257 |
| LCS 620-37257/2-B | Lab Control Sample | Total/NA | Water | MA EPH Frac | 37257 |
| LCSD 620-37257/3-B | Lab Control Sample Dup | Total/NA | Water | MA EPH Frac | 37257 |
| 620-19967-1 MS | GW-MW107-072524 | Total/NA | Water | MA EPH Frac | 37257 |
| 620-19967-1 MSD | GW-MW107-072524 | Total/NA | Water | MA EPH Frac | 37257 |

## Metals

### Prep Batch: 37156

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-19967-1 | GW-MW107-072524 | Dissolved | Water | 3005A | |
| 620-19967-2 | GW-MW104-072524 | Dissolved | Water | 3005A | |
| 620-19967-3 | GW-MW102R-072524 | Dissolved | Water | 3005A | |
| 620-19967-5 | GW-MW105-072524 | Dissolved | Water | 3005A | |
| 620-19967-6 | FD-01 | Dissolved | Water | 3005A | |
| 620-19967-8 | GW-MW109-072624 | Dissolved | Water | 3005A | |
| MB 620-37156/1-A | Method Blank | Total/NA | Water | 3005A | |
| LCS 620-37156/2-A | Lab Control Sample | Total/NA | Water | 3005A | |
| 620-19967-1 MS | GW-MW107-072524 | Dissolved | Water | 3005A | |
| 620-19967-1 MSD | GW-MW107-072524 | Dissolved | Water | 3005A | |
| 620-19967-1 DU | GW-MW107-072524 | Dissolved | Water | 3005A | |

### Leach Batch: 37213

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| LB 620-37213/1-C | Method Blank | Dissolved | Water | 1311 | |

## Metals

### Analysis Batch: 37222

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-19967-1 | GW-MW107-072524 | Dissolved | Water | 6010D | 37156 |
| 620-19967-2 | GW-MW104-072524 | Dissolved | Water | 6010D | 37156 |
| 620-19967-3 | GW-MW102R-072524 | Dissolved | Water | 6010D | 37156 |
| 620-19967-5 | GW-MW105-072524 | Dissolved | Water | 6010D | 37156 |
| 620-19967-6 | FD-01 | Dissolved | Water | 6010D | 37156 |
| 620-19967-8 | GW-MW109-072624 | Dissolved | Water | 6010D | 37156 |
| MB 620-37156/1-A | Method Blank | Total/NA | Water | 6010D | 37156 |
| LCS 620-37156/2-A | Lab Control Sample | Total/NA | Water | 6010D | 37156 |
| 620-19967-1 MS | GW-MW107-072524 | Dissolved | Water | 6010D | 37156 |
| 620-19967-1 MSD | GW-MW107-072524 | Dissolved | Water | 6010D | 37156 |
| 620-19967-1 DU | GW-MW107-072524 | Dissolved | Water | 6010D | 37156 |

### Prep Batch: 37225

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-19967-9 | GW-MW108-072624 | Total/NA | Water | 3005A | |
| MB 620-37225/1-A | Method Blank | Total/NA | Water | 3005A | |
| LCS 620-37225/2-A | Lab Control Sample | Total/NA | Water | 3005A | |
| 620-19967-9 MS | GW-MW108-072624 | Total/NA | Water | 3005A | |
| 620-19967-9 DU | GW-MW108-072624 | Total/NA | Water | 3005A | |

### Analysis Batch: 37269

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-19967-9 | GW-MW108-072624 | Total/NA | Water | 6010D | 37225 |
| MB 620-37225/1-A | Method Blank | Total/NA | Water | 6010D | 37225 |
| LCS 620-37225/2-A | Lab Control Sample | Total/NA | Water | 6010D | 37225 |
| 620-19967-9 MS | GW-MW108-072624 | Total/NA | Water | 6010D | 37225 |
| 620-19967-9 DU | GW-MW108-072624 | Total/NA | Water | 6010D | 37225 |

### Prep Batch: 37306

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-19967-1 | GW-MW107-072524 | Dissolved | Water | 7470A | |
| 620-19967-2 | GW-MW104-072524 | Dissolved | Water | 7470A | |
| LB 620-37213/1-C | Method Blank | Dissolved | Water | 7470A | 37213 |
| MB 620-37306/1-A | Method Blank | Total/NA | Water | 7470A | |
| LCS 620-37306/2-A | Lab Control Sample | Total/NA | Water | 7470A | |
| 620-19967-1 MS | GW-MW107-072524 | Dissolved | Water | 7470A | |
| 620-19967-1 MSD | GW-MW107-072524 | Dissolved | Water | 7470A | |

### Prep Batch: 37307

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-19967-3 | GW-MW102R-072524 | Dissolved | Water | 7470A | |
| 620-19967-5 | GW-MW105-072524 | Dissolved | Water | 7470A | |
| 620-19967-6 | FD-01 | Dissolved | Water | 7470A | |
| 620-19967-8 | GW-MW109-072624 | Dissolved | Water | 7470A | |
| 620-19967-9 | GW-MW108-072624 | Total/NA | Water | 7470A | |
| MB 620-37307/1-A | Method Blank | Total/NA | Water | 7470A | |
| LCS 620-37307/2-A | Lab Control Sample | Total/NA | Water | 7470A | |
| 620-19967-3 MS | GW-MW102R-072524 | Dissolved | Water | 7470A | |
| 620-19967-3 DU | GW-MW102R-072524 | Dissolved | Water | 7470A | |

## Metals

### Analysis Batch: 37369

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-19967-1 | GW-MW107-072524 | Dissolved | Water | 7470A | 37306 |
| 620-19967-2 | GW-MW104-072524 | Dissolved | Water | 7470A | 37306 |
| 620-19967-3 | GW-MW102R-072524 | Dissolved | Water | 7470A | 37307 |
| 620-19967-5 | GW-MW105-072524 | Dissolved | Water | 7470A | 37307 |
| 620-19967-6 | FD-01 | Dissolved | Water | 7470A | 37307 |
| 620-19967-8 | GW-MW109-072624 | Dissolved | Water | 7470A | 37307 |
| 620-19967-9 | GW-MW108-072624 | Total/NA | Water | 7470A | 37307 |
| LB 620-37213/1-C | Method Blank | Dissolved | Water | 7470A | 37306 |
| MB 620-37306/1-A | Method Blank | Total/NA | Water | 7470A | 37306 |
| MB 620-37307/1-A | Method Blank | Total/NA | Water | 7470A | 37307 |
| LCS 620-37306/2-A | Lab Control Sample | Total/NA | Water | 7470A | 37306 |
| LCS 620-37307/2-A | Lab Control Sample | Total/NA | Water | 7470A | 37307 |
| 620-19967-1 MS | GW-MW107-072524 | Dissolved | Water | 7470A | 37306 |
| 620-19967-1 MSD | GW-MW107-072524 | Dissolved | Water | 7470A | 37306 |
| 620-19967-3 MS | GW-MW102R-072524 | Dissolved | Water | 7470A | 37307 |
| 620-19967-3 DU | GW-MW102R-072524 | Dissolved | Water | 7470A | 37307 |

# Lab Chronicle

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-19967-1

## Client Sample ID: GW-MW107-072524

**Lab Sample ID: 620-19967-1**

**Date Collected: 07/25/24 10:50**

**Matrix: Water**

**Date Received: 07/26/24 16:43**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 37257 | JTE | EET RI | 07/31/24 10:44 |
| Total/NA | Fraction | MA EPH Frac | | | 37311 | AAH | EET RI | 08/01/24 10:32 |
| Total/NA | Analysis | EPH | | 1 | 37462 | JS | EET RI | 08/06/24 12:15 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 37119 | AMO | EET RI | 07/29/24 14:42 |
| Total/NA | Prep | 3510C | | | 37257 | JTE | EET RI | 07/31/24 10:44 |
| Total/NA | Fraction | MA EPH Frac | | | 37311 | AAH | EET RI | 08/01/24 10:32 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 37296 | JS | EET RI | 08/01/24 17:16 |
| Dissolved | Prep | 3005A | | | 37156 | JPC | EET RI | 07/29/24 12:21 |
| Dissolved | Analysis | 6010D | | 1 | 37222 | JPC | EET RI | 07/30/24 12:06 |
| Dissolved | Prep | 7470A | | | 37306 | PRB | EET RI | 08/01/24 09:44 |
| Dissolved | Analysis | 7470A | | 1 | 37369 | JPC | EET RI | 08/02/24 09:31 |

## Client Sample ID: GW-MW104-072524

**Lab Sample ID: 620-19967-2**

**Date Collected: 07/25/24 11:30**

**Matrix: Water**

**Date Received: 07/26/24 16:43**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 37257 | JTE | EET RI | 07/31/24 10:44 |
| Total/NA | Fraction | MA EPH Frac | | | 37311 | AAH | EET RI | 08/01/24 10:32 |
| Total/NA | Analysis | EPH | | 1 | 37462 | JS | EET RI | 08/06/24 13:23 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 37119 | AMO | EET RI | 07/30/24 01:56 |
| Total/NA | Prep | 3510C | | | 37257 | JTE | EET RI | 07/31/24 10:44 |
| Total/NA | Fraction | MA EPH Frac | | | 37311 | AAH | EET RI | 08/01/24 10:32 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 37296 | JS | EET RI | 08/01/24 18:39 |
| Dissolved | Prep | 3005A | | | 37156 | JPC | EET RI | 07/29/24 12:21 |
| Dissolved | Analysis | 6010D | | 1 | 37222 | JPC | EET RI | 07/30/24 12:30 |
| Dissolved | Prep | 7470A | | | 37306 | PRB | EET RI | 08/01/24 09:44 |
| Dissolved | Analysis | 7470A | | 1 | 37369 | JPC | EET RI | 08/02/24 09:37 |

## Client Sample ID: GW-MW102R-072524

**Lab Sample ID: 620-19967-3**

**Date Collected: 07/25/24 14:30**

**Matrix: Water**

**Date Received: 07/26/24 16:43**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 37257 | JTE | EET RI | 07/31/24 10:44 |
| Total/NA | Fraction | MA EPH Frac | | | 37311 | AAH | EET RI | 08/01/24 10:32 |
| Total/NA | Analysis | EPH | | 1 | 37462 | JS | EET RI | 08/06/24 13:45 |
| Total/NA | Prep | 3510C | | | 37257 | JTE | EET RI | 07/31/24 10:44 |
| Total/NA | Fraction | MA EPH Frac | | | 37311 | AAH | EET RI | 08/01/24 10:32 |
| Total/NA | Analysis | EPH | | 10 | 37606 | JS | EET RI | 08/09/24 11:32 |
| Total/NA | Analysis | MAVPH2.1 | | 2 | 37119 | AMO | EET RI | 07/30/24 09:07 |
| Total/NA | Analysis | MAVPH2.1 | DL | 5 | 37217 | CLR | EET RI | 07/30/24 18:17 |
| Total/NA | Analysis | MAVPH2.1 | DL3 | 20 | 37217 | CLR | EET RI | 07/31/24 09:42 |

# Lab Chronicle

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-19967-1

## Client Sample ID: GW-MW102R-072524

**Lab Sample ID: 620-19967-3**

**Date Collected: 07/25/24 14:30**
**Matrix: Water**
**Date Received: 07/26/24 16:43**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 37257 | JTE | EET RI | 07/31/24 10:44 |
| Total/NA | Fraction | MA EPH Frac | | | 37311 | AAH | EET RI | 08/01/24 10:32 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 37296 | JS | EET RI | 08/01/24 19:07 |
| Dissolved | Prep | 3005A | | | 37156 | JPC | EET RI | 07/29/24 12:21 |
| Dissolved | Analysis | 6010D | | 1 | 37222 | JPC | EET RI | 07/30/24 12:36 |
| Dissolved | Prep | 7470A | | | 37307 | PRB | EET RI | 08/01/24 09:45 |
| Dissolved | Analysis | 7470A | | 1 | 37369 | JPC | EET RI | 08/02/24 09:48 |

## Client Sample ID: GW-MW103-072524

**Lab Sample ID: 620-19967-4**

**Date Collected: 07/25/24 10:00**
**Matrix: Water**
**Date Received: 07/26/24 16:43**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | MAVPH2.1 | | 1 | 37119 | AMO | EET RI | 07/30/24 03:59 |

## Client Sample ID: GW-MW105-072524

**Lab Sample ID: 620-19967-5**

**Date Collected: 07/25/24 13:20**
**Matrix: Water**
**Date Received: 07/26/24 16:43**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 37257 | JTE | EET RI | 07/31/24 10:44 |
| Total/NA | Fraction | MA EPH Frac | | | 37311 | AAH | EET RI | 08/01/24 10:32 |
| Total/NA | Analysis | EPH | | 1 | 37462 | JS | EET RI | 08/06/24 14:08 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 37119 | AMO | EET RI | 07/30/24 04:32 |
| Total/NA | Prep | 3510C | | | 37257 | JTE | EET RI | 07/31/24 10:44 |
| Total/NA | Fraction | MA EPH Frac | | | 37311 | AAH | EET RI | 08/01/24 10:32 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 37296 | JS | EET RI | 08/01/24 19:34 |
| Dissolved | Prep | 3005A | | | 37156 | JPC | EET RI | 07/29/24 12:21 |
| Dissolved | Analysis | 6010D | | 1 | 37222 | JPC | EET RI | 07/30/24 12:42 |
| Dissolved | Prep | 7470A | | | 37307 | PRB | EET RI | 08/01/24 09:45 |
| Dissolved | Analysis | 7470A | | 1 | 37369 | JPC | EET RI | 08/02/24 09:54 |

## Client Sample ID: FD-01

**Lab Sample ID: 620-19967-6**

**Date Collected: 07/25/24 09:30**
**Matrix: Water**
**Date Received: 07/26/24 16:43**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 37257 | JTE | EET RI | 07/31/24 10:44 |
| Total/NA | Fraction | MA EPH Frac | | | 37311 | AAH | EET RI | 08/01/24 10:32 |
| Total/NA | Analysis | EPH | | 1 | 37462 | JS | EET RI | 08/06/24 14:30 |
| Total/NA | Prep | 3510C | | | 37257 | JTE | EET RI | 07/31/24 10:44 |
| Total/NA | Fraction | MA EPH Frac | | | 37311 | AAH | EET RI | 08/01/24 10:32 |
| Total/NA | Analysis | EPH | | 5 | 37606 | JS | EET RI | 08/09/24 12:22 |
| Total/NA | Analysis | MAVPH2.1 | | 2 | 37119 | AMO | EET RI | 07/30/24 10:08 |
| Total/NA | Analysis | MAVPH2.1 | DL | 5 | 37217 | CLR | EET RI | 07/30/24 19:25 |

# Lab Chronicle

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-19967-1

## Client Sample ID: FD-01

**Lab Sample ID: 620-19967-6**

**Date Collected: 07/25/24 09:30**

**Matrix: Water**

**Date Received: 07/26/24 16:43**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | MAVPH2.1 | DL3 | 20 | 37217 | CLR | EET RI | 07/31/24 10:13 |
| Total/NA | Prep | 3510C | | | 37257 | JTE | EET RI | 07/31/24 10:44 |
| Total/NA | Fraction | MA EPH Frac | | | 37311 | AAH | EET RI | 08/01/24 10:32 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 37296 | JS | EET RI | 08/01/24 20:02 |
| Dissolved | Prep | 3005A | | | 37156 | JPC | EET RI | 07/29/24 12:21 |
| Dissolved | Analysis | 6010D | | 1 | 37222 | JPC | EET RI | 07/30/24 12:48 |
| Dissolved | Prep | 7470A | | | 37307 | PRB | EET RI | 08/01/24 09:45 |
| Dissolved | Analysis | 7470A | | 1 | 37369 | JPC | EET RI | 08/02/24 09:57 |

## Client Sample ID: GW-MW101-072624

**Lab Sample ID: 620-19967-7**

**Date Collected: 07/26/24 12:30**

**Matrix: Water**

**Date Received: 07/26/24 16:43**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 37257 | JTE | EET RI | 07/31/24 10:44 |
| Total/NA | Fraction | MA EPH Frac | | | 37311 | AAH | EET RI | 08/01/24 10:32 |
| Total/NA | Analysis | EPH | | 1 | 37430 | JS | EET RI | 08/06/24 00:25 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 37119 | AMO | EET RI | 07/30/24 05:02 |
| Total/NA | Prep | 3510C | | | 37257 | JTE | EET RI | 07/31/24 10:44 |
| Total/NA | Fraction | MA EPH Frac | | | 37311 | AAH | EET RI | 08/01/24 10:32 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 37296 | JS | EET RI | 08/01/24 20:29 |

## Client Sample ID: GW-MW109-072624

**Lab Sample ID: 620-19967-8**

**Date Collected: 07/26/24 11:00**

**Matrix: Water**

**Date Received: 07/26/24 16:43**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 37257 | JTE | EET RI | 07/31/24 10:44 |
| Total/NA | Fraction | MA EPH Frac | | | 37311 | AAH | EET RI | 08/01/24 10:32 |
| Total/NA | Analysis | EPH | | 1 | 37430 | JS | EET RI | 08/06/24 00:48 |
| Total/NA | Prep | 3510C | | | 37257 | JTE | EET RI | 07/31/24 10:44 |
| Total/NA | Fraction | MA EPH Frac | | | 37311 | AAH | EET RI | 08/01/24 10:32 |
| Total/NA | Analysis | EPH | | 10 | 37462 | JS | EET RI | 08/06/24 15:25 |
| Total/NA | Analysis | MAVPH2.1 | | 2 | 37119 | AMO | EET RI | 07/30/24 09:38 |
| Total/NA | Analysis | MAVPH2.1 | DL | 10 | 37217 | CLR | EET RI | 07/30/24 19:58 |
| Total/NA | Prep | 3510C | | | 37257 | JTE | EET RI | 07/31/24 10:44 |
| Total/NA | Fraction | MA EPH Frac | | | 37311 | AAH | EET RI | 08/01/24 10:32 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 37296 | JS | EET RI | 08/01/24 20:57 |
| Dissolved | Prep | 3005A | | | 37156 | JPC | EET RI | 07/29/24 12:21 |
| Dissolved | Analysis | 6010D | | 1 | 37222 | JPC | EET RI | 07/30/24 12:54 |
| Dissolved | Prep | 7470A | | | 37307 | PRB | EET RI | 08/01/24 09:45 |
| Dissolved | Analysis | 7470A | | 1 | 37369 | JPC | EET RI | 08/02/24 09:59 |

# Lab Chronicle

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-19967-1

## Client Sample ID: GW-MW108-072624

**Lab Sample ID: 620-19967-9**

**Date Collected: 07/26/24 11:10**

**Matrix: Water**

**Date Received: 07/26/24 16:43**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 37257 | JTE | EET RI | 07/31/24 10:44 |
| Total/NA | Fraction | MA EPH Frac | | | 37311 | AAH | EET RI | 08/01/24 10:32 |
| Total/NA | Analysis | EPH | | 1 | 37430 | JS | EET RI | 08/06/24 01:11 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 37119 | AMO | EET RI | 07/30/24 05:33 |
| Total/NA | Prep | 3510C | | | 37257 | JTE | EET RI | 07/31/24 10:44 |
| Total/NA | Fraction | MA EPH Frac | | | 37311 | AAH | EET RI | 08/01/24 10:32 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 37296 | JS | EET RI | 08/01/24 21:24 |
| Total/NA | Prep | 3005A | | | 37225 | MEM | EET RI | 07/30/24 14:55 |
| Total/NA | Analysis | 6010D | | 1 | 37269 | JPC | EET RI | 07/31/24 11:29 |
| Total/NA | Prep | 7470A | | | 37307 | PRB | EET RI | 08/01/24 09:45 |
| Total/NA | Analysis | 7470A | | 1 | 37369 | JPC | EET RI | 08/02/24 10:01 |

## Client Sample ID: TB-01-072624

**Lab Sample ID: 620-19967-10**

**Date Collected: 07/26/24 09:00**

**Matrix: Water**

**Date Received: 07/26/24 16:43**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | MAVPH2.1 | | 1 | 37119 | AMO | EET RI | 07/29/24 14:12 |

**Laboratory References:**

EET RI = Eurofins Rhode Island, 646 Camp Ave, North Kingstown, RI 02852, TEL (413)789-9018

# Accreditation/Certification Summary

Client: Nobis Engineering, Inc. Job ID: 620-19967-1
Project/Site: Former L&M - Lunenburg MA

## Laboratory: Eurofins Rhode Island

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

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|
| Massachusetts | State | M-RI907 | 06-30-24 * |

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

| Analysis Method | Prep Method | Matrix | Analyte |
|---|---|---|---|
| 6010D | 3005A | Water | Antimony |
| 6010D | 3005A | Water | Arsenic |
| 6010D | 3005A | Water | Barium |
| 6010D | 3005A | Water | Beryllium |
| 6010D | 3005A | Water | Cadmium |
| 6010D | 3005A | Water | Chromium |
| 6010D | 3005A | Water | Lead |
| 6010D | 3005A | Water | Nickel |
| 6010D | 3005A | Water | Selenium |
| 6010D | 3005A | Water | Silver |
| 6010D | 3005A | Water | Thallium |
| 6010D | 3005A | Water | Vanadium |
| 6010D | 3005A | Water | Zinc |
| 7470A | 7470A | Water | Mercury |
| EPH | 3510C | Water | 2-Methylnaphthalene |
| EPH | 3510C | Water | Acenaphthene |
| EPH | 3510C | Water | Acenaphthylene |
| EPH | 3510C | Water | Anthracene |
| EPH | 3510C | Water | Benzo[a]anthracene |
| EPH | 3510C | Water | Benzo[a]pyrene |
| EPH | 3510C | Water | Benzo[b]fluoranthene |
| EPH | 3510C | Water | Benzo[g,h,i]perylene |
| EPH | 3510C | Water | Benzo[k]fluoranthene |
| EPH | 3510C | Water | Chrysene |
| EPH | 3510C | Water | Dibenz(a,h)anthracene |
| EPH | 3510C | Water | Fluoranthene |
| EPH | 3510C | Water | Fluorene |
| EPH | 3510C | Water | Indeno[1,2,3-cd]pyrene |
| EPH | 3510C | Water | Naphthalene |
| EPH | 3510C | Water | Phenanthrene |
| EPH | 3510C | Water | Pyrene |
| MAEPH2.1 | 3510C | Water | C11-C22 Aromatics |
| MAEPH2.1 | 3510C | Water | C11-C22 Aromatics (Adjusted) |
| MAEPH2.1 | 3510C | Water | C19-C36 Aliphatics |
| MAEPH2.1 | 3510C | Water | C9-C18 Aliphatics |
| MAVPH2.1 | | Water | Benzene |
| MAVPH2.1 | | Water | C5-C8 Aliphatics (adjusted) |
| MAVPH2.1 | | Water | C5-C8 Aliphatics (unadjusted) |
| MAVPH2.1 | | Water | C9-C10 Aromatics |
| MAVPH2.1 | | Water | C9-C12 Aliphatics (adjusted) |
| MAVPH2.1 | | Water | C9-C12 Aliphatics (unadjusted) |
| MAVPH2.1 | | Water | Ethylbenzene |
| MAVPH2.1 | | Water | m,p-Xylene |
| MAVPH2.1 | | Water | Methyl tert-butyl ether |
| MAVPH2.1 | | Water | Naphthalene |

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

# Accreditation/Certification Summary

Client: Nobis Engineering, Inc. Job ID: 620-19967-1
Project/Site: Former L&M - Lunenburg MA

## Laboratory: Eurofins Rhode Island (Continued)

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

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

| Analysis Method | Prep Method | Matrix | Analyte |
|---|---|---|---|
| MAVPH2.1 | | Water | o-Xylene |
| MAVPH2.1 | | Water | Toluene |
| MAVPH2.1 | | Water | Xylenes, Total |

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

# Method Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-19967-1

| Method | Method Description | Protocol | Laboratory |
|---|---|---|---|
| EPH | Extractable Petroleum Hydrocarbons (GC/MS) | MA DEP | EET RI |
| MAVPH2.1 | Massachusetts - Volatile Petroleum Hydrocarbons (GC) | MA DEP | EET RI |
| MAEPH2.1 | Massachusetts - Extractable Petroleum Hydrocarbons (GC) | MA DEP | EET RI |
| 6010D | Metals (ICP) | SW846 | EET RI |
| 7470A | Mercury (CVAA) | SW846 | EET RI |
| 3005A | Preparation, Total Metals | SW846 | EET RI |
| 3510C | Liquid-Liquid Extraction (Separatory Funnel) | SW846 | EET RI |
| 5030C | Purge and Trap | SW846 | EET RI |
| 7470A | Preparation, Mercury | SW846 | EET RI |
| MA EPH Frac | Massachusetts - Extractable Petroleum Hydrocarbon Fractionation | MA DEP | EET RI |

**Protocol References:**

MA DEP = Massachusetts Department Of Environmental Protection

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

**Laboratory References:**

EET RI = Eurofins Rhode Island, 646 Camp Ave, North Kingstown, RI 02852, TEL (413)789-9018

# Sample Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-19967-1

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---|---|---|---|---|
| 620-19967-1 | GW-MW107-072524 | Water | 07/25/24 10:50 | 07/26/24 16:43 |
| 620-19967-2 | GW-MW104-072524 | Water | 07/25/24 11:30 | 07/26/24 16:43 |
| 620-19967-3 | GW-MW102R-072524 | Water | 07/25/24 14:30 | 07/26/24 16:43 |
| 620-19967-4 | GW-MW103-072524 | Water | 07/25/24 10:00 | 07/26/24 16:43 |
| 620-19967-5 | GW-MW105-072524 | Water | 07/25/24 13:20 | 07/26/24 16:43 |
| 620-19967-6 | FD-01 | Water | 07/25/24 09:30 | 07/26/24 16:43 |
| 620-19967-7 | GW-MW101-072624 | Water | 07/26/24 12:30 | 07/26/24 16:43 |
| 620-19967-8 | GW-MW109-072624 | Water | 07/26/24 11:00 | 07/26/24 16:43 |
| 620-19967-9 | GW-MW108-072624 | Water | 07/26/24 11:10 | 07/26/24 16:43 |
| 620-19967-10 | TB-01-072624 | Water | 07/26/24 09:00 | 07/26/24 16:43 |

19967

**Eurofins Rhode Island**
646 Camp Ave
North Kingstown, RI 02852
Phone 413-789-9018 Fax: 413-506-3830

# Chain of Custody Record

eurofins | Environment Testing

| Client Information | Sampler: PM, SS | Lab PM: Huntley, Agnes R | Carrier Tracking No(s): | COC No: 620-18227-2520 1 |
|---|---|---|---|---|
| Client Contact: Adam Roy | Phone: | E-Mail: Agnes Huntley@et.eurofinsus com | State of Origin: MA | Page: Page 1 of 2 |
| Company: Nobis Engineering, Inc | PWSID: | Analysis Requested | | Job #: 500001.005 |
| Address: 585 Middlesex Street | Due Date Requested: | | | Preservation Codes: A - HCL, D - HNO3 |
| City: Lowell | TAT Requested (days): Standard | | | |
| State, Zip: MA, 01851 | Compliance Project: Δ Yes Δ No | | | |
| Phone: 603-520-5849(Tel) | PO #: Purchase Order Requested | | | |
| Email: aroy@nobis-group com | WO #: | | | |
| Project Name: Former L&M - Lunenburg MA | Project #: 62002215 | | | |
| Site: | SSOW#: | | | |

620-19967 Chain of Custody

| Sample Identification | Sample Date | Sample Time | Sample Type (C=comp, G=grab) | Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air) | Field Filtered Sample (Yes or No) | MAVPH2.1 - MADEP Volatile Petroleum Hydrocarbons (G | EPH_MS, MAEPH2.1 | 6010MCP, 7470MCP | Total Number | Special Instructions/Note: |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preservation Code: | | | A | A | D | | |
| GW-MW107-072524 | 7/25/24 | 1050 | | Water | Y | X | X | X | 18 | MS/MSD |
| GW-MW104-072524 | | 1130 | | Water | N | X | X | X | 6 | |
| GW-MW102R-072524 | | 1430 | | Water | N | X | X | X | 6 | |
| GW-MW103-072524 | | 1000 | | Water | N | X | X | X | 6 | |
| GW-MW105-072524 | | 1320 | | Water | N | X | X | X | 6 | |
| FD-01 | | 0930 | | Water | N | X | X | X | 6 | |
| GW-MW101-072624 | 7/26/24 | 1230 | | Water | N | X | X | | 5 | |
| GW-MW109-072624 | | 1100 | | Water | N | X | X | X | 6 | |
| GW-MW108-072624 | | 1110 | | Water | N | X | X | X | 6 | Needs to be filtered |
| TB-01-072624 | | 0900 | | Water | | | | | 2 | |
| | | | | Water | | | | | | |

**Possible Hazard Identification**
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

**Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)**
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements

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

| Relinquished by | Date/Time | Company | Received by | Date/Time | Company |
|---|---|---|---|---|---|
| | 7/26/24 14:50 | | | 7/26/24 14:50 | |
| | 7/26/24 16:43 | EDM | | 7/26/24 16:43 | GRA |
| | Date/Time | Company | Received by | Date/Time | Company |

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 4.2 to 1 4.4 #6

Ver: 04/02/2024

Page 57 of 58

8/9/2024

# Login Sample Receipt Checklist

Client: Nobis Engineering, Inc.

Job Number: 620-19967-1

**Login Number: 19967**
**List Number: 1**
**Creator: Makhoul, Elie**

**List Source: Eurofins Rhode Island**

| Question | Answer | Comment |
|---|---|---|
| Radioactivity wasn't checked or is </= background as measured by a survey meter. | N/A | |
| The cooler's custody seal, if present, is intact. | N/A | |
| Sample custody seals, if present, are intact. | N/A | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| Is the Field Sampler's name present on COC? | True | |
| There are no discrepancies between the containers received and the COC. | True | |
| Samples are received within Holding Time (excluding tests with immediate HTs) | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| Sample Preservation Verified. | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| Containers requiring zero headspace have no headspace or bubble is <6mm (1/4"). | True | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |
| Residual Chlorine Checked. | N/A | |

December 2, 2024
Nobis File No. S00001.05

Ms. Katy Deng
USEPA – Region 1
Land, Chemicals, and Redevelopment Division
5 Post Office Square, Suite 100
Boston, MA 02109-3912

Re: USEPA Contract No. 68HE0122D0001
USEPA Task Order No. 68HE0122F0044
Targeted Brownfields Assessment (TBA)
Former L&M Service Station Site
Lunenburg, Massachusetts
Sample Delivery Group (SDG) No. 620216921
Eurofins New England, North Kingstown, RI

Tier 1 Stage 2A Organic and Inorganic Data Review:

Volatile Petroleum Hydrocarbons (VPH by MassDEP-VPH), Extractable Petroleum Hydrocarbons (EPH by MassDEP-EPH), Massachusetts Contingency Plan (MCP) Dissolved Metals (MCP-14 Metals by 6010D/7470A)

9/Groundwater Samples: GW-MW108-101524, GW-B/MW104-101524, GW-B/MW105-101524, GW-MW109-101524, GW-FD01, GW-MW107-101624, GW-B/MW101-101624, GW-MW106-101624, GW-MW102R-101624
1/Field Duplicate Pair: GW-B/MW104-101524 / GW-FD01
1/Aqueous Trip Blank: Trip Blank-101624

Dear Ms. Deng:

Nobis Group (Nobis), under a USEPA contract as a subcontractor to KGSNE JV, LLC, performed a Tier 1 Stage 2A manual data review (S2AVM) on the organic and inorganic analytical data for the samples listed above. The samples were collected by Nobis at the Former L&M Service Station Site located in Lunenburg, Massachusetts on October 15, 2024 and October 16, 2024. The samples were analyzed for VPHs by MassDEP-VPH, EPHs by MassDEP-EPH, and Dissolved MCP-14 Metals by EPA Methods 6010D/7470A by Eurofins New England in North Kingstown, RI.

The Tier 1 Stage 2A manual data review was performed in accordance with the Region 1 - EPA New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures (September 2020); USEPA's National Functional Guidelines for Organic Superfund Methods Data Review (November 2020); USEPA's National Functional Guidelines for Inorganic Superfund Methods Data Review (November 2020); the Program Quality Assurance Project Plan (Program QAPP) dated October 2022, and the Quality Assurance Project Plan Addendum (QAPPA) (May 2023) for the Former L&M Service Station Site, which appends the October 2022 Program QAPP.

The data were evaluated based on the following parameters:

* • Overall Evaluation of Data and Potential Usability Issues
* • Data Completeness



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| | | |
|---|---|---|
| * | • | Preservation and Technical Holding Times |
| * | • | Blanks |
| * | • | Surrogates (organic analyses only) |
| NA | • | Internal Standards |
| * | • | Matrix Spike Analysis |
| * | • | Laboratory Duplicates |
| * | • | Laboratory Control Samples (LCS) |
| * | • | Field Duplicates |
| NA | • | ICP Serial Dilutions (metals only) |
| NA | • | Performance Evaluation (PE) Samples |
| NA | • | Target Analyte Identification |
| * | • | Reported Quantitation Limits |

* All criteria were met for this parameter or did not require qualification.
NA – Not applicable.

**Overall Evaluation of Data and Potential Usability Issues**

The site sampling objectives are:

- Characterize in-situ soil based on AOCs identified by Fuss & O'Neill in November 2020 Phase I for the presence of possible site-related contamination.
- Evaluate groundwater elevation.
- Evaluate presence/absence of groundwater contamination related to site.

The data meet the project quality criteria and can be used without restriction except as summarized below. The attachments provide details and supporting documentation.

**MassDEP-VPH:**
Qualification of the data was not required.

**MassDEP-EPH:**
Qualification of the data was not required.

**MCP-14 Metals and Mercury:**
Qualification of the data was not required.

Please contact Linda Terzis at lterzis@nobis-group.com should you have any questions or comments regarding this information.

Sincerely,

NOBIS GROUP®

Linda Terzis
Data Validator

Gary Glennon
Data Validator

Tables: Data Summary Tables – Tier 1 Stage 2A (S2AVM) Validated Data
Data Qualification Actions Table

Attachments: Data Review Checklist
Support Documentation
COC

cc: Denis McGrath (Nobis Group)
Adam Roy (Nobis Group)

# DATA SUMMARY TABLE

| **Analysis** | | EPH in Groundwater | | | | |
|---|---|---|---|---|---|---|
| **Lab Sample ID** | | 620-21692-1 | 620-21692-2 | 620-21692-3 | 620-21692-4 | 620-21692-5 |
| **Field Sample ID** | | GW-MW108-101524 | GW-B/MW104-101524 | GW-B/MW105-101524 | GW-MW109-101524 | GW-FD01 |
| **Sample Type** | | N | N | N | N | FD |
| **Parent Sample ID** | | | | | | GW-B/MW104-101524 |
| **Sample Date** | **Units** | 10/15/24 | 10/15/24 | 10/15/24 | 10/15/24 | 10/15/24 |
| 2-Methylnaphthalene | ug/L | 0.95 U | 1 U | 1 U | 7.7 | 1 U |
| Acenaphthene | ug/L | 0.95 U | 1 U | 1 U | 0.95 U | 1 U |
| Acenaphthylene | ug/L | 0.95 U | 1 U | 1 U | 0.95 U | 1 U |
| Anthracene | ug/L | 0.95 U | 1 U | 1 U | 0.95 U | 1 U |
| Benzo(a)anthracene | ug/L | 0.95 U | 1 U | 1 U | 0.95 U | 1 U |
| Benzo(a)pyrene | ug/L | 0.19 U | 0.17 J | 0.2 U | 0.19 U | 0.2 U |
| Benzo(b)fluoranthene | ug/L | 0.95 U | 1 U | 1 U | 0.95 U | 1 U |
| Benzo(g,h,i)perylene | ug/L | 0.95 U | 1 U | 1 U | 0.95 U | 1 U |
| Benzo(k)fluoranthene | ug/L | 0.95 U | 1 U | 1 U | 0.95 U | 1 U |
| C11-C22 Aromatics | ug/L | 95 U | 100 U | 100 U | 140 | 100 U |
| C11-C22 Aromatics (adjusted) | ug/L | 95 U | 100 U | 100 U | 110 | 100 U |
| C19-C36 Aliphatics | ug/L | 95 U | 100 U | 100 U | 95 U | 100 U |
| C9-C18 Aliphatics | ug/L | 95 U | 100 U | 100 U | 360 | 100 U |
| Chrysene | ug/L | 0.95 U | 1 U | 1 U | 0.95 U | 1 U |
| Dibenz(a,h)anthracene | ug/L | 0.48 U | 0.5 U | 0.5 U | 0.48 U | 0.5 U |
| Fluoranthene | ug/L | 0.95 U | 1 U | 1 U | 0.95 U | 1 U |
| Fluorene | ug/L | 0.95 U | 1 U | 1 U | 0.95 U | 1 U |
| Indeno(1,2,3-cd)pyrene | ug/L | 0.48 U | 0.5 U | 0.5 U | 0.48 U | 0.5 U |
| Naphthalene | ug/L | 0.95 U | 1 U | 1 U | 35 | 1 U |
| Phenanthrene | ug/L | 0.95 U | 1 U | 1 U | 0.95 U | 1 U |
| Pyrene | ug/L | 0.95 U | 1 U | 1 U | 0.95 U | 1 U |



U – not detected; J – estimated value; R – rejected; EB – detected in equipment blank; N – tentatively identified; + biased high; - biased low

# DATA SUMMARY TABLE

| **Analysis** | | EPH in Groundwater | | |
|---|---|---|---|---|
| **Lab Sample ID** | | 620-21692-6 | 620-21692-8 | 620-21692-9 |
| **Field Sample ID** | | GW-MW107-101624 | GW-MW106-101624 | GW-MW102R-101624 |
| **Sample Type** | | N | N | N |
| **Parent Sample ID** | | | | |
| **Sample Date** | **Units** | 10/16/24 | 10/16/24 | 10/16/24 |
| 2-Methylnaphthalene | ug/L | 1 U | 20 | 37 |
| Acenaphthene | ug/L | 1 U | 1 U | 0.4 J |
| Acenaphthylene | ug/L | 1 U | 1 U | 0.98 U |
| Anthracene | ug/L | 1 U | 1 U | 0.98 U |
| Benzo(a)anthracene | ug/L | 1 U | 1 U | 0.98 U |
| Benzo(a)pyrene | ug/L | 0.2 U | 0.2 U | 0.2 U |
| Benzo(b)fluoranthene | ug/L | 1 U | 1 U | 0.98 U |
| Benzo(g,h,i)perylene | ug/L | 1 U | 1 U | 0.98 U |
| Benzo(k)fluoranthene | ug/L | 1 U | 1 U | 0.98 U |
| C11-C22 Aromatics | ug/L | 100 U | 130 | 320 |
| C11-C22 Aromatics (adjusted) | ug/L | 100 U | 100 U | 160 |
| C19-C36 Aliphatics | ug/L | 100 U | 100 U | 98 U |
| C9-C18 Aliphatics | ug/L | 100 U | 340 | 480 |
| Chrysene | ug/L | 1 U | 1 U | 0.98 U |
| Dibenz(a,h)anthracene | ug/L | 0.5 U | 0.5 U | 0.49 U |
| Fluoranthene | ug/L | 1 U | 0.16 J | 0.98 U |
| Fluorene | ug/L | 1 U | 1 U | 0.59 J |
| Indeno(1,2,3-cd)pyrene | ug/L | 0.5 U | 0.5 U | 0.49 U |
| Naphthalene | ug/L | 1 U | 51 | 140 |
| Phenanthrene | ug/L | 1 U | 0.29 J | 0.34 J |
| Pyrene | ug/L | 1 U | 1 U | 0.98 U |

## DATA SUMMARY TABLE

| **Analysis** | | Dissolved Metals in Groundwater | | | | |
|---|---|---|---|---|---|---|
| **Lab Sample ID** | | 620-21692-1 | 620-21692-2 | 620-21692-3 | 620-21692-4 | 620-21692-5 |
| **Field Sample ID** | | GW-MW108-101524 | GW-B/MW104-101524 | GW-B/MW105-101524 | GW-MW109-101524 | GW-FD01 |
| **Sample Type** | | N | N | N | N | FD |
| **Parent Sample ID** | | | | | | GW-B/MW104-101524 |
| **Sample Date** | **Units** | 10/15/24 | 10/15/24 | 10/15/24 | 10/15/24 | 10/15/24 |
| Antimony | mg/L | 0.006 U | 0.0021 J | 0.006 U | 0.006 U | 0.006 U |
| Arsenic | mg/L | 0.0016 J | 0.008 | 0.004 | 0.032 | 0.011 |
| Barium | mg/L | 0.13 | 0.093 | 0.2 | 0.046 | 0.098 |
| Beryllium | mg/L | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Cadmium | mg/L | 0.0025 U | 0.00066 J | 0.0025 U | 0.0025 U | 0.00057 J |
| Chromium | mg/L | 0.005 U | 0.005 U | 0.0029 J | 0.0033 J | 0.0015 J |
| Lead | mg/L | 0.0075 U | 0.0075 U | 0.0075 U | 0.0075 U | 0.0075 U |
| Mercury | mg/L | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U |
| Nickel | mg/L | 0.0016 J | 0.018 | 0.0029 J | 0.0034 J | 0.019 |
| Selenium | mg/L | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U |
| Silver | mg/L | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Thallium | mg/L | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Vanadium | mg/L | 0.0011 J | 0.0022 J | 0.0047 J | 0.005 U | 0.0026 J |
| Zinc | mg/L | 0.005 U | 0.11 | 0.013 | 0.0018 J | 0.084 |

# DATA SUMMARY TABLE

| **Analysis** | | Dissolved Metals in Groundwater | | |
|---|---|---|---|---|
| **Lab Sample ID** | | 620-21692-6 | 620-21692-8 | 620-21692-9 |
| **Field Sample ID** | | GW-MW107-101624 | GW-MW106-101624 | GW-MW102R-101624 |
| **Sample Type** | | N | N | N |
| **Parent Sample ID** | | | | |
| **Sample Date** | **Units** | 10/16/24 | 10/16/24 | 10/16/24 |
| Antimony | mg/L | 0.006 U | 0.006 U | 0.006 U |
| Arsenic | mg/L | 0.072 | 0.054 | 0.04 |
| Barium | mg/L | 0.041 | 0.084 | 0.14 |
| Beryllium | mg/L | 0.002 U | 0.002 U | 0.002 U |
| Cadmium | mg/L | 0.0025 U | 0.0025 U | 0.0025 U |
| Chromium | mg/L | 0.012 | 0.011 | 0.017 |
| Lead | mg/L | 0.0075 U | 0.0075 U | 0.0075 U |
| Mercury | mg/L | 0.0002 U | 0.0002 U | 0.0002 U |
| Nickel | mg/L | 0.0023 J | 0.0023 J | 0.0053 |
| Selenium | mg/L | 0.015 U | 0.015 U | 0.015 U |
| Silver | mg/L | 0.005 U | 0.005 U | 0.005 U |
| Thallium | mg/L | 0.005 U | 0.005 U | 0.005 U |
| Vanadium | mg/L | 0.005 U | 0.005 U | 0.005 U |
| Zinc | mg/L | 0.005 U | 0.005 U | 0.005 U |

## DATA SUMMARY TABLE

| **Analysis** | | VPH in Groundwater | | | | |
|---|---|---|---|---|---|---|
| **Lab Sample ID** | | 620-21692-1 | 620-21692-2 | 620-21692-3 | 620-21692-4 | 620-21692-5 |
| **Field Sample ID** | | GW-MW108-101524 | GW-B/MW104-101524 | GW-B/MW105-101524 | GW-MW109-101524 | GW-FD01 |
| **Sample Type** | | N | N | N | N | FD |
| **Parent Sample ID** | | | | | | GW-B/MW104-101524 |
| **Sample Date** | **Units** | 10/15/24 | 10/15/24 | 10/15/24 | 10/15/24 | 10/15/24 |
| Benzene | ug/L | 5 U | 5 U | 5 U | 5 U | 5 U |
| C5-C8 Aliphatics (adjusted) | ug/L | 100 U | 100 U | 100 U | 100 U | 100 U |
| C5-C8 Aliphatics (unadjusted) | ug/L | 100 U | 100 U | 100 U | 200 | 100 U |
| C9-C10 Aromatics | ug/L | 100 U | 100 U | 100 U | 2100 | 100 U |
| C9-C12 Aliphatics (adjusted) | ug/L | 100 U | 100 U | 100 U | 3700 | 100 U |
| C9-C12 Aliphatics (unadjusted) | ug/L | 100 U | 100 U | 100 U | 6000 | 100 U |
| Ethylbenzene | ug/L | 5 U | 5 U | 5 U | 98 | 5 U |
| m,p-Xylene | ug/L | 10 U | 10 U | 10 U | 220 | 10 U |
| Methyl tert-butyl ether | ug/L | 5 U | 5.6 | 5 U | 130 | 5.8 |
| Naphthalene | ug/L | 5 U | 5 U | 5 U | 59 | 5 U |
| o-Xylene | ug/L | 5 U | 5 U | 5 U | 5 U | 5 U |
| Toluene | ug/L | 5 U | 5 U | 5 U | 5 U | 5 U |
| Xylene (total) | ug/L | 15 U | 15 U | 15 U | 220 | 15 U |



U – not detected; J – estimated value; R – rejected; EB – detected in equipment blank; N – tentatively identified; + biased high; - biased low

# DATA SUMMARY TABLE

| **Analysis** | | VPH in Groundwater | | | |
|---|---|---|---|---|---|
| **Lab Sample ID** | | 620-21692-6 | 620-21692-7 | 620-21692-8 | 620-21692-9 |
| **Field Sample ID** | | GW-MW107-101624 | GW-B/MW101-101624 | GW-MW106-101624 | GW-MW102R-101624 |
| **Sample Type** | | N | N | N | N |
| **Parent Sample ID** | | | | | |
| **Sample Date** | **Units** | 10/16/24 | 10/16/24 | 10/16/24 | 10/16/24 |
| Benzene | ug/L | 5 U | 5 U | 5 U | 150 |
| C5-C8 Aliphatics (adjusted) | ug/L | 100 U | 100 U | 1100 | 2000 |
| C5-C8 Aliphatics (unadjusted) | ug/L | 100 U | 100 U | 1200 | 2200 |
| C9-C10 Aromatics | ug/L | 100 U | 100 U | 2700 | 4100 |
| C9-C12 Aliphatics (adjusted) | ug/L | 100 U | 100 U | 7900 | 11000 |
| C9-C12 Aliphatics (unadjusted) | ug/L | 100 U | 100 U | 13000 | 18000 |
| Ethylbenzene | ug/L | 5 U | 5 U | 390 | 730 |
| m,p-Xylene | ug/L | 10 U | 10 U | 1000 | 2100 |
| Methyl tert-butyl ether | ug/L | 5 U | 5 U | 110 | 100 |
| Naphthalene | ug/L | 5 U | 5 U | 98 | 350 |
| o-Xylene | ug/L | 5 U | 5 U | 12 | 50 U |
| Toluene | ug/L | 5 U | 5 U | 5 U | 50 U |
| Xylene (total) | ug/L | 15 U | 15 U | 620 | 2100 |

# DATA SUMMARY TABLE

| **Analysis** | | VPH in Water Quality Control Matrix |
|---|---|---|
| **Lab Sample ID** | | 620-21692-10 |
| **Field Sample ID** | | Trip Blank-101624 |
| **Sample Type** | | N |
| **Parent Sample ID** | | |
| **Sample Date** | **Units** | 10/16/24 |
| Benzene | ug/L | 5 U |
| C5-C8 Aliphatics (adjusted) | ug/L | 100 U |
| C5-C8 Aliphatics (unadjusted) | ug/L | 100 U |
| C9-C10 Aromatics | ug/L | 100 U |
| C9-C12 Aliphatics (adjusted) | ug/L | 100 U |
| C9-C12 Aliphatics (unadjusted) | ug/L | 100 U |
| Ethylbenzene | ug/L | 5 U |
| m,p-Xylene | ug/L | 10 U |
| Methyl tert-butyl ether | ug/L | 5 U |
| Naphthalene | ug/L | 5 U |
| o-Xylene | ug/L | 5 U |
| Toluene | ug/L | 5 U |
| Xylene (total) | ug/L | 15 U |

**Data Review Qualification Actions**
**Former L&M Service Station**
**SDG 620-21692-1**

| Parameter | Analyte | Samples | Evaluation Criteria | Action Needed | Comments |
|---|---|---|---|---|---|
| **MassDEP-VPH** | | | | | |
| | Qualification of the data was not required. | | | | |
| **MassDEP-EPH** | | | | | |
| | Qualification of the data was not required. | | | | |
| **MCP-14 Metals / Mercury** | | | | | |
| | Qualification of the data was not required. | | | | |

**Tier 1/Stage 2A Data Review Checklist**

**Project:** Former L&M Service Station, Lunenburg, Massachusetts
Targeted Brownfields Assessment (TBA)
**Project #:** S00001.05

**Date:** 11/04/2024

**Methods:** Volatile Petroleum Hydrocarbons (VPH) (MassDEP-VPH)
Extractable Petroleum Hydrocarbons (EPH) (MassDEP-EPH)
Massachusetts Contingency Plan (MCP) Dissolved Metals (MCP-14 Metals by 6010D/7470A)

**Laboratory:** Eurofins New England Laboratory, North Kingstown, RI
**Case:** N/A
**SDG:** 620216921
**Reviewer:** Linda Terzis

1. **Case Narrative and Data Package Completeness (COC and Analyte List Review)**
Nine (9) groundwater samples, including one field duplicate sample, were listed on the COC for SDG 620216921. One trip blank sample was also included on the COC. The samples were collected on 10/15/2024 and 10/16/2024 and received at the Eurofins New England Laboratory on 10/17/2024 at a maximum temperature of 2.6 °C.

| Sample ID | Laboratory ID | Analyses |
|---|---|---|
| GW-MW108-101524 | 620-21692-1 | MassDEP-VPH, MassDEP-EPH, Dissolved MCP-14 Metals |
| GW-B/MW104-101524 | 620-21692-2 | |
| GW-B/MW105-101524 | 620-21692-3 | |
| GW-MW109-101524 | 620-21692-4 | |
| GW-FD01 | 620-21692-5 | |
| GW-MW107-101624 | 620-21692-6 | |
| GW-B/MW101-101624 | 620-21692-7 | MassDEP-VPH |
| GW-MW106-101624 | 620-21692-8 | MassDEP-VPH, MassDEP-EPH, Dissolved MCP-14 Metals |
| GW-MW102R-101624 | 620-21692-9 | |
| Trip Blank-101624 | 620-21692-10 | MassDEP-VPH |

The data were evaluated using the site-specific Quality Assurance Project Plan Addendum (QAPPA) (dated May 2023) and the Program QAPP (dated October 2022). Both were prepared by KGSNE, LLC. The QAPPA appends and incorporates by reference the procedures and quality control measures detailed in the Program QAPP (October 2022). Therefore, site data for this SDG were evaluated using both the QAPPA of May 2023 and the Program QAPP dated October 2022. The Massachusetts Compendium of Analytical Methods (CAM) and/or SW-846 Methods were used to perform the analyses. Therefore, site data were also evaluated using CAM quality control (QC) limits, where applicable.

The analyte lists reported by the laboratory were compared to the required analyte lists per Table 4 (groundwater) in the QAPPA (May 2023) for the site. Results for all requested analytes were reported and no inconsistencies were noted.



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2. **Holding Time and Sample Preservation Compliance**

Receipt temperatures are acceptable (≤ 6°), as specified in the QAPPA (May 2023).

MassDEP-VPH: Holding time criteria (analyzed within 14 days) were met.

MassDEP-EPH: Holding time criteria (extracted within 14 days and analyzed within 40 days of extraction) were met.

MCP-14 Metals/Mercury: Holding time criteria (analyzed within 28 days for mercury; within 180 days for all other analytes) were met.

3. **Calibration Issues**

Not assessed for S2AVM data review.

4. **Laboratory and Field Blanks**

MassDEP-VPH: Results for the VPH laboratory method blanks and VPH trip blank were non-detect. No blank actions are required.

MassDEP-EPH: Results for the EPH laboratory method blanks were non-detect. No blank actions are required.

MCP-14 Metals/Mercury: Results for the metals/mercury method blanks were non-detect. No blank actions are required.

5. **Interference Check Sample (metals only)**

Not assessed for S2AVM data review.

6. **Surrogates**

The Program QAPP (October 2022) was used to evaluate site data for surrogate recovery. If no Program QAPP-specific recovery limits were available for a surrogate, the MCP CAM recovery limits were used.

MassDEP-VPH: Percent surrogate recoveries for the samples were within the Program QAPP limits of 70-130%. No actions are required.

MassDEP-EPH: Percent surrogate recoveries for the samples were within the Program QAPP limits of 40-140% for the EPH GC/MS and GC analyses. No actions are required.

MCP-14 Metals/Mercury: Not applicable for this analysis.

7. **Laboratory Control Samples**

MassDEP-VPH: The percent recoveries in the VPH LCS/LCSD pairs 620-40432/2 and 3 and 620-40527/3 and 4 met the Program QAPP recovery limits of 70-130% and RPDs ≤ 25%. No actions are required.

MassDEP-EPH: The percent recoveries in the EPH-GC/MS LCS/LCSD pair 620-40360/4-B and 5-B meet the Program QAPP recovery limits of 40-140% and RPD ≤ 25%.

Percent recoveries and RPDs for the EPH-GC LCS/LCSD pair 620-40360/2-B and 3-B meet the Program QAPP limits of 40-140% and RPD ≤ 25%. No actions are required.

MCP-14 Metals/Mercury: Percent recoveries for the metals and mercury LCS analyses were within the QAPP limits of 80-120%. No actions are required.

**8. Matrix Spikes**

Based on the Region I EPA New England Environmental Data Review Supplement (Region I Supplement, 2020), MS/MSD qualifications are applied to all field samples with similar matrix, unless otherwise noted.

MassDEP-VPH: MS/MSD analyses were performed on sample GW-MW108-101524 (620-21692-1). Recoveries and RPDs met the Program QAPP limits of 70-130% recovery and ≤ 50% RPD except for the recoveries of C9-C10 aromatics, which was reported as spiked but not detected in both the MS and MSD analyses, and the recoveries of C5-C8 aliphatics (unadjusted) and C9-C12 aliphatics (unadjusted), which were also reported as spiked, but with results > spiking level. Percent recoveries were not calculated by the laboratory for these ranges. Results for the parent sample were all non-detect. The laboratory has indicated the exceedances are due to differences in baseline integration used for QC samples versus field samples (i.e., QC sample results are based on a summation of peaks whereas field sample results are based on an integration of the entire baseline). No actions are taken.

MassDEP-EPH: MS/MSD analyses were performed on sample GW-MW108-101524 (620-21692-1) for the EPH-GC/MS and EPH-GC analyses. MS/MSD results meet the limits of 40-140% recovery and ≤ 50% RPD as specified in the Program QAPP. No actions are required.

MCP-14 Metals/Mercury: MS/MSD analyses were performed for dissolved metals and dissolved mercury on sample GW-MW108-101524 (620-21692-1). Recoveries met the Program QAPP limits of 75-125% and RPD ≤ 20%. No actions are required.

**9. Laboratory Duplicates (metals only)**

MCP-14 Metals/Mercury: A laboratory duplicate analysis for mercury was performed on sample GW-MW108-101524 (620-21692-1). Results for mercury were non-detect in the sample and duplicate sample and an RPD was not calculated. Laboratory duplicate precision is acceptable and no actions are required.

**10. Serial Dilution (metals only)**

MCP-14 Metals/Mercury: A serial dilution analysis was not performed for this SDG. The Massachusetts CAM requires a serial dilution analysis on samples used for MS/MSD analyses where analytes are detected at > 50x RL. MS/MSD analyses were performed on sample GW-MW108-0101524 (620-21692-1). Detected analyte results were < 50x RL in these samples and no actions are required.

**11. Field Duplicate Precision**

Acceptable field duplicate precision is an RPD of ≤ 30% for results ≥ 5x RL and an absolute difference ≤ 2x RL for results < 5x RL, based on the EPA Region I Environmental Data Review Supplement (2020). Based on the Region I Supplement, qualifications are applied to all field samples with similar matrix, unless otherwise indicated.

Field duplicate pair GW-B/MW104-101524 (620-21692-2) / GW-FD01 (620-21692-5) was submitted with the samples of this SDG.

Field duplicate precision criteria were met for the VPH, EPH, and metals/mercury analyses and no actions are required.

**12. Internal Standards**

Not assessed for S2AVM data review.

**13. Dual Column Precision (PCBs only)**

Not applicable for this SDG.

**14. Performance Evaluation Samples**

Performance Evaluation (PE) samples were not included in this SDG.

**15. Reporting Limits**

RLs for non-detect results for the VPH, EPH, and metals/mercury analyses met the project action levels (PALs) presented on Table 4 of the QAPPA for the site.

**16. Other**

EPA Region I Environmental Data Review Supplement (2020) criterion for percent solids content (> 30%) not applicable for groundwater samples.

The laboratory noted a strong fuel odor for sample GW-MW102R-101624 (620-21692-9).

Overall bias is considered indeterminate when cumulative nonconformances do not show a consistent bias or in cases of the presence of conflicting high and low biases.

**Field Duplicate Evaluation**

**SDG: 620-21692-1 VPH**

| Analyte | Original Result (ug/L) | Qual | Duplicate Result (ug/L) | Qual | RPD ≤ 30% | Abs Diff | Comment[1] |
|---|---|---|---|---|---|---|---|
| **Sample ID** | **GW-B/MW104-101524** | | **GW-FD01** | | | | |
| | **620-21692-2** | | **620-21692-5** | | | | |
| Benzene | 5 | U | 5 | U | 0.00 | | Ok - both ND |
| C5-C8 Aliphatics (adjusted) | 100 | U | 100 | U | 0.00 | | Ok - both ND |
| C5-C8 Aliphatics (unadjusted) | 100 | U | 100 | U | 0.00 | | Ok - both ND |
| C9-C10 Aromatics | 100 | U | 100 | U | 0.00 | | Ok - both ND |
| C9-C12 Aliphatics (adjusted) | 100 | U | 100 | U | 0.00 | | Ok - both ND |
| C9-C12 Aliphatics (unadjusted) | 100 | U | 100 | U | 0.00 | | Ok - both ND |
| Ethylbenzene | 5 | U | 5 | U | 0.00 | | Ok - both ND |
| m,p-Xylene | 10 | U | 10 | U | 0.00 | | Ok - both ND |
| Methyl tert-butyl ether | 5.6 | | 5.8 | | 3.51 | 0.20 | Ok - abs diff < 2x RL |
| Naphthalene | 5 | U | 5 | U | 0.00 | | Ok - both ND |
| o-Xylene | 5 | U | 5 | U | 0.00 | | Ok - both ND |
| Toluene | 5 | U | 5 | U | 0.00 | | Ok - both ND |
| Xylene (total) | 15 | U | 15 | U | 0.00 | | Ok - both ND |

[1] Actions apply to all samples, per EPA Region I Supplemental Review Guidance (2020).

**Field Duplicate Evaluation**

**SDG: 620-21692-1 EPH**

| Analyte | Original Result (ug/L) | Qual | Duplicate Result (ugL) | Qual | RPD ≤ 30% | Abs Diff | Comment[1] |
|---|---|---|---|---|---|---|---|
| **Sample ID** | **GW-B/MW104-101524** | | **GW-FD01** | | | | |
| | **620-21692-2** | | **620-21692-5** | | | | |
| 2-Methylnaphthalene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Acenaphthene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Acenaphthylene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Anthracene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Benzo(a)anthracene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Benzo(a)pyrene | 0.17 | J | 0.2 | U | 16.22 | | Ok - < RL and ND |
| Benzo(b)fluoranthene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Benzo(g,h,i)perylene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Benzo(k)fluoranthene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| C11-C22 Aromatics | 100 | U | 100 | U | 0.00 | | Ok - both ND |
| C11-C22 Aromatics | 100 | U | 100 | U | 0.00 | | Ok - both ND |
| C19-C36 Aliphatics | 100 | U | 100 | U | 0.00 | | Ok - both ND |
| C9-C18 Aliphatics | 100 | U | 100 | U | 0.00 | | Ok - both ND |
| Chrysene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Dibenz(a,h)anthracene | 0.5 | U | 0.5 | U | 0.00 | | Ok - both ND |
| Fluoranthene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Fluorene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Indeno(1,2,3-cd)pyrene | 0.5 | U | 0.5 | U | 0.00 | | Ok - both ND |
| Naphthalene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Phenanthrene | 1 | U | 1 | U | 0.00 | | Ok - both ND |
| Pyrene | 1 | U | 1 | U | 0.00 | | Ok - both ND |

[1] Actions apply to all samples, per EPA Region I Supplemental Review Guidance (2020).

**Field Duplicate Evaluation**

**SDG: 620-21692-1 METALS**

| Analyte | Original Result (mg/L) | Qual | Duplicate Result (mg/L) | Qual | RPD ≤ 30% | Abs Diff | Comment[1] |
|---|---|---|---|---|---|---|---|
| **Sample ID** | **GW-B/MW104-101524** | | **GW-FD01** | | | | |
| | **620-21692-2** | | **620-21692-5** | | | | |
| Antimony | 0.0021 | J | 0.006 | U | 96.3 | | Ok - < RL and ND |
| Arsenic | 0.008 | | 0.011 | | 31.6 | 0.003 | Ok - abs diff < 2x RL |
| Barium | 0.093 | | 0.098 | | 5.2 | | Ok - RPD < 30% |
| Beryllium | 0.002 | U | 0.002 | U | 0.0 | | Ok - both ND |
| Cadmium | 0.00066 | J | 0.00057 | J | -14.6 | | Ok - both < RL |
| Chromium | 0.005 | U | 0.0015 | J | -107.7 | | Ok - < RL and ND |
| Lead | 0.0075 | U | 0.0075 | U | 0.0 | | Ok - both ND |
| Mercury | 0.0002 | U | 0.0002 | U | 0.0 | | Ok - both ND |
| Nickel | 0.018 | | 0.019 | | 5.4 | 0.001 | Ok - abs diff < 2x RL |
| Selenium | 0.015 | U | 0.015 | U | 0.0 | | Ok - both ND |
| Silver | 0.005 | U | 0.005 | U | 0.0 | | Ok - both ND |
| Thallium | 0.005 | U | 0.005 | U | 0.0 | | Ok - both ND |
| Vanadium | 0.0022 | J | 0.0026 | J | 16.7 | | Ok - both < RL |
| Zinc | 0.11 | | 0.084 | | -26.8 | | Ok - RPD < 30% |

[1] Actions apply to all samples, per EPA Region I Supplemental Review Guidance (2020).

**Eurofins Rhode Island**
646 Camp Ave
North Kingstown, RI 02852
Phone 413-789-9018 Fax 413-506-3830

21692

# Chain of Custody Record

eurofins | Environment Testing

| Client Information | Sampler: P. Moran | Lab PM: Huntley, Agnes R | Carrier Tracking No(s): | COC No: 620-19638-2812 1 |
|---|---|---|---|---|
| Client Contact: Adam Roy | Phone: 978-500-6217 | E-Mail: Agnes.Huntley@et.eurofinsus.com | State of Origin: | Page: Page 1 of 1 |
| Company: Nobis Engineering, Inc | PWSID: | | | Job #: |
| Address: 55 Technology Drive Suite 101 | Due Date Requested: | | | |
| City: Lowell | TAT Requested (days): Standard | | | |
| State, Zip: MA, 01851 | Compliance Project: ☑ Yes ☐ No | | | |
| Phone: 603-520-5849(Tel) | PO #: Purchase Order Requested | | | |
| Email: aroy@nobis-group.com | WO #: | | | |
| Project Name: Former L&M - Lunenburg MA | Project #: 62002215 | | | |
| Site: | SSOW#: | | | |

**Analysis Requested**

**Preservation Codes:**
A - HCL
D - HNO3

Other:

| Sample Identification | Sample Date | Sample Time | Sample Type (C=Comp, G=grab) | Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air) | Field Filtered Sample (Yes or No) | Perform MS/MSD (Yes or No) | MAVPH2.1 - MADEP Volatile Petroleum Hydrocarbons (G | EPH_MS, MAEPH2.1 | 6010MCP, 7470MCP | Total Number of containers | Special Instructions/Note: |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preservation Code: | | | | A | A | D | | |
| GW-MW108-101524 | 10/15/24 | 10:45 | G | Water | X | X | X | X | X | 18 | |
| GW-BMW104-101524 | 10/15/24 | 12:15 | G | Water | X | | X | X | X | 6 | |
| GW-BMW105-101524 | 10/15/24 | 14:00 | G | Water | X | | X | X | X | 6 | |
| GW-MW109-101524 | 10/15/24 | 15:20 | G | Water | X | | X | X | X | 6 | |
| GW-FD01 | 10/15/24 | 08:00 | G | Water | X | | X | X | X | 6 | |
| GW-MW107-101624 | 10/16/24 | 09:35 | G | Water | X | | X | X | X | 6 | |
| GW-BMW101-101624 | 10/16/24 | 09:50 | G | Water | | | X | | | 3 | |
| GW-MW106-101624 | 10/16/24 | 10:56 | G | Water | X | | X | X | X | 6 | |
| GW-MW102R-101624 | 10/16/24 | 11:50 | G | Water | X | | X | X | X | 6 | |
| Trip Blank | | | | Water | | | X | | | 2 | |
| | | | | Water | | | | | | | |

620-21692 Chain of Custody

***Possible Hazard Identification***
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

***Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)***
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested. I, II, III, IV, Other (specify): Email EDD equis

Special Instructions/QC Requirements

| Empty Kit Relinquished by | Date. | Time | Method of Shipment: |
|---|---|---|---|
| | | | |

| | Relinquished by | Date/Time | Company | Received by | Date/Time | Company |
|---|---|---|---|---|---|---|
| 1 | | 10/17/24 12:45 | Nobis | | 10/17/2024 12:45 | Eurofins |
| 2 | | 10/17/24 17:39 | GZA | | 10/17/24 17:39 | GZA |
| 3 | Relinquished by | Date/Time | Company | Received by | Date/Time | Company |

| Custody Seals Intact ☐ Yes ☐ No | Custody Seal No | Cooler Temperature(s) °C and Other Remarks: 0.6 +0.2 0.8/1.2 +0.2 1.4/2.4 +0.2 2.6 +0.2 |
|---|---|---|

Ver: 05/06/2024

Page 52 of 53

10/31/2024

eurofins | Environment Testing

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

# ANALYTICAL REPORT

## PREPARED FOR

Attn: Adam Roy
Nobis Engineering, Inc.
55 Technology Drive
Suite 101
Lowell, Massachusetts 01851

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## JOB DESCRIPTION

Former L&M - Lunenburg MA

## JOB NUMBER

620-21692-1

Eurofins Rhode Island
646 Camp Ave
North Kingstown RI 02852

See page two for job notes and contact information.



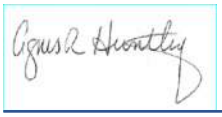
myEOL

## Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northeast, LLC Project Manager.

## Authorization



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Authorized for release by
Agnes Huntley, Project Manager
Agnes.Huntley@et.eurofinsus.com
(401)267-4374

# Table of Contents

Cover Page . . . . . 1
Table of Contents . . . . . 3
Definitions/Glossary . . . . . 4
State Forms . . . . . 5
MCP Checklist . . . . . 5
Case Narrative . . . . . 6
Detection Summary . . . . . 7
Client Sample Results . . . . . 10
Surrogate Summary . . . . . 28
QC Sample Results . . . . . 30
QC Association Summary . . . . . 40
Lab Chronicle . . . . . 44
Certification Summary . . . . . 48
Method Summary . . . . . 50
Sample Summary . . . . . 51
Chain of Custody . . . . . 52
Receipt Checklists . . . . . 53

# Definitions/Glossary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-21692-1

## Qualifiers

### GC/MS Semi VOA

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

### Metals

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

## Glossary

| Abbreviation | These commonly used abbreviations may or may not be present in this report. |
|---|---|
| ☼ | Listed under the "D" column to designate that the result is reported on a dry weight basis |
| %R | Percent Recovery |
| CFL | Contains Free Liquid |
| CFU | Colony Forming Unit |
| CNF | Contains No Free Liquid |
| DER | Duplicate Error Ratio (normalized absolute difference) |
| Dil Fac | Dilution Factor |
| DL | Detection Limit (DoD/DOE) |
| DL, RA, RE, IN | Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample |
| DLC | Decision Level Concentration (Radiochemistry) |
| EDL | Estimated Detection Limit (Dioxin) |
| LOD | Limit of Detection (DoD/DOE) |
| LOQ | Limit of Quantitation (DoD/DOE) |
| MCL | EPA recommended "Maximum Contaminant Level" |
| MDA | Minimum Detectable Activity (Radiochemistry) |
| MDC | Minimum Detectable Concentration (Radiochemistry) |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| MPN | Most Probable Number |
| MQL | Method Quantitation Limit |
| NC | Not Calculated |
| ND | Not Detected at the reporting limit (or MDL or EDL if shown) |
| NEG | Negative / Absent |
| POS | Positive / Present |
| PQL | Practical Quantitation Limit |
| PRES | Presumptive |
| QC | Quality Control |
| RER | Relative Error Ratio (Radiochemistry) |
| RL | Reporting Limit or Requested Limit (Radiochemistry) |
| RPD | Relative Percent Difference, a measure of the relative difference between two points |
| TEF | Toxicity Equivalent Factor (Dioxin) |
| TEQ | Toxicity Equivalent Quotient (Dioxin) |
| TNTC | Too Numerous To Count |

# MassDEP Analytical Protocol Certfication Form

Laboratory Name: Eurofins Rhode Island | Project #: 620-21692-1

Project Location: Former L&M - Lunenburg MA | RTN:

**This Form provides certifications for the following data set: list Laboratory Sample ID Number(s):**
620-21692-1 through 620-21692-10

Matrices: ☑ Groundwater/Surface Water ☐ Soil/Sediment ☐ Drinking Water ☐ Air ☐ Other:

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

| | | | | | |
|---|---|---|---|---|---|
| 8260 VOC CAM II A ☐ | 7470/7471 Hg CAM III B ☑ | MassDEP VPH (GC/PID/FID) CAM IV A ☑ | 8082 PCB CAM V A ☐ | 9014 Total Cyanide/PAC CAM VI A ☐ | 6860 Perchlorate CAM VIII B ☐ |
| 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 ☐ |
| 6010 Metals CAM III A ☑ | 6020 Metals CAM III D ☐ | MassDEP EPH CAM IV B ☑ | 8151 Herbicides CAM V C ☐ | 8330 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 ☐ No |
| **B** | Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed? | ☑ Yes ☐ 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 ☐ No |
| **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 ☐ No |
| **E** | VPH, EPH, APH, and TO-15 only<br>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).<br>b. APH and TO-15 Methods only: Was the complete analyte list reported for each method? | ☑ Yes ☐ No<br>☐ 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 ☐ 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 protocol(s)? | ☐ Yes ☑ No[1] |

***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[1] |
| **I** | Were results reported for the complete analyte list specified in the selected CAM protocol(s)? | ☑ Yes ☐ No[1] |

*1 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, is accurate and complete.***

**Signature:** Agnes R Huntley **Position:** Project Manager

**Printed Name:** Agnes Huntley **Date:** 10/31/2024

## Job ID: 620-21692-1 Eurofins Rhode Island

**Job Narrative**
**620-21692-1**

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

**Receipt**
The samples were received on 10/17/2024 5:00 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 0.8°C, 1.4°C and 2.6°C.

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

**Hydrocarbons**
Method MAVPH2.1: The following sample was diluted due to the nature of the sample matrix (strong fuel odor): GW-MW102R-101624 (620-21692-9). Elevated reporting limits (RLs) are provided.

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

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

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

# Detection Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-21692-1

## Client Sample ID: GW-MW108-101524 — Lab Sample ID: 620-21692-1

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 0.0016 | J | 0.0040 | 0.0014 | mg/L | 1 | | 6010D | Dissolved |
| Barium | 0.13 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Nickel | 0.0016 | J | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |
| Vanadium | 0.0011 | J | 0.0050 | 0.0011 | mg/L | 1 | | 6010D | Dissolved |

## Client Sample ID: GW-BMW104-101524 — Lab Sample ID: 620-21692-2

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Benzo[a]pyrene | 0.17 | J | 0.20 | 0.16 | ug/L | 1 | | EPH | Total/NA |
| Methyl tert-butyl ether | 5.6 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Antimony | 0.0021 | J | 0.0060 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |
| Arsenic | 0.0080 | | 0.0040 | 0.0014 | mg/L | 1 | | 6010D | Dissolved |
| Barium | 0.093 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Cadmium | 0.00066 | J | 0.0025 | 0.00036 | mg/L | 1 | | 6010D | Dissolved |
| Nickel | 0.018 | | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |
| Vanadium | 0.0022 | J | 0.0050 | 0.0011 | mg/L | 1 | | 6010D | Dissolved |
| Zinc | 0.11 | | 0.0050 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |

## Client Sample ID: GW-BMW105-101524 — Lab Sample ID: 620-21692-3

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 0.0040 | | 0.0040 | 0.0014 | mg/L | 1 | | 6010D | Dissolved |
| Barium | 0.20 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Chromium | 0.0029 | J | 0.0050 | 0.00093 | mg/L | 1 | | 6010D | Dissolved |
| Nickel | 0.0029 | J | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |
| Vanadium | 0.0047 | J | 0.0050 | 0.0011 | mg/L | 1 | | 6010D | Dissolved |
| Zinc | 0.013 | | 0.0050 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |

## Client Sample ID: GW-MW109-101524 — Lab Sample ID: 620-21692-4

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | 35 | | 0.95 | 0.22 | ug/L | 1 | | EPH | Total/NA |
| 2-Methylnaphthalene | 7.7 | | 0.95 | 0.28 | ug/L | 1 | | EPH | Total/NA |
| C5-C8 Aliphatics (unadjusted) | 200 | | 100 | 100 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Ethylbenzene | 98 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Methyl tert-butyl ether | 130 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Naphthalene | 59 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| m,p-Xylene | 220 | | 10 | 10 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Xylenes, Total | 220 | | 15 | 15 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (adjusted) - DL | 3700 | | 500 | 500 | ug/L | 5 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (unadjusted) - DL | 6000 | | 500 | 500 | ug/L | 5 | | MAVPH2.1 | Total/NA |
| C9-C10 Aromatics - DL2 | 2100 | | 1000 | 1000 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| C9-C18 Aliphatics | 360 | | 95 | 95 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics | 140 | | 95 | 95 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics (Adjusted) | 110 | | 95 | 95 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| Arsenic | 0.032 | | 0.0040 | 0.0014 | mg/L | 1 | | 6010D | Dissolved |
| Barium | 0.046 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Chromium | 0.0033 | J | 0.0050 | 0.00093 | mg/L | 1 | | 6010D | Dissolved |
| Nickel | 0.0034 | J | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |
| Zinc | 0.0018 | J | 0.0050 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |

This Detection Summary does not include radiochemical test results.

# Detection Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-21692-1

## Client Sample ID: GW-FD01 — Lab Sample ID: 620-21692-5

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Methyl tert-butyl ether | 5.8 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Arsenic | 0.011 | | 0.0040 | 0.0014 | mg/L | 1 | | 6010D | Dissolved |
| Barium | 0.098 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Cadmium | 0.00057 | J | 0.0025 | 0.00036 | mg/L | 1 | | 6010D | Dissolved |
| Chromium | 0.0015 | J | 0.0050 | 0.00093 | mg/L | 1 | | 6010D | Dissolved |
| Nickel | 0.019 | | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |
| Vanadium | 0.0026 | J | 0.0050 | 0.0011 | mg/L | 1 | | 6010D | Dissolved |
| Zinc | 0.084 | | 0.0050 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |

## Client Sample ID: GW-MW107-101624 — Lab Sample ID: 620-21692-6

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 0.072 | | 0.0040 | 0.0014 | mg/L | 1 | | 6010D | Dissolved |
| Barium | 0.041 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Chromium | 0.012 | | 0.0050 | 0.00093 | mg/L | 1 | | 6010D | Dissolved |
| Nickel | 0.0023 | J | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |

## Client Sample ID: GW-BMW101-101624 — Lab Sample ID: 620-21692-7

No Detections.

## Client Sample ID: GW-MW106-101624 — Lab Sample ID: 620-21692-8

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | 51 | | 1.0 | 0.23 | ug/L | 1 | | EPH | Total/NA |
| 2-Methylnaphthalene | 20 | | 1.0 | 0.29 | ug/L | 1 | | EPH | Total/NA |
| Phenanthrene | 0.29 | J | 1.0 | 0.17 | ug/L | 1 | | EPH | Total/NA |
| Fluoranthene | 0.16 | J | 1.0 | 0.15 | ug/L | 1 | | EPH | Total/NA |
| C5-C8 Aliphatics (adjusted) | 1100 | | 100 | 100 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C5-C8 Aliphatics (unadjusted) | 1200 | | 100 | 100 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Methyl tert-butyl ether | 110 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Naphthalene | 98 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| o-Xylene | 12 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Xylenes, Total | 620 | | 15 | 15 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C9-C10 Aromatics - DL | 2700 | | 1000 | 1000 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| Ethylbenzene - DL | 390 | | 50 | 50 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| m,p-Xylene - DL | 1000 | | 100 | 100 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (adjusted) - DL2 | 7900 | | 5000 | 5000 | ug/L | 50 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (unadjusted) - DL2 | 13000 | | 5000 | 5000 | ug/L | 50 | | MAVPH2.1 | Total/NA |
| C9-C18 Aliphatics | 340 | | 100 | 100 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics | 130 | | 100 | 100 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| Arsenic | 0.054 | | 0.0040 | 0.0014 | mg/L | 1 | | 6010D | Dissolved |
| Barium | 0.084 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Chromium | 0.011 | | 0.0050 | 0.00093 | mg/L | 1 | | 6010D | Dissolved |
| Nickel | 0.0023 | J | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |

## Client Sample ID: GW-MW102R-101624 — Lab Sample ID: 620-21692-9

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | 140 | | 3.9 | 0.91 | ug/L | 4 | | EPH | Total/NA |
| 2-Methylnaphthalene | 37 | | 0.98 | 0.28 | ug/L | 1 | | EPH | Total/NA |
| Acenaphthene | 0.40 | J | 0.98 | 0.18 | ug/L | 1 | | EPH | Total/NA |
| Fluorene | 0.59 | J | 0.98 | 0.38 | ug/L | 1 | | EPH | Total/NA |

This Detection Summary does not include radiochemical test results.

## Client Sample ID: GW-MW102R-101624 (Continued)

## Lab Sample ID: 620-21692-9

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Phenanthrene | 0.34 | J | 0.98 | 0.17 | ug/L | 1 | | EPH | Total/NA |
| C5-C8 Aliphatics (adjusted) | 2000 | | 1000 | 1000 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| C5-C8 Aliphatics (unadjusted) | 2200 | | 1000 | 1000 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| Benzene | 150 | | 50 | 50 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| Ethylbenzene | 730 | | 50 | 50 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| Methyl tert-butyl ether | 100 | | 50 | 50 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| Naphthalene | 350 | | 50 | 50 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| m,p-Xylene | 2100 | | 100 | 100 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| Xylenes, Total | 2100 | | 150 | 150 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (adjusted) - DL | 11000 | | 2500 | 2500 | ug/L | 25 | | MAVPH2.1 | Total/NA |
| C9-C10 Aromatics - DL | 4100 | | 2500 | 2500 | ug/L | 25 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (unadjusted) - DL | 18000 | | 2500 | 2500 | ug/L | 25 | | MAVPH2.1 | Total/NA |
| C9-C18 Aliphatics | 480 | | 98 | 98 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics | 320 | | 98 | 98 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics (Adjusted) | 160 | | 98 | 98 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| Arsenic | 0.040 | | 0.0040 | 0.0014 | mg/L | 1 | | 6010D | Dissolved |
| Barium | 0.14 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Chromium | 0.017 | | 0.0050 | 0.00093 | mg/L | 1 | | 6010D | Dissolved |
| Nickel | 0.0053 | | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |

## Client Sample ID: Trip Blank

## Lab Sample ID: 620-21692-10

No Detections.

This Detection Summary does not include radiochemical test results.

## Client Sample ID: GW-MW108-101524

**Date Collected: 10/15/24 10:45**
**Date Received: 10/17/24 17:00**

## Lab Sample ID: 620-21692-1

**Matrix: Water**

### Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 0.95 | 0.22 | ug/L | | 10/23/24 09:47 | 10/29/24 18:56 | 1 |
| 2-Methylnaphthalene | ND | | 0.95 | 0.28 | ug/L | | 10/23/24 09:47 | 10/29/24 18:56 | 1 |
| Acenaphthylene | ND | | 0.95 | 0.37 | ug/L | | 10/23/24 09:47 | 10/29/24 18:56 | 1 |
| Acenaphthene | ND | | 0.95 | 0.18 | ug/L | | 10/23/24 09:47 | 10/29/24 18:56 | 1 |
| Fluorene | ND | | 0.95 | 0.37 | ug/L | | 10/23/24 09:47 | 10/29/24 18:56 | 1 |
| Phenanthrene | ND | | 0.95 | 0.16 | ug/L | | 10/23/24 09:47 | 10/29/24 18:56 | 1 |
| Anthracene | ND | | 0.95 | 0.15 | ug/L | | 10/23/24 09:47 | 10/29/24 18:56 | 1 |
| Fluoranthene | ND | | 0.95 | 0.14 | ug/L | | 10/23/24 09:47 | 10/29/24 18:56 | 1 |
| Pyrene | ND | | 0.95 | 0.14 | ug/L | | 10/23/24 09:47 | 10/29/24 18:56 | 1 |
| Benzo[a]anthracene | ND | | 0.95 | 0.067 | ug/L | | 10/23/24 09:47 | 10/29/24 18:56 | 1 |
| Chrysene | ND | | 0.95 | 0.13 | ug/L | | 10/23/24 09:47 | 10/29/24 18:56 | 1 |
| Benzo[b]fluoranthene | ND | | 0.95 | 0.14 | ug/L | | 10/23/24 09:47 | 10/29/24 18:56 | 1 |
| Benzo[k]fluoranthene | ND | | 0.95 | 0.23 | ug/L | | 10/23/24 09:47 | 10/29/24 18:56 | 1 |
| Benzo[a]pyrene | ND | | 0.19 | 0.15 | ug/L | | 10/23/24 09:47 | 10/29/24 18:56 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.48 | 0.44 | ug/L | | 10/23/24 09:47 | 10/29/24 18:56 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.48 | 0.20 | ug/L | | 10/23/24 09:47 | 10/29/24 18:56 | 1 |
| Benzo[g,h,i]perylene | ND | | 0.95 | 0.16 | ug/L | | 10/23/24 09:47 | 10/29/24 18:56 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *77* | | *40 - 140* | *10/23/24 09:47* | *10/29/24 18:56* | *1* |
| *2-Fluorobiphenyl (Surr)* | *98* | | *40 - 140* | *10/23/24 09:47* | *10/29/24 18:56* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 10/28/24 18:02 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 10/28/24 18:02 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 10/28/24 18:02 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 10/28/24 18:02 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 10/28/24 18:02 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 10/28/24 18:02 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 10/28/24 18:02 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 10/28/24 18:02 | 1 |
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 10/28/24 18:02 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 10/28/24 18:02 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 10/28/24 18:02 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 10/28/24 18:02 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 10/28/24 18:02 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *97* | | *70 - 130* | | *10/28/24 18:02* | *1* |
| *2,5-Dibromotoluene (pid)* | *96* | | *70 - 130* | | *10/28/24 18:02* | *1* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 95 | 95 | ug/L | | 10/23/24 09:47 | 10/28/24 11:29 | 1 |
| C19-C36 Aliphatics | ND | | 95 | 95 | ug/L | | 10/23/24 09:47 | 10/28/24 11:29 | 1 |
| C11-C22 Aromatics | ND | | 95 | 95 | ug/L | | 10/23/24 09:47 | 10/28/24 11:29 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 95 | 95 | ug/L | | 10/23/24 09:47 | 10/28/24 11:29 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *65* | | *40 - 140* | *10/23/24 09:47* | *10/28/24 11:29* | *1* |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-21692-1

## Client Sample ID: GW-MW108-101524

**Date Collected: 10/15/24 10:45**
**Date Received: 10/17/24 17:00**

## Lab Sample ID: 620-21692-1

**Matrix: Water**

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *64* | | *40 - 140* | *10/23/24 09:47* | *10/28/24 11:29* | *1* |
| *2-Fluorobiphenyl (Surr)* | *83* | | *40 - 140* | *10/23/24 09:47* | *10/28/24 11:29* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 0.0060 | 0.0016 | mg/L | | 10/18/24 12:07 | 10/21/24 11:42 | 1 |
| **Arsenic** | **0.0016** | **J** | 0.0040 | 0.0014 | mg/L | | 10/18/24 12:07 | 10/21/24 11:42 | 1 |
| **Barium** | **0.13** | | 0.0050 | 0.00070 | mg/L | | 10/18/24 12:07 | 10/21/24 11:42 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 10/18/24 12:07 | 10/21/24 11:42 | 1 |
| Cadmium | ND | | 0.0025 | 0.00036 | mg/L | | 10/18/24 12:07 | 10/21/24 11:42 | 1 |
| Chromium | ND | | 0.0050 | 0.00093 | mg/L | | 10/18/24 12:07 | 10/21/24 11:42 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 10/18/24 12:07 | 10/21/24 11:42 | 1 |
| **Nickel** | **0.0016** | **J** | 0.0050 | 0.00087 | mg/L | | 10/18/24 12:07 | 10/21/24 11:42 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 10/18/24 12:07 | 10/21/24 11:42 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 10/18/24 12:07 | 10/21/24 11:42 | 1 |
| Thallium | ND | | 0.0050 | 0.0021 | mg/L | | 10/18/24 12:07 | 10/21/24 11:42 | 1 |
| **Vanadium** | **0.0011** | **J** | 0.0050 | 0.0011 | mg/L | | 10/18/24 12:07 | 10/21/24 11:42 | 1 |
| Zinc | ND | | 0.0050 | 0.0016 | mg/L | | 10/18/24 12:07 | 10/21/24 11:42 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 10/28/24 09:24 | 10/29/24 14:04 | 1 |

## Client Sample ID: GW-BMW104-101524

**Date Collected: 10/15/24 12:15**
**Date Received: 10/17/24 17:00**

## Lab Sample ID: 620-21692-2

**Matrix: Water**

### Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 1.0 | 0.23 | ug/L | | 10/23/24 09:47 | 10/29/24 20:06 | 1 |
| 2-Methylnaphthalene | ND | | 1.0 | 0.29 | ug/L | | 10/23/24 09:47 | 10/29/24 20:06 | 1 |
| Acenaphthylene | ND | | 1.0 | 0.39 | ug/L | | 10/23/24 09:47 | 10/29/24 20:06 | 1 |
| Acenaphthene | ND | | 1.0 | 0.19 | ug/L | | 10/23/24 09:47 | 10/29/24 20:06 | 1 |
| Fluorene | ND | | 1.0 | 0.39 | ug/L | | 10/23/24 09:47 | 10/29/24 20:06 | 1 |
| Phenanthrene | ND | | 1.0 | 0.17 | ug/L | | 10/23/24 09:47 | 10/29/24 20:06 | 1 |
| Anthracene | ND | | 1.0 | 0.15 | ug/L | | 10/23/24 09:47 | 10/29/24 20:06 | 1 |
| Fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 10/23/24 09:47 | 10/29/24 20:06 | 1 |
| Pyrene | ND | | 1.0 | 0.14 | ug/L | | 10/23/24 09:47 | 10/29/24 20:06 | 1 |
| Benzo[a]anthracene | ND | | 1.0 | 0.070 | ug/L | | 10/23/24 09:47 | 10/29/24 20:06 | 1 |
| Chrysene | ND | | 1.0 | 0.14 | ug/L | | 10/23/24 09:47 | 10/29/24 20:06 | 1 |
| Benzo[b]fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 10/23/24 09:47 | 10/29/24 20:06 | 1 |
| Benzo[k]fluoranthene | ND | | 1.0 | 0.24 | ug/L | | 10/23/24 09:47 | 10/29/24 20:06 | 1 |
| **Benzo[a]pyrene** | **0.17** | **J** | 0.20 | 0.16 | ug/L | | 10/23/24 09:47 | 10/29/24 20:06 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.50 | 0.46 | ug/L | | 10/23/24 09:47 | 10/29/24 20:06 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.50 | 0.21 | ug/L | | 10/23/24 09:47 | 10/29/24 20:06 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.0 | 0.17 | ug/L | | 10/23/24 09:47 | 10/29/24 20:06 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *74* | | *40 - 140* | *10/23/24 09:47* | *10/29/24 20:06* | *1* |
| *2-Fluorobiphenyl (Surr)* | *103* | | *40 - 140* | *10/23/24 09:47* | *10/29/24 20:06* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 10/24/24 21:11 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 10/24/24 21:11 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 10/24/24 21:11 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 10/24/24 21:11 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 10/24/24 21:11 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 21:11 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 21:11 | 1 |
| **Methyl tert-butyl ether** | **5.6** | | 5.0 | 5.0 | ug/L | | | 10/24/24 21:11 | 1 |
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 21:11 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 21:11 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 10/24/24 21:11 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 21:11 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 10/24/24 21:11 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *93* | | *70 - 130* | | *10/24/24 21:11* | *1* |
| *2,5-Dibromotoluene (pid)* | *92* | | *70 - 130* | | *10/24/24 21:11* | *1* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 100 | 100 | ug/L | | 10/23/24 09:47 | 10/28/24 12:51 | 1 |
| C19-C36 Aliphatics | ND | | 100 | 100 | ug/L | | 10/23/24 09:47 | 10/28/24 12:51 | 1 |
| C11-C22 Aromatics | ND | | 100 | 100 | ug/L | | 10/23/24 09:47 | 10/28/24 12:51 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 100 | 100 | ug/L | | 10/23/24 09:47 | 10/28/24 12:51 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *58* | | *40 - 140* | *10/23/24 09:47* | *10/28/24 12:51* | *1* |

## Client Sample ID: GW-BMW104-101524

**Date Collected: 10/15/24 12:15**
**Date Received: 10/17/24 17:00**

## Lab Sample ID: 620-21692-2

**Matrix: Water**

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *62* | | *40 - 140* | *10/23/24 09:47* | *10/28/24 12:51* | *1* |
| *2-Fluorobiphenyl (Surr)* | *85* | | *40 - 140* | *10/23/24 09:47* | *10/28/24 12:51* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Antimony** | **0.0021** | **J** | 0.0060 | 0.0016 | mg/L | | 10/18/24 12:07 | 10/21/24 12:18 | 1 |
| **Arsenic** | **0.0080** | | 0.0040 | 0.0014 | mg/L | | 10/18/24 12:07 | 10/21/24 12:18 | 1 |
| **Barium** | **0.093** | | 0.0050 | 0.00070 | mg/L | | 10/18/24 12:07 | 10/21/24 12:18 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 10/18/24 12:07 | 10/21/24 12:18 | 1 |
| **Cadmium** | **0.00066** | **J** | 0.0025 | 0.00036 | mg/L | | 10/18/24 12:07 | 10/21/24 12:18 | 1 |
| Chromium | ND | | 0.0050 | 0.00093 | mg/L | | 10/18/24 12:07 | 10/21/24 12:18 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 10/18/24 12:07 | 10/21/24 12:18 | 1 |
| **Nickel** | **0.018** | | 0.0050 | 0.00087 | mg/L | | 10/18/24 12:07 | 10/21/24 12:18 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 10/18/24 12:07 | 10/21/24 12:18 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 10/18/24 12:07 | 10/21/24 12:18 | 1 |
| Thallium | ND | | 0.0050 | 0.0021 | mg/L | | 10/18/24 12:07 | 10/21/24 12:18 | 1 |
| **Vanadium** | **0.0022** | **J** | 0.0050 | 0.0011 | mg/L | | 10/18/24 12:07 | 10/21/24 12:18 | 1 |
| **Zinc** | **0.11** | | 0.0050 | 0.0016 | mg/L | | 10/18/24 12:07 | 10/21/24 12:18 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 10/28/24 09:24 | 10/29/24 14:12 | 1 |

## Client Sample ID: GW-BMW105-101524

**Date Collected: 10/15/24 14:00**
**Date Received: 10/17/24 17:00**

## Lab Sample ID: 620-21692-3

**Matrix: Water**

### Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 1.0 | 0.23 | ug/L | | 10/23/24 09:47 | 10/29/24 20:29 | 1 |
| 2-Methylnaphthalene | ND | | 1.0 | 0.29 | ug/L | | 10/23/24 09:47 | 10/29/24 20:29 | 1 |
| Acenaphthylene | ND | | 1.0 | 0.39 | ug/L | | 10/23/24 09:47 | 10/29/24 20:29 | 1 |
| Acenaphthene | ND | | 1.0 | 0.19 | ug/L | | 10/23/24 09:47 | 10/29/24 20:29 | 1 |
| Fluorene | ND | | 1.0 | 0.39 | ug/L | | 10/23/24 09:47 | 10/29/24 20:29 | 1 |
| Phenanthrene | ND | | 1.0 | 0.17 | ug/L | | 10/23/24 09:47 | 10/29/24 20:29 | 1 |
| Anthracene | ND | | 1.0 | 0.15 | ug/L | | 10/23/24 09:47 | 10/29/24 20:29 | 1 |
| Fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 10/23/24 09:47 | 10/29/24 20:29 | 1 |
| Pyrene | ND | | 1.0 | 0.14 | ug/L | | 10/23/24 09:47 | 10/29/24 20:29 | 1 |
| Benzo[a]anthracene | ND | | 1.0 | 0.070 | ug/L | | 10/23/24 09:47 | 10/29/24 20:29 | 1 |
| Chrysene | ND | | 1.0 | 0.14 | ug/L | | 10/23/24 09:47 | 10/29/24 20:29 | 1 |
| Benzo[b]fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 10/23/24 09:47 | 10/29/24 20:29 | 1 |
| Benzo[k]fluoranthene | ND | | 1.0 | 0.24 | ug/L | | 10/23/24 09:47 | 10/29/24 20:29 | 1 |
| Benzo[a]pyrene | ND | | 0.20 | 0.16 | ug/L | | 10/23/24 09:47 | 10/29/24 20:29 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.50 | 0.46 | ug/L | | 10/23/24 09:47 | 10/29/24 20:29 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.50 | 0.21 | ug/L | | 10/23/24 09:47 | 10/29/24 20:29 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.0 | 0.17 | ug/L | | 10/23/24 09:47 | 10/29/24 20:29 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *74* | | *40 - 140* | *10/23/24 09:47* | *10/29/24 20:29* | *1* |
| *2-Fluorobiphenyl (Surr)* | *95* | | *40 - 140* | *10/23/24 09:47* | *10/29/24 20:29* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 10/24/24 21:41 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 10/24/24 21:41 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 10/24/24 21:41 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 10/24/24 21:41 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 10/24/24 21:41 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 21:41 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 21:41 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 21:41 | 1 |
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 21:41 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 21:41 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 10/24/24 21:41 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 21:41 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 10/24/24 21:41 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *93* | | *70 - 130* | | *10/24/24 21:41* | *1* |
| *2,5-Dibromotoluene (pid)* | *91* | | *70 - 130* | | *10/24/24 21:41* | *1* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 100 | 100 | ug/L | | 10/23/24 09:47 | 10/29/24 10:40 | 1 |
| C19-C36 Aliphatics | ND | | 100 | 100 | ug/L | | 10/23/24 09:47 | 10/29/24 10:40 | 1 |
| C11-C22 Aromatics | ND | | 100 | 100 | ug/L | | 10/23/24 09:47 | 10/29/24 10:40 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 100 | 100 | ug/L | | 10/23/24 09:47 | 10/29/24 10:40 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *59* | | *40 - 140* | *10/23/24 09:47* | *10/29/24 10:40* | *1* |

## Client Sample ID: GW-BMW105-101524

**Lab Sample ID: 620-21692-3**

**Date Collected: 10/15/24 14:00**

**Matrix: Water**

**Date Received: 10/17/24 17:00**

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *58* | | *40 - 140* | *10/23/24 09:47* | *10/29/24 10:40* | *1* |
| *2-Fluorobiphenyl (Surr)* | *73* | | *40 - 140* | *10/23/24 09:47* | *10/29/24 10:40* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 0.0060 | 0.0016 | mg/L | | 10/18/24 12:07 | 10/21/24 12:24 | 1 |
| **Arsenic** | **0.0040** | | 0.0040 | 0.0014 | mg/L | | 10/18/24 12:07 | 10/21/24 12:24 | 1 |
| **Barium** | **0.20** | | 0.0050 | 0.00070 | mg/L | | 10/18/24 12:07 | 10/21/24 12:24 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 10/18/24 12:07 | 10/21/24 12:24 | 1 |
| Cadmium | ND | | 0.0025 | 0.00036 | mg/L | | 10/18/24 12:07 | 10/21/24 12:24 | 1 |
| **Chromium** | **0.0029** | **J** | 0.0050 | 0.00093 | mg/L | | 10/18/24 12:07 | 10/21/24 12:24 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 10/18/24 12:07 | 10/21/24 12:24 | 1 |
| **Nickel** | **0.0029** | **J** | 0.0050 | 0.00087 | mg/L | | 10/18/24 12:07 | 10/21/24 12:24 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 10/18/24 12:07 | 10/21/24 12:24 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 10/18/24 12:07 | 10/21/24 12:24 | 1 |
| Thallium | ND | | 0.0050 | 0.0021 | mg/L | | 10/18/24 12:07 | 10/21/24 12:24 | 1 |
| **Vanadium** | **0.0047** | **J** | 0.0050 | 0.0011 | mg/L | | 10/18/24 12:07 | 10/21/24 12:24 | 1 |
| **Zinc** | **0.013** | | 0.0050 | 0.0016 | mg/L | | 10/18/24 12:07 | 10/21/24 12:24 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 10/28/24 09:24 | 10/29/24 14:15 | 1 |

## Client Sample ID: GW-MW109-101524

**Date Collected: 10/15/24 15:20**
**Date Received: 10/17/24 17:00**

## Lab Sample ID: 620-21692-4

**Matrix: Water**

### Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Naphthalene** | **35** | | 0.95 | 0.22 | ug/L | | 10/23/24 09:47 | 10/29/24 20:53 | 1 |
| **2-Methylnaphthalene** | **7.7** | | 0.95 | 0.28 | ug/L | | 10/23/24 09:47 | 10/29/24 20:53 | 1 |
| Acenaphthylene | ND | | 0.95 | 0.37 | ug/L | | 10/23/24 09:47 | 10/29/24 20:53 | 1 |
| Acenaphthene | ND | | 0.95 | 0.18 | ug/L | | 10/23/24 09:47 | 10/29/24 20:53 | 1 |
| Fluorene | ND | | 0.95 | 0.37 | ug/L | | 10/23/24 09:47 | 10/29/24 20:53 | 1 |
| Phenanthrene | ND | | 0.95 | 0.16 | ug/L | | 10/23/24 09:47 | 10/29/24 20:53 | 1 |
| Anthracene | ND | | 0.95 | 0.15 | ug/L | | 10/23/24 09:47 | 10/29/24 20:53 | 1 |
| Fluoranthene | ND | | 0.95 | 0.14 | ug/L | | 10/23/24 09:47 | 10/29/24 20:53 | 1 |
| Pyrene | ND | | 0.95 | 0.14 | ug/L | | 10/23/24 09:47 | 10/29/24 20:53 | 1 |
| Benzo[a]anthracene | ND | | 0.95 | 0.067 | ug/L | | 10/23/24 09:47 | 10/29/24 20:53 | 1 |
| Chrysene | ND | | 0.95 | 0.13 | ug/L | | 10/23/24 09:47 | 10/29/24 20:53 | 1 |
| Benzo[b]fluoranthene | ND | | 0.95 | 0.14 | ug/L | | 10/23/24 09:47 | 10/29/24 20:53 | 1 |
| Benzo[k]fluoranthene | ND | | 0.95 | 0.23 | ug/L | | 10/23/24 09:47 | 10/29/24 20:53 | 1 |
| Benzo[a]pyrene | ND | | 0.19 | 0.15 | ug/L | | 10/23/24 09:47 | 10/29/24 20:53 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.48 | 0.44 | ug/L | | 10/23/24 09:47 | 10/29/24 20:53 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.48 | 0.20 | ug/L | | 10/23/24 09:47 | 10/29/24 20:53 | 1 |
| Benzo[g,h,i]perylene | ND | | 0.95 | 0.16 | ug/L | | 10/23/24 09:47 | 10/29/24 20:53 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *73* | | *40 - 140* | *10/23/24 09:47* | *10/29/24 20:53* | *1* |
| *2-Fluorobiphenyl (Surr)* | *99* | | *40 - 140* | *10/23/24 09:47* | *10/29/24 20:53* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 10/24/24 22:11 | 1 |
| **C5-C8 Aliphatics (unadjusted)** | **200** | | 100 | 100 | ug/L | | | 10/24/24 22:11 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 22:11 | 1 |
| **Ethylbenzene** | **98** | | 5.0 | 5.0 | ug/L | | | 10/24/24 22:11 | 1 |
| **Methyl tert-butyl ether** | **130** | | 5.0 | 5.0 | ug/L | | | 10/24/24 22:11 | 1 |
| **Naphthalene** | **59** | | 5.0 | 5.0 | ug/L | | | 10/24/24 22:11 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 22:11 | 1 |
| **m,p-Xylene** | **220** | | 10 | 10 | ug/L | | | 10/24/24 22:11 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 22:11 | 1 |
| **Xylenes, Total** | **220** | | 15 | 15 | ug/L | | | 10/24/24 22:11 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *109* | | *70 - 130* | | *10/24/24 22:11* | *1* |
| *2,5-Dibromotoluene (pid)* | *108* | | *70 - 130* | | *10/24/24 22:11* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) - DL

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C9-C12 Aliphatics (adjusted)** | **3700** | | 500 | 500 | ug/L | | | 10/28/24 19:33 | 5 |
| **C9-C12 Aliphatics (unadjusted)** | **6000** | | 500 | 500 | ug/L | | | 10/28/24 19:33 | 5 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *97* | | *70 - 130* | | *10/28/24 19:33* | *5* |
| *2,5-Dibromotoluene (pid)* | *94* | | *70 - 130* | | *10/28/24 19:33* | *5* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) - DL2

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C9-C10 Aromatics** | **2100** | | 1000 | 1000 | ug/L | | | 10/29/24 14:45 | 10 |

## Client Sample ID: GW-MW109-101524

**Date Collected: 10/15/24 15:20**
**Date Received: 10/17/24 17:00**

## Lab Sample ID: 620-21692-4

**Matrix: Water**

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *100* | | *70 - 130* | | *10/29/24 14:45* | *10* |
| *2,5-Dibromotoluene (pid)* | *100* | | *70 - 130* | | *10/29/24 14:45* | *10* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C9-C18 Aliphatics** | **360** | | 95 | 95 | ug/L | | 10/23/24 09:47 | 10/29/24 11:06 | 1 |
| C19-C36 Aliphatics | ND | | 95 | 95 | ug/L | | 10/23/24 09:47 | 10/29/24 11:06 | 1 |
| **C11-C22 Aromatics** | **140** | | 95 | 95 | ug/L | | 10/23/24 09:47 | 10/29/24 11:06 | 1 |
| **C11-C22 Aromatics (Adjusted)** | **110** | | 95 | 95 | ug/L | | 10/23/24 09:47 | 10/29/24 11:06 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *64* | | *40 - 140* | *10/23/24 09:47* | *10/29/24 11:06* | *1* |
| *o-Terphenyl (Surr)* | *61* | | *40 - 140* | *10/23/24 09:47* | *10/29/24 11:06* | *1* |
| *2-Fluorobiphenyl (Surr)* | *87* | | *40 - 140* | *10/23/24 09:47* | *10/29/24 11:06* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 0.0060 | 0.0016 | mg/L | | 10/18/24 12:07 | 10/21/24 12:43 | 1 |
| **Arsenic** | **0.032** | | 0.0040 | 0.0014 | mg/L | | 10/18/24 12:07 | 10/21/24 12:43 | 1 |
| **Barium** | **0.046** | | 0.0050 | 0.00070 | mg/L | | 10/18/24 12:07 | 10/21/24 12:43 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 10/18/24 12:07 | 10/21/24 12:43 | 1 |
| Cadmium | ND | | 0.0025 | 0.00036 | mg/L | | 10/18/24 12:07 | 10/21/24 12:43 | 1 |
| **Chromium** | **0.0033** | **J** | 0.0050 | 0.00093 | mg/L | | 10/18/24 12:07 | 10/21/24 12:43 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 10/18/24 12:07 | 10/21/24 12:43 | 1 |
| **Nickel** | **0.0034** | **J** | 0.0050 | 0.00087 | mg/L | | 10/18/24 12:07 | 10/21/24 12:43 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 10/18/24 12:07 | 10/21/24 12:43 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 10/18/24 12:07 | 10/21/24 12:43 | 1 |
| Thallium | ND | | 0.0050 | 0.0021 | mg/L | | 10/18/24 12:07 | 10/21/24 12:43 | 1 |
| Vanadium | ND | | 0.0050 | 0.0011 | mg/L | | 10/18/24 12:07 | 10/21/24 12:43 | 1 |
| **Zinc** | **0.0018** | **J** | 0.0050 | 0.0016 | mg/L | | 10/18/24 12:07 | 10/21/24 12:43 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 10/28/24 09:24 | 10/29/24 14:17 | 1 |

## Client Sample ID: GW-FD01

**Date Collected: 10/15/24 08:00**
**Date Received: 10/17/24 17:00**

## Lab Sample ID: 620-21692-5

**Matrix: Water**

### Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 1.0 | 0.23 | ug/L | | 10/23/24 09:47 | 10/29/24 21:16 | 1 |
| 2-Methylnaphthalene | ND | | 1.0 | 0.29 | ug/L | | 10/23/24 09:47 | 10/29/24 21:16 | 1 |
| Acenaphthylene | ND | | 1.0 | 0.39 | ug/L | | 10/23/24 09:47 | 10/29/24 21:16 | 1 |
| Acenaphthene | ND | | 1.0 | 0.19 | ug/L | | 10/23/24 09:47 | 10/29/24 21:16 | 1 |
| Fluorene | ND | | 1.0 | 0.39 | ug/L | | 10/23/24 09:47 | 10/29/24 21:16 | 1 |
| Phenanthrene | ND | | 1.0 | 0.17 | ug/L | | 10/23/24 09:47 | 10/29/24 21:16 | 1 |
| Anthracene | ND | | 1.0 | 0.15 | ug/L | | 10/23/24 09:47 | 10/29/24 21:16 | 1 |
| Fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 10/23/24 09:47 | 10/29/24 21:16 | 1 |
| Pyrene | ND | | 1.0 | 0.14 | ug/L | | 10/23/24 09:47 | 10/29/24 21:16 | 1 |
| Benzo[a]anthracene | ND | | 1.0 | 0.070 | ug/L | | 10/23/24 09:47 | 10/29/24 21:16 | 1 |
| Chrysene | ND | | 1.0 | 0.14 | ug/L | | 10/23/24 09:47 | 10/29/24 21:16 | 1 |
| Benzo[b]fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 10/23/24 09:47 | 10/29/24 21:16 | 1 |
| Benzo[k]fluoranthene | ND | | 1.0 | 0.24 | ug/L | | 10/23/24 09:47 | 10/29/24 21:16 | 1 |
| Benzo[a]pyrene | ND | | 0.20 | 0.16 | ug/L | | 10/23/24 09:47 | 10/29/24 21:16 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.50 | 0.46 | ug/L | | 10/23/24 09:47 | 10/29/24 21:16 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.50 | 0.21 | ug/L | | 10/23/24 09:47 | 10/29/24 21:16 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.0 | 0.17 | ug/L | | 10/23/24 09:47 | 10/29/24 21:16 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *74* | | *40 - 140* | *10/23/24 09:47* | *10/29/24 21:16* | *1* |
| *2-Fluorobiphenyl (Surr)* | *102* | | *40 - 140* | *10/23/24 09:47* | *10/29/24 21:16* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 10/24/24 22:42 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 10/24/24 22:42 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 10/24/24 22:42 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 10/24/24 22:42 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 10/24/24 22:42 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 22:42 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 22:42 | 1 |
| **Methyl tert-butyl ether** | **5.8** | | 5.0 | 5.0 | ug/L | | | 10/24/24 22:42 | 1 |
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 22:42 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 22:42 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 10/24/24 22:42 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 22:42 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 10/24/24 22:42 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *93* | | *70 - 130* | | *10/24/24 22:42* | *1* |
| *2,5-Dibromotoluene (pid)* | *93* | | *70 - 130* | | *10/24/24 22:42* | *1* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 100 | 100 | ug/L | | 10/23/24 09:47 | 10/29/24 11:33 | 1 |
| C19-C36 Aliphatics | ND | | 100 | 100 | ug/L | | 10/23/24 09:47 | 10/29/24 11:33 | 1 |
| C11-C22 Aromatics | ND | | 100 | 100 | ug/L | | 10/23/24 09:47 | 10/29/24 11:33 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 100 | 100 | ug/L | | 10/23/24 09:47 | 10/29/24 11:33 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *46* | | *40 - 140* | *10/23/24 09:47* | *10/29/24 11:33* | *1* |

## Client Sample ID: GW-FD01

**Date Collected: 10/15/24 08:00**
**Date Received: 10/17/24 17:00**

## Lab Sample ID: 620-21692-5

**Matrix: Water**

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *61* | | *40 - 140* | *10/23/24 09:47* | *10/29/24 11:33* | *1* |
| *2-Fluorobiphenyl (Surr)* | *74* | | *40 - 140* | *10/23/24 09:47* | *10/29/24 11:33* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 0.0060 | 0.0016 | mg/L | | 10/18/24 12:07 | 10/21/24 12:49 | 1 |
| **Arsenic** | **0.011** | | 0.0040 | 0.0014 | mg/L | | 10/18/24 12:07 | 10/21/24 12:49 | 1 |
| **Barium** | **0.098** | | 0.0050 | 0.00070 | mg/L | | 10/18/24 12:07 | 10/21/24 12:49 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 10/18/24 12:07 | 10/21/24 12:49 | 1 |
| **Cadmium** | **0.00057** | **J** | 0.0025 | 0.00036 | mg/L | | 10/18/24 12:07 | 10/21/24 12:49 | 1 |
| **Chromium** | **0.0015** | **J** | 0.0050 | 0.00093 | mg/L | | 10/18/24 12:07 | 10/21/24 12:49 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 10/18/24 12:07 | 10/21/24 12:49 | 1 |
| **Nickel** | **0.019** | | 0.0050 | 0.00087 | mg/L | | 10/18/24 12:07 | 10/21/24 12:49 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 10/18/24 12:07 | 10/21/24 12:49 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 10/18/24 12:07 | 10/21/24 12:49 | 1 |
| Thallium | ND | | 0.0050 | 0.0021 | mg/L | | 10/18/24 12:07 | 10/21/24 12:49 | 1 |
| **Vanadium** | **0.0026** | **J** | 0.0050 | 0.0011 | mg/L | | 10/18/24 12:07 | 10/21/24 12:49 | 1 |
| **Zinc** | **0.084** | | 0.0050 | 0.0016 | mg/L | | 10/18/24 12:07 | 10/21/24 12:49 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 10/28/24 09:24 | 10/29/24 14:19 | 1 |

## Client Sample ID: GW-MW107-101624

**Date Collected: 10/16/24 09:35**
**Date Received: 10/17/24 17:00**

## Lab Sample ID: 620-21692-6

**Matrix: Water**

### Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 1.0 | 0.23 | ug/L | | 10/23/24 09:47 | 10/29/24 21:39 | 1 |
| 2-Methylnaphthalene | ND | | 1.0 | 0.29 | ug/L | | 10/23/24 09:47 | 10/29/24 21:39 | 1 |
| Acenaphthylene | ND | | 1.0 | 0.39 | ug/L | | 10/23/24 09:47 | 10/29/24 21:39 | 1 |
| Acenaphthene | ND | | 1.0 | 0.19 | ug/L | | 10/23/24 09:47 | 10/29/24 21:39 | 1 |
| Fluorene | ND | | 1.0 | 0.39 | ug/L | | 10/23/24 09:47 | 10/29/24 21:39 | 1 |
| Phenanthrene | ND | | 1.0 | 0.17 | ug/L | | 10/23/24 09:47 | 10/29/24 21:39 | 1 |
| Anthracene | ND | | 1.0 | 0.15 | ug/L | | 10/23/24 09:47 | 10/29/24 21:39 | 1 |
| Fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 10/23/24 09:47 | 10/29/24 21:39 | 1 |
| Pyrene | ND | | 1.0 | 0.14 | ug/L | | 10/23/24 09:47 | 10/29/24 21:39 | 1 |
| Benzo[a]anthracene | ND | | 1.0 | 0.070 | ug/L | | 10/23/24 09:47 | 10/29/24 21:39 | 1 |
| Chrysene | ND | | 1.0 | 0.14 | ug/L | | 10/23/24 09:47 | 10/29/24 21:39 | 1 |
| Benzo[b]fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 10/23/24 09:47 | 10/29/24 21:39 | 1 |
| Benzo[k]fluoranthene | ND | | 1.0 | 0.24 | ug/L | | 10/23/24 09:47 | 10/29/24 21:39 | 1 |
| Benzo[a]pyrene | ND | | 0.20 | 0.16 | ug/L | | 10/23/24 09:47 | 10/29/24 21:39 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.50 | 0.46 | ug/L | | 10/23/24 09:47 | 10/29/24 21:39 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.50 | 0.21 | ug/L | | 10/23/24 09:47 | 10/29/24 21:39 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.0 | 0.17 | ug/L | | 10/23/24 09:47 | 10/29/24 21:39 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *78* | | *40 - 140* | *10/23/24 09:47* | *10/29/24 21:39* | *1* |
| *2-Fluorobiphenyl (Surr)* | *101* | | *40 - 140* | *10/23/24 09:47* | *10/29/24 21:39* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 10/24/24 23:12 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 10/24/24 23:12 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 10/24/24 23:12 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 10/24/24 23:12 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 10/24/24 23:12 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 23:12 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 23:12 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 23:12 | 1 |
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 23:12 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 23:12 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 10/24/24 23:12 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 23:12 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 10/24/24 23:12 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *96* | | *70 - 130* | | *10/24/24 23:12* | *1* |
| *2,5-Dibromotoluene (pid)* | *95* | | *70 - 130* | | *10/24/24 23:12* | *1* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 100 | 100 | ug/L | | 10/23/24 09:47 | 10/29/24 12:00 | 1 |
| C19-C36 Aliphatics | ND | | 100 | 100 | ug/L | | 10/23/24 09:47 | 10/29/24 12:00 | 1 |
| C11-C22 Aromatics | ND | | 100 | 100 | ug/L | | 10/23/24 09:47 | 10/29/24 12:00 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 100 | 100 | ug/L | | 10/23/24 09:47 | 10/29/24 12:00 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *53* | | *40 - 140* | *10/23/24 09:47* | *10/29/24 12:00* | *1* |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-21692-1

## Client Sample ID: GW-MW107-101624

**Lab Sample ID: 620-21692-6**

**Date Collected: 10/16/24 09:35**

**Matrix: Water**

**Date Received: 10/17/24 17:00**

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *64* | | *40 - 140* | *10/23/24 09:47* | *10/29/24 12:00* | *1* |
| *2-Fluorobiphenyl (Surr)* | *76* | | *40 - 140* | *10/23/24 09:47* | *10/29/24 12:00* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 0.0060 | 0.0016 | mg/L | | 10/18/24 12:07 | 10/21/24 12:55 | 1 |
| **Arsenic** | **0.072** | | 0.0040 | 0.0014 | mg/L | | 10/18/24 12:07 | 10/21/24 12:55 | 1 |
| **Barium** | **0.041** | | 0.0050 | 0.00070 | mg/L | | 10/18/24 12:07 | 10/21/24 12:55 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 10/18/24 12:07 | 10/21/24 12:55 | 1 |
| Cadmium | ND | | 0.0025 | 0.00036 | mg/L | | 10/18/24 12:07 | 10/21/24 12:55 | 1 |
| **Chromium** | **0.012** | | 0.0050 | 0.00093 | mg/L | | 10/18/24 12:07 | 10/21/24 12:55 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 10/18/24 12:07 | 10/21/24 12:55 | 1 |
| **Nickel** | **0.0023** | **J** | 0.0050 | 0.00087 | mg/L | | 10/18/24 12:07 | 10/21/24 12:55 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 10/18/24 12:07 | 10/21/24 12:55 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 10/18/24 12:07 | 10/21/24 12:55 | 1 |
| Thallium | ND | | 0.0050 | 0.0021 | mg/L | | 10/18/24 12:07 | 10/21/24 12:55 | 1 |
| Vanadium | ND | | 0.0050 | 0.0011 | mg/L | | 10/18/24 12:07 | 10/21/24 12:55 | 1 |
| Zinc | ND | | 0.0050 | 0.0016 | mg/L | | 10/18/24 12:07 | 10/21/24 12:55 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 10/28/24 09:24 | 10/29/24 14:25 | 1 |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-21692-1

**Client Sample ID: GW-BMW101-101624**
**Date Collected: 10/16/24 09:50**
**Date Received: 10/17/24 17:00**

**Lab Sample ID: 620-21692-7**
**Matrix: Water**

**Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)**

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 10/24/24 23:43 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 10/24/24 23:43 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 10/24/24 23:43 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 10/24/24 23:43 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 10/24/24 23:43 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 23:43 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 23:43 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 23:43 | 1 |
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 23:43 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 23:43 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 10/24/24 23:43 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 23:43 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 10/24/24 23:43 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *92* | | *70 - 130* | | *10/24/24 23:43* | *1* |
| *2,5-Dibromotoluene (pid)* | *90* | | *70 - 130* | | *10/24/24 23:43* | *1* |

## Client Sample ID: GW-MW106-101624

**Date Collected: 10/16/24 10:50**
**Date Received: 10/17/24 17:00**

## Lab Sample ID: 620-21692-8

**Matrix: Water**

### Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Naphthalene** | **51** | | 1.0 | 0.23 | ug/L | | 10/23/24 09:47 | 10/29/24 22:03 | 1 |
| **2-Methylnaphthalene** | **20** | | 1.0 | 0.29 | ug/L | | 10/23/24 09:47 | 10/29/24 22:03 | 1 |
| Acenaphthylene | ND | | 1.0 | 0.39 | ug/L | | 10/23/24 09:47 | 10/29/24 22:03 | 1 |
| Acenaphthene | ND | | 1.0 | 0.19 | ug/L | | 10/23/24 09:47 | 10/29/24 22:03 | 1 |
| Fluorene | ND | | 1.0 | 0.39 | ug/L | | 10/23/24 09:47 | 10/29/24 22:03 | 1 |
| **Phenanthrene** | **0.29** | **J** | 1.0 | 0.17 | ug/L | | 10/23/24 09:47 | 10/29/24 22:03 | 1 |
| Anthracene | ND | | 1.0 | 0.15 | ug/L | | 10/23/24 09:47 | 10/29/24 22:03 | 1 |
| **Fluoranthene** | **0.16** | **J** | 1.0 | 0.15 | ug/L | | 10/23/24 09:47 | 10/29/24 22:03 | 1 |
| Pyrene | ND | | 1.0 | 0.14 | ug/L | | 10/23/24 09:47 | 10/29/24 22:03 | 1 |
| Benzo[a]anthracene | ND | | 1.0 | 0.070 | ug/L | | 10/23/24 09:47 | 10/29/24 22:03 | 1 |
| Chrysene | ND | | 1.0 | 0.14 | ug/L | | 10/23/24 09:47 | 10/29/24 22:03 | 1 |
| Benzo[b]fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 10/23/24 09:47 | 10/29/24 22:03 | 1 |
| Benzo[k]fluoranthene | ND | | 1.0 | 0.24 | ug/L | | 10/23/24 09:47 | 10/29/24 22:03 | 1 |
| Benzo[a]pyrene | ND | | 0.20 | 0.16 | ug/L | | 10/23/24 09:47 | 10/29/24 22:03 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.50 | 0.46 | ug/L | | 10/23/24 09:47 | 10/29/24 22:03 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.50 | 0.21 | ug/L | | 10/23/24 09:47 | 10/29/24 22:03 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.0 | 0.17 | ug/L | | 10/23/24 09:47 | 10/29/24 22:03 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *67* | | *40 - 140* | *10/23/24 09:47* | *10/29/24 22:03* | *1* |
| *2-Fluorobiphenyl (Surr)* | *100* | | *40 - 140* | *10/23/24 09:47* | *10/29/24 22:03* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C5-C8 Aliphatics (adjusted)** | **1100** | | 100 | 100 | ug/L | | | 10/25/24 00:13 | 1 |
| **C5-C8 Aliphatics (unadjusted)** | **1200** | | 100 | 100 | ug/L | | | 10/25/24 00:13 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 10/25/24 00:13 | 1 |
| **Methyl tert-butyl ether** | **110** | | 5.0 | 5.0 | ug/L | | | 10/25/24 00:13 | 1 |
| **Naphthalene** | **98** | | 5.0 | 5.0 | ug/L | | | 10/25/24 00:13 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 10/25/24 00:13 | 1 |
| **o-Xylene** | **12** | | 5.0 | 5.0 | ug/L | | | 10/25/24 00:13 | 1 |
| **Xylenes, Total** | **620** | | 15 | 15 | ug/L | | | 10/25/24 00:13 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *112* | | *70 - 130* | | *10/25/24 00:13* | *1* |
| *2,5-Dibromotoluene (pid)* | *112* | | *70 - 130* | | *10/25/24 00:13* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) - DL

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C9-C10 Aromatics** | **2700** | | 1000 | 1000 | ug/L | | | 10/28/24 20:04 | 10 |
| **Ethylbenzene** | **390** | | 50 | 50 | ug/L | | | 10/28/24 20:04 | 10 |
| **m,p-Xylene** | **1000** | | 100 | 100 | ug/L | | | 10/28/24 20:04 | 10 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *99* | | *70 - 130* | | *10/28/24 20:04* | *10* |
| *2,5-Dibromotoluene (pid)* | *95* | | *70 - 130* | | *10/28/24 20:04* | *10* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) - DL2

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C9-C12 Aliphatics (adjusted)** | **7900** | | 5000 | 5000 | ug/L | | | 10/29/24 15:15 | 50 |
| **C9-C12 Aliphatics (unadjusted)** | **13000** | | 5000 | 5000 | ug/L | | | 10/29/24 15:15 | 50 |

## Client Sample ID: GW-MW106-101624

**Date Collected: 10/16/24 10:50**
**Date Received: 10/17/24 17:00**

## Lab Sample ID: 620-21692-8

**Matrix: Water**

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *93* | | *70 - 130* | | *10/29/24 15:15* | *50* |
| *2,5-Dibromotoluene (pid)* | *93* | | *70 - 130* | | *10/29/24 15:15* | *50* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C9-C18 Aliphatics** | **340** | | 100 | 100 | ug/L | | 10/23/24 09:47 | 10/29/24 12:27 | 1 |
| C19-C36 Aliphatics | ND | | 100 | 100 | ug/L | | 10/23/24 09:47 | 10/29/24 12:27 | 1 |
| **C11-C22 Aromatics** | **130** | | 100 | 100 | ug/L | | 10/23/24 09:47 | 10/29/24 12:27 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 100 | 100 | ug/L | | 10/23/24 09:47 | 10/29/24 12:27 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *58* | | *40 - 140* | *10/23/24 09:47* | *10/29/24 12:27* | *1* |
| *o-Terphenyl (Surr)* | *55* | | *40 - 140* | *10/23/24 09:47* | *10/29/24 12:27* | *1* |
| *2-Fluorobiphenyl (Surr)* | *82* | | *40 - 140* | *10/23/24 09:47* | *10/29/24 12:27* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 0.0060 | 0.0016 | mg/L | | 10/18/24 12:07 | 10/21/24 13:01 | 1 |
| **Arsenic** | **0.054** | | 0.0040 | 0.0014 | mg/L | | 10/18/24 12:07 | 10/21/24 13:01 | 1 |
| **Barium** | **0.084** | | 0.0050 | 0.00070 | mg/L | | 10/18/24 12:07 | 10/21/24 13:01 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 10/18/24 12:07 | 10/21/24 13:01 | 1 |
| Cadmium | ND | | 0.0025 | 0.00036 | mg/L | | 10/18/24 12:07 | 10/21/24 13:01 | 1 |
| **Chromium** | **0.011** | | 0.0050 | 0.00093 | mg/L | | 10/18/24 12:07 | 10/21/24 13:01 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 10/18/24 12:07 | 10/21/24 13:01 | 1 |
| **Nickel** | **0.0023** | **J** | 0.0050 | 0.00087 | mg/L | | 10/18/24 12:07 | 10/21/24 13:01 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 10/18/24 12:07 | 10/21/24 13:01 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 10/18/24 12:07 | 10/21/24 13:01 | 1 |
| Thallium | ND | | 0.0050 | 0.0021 | mg/L | | 10/18/24 12:07 | 10/21/24 13:01 | 1 |
| Vanadium | ND | | 0.0050 | 0.0011 | mg/L | | 10/18/24 12:07 | 10/21/24 13:01 | 1 |
| Zinc | ND | | 0.0050 | 0.0016 | mg/L | | 10/18/24 12:07 | 10/21/24 13:01 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 10/28/24 09:24 | 10/29/24 14:28 | 1 |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-21692-1

## Client Sample ID: GW-MW102R-101624

**Date Collected: 10/16/24 11:50**
**Date Received: 10/17/24 17:00**

## Lab Sample ID: 620-21692-9

**Matrix: Water**

### Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Naphthalene** | **140** | | 3.9 | 0.91 | ug/L | | 10/23/24 09:47 | 10/31/24 14:48 | 4 |
| **2-Methylnaphthalene** | **37** | | 0.98 | 0.28 | ug/L | | 10/23/24 09:47 | 10/29/24 22:26 | 1 |
| Acenaphthylene | ND | | 0.98 | 0.38 | ug/L | | 10/23/24 09:47 | 10/29/24 22:26 | 1 |
| **Acenaphthene** | **0.40** | **J** | 0.98 | 0.18 | ug/L | | 10/23/24 09:47 | 10/29/24 22:26 | 1 |
| **Fluorene** | **0.59** | **J** | 0.98 | 0.38 | ug/L | | 10/23/24 09:47 | 10/29/24 22:26 | 1 |
| **Phenanthrene** | **0.34** | **J** | 0.98 | 0.17 | ug/L | | 10/23/24 09:47 | 10/29/24 22:26 | 1 |
| Anthracene | ND | | 0.98 | 0.15 | ug/L | | 10/23/24 09:47 | 10/29/24 22:26 | 1 |
| Fluoranthene | ND | | 0.98 | 0.15 | ug/L | | 10/23/24 09:47 | 10/29/24 22:26 | 1 |
| Pyrene | ND | | 0.98 | 0.14 | ug/L | | 10/23/24 09:47 | 10/29/24 22:26 | 1 |
| Benzo[a]anthracene | ND | | 0.98 | 0.068 | ug/L | | 10/23/24 09:47 | 10/29/24 22:26 | 1 |
| Chrysene | ND | | 0.98 | 0.14 | ug/L | | 10/23/24 09:47 | 10/29/24 22:26 | 1 |
| Benzo[b]fluoranthene | ND | | 0.98 | 0.15 | ug/L | | 10/23/24 09:47 | 10/29/24 22:26 | 1 |
| Benzo[k]fluoranthene | ND | | 0.98 | 0.23 | ug/L | | 10/23/24 09:47 | 10/29/24 22:26 | 1 |
| Benzo[a]pyrene | ND | | 0.20 | 0.16 | ug/L | | 10/23/24 09:47 | 10/29/24 22:26 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.49 | 0.45 | ug/L | | 10/23/24 09:47 | 10/29/24 22:26 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.49 | 0.21 | ug/L | | 10/23/24 09:47 | 10/29/24 22:26 | 1 |
| Benzo[g,h,i]perylene | ND | | 0.98 | 0.16 | ug/L | | 10/23/24 09:47 | 10/29/24 22:26 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *65* | | *40 - 140* | *10/23/24 09:47* | *10/29/24 22:26* | *1* |
| *o-Terphenyl (Surr)* | *54* | | *40 - 140* | *10/23/24 09:47* | *10/31/24 14:48* | *4* |
| *2-Fluorobiphenyl (Surr)* | *99* | | *40 - 140* | *10/23/24 09:47* | *10/29/24 22:26* | *1* |
| *2-Fluorobiphenyl (Surr)* | *82* | | *40 - 140* | *10/23/24 09:47* | *10/31/24 14:48* | *4* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C5-C8 Aliphatics (adjusted)** | **2000** | | 1000 | 1000 | ug/L | | | 10/25/24 01:14 | 10 |
| **C5-C8 Aliphatics (unadjusted)** | **2200** | | 1000 | 1000 | ug/L | | | 10/25/24 01:14 | 10 |
| **Benzene** | **150** | | 50 | 50 | ug/L | | | 10/25/24 01:14 | 10 |
| **Ethylbenzene** | **730** | | 50 | 50 | ug/L | | | 10/25/24 01:14 | 10 |
| **Methyl tert-butyl ether** | **100** | | 50 | 50 | ug/L | | | 10/25/24 01:14 | 10 |
| **Naphthalene** | **350** | | 50 | 50 | ug/L | | | 10/25/24 01:14 | 10 |
| Toluene | ND | | 50 | 50 | ug/L | | | 10/25/24 01:14 | 10 |
| **m,p-Xylene** | **2100** | | 100 | 100 | ug/L | | | 10/25/24 01:14 | 10 |
| o-Xylene | ND | | 50 | 50 | ug/L | | | 10/25/24 01:14 | 10 |
| **Xylenes, Total** | **2100** | | 150 | 150 | ug/L | | | 10/25/24 01:14 | 10 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *103* | | *70 - 130* | | *10/25/24 01:14* | *10* |
| *2,5-Dibromotoluene (pid)* | *102* | | *70 - 130* | | *10/25/24 01:14* | *10* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) - DL

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C9-C12 Aliphatics (adjusted)** | **11000** | | 2500 | 2500 | ug/L | | | 10/28/24 20:34 | 25 |
| **C9-C10 Aromatics** | **4100** | | 2500 | 2500 | ug/L | | | 10/28/24 20:34 | 25 |
| **C9-C12 Aliphatics (unadjusted)** | **18000** | | 2500 | 2500 | ug/L | | | 10/28/24 20:34 | 25 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *97* | | *70 - 130* | | *10/28/24 20:34* | *25* |
| *2,5-Dibromotoluene (pid)* | *97* | | *70 - 130* | | *10/28/24 20:34* | *25* |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-21692-1

## Client Sample ID: GW-MW102R-101624

**Lab Sample ID: 620-21692-9**

**Date Collected: 10/16/24 11:50**

**Matrix: Water**

**Date Received: 10/17/24 17:00**

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C9-C18 Aliphatics** | **480** | | 98 | 98 | ug/L | | 10/23/24 09:47 | 10/29/24 12:55 | 1 |
| C19-C36 Aliphatics | ND | | 98 | 98 | ug/L | | 10/23/24 09:47 | 10/29/24 12:55 | 1 |
| **C11-C22 Aromatics** | **320** | | 98 | 98 | ug/L | | 10/23/24 09:47 | 10/29/24 12:55 | 1 |
| **C11-C22 Aromatics (Adjusted)** | **160** | | 98 | 98 | ug/L | | 10/23/24 09:47 | 10/29/24 12:55 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *57* | | *40 - 140* | *10/23/24 09:47* | *10/29/24 12:55* | *1* |
| *o-Terphenyl (Surr)* | *54* | | *40 - 140* | *10/23/24 09:47* | *10/29/24 12:55* | *1* |
| *2-Fluorobiphenyl (Surr)* | *85* | | *40 - 140* | *10/23/24 09:47* | *10/29/24 12:55* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 0.0060 | 0.0016 | mg/L | | 10/18/24 12:07 | 10/21/24 13:07 | 1 |
| **Arsenic** | **0.040** | | 0.0040 | 0.0014 | mg/L | | 10/18/24 12:07 | 10/21/24 13:07 | 1 |
| **Barium** | **0.14** | | 0.0050 | 0.00070 | mg/L | | 10/18/24 12:07 | 10/21/24 13:07 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 10/18/24 12:07 | 10/21/24 13:07 | 1 |
| Cadmium | ND | | 0.0025 | 0.00036 | mg/L | | 10/18/24 12:07 | 10/21/24 13:07 | 1 |
| **Chromium** | **0.017** | | 0.0050 | 0.00093 | mg/L | | 10/18/24 12:07 | 10/21/24 13:07 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 10/18/24 12:07 | 10/21/24 13:07 | 1 |
| **Nickel** | **0.0053** | | 0.0050 | 0.00087 | mg/L | | 10/18/24 12:07 | 10/21/24 13:07 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 10/18/24 12:07 | 10/21/24 13:07 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 10/18/24 12:07 | 10/21/24 13:07 | 1 |
| Thallium | ND | | 0.0050 | 0.0021 | mg/L | | 10/18/24 12:07 | 10/21/24 13:07 | 1 |
| Vanadium | ND | | 0.0050 | 0.0011 | mg/L | | 10/18/24 12:07 | 10/21/24 13:07 | 1 |
| Zinc | ND | | 0.0050 | 0.0016 | mg/L | | 10/18/24 12:07 | 10/21/24 13:07 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 10/28/24 09:24 | 10/29/24 14:30 | 1 |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-21692-1

## Client Sample ID: Trip Blank

**Date Collected: 10/16/24 00:00**
**Date Received: 10/17/24 17:00**

## Lab Sample ID: 620-21692-10

**Matrix: Water**

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 10/24/24 17:38 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 10/24/24 17:38 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 10/24/24 17:38 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 10/24/24 17:38 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 10/24/24 17:38 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 17:38 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 17:38 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 17:38 | 1 |
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 17:38 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 17:38 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 10/24/24 17:38 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 17:38 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 10/24/24 17:38 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *101* | | *70 - 130* | | *10/24/24 17:38* | *1* |
| *2,5-Dibromotoluene (pid)* | *100* | | *70 - 130* | | *10/24/24 17:38* | *1* |

# Surrogate Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-21692-1

## Method: EPH - Extractable Petroleum Hydrocarbons (GC/MS)

**Matrix: Water**

**Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) | |
|---|---|---|---|
| Lab Sample ID | Client Sample ID | OTPH (40-140) | FBP (40-140) |
| 620-21692-1 | GW-MW108-101524 | 77 | 98 |
| 620-21692-1 MS | GW-MW108-101524 | 79 | 104 |
| 620-21692-1 MSD | GW-MW108-101524 | 77 | 102 |
| 620-21692-2 | GW-BMW104-101524 | 74 | 103 |
| 620-21692-3 | GW-BMW105-101524 | 74 | 95 |
| 620-21692-4 | GW-MW109-101524 | 73 | 99 |
| 620-21692-5 | GW-FD01 | 74 | 102 |
| 620-21692-6 | GW-MW107-101624 | 78 | 101 |
| 620-21692-8 | GW-MW106-101624 | 67 | 100 |
| 620-21692-9 | GW-MW102R-101624 | 65 | 99 |
| 620-21692-9 | GW-MW102R-101624 | 54 | 82 |
| LCS 620-40360/4-B | Lab Control Sample | 95 | 107 |
| LCSD 620-40360/5-B | Lab Control Sample Dup | 84 | 108 |
| MB 620-40360/1-B | Method Blank | 66 | 100 |

**Surrogate Legend**

OTPH = o-Terphenyl (Surr)

FBP = 2-Fluorobiphenyl (Surr)

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

**Matrix: Water**

**Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) | |
|---|---|---|---|
| Lab Sample ID | Client Sample ID | 25DBTf1 (70-130) | 25DBTp1 (70-130) |
| 620-21692-1 | GW-MW108-101524 | 97 | 96 |
| 620-21692-1 MS | GW-MW108-101524 | 97 | 95 |
| 620-21692-1 MSD | GW-MW108-101524 | 96 | 95 |
| 620-21692-2 | GW-BMW104-101524 | 93 | 92 |
| 620-21692-3 | GW-BMW105-101524 | 93 | 91 |
| 620-21692-4 | GW-MW109-101524 | 109 | 108 |
| 620-21692-4 - DL | GW-MW109-101524 | 97 | 94 |
| 620-21692-4 - DL2 | GW-MW109-101524 | 100 | 100 |
| 620-21692-5 | GW-FD01 | 93 | 93 |
| 620-21692-6 | GW-MW107-101624 | 96 | 95 |
| 620-21692-7 | GW-BMW101-101624 | 92 | 90 |
| 620-21692-8 | GW-MW106-101624 | 112 | 112 |
| 620-21692-8 - DL | GW-MW106-101624 | 99 | 95 |
| 620-21692-8 - DL2 | GW-MW106-101624 | 93 | 93 |
| 620-21692-9 | GW-MW102R-101624 | 103 | 102 |
| 620-21692-9 - DL | GW-MW102R-101624 | 97 | 97 |
| 620-21692-10 | Trip Blank | 101 | 100 |
| LCS 620-40432/2 | Lab Control Sample | 102 | 102 |
| LCS 620-40527/3 | Lab Control Sample | 98 | 101 |
| LCSD 620-40432/3 | Lab Control Sample Dup | 100 | 102 |
| LCSD 620-40527/4 | Lab Control Sample Dup | 95 | 96 |
| MB 620-40432/4 | Method Blank | 102 | 101 |
| MB 620-40527/5 | Method Blank | 96 | 99 |

**Surrogate Legend**

25DBTf = 2,5-Dibromotoluene (fid)

# Surrogate Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-21692-1

25DBTp = 2,5-Dibromotoluene (pid)

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

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

| | | Percent Surrogate Recovery (Acceptance Limits) | | |
|---|---|---|---|---|
| Lab Sample ID | Client Sample ID | 1COD1 (40-140) | OTPH1 (40-140) | FBP1 (40-140) |
| 620-21692-1 | GW-MW108-101524 | 65 | 64 | 83 |
| 620-21692-1 MS | GW-MW108-101524 | 56 | 62 | 78 |
| 620-21692-1 MSD | GW-MW108-101524 | 65 | 64 | 84 |
| 620-21692-2 | GW-BMW104-101524 | 58 | 62 | 85 |
| 620-21692-3 | GW-BMW105-101524 | 59 | 58 | 73 |
| 620-21692-4 | GW-MW109-101524 | 64 | 61 | 87 |
| 620-21692-5 | GW-FD01 | 46 | 61 | 74 |
| 620-21692-6 | GW-MW107-101624 | 53 | 64 | 76 |
| 620-21692-8 | GW-MW106-101624 | 58 | 55 | 82 |
| 620-21692-9 | GW-MW102R-101624 | 57 | 54 | 85 |
| LCS 620-40360/2-B | Lab Control Sample | 71 | 79 | 92 |
| LCSD 620-40360/3-B | Lab Control Sample Dup | 66 | 73 | 92 |
| MB 620-40360/1-B | Method Blank | 76 | 74 | 92 |

**Surrogate Legend**

1COD = 1-Chlorooctadecane (Surr)
OTPH = o-Terphenyl (Surr)
FBP = 2-Fluorobiphenyl (Surr)

## Method: EPH - Extractable Petroleum Hydrocarbons (GC/MS)

**Lab Sample ID: MB 620-40360/1-B**
**Matrix: Water**
**Analysis Batch: 40620**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 40360**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 1.0 | 0.23 | ug/L | | 10/23/24 09:47 | 10/29/24 17:46 | 1 |
| 2-Methylnaphthalene | ND | | 1.0 | 0.29 | ug/L | | 10/23/24 09:47 | 10/29/24 17:46 | 1 |
| Acenaphthylene | ND | | 1.0 | 0.39 | ug/L | | 10/23/24 09:47 | 10/29/24 17:46 | 1 |
| Acenaphthene | ND | | 1.0 | 0.19 | ug/L | | 10/23/24 09:47 | 10/29/24 17:46 | 1 |
| Fluorene | ND | | 1.0 | 0.39 | ug/L | | 10/23/24 09:47 | 10/29/24 17:46 | 1 |
| Phenanthrene | ND | | 1.0 | 0.17 | ug/L | | 10/23/24 09:47 | 10/29/24 17:46 | 1 |
| Anthracene | ND | | 1.0 | 0.15 | ug/L | | 10/23/24 09:47 | 10/29/24 17:46 | 1 |
| Fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 10/23/24 09:47 | 10/29/24 17:46 | 1 |
| Pyrene | ND | | 1.0 | 0.14 | ug/L | | 10/23/24 09:47 | 10/29/24 17:46 | 1 |
| Benzo[a]anthracene | ND | | 1.0 | 0.070 | ug/L | | 10/23/24 09:47 | 10/29/24 17:46 | 1 |
| Chrysene | ND | | 1.0 | 0.14 | ug/L | | 10/23/24 09:47 | 10/29/24 17:46 | 1 |
| Benzo[b]fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 10/23/24 09:47 | 10/29/24 17:46 | 1 |
| Benzo[k]fluoranthene | ND | | 1.0 | 0.24 | ug/L | | 10/23/24 09:47 | 10/29/24 17:46 | 1 |
| Benzo[a]pyrene | ND | | 0.20 | 0.16 | ug/L | | 10/23/24 09:47 | 10/29/24 17:46 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.50 | 0.46 | ug/L | | 10/23/24 09:47 | 10/29/24 17:46 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.50 | 0.21 | ug/L | | 10/23/24 09:47 | 10/29/24 17:46 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.0 | 0.17 | ug/L | | 10/23/24 09:47 | 10/29/24 17:46 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *66* | | *40 - 140* | *10/23/24 09:47* | *10/29/24 17:46* | *1* |
| *2-Fluorobiphenyl (Surr)* | *100* | | *40 - 140* | *10/23/24 09:47* | *10/29/24 17:46* | *1* |

**Lab Sample ID: LCS 620-40360/4-B**
**Matrix: Water**
**Analysis Batch: 40620**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 40360**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Naphthalene | 5.00 | 3.55 | | ug/L | | 71 | 40 - 140 |
| 2-Methylnaphthalene | 5.00 | 3.48 | | ug/L | | 70 | 40 - 140 |
| Acenaphthylene | 5.00 | 3.56 | | ug/L | | 71 | 40 - 140 |
| Acenaphthene | 5.00 | 3.52 | | ug/L | | 70 | 40 - 140 |
| Fluorene | 5.00 | 3.50 | | ug/L | | 70 | 40 - 140 |
| Phenanthrene | 5.00 | 3.64 | | ug/L | | 73 | 40 - 140 |
| Anthracene | 5.00 | 3.42 | | ug/L | | 68 | 40 - 140 |
| Fluoranthene | 5.00 | 4.01 | | ug/L | | 80 | 40 - 140 |
| Pyrene | 5.00 | 4.06 | | ug/L | | 81 | 40 - 140 |
| Benzo[a]anthracene | 5.00 | 3.89 | | ug/L | | 78 | 40 - 140 |
| Chrysene | 5.00 | 3.27 | | ug/L | | 65 | 40 - 140 |
| Benzo[b]fluoranthene | 5.00 | 3.83 | | ug/L | | 77 | 40 - 140 |
| Benzo[k]fluoranthene | 5.00 | 4.37 | | ug/L | | 87 | 40 - 140 |
| Benzo[a]pyrene | 5.00 | 3.61 | | ug/L | | 72 | 40 - 140 |
| Indeno[1,2,3-cd]pyrene | 5.00 | 3.68 | | ug/L | | 74 | 40 - 140 |
| Dibenz(a,h)anthracene | 5.00 | 3.12 | | ug/L | | 62 | 40 - 140 |
| Benzo[g,h,i]perylene | 5.00 | 3.90 | | ug/L | | 78 | 40 - 140 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl (Surr)* | *95* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *107* | | *40 - 140* |

## Method: EPH - Extractable Petroleum Hydrocarbons (GC/MS)

**Lab Sample ID: LCSD 620-40360/5-B**
**Matrix: Water**
**Analysis Batch: 40620**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 40360**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | | | 5.00 | 3.40 | | ug/L | | 68 | 40 - 140 | 4 | 25 |
| 2-Methylnaphthalene | | | 5.00 | 3.15 | | ug/L | | 63 | 40 - 140 | 10 | 25 |
| Acenaphthylene | | | 5.00 | 3.39 | | ug/L | | 68 | 40 - 140 | 5 | 25 |
| Acenaphthene | | | 5.00 | 3.28 | | ug/L | | 66 | 40 - 140 | 7 | 25 |
| Fluorene | | | 5.00 | 3.19 | | ug/L | | 64 | 40 - 140 | 9 | 25 |
| Phenanthrene | | | 5.00 | 3.37 | | ug/L | | 67 | 40 - 140 | 8 | 25 |
| Anthracene | | | 5.00 | 3.30 | | ug/L | | 66 | 40 - 140 | 4 | 25 |
| Fluoranthene | | | 5.00 | 3.73 | | ug/L | | 75 | 40 - 140 | 7 | 25 |
| Pyrene | | | 5.00 | 3.67 | | ug/L | | 73 | 40 - 140 | 10 | 25 |
| Benzo[a]anthracene | | | 5.00 | 3.65 | | ug/L | | 73 | 40 - 140 | 6 | 25 |
| Chrysene | | | 5.00 | 3.06 | | ug/L | | 61 | 40 - 140 | 6 | 25 |
| Benzo[b]fluoranthene | | | 5.00 | 4.15 | | ug/L | | 83 | 40 - 140 | 8 | 25 |
| Benzo[k]fluoranthene | | | 5.00 | 3.54 | | ug/L | | 71 | 40 - 140 | 21 | 25 |
| Benzo[a]pyrene | | | 5.00 | 3.36 | | ug/L | | 67 | 40 - 140 | 7 | 25 |
| Indeno[1,2,3-cd]pyrene | | | 5.00 | 3.59 | | ug/L | | 72 | 40 - 140 | 3 | 25 |
| Dibenz(a,h)anthracene | | | 5.00 | 2.92 | | ug/L | | 58 | 40 - 140 | 7 | 25 |
| Benzo[g,h,i]perylene | | | 5.00 | 3.77 | | ug/L | | 75 | 40 - 140 | 3 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl (Surr)* | *84* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *108* | | *40 - 140* |

**Lab Sample ID: 620-21692-1 MS**
**Matrix: Water**
**Analysis Batch: 40620**

**Client Sample ID: GW-MW108-101524**
**Prep Type: Total/NA**
**Prep Batch: 40360**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 4.76 | 2.19 | | ug/L | | 46 | 40 - 140 |
| 2-Methylnaphthalene | ND | | 4.76 | 2.09 | | ug/L | | 44 | 40 - 140 |
| Acenaphthylene | ND | | 4.76 | 2.30 | | ug/L | | 48 | 40 - 140 |
| Acenaphthene | ND | | 4.76 | 2.36 | | ug/L | | 50 | 40 - 140 |
| Fluorene | ND | | 4.76 | 2.39 | | ug/L | | 50 | 40 - 140 |
| Phenanthrene | ND | | 4.76 | 2.83 | | ug/L | | 59 | 40 - 140 |
| Anthracene | ND | | 4.76 | 2.47 | | ug/L | | 52 | 40 - 140 |
| Fluoranthene | ND | | 4.76 | 3.37 | | ug/L | | 71 | 40 - 140 |
| Pyrene | ND | | 4.76 | 3.30 | | ug/L | | 69 | 40 - 140 |
| Benzo[a]anthracene | ND | | 4.76 | 3.18 | | ug/L | | 67 | 40 - 140 |
| Chrysene | ND | | 4.76 | 2.67 | | ug/L | | 56 | 40 - 140 |
| Benzo[b]fluoranthene | ND | | 4.76 | 3.28 | | ug/L | | 69 | 40 - 140 |
| Benzo[k]fluoranthene | ND | | 4.76 | 2.91 | | ug/L | | 61 | 40 - 140 |
| Benzo[a]pyrene | ND | | 4.76 | 2.74 | | ug/L | | 58 | 40 - 140 |
| Indeno[1,2,3-cd]pyrene | ND | | 4.76 | 2.75 | | ug/L | | 58 | 40 - 140 |
| Dibenz(a,h)anthracene | ND | | 4.76 | 2.12 | | ug/L | | 44 | 40 - 140 |
| Benzo[g,h,i]perylene | ND | | 4.76 | 2.82 | | ug/L | | 59 | 40 - 140 |

| *Surrogate* | *MS %Recovery* | *MS Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl (Surr)* | *79* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *104* | | *40 - 140* |

## Method: EPH - Extractable Petroleum Hydrocarbons (GC/MS)

**Lab Sample ID: 620-21692-1 MSD**
**Matrix: Water**
**Analysis Batch: 40620**

**Client Sample ID: GW-MW108-101524**
**Prep Type: Total/NA**
**Prep Batch: 40360**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 4.76 | 2.51 | | ug/L | | 53 | 40 - 140 | 13 | 50 |
| 2-Methylnaphthalene | ND | | 4.76 | 2.46 | | ug/L | | 52 | 40 - 140 | 16 | 50 |
| Acenaphthylene | ND | | 4.76 | 2.67 | | ug/L | | 56 | 40 - 140 | 15 | 50 |
| Acenaphthene | ND | | 4.76 | 2.59 | | ug/L | | 54 | 40 - 140 | 9 | 50 |
| Fluorene | ND | | 4.76 | 2.58 | | ug/L | | 54 | 40 - 140 | 7 | 50 |
| Phenanthrene | ND | | 4.76 | 2.90 | | ug/L | | 61 | 40 - 140 | 3 | 50 |
| Anthracene | ND | | 4.76 | 2.72 | | ug/L | | 57 | 40 - 140 | 9 | 50 |
| Fluoranthene | ND | | 4.76 | 3.39 | | ug/L | | 71 | 40 - 140 | 1 | 50 |
| Pyrene | ND | | 4.76 | 3.37 | | ug/L | | 71 | 40 - 140 | 2 | 50 |
| Benzo[a]anthracene | ND | | 4.76 | 3.38 | | ug/L | | 71 | 40 - 140 | 6 | 50 |
| Chrysene | ND | | 4.76 | 2.67 | | ug/L | | 56 | 40 - 140 | 0 | 50 |
| Benzo[b]fluoranthene | ND | | 4.76 | 3.18 | | ug/L | | 67 | 40 - 140 | 3 | 50 |
| Benzo[k]fluoranthene | ND | | 4.76 | 3.44 | | ug/L | | 72 | 40 - 140 | 17 | 50 |
| Benzo[a]pyrene | ND | | 4.76 | 2.85 | | ug/L | | 60 | 40 - 140 | 4 | 50 |
| Indeno[1,2,3-cd]pyrene | ND | | 4.76 | 2.94 | | ug/L | | 62 | 40 - 140 | 7 | 50 |
| Dibenz(a,h)anthracene | ND | | 4.76 | 2.05 | | ug/L | | 43 | 40 - 140 | 3 | 50 |
| Benzo[g,h,i]perylene | ND | | 4.76 | 3.05 | | ug/L | | 64 | 40 - 140 | 8 | 50 |

| *Surrogate* | *MSD %Recovery* | *MSD Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl (Surr)* | *77* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *102* | | *40 - 140* |

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

**Lab Sample ID: MB 620-40432/4**
**Matrix: Water**
**Analysis Batch: 40432**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 10/24/24 13:15 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 10/24/24 13:15 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 10/24/24 13:15 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 10/24/24 13:15 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 10/24/24 13:15 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 13:15 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 13:15 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 13:15 | 1 |
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 13:15 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 13:15 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 10/24/24 13:15 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 10/24/24 13:15 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 10/24/24 13:15 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *102* | | *70 - 130* | | *10/24/24 13:15* | *1* |
| *2,5-Dibromotoluene (pid)* | *101* | | *70 - 130* | | *10/24/24 13:15* | *1* |

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: LCS 620-40432/2**
**Matrix: Water**
**Analysis Batch: 40432**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | | | 20.0 | ND | | ug/L | | 74 | 70 - 130 | | |
| C5-C8 Aliphatics (unadjusted) | | | 60.0 | ND | | ug/L | | 104 | 70 - 130 | | |
| C9-C12 Aliphatics (unadjusted) | | | 60.0 | ND | | ug/L | | 90 | 70 - 130 | | |
| Benzene | | | 20.0 | 19.0 | | ug/L | | 95 | 70 - 130 | | |
| Ethylbenzene | | | 20.0 | 18.6 | | ug/L | | 93 | 70 - 130 | | |
| Methyl tert-butyl ether | | | 20.0 | 18.9 | | ug/L | | 95 | 70 - 130 | | |
| Naphthalene | | | 20.0 | 19.7 | | ug/L | | 99 | 70 - 130 | | |
| Toluene | | | 20.0 | 18.6 | | ug/L | | 93 | 70 - 130 | | |
| m,p-Xylene | | | 40.0 | 36.7 | | ug/L | | 92 | 70 - 130 | | |
| o-Xylene | | | 20.0 | 17.4 | | ug/L | | 87 | 70 - 130 | | |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *102* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *102* | | *70 - 130* |

**Lab Sample ID: LCSD 620-40432/3**
**Matrix: Water**
**Analysis Batch: 40432**

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

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | | | 20.0 | ND | | ug/L | | 74 | 70 - 130 | 0 | 25 |
| C5-C8 Aliphatics (unadjusted) | | | 60.0 | ND | | ug/L | | 104 | 70 - 130 | 0 | 25 |
| C9-C12 Aliphatics (unadjusted) | | | 60.0 | ND | | ug/L | | 89 | 70 - 130 | 1 | 25 |
| Benzene | | | 20.0 | 18.9 | | ug/L | | 94 | 70 - 130 | 1 | 25 |
| Ethylbenzene | | | 20.0 | 18.7 | | ug/L | | 94 | 70 - 130 | 0 | 25 |
| Methyl tert-butyl ether | | | 20.0 | 19.6 | | ug/L | | 98 | 70 - 130 | 3 | 25 |
| Naphthalene | | | 20.0 | 20.7 | | ug/L | | 103 | 70 - 130 | 5 | 25 |
| Toluene | | | 20.0 | 18.7 | | ug/L | | 94 | 70 - 130 | 1 | 25 |
| m,p-Xylene | | | 40.0 | 36.8 | | ug/L | | 92 | 70 - 130 | 0 | 25 |
| o-Xylene | | | 20.0 | 17.7 | | ug/L | | 88 | 70 - 130 | 1 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *100* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *102* | | *70 - 130* |

**Lab Sample ID: MB 620-40527/5**
**Matrix: Water**
**Analysis Batch: 40527**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 10/28/24 15:54 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 10/28/24 15:54 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 10/28/24 15:54 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 10/28/24 15:54 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 10/28/24 15:54 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 10/28/24 15:54 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 10/28/24 15:54 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 10/28/24 15:54 | 1 |

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: MB 620-40527/5**
**Matrix: Water**
**Analysis Batch: 40527**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 10/28/24 15:54 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 10/28/24 15:54 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 10/28/24 15:54 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 10/28/24 15:54 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 10/28/24 15:54 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *96* | | *70 - 130* | | *10/28/24 15:54* | *1* |
| *2,5-Dibromotoluene (pid)* | *99* | | *70 - 130* | | *10/28/24 15:54* | *1* |

**Lab Sample ID: LCS 620-40527/3**
**Matrix: Water**
**Analysis Batch: 40527**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | 20.0 | ND | | ug/L | | 88 | 70 - 130 |
| C5-C8 Aliphatics (unadjusted) | 60.0 | ND | | ug/L | | 101 | 70 - 130 |
| C9-C12 Aliphatics (unadjusted) | 60.0 | ND | | ug/L | | 100 | 70 - 130 |
| Benzene | 20.0 | 19.3 | | ug/L | | 97 | 70 - 130 |
| Ethylbenzene | 20.0 | 19.6 | | ug/L | | 98 | 70 - 130 |
| Methyl tert-butyl ether | 20.0 | 19.1 | | ug/L | | 96 | 70 - 130 |
| Naphthalene | 20.0 | 17.8 | | ug/L | | 89 | 70 - 130 |
| Toluene | 20.0 | 19.1 | | ug/L | | 95 | 70 - 130 |
| m,p-Xylene | 40.0 | 39.5 | | ug/L | | 99 | 70 - 130 |
| o-Xylene | 20.0 | 19.1 | | ug/L | | 95 | 70 - 130 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *98* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *101* | | *70 - 130* |

**Lab Sample ID: LCSD 620-40527/4**
**Matrix: Water**
**Analysis Batch: 40527**

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

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | 20.0 | ND | | ug/L | | 89 | 70 - 130 | 1 | 25 |
| C5-C8 Aliphatics (unadjusted) | 60.0 | ND | | ug/L | | 105 | 70 - 130 | 3 | 25 |
| C9-C12 Aliphatics (unadjusted) | 60.0 | ND | | ug/L | | 100 | 70 - 130 | 1 | 25 |
| Benzene | 20.0 | 19.7 | | ug/L | | 98 | 70 - 130 | 2 | 25 |
| Ethylbenzene | 20.0 | 20.2 | | ug/L | | 101 | 70 - 130 | 3 | 25 |
| Methyl tert-butyl ether | 20.0 | 20.2 | | ug/L | | 101 | 70 - 130 | 5 | 25 |
| Naphthalene | 20.0 | 19.5 | | ug/L | | 98 | 70 - 130 | 9 | 25 |
| Toluene | 20.0 | 19.5 | | ug/L | | 98 | 70 - 130 | 2 | 25 |
| m,p-Xylene | 40.0 | 40.5 | | ug/L | | 101 | 70 - 130 | 3 | 25 |
| o-Xylene | 20.0 | 19.9 | | ug/L | | 99 | 70 - 130 | 4 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *95* | | *70 - 130* |

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: LCSD 620-40527/4**
**Matrix: Water**
**Analysis Batch: 40527**

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

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (pid)* | *96* | | *70 - 130* |

**Lab Sample ID: 620-21692-1 MS**
**Matrix: Water**
**Analysis Batch: 40527**

**Client Sample ID: GW-MW108-101524**
**Prep Type: Total/NA**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | ND | | 20.3 | ND | | ug/L | | NC | 70 - 130 |
| C5-C8 Aliphatics (unadjusted) | ND | | 61.0 | 156 | | ug/L | | NC | 70 - 130 |
| C9-C12 Aliphatics (unadjusted) | ND | | 61.0 | 383 | | ug/L | | NC | 70 - 130 |
| Benzene | ND | | 20.3 | 20.6 | | ug/L | | 101 | 70 - 130 |
| Ethylbenzene | ND | | 20.3 | 21.2 | | ug/L | | 104 | 70 - 130 |
| Methyl tert-butyl ether | ND | | 20.3 | 20.9 | | ug/L | | 103 | 70 - 130 |
| Naphthalene | ND | | 20.3 | 18.7 | | ug/L | | 92 | 70 - 130 |
| Toluene | ND | | 20.3 | 20.5 | | ug/L | | 101 | 70 - 130 |
| m,p-Xylene | ND | | 40.7 | 42.8 | | ug/L | | 105 | 70 - 130 |
| o-Xylene | ND | | 20.3 | 20.3 | | ug/L | | 100 | 70 - 130 |

| *Surrogate* | *MS %Recovery* | *MS Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *97* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *95* | | *70 - 130* |

**Lab Sample ID: 620-21692-1 MSD**
**Matrix: Water**
**Analysis Batch: 40527**

**Client Sample ID: GW-MW108-101524**
**Prep Type: Total/NA**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | ND | | 20.3 | ND | | ug/L | | NC | 70 - 130 | NC | 30 |
| C5-C8 Aliphatics (unadjusted) | ND | | 61.0 | 149 | | ug/L | | NC | 70 - 130 | 5 | 30 |
| C9-C12 Aliphatics (unadjusted) | ND | | 61.0 | 373 | | ug/L | | NC | 70 - 130 | 3 | 30 |
| Benzene | ND | | 20.3 | 19.9 | | ug/L | | 98 | 70 - 130 | 4 | 30 |
| Ethylbenzene | ND | | 20.3 | 20.2 | | ug/L | | 99 | 70 - 130 | 5 | 30 |
| Methyl tert-butyl ether | ND | | 20.3 | 19.6 | | ug/L | | 96 | 70 - 130 | 7 | 30 |
| Naphthalene | ND | | 20.3 | 18.9 | | ug/L | | 93 | 70 - 130 | 1 | 30 |
| Toluene | ND | | 20.3 | 19.6 | | ug/L | | 96 | 70 - 130 | 4 | 30 |
| m,p-Xylene | ND | | 40.7 | 41.2 | | ug/L | | 101 | 70 - 130 | 4 | 30 |
| o-Xylene | ND | | 20.3 | 19.6 | | ug/L | | 96 | 70 - 130 | 3 | 30 |

| *Surrogate* | *MSD %Recovery* | *MSD Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *96* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *95* | | *70 - 130* |

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

**Lab Sample ID: MB 620-40360/1-B**
**Matrix: Water**
**Analysis Batch: 40351**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 40360**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 100 | 100 | ug/L | | 10/23/24 09:47 | 10/23/24 15:12 | 1 |
| C19-C36 Aliphatics | ND | | 100 | 100 | ug/L | | 10/23/24 09:47 | 10/23/24 15:12 | 1 |
| C11-C22 Aromatics | ND | | 100 | 100 | ug/L | | 10/23/24 09:47 | 10/23/24 15:12 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 100 | 100 | ug/L | | 10/23/24 09:47 | 10/23/24 15:12 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *76* | | *40 - 140* | *10/23/24 09:47* | *10/23/24 15:12* | *1* |
| *o-Terphenyl (Surr)* | *74* | | *40 - 140* | *10/23/24 09:47* | *10/23/24 15:12* | *1* |
| *2-Fluorobiphenyl (Surr)* | *92* | | *40 - 140* | *10/23/24 09:47* | *10/23/24 15:12* | *1* |

**Lab Sample ID: LCS 620-40360/2-B**
**Matrix: Water**
**Analysis Batch: 40351**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 40360**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | 120 | 149 | | ug/L | | 125 | 40 - 140 |
| C19-C36 Aliphatics | 160 | 203 | | ug/L | | 127 | 40 - 140 |
| C11-C22 Aromatics | 340 | 314 | | ug/L | | 92 | 40 - 140 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *71* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *79* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *92* | | *40 - 140* |

**Lab Sample ID: LCSD 620-40360/3-B**
**Matrix: Water**
**Analysis Batch: 40351**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 40360**

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | 120 | 140 | | ug/L | | 117 | 40 - 140 | 7 | 25 |
| C19-C36 Aliphatics | 160 | 200 | | ug/L | | 125 | 40 - 140 | 1 | 25 |
| C11-C22 Aromatics | 340 | 309 | | ug/L | | 91 | 40 - 140 | 2 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *66* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *73* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *92* | | *40 - 140* |

**Lab Sample ID: 620-21692-1 MS**
**Matrix: Water**
**Analysis Batch: 40551**

**Client Sample ID: GW-MW108-101524**
**Prep Type: Total/NA**
**Prep Batch: 40360**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 120 | 103 | | ug/L | | 86 | 40 - 140 |
| C19-C36 Aliphatics | ND | | 160 | 198 | | ug/L | | 124 | 40 - 140 |
| C11-C22 Aromatics | ND | | 340 | 227 | | ug/L | | 67 | 40 - 140 |

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: 620-21692-1 MS**
**Matrix: Water**
**Analysis Batch: 40551**

**Client Sample ID: GW-MW108-101524**
**Prep Type: Total/NA**
**Prep Batch: 40360**

| *Surrogate* | *MS %Recovery* | *MS Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *56* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *62* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *78* | | *40 - 140* |

**Lab Sample ID: 620-21692-1 MSD**
**Matrix: Water**
**Analysis Batch: 40551**

**Client Sample ID: GW-MW108-101524**
**Prep Type: Total/NA**
**Prep Batch: 40360**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 114 | 106 | | ug/L | | 93 | 40 - 140 | 3 | 50 |
| C19-C36 Aliphatics | ND | | 152 | 175 | | ug/L | | 115 | 40 - 140 | 12 | 50 |
| C11-C22 Aromatics | ND | | 324 | 240 | | ug/L | | 74 | 40 - 140 | 5 | 50 |

| *Surrogate* | *MSD %Recovery* | *MSD Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *65* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *64* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *84* | | *40 - 140* |

## Method: 6010D - Metals (ICP)

**Lab Sample ID: MB 620-40189/1-A**
**Matrix: Water**
**Analysis Batch: 40277**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 40189**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 0.0060 | 0.0016 | mg/L | | 10/18/24 12:07 | 10/21/24 11:30 | 1 |
| Arsenic | ND | | 0.0040 | 0.0014 | mg/L | | 10/18/24 12:07 | 10/21/24 11:30 | 1 |
| Barium | ND | | 0.0050 | 0.00070 | mg/L | | 10/18/24 12:07 | 10/21/24 11:30 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 10/18/24 12:07 | 10/21/24 11:30 | 1 |
| Cadmium | ND | | 0.0025 | 0.00036 | mg/L | | 10/18/24 12:07 | 10/21/24 11:30 | 1 |
| Chromium | ND | | 0.0050 | 0.00093 | mg/L | | 10/18/24 12:07 | 10/21/24 11:30 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 10/18/24 12:07 | 10/21/24 11:30 | 1 |
| Nickel | ND | | 0.0050 | 0.00087 | mg/L | | 10/18/24 12:07 | 10/21/24 11:30 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 10/18/24 12:07 | 10/21/24 11:30 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 10/18/24 12:07 | 10/21/24 11:30 | 1 |
| Thallium | ND | | 0.0050 | 0.0021 | mg/L | | 10/18/24 12:07 | 10/21/24 11:30 | 1 |
| Vanadium | ND | | 0.0050 | 0.0011 | mg/L | | 10/18/24 12:07 | 10/21/24 11:30 | 1 |
| Zinc | ND | | 0.0050 | 0.0016 | mg/L | | 10/18/24 12:07 | 10/21/24 11:30 | 1 |

**Lab Sample ID: LCS 620-40189/2-A**
**Matrix: Water**
**Analysis Batch: 40277**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 40189**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Antimony | 1.00 | 0.900 | | mg/L | | 90 | 80 - 120 |
| Arsenic | 1.00 | 0.960 | | mg/L | | 96 | 80 - 120 |
| Barium | 1.00 | 1.05 | | mg/L | | 105 | 80 - 120 |
| Beryllium | 1.00 | 1.03 | | mg/L | | 103 | 80 - 120 |
| Cadmium | 1.00 | 0.959 | | mg/L | | 96 | 80 - 120 |

## Method: 6010D - Metals (ICP) (Continued)

**Lab Sample ID: LCS 620-40189/2-A**
**Matrix: Water**
**Analysis Batch: 40277**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 40189**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Chromium | 1.00 | 0.958 | | mg/L | | 96 | 80 - 120 |
| Lead | 1.00 | 0.942 | | mg/L | | 94 | 80 - 120 |
| Nickel | 1.00 | 0.907 | | mg/L | | 91 | 80 - 120 |
| Selenium | 1.00 | 0.939 | | mg/L | | 94 | 80 - 120 |
| Silver | 1.00 | 0.981 | | mg/L | | 98 | 80 - 120 |
| Thallium | 1.00 | 0.975 | | mg/L | | 97 | 80 - 120 |
| Vanadium | 1.00 | 1.03 | | mg/L | | 103 | 80 - 120 |
| Zinc | 1.00 | 0.912 | | mg/L | | 91 | 80 - 120 |

**Lab Sample ID: 620-21692-1 MS**
**Matrix: Water**
**Analysis Batch: 40277**

**Client Sample ID: GW-MW108-101524**
**Prep Type: Dissolved**
**Prep Batch: 40189**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 1.00 | 0.938 | | mg/L | | 94 | 75 - 125 |
| Arsenic | 0.0016 | J | 1.00 | 1.05 | | mg/L | | 104 | 75 - 125 |
| Barium | 0.13 | | 1.00 | 1.19 | | mg/L | | 106 | 75 - 125 |
| Beryllium | ND | | 1.00 | 1.08 | | mg/L | | 108 | 75 - 125 |
| Cadmium | ND | | 1.00 | 0.959 | | mg/L | | 96 | 75 - 125 |
| Chromium | ND | | 1.00 | 1.03 | | mg/L | | 103 | 75 - 125 |
| Lead | ND | | 1.00 | 0.883 | | mg/L | | 88 | 75 - 125 |
| Nickel | 0.0016 | J | 1.00 | 0.860 | | mg/L | | 86 | 75 - 125 |
| Selenium | ND | | 1.00 | 1.00 | | mg/L | | 100 | 75 - 125 |
| Silver | ND | | 1.00 | 1.08 | | mg/L | | 108 | 75 - 125 |
| Thallium | ND | | 1.00 | 0.941 | | mg/L | | 94 | 75 - 125 |
| Vanadium | 0.0011 | J | 1.00 | 1.06 | | mg/L | | 106 | 75 - 125 |
| Zinc | ND | | 1.00 | 0.972 | | mg/L | | 97 | 75 - 125 |

**Lab Sample ID: 620-21692-1 MSD**
**Matrix: Water**
**Analysis Batch: 40277**

**Client Sample ID: GW-MW108-101524**
**Prep Type: Dissolved**
**Prep Batch: 40189**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 1.00 | 0.918 | | mg/L | | 92 | 75 - 125 | 2 | 20 |
| Arsenic | 0.0016 | J | 1.00 | 1.02 | | mg/L | | 102 | 75 - 125 | 2 | 20 |
| Barium | 0.13 | | 1.00 | 1.13 | | mg/L | | 100 | 75 - 125 | 5 | 20 |
| Beryllium | ND | | 1.00 | 1.02 | | mg/L | | 102 | 75 - 125 | 6 | 20 |
| Cadmium | ND | | 1.00 | 0.934 | | mg/L | | 93 | 75 - 125 | 3 | 20 |
| Chromium | ND | | 1.00 | 0.978 | | mg/L | | 98 | 75 - 125 | 5 | 20 |
| Lead | ND | | 1.00 | 0.863 | | mg/L | | 86 | 75 - 125 | 2 | 20 |
| Nickel | 0.0016 | J | 1.00 | 0.841 | | mg/L | | 84 | 75 - 125 | 2 | 20 |
| Selenium | ND | | 1.00 | 0.983 | | mg/L | | 98 | 75 - 125 | 2 | 20 |
| Silver | ND | | 1.00 | 1.03 | | mg/L | | 103 | 75 - 125 | 5 | 20 |
| Thallium | ND | | 1.00 | 0.919 | | mg/L | | 92 | 75 - 125 | 2 | 20 |
| Vanadium | 0.0011 | J | 1.00 | 1.02 | | mg/L | | 102 | 75 - 125 | 4 | 20 |
| Zinc | ND | | 1.00 | 0.948 | | mg/L | | 95 | 75 - 125 | 3 | 20 |

## Method: 7470A - Mercury (CVAA)

**Lab Sample ID: MB 620-40545/1-A**
**Matrix: Water**
**Analysis Batch: 40655**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 40545**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 10/28/24 09:24 | 10/29/24 14:00 | 1 |

**Lab Sample ID: LCS 620-40545/2-A**
**Matrix: Water**
**Analysis Batch: 40655**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 40545**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | | | 0.00500 | 0.00503 | | mg/L | | 101 | 85 - 115 | | |

**Lab Sample ID: 620-21692-1 MS**
**Matrix: Water**
**Analysis Batch: 40655**

**Client Sample ID: GW-MW108-101524**
**Prep Type: Dissolved**
**Prep Batch: 40545**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00500 | 0.00503 | | mg/L | | 101 | 80 - 120 | | |

**Lab Sample ID: 620-21692-1 MSD**
**Matrix: Water**
**Analysis Batch: 40655**

**Client Sample ID: GW-MW108-101524**
**Prep Type: Dissolved**
**Prep Batch: 40545**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00500 | 0.00509 | | mg/L | | 102 | 80 - 120 | 1 | 20 |

**Lab Sample ID: 620-21692-1 DU**
**Matrix: Water**
**Analysis Batch: 40655**

**Client Sample ID: GW-MW108-101524**
**Prep Type: Dissolved**
**Prep Batch: 40545**

| Analyte | Sample Result | Sample Qualifier | | DU Result | DU Qualifier | Unit | D | | | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | | ND | | mg/L | | | | NC | 20 |

## GC/MS Semi VOA

### Prep Batch: 40360

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-21692-1 | GW-MW108-101524 | Total/NA | Water | 3510C | |
| 620-21692-2 | GW-BMW104-101524 | Total/NA | Water | 3510C | |
| 620-21692-3 | GW-BMW105-101524 | Total/NA | Water | 3510C | |
| 620-21692-4 | GW-MW109-101524 | Total/NA | Water | 3510C | |
| 620-21692-5 | GW-FD01 | Total/NA | Water | 3510C | |
| 620-21692-6 | GW-MW107-101624 | Total/NA | Water | 3510C | |
| 620-21692-8 | GW-MW106-101624 | Total/NA | Water | 3510C | |
| 620-21692-9 | GW-MW102R-101624 | Total/NA | Water | 3510C | |
| MB 620-40360/1-B | Method Blank | Total/NA | Water | 3510C | |
| LCS 620-40360/4-B | Lab Control Sample | Total/NA | Water | 3510C | |
| LCSD 620-40360/5-B | Lab Control Sample Dup | Total/NA | Water | 3510C | |
| 620-21692-1 MS | GW-MW108-101524 | Total/NA | Water | 3510C | |
| 620-21692-1 MSD | GW-MW108-101524 | Total/NA | Water | 3510C | |

### Fraction Batch: 40381

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-21692-1 | GW-MW108-101524 | Total/NA | Water | MA EPH Frac | 40360 |
| 620-21692-2 | GW-BMW104-101524 | Total/NA | Water | MA EPH Frac | 40360 |
| 620-21692-3 | GW-BMW105-101524 | Total/NA | Water | MA EPH Frac | 40360 |
| 620-21692-4 | GW-MW109-101524 | Total/NA | Water | MA EPH Frac | 40360 |
| 620-21692-5 | GW-FD01 | Total/NA | Water | MA EPH Frac | 40360 |
| 620-21692-6 | GW-MW107-101624 | Total/NA | Water | MA EPH Frac | 40360 |
| 620-21692-8 | GW-MW106-101624 | Total/NA | Water | MA EPH Frac | 40360 |
| 620-21692-9 | GW-MW102R-101624 | Total/NA | Water | MA EPH Frac | 40360 |
| MB 620-40360/1-B | Method Blank | Total/NA | Water | MA EPH Frac | 40360 |
| LCS 620-40360/4-B | Lab Control Sample | Total/NA | Water | MA EPH Frac | 40360 |
| LCSD 620-40360/5-B | Lab Control Sample Dup | Total/NA | Water | MA EPH Frac | 40360 |
| 620-21692-1 MS | GW-MW108-101524 | Total/NA | Water | MA EPH Frac | 40360 |
| 620-21692-1 MSD | GW-MW108-101524 | Total/NA | Water | MA EPH Frac | 40360 |

### Analysis Batch: 40620

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-21692-1 | GW-MW108-101524 | Total/NA | Water | EPH | 40381 |
| 620-21692-2 | GW-BMW104-101524 | Total/NA | Water | EPH | 40381 |
| 620-21692-3 | GW-BMW105-101524 | Total/NA | Water | EPH | 40381 |
| 620-21692-4 | GW-MW109-101524 | Total/NA | Water | EPH | 40381 |
| 620-21692-5 | GW-FD01 | Total/NA | Water | EPH | 40381 |
| 620-21692-6 | GW-MW107-101624 | Total/NA | Water | EPH | 40381 |
| 620-21692-8 | GW-MW106-101624 | Total/NA | Water | EPH | 40381 |
| 620-21692-9 | GW-MW102R-101624 | Total/NA | Water | EPH | 40381 |
| MB 620-40360/1-B | Method Blank | Total/NA | Water | EPH | 40381 |
| LCS 620-40360/4-B | Lab Control Sample | Total/NA | Water | EPH | 40381 |
| LCSD 620-40360/5-B | Lab Control Sample Dup | Total/NA | Water | EPH | 40381 |
| 620-21692-1 MS | GW-MW108-101524 | Total/NA | Water | EPH | 40381 |
| 620-21692-1 MSD | GW-MW108-101524 | Total/NA | Water | EPH | 40381 |

### Analysis Batch: 40753

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-21692-9 | GW-MW102R-101624 | Total/NA | Water | EPH | 40381 |

## GC VOA

### Analysis Batch: 40432

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-21692-2 | GW-BMW104-101524 | Total/NA | Water | MAVPH2.1 | |
| 620-21692-3 | GW-BMW105-101524 | Total/NA | Water | MAVPH2.1 | |
| 620-21692-4 | GW-MW109-101524 | Total/NA | Water | MAVPH2.1 | |
| 620-21692-5 | GW-FD01 | Total/NA | Water | MAVPH2.1 | |
| 620-21692-6 | GW-MW107-101624 | Total/NA | Water | MAVPH2.1 | |
| 620-21692-7 | GW-BMW101-101624 | Total/NA | Water | MAVPH2.1 | |
| 620-21692-8 | GW-MW106-101624 | Total/NA | Water | MAVPH2.1 | |
| 620-21692-9 | GW-MW102R-101624 | Total/NA | Water | MAVPH2.1 | |
| 620-21692-10 | Trip Blank | Total/NA | Water | MAVPH2.1 | |
| MB 620-40432/4 | Method Blank | Total/NA | Water | MAVPH2.1 | |
| LCS 620-40432/2 | Lab Control Sample | Total/NA | Water | MAVPH2.1 | |
| LCSD 620-40432/3 | Lab Control Sample Dup | Total/NA | Water | MAVPH2.1 | |

### Analysis Batch: 40527

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-21692-1 | GW-MW108-101524 | Total/NA | Water | MAVPH2.1 | |
| 620-21692-4 - DL | GW-MW109-101524 | Total/NA | Water | MAVPH2.1 | |
| 620-21692-4 - DL2 | GW-MW109-101524 | Total/NA | Water | MAVPH2.1 | |
| 620-21692-8 - DL | GW-MW106-101624 | Total/NA | Water | MAVPH2.1 | |
| 620-21692-8 - DL2 | GW-MW106-101624 | Total/NA | Water | MAVPH2.1 | |
| 620-21692-9 - DL | GW-MW102R-101624 | Total/NA | Water | MAVPH2.1 | |
| MB 620-40527/5 | Method Blank | Total/NA | Water | MAVPH2.1 | |
| LCS 620-40527/3 | Lab Control Sample | Total/NA | Water | MAVPH2.1 | |
| LCSD 620-40527/4 | Lab Control Sample Dup | Total/NA | Water | MAVPH2.1 | |
| 620-21692-1 MS | GW-MW108-101524 | Total/NA | Water | MAVPH2.1 | |
| 620-21692-1 MSD | GW-MW108-101524 | Total/NA | Water | MAVPH2.1 | |

## GC Semi VOA

### Analysis Batch: 40351

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| MB 620-40360/1-B | Method Blank | Total/NA | Water | MAEPH2.1 | 40381 |
| LCS 620-40360/2-B | Lab Control Sample | Total/NA | Water | MAEPH2.1 | 40381 |
| LCSD 620-40360/3-B | Lab Control Sample Dup | Total/NA | Water | MAEPH2.1 | 40381 |

### Prep Batch: 40360

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-21692-1 | GW-MW108-101524 | Total/NA | Water | 3510C | |
| 620-21692-2 | GW-BMW104-101524 | Total/NA | Water | 3510C | |
| 620-21692-3 | GW-BMW105-101524 | Total/NA | Water | 3510C | |
| 620-21692-4 | GW-MW109-101524 | Total/NA | Water | 3510C | |
| 620-21692-5 | GW-FD01 | Total/NA | Water | 3510C | |
| 620-21692-6 | GW-MW107-101624 | Total/NA | Water | 3510C | |
| 620-21692-8 | GW-MW106-101624 | Total/NA | Water | 3510C | |
| 620-21692-9 | GW-MW102R-101624 | Total/NA | Water | 3510C | |
| MB 620-40360/1-B | Method Blank | Total/NA | Water | 3510C | |
| LCS 620-40360/2-B | Lab Control Sample | Total/NA | Water | 3510C | |
| LCSD 620-40360/3-B | Lab Control Sample Dup | Total/NA | Water | 3510C | |
| 620-21692-1 MS | GW-MW108-101524 | Total/NA | Water | 3510C | |
| 620-21692-1 MSD | GW-MW108-101524 | Total/NA | Water | 3510C | |

## GC Semi VOA

### Fraction Batch: 40381

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-21692-1 | GW-MW108-101524 | Total/NA | Water | MA EPH Frac | 40360 |
| 620-21692-2 | GW-BMW104-101524 | Total/NA | Water | MA EPH Frac | 40360 |
| 620-21692-3 | GW-BMW105-101524 | Total/NA | Water | MA EPH Frac | 40360 |
| 620-21692-4 | GW-MW109-101524 | Total/NA | Water | MA EPH Frac | 40360 |
| 620-21692-5 | GW-FD01 | Total/NA | Water | MA EPH Frac | 40360 |
| 620-21692-6 | GW-MW107-101624 | Total/NA | Water | MA EPH Frac | 40360 |
| 620-21692-8 | GW-MW106-101624 | Total/NA | Water | MA EPH Frac | 40360 |
| 620-21692-9 | GW-MW102R-101624 | Total/NA | Water | MA EPH Frac | 40360 |
| MB 620-40360/1-B | Method Blank | Total/NA | Water | MA EPH Frac | 40360 |
| LCS 620-40360/2-B | Lab Control Sample | Total/NA | Water | MA EPH Frac | 40360 |
| LCSD 620-40360/3-B | Lab Control Sample Dup | Total/NA | Water | MA EPH Frac | 40360 |
| 620-21692-1 MS | GW-MW108-101524 | Total/NA | Water | MA EPH Frac | 40360 |
| 620-21692-1 MSD | GW-MW108-101524 | Total/NA | Water | MA EPH Frac | 40360 |

### Analysis Batch: 40551

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-21692-1 | GW-MW108-101524 | Total/NA | Water | MAEPH2.1 | 40381 |
| 620-21692-2 | GW-BMW104-101524 | Total/NA | Water | MAEPH2.1 | 40381 |
| 620-21692-1 MS | GW-MW108-101524 | Total/NA | Water | MAEPH2.1 | 40381 |
| 620-21692-1 MSD | GW-MW108-101524 | Total/NA | Water | MAEPH2.1 | 40381 |

### Analysis Batch: 40600

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-21692-3 | GW-BMW105-101524 | Total/NA | Water | MAEPH2.1 | 40381 |
| 620-21692-4 | GW-MW109-101524 | Total/NA | Water | MAEPH2.1 | 40381 |
| 620-21692-5 | GW-FD01 | Total/NA | Water | MAEPH2.1 | 40381 |
| 620-21692-6 | GW-MW107-101624 | Total/NA | Water | MAEPH2.1 | 40381 |
| 620-21692-8 | GW-MW106-101624 | Total/NA | Water | MAEPH2.1 | 40381 |
| 620-21692-9 | GW-MW102R-101624 | Total/NA | Water | MAEPH2.1 | 40381 |

## Metals

### Prep Batch: 40189

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-21692-1 | GW-MW108-101524 | Dissolved | Water | 3005A | |
| 620-21692-2 | GW-BMW104-101524 | Dissolved | Water | 3005A | |
| 620-21692-3 | GW-BMW105-101524 | Dissolved | Water | 3005A | |
| 620-21692-4 | GW-MW109-101524 | Dissolved | Water | 3005A | |
| 620-21692-5 | GW-FD01 | Dissolved | Water | 3005A | |
| 620-21692-6 | GW-MW107-101624 | Dissolved | Water | 3005A | |
| 620-21692-8 | GW-MW106-101624 | Dissolved | Water | 3005A | |
| 620-21692-9 | GW-MW102R-101624 | Dissolved | Water | 3005A | |
| MB 620-40189/1-A | Method Blank | Total/NA | Water | 3005A | |
| LCS 620-40189/2-A | Lab Control Sample | Total/NA | Water | 3005A | |
| 620-21692-1 MS | GW-MW108-101524 | Dissolved | Water | 3005A | |
| 620-21692-1 MSD | GW-MW108-101524 | Dissolved | Water | 3005A | |

### Analysis Batch: 40277

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-21692-1 | GW-MW108-101524 | Dissolved | Water | 6010D | 40189 |
| 620-21692-2 | GW-BMW104-101524 | Dissolved | Water | 6010D | 40189 |

## Metals (Continued)

### Analysis Batch: 40277 (Continued)

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-21692-3 | GW-BMW105-101524 | Dissolved | Water | 6010D | 40189 |
| 620-21692-4 | GW-MW109-101524 | Dissolved | Water | 6010D | 40189 |
| 620-21692-5 | GW-FD01 | Dissolved | Water | 6010D | 40189 |
| 620-21692-6 | GW-MW107-101624 | Dissolved | Water | 6010D | 40189 |
| 620-21692-8 | GW-MW106-101624 | Dissolved | Water | 6010D | 40189 |
| 620-21692-9 | GW-MW102R-101624 | Dissolved | Water | 6010D | 40189 |
| MB 620-40189/1-A | Method Blank | Total/NA | Water | 6010D | 40189 |
| LCS 620-40189/2-A | Lab Control Sample | Total/NA | Water | 6010D | 40189 |
| 620-21692-1 MS | GW-MW108-101524 | Dissolved | Water | 6010D | 40189 |
| 620-21692-1 MSD | GW-MW108-101524 | Dissolved | Water | 6010D | 40189 |

### Prep Batch: 40545

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-21692-1 | GW-MW108-101524 | Dissolved | Water | 7470A | |
| 620-21692-2 | GW-BMW104-101524 | Dissolved | Water | 7470A | |
| 620-21692-3 | GW-BMW105-101524 | Dissolved | Water | 7470A | |
| 620-21692-4 | GW-MW109-101524 | Dissolved | Water | 7470A | |
| 620-21692-5 | GW-FD01 | Dissolved | Water | 7470A | |
| 620-21692-6 | GW-MW107-101624 | Dissolved | Water | 7470A | |
| 620-21692-8 | GW-MW106-101624 | Dissolved | Water | 7470A | |
| 620-21692-9 | GW-MW102R-101624 | Dissolved | Water | 7470A | |
| MB 620-40545/1-A | Method Blank | Total/NA | Water | 7470A | |
| LCS 620-40545/2-A | Lab Control Sample | Total/NA | Water | 7470A | |
| 620-21692-1 MS | GW-MW108-101524 | Dissolved | Water | 7470A | |
| 620-21692-1 MSD | GW-MW108-101524 | Dissolved | Water | 7470A | |
| 620-21692-1 DU | GW-MW108-101524 | Dissolved | Water | 7470A | |

### Analysis Batch: 40655

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-21692-1 | GW-MW108-101524 | Dissolved | Water | 7470A | 40545 |
| 620-21692-2 | GW-BMW104-101524 | Dissolved | Water | 7470A | 40545 |
| 620-21692-3 | GW-BMW105-101524 | Dissolved | Water | 7470A | 40545 |
| 620-21692-4 | GW-MW109-101524 | Dissolved | Water | 7470A | 40545 |
| 620-21692-5 | GW-FD01 | Dissolved | Water | 7470A | 40545 |
| 620-21692-6 | GW-MW107-101624 | Dissolved | Water | 7470A | 40545 |
| 620-21692-8 | GW-MW106-101624 | Dissolved | Water | 7470A | 40545 |
| 620-21692-9 | GW-MW102R-101624 | Dissolved | Water | 7470A | 40545 |
| MB 620-40545/1-A | Method Blank | Total/NA | Water | 7470A | 40545 |
| LCS 620-40545/2-A | Lab Control Sample | Total/NA | Water | 7470A | 40545 |
| 620-21692-1 MS | GW-MW108-101524 | Dissolved | Water | 7470A | 40545 |
| 620-21692-1 MSD | GW-MW108-101524 | Dissolved | Water | 7470A | 40545 |
| 620-21692-1 DU | GW-MW108-101524 | Dissolved | Water | 7470A | 40545 |

# Lab Chronicle

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-21692-1

## Client Sample ID: GW-MW108-101524

**Lab Sample ID: 620-21692-1**

**Date Collected: 10/15/24 10:45**

**Matrix: Water**

**Date Received: 10/17/24 17:00**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 40360 | AAH | EET RI | 10/23/24 09:47 |
| Total/NA | Fraction | MA EPH Frac | | | 40381 | AAH | EET RI | 10/23/24 13:36 |
| Total/NA | Analysis | EPH | | 1 | 40620 | JS | EET RI | 10/29/24 18:56 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 40527 | CLR | EET RI | 10/28/24 18:02 |
| Total/NA | Prep | 3510C | | | 40360 | AAH | EET RI | 10/23/24 09:47 |
| Total/NA | Fraction | MA EPH Frac | | | 40381 | AAH | EET RI | 10/23/24 13:36 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 40551 | JS | EET RI | 10/28/24 11:29 |
| Dissolved | Prep | 3005A | | | 40189 | JPC | EET RI | 10/18/24 12:07 |
| Dissolved | Analysis | 6010D | | 1 | 40277 | JPC | EET RI | 10/21/24 11:42 |
| Dissolved | Prep | 7470A | | | 40545 | PRB | EET RI | 10/28/24 09:24 |
| Dissolved | Analysis | 7470A | | 1 | 40655 | PRB | EET RI | 10/29/24 14:04 |

## Client Sample ID: GW-BMW104-101524

**Lab Sample ID: 620-21692-2**

**Date Collected: 10/15/24 12:15**

**Matrix: Water**

**Date Received: 10/17/24 17:00**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 40360 | AAH | EET RI | 10/23/24 09:47 |
| Total/NA | Fraction | MA EPH Frac | | | 40381 | AAH | EET RI | 10/23/24 13:36 |
| Total/NA | Analysis | EPH | | 1 | 40620 | JS | EET RI | 10/29/24 20:06 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 40432 | CLR | EET RI | 10/24/24 21:11 |
| Total/NA | Prep | 3510C | | | 40360 | AAH | EET RI | 10/23/24 09:47 |
| Total/NA | Fraction | MA EPH Frac | | | 40381 | AAH | EET RI | 10/23/24 13:36 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 40551 | JS | EET RI | 10/28/24 12:51 |
| Dissolved | Prep | 3005A | | | 40189 | JPC | EET RI | 10/18/24 12:07 |
| Dissolved | Analysis | 6010D | | 1 | 40277 | JPC | EET RI | 10/21/24 12:18 |
| Dissolved | Prep | 7470A | | | 40545 | PRB | EET RI | 10/28/24 09:24 |
| Dissolved | Analysis | 7470A | | 1 | 40655 | PRB | EET RI | 10/29/24 14:12 |

## Client Sample ID: GW-BMW105-101524

**Lab Sample ID: 620-21692-3**

**Date Collected: 10/15/24 14:00**

**Matrix: Water**

**Date Received: 10/17/24 17:00**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 40360 | AAH | EET RI | 10/23/24 09:47 |
| Total/NA | Fraction | MA EPH Frac | | | 40381 | AAH | EET RI | 10/23/24 13:36 |
| Total/NA | Analysis | EPH | | 1 | 40620 | JS | EET RI | 10/29/24 20:29 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 40432 | CLR | EET RI | 10/24/24 21:41 |
| Total/NA | Prep | 3510C | | | 40360 | AAH | EET RI | 10/23/24 09:47 |
| Total/NA | Fraction | MA EPH Frac | | | 40381 | AAH | EET RI | 10/23/24 13:36 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 40600 | JS | EET RI | 10/29/24 10:40 |
| Dissolved | Prep | 3005A | | | 40189 | JPC | EET RI | 10/18/24 12:07 |
| Dissolved | Analysis | 6010D | | 1 | 40277 | JPC | EET RI | 10/21/24 12:24 |
| Dissolved | Prep | 7470A | | | 40545 | PRB | EET RI | 10/28/24 09:24 |
| Dissolved | Analysis | 7470A | | 1 | 40655 | PRB | EET RI | 10/29/24 14:15 |

# Lab Chronicle

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-21692-1

## Client Sample ID: GW-MW109-101524

**Lab Sample ID: 620-21692-4**

**Date Collected: 10/15/24 15:20**
**Matrix: Water**
**Date Received: 10/17/24 17:00**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 40360 | AAH | EET RI | 10/23/24 09:47 |
| Total/NA | Fraction | MA EPH Frac | | | 40381 | AAH | EET RI | 10/23/24 13:36 |
| Total/NA | Analysis | EPH | | 1 | 40620 | JS | EET RI | 10/29/24 20:53 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 40432 | CLR | EET RI | 10/24/24 22:11 |
| Total/NA | Analysis | MAVPH2.1 | DL | 5 | 40527 | CLR | EET RI | 10/28/24 19:33 |
| Total/NA | Analysis | MAVPH2.1 | DL2 | 10 | 40527 | CLR | EET RI | 10/29/24 14:45 |
| Total/NA | Prep | 3510C | | | 40360 | AAH | EET RI | 10/23/24 09:47 |
| Total/NA | Fraction | MA EPH Frac | | | 40381 | AAH | EET RI | 10/23/24 13:36 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 40600 | JS | EET RI | 10/29/24 11:06 |
| Dissolved | Prep | 3005A | | | 40189 | JPC | EET RI | 10/18/24 12:07 |
| Dissolved | Analysis | 6010D | | 1 | 40277 | JPC | EET RI | 10/21/24 12:43 |
| Dissolved | Prep | 7470A | | | 40545 | PRB | EET RI | 10/28/24 09:24 |
| Dissolved | Analysis | 7470A | | 1 | 40655 | PRB | EET RI | 10/29/24 14:17 |

## Client Sample ID: GW-FD01

**Lab Sample ID: 620-21692-5**

**Date Collected: 10/15/24 08:00**
**Matrix: Water**
**Date Received: 10/17/24 17:00**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 40360 | AAH | EET RI | 10/23/24 09:47 |
| Total/NA | Fraction | MA EPH Frac | | | 40381 | AAH | EET RI | 10/23/24 13:36 |
| Total/NA | Analysis | EPH | | 1 | 40620 | JS | EET RI | 10/29/24 21:16 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 40432 | CLR | EET RI | 10/24/24 22:42 |
| Total/NA | Prep | 3510C | | | 40360 | AAH | EET RI | 10/23/24 09:47 |
| Total/NA | Fraction | MA EPH Frac | | | 40381 | AAH | EET RI | 10/23/24 13:36 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 40600 | JS | EET RI | 10/29/24 11:33 |
| Dissolved | Prep | 3005A | | | 40189 | JPC | EET RI | 10/18/24 12:07 |
| Dissolved | Analysis | 6010D | | 1 | 40277 | JPC | EET RI | 10/21/24 12:49 |
| Dissolved | Prep | 7470A | | | 40545 | PRB | EET RI | 10/28/24 09:24 |
| Dissolved | Analysis | 7470A | | 1 | 40655 | PRB | EET RI | 10/29/24 14:19 |

## Client Sample ID: GW-MW107-101624

**Lab Sample ID: 620-21692-6**

**Date Collected: 10/16/24 09:35**
**Matrix: Water**
**Date Received: 10/17/24 17:00**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 40360 | AAH | EET RI | 10/23/24 09:47 |
| Total/NA | Fraction | MA EPH Frac | | | 40381 | AAH | EET RI | 10/23/24 13:36 |
| Total/NA | Analysis | EPH | | 1 | 40620 | JS | EET RI | 10/29/24 21:39 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 40432 | CLR | EET RI | 10/24/24 23:12 |
| Total/NA | Prep | 3510C | | | 40360 | AAH | EET RI | 10/23/24 09:47 |
| Total/NA | Fraction | MA EPH Frac | | | 40381 | AAH | EET RI | 10/23/24 13:36 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 40600 | JS | EET RI | 10/29/24 12:00 |
| Dissolved | Prep | 3005A | | | 40189 | JPC | EET RI | 10/18/24 12:07 |
| Dissolved | Analysis | 6010D | | 1 | 40277 | JPC | EET RI | 10/21/24 12:55 |

# Lab Chronicle

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-21692-1

## Client Sample ID: GW-MW107-101624

**Lab Sample ID: 620-21692-6**

**Date Collected: 10/16/24 09:35**

**Matrix: Water**

**Date Received: 10/17/24 17:00**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Dissolved | Prep | 7470A | | | 40545 | PRB | EET RI | 10/28/24 09:24 |
| Dissolved | Analysis | 7470A | | 1 | 40655 | PRB | EET RI | 10/29/24 14:25 |

## Client Sample ID: GW-BMW101-101624

**Lab Sample ID: 620-21692-7**

**Date Collected: 10/16/24 09:50**

**Matrix: Water**

**Date Received: 10/17/24 17:00**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | MAVPH2.1 | | 1 | 40432 | CLR | EET RI | 10/24/24 23:43 |

## Client Sample ID: GW-MW106-101624

**Lab Sample ID: 620-21692-8**

**Date Collected: 10/16/24 10:50**

**Matrix: Water**

**Date Received: 10/17/24 17:00**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 40360 | AAH | EET RI | 10/23/24 09:47 |
| Total/NA | Fraction | MA EPH Frac | | | 40381 | AAH | EET RI | 10/23/24 13:36 |
| Total/NA | Analysis | EPH | | 1 | 40620 | JS | EET RI | 10/29/24 22:03 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 40432 | CLR | EET RI | 10/25/24 00:13 |
| Total/NA | Analysis | MAVPH2.1 | DL | 10 | 40527 | CLR | EET RI | 10/28/24 20:04 |
| Total/NA | Analysis | MAVPH2.1 | DL2 | 50 | 40527 | CLR | EET RI | 10/29/24 15:15 |
| Total/NA | Prep | 3510C | | | 40360 | AAH | EET RI | 10/23/24 09:47 |
| Total/NA | Fraction | MA EPH Frac | | | 40381 | AAH | EET RI | 10/23/24 13:36 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 40600 | JS | EET RI | 10/29/24 12:27 |
| Dissolved | Prep | 3005A | | | 40189 | JPC | EET RI | 10/18/24 12:07 |
| Dissolved | Analysis | 6010D | | 1 | 40277 | JPC | EET RI | 10/21/24 13:01 |
| Dissolved | Prep | 7470A | | | 40545 | PRB | EET RI | 10/28/24 09:24 |
| Dissolved | Analysis | 7470A | | 1 | 40655 | PRB | EET RI | 10/29/24 14:28 |

## Client Sample ID: GW-MW102R-101624

**Lab Sample ID: 620-21692-9**

**Date Collected: 10/16/24 11:50**

**Matrix: Water**

**Date Received: 10/17/24 17:00**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 40360 | AAH | EET RI | 10/23/24 09:47 |
| Total/NA | Fraction | MA EPH Frac | | | 40381 | AAH | EET RI | 10/23/24 13:36 |
| Total/NA | Analysis | EPH | | 1 | 40620 | JS | EET RI | 10/29/24 22:26 |
| Total/NA | Prep | 3510C | | | 40360 | AAH | EET RI | 10/23/24 09:47 |
| Total/NA | Fraction | MA EPH Frac | | | 40381 | AAH | EET RI | 10/23/24 13:36 |
| Total/NA | Analysis | EPH | | 4 | 40753 | JS | EET RI | 10/31/24 14:48 |
| Total/NA | Analysis | MAVPH2.1 | | 10 | 40432 | CLR | EET RI | 10/25/24 01:14 |
| Total/NA | Analysis | MAVPH2.1 | DL | 25 | 40527 | CLR | EET RI | 10/28/24 20:34 |
| Total/NA | Prep | 3510C | | | 40360 | AAH | EET RI | 10/23/24 09:47 |
| Total/NA | Fraction | MA EPH Frac | | | 40381 | AAH | EET RI | 10/23/24 13:36 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 40600 | JS | EET RI | 10/29/24 12:55 |

# Lab Chronicle

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-21692-1

## Client Sample ID: GW-MW102R-101624

**Lab Sample ID: 620-21692-9**

**Date Collected: 10/16/24 11:50**

**Matrix: Water**

**Date Received: 10/17/24 17:00**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Dissolved | Prep | 3005A | | | 40189 | JPC | EET RI | 10/18/24 12:07 |
| Dissolved | Analysis | 6010D | | 1 | 40277 | JPC | EET RI | 10/21/24 13:07 |
| Dissolved | Prep | 7470A | | | 40545 | PRB | EET RI | 10/28/24 09:24 |
| Dissolved | Analysis | 7470A | | 1 | 40655 | PRB | EET RI | 10/29/24 14:30 |

## Client Sample ID: Trip Blank

**Lab Sample ID: 620-21692-10**

**Date Collected: 10/16/24 00:00**

**Matrix: Water**

**Date Received: 10/17/24 17:00**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | MAVPH2.1 | | 1 | 40432 | CLR | EET RI | 10/24/24 17:38 |

**Laboratory References:**

EET RI = Eurofins Rhode Island, 646 Camp Ave, North Kingstown, RI 02852, TEL (413)789-9018

# Accreditation/Certification Summary

Client: Nobis Engineering, Inc. Job ID: 620-21692-1
Project/Site: Former L&M - Lunenburg MA

## Laboratory: Eurofins Rhode Island

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

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|
| Massachusetts | State | M-RI907 | 06-30-25 |

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

| Analysis Method | Prep Method | Matrix | Analyte |
|---|---|---|---|
| 6010D | 3005A | Water | Antimony |
| 6010D | 3005A | Water | Arsenic |
| 6010D | 3005A | Water | Barium |
| 6010D | 3005A | Water | Beryllium |
| 6010D | 3005A | Water | Cadmium |
| 6010D | 3005A | Water | Chromium |
| 6010D | 3005A | Water | Lead |
| 6010D | 3005A | Water | Nickel |
| 6010D | 3005A | Water | Selenium |
| 6010D | 3005A | Water | Silver |
| 6010D | 3005A | Water | Thallium |
| 6010D | 3005A | Water | Vanadium |
| 6010D | 3005A | Water | Zinc |
| 7470A | 7470A | Water | Mercury |
| EPH | 3510C | Water | 2-Methylnaphthalene |
| EPH | 3510C | Water | Acenaphthene |
| EPH | 3510C | Water | Acenaphthylene |
| EPH | 3510C | Water | Anthracene |
| EPH | 3510C | Water | Benzo[a]anthracene |
| EPH | 3510C | Water | Benzo[a]pyrene |
| EPH | 3510C | Water | Benzo[b]fluoranthene |
| EPH | 3510C | Water | Benzo[g,h,i]perylene |
| EPH | 3510C | Water | Benzo[k]fluoranthene |
| EPH | 3510C | Water | Chrysene |
| EPH | 3510C | Water | Dibenz(a,h)anthracene |
| EPH | 3510C | Water | Fluoranthene |
| EPH | 3510C | Water | Fluorene |
| EPH | 3510C | Water | Indeno[1,2,3-cd]pyrene |
| EPH | 3510C | Water | Naphthalene |
| EPH | 3510C | Water | Phenanthrene |
| EPH | 3510C | Water | Pyrene |
| MAEPH2.1 | 3510C | Water | C11-C22 Aromatics |
| MAEPH2.1 | 3510C | Water | C11-C22 Aromatics (Adjusted) |
| MAEPH2.1 | 3510C | Water | C19-C36 Aliphatics |
| MAEPH2.1 | 3510C | Water | C9-C18 Aliphatics |
| MAVPH2.1 | | Water | Benzene |
| MAVPH2.1 | | Water | C5-C8 Aliphatics (adjusted) |
| MAVPH2.1 | | Water | C5-C8 Aliphatics (unadjusted) |
| MAVPH2.1 | | Water | C9-C10 Aromatics |
| MAVPH2.1 | | Water | C9-C12 Aliphatics (adjusted) |
| MAVPH2.1 | | Water | C9-C12 Aliphatics (unadjusted) |
| MAVPH2.1 | | Water | Ethylbenzene |
| MAVPH2.1 | | Water | m,p-Xylene |
| MAVPH2.1 | | Water | Methyl tert-butyl ether |
| MAVPH2.1 | | Water | Naphthalene |

Client: Nobis Engineering, Inc. Job ID: 620-21692-1
Project/Site: Former L&M - Lunenburg MA

## Laboratory: Eurofins Rhode Island (Continued)

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

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

| Analysis Method | Prep Method | Matrix | Analyte |
|---|---|---|---|
| MAVPH2.1 | | Water | o-Xylene |
| MAVPH2.1 | | Water | Toluene |
| MAVPH2.1 | | Water | Xylenes, Total |

# Method Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-21692-1

| Method | Method Description | Protocol | Laboratory |
|---|---|---|---|
| EPH | Extractable Petroleum Hydrocarbons (GC/MS) | MA DEP | EET RI |
| MAVPH2.1 | Massachusetts - Volatile Petroleum Hydrocarbons (GC) | MA DEP | EET RI |
| MAEPH2.1 | Massachusetts - Extractable Petroleum Hydrocarbons (GC) | MA DEP | EET RI |
| 6010D | Metals (ICP) | SW846 | EET RI |
| 7470A | Mercury (CVAA) | SW846 | EET RI |
| 3005A | Preparation, Total Metals | SW846 | EET RI |
| 3510C | Liquid-Liquid Extraction (Separatory Funnel) | SW846 | EET RI |
| 5030C | Purge and Trap | SW846 | EET RI |
| 7470A | Preparation, Mercury | SW846 | EET RI |
| MA EPH Frac | Massachusetts - Extractable Petroleum Hydrocarbon Fractionation | MA DEP | EET RI |

**Protocol References:**

MA DEP = Massachusetts Department Of Environmental Protection

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

**Laboratory References:**

EET RI = Eurofins Rhode Island, 646 Camp Ave, North Kingstown, RI 02852, TEL (413)789-9018

# Sample Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-21692-1

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---|---|---|---|---|
| 620-21692-1 | GW-MW108-101524 | Water | 10/15/24 10:45 | 10/17/24 17:00 |
| 620-21692-2 | GW-BMW104-101524 | Water | 10/15/24 12:15 | 10/17/24 17:00 |
| 620-21692-3 | GW-BMW105-101524 | Water | 10/15/24 14:00 | 10/17/24 17:00 |
| 620-21692-4 | GW-MW109-101524 | Water | 10/15/24 15:20 | 10/17/24 17:00 |
| 620-21692-5 | GW-FD01 | Water | 10/15/24 08:00 | 10/17/24 17:00 |
| 620-21692-6 | GW-MW107-101624 | Water | 10/16/24 09:35 | 10/17/24 17:00 |
| 620-21692-7 | GW-BMW101-101624 | Water | 10/16/24 09:50 | 10/17/24 17:00 |
| 620-21692-8 | GW-MW106-101624 | Water | 10/16/24 10:50 | 10/17/24 17:00 |
| 620-21692-9 | GW-MW102R-101624 | Water | 10/16/24 11:50 | 10/17/24 17:00 |
| 620-21692-10 | Trip Blank | Water | 10/16/24 00:00 | 10/17/24 17:00 |

**Eurofins Rhode Island**
646 Camp Ave
North Kingstown, RI 02852
Phone 413-789-9018 Fax 413-506-3830

21692

# Chain of Custody Record

eurofins | Environment Testing

| Client Information | Sampler: P. Moran | Lab PM: Huntley, Agnes R | Carrier Tracking No(s): | COC No: 620-19638-2812 1 |
|---|---|---|---|---|
| Client Contact: Adam Roy | Phone: 978-500-6217 | E-Mail: Agnes.Huntley@et.eurofinsus.com | State of Origin: | Page: Page 1 of 1 |
| Company: Nobis Engineering, Inc | PWSID: | | | Job #: |
| Address: 55 Technology Drive Suite 101 | Due Date Requested: | | | |
| City: Lowell | TAT Requested (days): Standard | | | |
| State, Zip: MA, 01851 | Compliance Project: ☑ Yes ☐ No | | | |
| Phone: 603-520-5849(Tel) | PO #: Purchase Order Requested | | | |
| Email: aroy@nobis-group.com | WO #: | | | |
| Project Name: Former L&M - Lunenburg MA | Project #: 62002215 | | | |
| Site: | SSOW#: | | | |

**Analysis Requested**

**Preservation Codes:**
A - HCL
D - HNO3

Other:

| Sample Identification | Sample Date | Sample Time | Sample Type (C=Comp, G=grab) | Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air) | Field Filtered Sample (Yes or No) | Perform MS/MSD (Yes or No) | MAVPH2.1 - MADEP Volatile Petroleum Hydrocarbons (G | EPH_MS, MAEPH2.1 | 6010MCP, 7470MCP | Total Number of containers | Special Instructions/Note: |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preservation Code: | | | | A | A | D | | |
| GW-MW108-101524 | 10/15/24 | 10:45 | G | Water | X | X | X | X | X | 18 | |
| GW-BMW104-101524 | 10/15/24 | 12:15 | G | Water | X | | X | X | X | 6 | |
| GW-BMW105-101524 | 10/15/24 | 14:00 | G | Water | X | | X | X | X | 6 | |
| GW-MW109-101524 | 10/15/24 | 15:20 | G | Water | X | | X | X | X | 6 | |
| GW-FD01 | 10/15/24 | 08:00 | G | Water | X | | X | X | X | 6 | |
| GW-MW107-101624 | 10/16/24 | 09:35 | G | Water | X | | X | X | X | 6 | |
| GW-BMW101-101624 | 10/16/24 | 09:50 | G | Water | | | X | | | 3 | |
| GW-MW106-101624 | 10/16/24 | 10:56 | G | Water | X | | X | X | X | 6 | |
| GW-MW102R-101624 | 10/16/24 | 11:50 | G | Water | X | | X | X | X | 6 | |
| Trip Blank | | | | Water | | | X | | | 2 | |
| | | | | Water | | | | | | | |

620-21692 Chain of Custody

***Possible Hazard Identification***
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

***Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)***
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested. I, II, III, IV, Other (specify): Email EDD equis

Special Instructions/QC Requirements

| Empty Kit Relinquished by | Date. | Time | Method of Shipment: |
|---|---|---|---|
| | | | |

| | Relinquished by | Date/Time | Company | Received by | Date/Time | Company |
|---|---|---|---|---|---|---|
| 1 | | 10/17/24 12:45 | Nobis | | 10/17/2024 12:45 | Eurofins |
| 2 | | 10/17/24 17:39 | GZA | | 10/17/24 17:39 | GZA |
| 3 | Relinquished by | Date/Time | Company | Received by | Date/Time | Company |

| Custody Seals Intact ☐ Yes ☐ No | Custody Seal No | Cooler Temperature(s) °C and Other Remarks: 0.6 +0.2 0.8/1.2 +0.2 1.4/2.4 +0.2 2.6 +0.2 |
|---|---|---|

Ver: 05/06/2024

Page 52 of 53

10/31/2024

# Login Sample Receipt Checklist

Client: Nobis Engineering, Inc.

Job Number: 620-21692-1

**Login Number: 21692**
**List Number: 1**
**Creator: Makhoul, Elie**

**List Source: Eurofins Rhode Island**

| Question | Answer | Comment |
|---|---|---|
| Radioactivity wasn't checked or is </= background as measured by a survey meter. | N/A | |
| The cooler's custody seal, if present, is intact. | N/A | |
| Sample custody seals, if present, are intact. | N/A | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| Is the Field Sampler's name present on COC? | True | |
| There are no discrepancies between the containers received and the COC. | True | |
| Samples are received within Holding Time (excluding tests with immediate HTs) | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| Sample Preservation Verified. | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| Containers requiring zero headspace have no headspace or bubble is <6mm (1/4"). | True | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |
| Residual Chlorine Checked. | N/A | |

February 12, 2025
Nobis File No. S00001.05

Ms. Katy Deng
USEPA – Region 1
Land, Chemicals, and Redevelopment Division
5 Post Office Square, Suite 100
Boston, MA 02109-3912

Re: USEPA Contract No. 68HE0122D0001
USEPA Task Order No. 68HE0122F0044
Targeted Brownfields Assessment (TBA)
Former L&M Service Station Site
Lunenburg, Massachusetts
Sample Delivery Group (SDG) No. 620229081
Eurofins New England, North Kingstown, RI

Tier 1 Stage 2A Organic and Inorganic Data Review:

Volatile Petroleum Hydrocarbons (VPH by MassDEP-VPH), Extractable Petroleum Hydrocarbons (EPH by MassDEP-EPH), Massachusetts Contingency Plan (MCP) Dissolved Metals (MCP-14 Metals by 6010D/7470A)

9/Groundwater Samples: GW-MW108-121024, GW-MW104-121024, GW-MW107-121024, GW-MW106-121024, GW-MW109-121024, GW-MW102R-121024, GW-MW105-121124, GW-MW101-121124, FD-01-121024
1/Field Duplicate Pair: GW-MW102R-121024 / FD-01-121024
1/Aqueous Trip Blank: Trip Blank-121024

Dear Ms. Deng:

Nobis Group (Nobis), under a USEPA contract as a subcontractor to KGSNE JV, LLC, performed a Tier 1 Stage 2A manual data review (S2AVM) on the organic and inorganic analytical data for the samples listed above. The samples were collected by Nobis at the Former L&M Service Station Site located in Lunenburg, Massachusetts on December 10, 2024 and December 11, 2024. The samples were analyzed for VPH by MassDEP-VPH, EPH by MassDEP-EPH, and Dissolved MCP-14 Metals by EPA Methods 6010D/7470A by Eurofins New England in North Kingstown, RI.

The Tier 1 Stage 2A manual data review was performed in accordance with the Region 1 - EPA New England Environmental Data Review Supplement for Region 1 Data Review Elements and Superfund Specific Guidance/Procedures (September 2020); USEPA's National Functional Guidelines for Organic Superfund Methods Data Review (November 2020); USEPA's National Functional Guidelines for Inorganic Superfund Methods Data Review (November 2020); the Program Quality Assurance Project Plan (Program QAPP) dated October 2022, and the Quality Assurance Project Plan Addendum (QAPPA) (May 2023) for the Former L&M Service Station Site, which appends the October 2022 Program QAPP.

The data were evaluated based on the following parameters:

* • Overall Evaluation of Data and Potential Usability Issues
* • Data Completeness



Nobis Group®
55 Technology Drive
Suite 101
Lowell, MA 01851
T (978) 683-0891

| | |
|---|---|
| | • Preservation and Technical Holding Times |
| * | • Blanks |
| | • Surrogates (organic analyses only) |
| NA | • Internal Standards |
| * | • Matrix Spike Analysis |
| NA | • Laboratory Duplicates |
| * | • Laboratory Control Samples (LCS) |
| | • Field Duplicates |
| NA | • ICP Serial Dilutions (metals only) |
| NA | • Performance Evaluation (PE) Samples |
| NA | • Target Analyte Identification |
| * | • Reported Quantitation Limits |

* All criteria were met for this parameter or did not require qualification.
NA – Not applicable.

**Overall Evaluation of Data and Potential Usability Issues**

The site sampling objectives are:

- Characterize in-situ soil based on AOCs identified by Fuss & O'Neill in November 2020 Phase I for the presence of possible site-related contamination.
- Evaluate groundwater elevation.
- Evaluate presence/absence of groundwater contamination related to site.

Non-detect EPH results were rejected (R) in one sample due to holding time exceedance.

All PALs were met.

The remaining data meet the project quality criteria and can be used without restriction except as summarized below. The attachments provide details and supporting documentation.

**MassDEP-VPH:**
Results were qualified for methyl tert-butyl ether due to field duplicate imprecision.

**MassDEP-EPH:**
Non-detect EPH results were rejected (R) in one sample due to holding time exceedance. EPH results were qualified due to holding time exceedance and field duplicate imprecision.

**MCP-14 Metals and Mercury:**
Qualification of the data was not required.

Please contact Linda Terzis at lterzis@nobis-group.com should you have any questions or comments regarding this information.

Sincerely,

NOBIS GROUP®

James Yazzo
Data Validator

Linda Terzis
Data Validator

Tables: Data Summary Tables – Tier 1 Stage 2A (S2AVM) Validated Data
Data Qualification Actions Table

Attachments: Data Review Checklist
Support Documentation
COC

cc: Denis McGrath (Nobis Group)
Adam Roy (Nobis Group)

# DATA SUMMARY TABLE

| **Analysis** | | EPH in Groundwater | | | | |
|---|---|---|---|---|---|---|
| **Lab Sample ID** | | 620-22908-1 | 620-22908-2 | 620-22908-3 | 620-22908-4 | 620-22908-5 |
| **Field Sample ID** | | GW-MW108-121024 | GW-MW104-121024 | GW-MW107-121024 | GW-MW106-121024 | GW-MW109-121024 |
| **Sample Type** | | N | N | N | N | N |
| **Parent Sample ID** | | | | | | |
| **Sample Date** | **Units** | 12/10/24 | 12/10/24 | 12/10/24 | 12/10/24 | 12/10/24 |
| 2-Methylnaphthalene | ug/L | 1 U | 0.95 U | 1 U | 13 | 19 |
| Acenaphthene | ug/L | 1 U | 0.95 U | 1 U | 1.1 U | 1 U |
| Acenaphthylene | ug/L | 1 U | 0.95 U | 1 U | 1.1 U | 1 U |
| Anthracene | ug/L | 1 U | 0.95 U | 1 U | 1.1 U | 1 U |
| Benzo(a)anthracene | ug/L | 1 U | 0.95 U | 1 U | 1.1 U | 1 U |
| Benzo(a)pyrene | ug/L | 0.2 U | 0.19 U | 0.2 U | 0.21 U | 0.2 U |
| Benzo(b)fluoranthene | ug/L | 1 U | 0.95 U | 1 U | 1.1 U | 1 U |
| Benzo(g,h,i)perylene | ug/L | 1 U | 0.95 U | 1 U | 1.1 U | 1 U |
| Benzo(k)fluoranthene | ug/L | 1 U | 0.95 U | 1 U | 1.1 U | 1 U |
| C11-C22 Aromatics | ug/L | 100 U | 95 U | 100 U | 130 | 200 |
| C11-C22 Aromatics (adjusted) | ug/L | 100 U | 95 U | 100 U | 110 U | 110 |
| C19-C36 Aliphatics | ug/L | 100 U | 95 U | 100 U | 110 U | 100 U |
| C9-C18 Aliphatics | ug/L | 100 U | 95 U | 100 U | 160 | 320 |
| Chrysene | ug/L | 1 U | 0.95 U | 1 U | 1.1 U | 1 U |
| Dibenz(a,h)anthracene | ug/L | 0.5 U | 0.48 U | 0.5 U | 0.53 U | 0.5 U |
| Fluoranthene | ug/L | 1 U | 0.95 U | 1 U | 1.1 U | 1 U |
| Fluorene | ug/L | 1 U | 0.95 U | 1 U | 1.1 U | 1 U |
| Indeno(1,2,3-cd)pyrene | ug/L | 0.5 U | 0.48 U | 0.5 U | 0.53 U | 0.5 U |
| Naphthalene | ug/L | 1 UJ | 0.95 UJ | 1 UJ | 37 J | 76 J |
| Phenanthrene | ug/L | 1 U | 0.95 U | 1 U | 1.1 U | 1 U |
| Pyrene | ug/L | 1 U | 0.95 U | 1 U | 1.1 U | 1 U |

# DATA SUMMARY TABLE

| **Analysis** | | EPH in Groundwater | | | |
|---|---|---|---|---|---|
| **Lab Sample ID** | | 620-22908-6 | 620-22908-7 | 620-22908-8 | 620-22908-9 |
| **Field Sample ID** | | GW-MW102R-121024 | GW-MW105-121124 | GW-MW101-121124 | FD-01-121024 |
| **Sample Type** | | N | N | N | FD |
| **Parent Sample ID** | | | | | GW-MW102R-121024 |
| **Sample Date** | **Units** | 12/10/24 | 12/11/24 | 12/11/24 | 12/10/24 |
| 2-Methylnaphthalene | ug/L | 8.8 J- | 1 U | 0.98 U | 6.8 |
| Acenaphthene | ug/L | R | 1 U | 0.98 U | 1 U |
| Acenaphthylene | ug/L | R | 1 U | 0.98 U | 1 U |
| Anthracene | ug/L | R | 1 U | 0.98 U | 1 U |
| Benzo(a)anthracene | ug/L | R | 1 U | 0.16 J | 1 U |
| Benzo(a)pyrene | ug/L | R | 0.2 U | 0.19 J | 0.2 U |
| Benzo(b)fluoranthene | ug/L | R | 1 U | 0.2 J | 1 U |
| Benzo(g,h,i)perylene | ug/L | R | 1 U | 0.98 U | 1 U |
| Benzo(k)fluoranthene | ug/L | R | 1 U | 0.98 U | 1 U |
| C11-C22 Aromatics | ug/L | 140 J- | 100 U | 98 U | 150 |
| C11-C22 Aromatics (adjusted) | ug/L | R | 100 U | 98 U | 110 |
| C19-C36 Aliphatics | ug/L | R | 100 U | 150 | 100 U |
| C9-C18 Aliphatics | ug/L | 300 J- | 100 U | 98 U | 120 |
| Chrysene | ug/L | R | 1 U | 0.98 U | 1 U |
| Dibenz(a,h)anthracene | ug/L | R | 0.5 U | 0.49 U | 0.5 U |
| Fluoranthene | ug/L | R | 1 U | 0.98 U | 1 U |
| Fluorene | ug/L | R | 1 U | 0.98 U | 1 U |
| Indeno(1,2,3-cd)pyrene | ug/L | R | 0.5 U | 0.49 U | 0.5 U |
| Naphthalene | ug/L | 47 J | 1 UJ | 0.98 UJ | 34 J |
| Phenanthrene | ug/L | R | 1 U | 0.98 U | 1 U |
| Pyrene | ug/L | R | 1 U | 0.98 U | 1 U |

# DATA SUMMARY TABLE

| **Analysis** | | Dissolved Metals in Groundwater | | | | |
|---|---|---|---|---|---|---|
| **Lab Sample ID** | | 620-22908-1 | 620-22908-2 | 620-22908-3 | 620-22908-4 | 620-22908-5 |
| **Field Sample ID** | | GW-MW108-121024 | GW-MW104-121024 | GW-MW107-121024 | GW-MW106-121024 | GW-MW109-121024 |
| **Sample Type** | | N | N | N | N | N |
| **Parent Sample ID** | | | | | | |
| **Sample Date** | **Units** | 12/10/24 | 12/10/24 | 12/10/24 | 12/10/24 | 12/10/24 |
| Antimony | mg/L | 0.003 J | 0.0042 J | 0.0045 J | 0.0018 J | 0.002 J |
| Arsenic | mg/L | 0.004 U | 0.004 U | 0.015 | 0.041 | 0.049 |
| Barium | mg/L | 0.084 | 0.045 | 0.038 | 0.039 | 0.026 |
| Beryllium | mg/L | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Cadmium | mg/L | 0.0025 U | 0.00085 J | 0.0025 U | 0.0025 U | 0.0025 U |
| Chromium | mg/L | 0.0019 J | 0.0038 J | 0.0041 J | 0.0018 J | 0.0022 J |
| Lead | mg/L | 0.0075 U | 0.0075 U | 0.0075 U | 0.0075 U | 0.0075 U |
| Mercury | mg/L | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U |
| Nickel | mg/L | 0.0016 J | 0.018 | 0.0069 | 0.0025 J | 0.0026 J |
| Selenium | mg/L | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U |
| Silver | mg/L | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Thallium | mg/L | 0.0022 J | 0.005 U | 0.0028 J | 0.005 U | 0.0031 J |
| Vanadium | mg/L | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Zinc | mg/L | 0.0031 J | 0.23 | 0.0067 | 0.002 J | 0.0027 J |

# DATA SUMMARY TABLE

| **Analysis** | | Dissolved Metals in Groundwater | | | |
|---|---|---|---|---|---|
| **Lab Sample ID** | | 620-22908-6 | 620-22908-7 | 620-22908-8 | 620-22908-9 |
| **Field Sample ID** | | GW-MW102R-121024 | GW-MW105-121124 | GW-MW101-121124 | FD-01-121024 |
| **Sample Type** | | N | N | N | FD |
| **Parent Sample ID** | | | | | GW-MW102R-121024 |
| **Sample Date** | **Units** | 12/10/24 | 12/11/24 | 12/11/24 | 12/10/24 |
| Antimony | mg/L | 0.0027 J | 0.006 U | 0.0038 J | 0.0033 J |
| Arsenic | mg/L | 0.063 | 0.004 U | 0.02 | 0.069 |
| Barium | mg/L | 0.079 | 0.1 | 0.25 | 0.078 |
| Beryllium | mg/L | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Cadmium | mg/L | 0.0025 U | 0.0025 U | 0.001 J | 0.0025 U |
| Chromium | mg/L | 0.0026 J | 0.0047 J | 0.0042 J | 0.0031 J |
| Lead | mg/L | 0.0075 U | 0.0075 U | 0.047 | 0.0075 U |
| Mercury | mg/L | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U |
| Nickel | mg/L | 0.0033 J | 0.0032 J | 0.0071 | 0.0046 J |
| Selenium | mg/L | 0.015 U | 0.015 U | 0.015 U | 0.015 U |
| Silver | mg/L | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Thallium | mg/L | 0.005 U | 0.0027 J | 0.0032 J | 0.005 U |
| Vanadium | mg/L | 0.0013 J | 0.005 U | 0.005 U | 0.0012 J |
| Zinc | mg/L | 0.005 U | 0.0092 | 0.36 | 0.005 U |

## DATA SUMMARY TABLE

| **Analysis** | | VPH in Groundwater | | | | |
|---|---|---|---|---|---|---|
| **Lab Sample ID** | | 620-22908-1 | 620-22908-2 | 620-22908-3 | 620-22908-4 | 620-22908-5 |
| **Field Sample ID** | | GW-MW108-121024 | GW-MW104-121024 | GW-MW107-121024 | GW-MW106-121024 | GW-MW109-121024 |
| **Sample Type** | | N | N | N | N | N |
| **Parent Sample ID** | | | | | | |
| **Sample Date** | **Units** | 12/10/24 | 12/10/24 | 12/10/24 | 12/10/24 | 12/10/24 |
| Benzene | ug/L | 5 U | 5 U | 5 U | 5 U | 5 U |
| C5-C8 Aliphatics (adjusted) | ug/L | 100 U | 100 U | 100 U | 360 | 260 |
| C5-C8 Aliphatics (unadjusted) | ug/L | 100 U | 100 U | 100 U | 680 | 530 |
| C9-C10 Aromatics | ug/L | 100 U | 100 U | 100 U | 2000 | 2800 |
| C9-C12 Aliphatics (adjusted) | ug/L | 100 U | 100 U | 100 U | 4100 | 5000 U |
| C9-C12 Aliphatics (unadjusted) | ug/L | 100 U | 100 U | 110 | 7200 | 9600 |
| Ethylbenzene | ug/L | 5 U | 5 U | 5 U | 120 | 300 |
| m,p-Xylene | ug/L | 10 U | 10 U | 10 U | 310 | 1200 |
| Methyl tert-butyl ether | ug/L | 5 UJ | 5 UJ | 5 UJ | 290 J | 300 J |
| Naphthalene | ug/L | 5 U | 5 U | 5 U | 37 | 130 |
| o-Xylene | ug/L | 5 U | 5 U | 5 U | 5 U | 5 U |
| Toluene | ug/L | 5 U | 5 U | 5 U | 5 U | 5 U |
| Xylene (total) | ug/L | 15 U | 15 U | 15 U | 310 | 690 |

## DATA SUMMARY TABLE

| **Analysis** | | VPH in Groundwater | | | |
|---|---|---|---|---|---|
| **Lab Sample ID** | | 620-22908-6 | 620-22908-7 | 620-22908-8 | 620-22908-9 |
| **Field Sample ID** | | GW-MW102R-121024 | GW-MW105-121124 | GW-MW101-121124 | FD-01-121024 |
| **Sample Type** | | N | N | N | FD |
| **Parent Sample ID** | | | | | GW-MW102R-121024 |
| **Sample Date** | **Units** | 12/10/24 | 12/11/24 | 12/11/24 | 12/10/24 |
| Benzene | ug/L | 41 | 5 U | 5 U | 45 |
| C5-C8 Aliphatics (adjusted) | ug/L | 530 | 100 U | 100 U | 520 |
| C5-C8 Aliphatics (unadjusted) | ug/L | 750 | 100 U | 100 U | 690 |
| C9-C10 Aromatics | ug/L | 1200 | 100 U | 100 U | 1200 |
| C9-C12 Aliphatics (adjusted) | ug/L | 2600 | 100 U | 100 U | 3800 |
| C9-C12 Aliphatics (unadjusted) | ug/L | 5000 | 100 U | 100 U | 6800 |
| Ethylbenzene | ug/L | 180 | 5 U | 5 U | 190 |
| m,p-Xylene | ug/L | 520 | 10 U | 10 U | 510 |
| Methyl tert-butyl ether | ug/L | 170 J | 5 UJ | 5 UJ | 120 J |
| Naphthalene | ug/L | 110 | 5 U | 5 U | 100 |
| o-Xylene | ug/L | 7.5 | 5 U | 5 U | 7.4 |
| Toluene | ug/L | 6 | 5 U | 5 U | 6.6 |
| Xylene (total) | ug/L | 500 | 15 U | 15 U | 480 |



U – not detected; J – estimated value; R – rejected; EB – detected in equipment blank; N – tentatively identified; + biased high; - biased low

# DATA SUMMARY TABLE

| **Analysis** | | VPH in Water Quality Control Matrix |
|---|---|---|
| **Lab Sample ID** | | 620-22908-10 |
| **Field Sample ID** | | Trip Blank-121024 |
| **Sample Type** | | N |
| **Parent Sample ID** | | |
| **Sample Date** | **Units** | 12/10/24 |
| Benzene | ug/L | 5 U |
| C5-C8 Aliphatics (adjusted) | ug/L | 100 U |
| C5-C8 Aliphatics (unadjusted) | ug/L | 100 U |
| C9-C10 Aromatics | ug/L | 100 U |
| C9-C12 Aliphatics (adjusted) | ug/L | 100 U |
| C9-C12 Aliphatics (unadjusted) | ug/L | 100 U |
| Ethylbenzene | ug/L | 5 U |
| m,p-Xylene | ug/L | 10 U |
| Methyl tert-butyl ether | ug/L | 5 UJ |
| Naphthalene | ug/L | 5 U |
| o-Xylene | ug/L | 5 U |
| Toluene | ug/L | 5 U |
| Xylene (total) | ug/L | 15 U |

**Data Review Qualification Actions**
**Former L&M Service Station**
**SDG 620-22908-1**

| Parameter | Analyte | Samples | Evaluation Criteria | Action Needed | Comments |
|---|---|---|---|---|---|
| **MassDEP-VPH** | | | | | |
| | Methyl tert-butyl ether | All samples | Field duplicate | J/UJ | |
| **MassDEP-EPH** | | | | | |
| | Naphthalene | All samples | Field duplicate | J/UJ | |
| **EPH GC/MS** | | | | | |
| | All compounds | GW-MW102R-121024 | Holding time | J-/R | Final qual for naphthalene is estimated J with an indeterminate bias due to field duplicate imprecision |
| **EPH GC** | | | | | |
| | All hydrocarbon ranges | GW-MW102R-121024 | Holding time | J-/R | |
| **MCP-14 Metals / Mercury** | | | | | |
| | No action required. | | | | |

**Tier 1/Stage 2A Data Review Checklist**

**Project:** Former L&M Service Station, Lunenburg, Massachusetts
Targeted Brownfields Assessment (TBA)
**Project #:** S00001.05

**Date:** 01/16/2025

**Methods:** Volatile Petroleum Hydrocarbons (VPH) (MassDEP-VPH)
Extractable Petroleum Hydrocarbons (EPH) (MassDEP-EPH)
Massachusetts Contingency Plan (MCP) Dissolved Metals (MCP-14 Metals by 6010D/7470A)

**Laboratory:** Eurofins New England Laboratory, North Kingstown, RI
**Case:** N/A
**SDG:** 620229081
**Reviewer:** James Yazzo

1. **Case Narrative and Data Package Completeness (COC and Analyte List Review)**
Nine (9) groundwater samples, including one field duplicate sample, were listed on the COC for SDG 620229081. One trip blank sample was also included on the COC. The samples were collected on 12/10/2024 and 12/11/2024 and received at the Eurofins New England Laboratory on 12/12/2024 the temperatures of 2.8, 3.8, and 4.8 °C.

| Sample ID | Laboratory ID | Analyses |
|---|---|---|
| GW-MW108-121024 | 620-22908-1 | Dissolved MCP-14 Metals |
| GW-MW104-121024 | 620-22908-2 | |
| GW-MW107-121024 | 620-22908-3 | |
| GW-MW106-121024 | 620-22908-4 | MassDEP-VPH, MassDEP-EPH, Dissolved MCP-14 Metals |
| GW-MW109-121024 | 620-22908-5 | |
| GW-MW102R-121024 | 620-22908-6 | |
| GW-MW105-121124 | 620-22908-7 | Dissolved MCP-14 Metals |
| GW-MW101-121124 | 620-22908-8 | MassDEP-EPH, Dissolved MCP-14 Metals |
| FD-01-121024 | 620-22908-9 | MassDEP-VPH, MassDEP-EPH, Dissolved MCP-14 Metals |
| Trip Blank | 620-22908-10 | MassDEP-VPH |

The data were evaluated using the site-specific Quality Assurance Project Plan Addendum (QAPPA) (dated May 2023) and the Program QAPP (dated October 2022). Both were prepared by KGSNE, LLC. The QAPPA appends and incorporates by reference the procedures and quality control measures detailed in the Program QAPP (October 2022). Therefore, site data for this SDG were evaluated using both the QAPPA of May 2023 and the Program QAPP dated October 2022. The Massachusetts Compendium of Analytical Methods (CAM) and/or SW-846 Methods were used to perform the analyses. Therefore, site data were also evaluated using CAM quality control (QC) limits, where applicable.



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The analyte lists reported by the laboratory were compared to the required analyte lists per Table 4 (groundwater) in the QAPPA (May 2023) for the site. Results for all requested analytes were reported and no inconsistencies were noted.

**2. Holding Time and Sample Preservation Compliance**

Receipt temperatures are acceptable (≤ 6°), as specified in the QAPPA (May 2023).

MassDEP-VPH: Holding time criteria (analyzed within 14 days) were met.

MassDEP-EPH: Holding time criteria (extracted within 14 days and analyzed within 40 days of extraction) were met. Note that sample GW-MW102R-121024 (620-22908-6) was re-extracted and re-analyzed for EPH by GC/MS and GC due to low surrogate recoveries in the original analyses. Recoveries were acceptable in the re-analyses of the sample; however, the re-extractions occurred outside of holding time. Based on sample results, results from the re-analyses are reported, qualified for holding time exceedance. Detected EPH results are qualified as estimated with a potential low bias (J-) and non-detect EPH results are rejected (R) for all EPH compounds and hydrocarbon ranges in sample GW-MW102R-121024 due to exceeded holding time. Note that the final qualifier for naphthalene is estimated (J) with an indeterminate bias due to field duplicate imprecision, as discussed below.

MCP-14 Metals/Mercury: Holding time criteria (analyzed within 28 days for mercury; within 180 days for all other analytes) were met.

**3. Calibration Issues**

Not assessed for S2AVM data review.

**4. Laboratory and Field Blanks**

MassDEP-VPH: Results for the VPH laboratory method blanks and VPH trip blank were non-detect. No blank actions are required.

MassDEP-EPH: Results for the EPH laboratory method blanks were non-detect. No blank actions are required.

MCP-14 Metals/Mercury: Results for the metals/mercury method blanks were non-detect. No blank actions are required.

**5. Interference Check Sample (metals only)**

Not assessed for S2AVM data review.

**6. Surrogates**

The Program QAPP (October 2022) was used to evaluate site data for surrogate recovery. If no Program QAPP-specific recovery limits were available for a surrogate, the MCP CAM recovery limits were used.

MassDEP-VPH: Percent surrogate recoveries for the samples were within the Program QAPP limits of 70-130%. No actions are required.

MassDEP-EPH: Percent surrogate recoveries for the samples were within the Program QAPP limits of 40-140% for the EPH GC/MS and GC analyses except for sample GW-MW102R-121024 (620-22908-6), where the recoveries for o-terphenyl (GC/MS) and 1-chlorooctadecane (GC) were 25% and 31%, respectively. Surrogate recoveries were acceptable in the re-analyses; however, the re-analyses occurred outside of holding time. Based on the sample results, the results from the re-analyses are reported, qualified for holding time exceedance, as discussed above. Detected EPH results are qualified as estimated with a potential low bias (J-) and non-detect results are rejected (R) for all EPH compounds and hydrocarbon ranges in sample GW-MW102R-121024 due to holding time exceedance. No actions are required for surrogate recovery.

MCP-14 Metals/Mercury: Not applicable for this analysis.

**7. Laboratory Control Samples**

MassDEP-VPH: The percent recoveries in the VPH LCS/LCSD pairs 620-42608/2 and 3, 620-42639/2 and 3, 620-42713/2 and 3 met the Program QAPP recovery limits of 70-130% and RPDs ≤ 25%. No actions are required.

MassDEP-EPH: The percent recoveries in the EPH-GC/MS LCS/LCSD pairs 620-42884/4-B and 5-B and 620-42715/4-B and 5-B meet the Program QAPP recovery limits of 40-140% and RPD ≤ 25%.

Percent recoveries and RPDs for the EPH-GC LCS/LCSD pairs 620-42715/2-B and 3-B and 620-42884/2-B and 3-B meet the Program QAPP limits of 40-140% and RPD ≤ 25%. No actions are required.

MCP-14 Metals/Mercury: Percent recoveries for the metals and mercury LCS analyses were within the QAPP limits of 80-120%. No actions are required.

**8. Matrix Spikes**

Based on the Region I EPA New England Environmental Data Review Supplement (Region I Supplement, 2020), MS/MSD qualifications are applied to all field samples with similar matrix, unless otherwise noted.

MassDEP-VPH: MS/MSD analyses were performed on sample GW-MW108-121024 (620-22908-1). Recoveries and RPDs met the Program QAPP limits of 70-130% recovery and ≤ 50% RPD except for the recoveries of C9-C10 aromatics, which was reported as spiked but not detected in both the MS and MSD analyses, and the recoveries of C5-C8 aliphatics (unadjusted) and C9-C12 aliphatics (unadjusted), which were also reported as spiked, but with results > spiking level. Percent recoveries were not calculated by the laboratory for these ranges. Results for the parent sample were all non-detect. The laboratory has indicated the exceedances are due to differences in baseline integration used for QC samples versus field samples (i.e., QC sample results are based on a summation of peaks whereas field sample results are based on an integration of the entire baseline). No actions are taken.

MassDEP-EPH: MS/MSD analyses were performed on sample GW-MW108-121024 (620-22908-1) for the EPH-GC/MS and EPH-GC analyses. MS/MSD results meet the limits of 40-140% recovery and ≤ 50% RPD as specified in the Program QAPP. No actions are required.

MCP-14 Metals/Mercury: MS/MSD analyses were performed for dissolved metals and dissolved mercury on sample GW-MW108-121024 (620-22908-1). Recoveries met the Program QAPP limits of 75-125% and RPD ≤ 20%. No actions are required.

**9. Laboratory Duplicates (metals only)**

A laboratory duplicate analysis was not submitted with this SDG. No actions are required.

**10. Serial Dilution (metals only)**

MCP-14 Metals/Mercury: The Massachusetts CAM requires a serial dilution analysis on samples used for MS/MSD analyses where analytes are detected at > 50x RL. MS/MSD analyses were performed on sample GW-MW108-121024 (620-22908-1). Detected analyte results were < 50x RL in these samples and no actions are required.

**11. Field Duplicate Precision**

Acceptable field duplicate precision is an RPD of ≤ 30% for results ≥ 5x RL and an absolute difference ≤ 2x RL for results < 5x RL, based on the EPA Region I Environmental Data Review Supplement (2020). Based on the Region I Supplement, qualifications are applied to all field samples with similar matrix, unless otherwise indicated.

Field duplicate pair GW-MW102R-121024 (620-22908-6) / GW-FD01-121024 (620-22908-9) was submitted with the samples of this SDG.

Field duplicate precision criteria were met for the VPH, EPH, and metals/mercury analyses except for methyl tert-butyl ether (VPH analysis) and naphthalene (EPH analysis). Detect and non-detect results for methyl tert-butyl ether and naphthalene are qualified as estimated (J/UJ) in all samples, based on the EPA Region 1 Supplemental Guidance (2020).

**12. Internal Standards**

Not assessed for S2AVM data review.

**13. Dual Column Precision (PCBs only)**

Not applicable for this SDG.

**14. Performance Evaluation Samples**

Performance Evaluation (PE) samples were not included in this SDG.

**15. Reporting Limits**

RLs for non-detect results for the VPH, EPH, and metals/mercury analyses met the project action levels (PALs) presented on Table 4 of the QAPPA for the site.

**16. Other**

EPA Region I Environmental Data Review Supplement (2020) criterion for percent solids content (> 30%) not applicable for groundwater samples.

Overall bias is considered indeterminate when cumulative nonconformances do not show a consistent bias or in cases of the presence of conflicting high and low biases.

**Field Duplicate Evaluation**

**SDG: 620-22908-1 VPH**

| Analyte | Original Result (ug/L) | Qual | Duplicate Result (ug/L) | Qual | RPD ≤ 30% | Abs Diff | Comment[1] |
|---|---|---|---|---|---|---|---|
| **Sample ID** | **GW-MW102R-121024** | | **FD-01-121024** | | | | |
| | **620-22908-6** | | **620-22908-9** | | | | |
| Benzene | 41 | | 45 | | 9.30 | | Ok - RPD =< 30% |
| C5-C8 Aliphatics (adjusted) | 530 | | 520 | | -1.90 | | Ok - RPD =< 30% |
| C5-C8 Aliphatics (unadjusted) | 750 | | 690 | | -8.33 | | Ok - RPD =< 30% |
| C9-C10 Aromatics | 1200 | | 1200 | | 0.00 | 0.00 | Ok - abs diff =< 2x RL |
| C9-C12 Aliphatics (adjusted) | 2600 | | 3800 | | 37.50 | 1200 | Ok - abs diff =< 2x RL |
| C9-C12 Aliphatics (unadjusted) | 5000 | | 6800 | | 30.51 | 1800 | Ok - abs diff =< 2x RL |
| Ethylbenzene | 180 | | 190 | | 5.41 | | Ok - RPD =< 30% |
| m,p-Xylene | 520 | | 510 | | -1.94 | | Ok - RPD =< 30% |
| Methyl tert-butyl ether | 170 | | 120 | | -34.48 | | Qual: J / UJ for RPD |
| Naphthalene | 110 | | 100 | | -9.52 | | Ok - RPD =< 30% |
| o-Xylene | 7.5 | | 7.4 | | -1.34 | -0.1 | Ok - abs diff =< 2x RL |
| Toluene | 6 | | 6.6 | | 9.52 | 0.6 | Ok - abs diff =< 2x RL |
| Xylene (total) | 500 | | 480 | | -4.08 | | Ok - RPD =< 30% |

[1] Actions apply to all samples, per EPA Region I Supplemental Review Guidance (2020).

**Field Duplicate Evaluation**

**SDG: 620-22908-1 EPH**

| Analyte | Original Result (ug/L) | Qual | Duplicate Result (ugL) | Qual | RPD ≤ 30% | Abs Diff | Comment[1] |
|---|---|---|---|---|---|---|---|
| **Sample ID** | **GW-MW102R-121024** | | **FD-01-121024** | | | | |
| | **620-22908-6** | | **620-22908-9** | | | | |
| 2-Methylnaphthalene | 8.8 | | 6.8 | | -25.64 | | Ok - RPD =< 30% |
| Acenaphthene | 1.1 | U | 1 | U | -9.52 | | Ok - both ND |
| Acenaphthylene | 1.1 | U | 1 | U | -9.52 | | Ok - both ND |
| Anthracene | 1.1 | U | 1 | U | -9.52 | | Ok - both ND |
| Benzo(a)anthracene | 1.1 | U | 1 | U | -9.52 | | Ok - both ND |
| Benzo(a)pyrene | 0.21 | U | 0.2 | U | -4.88 | | Ok - both ND |
| Benzo(b)fluoranthene | 1.1 | U | 1 | U | -9.52 | | Ok - both ND |
| Benzo(g,h,i)perylene | 1.1 | U | 1 | U | -9.52 | | Ok - both ND |
| Benzo(k)fluoranthene | 1.1 | U | 1 | U | -9.52 | | Ok - both ND |
| C11-C22 Aromatics | 140 | | 150 | | 6.90 | 10 | Ok - abs diff =< 2x RL |
| C11-C22 Aromatics (adjusted) | 110 | U | 110 | | 0.00 | 0.0 | Ok - abs diff =< 30% |
| C19-C36 Aliphatics | 110 | U | 100 | U | -9.52 | | Ok - both ND |
| C9-C18 Aliphatics | 300 | | 120 | | -85.71 | -180 | Ok - abs diff =< 2x RL |
| Chrysene | 1.1 | U | 1 | U | -9.52 | | Ok - both ND |
| Dibenz(a,h)anthracene | 0.53 | U | 0.5 | U | -5.83 | | Ok - both ND |
| Fluoranthene | 1.1 | U | 1 | U | -9.52 | | Ok - both ND |
| Fluorene | 1.1 | U | 1 | U | -9.52 | | Ok - both ND |
| Indeno(1,2,3-cd)pyrene | 0.53 | U | 0.5 | U | -5.83 | | Ok - both ND |
| Naphthalene | 47 | | 34 | | -32.10 | | Qual: J / UJ for RPD |
| Phenanthrene | 1.1 | U | 1 | U | -9.52 | | Ok - both ND |
| Pyrene | 1.1 | U | 1 | U | -9.52 | | Ok - both ND |

[1] Actions apply to all samples, per EPA Region I Supplemental Review Guidance (2020).

**Field Duplicate Evaluation**

**SDG: 620-22908-1 METALS**

| Analyte | Original Result (mg/L) | Qual | Duplicate Result (mg/L) | Qual | RPD ≤ 30% | Abs Diff | Comment[1] |
|---|---|---|---|---|---|---|---|
| **Sample ID** | **GW-MW102R-121024** | | **FD-01-121024** | | | | |
| | **620-22908-6** | | **620-22908-9** | | | | |
| Antimony | 0.0027 | J | 0.0033 | J | 20.0 | | Ok - both < RL |
| Arsenic | 0.063 | | 0.069 | | 9.1 | | Ok - RPD =< 30% |
| Barium | 0.079 | | 0.078 | | -1.3 | | Ok - RPD =< 30% |
| Beryllium | 0.002 | U | 0.002 | U | 0.0 | | Ok - both ND |
| Cadmium | 0.0025 | U | 0.0025 | U | 0.0 | | Ok - both ND |
| Chromium | 0.0026 | J | 0.0031 | J | 17.5 | | Ok - both < RL |
| Lead | 0.0075 | U | 0.0075 | U | 0.0 | | Ok - both ND |
| Mercury | 0.0002 | U | 0.0002 | U | 0.0 | | Ok - both ND |
| Nickel | 0.0033 | J | 0.0046 | J | 32.9 | | Ok - both < RL |
| Selenium | 0.015 | U | 0.015 | U | 0.0 | | Ok - both ND |
| Silver | 0.005 | U | 0.005 | U | 0.0 | | Ok - both ND |
| Thallium | 0.005 | U | 0.005 | U | 0.0 | | Ok - both ND |
| Vanadium | 0.0013 | J | 0.0012 | J | -8.0 | | Ok - both < RL |
| Zinc | 0.005 | U | 0.005 | U | 0.0 | | Ok - both ND |

[1] Actions apply to all samples, per EPA Region I Supplemental Review Guidance (2020).

22908

# Chain of Custody Record


**Eurofins Rhode Island**
646 Camp Ave
North Kingstown, RI 02852
Phone 413-789-9018 Fax: 413-506-3830


eurofins | Environment Testing

| Client Information | Sampler | Lab PM | Carrier Tracking No(s) | COC No |
|---|---|---|---|---|
| Client Contact: Adam Roy | P. Moran & S. Stone | Huntley, Agnes R | | 620-20841-3087 2 |
| Company: Nobis Engineering, Inc | Phone | E-Mail: Agnes.Huntley@et.eurofinsus.com | State of Origin: MA | Page: Page 1 of 1 |
| Address: 55 Technology Drive Suite 101 | PWSID | Due Date Requested: | | Job #: |
| City: Lowell | | TAT Requested (days): Standard | | |
| State, Zip: MA, 01851 | | Compliance Project: Δ Yes Δ No | | |
| Phone: 603-520-5849(Tel) | | PO #: Purchase Order Requested | | |
| Email: aroy@nobis-group com | | WO #: | | |
| Project Name: Former L&M - Lunenburg MA | | Project #: 62002215 | | |
| Site | | SSOW#: | | |

**Analysis Requested**

Preservation Codes:
A - HCL
D - HNO3
Other:

| Sample Identification | Sample Date | Sample Time | Sample Type (C=Comp, G=grab) | Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air) | Field Filtered Sample (Yes or No) | Perform MS/MSD (Yes or No) | MAVPH2.1 - MADEP Volatile Petroleum Hydrocarbons (G | EPH_MS, MAEPH2.1 | 6010MCP, 7470MCP | Total Number of containers | Special Instructions/Note: |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preservation Code: | | | | A | A | D | | |
| 1 GW-MW108-121024 | 12/10/24 | 1210 | G | Water | X | X | X | X | X | 18 | MS/MSD |
| 2 GW-MW104-121024 | 12/10/24 | 1505 | G | Water | X | | X | X | X | 6 | |
| 3 GW-MW107-121024 | 12/10/24 | 1550 | G | water | X | | X | X | X | 6 | |
| 4 GW-MW106-121024 | 12/10/24 | 1410 | G | water | X | | X | X | X | 6 | |
| 5 GW-MW109-121024 | 12/10/24 | 1230 | G | water | X | | X | X | X | 6 | |
| 6 GW-MW102R-121024 | 12/10/24 | 1035 | G | water | X | | X | X | X | 6 | |
| 7 GW-MW105-121124 | 12/11/24 | 0830 | G | water | X | | X | X | X | 6 | |
| 8 GW-MW101-121124 | 12/11/24 | 0820 | G | water | X | | X | X | X | 6 | |
| 9 FD-01 | 12/10/24 | 0800 | G | water | X | | X | X | X | 6 | |
| 10 Trip Blank | | | | | | | X | | | | |

620-22908 Chain of Custody

Page 60 of 61

12/30/2024

***Possible Hazard Identification***
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

***Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)***
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested I, II, III, IV, Other (specify): Equis EDD

Special Instructions/QC Requirements

| Empty Kit Relinquished by | Date | Time | Method of Shipment |
|---|---|---|---|
| | | | |

| | Relinquished by | Date/Time | Company | Received by | Date/Time | Company |
|---|---|---|---|---|---|---|
| 1 | | 12/11/24 13:00 | Nobis | | 12/12/24 14:02 | GRI |
| 2 | | 12/12/24 17:14 | CRI | | 12/12/24 17:14 | CRI |
| 3 | | | | | | |

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 2.6 +0.8 2.8 / 3.6 +0.2 3.8 / 4.6 +0.2 4.8 #6

Ver: 10/10/2024

eurofins | Environment Testing

# ANALYTICAL REPORT

## PREPARED FOR

Attn: Adam Roy
Nobis Engineering, Inc.
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Lowell, Massachusetts 01851

Generated 12/30/2024 2:30:14 PM

## JOB DESCRIPTION

Former L&M - Lunenburg MA

## JOB NUMBER

620-22908-1

Eurofins Rhode Island
646 Camp Ave
North Kingstown RI 02852

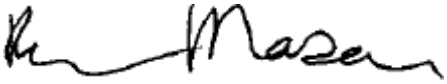
See page two for job notes and contact information.

## Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northeast, LLC Project Manager.

## Authorization



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# Table of Contents

Cover Page . . . . . 1
Table of Contents . . . . . 3
Definitions/Glossary . . . . . 4
State Forms . . . . . 5
MCP Checklist . . . . . 5
Case Narrative . . . . . 6
Detection Summary . . . . . 7
Client Sample Results . . . . . 11
Surrogate Summary . . . . . 31
QC Sample Results . . . . . 33
QC Association Summary . . . . . 47
Lab Chronicle . . . . . 52
Certification Summary . . . . . 56
Method Summary . . . . . 58
Sample Summary . . . . . 59
Chain of Custody . . . . . 60
Receipt Checklists . . . . . 61

# Definitions/Glossary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-22908-1

## Qualifiers

### GC/MS Semi VOA

| Qualifier | Qualifier Description |
|---|---|
| H | Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements. |
| J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |
| S1- | Surrogate recovery exceeds control limits, low biased. |

### GC Semi VOA

| Qualifier | Qualifier Description |
|---|---|
| H | Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements. |
| S1- | Surrogate recovery exceeds control limits, low biased. |

### Metals

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

## Glossary

| Abbreviation | These commonly used abbreviations may or may not be present in this report. |
|---|---|
| ☼ | Listed under the "D" column to designate that the result is reported on a dry weight basis |
| %R | Percent Recovery |
| CFL | Contains Free Liquid |
| CFU | Colony Forming Unit |
| CNF | Contains No Free Liquid |
| DER | Duplicate Error Ratio (normalized absolute difference) |
| Dil Fac | Dilution Factor |
| DL | Detection Limit (DoD/DOE) |
| DL, RA, RE, IN | Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample |
| DLC | Decision Level Concentration (Radiochemistry) |
| EDL | Estimated Detection Limit (Dioxin) |
| LOD | Limit of Detection (DoD/DOE) |
| LOQ | Limit of Quantitation (DoD/DOE) |
| MCL | EPA recommended "Maximum Contaminant Level" |
| MDA | Minimum Detectable Activity (Radiochemistry) |
| MDC | Minimum Detectable Concentration (Radiochemistry) |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| MPN | Most Probable Number |
| MQL | Method Quantitation Limit |
| NC | Not Calculated |
| ND | Not Detected at the reporting limit (or MDL or EDL if shown) |
| NEG | Negative / Absent |
| POS | Positive / Present |
| PQL | Practical Quantitation Limit |
| PRES | Presumptive |
| QC | Quality Control |
| RER | Relative Error Ratio (Radiochemistry) |
| RL | Reporting Limit or Requested Limit (Radiochemistry) |
| RPD | Relative Percent Difference, a measure of the relative difference between two points |
| TEF | Toxicity Equivalent Factor (Dioxin) |
| TEQ | Toxicity Equivalent Quotient (Dioxin) |
| TNTC | Too Numerous To Count |

# MassDEP Analytical Protocol Certfication Form

Laboratory Name: Eurofins Rhode Island | Project #: 620-22908-1

Project Location: Former L&M - Lunenburg MA | RTN:

**This Form provides certifications for the following data set: list Laboratory Sample ID Number(s):**
620-22908-1 through 620-22908-10

Matrices: ☑ Groundwater/Surface Water ☐ Soil/Sediment ☐ Drinking Water ☐ Air ☐ Other:

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

| | | | | | |
|---|---|---|---|---|---|
| 8260 VOC CAM II A ☐ | 7470/7471 Hg CAM III B ☑ | MassDEP VPH (GC/PID/FID) CAM IV A ☑ | 8082 PCB CAM V A ☐ | 9014 Total Cyanide/PAC CAM VI A ☐ | 6860 Perchlorate CAM VIII B ☐ |
| 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 ☐ |
| 6010 Metals CAM III A ☑ | 6020 Metals CAM III D ☐ | MassDEP EPH CAM IV B ☑ | 8151 Herbicides CAM V C ☐ | 8330 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 ☐ No |
| **B** | Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed? | ☑ Yes ☐ 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 ☐ No |
| **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 ☐ No |
| **E** | VPH, EPH, APH, and TO-15 only<br>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).<br>b. APH and TO-15 Methods only: Was the complete analyte list reported for each method? | ☑ Yes ☐ No<br>☐ 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 ☐ 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 protocol(s)? | ☑ Yes ☐ No[1] |

***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[1] |
| **I** | Were results reported for the complete analyte list specified in the selected CAM protocol(s)? | ☑ Yes ☐ No[1] |

*1 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, is accurate and complete.***

**Signature:** _____ **Position:** Project Manager II

**Printed Name:** Becky Mason **Date:** 12/30/2024

## Job ID: 620-22908-1 Eurofins Rhode Island

**Job Narrative**
**620-22908-1**

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

**Receipt**
The samples were received on 12/12/2024 5:14 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 2.8°C, 3.8°C and 4.8°C.

**GC/MS Semi VOA**
Method EPH_MS: Reanalysis of the following sample was performed outside of the analytical holding time due to failure of quality control parameters in the initial analysis. Both analysis are reported. GW-MW102R-121024 (620-22908-6)

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

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

**Hydrocarbons**
Method MAEPH2.1: Reanalysis of the following sample was performed outside of the analytical holding time due to failure of quality control parameters in the initial analysis. Both analysis are reported. GW-MW102R-121024 (620-22908-6)

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

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

# Detection Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-22908-1

## Client Sample ID: GW-MW108-121024 — Lab Sample ID: 620-22908-1

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.0030 | J | 0.0060 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |
| Barium | 0.084 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Chromium | 0.0019 | J | 0.0050 | 0.00093 | mg/L | 1 | | 6010D | Dissolved |
| Nickel | 0.0016 | J | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |
| Thallium | 0.0022 | J | 0.0050 | 0.0021 | mg/L | 1 | | 6010D | Dissolved |
| Zinc | 0.0031 | J | 0.0050 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |

## Client Sample ID: GW-MW104-121024 — Lab Sample ID: 620-22908-2

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.0042 | J | 0.0060 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |
| Barium | 0.045 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Cadmium | 0.00085 | J | 0.0025 | 0.00036 | mg/L | 1 | | 6010D | Dissolved |
| Chromium | 0.0038 | J | 0.0050 | 0.00093 | mg/L | 1 | | 6010D | Dissolved |
| Nickel | 0.018 | | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |
| Zinc | 0.23 | | 0.0050 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |

## Client Sample ID: GW-MW107-121024 — Lab Sample ID: 620-22908-3

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| C9-C12 Aliphatics (unadjusted) | 110 | | 100 | 100 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Antimony | 0.0045 | J | 0.0060 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |
| Arsenic | 0.015 | | 0.0040 | 0.0014 | mg/L | 1 | | 6010D | Dissolved |
| Barium | 0.038 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Chromium | 0.0041 | J | 0.0050 | 0.00093 | mg/L | 1 | | 6010D | Dissolved |
| Nickel | 0.0069 | | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |
| Thallium | 0.0028 | J | 0.0050 | 0.0021 | mg/L | 1 | | 6010D | Dissolved |
| Zinc | 0.0067 | | 0.0050 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |

## Client Sample ID: GW-MW106-121024 — Lab Sample ID: 620-22908-4

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | 37 | | 1.1 | 0.25 | ug/L | 1 | | EPH | Total/NA |
| 2-Methylnaphthalene | 13 | | 1.1 | 0.31 | ug/L | 1 | | EPH | Total/NA |
| C5-C8 Aliphatics (adjusted) | 360 | | 100 | 100 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C5-C8 Aliphatics (unadjusted) | 680 | | 100 | 100 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Ethylbenzene | 120 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Naphthalene | 37 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| m,p-Xylene | 310 | | 10 | 10 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Xylenes, Total | 310 | | 15 | 15 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Methyl tert-butyl ether - DL | 290 | | 25 | 25 | ug/L | 5 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (adjusted) - DL2 | 4100 | | 1000 | 1000 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| C9-C10 Aromatics - DL2 | 2000 | | 1000 | 1000 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (unadjusted) - DL2 | 7200 | | 1000 | 1000 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| C9-C18 Aliphatics | 160 | | 110 | 110 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics | 130 | | 110 | 110 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| Antimony | 0.0018 | J | 0.0060 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |
| Arsenic | 0.041 | | 0.0040 | 0.0014 | mg/L | 1 | | 6010D | Dissolved |
| Barium | 0.039 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Chromium | 0.0018 | J | 0.0050 | 0.00093 | mg/L | 1 | | 6010D | Dissolved |
| Nickel | 0.0025 | J | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |
| Zinc | 0.0020 | J | 0.0050 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |

This Detection Summary does not include radiochemical test results.

# Detection Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-22908-1

## Client Sample ID: GW-MW109-121024

Lab Sample ID: 620-22908-5

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | 76 | | 1.0 | 0.23 | ug/L | 1 | | EPH | Total/NA |
| 2-Methylnaphthalene | 19 | | 1.0 | 0.29 | ug/L | 1 | | EPH | Total/NA |
| C5-C8 Aliphatics (adjusted) | 260 | | 100 | 100 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C5-C8 Aliphatics (unadjusted) | 530 | | 100 | 100 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Naphthalene | 130 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Xylenes, Total | 690 | | 15 | 15 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C9-C10 Aromatics - DL | 2800 | | 1000 | 1000 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| Ethylbenzene - DL | 300 | | 50 | 50 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| Methyl tert-butyl ether - DL | 300 | | 50 | 50 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| m,p-Xylene - DL | 1200 | | 100 | 100 | ug/L | 10 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (unadjusted) - DL2 | 9600 | | 5000 | 5000 | ug/L | 50 | | MAVPH2.1 | Total/NA |
| C9-C18 Aliphatics | 320 | | 100 | 100 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics | 200 | | 100 | 100 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics (Adjusted) | 110 | | 100 | 100 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| Antimony | 0.0020 | J | 0.0060 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |
| Arsenic | 0.049 | | 0.0040 | 0.0014 | mg/L | 1 | | 6010D | Dissolved |
| Barium | 0.026 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Chromium | 0.0022 | J | 0.0050 | 0.00093 | mg/L | 1 | | 6010D | Dissolved |
| Nickel | 0.0026 | J | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |
| Thallium | 0.0031 | J | 0.0050 | 0.0021 | mg/L | 1 | | 6010D | Dissolved |
| Zinc | 0.0027 | J | 0.0050 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |

## Client Sample ID: GW-MW102R-121024

Lab Sample ID: 620-22908-6

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | 17 | | 1.0 | 0.24 | ug/L | 1 | | EPH | Total/NA |
| Naphthalene | 47 | H | 1.1 | 0.25 | ug/L | 1 | | EPH | Total/NA |
| 2-Methylnaphthalene | 3.4 | | 1.0 | 0.30 | ug/L | 1 | | EPH | Total/NA |
| 2-Methylnaphthalene | 8.8 | H | 1.1 | 0.31 | ug/L | 1 | | EPH | Total/NA |
| C5-C8 Aliphatics (adjusted) | 530 | | 100 | 100 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C5-C8 Aliphatics (unadjusted) | 750 | | 100 | 100 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Benzene | 41 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Ethylbenzene | 180 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Methyl tert-butyl ether | 170 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Naphthalene | 110 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Toluene | 6.0 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| o-Xylene | 7.5 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Xylenes, Total | 500 | | 15 | 15 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C9-C10 Aromatics - DL | 1200 | | 500 | 500 | ug/L | 5 | | MAVPH2.1 | Total/NA |
| m,p-Xylene - DL | 520 | | 50 | 50 | ug/L | 5 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (adjusted) - DL2 | 2600 | | 2500 | 2500 | ug/L | 25 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (unadjusted) - DL2 | 5000 | | 2500 | 2500 | ug/L | 25 | | MAVPH2.1 | Total/NA |
| C9-C18 Aliphatics | 120 | | 100 | 100 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| C9-C18 Aliphatics | 300 | H | 110 | 110 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics | 140 | H | 110 | 110 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| Antimony | 0.0027 | J | 0.0060 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |
| Arsenic | 0.063 | | 0.0040 | 0.0014 | mg/L | 1 | | 6010D | Dissolved |
| Barium | 0.079 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Chromium | 0.0026 | J | 0.0050 | 0.00093 | mg/L | 1 | | 6010D | Dissolved |
| Nickel | 0.0033 | J | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |
| Vanadium | 0.0013 | J | 0.0050 | 0.0011 | mg/L | 1 | | 6010D | Dissolved |

This Detection Summary does not include radiochemical test results.

# Detection Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-22908-1

## Client Sample ID: GW-MW105-121124 — Lab Sample ID: 620-22908-7

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Barium | 0.10 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Chromium | 0.0047 | J | 0.0050 | 0.00093 | mg/L | 1 | | 6010D | Dissolved |
| Nickel | 0.0032 | J | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |
| Thallium | 0.0027 | J | 0.0050 | 0.0021 | mg/L | 1 | | 6010D | Dissolved |
| Zinc | 0.0092 | | 0.0050 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |

## Client Sample ID: GW-MW101-121124 — Lab Sample ID: 620-22908-8

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Benzo[a]anthracene | 0.16 | J | 0.98 | 0.068 | ug/L | 1 | | EPH | Total/NA |
| Benzo[b]fluoranthene | 0.20 | J | 0.98 | 0.15 | ug/L | 1 | | EPH | Total/NA |
| Benzo[a]pyrene | 0.19 | J | 0.20 | 0.16 | ug/L | 1 | | EPH | Total/NA |
| C19-C36 Aliphatics | 150 | | 98 | 98 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| Antimony | 0.0038 | J | 0.0060 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |
| Arsenic | 0.020 | | 0.0040 | 0.0014 | mg/L | 1 | | 6010D | Dissolved |
| Barium | 0.25 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Cadmium | 0.0010 | J | 0.0025 | 0.00036 | mg/L | 1 | | 6010D | Dissolved |
| Chromium | 0.0042 | J | 0.0050 | 0.00093 | mg/L | 1 | | 6010D | Dissolved |
| Lead | 0.047 | | 0.0075 | 0.0062 | mg/L | 1 | | 6010D | Dissolved |
| Nickel | 0.0071 | | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |
| Thallium | 0.0032 | J | 0.0050 | 0.0021 | mg/L | 1 | | 6010D | Dissolved |
| Zinc | 0.36 | | 0.0050 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |

## Client Sample ID: FD-01 — Lab Sample ID: 620-22908-9

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | 34 | | 1.0 | 0.23 | ug/L | 1 | | EPH | Total/NA |
| 2-Methylnaphthalene | 6.8 | | 1.0 | 0.29 | ug/L | 1 | | EPH | Total/NA |
| C5-C8 Aliphatics (adjusted) | 520 | | 100 | 100 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C5-C8 Aliphatics (unadjusted) | 690 | | 100 | 100 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Benzene | 45 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Ethylbenzene | 190 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Methyl tert-butyl ether | 120 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Naphthalene | 100 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Toluene | 6.6 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| o-Xylene | 7.4 | | 5.0 | 5.0 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| Xylenes, Total | 480 | | 15 | 15 | ug/L | 1 | | MAVPH2.1 | Total/NA |
| C9-C10 Aromatics - DL | 1200 | | 500 | 500 | ug/L | 5 | | MAVPH2.1 | Total/NA |
| m,p-Xylene - DL | 510 | | 50 | 50 | ug/L | 5 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (adjusted) - DL2 | 3800 | | 2500 | 2500 | ug/L | 25 | | MAVPH2.1 | Total/NA |
| C9-C12 Aliphatics (unadjusted) - DL2 | 6800 | | 2500 | 2500 | ug/L | 25 | | MAVPH2.1 | Total/NA |
| C9-C18 Aliphatics | 120 | | 100 | 100 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics | 150 | | 100 | 100 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics (Adjusted) | 110 | | 100 | 100 | ug/L | 1 | | MAEPH2.1 | Total/NA |
| Antimony | 0.0033 | J | 0.0060 | 0.0016 | mg/L | 1 | | 6010D | Dissolved |
| Arsenic | 0.069 | | 0.0040 | 0.0014 | mg/L | 1 | | 6010D | Dissolved |
| Barium | 0.078 | | 0.0050 | 0.00070 | mg/L | 1 | | 6010D | Dissolved |
| Chromium | 0.0031 | J | 0.0050 | 0.00093 | mg/L | 1 | | 6010D | Dissolved |
| Nickel | 0.0046 | J | 0.0050 | 0.00087 | mg/L | 1 | | 6010D | Dissolved |
| Vanadium | 0.0012 | J | 0.0050 | 0.0011 | mg/L | 1 | | 6010D | Dissolved |

This Detection Summary does not include radiochemical test results.

# Detection Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-22908-1

## Client Sample ID: Trip Blank — Lab Sample ID: 620-22908-10

No Detections.

This Detection Summary does not include radiochemical test results.

## Client Sample ID: GW-MW108-121024

**Date Collected: 12/10/24 12:10**
**Date Received: 12/12/24 17:14**

## Lab Sample ID: 620-22908-1

**Matrix: Water**

### Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 1.0 | 0.23 | ug/L | | 12/19/24 10:45 | 12/23/24 12:31 | 1 |
| 2-Methylnaphthalene | ND | | 1.0 | 0.29 | ug/L | | 12/19/24 10:45 | 12/23/24 12:31 | 1 |
| Acenaphthylene | ND | | 1.0 | 0.39 | ug/L | | 12/19/24 10:45 | 12/23/24 12:31 | 1 |
| Acenaphthene | ND | | 1.0 | 0.19 | ug/L | | 12/19/24 10:45 | 12/23/24 12:31 | 1 |
| Fluorene | ND | | 1.0 | 0.39 | ug/L | | 12/19/24 10:45 | 12/23/24 12:31 | 1 |
| Phenanthrene | ND | | 1.0 | 0.17 | ug/L | | 12/19/24 10:45 | 12/23/24 12:31 | 1 |
| Anthracene | ND | | 1.0 | 0.15 | ug/L | | 12/19/24 10:45 | 12/23/24 12:31 | 1 |
| Fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 12/19/24 10:45 | 12/23/24 12:31 | 1 |
| Pyrene | ND | | 1.0 | 0.14 | ug/L | | 12/19/24 10:45 | 12/23/24 12:31 | 1 |
| Benzo[a]anthracene | ND | | 1.0 | 0.070 | ug/L | | 12/19/24 10:45 | 12/23/24 12:31 | 1 |
| Chrysene | ND | | 1.0 | 0.14 | ug/L | | 12/19/24 10:45 | 12/23/24 12:31 | 1 |
| Benzo[b]fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 12/19/24 10:45 | 12/23/24 12:31 | 1 |
| Benzo[k]fluoranthene | ND | | 1.0 | 0.24 | ug/L | | 12/19/24 10:45 | 12/23/24 12:31 | 1 |
| Benzo[a]pyrene | ND | | 0.20 | 0.16 | ug/L | | 12/19/24 10:45 | 12/23/24 12:31 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.50 | 0.46 | ug/L | | 12/19/24 10:45 | 12/23/24 12:31 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.50 | 0.21 | ug/L | | 12/19/24 10:45 | 12/23/24 12:31 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.0 | 0.17 | ug/L | | 12/19/24 10:45 | 12/23/24 12:31 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *55* | | *40 - 140* | *12/19/24 10:45* | *12/23/24 12:31* | *1* |
| *2-Fluorobiphenyl (Surr)* | *85* | | *40 - 140* | *12/19/24 10:45* | *12/23/24 12:31* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 12/17/24 21:06 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 12/17/24 21:06 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 12/17/24 21:06 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 12/17/24 21:06 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 12/17/24 21:06 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 12/17/24 21:06 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 12/17/24 21:06 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 12/17/24 21:06 | 1 |
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 12/17/24 21:06 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 12/17/24 21:06 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 12/17/24 21:06 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 12/17/24 21:06 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 12/17/24 21:06 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *97* | | *70 - 130* | | *12/17/24 21:06* | *1* |
| *2,5-Dibromotoluene (pid)* | *95* | | *70 - 130* | | *12/17/24 21:06* | *1* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 100 | 100 | ug/L | | 12/19/24 10:45 | 12/23/24 16:48 | 1 |
| C19-C36 Aliphatics | ND | | 100 | 100 | ug/L | | 12/19/24 10:45 | 12/23/24 16:48 | 1 |
| C11-C22 Aromatics | ND | | 100 | 100 | ug/L | | 12/19/24 10:45 | 12/23/24 16:48 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 100 | 100 | ug/L | | 12/19/24 10:45 | 12/23/24 16:48 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *62* | | *40 - 140* | *12/19/24 10:45* | *12/23/24 16:48* | *1* |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-22908-1

## Client Sample ID: GW-MW108-121024

**Date Collected: 12/10/24 12:10**
**Date Received: 12/12/24 17:14**

## Lab Sample ID: 620-22908-1

**Matrix: Water**

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *55* | | *40 - 140* | *12/19/24 10:45* | *12/23/24 16:48* | *1* |
| *2-Fluorobiphenyl (Surr)* | *78* | | *40 - 140* | *12/19/24 10:45* | *12/23/24 16:48* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Antimony** | **0.0030** | **J** | 0.0060 | 0.0016 | mg/L | | 12/13/24 15:10 | 12/16/24 12:05 | 1 |
| Arsenic | ND | | 0.0040 | 0.0014 | mg/L | | 12/13/24 15:10 | 12/16/24 12:05 | 1 |
| **Barium** | **0.084** | | 0.0050 | 0.00070 | mg/L | | 12/13/24 15:10 | 12/16/24 12:05 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 12/13/24 15:10 | 12/16/24 12:05 | 1 |
| Cadmium | ND | | 0.0025 | 0.00036 | mg/L | | 12/13/24 15:10 | 12/16/24 12:05 | 1 |
| **Chromium** | **0.0019** | **J** | 0.0050 | 0.00093 | mg/L | | 12/13/24 15:10 | 12/16/24 12:05 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 12/13/24 15:10 | 12/16/24 12:05 | 1 |
| **Nickel** | **0.0016** | **J** | 0.0050 | 0.00087 | mg/L | | 12/13/24 15:10 | 12/16/24 12:05 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 12/13/24 15:10 | 12/16/24 12:05 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 12/13/24 15:10 | 12/16/24 12:05 | 1 |
| **Thallium** | **0.0022** | **J** | 0.0050 | 0.0021 | mg/L | | 12/13/24 15:10 | 12/16/24 12:05 | 1 |
| Vanadium | ND | | 0.0050 | 0.0011 | mg/L | | 12/13/24 15:10 | 12/16/24 12:05 | 1 |
| **Zinc** | **0.0031** | **J** | 0.0050 | 0.0016 | mg/L | | 12/13/24 15:10 | 12/16/24 12:05 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 12/18/24 09:03 | 12/18/24 15:11 | 1 |

## Client Sample ID: GW-MW104-121024

**Date Collected: 12/10/24 15:05**
**Date Received: 12/12/24 17:14**

## Lab Sample ID: 620-22908-2

**Matrix: Water**

### Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 0.95 | 0.22 | ug/L | | 12/19/24 10:45 | 12/23/24 14:04 | 1 |
| 2-Methylnaphthalene | ND | | 0.95 | 0.28 | ug/L | | 12/19/24 10:45 | 12/23/24 14:04 | 1 |
| Acenaphthylene | ND | | 0.95 | 0.37 | ug/L | | 12/19/24 10:45 | 12/23/24 14:04 | 1 |
| Acenaphthene | ND | | 0.95 | 0.18 | ug/L | | 12/19/24 10:45 | 12/23/24 14:04 | 1 |
| Fluorene | ND | | 0.95 | 0.37 | ug/L | | 12/19/24 10:45 | 12/23/24 14:04 | 1 |
| Phenanthrene | ND | | 0.95 | 0.16 | ug/L | | 12/19/24 10:45 | 12/23/24 14:04 | 1 |
| Anthracene | ND | | 0.95 | 0.15 | ug/L | | 12/19/24 10:45 | 12/23/24 14:04 | 1 |
| Fluoranthene | ND | | 0.95 | 0.14 | ug/L | | 12/19/24 10:45 | 12/23/24 14:04 | 1 |
| Pyrene | ND | | 0.95 | 0.14 | ug/L | | 12/19/24 10:45 | 12/23/24 14:04 | 1 |
| Benzo[a]anthracene | ND | | 0.95 | 0.067 | ug/L | | 12/19/24 10:45 | 12/23/24 14:04 | 1 |
| Chrysene | ND | | 0.95 | 0.13 | ug/L | | 12/19/24 10:45 | 12/23/24 14:04 | 1 |
| Benzo[b]fluoranthene | ND | | 0.95 | 0.14 | ug/L | | 12/19/24 10:45 | 12/23/24 14:04 | 1 |
| Benzo[k]fluoranthene | ND | | 0.95 | 0.23 | ug/L | | 12/19/24 10:45 | 12/23/24 14:04 | 1 |
| Benzo[a]pyrene | ND | | 0.19 | 0.15 | ug/L | | 12/19/24 10:45 | 12/23/24 14:04 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.48 | 0.44 | ug/L | | 12/19/24 10:45 | 12/23/24 14:04 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.48 | 0.20 | ug/L | | 12/19/24 10:45 | 12/23/24 14:04 | 1 |
| Benzo[g,h,i]perylene | ND | | 0.95 | 0.16 | ug/L | | 12/19/24 10:45 | 12/23/24 14:04 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *76* | | *40 - 140* | *12/19/24 10:45* | *12/23/24 14:04* | *1* |
| *2-Fluorobiphenyl (Surr)* | *119* | | *40 - 140* | *12/19/24 10:45* | *12/23/24 14:04* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 12/17/24 21:37 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 12/17/24 21:37 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 12/17/24 21:37 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 12/17/24 21:37 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 12/17/24 21:37 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 12/17/24 21:37 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 12/17/24 21:37 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 12/17/24 21:37 | 1 |
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 12/17/24 21:37 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 12/17/24 21:37 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 12/17/24 21:37 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 12/17/24 21:37 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 12/17/24 21:37 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *99* | | *70 - 130* | | *12/17/24 21:37* | *1* |
| *2,5-Dibromotoluene (pid)* | *97* | | *70 - 130* | | *12/17/24 21:37* | *1* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 95 | 95 | ug/L | | 12/19/24 10:45 | 12/23/24 18:10 | 1 |
| C19-C36 Aliphatics | ND | | 95 | 95 | ug/L | | 12/19/24 10:45 | 12/23/24 18:10 | 1 |
| C11-C22 Aromatics | ND | | 95 | 95 | ug/L | | 12/19/24 10:45 | 12/23/24 18:10 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 95 | 95 | ug/L | | 12/19/24 10:45 | 12/23/24 18:10 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *55* | | *40 - 140* | *12/19/24 10:45* | *12/23/24 18:10* | *1* |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-22908-1

## Client Sample ID: GW-MW104-121024

**Date Collected: 12/10/24 15:05**
**Date Received: 12/12/24 17:14**

## Lab Sample ID: 620-22908-2

**Matrix: Water**

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *66* | | *40 - 140* | *12/19/24 10:45* | *12/23/24 18:10* | *1* |
| *2-Fluorobiphenyl (Surr)* | *94* | | *40 - 140* | *12/19/24 10:45* | *12/23/24 18:10* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Antimony** | **0.0042** | **J** | 0.0060 | 0.0016 | mg/L | | 12/13/24 15:10 | 12/16/24 12:23 | 1 |
| Arsenic | ND | | 0.0040 | 0.0014 | mg/L | | 12/13/24 15:10 | 12/16/24 12:23 | 1 |
| **Barium** | **0.045** | | 0.0050 | 0.00070 | mg/L | | 12/13/24 15:10 | 12/16/24 12:23 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 12/13/24 15:10 | 12/16/24 12:23 | 1 |
| **Cadmium** | **0.00085** | **J** | 0.0025 | 0.00036 | mg/L | | 12/13/24 15:10 | 12/16/24 12:23 | 1 |
| **Chromium** | **0.0038** | **J** | 0.0050 | 0.00093 | mg/L | | 12/13/24 15:10 | 12/16/24 12:23 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 12/13/24 15:10 | 12/16/24 12:23 | 1 |
| **Nickel** | **0.018** | | 0.0050 | 0.00087 | mg/L | | 12/13/24 15:10 | 12/16/24 12:23 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 12/13/24 15:10 | 12/16/24 12:23 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 12/13/24 15:10 | 12/16/24 12:23 | 1 |
| Thallium | ND | | 0.0050 | 0.0021 | mg/L | | 12/13/24 15:10 | 12/16/24 12:23 | 1 |
| Vanadium | ND | | 0.0050 | 0.0011 | mg/L | | 12/13/24 15:10 | 12/16/24 12:23 | 1 |
| **Zinc** | **0.23** | | 0.0050 | 0.0016 | mg/L | | 12/13/24 15:10 | 12/16/24 12:23 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 12/18/24 09:03 | 12/18/24 15:18 | 1 |

## Client Sample ID: GW-MW107-121024

**Date Collected: 12/10/24 15:50**
**Date Received: 12/12/24 17:14**

## Lab Sample ID: 620-22908-3

**Matrix: Water**

### Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 1.0 | 0.23 | ug/L | | 12/19/24 10:45 | 12/23/24 14:27 | 1 |
| 2-Methylnaphthalene | ND | | 1.0 | 0.29 | ug/L | | 12/19/24 10:45 | 12/23/24 14:27 | 1 |
| Acenaphthylene | ND | | 1.0 | 0.39 | ug/L | | 12/19/24 10:45 | 12/23/24 14:27 | 1 |
| Acenaphthene | ND | | 1.0 | 0.19 | ug/L | | 12/19/24 10:45 | 12/23/24 14:27 | 1 |
| Fluorene | ND | | 1.0 | 0.39 | ug/L | | 12/19/24 10:45 | 12/23/24 14:27 | 1 |
| Phenanthrene | ND | | 1.0 | 0.17 | ug/L | | 12/19/24 10:45 | 12/23/24 14:27 | 1 |
| Anthracene | ND | | 1.0 | 0.15 | ug/L | | 12/19/24 10:45 | 12/23/24 14:27 | 1 |
| Fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 12/19/24 10:45 | 12/23/24 14:27 | 1 |
| Pyrene | ND | | 1.0 | 0.14 | ug/L | | 12/19/24 10:45 | 12/23/24 14:27 | 1 |
| Benzo[a]anthracene | ND | | 1.0 | 0.070 | ug/L | | 12/19/24 10:45 | 12/23/24 14:27 | 1 |
| Chrysene | ND | | 1.0 | 0.14 | ug/L | | 12/19/24 10:45 | 12/23/24 14:27 | 1 |
| Benzo[b]fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 12/19/24 10:45 | 12/23/24 14:27 | 1 |
| Benzo[k]fluoranthene | ND | | 1.0 | 0.24 | ug/L | | 12/19/24 10:45 | 12/23/24 14:27 | 1 |
| Benzo[a]pyrene | ND | | 0.20 | 0.16 | ug/L | | 12/19/24 10:45 | 12/23/24 14:27 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.50 | 0.46 | ug/L | | 12/19/24 10:45 | 12/23/24 14:27 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.50 | 0.21 | ug/L | | 12/19/24 10:45 | 12/23/24 14:27 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.0 | 0.17 | ug/L | | 12/19/24 10:45 | 12/23/24 14:27 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *75* | | *40 - 140* | *12/19/24 10:45* | *12/23/24 14:27* | *1* |
| *2-Fluorobiphenyl (Surr)* | *118* | | *40 - 140* | *12/19/24 10:45* | *12/23/24 14:27* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 12/17/24 22:07 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 12/17/24 22:07 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 12/17/24 22:07 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 12/17/24 22:07 | 1 |
| **C9-C12 Aliphatics (unadjusted)** | **110** | | 100 | 100 | ug/L | | | 12/17/24 22:07 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 12/17/24 22:07 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 12/17/24 22:07 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 12/17/24 22:07 | 1 |
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 12/17/24 22:07 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 12/17/24 22:07 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 12/17/24 22:07 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 12/17/24 22:07 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 12/17/24 22:07 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *99* | | *70 - 130* | | *12/17/24 22:07* | *1* |
| *2,5-Dibromotoluene (pid)* | *94* | | *70 - 130* | | *12/17/24 22:07* | *1* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 100 | 100 | ug/L | | 12/19/24 10:45 | 12/23/24 18:37 | 1 |
| C19-C36 Aliphatics | ND | | 100 | 100 | ug/L | | 12/19/24 10:45 | 12/23/24 18:37 | 1 |
| C11-C22 Aromatics | ND | | 100 | 100 | ug/L | | 12/19/24 10:45 | 12/23/24 18:37 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 100 | 100 | ug/L | | 12/19/24 10:45 | 12/23/24 18:37 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *52* | | *40 - 140* | *12/19/24 10:45* | *12/23/24 18:37* | *1* |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-22908-1

## Client Sample ID: GW-MW107-121024

**Lab Sample ID: 620-22908-3**

**Date Collected: 12/10/24 15:50**

**Matrix: Water**

**Date Received: 12/12/24 17:14**

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *65* | | *40 - 140* | *12/19/24 10:45* | *12/23/24 18:37* | *1* |
| *2-Fluorobiphenyl (Surr)* | *95* | | *40 - 140* | *12/19/24 10:45* | *12/23/24 18:37* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Antimony** | **0.0045** | **J** | 0.0060 | 0.0016 | mg/L | | 12/13/24 15:10 | 12/16/24 12:29 | 1 |
| **Arsenic** | **0.015** | | 0.0040 | 0.0014 | mg/L | | 12/13/24 15:10 | 12/16/24 12:29 | 1 |
| **Barium** | **0.038** | | 0.0050 | 0.00070 | mg/L | | 12/13/24 15:10 | 12/16/24 12:29 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 12/13/24 15:10 | 12/16/24 12:29 | 1 |
| Cadmium | ND | | 0.0025 | 0.00036 | mg/L | | 12/13/24 15:10 | 12/16/24 12:29 | 1 |
| **Chromium** | **0.0041** | **J** | 0.0050 | 0.00093 | mg/L | | 12/13/24 15:10 | 12/16/24 12:29 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 12/13/24 15:10 | 12/16/24 12:29 | 1 |
| **Nickel** | **0.0069** | | 0.0050 | 0.00087 | mg/L | | 12/13/24 15:10 | 12/16/24 12:29 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 12/13/24 15:10 | 12/16/24 12:29 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 12/13/24 15:10 | 12/16/24 12:29 | 1 |
| **Thallium** | **0.0028** | **J** | 0.0050 | 0.0021 | mg/L | | 12/13/24 15:10 | 12/16/24 12:29 | 1 |
| Vanadium | ND | | 0.0050 | 0.0011 | mg/L | | 12/13/24 15:10 | 12/16/24 12:29 | 1 |
| **Zinc** | **0.0067** | | 0.0050 | 0.0016 | mg/L | | 12/13/24 15:10 | 12/16/24 12:29 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 12/18/24 09:03 | 12/18/24 15:20 | 1 |

## Client Sample ID: GW-MW106-121024

**Date Collected: 12/10/24 14:10**
**Date Received: 12/12/24 17:14**

## Lab Sample ID: 620-22908-4

**Matrix: Water**

### Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Naphthalene** | **37** | | 1.1 | 0.25 | ug/L | | 12/19/24 10:45 | 12/23/24 14:50 | 1 |
| **2-Methylnaphthalene** | **13** | | 1.1 | 0.31 | ug/L | | 12/19/24 10:45 | 12/23/24 14:50 | 1 |
| Acenaphthylene | ND | | 1.1 | 0.41 | ug/L | | 12/19/24 10:45 | 12/23/24 14:50 | 1 |
| Acenaphthene | ND | | 1.1 | 0.20 | ug/L | | 12/19/24 10:45 | 12/23/24 14:50 | 1 |
| Fluorene | ND | | 1.1 | 0.41 | ug/L | | 12/19/24 10:45 | 12/23/24 14:50 | 1 |
| Phenanthrene | ND | | 1.1 | 0.18 | ug/L | | 12/19/24 10:45 | 12/23/24 14:50 | 1 |
| Anthracene | ND | | 1.1 | 0.16 | ug/L | | 12/19/24 10:45 | 12/23/24 14:50 | 1 |
| Fluoranthene | ND | | 1.1 | 0.16 | ug/L | | 12/19/24 10:45 | 12/23/24 14:50 | 1 |
| Pyrene | ND | | 1.1 | 0.15 | ug/L | | 12/19/24 10:45 | 12/23/24 14:50 | 1 |
| Benzo[a]anthracene | ND | | 1.1 | 0.074 | ug/L | | 12/19/24 10:45 | 12/23/24 14:50 | 1 |
| Chrysene | ND | | 1.1 | 0.15 | ug/L | | 12/19/24 10:45 | 12/23/24 14:50 | 1 |
| Benzo[b]fluoranthene | ND | | 1.1 | 0.16 | ug/L | | 12/19/24 10:45 | 12/23/24 14:50 | 1 |
| Benzo[k]fluoranthene | ND | | 1.1 | 0.25 | ug/L | | 12/19/24 10:45 | 12/23/24 14:50 | 1 |
| Benzo[a]pyrene | ND | | 0.21 | 0.17 | ug/L | | 12/19/24 10:45 | 12/23/24 14:50 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.53 | 0.49 | ug/L | | 12/19/24 10:45 | 12/23/24 14:50 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.53 | 0.23 | ug/L | | 12/19/24 10:45 | 12/23/24 14:50 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.1 | 0.18 | ug/L | | 12/19/24 10:45 | 12/23/24 14:50 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *73* | | *40 - 140* | *12/19/24 10:45* | *12/23/24 14:50* | *1* |
| *2-Fluorobiphenyl (Surr)* | *118* | | *40 - 140* | *12/19/24 10:45* | *12/23/24 14:50* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C5-C8 Aliphatics (adjusted)** | **360** | | 100 | 100 | ug/L | | | 12/17/24 22:37 | 1 |
| **C5-C8 Aliphatics (unadjusted)** | **680** | | 100 | 100 | ug/L | | | 12/17/24 22:37 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 12/17/24 22:37 | 1 |
| **Ethylbenzene** | **120** | | 5.0 | 5.0 | ug/L | | | 12/17/24 22:37 | 1 |
| **Naphthalene** | **37** | | 5.0 | 5.0 | ug/L | | | 12/17/24 22:37 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 12/17/24 22:37 | 1 |
| **m,p-Xylene** | **310** | | 10 | 10 | ug/L | | | 12/17/24 22:37 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 12/17/24 22:37 | 1 |
| **Xylenes, Total** | **310** | | 15 | 15 | ug/L | | | 12/17/24 22:37 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *110* | | *70 - 130* | | *12/17/24 22:37* | *1* |
| *2,5-Dibromotoluene (pid)* | *109* | | *70 - 130* | | *12/17/24 22:37* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) - DL

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Methyl tert-butyl ether** | **290** | | 25 | 25 | ug/L | | | 12/18/24 13:54 | 5 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *101* | | *70 - 130* | | *12/18/24 13:54* | *5* |
| *2,5-Dibromotoluene (pid)* | *99* | | *70 - 130* | | *12/18/24 13:54* | *5* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) - DL2

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C9-C12 Aliphatics (adjusted)** | **4100** | | 1000 | 1000 | ug/L | | | 12/19/24 15:29 | 10 |
| **C9-C10 Aromatics** | **2000** | | 1000 | 1000 | ug/L | | | 12/19/24 15:29 | 10 |
| **C9-C12 Aliphatics (unadjusted)** | **7200** | | 1000 | 1000 | ug/L | | | 12/19/24 15:29 | 10 |

## Client Sample ID: GW-MW106-121024

**Date Collected: 12/10/24 14:10**
**Date Received: 12/12/24 17:14**

## Lab Sample ID: 620-22908-4

**Matrix: Water**

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *99* | | *70 - 130* | | *12/19/24 15:29* | *10* |
| *2,5-Dibromotoluene (pid)* | *98* | | *70 - 130* | | *12/19/24 15:29* | *10* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C9-C18 Aliphatics** | **160** | | 110 | 110 | ug/L | | 12/19/24 10:45 | 12/23/24 19:04 | 1 |
| C19-C36 Aliphatics | ND | | 110 | 110 | ug/L | | 12/19/24 10:45 | 12/23/24 19:04 | 1 |
| **C11-C22 Aromatics** | **130** | | 110 | 110 | ug/L | | 12/19/24 10:45 | 12/23/24 19:04 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 110 | 110 | ug/L | | 12/19/24 10:45 | 12/23/24 19:04 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *55* | | *40 - 140* | *12/19/24 10:45* | *12/23/24 19:04* | *1* |
| *o-Terphenyl (Surr)* | *64* | | *40 - 140* | *12/19/24 10:45* | *12/23/24 19:04* | *1* |
| *2-Fluorobiphenyl (Surr)* | *96* | | *40 - 140* | *12/19/24 10:45* | *12/23/24 19:04* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Antimony** | **0.0018** | **J** | 0.0060 | 0.0016 | mg/L | | 12/13/24 15:10 | 12/16/24 12:35 | 1 |
| **Arsenic** | **0.041** | | 0.0040 | 0.0014 | mg/L | | 12/13/24 15:10 | 12/16/24 12:35 | 1 |
| **Barium** | **0.039** | | 0.0050 | 0.00070 | mg/L | | 12/13/24 15:10 | 12/16/24 12:35 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 12/13/24 15:10 | 12/16/24 12:35 | 1 |
| Cadmium | ND | | 0.0025 | 0.00036 | mg/L | | 12/13/24 15:10 | 12/16/24 12:35 | 1 |
| **Chromium** | **0.0018** | **J** | 0.0050 | 0.00093 | mg/L | | 12/13/24 15:10 | 12/16/24 12:35 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 12/13/24 15:10 | 12/16/24 12:35 | 1 |
| **Nickel** | **0.0025** | **J** | 0.0050 | 0.00087 | mg/L | | 12/13/24 15:10 | 12/16/24 12:35 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 12/13/24 15:10 | 12/16/24 12:35 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 12/13/24 15:10 | 12/16/24 12:35 | 1 |
| Thallium | ND | | 0.0050 | 0.0021 | mg/L | | 12/13/24 15:10 | 12/16/24 12:35 | 1 |
| Vanadium | ND | | 0.0050 | 0.0011 | mg/L | | 12/13/24 15:10 | 12/16/24 12:35 | 1 |
| **Zinc** | **0.0020** | **J** | 0.0050 | 0.0016 | mg/L | | 12/13/24 15:10 | 12/16/24 12:35 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 12/18/24 09:03 | 12/18/24 15:22 | 1 |

## Client Sample ID: GW-MW109-121024

**Date Collected: 12/10/24 12:30**
**Date Received: 12/12/24 17:14**

## Lab Sample ID: 620-22908-5

**Matrix: Water**

### Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Naphthalene** | **76** | | 1.0 | 0.23 | ug/L | | 12/19/24 10:45 | 12/23/24 15:13 | 1 |
| **2-Methylnaphthalene** | **19** | | 1.0 | 0.29 | ug/L | | 12/19/24 10:45 | 12/23/24 15:13 | 1 |
| Acenaphthylene | ND | | 1.0 | 0.39 | ug/L | | 12/19/24 10:45 | 12/23/24 15:13 | 1 |
| Acenaphthene | ND | | 1.0 | 0.19 | ug/L | | 12/19/24 10:45 | 12/23/24 15:13 | 1 |
| Fluorene | ND | | 1.0 | 0.39 | ug/L | | 12/19/24 10:45 | 12/23/24 15:13 | 1 |
| Phenanthrene | ND | | 1.0 | 0.17 | ug/L | | 12/19/24 10:45 | 12/23/24 15:13 | 1 |
| Anthracene | ND | | 1.0 | 0.15 | ug/L | | 12/19/24 10:45 | 12/23/24 15:13 | 1 |
| Fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 12/19/24 10:45 | 12/23/24 15:13 | 1 |
| Pyrene | ND | | 1.0 | 0.14 | ug/L | | 12/19/24 10:45 | 12/23/24 15:13 | 1 |
| Benzo[a]anthracene | ND | | 1.0 | 0.070 | ug/L | | 12/19/24 10:45 | 12/23/24 15:13 | 1 |
| Chrysene | ND | | 1.0 | 0.14 | ug/L | | 12/19/24 10:45 | 12/23/24 15:13 | 1 |
| Benzo[b]fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 12/19/24 10:45 | 12/23/24 15:13 | 1 |
| Benzo[k]fluoranthene | ND | | 1.0 | 0.24 | ug/L | | 12/19/24 10:45 | 12/23/24 15:13 | 1 |
| Benzo[a]pyrene | ND | | 0.20 | 0.16 | ug/L | | 12/19/24 10:45 | 12/23/24 15:13 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.50 | 0.46 | ug/L | | 12/19/24 10:45 | 12/23/24 15:13 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.50 | 0.21 | ug/L | | 12/19/24 10:45 | 12/23/24 15:13 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.0 | 0.17 | ug/L | | 12/19/24 10:45 | 12/23/24 15:13 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *67* | | *40 - 140* | *12/19/24 10:45* | *12/23/24 15:13* | *1* |
| *2-Fluorobiphenyl (Surr)* | *116* | | *40 - 140* | *12/19/24 10:45* | *12/23/24 15:13* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C5-C8 Aliphatics (adjusted)** | **260** | | 100 | 100 | ug/L | | | 12/17/24 23:08 | 1 |
| **C5-C8 Aliphatics (unadjusted)** | **530** | | 100 | 100 | ug/L | | | 12/17/24 23:08 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 12/17/24 23:08 | 1 |
| **Naphthalene** | **130** | | 5.0 | 5.0 | ug/L | | | 12/17/24 23:08 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 12/17/24 23:08 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 12/17/24 23:08 | 1 |
| **Xylenes, Total** | **690** | | 15 | 15 | ug/L | | | 12/17/24 23:08 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *114* | | *70 - 130* | | *12/17/24 23:08* | *1* |
| *2,5-Dibromotoluene (pid)* | *109* | | *70 - 130* | | *12/17/24 23:08* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) - DL

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C9-C10 Aromatics** | **2800** | | 1000 | 1000 | ug/L | | | 12/18/24 14:24 | 10 |
| **Ethylbenzene** | **300** | | 50 | 50 | ug/L | | | 12/18/24 14:24 | 10 |
| **Methyl tert-butyl ether** | **300** | | 50 | 50 | ug/L | | | 12/18/24 14:24 | 10 |
| **m,p-Xylene** | **1200** | | 100 | 100 | ug/L | | | 12/18/24 14:24 | 10 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *99* | | *70 - 130* | | *12/18/24 14:24* | *10* |
| *2,5-Dibromotoluene (pid)* | *96* | | *70 - 130* | | *12/18/24 14:24* | *10* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) - DL2

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C12 Aliphatics (adjusted) | ND | | 5000 | 5000 | ug/L | | | 12/19/24 16:30 | 50 |
| **C9-C12 Aliphatics (unadjusted)** | **9600** | | 5000 | 5000 | ug/L | | | 12/19/24 16:30 | 50 |

## Client Sample ID: GW-MW109-121024

**Date Collected: 12/10/24 12:30**
**Date Received: 12/12/24 17:14**

## Lab Sample ID: 620-22908-5

**Matrix: Water**

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *98* | | *70 - 130* | | *12/19/24 16:30* | *50* |
| *2,5-Dibromotoluene (pid)* | *97* | | *70 - 130* | | *12/19/24 16:30* | *50* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C9-C18 Aliphatics** | **320** | | 100 | 100 | ug/L | | 12/19/24 10:45 | 12/23/24 19:31 | 1 |
| C19-C36 Aliphatics | ND | | 100 | 100 | ug/L | | 12/19/24 10:45 | 12/23/24 19:31 | 1 |
| **C11-C22 Aromatics** | **200** | | 100 | 100 | ug/L | | 12/19/24 10:45 | 12/23/24 19:31 | 1 |
| **C11-C22 Aromatics (Adjusted)** | **110** | | 100 | 100 | ug/L | | 12/19/24 10:45 | 12/23/24 19:31 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *48* | | *40 - 140* | *12/19/24 10:45* | *12/23/24 19:31* | *1* |
| *o-Terphenyl (Surr)* | *59* | | *40 - 140* | *12/19/24 10:45* | *12/23/24 19:31* | *1* |
| *2-Fluorobiphenyl (Surr)* | *97* | | *40 - 140* | *12/19/24 10:45* | *12/23/24 19:31* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Antimony** | **0.0020** | **J** | 0.0060 | 0.0016 | mg/L | | 12/13/24 15:10 | 12/16/24 12:41 | 1 |
| **Arsenic** | **0.049** | | 0.0040 | 0.0014 | mg/L | | 12/13/24 15:10 | 12/16/24 12:41 | 1 |
| **Barium** | **0.026** | | 0.0050 | 0.00070 | mg/L | | 12/13/24 15:10 | 12/16/24 12:41 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 12/13/24 15:10 | 12/16/24 12:41 | 1 |
| Cadmium | ND | | 0.0025 | 0.00036 | mg/L | | 12/13/24 15:10 | 12/16/24 12:41 | 1 |
| **Chromium** | **0.0022** | **J** | 0.0050 | 0.00093 | mg/L | | 12/13/24 15:10 | 12/16/24 12:41 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 12/13/24 15:10 | 12/16/24 12:41 | 1 |
| **Nickel** | **0.0026** | **J** | 0.0050 | 0.00087 | mg/L | | 12/13/24 15:10 | 12/16/24 12:41 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 12/13/24 15:10 | 12/16/24 12:41 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 12/13/24 15:10 | 12/16/24 12:41 | 1 |
| **Thallium** | **0.0031** | **J** | 0.0050 | 0.0021 | mg/L | | 12/13/24 15:10 | 12/16/24 12:41 | 1 |
| Vanadium | ND | | 0.0050 | 0.0011 | mg/L | | 12/13/24 15:10 | 12/16/24 12:41 | 1 |
| **Zinc** | **0.0027** | **J** | 0.0050 | 0.0016 | mg/L | | 12/13/24 15:10 | 12/16/24 12:41 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 12/18/24 09:03 | 12/18/24 15:24 | 1 |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-22908-1

**Client Sample ID: GW-MW102R-121024**
**Date Collected: 12/10/24 10:35**
**Date Received: 12/12/24 17:14**

**Lab Sample ID: 620-22908-6**
**Matrix: Water**

## Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Naphthalene** | **17** | | 1.0 | 0.24 | ug/L | | 12/19/24 10:45 | 12/23/24 15:37 | 1 |
| **Naphthalene** | **47** | **H** | 1.1 | 0.25 | ug/L | | 12/27/24 09:56 | 12/30/24 11:56 | 1 |
| **2-Methylnaphthalene** | **3.4** | | 1.0 | 0.30 | ug/L | | 12/19/24 10:45 | 12/23/24 15:37 | 1 |
| **2-Methylnaphthalene** | **8.8** | **H** | 1.1 | 0.31 | ug/L | | 12/27/24 09:56 | 12/30/24 11:56 | 1 |
| Acenaphthylene | ND | | 1.0 | 0.40 | ug/L | | 12/19/24 10:45 | 12/23/24 15:37 | 1 |
| Acenaphthylene | ND | H | 1.1 | 0.41 | ug/L | | 12/27/24 09:56 | 12/30/24 11:56 | 1 |
| Acenaphthene | ND | | 1.0 | 0.19 | ug/L | | 12/19/24 10:45 | 12/23/24 15:37 | 1 |
| Acenaphthene | ND | H | 1.1 | 0.20 | ug/L | | 12/27/24 09:56 | 12/30/24 11:56 | 1 |
| Fluorene | ND | | 1.0 | 0.40 | ug/L | | 12/19/24 10:45 | 12/23/24 15:37 | 1 |
| Fluorene | ND | H | 1.1 | 0.41 | ug/L | | 12/27/24 09:56 | 12/30/24 11:56 | 1 |
| Phenanthrene | ND | | 1.0 | 0.18 | ug/L | | 12/19/24 10:45 | 12/23/24 15:37 | 1 |
| Phenanthrene | ND | H | 1.1 | 0.18 | ug/L | | 12/27/24 09:56 | 12/30/24 11:56 | 1 |
| Anthracene | ND | | 1.0 | 0.16 | ug/L | | 12/19/24 10:45 | 12/23/24 15:37 | 1 |
| Anthracene | ND | H | 1.1 | 0.16 | ug/L | | 12/27/24 09:56 | 12/30/24 11:56 | 1 |
| Fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 12/19/24 10:45 | 12/23/24 15:37 | 1 |
| Fluoranthene | ND | H | 1.1 | 0.16 | ug/L | | 12/27/24 09:56 | 12/30/24 11:56 | 1 |
| Pyrene | ND | | 1.0 | 0.15 | ug/L | | 12/19/24 10:45 | 12/23/24 15:37 | 1 |
| Pyrene | ND | H | 1.1 | 0.15 | ug/L | | 12/27/24 09:56 | 12/30/24 11:56 | 1 |
| Benzo[a]anthracene | ND | | 1.0 | 0.072 | ug/L | | 12/19/24 10:45 | 12/23/24 15:37 | 1 |
| Benzo[a]anthracene | ND | H | 1.1 | 0.074 | ug/L | | 12/27/24 09:56 | 12/30/24 11:56 | 1 |
| Chrysene | ND | | 1.0 | 0.14 | ug/L | | 12/19/24 10:45 | 12/23/24 15:37 | 1 |
| Chrysene | ND | H | 1.1 | 0.15 | ug/L | | 12/27/24 09:56 | 12/30/24 11:56 | 1 |
| Benzo[b]fluoranthene | ND | | 1.0 | 0.16 | ug/L | | 12/19/24 10:45 | 12/23/24 15:37 | 1 |
| Benzo[b]fluoranthene | ND | H | 1.1 | 0.16 | ug/L | | 12/27/24 09:56 | 12/30/24 11:56 | 1 |
| Benzo[k]fluoranthene | ND | | 1.0 | 0.24 | ug/L | | 12/19/24 10:45 | 12/23/24 15:37 | 1 |
| Benzo[k]fluoranthene | ND | H | 1.1 | 0.25 | ug/L | | 12/27/24 09:56 | 12/30/24 11:56 | 1 |
| Benzo[a]pyrene | ND | | 0.21 | 0.17 | ug/L | | 12/19/24 10:45 | 12/23/24 15:37 | 1 |
| Benzo[a]pyrene | ND | H | 0.21 | 0.17 | ug/L | | 12/27/24 09:56 | 12/30/24 11:56 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.51 | 0.47 | ug/L | | 12/19/24 10:45 | 12/23/24 15:37 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | H | 0.53 | 0.49 | ug/L | | 12/27/24 09:56 | 12/30/24 11:56 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.51 | 0.22 | ug/L | | 12/19/24 10:45 | 12/23/24 15:37 | 1 |
| Dibenz(a,h)anthracene | ND | H | 0.53 | 0.23 | ug/L | | 12/27/24 09:56 | 12/30/24 11:56 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.0 | 0.17 | ug/L | | 12/19/24 10:45 | 12/23/24 15:37 | 1 |
| Benzo[g,h,i]perylene | ND | H | 1.1 | 0.18 | ug/L | | 12/27/24 09:56 | 12/30/24 11:56 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *25* | *S1-* | *40 - 140* | *12/19/24 10:45* | *12/23/24 15:37* | *1* |
| *o-Terphenyl (Surr)* | *73* | | *40 - 140* | *12/27/24 09:56* | *12/30/24 11:56* | *1* |
| *2-Fluorobiphenyl (Surr)* | *115* | | *40 - 140* | *12/19/24 10:45* | *12/23/24 15:37* | *1* |
| *2-Fluorobiphenyl (Surr)* | *114* | | *40 - 140* | *12/27/24 09:56* | *12/30/24 11:56* | *1* |

## Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C5-C8 Aliphatics (adjusted)** | **530** | | 100 | 100 | ug/L | | | 12/17/24 23:38 | 1 |
| **C5-C8 Aliphatics (unadjusted)** | **750** | | 100 | 100 | ug/L | | | 12/17/24 23:38 | 1 |
| **Benzene** | **41** | | 5.0 | 5.0 | ug/L | | | 12/17/24 23:38 | 1 |
| **Ethylbenzene** | **180** | | 5.0 | 5.0 | ug/L | | | 12/17/24 23:38 | 1 |
| **Methyl tert-butyl ether** | **170** | | 5.0 | 5.0 | ug/L | | | 12/17/24 23:38 | 1 |
| **Naphthalene** | **110** | | 5.0 | 5.0 | ug/L | | | 12/17/24 23:38 | 1 |
| **Toluene** | **6.0** | | 5.0 | 5.0 | ug/L | | | 12/17/24 23:38 | 1 |

## Client Sample ID: GW-MW102R-121024

**Lab Sample ID: 620-22908-6**

**Date Collected: 12/10/24 10:35**

**Matrix: Water**

**Date Received: 12/12/24 17:14**

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **o-Xylene** | **7.5** | | 5.0 | 5.0 | ug/L | | | 12/17/24 23:38 | 1 |
| **Xylenes, Total** | **500** | | 15 | 15 | ug/L | | | 12/17/24 23:38 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *122* | | *70 - 130* | | *12/17/24 23:38* | *1* |
| *2,5-Dibromotoluene (pid)* | *114* | | *70 - 130* | | *12/17/24 23:38* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) - DL

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C9-C10 Aromatics** | **1200** | | 500 | 500 | ug/L | | | 12/18/24 14:54 | 5 |
| **m,p-Xylene** | **520** | | 50 | 50 | ug/L | | | 12/18/24 14:54 | 5 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *104* | | *70 - 130* | | *12/18/24 14:54* | *5* |
| *2,5-Dibromotoluene (pid)* | *102* | | *70 - 130* | | *12/18/24 14:54* | *5* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) - DL2

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C9-C12 Aliphatics (adjusted)** | **2600** | | 2500 | 2500 | ug/L | | | 12/19/24 17:00 | 25 |
| **C9-C12 Aliphatics (unadjusted)** | **5000** | | 2500 | 2500 | ug/L | | | 12/19/24 17:00 | 25 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *97* | | *70 - 130* | | *12/19/24 17:00* | *25* |
| *2,5-Dibromotoluene (pid)* | *95* | | *70 - 130* | | *12/19/24 17:00* | *25* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C9-C18 Aliphatics** | **120** | | 100 | 100 | ug/L | | 12/19/24 10:45 | 12/26/24 11:06 | 1 |
| **C9-C18 Aliphatics** | **300** | **H** | 110 | 110 | ug/L | | 12/27/24 09:56 | 12/30/24 12:34 | 1 |
| C19-C36 Aliphatics | ND | | 100 | 100 | ug/L | | 12/19/24 10:45 | 12/26/24 11:06 | 1 |
| C19-C36 Aliphatics | ND | H | 110 | 110 | ug/L | | 12/27/24 09:56 | 12/30/24 12:34 | 1 |
| C11-C22 Aromatics | ND | | 100 | 100 | ug/L | | 12/19/24 10:45 | 12/26/24 11:06 | 1 |
| **C11-C22 Aromatics** | **140** | **H** | 110 | 110 | ug/L | | 12/27/24 09:56 | 12/30/24 12:34 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 100 | 100 | ug/L | | 12/19/24 10:45 | 12/26/24 11:06 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | H | 110 | 110 | ug/L | | 12/27/24 09:56 | 12/30/24 12:34 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *31* | *S1-* | *40 - 140* | *12/19/24 10:45* | *12/26/24 11:06* | *1* |
| *1-Chlorooctadecane (Surr)* | *67* | | *40 - 140* | *12/27/24 09:56* | *12/30/24 12:34* | *1* |
| *o-Terphenyl (Surr)* | *23* | *S1-* | *40 - 140* | *12/19/24 10:45* | *12/26/24 11:06* | *1* |
| *o-Terphenyl (Surr)* | *67* | | *40 - 140* | *12/27/24 09:56* | *12/30/24 12:34* | *1* |
| *2-Fluorobiphenyl (Surr)* | *94* | | *40 - 140* | *12/19/24 10:45* | *12/26/24 11:06* | *1* |
| *2-Fluorobiphenyl (Surr)* | *98* | | *40 - 140* | *12/27/24 09:56* | *12/30/24 12:34* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Antimony** | **0.0027** | **J** | 0.0060 | 0.0016 | mg/L | | 12/13/24 15:10 | 12/16/24 12:47 | 1 |
| **Arsenic** | **0.063** | | 0.0040 | 0.0014 | mg/L | | 12/13/24 15:10 | 12/16/24 12:47 | 1 |
| **Barium** | **0.079** | | 0.0050 | 0.00070 | mg/L | | 12/13/24 15:10 | 12/16/24 12:47 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 12/13/24 15:10 | 12/16/24 12:47 | 1 |
| Cadmium | ND | | 0.0025 | 0.00036 | mg/L | | 12/13/24 15:10 | 12/16/24 12:47 | 1 |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-22908-1

**Client Sample ID: GW-MW102R-121024**
**Date Collected: 12/10/24 10:35**
**Date Received: 12/12/24 17:14**

**Lab Sample ID: 620-22908-6**
**Matrix: Water**

### Method: SW846 6010D - Metals (ICP) - Dissolved (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Chromium** | **0.0026** | **J** | 0.0050 | 0.00093 | mg/L | | 12/13/24 15:10 | 12/16/24 12:47 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 12/13/24 15:10 | 12/16/24 12:47 | 1 |
| **Nickel** | **0.0033** | **J** | 0.0050 | 0.00087 | mg/L | | 12/13/24 15:10 | 12/16/24 12:47 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 12/13/24 15:10 | 12/16/24 12:47 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 12/13/24 15:10 | 12/16/24 12:47 | 1 |
| Thallium | ND | | 0.0050 | 0.0021 | mg/L | | 12/13/24 15:10 | 12/16/24 12:47 | 1 |
| **Vanadium** | **0.0013** | **J** | 0.0050 | 0.0011 | mg/L | | 12/13/24 15:10 | 12/16/24 12:47 | 1 |
| Zinc | ND | | 0.0050 | 0.0016 | mg/L | | 12/13/24 15:10 | 12/16/24 12:47 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 12/18/24 09:03 | 12/18/24 15:31 | 1 |

**Client Sample ID: GW-MW105-121124**
**Date Collected: 12/11/24 08:30**
**Date Received: 12/12/24 17:14**

**Lab Sample ID: 620-22908-7**
**Matrix: Water**

## Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 1.0 | 0.23 | ug/L | | 12/19/24 10:45 | 12/23/24 16:00 | 1 |
| 2-Methylnaphthalene | ND | | 1.0 | 0.29 | ug/L | | 12/19/24 10:45 | 12/23/24 16:00 | 1 |
| Acenaphthylene | ND | | 1.0 | 0.39 | ug/L | | 12/19/24 10:45 | 12/23/24 16:00 | 1 |
| Acenaphthene | ND | | 1.0 | 0.19 | ug/L | | 12/19/24 10:45 | 12/23/24 16:00 | 1 |
| Fluorene | ND | | 1.0 | 0.39 | ug/L | | 12/19/24 10:45 | 12/23/24 16:00 | 1 |
| Phenanthrene | ND | | 1.0 | 0.17 | ug/L | | 12/19/24 10:45 | 12/23/24 16:00 | 1 |
| Anthracene | ND | | 1.0 | 0.15 | ug/L | | 12/19/24 10:45 | 12/23/24 16:00 | 1 |
| Fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 12/19/24 10:45 | 12/23/24 16:00 | 1 |
| Pyrene | ND | | 1.0 | 0.14 | ug/L | | 12/19/24 10:45 | 12/23/24 16:00 | 1 |
| Benzo[a]anthracene | ND | | 1.0 | 0.070 | ug/L | | 12/19/24 10:45 | 12/23/24 16:00 | 1 |
| Chrysene | ND | | 1.0 | 0.14 | ug/L | | 12/19/24 10:45 | 12/23/24 16:00 | 1 |
| Benzo[b]fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 12/19/24 10:45 | 12/23/24 16:00 | 1 |
| Benzo[k]fluoranthene | ND | | 1.0 | 0.24 | ug/L | | 12/19/24 10:45 | 12/23/24 16:00 | 1 |
| Benzo[a]pyrene | ND | | 0.20 | 0.16 | ug/L | | 12/19/24 10:45 | 12/23/24 16:00 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.50 | 0.46 | ug/L | | 12/19/24 10:45 | 12/23/24 16:00 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.50 | 0.21 | ug/L | | 12/19/24 10:45 | 12/23/24 16:00 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.0 | 0.17 | ug/L | | 12/19/24 10:45 | 12/23/24 16:00 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *72* | | *40 - 140* | *12/19/24 10:45* | *12/23/24 16:00* | *1* |
| *2-Fluorobiphenyl (Surr)* | *116* | | *40 - 140* | *12/19/24 10:45* | *12/23/24 16:00* | *1* |

## Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 12/18/24 00:09 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 12/18/24 00:09 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 12/18/24 00:09 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 12/18/24 00:09 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 12/18/24 00:09 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 12/18/24 00:09 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 12/18/24 00:09 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 12/18/24 00:09 | 1 |
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 12/18/24 00:09 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 12/18/24 00:09 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 12/18/24 00:09 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 12/18/24 00:09 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 12/18/24 00:09 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *98* | | *70 - 130* | | *12/18/24 00:09* | *1* |
| *2,5-Dibromotoluene (pid)* | *99* | | *70 - 130* | | *12/18/24 00:09* | *1* |

## Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 100 | 100 | ug/L | | 12/19/24 10:45 | 12/26/24 11:33 | 1 |
| C19-C36 Aliphatics | ND | | 100 | 100 | ug/L | | 12/19/24 10:45 | 12/26/24 11:33 | 1 |
| C11-C22 Aromatics | ND | | 100 | 100 | ug/L | | 12/19/24 10:45 | 12/26/24 11:33 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 100 | 100 | ug/L | | 12/19/24 10:45 | 12/26/24 11:33 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *60* | | *40 - 140* | *12/19/24 10:45* | *12/26/24 11:33* | *1* |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-22908-1

**Client Sample ID: GW-MW105-121124**
**Date Collected: 12/11/24 08:30**
**Date Received: 12/12/24 17:14**

**Lab Sample ID: 620-22908-7**
**Matrix: Water**

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *75* | | *40 - 140* | *12/19/24 10:45* | *12/26/24 11:33* | *1* |
| *2-Fluorobiphenyl (Surr)* | *110* | | *40 - 140* | *12/19/24 10:45* | *12/26/24 11:33* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 0.0060 | 0.0016 | mg/L | | 12/13/24 15:10 | 12/16/24 13:05 | 1 |
| Arsenic | ND | | 0.0040 | 0.0014 | mg/L | | 12/13/24 15:10 | 12/16/24 13:05 | 1 |
| **Barium** | **0.10** | | 0.0050 | 0.00070 | mg/L | | 12/13/24 15:10 | 12/16/24 13:05 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 12/13/24 15:10 | 12/16/24 13:05 | 1 |
| Cadmium | ND | | 0.0025 | 0.00036 | mg/L | | 12/13/24 15:10 | 12/16/24 13:05 | 1 |
| **Chromium** | **0.0047** | **J** | 0.0050 | 0.00093 | mg/L | | 12/13/24 15:10 | 12/16/24 13:05 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 12/13/24 15:10 | 12/16/24 13:05 | 1 |
| **Nickel** | **0.0032** | **J** | 0.0050 | 0.00087 | mg/L | | 12/13/24 15:10 | 12/16/24 13:05 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 12/13/24 15:10 | 12/16/24 13:05 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 12/13/24 15:10 | 12/16/24 13:05 | 1 |
| **Thallium** | **0.0027** | **J** | 0.0050 | 0.0021 | mg/L | | 12/13/24 15:10 | 12/16/24 13:05 | 1 |
| Vanadium | ND | | 0.0050 | 0.0011 | mg/L | | 12/13/24 15:10 | 12/16/24 13:05 | 1 |
| **Zinc** | **0.0092** | | 0.0050 | 0.0016 | mg/L | | 12/13/24 15:10 | 12/16/24 13:05 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 12/18/24 09:03 | 12/18/24 15:33 | 1 |

## Client Sample ID: GW-MW101-121124

**Date Collected: 12/11/24 08:20**
**Date Received: 12/12/24 17:14**

**Lab Sample ID: 620-22908-8**
**Matrix: Water**

### Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 0.98 | 0.23 | ug/L | | 12/19/24 10:45 | 12/23/24 16:24 | 1 |
| 2-Methylnaphthalene | ND | | 0.98 | 0.28 | ug/L | | 12/19/24 10:45 | 12/23/24 16:24 | 1 |
| Acenaphthylene | ND | | 0.98 | 0.38 | ug/L | | 12/19/24 10:45 | 12/23/24 16:24 | 1 |
| Acenaphthene | ND | | 0.98 | 0.18 | ug/L | | 12/19/24 10:45 | 12/23/24 16:24 | 1 |
| Fluorene | ND | | 0.98 | 0.38 | ug/L | | 12/19/24 10:45 | 12/23/24 16:24 | 1 |
| Phenanthrene | ND | | 0.98 | 0.17 | ug/L | | 12/19/24 10:45 | 12/23/24 16:24 | 1 |
| Anthracene | ND | | 0.98 | 0.15 | ug/L | | 12/19/24 10:45 | 12/23/24 16:24 | 1 |
| Fluoranthene | ND | | 0.98 | 0.15 | ug/L | | 12/19/24 10:45 | 12/23/24 16:24 | 1 |
| Pyrene | ND | | 0.98 | 0.14 | ug/L | | 12/19/24 10:45 | 12/23/24 16:24 | 1 |
| **Benzo[a]anthracene** | **0.16** | **J** | 0.98 | 0.068 | ug/L | | 12/19/24 10:45 | 12/23/24 16:24 | 1 |
| Chrysene | ND | | 0.98 | 0.14 | ug/L | | 12/19/24 10:45 | 12/23/24 16:24 | 1 |
| **Benzo[b]fluoranthene** | **0.20** | **J** | 0.98 | 0.15 | ug/L | | 12/19/24 10:45 | 12/23/24 16:24 | 1 |
| Benzo[k]fluoranthene | ND | | 0.98 | 0.23 | ug/L | | 12/19/24 10:45 | 12/23/24 16:24 | 1 |
| **Benzo[a]pyrene** | **0.19** | **J** | 0.20 | 0.16 | ug/L | | 12/19/24 10:45 | 12/23/24 16:24 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.49 | 0.45 | ug/L | | 12/19/24 10:45 | 12/23/24 16:24 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.49 | 0.21 | ug/L | | 12/19/24 10:45 | 12/23/24 16:24 | 1 |
| Benzo[g,h,i]perylene | ND | | 0.98 | 0.16 | ug/L | | 12/19/24 10:45 | 12/23/24 16:24 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *69* | | *40 - 140* | *12/19/24 10:45* | *12/23/24 16:24* | *1* |
| *2-Fluorobiphenyl (Surr)* | *95* | | *40 - 140* | *12/19/24 10:45* | *12/23/24 16:24* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 12/18/24 00:39 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 12/18/24 00:39 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 12/18/24 00:39 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 12/18/24 00:39 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 12/18/24 00:39 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 12/18/24 00:39 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 12/18/24 00:39 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 12/18/24 00:39 | 1 |
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 12/18/24 00:39 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 12/18/24 00:39 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 12/18/24 00:39 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 12/18/24 00:39 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 12/18/24 00:39 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *97* | | *70 - 130* | | *12/18/24 00:39* | *1* |
| *2,5-Dibromotoluene (pid)* | *96* | | *70 - 130* | | *12/18/24 00:39* | *1* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 98 | 98 | ug/L | | 12/19/24 10:45 | 12/26/24 12:01 | 1 |
| **C19-C36 Aliphatics** | **150** | | 98 | 98 | ug/L | | 12/19/24 10:45 | 12/26/24 12:01 | 1 |
| C11-C22 Aromatics | ND | | 98 | 98 | ug/L | | 12/19/24 10:45 | 12/26/24 12:01 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 98 | 98 | ug/L | | 12/19/24 10:45 | 12/26/24 12:01 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *67* | | *40 - 140* | *12/19/24 10:45* | *12/26/24 12:01* | *1* |

## Client Sample ID: GW-MW101-121124

**Lab Sample ID: 620-22908-8**

**Date Collected: 12/11/24 08:20**

**Matrix: Water**

**Date Received: 12/12/24 17:14**

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *74* | | *40 - 140* | *12/19/24 10:45* | *12/26/24 12:01* | *1* |
| *2-Fluorobiphenyl (Surr)* | *95* | | *40 - 140* | *12/19/24 10:45* | *12/26/24 12:01* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Antimony** | **0.0038** | **J** | 0.0060 | 0.0016 | mg/L | | 12/13/24 15:10 | 12/16/24 13:11 | 1 |
| **Arsenic** | **0.020** | | 0.0040 | 0.0014 | mg/L | | 12/13/24 15:10 | 12/16/24 13:11 | 1 |
| **Barium** | **0.25** | | 0.0050 | 0.00070 | mg/L | | 12/13/24 15:10 | 12/16/24 13:11 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 12/13/24 15:10 | 12/16/24 13:11 | 1 |
| **Cadmium** | **0.0010** | **J** | 0.0025 | 0.00036 | mg/L | | 12/13/24 15:10 | 12/16/24 13:11 | 1 |
| **Chromium** | **0.0042** | **J** | 0.0050 | 0.00093 | mg/L | | 12/13/24 15:10 | 12/16/24 13:11 | 1 |
| **Lead** | **0.047** | | 0.0075 | 0.0062 | mg/L | | 12/13/24 15:10 | 12/16/24 13:11 | 1 |
| **Nickel** | **0.0071** | | 0.0050 | 0.00087 | mg/L | | 12/13/24 15:10 | 12/16/24 13:11 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 12/13/24 15:10 | 12/16/24 13:11 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 12/13/24 15:10 | 12/16/24 13:11 | 1 |
| **Thallium** | **0.0032** | **J** | 0.0050 | 0.0021 | mg/L | | 12/13/24 15:10 | 12/16/24 13:11 | 1 |
| Vanadium | ND | | 0.0050 | 0.0011 | mg/L | | 12/13/24 15:10 | 12/16/24 13:11 | 1 |
| **Zinc** | **0.36** | | 0.0050 | 0.0016 | mg/L | | 12/13/24 15:10 | 12/16/24 13:11 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 12/18/24 09:03 | 12/18/24 15:35 | 1 |

## Client Sample ID: FD-01

**Date Collected: 12/10/24 08:00**
**Date Received: 12/12/24 17:14**

## Lab Sample ID: 620-22908-9

**Matrix: Water**

### Method: MA DEP EPH - Extractable Petroleum Hydrocarbons (GC/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Naphthalene** | **34** | | 1.0 | 0.23 | ug/L | | 12/19/24 10:45 | 12/23/24 16:47 | 1 |
| **2-Methylnaphthalene** | **6.8** | | 1.0 | 0.29 | ug/L | | 12/19/24 10:45 | 12/23/24 16:47 | 1 |
| Acenaphthylene | ND | | 1.0 | 0.39 | ug/L | | 12/19/24 10:45 | 12/23/24 16:47 | 1 |
| Acenaphthene | ND | | 1.0 | 0.19 | ug/L | | 12/19/24 10:45 | 12/23/24 16:47 | 1 |
| Fluorene | ND | | 1.0 | 0.39 | ug/L | | 12/19/24 10:45 | 12/23/24 16:47 | 1 |
| Phenanthrene | ND | | 1.0 | 0.17 | ug/L | | 12/19/24 10:45 | 12/23/24 16:47 | 1 |
| Anthracene | ND | | 1.0 | 0.15 | ug/L | | 12/19/24 10:45 | 12/23/24 16:47 | 1 |
| Fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 12/19/24 10:45 | 12/23/24 16:47 | 1 |
| Pyrene | ND | | 1.0 | 0.14 | ug/L | | 12/19/24 10:45 | 12/23/24 16:47 | 1 |
| Benzo[a]anthracene | ND | | 1.0 | 0.070 | ug/L | | 12/19/24 10:45 | 12/23/24 16:47 | 1 |
| Chrysene | ND | | 1.0 | 0.14 | ug/L | | 12/19/24 10:45 | 12/23/24 16:47 | 1 |
| Benzo[b]fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 12/19/24 10:45 | 12/23/24 16:47 | 1 |
| Benzo[k]fluoranthene | ND | | 1.0 | 0.24 | ug/L | | 12/19/24 10:45 | 12/23/24 16:47 | 1 |
| Benzo[a]pyrene | ND | | 0.20 | 0.16 | ug/L | | 12/19/24 10:45 | 12/23/24 16:47 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.50 | 0.46 | ug/L | | 12/19/24 10:45 | 12/23/24 16:47 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.50 | 0.21 | ug/L | | 12/19/24 10:45 | 12/23/24 16:47 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.0 | 0.17 | ug/L | | 12/19/24 10:45 | 12/23/24 16:47 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *69* | | *40 - 140* | *12/19/24 10:45* | *12/23/24 16:47* | *1* |
| *2-Fluorobiphenyl (Surr)* | *116* | | *40 - 140* | *12/19/24 10:45* | *12/23/24 16:47* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C5-C8 Aliphatics (adjusted)** | **520** | | 100 | 100 | ug/L | | | 12/18/24 01:09 | 1 |
| **C5-C8 Aliphatics (unadjusted)** | **690** | | 100 | 100 | ug/L | | | 12/18/24 01:09 | 1 |
| **Benzene** | **45** | | 5.0 | 5.0 | ug/L | | | 12/18/24 01:09 | 1 |
| **Ethylbenzene** | **190** | | 5.0 | 5.0 | ug/L | | | 12/18/24 01:09 | 1 |
| **Methyl tert-butyl ether** | **120** | | 5.0 | 5.0 | ug/L | | | 12/18/24 01:09 | 1 |
| **Naphthalene** | **100** | | 5.0 | 5.0 | ug/L | | | 12/18/24 01:09 | 1 |
| **Toluene** | **6.6** | | 5.0 | 5.0 | ug/L | | | 12/18/24 01:09 | 1 |
| **o-Xylene** | **7.4** | | 5.0 | 5.0 | ug/L | | | 12/18/24 01:09 | 1 |
| **Xylenes, Total** | **480** | | 15 | 15 | ug/L | | | 12/18/24 01:09 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *120* | | *70 - 130* | | *12/18/24 01:09* | *1* |
| *2,5-Dibromotoluene (pid)* | *115* | | *70 - 130* | | *12/18/24 01:09* | *1* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) - DL

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C9-C10 Aromatics** | **1200** | | 500 | 500 | ug/L | | | 12/18/24 15:24 | 5 |
| **m,p-Xylene** | **510** | | 50 | 50 | ug/L | | | 12/18/24 15:24 | 5 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *102* | | *70 - 130* | | *12/18/24 15:24* | *5* |
| *2,5-Dibromotoluene (pid)* | *98* | | *70 - 130* | | *12/18/24 15:24* | *5* |

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) - DL2

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C9-C12 Aliphatics (adjusted)** | **3800** | | 2500 | 2500 | ug/L | | | 12/19/24 17:30 | 25 |
| **C9-C12 Aliphatics (unadjusted)** | **6800** | | 2500 | 2500 | ug/L | | | 12/19/24 17:30 | 25 |

## Client Sample ID: FD-01

**Date Collected: 12/10/24 08:00**
**Date Received: 12/12/24 17:14**

## Lab Sample ID: 620-22908-9

**Matrix: Water**

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *100* | | *70 - 130* | | *12/19/24 17:30* | *25* |
| *2,5-Dibromotoluene (pid)* | *97* | | *70 - 130* | | *12/19/24 17:30* | *25* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **C9-C18 Aliphatics** | **120** | | 100 | 100 | ug/L | | 12/19/24 10:45 | 12/26/24 12:29 | 1 |
| C19-C36 Aliphatics | ND | | 100 | 100 | ug/L | | 12/19/24 10:45 | 12/26/24 12:29 | 1 |
| **C11-C22 Aromatics** | **150** | | 100 | 100 | ug/L | | 12/19/24 10:45 | 12/26/24 12:29 | 1 |
| **C11-C22 Aromatics (Adjusted)** | **110** | | 100 | 100 | ug/L | | 12/19/24 10:45 | 12/26/24 12:29 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *63* | | *40 - 140* | *12/19/24 10:45* | *12/26/24 12:29* | *1* |
| *o-Terphenyl (Surr)* | *72* | | *40 - 140* | *12/19/24 10:45* | *12/26/24 12:29* | *1* |
| *2-Fluorobiphenyl (Surr)* | *114* | | *40 - 140* | *12/19/24 10:45* | *12/26/24 12:29* | *1* |

### Method: SW846 6010D - Metals (ICP) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Antimony** | **0.0033** | **J** | 0.0060 | 0.0016 | mg/L | | 12/13/24 15:10 | 12/16/24 13:17 | 1 |
| **Arsenic** | **0.069** | | 0.0040 | 0.0014 | mg/L | | 12/13/24 15:10 | 12/16/24 13:17 | 1 |
| **Barium** | **0.078** | | 0.0050 | 0.00070 | mg/L | | 12/13/24 15:10 | 12/16/24 13:17 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 12/13/24 15:10 | 12/16/24 13:17 | 1 |
| Cadmium | ND | | 0.0025 | 0.00036 | mg/L | | 12/13/24 15:10 | 12/16/24 13:17 | 1 |
| **Chromium** | **0.0031** | **J** | 0.0050 | 0.00093 | mg/L | | 12/13/24 15:10 | 12/16/24 13:17 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 12/13/24 15:10 | 12/16/24 13:17 | 1 |
| **Nickel** | **0.0046** | **J** | 0.0050 | 0.00087 | mg/L | | 12/13/24 15:10 | 12/16/24 13:17 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 12/13/24 15:10 | 12/16/24 13:17 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 12/13/24 15:10 | 12/16/24 13:17 | 1 |
| Thallium | ND | | 0.0050 | 0.0021 | mg/L | | 12/13/24 15:10 | 12/16/24 13:17 | 1 |
| **Vanadium** | **0.0012** | **J** | 0.0050 | 0.0011 | mg/L | | 12/13/24 15:10 | 12/16/24 13:17 | 1 |
| Zinc | ND | | 0.0050 | 0.0016 | mg/L | | 12/13/24 15:10 | 12/16/24 13:17 | 1 |

### Method: SW846 7470A - Mercury (CVAA) - Dissolved

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 12/18/24 09:03 | 12/18/24 15:37 | 1 |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-22908-1

## Client Sample ID: Trip Blank

**Date Collected: 12/10/24 00:00**
**Date Received: 12/12/24 17:14**

## Lab Sample ID: 620-22908-10

**Matrix: Water**

### Method: MA DEP MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 12/17/24 18:34 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 12/17/24 18:34 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 12/17/24 18:34 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 12/17/24 18:34 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 12/17/24 18:34 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 12/17/24 18:34 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 12/17/24 18:34 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 12/17/24 18:34 | 1 |
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 12/17/24 18:34 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 12/17/24 18:34 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 12/17/24 18:34 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 12/17/24 18:34 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 12/17/24 18:34 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *94* | | *70 - 130* | | *12/17/24 18:34* | *1* |
| *2,5-Dibromotoluene (pid)* | *92* | | *70 - 130* | | *12/17/24 18:34* | *1* |

# Surrogate Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-22908-1

## Method: EPH - Extractable Petroleum Hydrocarbons (GC/MS)

**Matrix: Water**

**Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) | |
|---|---|---|---|
| Lab Sample ID | Client Sample ID | OTPH (40-140) | FBP (40-140) |
| 620-22908-1 | GW-MW108-121024 | 55 | 85 |
| 620-22908-1 MS | GW-MW108-121024 | 75 | 117 |
| 620-22908-1 MSD | GW-MW108-121024 | 74 | 112 |
| 620-22908-2 | GW-MW104-121024 | 76 | 119 |
| 620-22908-3 | GW-MW107-121024 | 75 | 118 |
| 620-22908-4 | GW-MW106-121024 | 73 | 118 |
| 620-22908-5 | GW-MW109-121024 | 67 | 116 |
| 620-22908-6 | GW-MW102R-121024 | 25 S1- | 115 |
| 620-22908-6 | GW-MW102R-121024 | 73 | 114 |
| 620-22908-7 | GW-MW105-121124 | 72 | 116 |
| 620-22908-8 | GW-MW101-121124 | 69 | 95 |
| 620-22908-9 | FD-01 | 69 | 116 |
| LCS 620-42715/4-B | Lab Control Sample | 79 | 117 |
| LCS 620-42884/4-B | Lab Control Sample | 77 | 117 |
| LCSD 620-42715/5-B | Lab Control Sample Dup | 76 | 107 |
| LCSD 620-42884/5-B | Lab Control Sample Dup | 79 | 115 |
| MB 620-42715/1-B | Method Blank | 76 | 116 |
| MB 620-42884/1-B | Method Blank | 73 | 108 |

**Surrogate Legend**

OTPH = o-Terphenyl (Surr)

FBP = 2-Fluorobiphenyl (Surr)

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

**Matrix: Water**

**Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) | |
|---|---|---|---|
| Lab Sample ID | Client Sample ID | 25DBTf1 (70-130) | 25DBTp1 (70-130) |
| 620-22908-1 | GW-MW108-121024 | 97 | 95 |
| 620-22908-1 MS | GW-MW108-121024 | 96 | 93 |
| 620-22908-1 MSD | GW-MW108-121024 | 96 | 94 |
| 620-22908-2 | GW-MW104-121024 | 99 | 97 |
| 620-22908-3 | GW-MW107-121024 | 99 | 94 |
| 620-22908-4 | GW-MW106-121024 | 110 | 109 |
| 620-22908-4 - DL | GW-MW106-121024 | 101 | 99 |
| 620-22908-4 - DL2 | GW-MW106-121024 | 99 | 98 |
| 620-22908-5 | GW-MW109-121024 | 114 | 109 |
| 620-22908-5 - DL | GW-MW109-121024 | 99 | 96 |
| 620-22908-5 - DL2 | GW-MW109-121024 | 98 | 97 |
| 620-22908-6 | GW-MW102R-121024 | 122 | 114 |
| 620-22908-6 - DL | GW-MW102R-121024 | 104 | 102 |
| 620-22908-6 - DL2 | GW-MW102R-121024 | 97 | 95 |
| 620-22908-7 | GW-MW105-121124 | 98 | 99 |
| 620-22908-8 | GW-MW101-121124 | 97 | 96 |
| 620-22908-9 | FD-01 | 120 | 115 |
| 620-22908-9 - DL | FD-01 | 102 | 98 |
| 620-22908-9 - DL2 | FD-01 | 100 | 97 |
| 620-22908-10 | Trip Blank | 94 | 92 |
| LCS 620-42608/2 | Lab Control Sample | 101 | 99 |

# Surrogate Summary

Client: Nobis Engineering, Inc. Job ID: 620-22908-1
Project/Site: Former L&M - Lunenburg MA

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) (Continued)

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

| | | Percent Surrogate Recovery (Acceptance Limits) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab Sample ID | Client Sample ID | 25DBTf1 (70-130) | 25DBTp1 (70-130) | | | | | | | | |
| LCS 620-42639/2 | Lab Control Sample | 102 | 103 | | | | | | | | |
| LCS 620-42713/2 | Lab Control Sample | 102 | 103 | | | | | | | | |
| LCSD 620-42608/3 | Lab Control Sample Dup | 97 | 94 | | | | | | | | |
| LCSD 620-42639/3 | Lab Control Sample Dup | 99 | 98 | | | | | | | | |
| LCSD 620-42713/3 | Lab Control Sample Dup | 100 | 98 | | | | | | | | |
| MB 620-42608/4 | Method Blank | 98 | 100 | | | | | | | | |
| MB 620-42639/4 | Method Blank | 101 | 100 | | | | | | | | |
| MB 620-42713/4 | Method Blank | 99 | 96 | | | | | | | | |

**Surrogate Legend**

25DBTf = 2,5-Dibromotoluene (fid)
25DBTp = 2,5-Dibromotoluene (pid)

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

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

| | | Percent Surrogate Recovery (Acceptance Limits) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab Sample ID | Client Sample ID | 1COD1 (40-140) | OTPH1 (40-140) | FBP1 (40-140) | | | | | | | |
| 620-22908-1 | GW-MW108-121024 | 62 | 55 | 78 | | | | | | | |
| 620-22908-1 MS | GW-MW108-121024 | 57 | 72 | 102 | | | | | | | |
| 620-22908-1 MSD | GW-MW108-121024 | 61 | 71 | 100 | | | | | | | |
| 620-22908-2 | GW-MW104-121024 | 55 | 66 | 94 | | | | | | | |
| 620-22908-3 | GW-MW107-121024 | 52 | 65 | 95 | | | | | | | |
| 620-22908-4 | GW-MW106-121024 | 55 | 64 | 96 | | | | | | | |
| 620-22908-5 | GW-MW109-121024 | 48 | 59 | 97 | | | | | | | |
| 620-22908-6 | GW-MW102R-121024 | 31 S1- | 23 S1- | 94 | | | | | | | |
| 620-22908-6 | GW-MW102R-121024 | 67 | 67 | 98 | | | | | | | |
| 620-22908-7 | GW-MW105-121124 | 60 | 75 | 110 | | | | | | | |
| 620-22908-8 | GW-MW101-121124 | 67 | 74 | 95 | | | | | | | |
| 620-22908-9 | FD-01 | 63 | 72 | 114 | | | | | | | |
| LCS 620-42715/2-B | Lab Control Sample | 74 | 59 | 79 | | | | | | | |
| LCS 620-42884/2-B | Lab Control Sample | 75 | 74 | 102 | | | | | | | |
| LCSD 620-42715/3-B | Lab Control Sample Dup | 70 | 59 | 78 | | | | | | | |
| LCSD 620-42884/3-B | Lab Control Sample Dup | 71 | 69 | 98 | | | | | | | |
| MB 620-42715/1-B | Method Blank | 58 | 72 | 98 | | | | | | | |
| MB 620-42884/1-B | Method Blank | 74 | 63 | 85 | | | | | | | |

**Surrogate Legend**

1COD = 1-Chlorooctadecane (Surr)
OTPH = o-Terphenyl (Surr)
FBP = 2-Fluorobiphenyl (Surr)

## Method: EPH - Extractable Petroleum Hydrocarbons (GC/MS)

**Lab Sample ID: MB 620-42715/1-B**
**Matrix: Water**
**Analysis Batch: 42815**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 42715**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 1.0 | 0.23 | ug/L | | 12/19/24 10:45 | 12/23/24 11:21 | 1 |
| 2-Methylnaphthalene | ND | | 1.0 | 0.29 | ug/L | | 12/19/24 10:45 | 12/23/24 11:21 | 1 |
| Acenaphthylene | ND | | 1.0 | 0.39 | ug/L | | 12/19/24 10:45 | 12/23/24 11:21 | 1 |
| Acenaphthene | ND | | 1.0 | 0.19 | ug/L | | 12/19/24 10:45 | 12/23/24 11:21 | 1 |
| Fluorene | ND | | 1.0 | 0.39 | ug/L | | 12/19/24 10:45 | 12/23/24 11:21 | 1 |
| Phenanthrene | ND | | 1.0 | 0.17 | ug/L | | 12/19/24 10:45 | 12/23/24 11:21 | 1 |
| Anthracene | ND | | 1.0 | 0.15 | ug/L | | 12/19/24 10:45 | 12/23/24 11:21 | 1 |
| Fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 12/19/24 10:45 | 12/23/24 11:21 | 1 |
| Pyrene | ND | | 1.0 | 0.14 | ug/L | | 12/19/24 10:45 | 12/23/24 11:21 | 1 |
| Benzo[a]anthracene | ND | | 1.0 | 0.070 | ug/L | | 12/19/24 10:45 | 12/23/24 11:21 | 1 |
| Chrysene | ND | | 1.0 | 0.14 | ug/L | | 12/19/24 10:45 | 12/23/24 11:21 | 1 |
| Benzo[b]fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 12/19/24 10:45 | 12/23/24 11:21 | 1 |
| Benzo[k]fluoranthene | ND | | 1.0 | 0.24 | ug/L | | 12/19/24 10:45 | 12/23/24 11:21 | 1 |
| Benzo[a]pyrene | ND | | 0.20 | 0.16 | ug/L | | 12/19/24 10:45 | 12/23/24 11:21 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.50 | 0.46 | ug/L | | 12/19/24 10:45 | 12/23/24 11:21 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.50 | 0.21 | ug/L | | 12/19/24 10:45 | 12/23/24 11:21 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.0 | 0.17 | ug/L | | 12/19/24 10:45 | 12/23/24 11:21 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *76* | | *40 - 140* | *12/19/24 10:45* | *12/23/24 11:21* | *1* |
| *2-Fluorobiphenyl (Surr)* | *116* | | *40 - 140* | *12/19/24 10:45* | *12/23/24 11:21* | *1* |

**Lab Sample ID: LCS 620-42715/4-B**
**Matrix: Water**
**Analysis Batch: 42815**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 42715**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Naphthalene | 5.00 | 3.20 | | ug/L | | 64 | 40 - 140 |
| 2-Methylnaphthalene | 5.00 | 3.00 | | ug/L | | 60 | 40 - 140 |
| Acenaphthylene | 5.00 | 3.37 | | ug/L | | 67 | 40 - 140 |
| Acenaphthene | 5.00 | 3.13 | | ug/L | | 63 | 40 - 140 |
| Fluorene | 5.00 | 3.19 | | ug/L | | 64 | 40 - 140 |
| Phenanthrene | 5.00 | 3.46 | | ug/L | | 69 | 40 - 140 |
| Anthracene | 5.00 | 2.96 | | ug/L | | 59 | 40 - 140 |
| Fluoranthene | 5.00 | 3.70 | | ug/L | | 74 | 40 - 140 |
| Pyrene | 5.00 | 3.65 | | ug/L | | 73 | 40 - 140 |
| Benzo[a]anthracene | 5.00 | 3.61 | | ug/L | | 72 | 40 - 140 |
| Chrysene | 5.00 | 2.86 | | ug/L | | 57 | 40 - 140 |
| Benzo[b]fluoranthene | 5.00 | 3.98 | | ug/L | | 80 | 40 - 140 |
| Benzo[k]fluoranthene | 5.00 | 3.62 | | ug/L | | 72 | 40 - 140 |
| Benzo[a]pyrene | 5.00 | 3.12 | | ug/L | | 62 | 40 - 140 |
| Indeno[1,2,3-cd]pyrene | 5.00 | 3.52 | | ug/L | | 70 | 40 - 140 |
| Dibenz(a,h)anthracene | 5.00 | 2.96 | | ug/L | | 59 | 40 - 140 |
| Benzo[g,h,i]perylene | 5.00 | 3.75 | | ug/L | | 75 | 40 - 140 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl (Surr)* | *79* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *117* | | *40 - 140* |

## Method: EPH - Extractable Petroleum Hydrocarbons (GC/MS)

**Lab Sample ID: LCSD 620-42715/5-B**
**Matrix: Water**
**Analysis Batch: 42815**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 42715**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | | | 5.00 | 2.92 | | ug/L | | 58 | 40 - 140 | 9 | 25 |
| 2-Methylnaphthalene | | | 5.00 | 2.78 | | ug/L | | 56 | 40 - 140 | 8 | 25 |
| Acenaphthylene | | | 5.00 | 3.28 | | ug/L | | 66 | 40 - 140 | 3 | 25 |
| Acenaphthene | | | 5.00 | 3.08 | | ug/L | | 62 | 40 - 140 | 2 | 25 |
| Fluorene | | | 5.00 | 3.11 | | ug/L | | 62 | 40 - 140 | 2 | 25 |
| Phenanthrene | | | 5.00 | 3.30 | | ug/L | | 66 | 40 - 140 | 5 | 25 |
| Anthracene | | | 5.00 | 2.89 | | ug/L | | 58 | 40 - 140 | 2 | 25 |
| Fluoranthene | | | 5.00 | 3.66 | | ug/L | | 73 | 40 - 140 | 1 | 25 |
| Pyrene | | | 5.00 | 3.56 | | ug/L | | 71 | 40 - 140 | 3 | 25 |
| Benzo[a]anthracene | | | 5.00 | 3.51 | | ug/L | | 70 | 40 - 140 | 3 | 25 |
| Chrysene | | | 5.00 | 2.69 | | ug/L | | 54 | 40 - 140 | 6 | 25 |
| Benzo[b]fluoranthene | | | 5.00 | 3.55 | | ug/L | | 71 | 40 - 140 | 11 | 25 |
| Benzo[k]fluoranthene | | | 5.00 | 3.93 | | ug/L | | 79 | 40 - 140 | 8 | 25 |
| Benzo[a]pyrene | | | 5.00 | 3.18 | | ug/L | | 64 | 40 - 140 | 2 | 25 |
| Indeno[1,2,3-cd]pyrene | | | 5.00 | 3.43 | | ug/L | | 69 | 40 - 140 | 3 | 25 |
| Dibenz(a,h)anthracene | | | 5.00 | 2.92 | | ug/L | | 58 | 40 - 140 | 1 | 25 |
| Benzo[g,h,i]perylene | | | 5.00 | 3.69 | | ug/L | | 74 | 40 - 140 | 2 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl (Surr)* | *76* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *107* | | *40 - 140* |

**Lab Sample ID: 620-22908-1 MS**
**Matrix: Water**
**Analysis Batch: 42815**

**Client Sample ID: GW-MW108-121024**
**Prep Type: Total/NA**
**Prep Batch: 42715**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 20.0 | 12.7 | | ug/L | | 64 | 40 - 140 |
| 2-Methylnaphthalene | ND | | 20.0 | 12.6 | | ug/L | | 63 | 40 - 140 |
| Acenaphthylene | ND | | 20.0 | 12.9 | | ug/L | | 65 | 40 - 140 |
| Acenaphthene | ND | | 20.0 | 12.3 | | ug/L | | 61 | 40 - 140 |
| Fluorene | ND | | 20.0 | 12.8 | | ug/L | | 64 | 40 - 140 |
| Phenanthrene | ND | | 20.0 | 13.8 | | ug/L | | 69 | 40 - 140 |
| Anthracene | ND | | 20.0 | 13.0 | | ug/L | | 65 | 40 - 140 |
| Fluoranthene | ND | | 20.0 | 15.4 | | ug/L | | 77 | 40 - 140 |
| Pyrene | ND | | 20.0 | 15.2 | | ug/L | | 76 | 40 - 140 |
| Benzo[a]anthracene | ND | | 20.0 | 15.3 | | ug/L | | 77 | 40 - 140 |
| Chrysene | ND | | 20.0 | 11.5 | | ug/L | | 58 | 40 - 140 |
| Benzo[b]fluoranthene | ND | | 20.0 | 16.4 | | ug/L | | 82 | 40 - 140 |
| Benzo[k]fluoranthene | ND | | 20.0 | 14.7 | | ug/L | | 73 | 40 - 140 |
| Benzo[a]pyrene | ND | | 20.0 | 13.6 | | ug/L | | 68 | 40 - 140 |
| Indeno[1,2,3-cd]pyrene | ND | | 20.0 | 14.6 | | ug/L | | 73 | 40 - 140 |
| Dibenz(a,h)anthracene | ND | | 20.0 | 12.3 | | ug/L | | 62 | 40 - 140 |
| Benzo[g,h,i]perylene | ND | | 20.0 | 14.8 | | ug/L | | 74 | 40 - 140 |

| *Surrogate* | *MS %Recovery* | *MS Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl (Surr)* | *75* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *117* | | *40 - 140* |

## Method: EPH - Extractable Petroleum Hydrocarbons (GC/MS)

**Lab Sample ID: 620-22908-1 MSD**
**Matrix: Water**
**Analysis Batch: 42815**

**Client Sample ID: GW-MW108-121024**
**Prep Type: Total/NA**
**Prep Batch: 42715**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 20.0 | 13.0 | | ug/L | | 65 | 40 - 140 | 2 | 50 |
| 2-Methylnaphthalene | ND | | 20.0 | 12.5 | | ug/L | | 62 | 40 - 140 | 1 | 50 |
| Acenaphthylene | ND | | 20.0 | 12.9 | | ug/L | | 65 | 40 - 140 | 0 | 50 |
| Acenaphthene | ND | | 20.0 | 12.3 | | ug/L | | 61 | 40 - 140 | 0 | 50 |
| Fluorene | ND | | 20.0 | 13.0 | | ug/L | | 65 | 40 - 140 | 2 | 50 |
| Phenanthrene | ND | | 20.0 | 13.8 | | ug/L | | 69 | 40 - 140 | 0 | 50 |
| Anthracene | ND | | 20.0 | 12.8 | | ug/L | | 64 | 40 - 140 | 2 | 50 |
| Fluoranthene | ND | | 20.0 | 14.9 | | ug/L | | 74 | 40 - 140 | 3 | 50 |
| Pyrene | ND | | 20.0 | 14.6 | | ug/L | | 73 | 40 - 140 | 4 | 50 |
| Benzo[a]anthracene | ND | | 20.0 | 14.8 | | ug/L | | 74 | 40 - 140 | 4 | 50 |
| Chrysene | ND | | 20.0 | 10.8 | | ug/L | | 54 | 40 - 140 | 6 | 50 |
| Benzo[b]fluoranthene | ND | | 20.0 | 15.7 | | ug/L | | 78 | 40 - 140 | 5 | 50 |
| Benzo[k]fluoranthene | ND | | 20.0 | 14.4 | | ug/L | | 72 | 40 - 140 | 2 | 50 |
| Benzo[a]pyrene | ND | | 20.0 | 12.4 | | ug/L | | 62 | 40 - 140 | 9 | 50 |
| Indeno[1,2,3-cd]pyrene | ND | | 20.0 | 13.9 | | ug/L | | 70 | 40 - 140 | 4 | 50 |
| Dibenz(a,h)anthracene | ND | | 20.0 | 11.9 | | ug/L | | 59 | 40 - 140 | 4 | 50 |
| Benzo[g,h,i]perylene | ND | | 20.0 | 14.2 | | ug/L | | 71 | 40 - 140 | 4 | 50 |

| *Surrogate* | *MSD %Recovery* | *MSD Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl (Surr)* | *74* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *112* | | *40 - 140* |

**Lab Sample ID: MB 620-42884/1-B**
**Matrix: Water**
**Analysis Batch: 42909**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 42884**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 1.0 | 0.23 | ug/L | | 12/27/24 09:56 | 12/30/24 10:44 | 1 |
| 2-Methylnaphthalene | ND | | 1.0 | 0.29 | ug/L | | 12/27/24 09:56 | 12/30/24 10:44 | 1 |
| Acenaphthylene | ND | | 1.0 | 0.39 | ug/L | | 12/27/24 09:56 | 12/30/24 10:44 | 1 |
| Acenaphthene | ND | | 1.0 | 0.19 | ug/L | | 12/27/24 09:56 | 12/30/24 10:44 | 1 |
| Fluorene | ND | | 1.0 | 0.39 | ug/L | | 12/27/24 09:56 | 12/30/24 10:44 | 1 |
| Phenanthrene | ND | | 1.0 | 0.17 | ug/L | | 12/27/24 09:56 | 12/30/24 10:44 | 1 |
| Anthracene | ND | | 1.0 | 0.15 | ug/L | | 12/27/24 09:56 | 12/30/24 10:44 | 1 |
| Fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 12/27/24 09:56 | 12/30/24 10:44 | 1 |
| Pyrene | ND | | 1.0 | 0.14 | ug/L | | 12/27/24 09:56 | 12/30/24 10:44 | 1 |
| Benzo[a]anthracene | ND | | 1.0 | 0.070 | ug/L | | 12/27/24 09:56 | 12/30/24 10:44 | 1 |
| Chrysene | ND | | 1.0 | 0.14 | ug/L | | 12/27/24 09:56 | 12/30/24 10:44 | 1 |
| Benzo[b]fluoranthene | ND | | 1.0 | 0.15 | ug/L | | 12/27/24 09:56 | 12/30/24 10:44 | 1 |
| Benzo[k]fluoranthene | ND | | 1.0 | 0.24 | ug/L | | 12/27/24 09:56 | 12/30/24 10:44 | 1 |
| Benzo[a]pyrene | ND | | 0.20 | 0.16 | ug/L | | 12/27/24 09:56 | 12/30/24 10:44 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.50 | 0.46 | ug/L | | 12/27/24 09:56 | 12/30/24 10:44 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.50 | 0.21 | ug/L | | 12/27/24 09:56 | 12/30/24 10:44 | 1 |
| Benzo[g,h,i]perylene | ND | | 1.0 | 0.17 | ug/L | | 12/27/24 09:56 | 12/30/24 10:44 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl (Surr)* | *73* | | *40 - 140* | *12/27/24 09:56* | *12/30/24 10:44* | *1* |
| *2-Fluorobiphenyl (Surr)* | *108* | | *40 - 140* | *12/27/24 09:56* | *12/30/24 10:44* | *1* |

## Method: EPH - Extractable Petroleum Hydrocarbons (GC/MS)

**Lab Sample ID: LCS 620-42884/4-B**
**Matrix: Water**
**Analysis Batch: 42909**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 42884**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | | | 5.00 | 2.27 | | ug/L | | 45 | 40 - 140 | | |
| 2-Methylnaphthalene | | | 5.00 | 2.12 | | ug/L | | 42 | 40 - 140 | | |
| Acenaphthylene | | | 5.00 | 2.76 | | ug/L | | 55 | 40 - 140 | | |
| Acenaphthene | | | 5.00 | 2.51 | | ug/L | | 50 | 40 - 140 | | |
| Fluorene | | | 5.00 | 2.71 | | ug/L | | 54 | 40 - 140 | | |
| Phenanthrene | | | 5.00 | 2.77 | | ug/L | | 55 | 40 - 140 | | |
| Anthracene | | | 5.00 | 2.77 | | ug/L | | 55 | 40 - 140 | | |
| Fluoranthene | | | 5.00 | 3.48 | | ug/L | | 70 | 40 - 140 | | |
| Pyrene | | | 5.00 | 3.44 | | ug/L | | 69 | 40 - 140 | | |
| Benzo[a]anthracene | | | 5.00 | 3.31 | | ug/L | | 66 | 40 - 140 | | |
| Chrysene | | | 5.00 | 2.47 | | ug/L | | 49 | 40 - 140 | | |
| Benzo[b]fluoranthene | | | 5.00 | 3.73 | | ug/L | | 75 | 40 - 140 | | |
| Benzo[k]fluoranthene | | | 5.00 | 3.81 | | ug/L | | 76 | 40 - 140 | | |
| Benzo[a]pyrene | | | 5.00 | 2.78 | | ug/L | | 56 | 40 - 140 | | |
| Indeno[1,2,3-cd]pyrene | | | 5.00 | 3.34 | | ug/L | | 67 | 40 - 140 | | |
| Dibenz(a,h)anthracene | | | 5.00 | 2.83 | | ug/L | | 57 | 40 - 140 | | |
| Benzo[g,h,i]perylene | | | 5.00 | 3.67 | | ug/L | | 73 | 40 - 140 | | |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl (Surr)* | *77* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *117* | | *40 - 140* |

**Lab Sample ID: LCSD 620-42884/5-B**
**Matrix: Water**
**Analysis Batch: 42909**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 42884**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | | | 5.00 | 2.53 | | ug/L | | 51 | 40 - 140 | 11 | 25 |
| 2-Methylnaphthalene | | | 5.00 | 2.13 | | ug/L | | 43 | 40 - 140 | 0 | 25 |
| Acenaphthylene | | | 5.00 | 2.96 | | ug/L | | 59 | 40 - 140 | 7 | 25 |
| Acenaphthene | | | 5.00 | 2.82 | | ug/L | | 56 | 40 - 140 | 11 | 25 |
| Fluorene | | | 5.00 | 2.74 | | ug/L | | 55 | 40 - 140 | 1 | 25 |
| Phenanthrene | | | 5.00 | 3.02 | | ug/L | | 60 | 40 - 140 | 9 | 25 |
| Anthracene | | | 5.00 | 2.97 | | ug/L | | 59 | 40 - 140 | 7 | 25 |
| Fluoranthene | | | 5.00 | 3.46 | | ug/L | | 69 | 40 - 140 | 1 | 25 |
| Pyrene | | | 5.00 | 3.44 | | ug/L | | 69 | 40 - 140 | 0 | 25 |
| Benzo[a]anthracene | | | 5.00 | 3.22 | | ug/L | | 64 | 40 - 140 | 3 | 25 |
| Chrysene | | | 5.00 | 2.74 | | ug/L | | 55 | 40 - 140 | 10 | 25 |
| Benzo[b]fluoranthene | | | 5.00 | 3.60 | | ug/L | | 72 | 40 - 140 | 4 | 25 |
| Benzo[k]fluoranthene | | | 5.00 | 3.28 | | ug/L | | 66 | 40 - 140 | 15 | 25 |
| Benzo[a]pyrene | | | 5.00 | 2.86 | | ug/L | | 57 | 40 - 140 | 3 | 25 |
| Indeno[1,2,3-cd]pyrene | | | 5.00 | 3.20 | | ug/L | | 64 | 40 - 140 | 5 | 25 |
| Dibenz(a,h)anthracene | | | 5.00 | 2.43 | | ug/L | | 49 | 40 - 140 | 15 | 25 |
| Benzo[g,h,i]perylene | | | 5.00 | 3.53 | | ug/L | | 71 | 40 - 140 | 4 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl (Surr)* | *79* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *115* | | *40 - 140* |

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC)

**Lab Sample ID: MB 620-42608/4**
**Matrix: Water**
**Analysis Batch: 42608**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 12/17/24 14:54 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 12/17/24 14:54 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 12/17/24 14:54 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 12/17/24 14:54 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 12/17/24 14:54 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 12/17/24 14:54 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 12/17/24 14:54 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 12/17/24 14:54 | 1 |
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 12/17/24 14:54 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 12/17/24 14:54 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 12/17/24 14:54 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 12/17/24 14:54 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 12/17/24 14:54 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *98* | | *70 - 130* | | *12/17/24 14:54* | *1* |
| *2,5-Dibromotoluene (pid)* | *100* | | *70 - 130* | | *12/17/24 14:54* | *1* |

**Lab Sample ID: LCS 620-42608/2**
**Matrix: Water**
**Analysis Batch: 42608**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | | | 20.0 | ND | | ug/L | | 97 | 70 - 130 | | |
| C5-C8 Aliphatics (unadjusted) | | | 60.0 | ND | | ug/L | | 96 | 70 - 130 | | |
| C9-C12 Aliphatics (unadjusted) | | | 60.0 | ND | | ug/L | | 95 | 70 - 130 | | |
| Benzene | | | 20.0 | 20.2 | | ug/L | | 101 | 70 - 130 | | |
| Ethylbenzene | | | 20.0 | 20.3 | | ug/L | | 101 | 70 - 130 | | |
| Methyl tert-butyl ether | | | 20.0 | 19.8 | | ug/L | | 99 | 70 - 130 | | |
| Naphthalene | | | 20.0 | 19.6 | | ug/L | | 98 | 70 - 130 | | |
| Toluene | | | 20.0 | 20.0 | | ug/L | | 100 | 70 - 130 | | |
| m,p-Xylene | | | 40.0 | 40.7 | | ug/L | | 102 | 70 - 130 | | |
| o-Xylene | | | 20.0 | 20.4 | | ug/L | | 102 | 70 - 130 | | |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *101* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *99* | | *70 - 130* |

**Lab Sample ID: LCSD 620-42608/3**
**Matrix: Water**
**Analysis Batch: 42608**

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

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | | | 20.0 | ND | | ug/L | | 98 | 70 - 130 | 1 | 25 |
| C5-C8 Aliphatics (unadjusted) | | | 60.0 | ND | | ug/L | | 99 | 70 - 130 | 3 | 25 |
| C9-C12 Aliphatics (unadjusted) | | | 60.0 | ND | | ug/L | | 96 | 70 - 130 | 1 | 25 |
| Benzene | | | 20.0 | 20.4 | | ug/L | | 102 | 70 - 130 | 1 | 25 |
| Ethylbenzene | | | 20.0 | 20.7 | | ug/L | | 103 | 70 - 130 | 2 | 25 |

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: LCSD 620-42608/3**
**Matrix: Water**
**Analysis Batch: 42608**

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

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Methyl tert-butyl ether | | | 20.0 | 21.6 | | ug/L | | 108 | 70 - 130 | 8 | 25 |
| Naphthalene | | | 20.0 | 21.1 | | ug/L | | 105 | 70 - 130 | 7 | 25 |
| Toluene | | | 20.0 | 20.5 | | ug/L | | 103 | 70 - 130 | 2 | 25 |
| m,p-Xylene | | | 40.0 | 41.8 | | ug/L | | 104 | 70 - 130 | 3 | 25 |
| o-Xylene | | | 20.0 | 20.9 | | ug/L | | 105 | 70 - 130 | 3 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *97* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *94* | | *70 - 130* |

**Lab Sample ID: 620-22908-1 MS**
**Matrix: Water**
**Analysis Batch: 42608**

**Client Sample ID: GW-MW108-121024**
**Prep Type: Total/NA**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | ND | | 20.3 | ND | | ug/L | | NC | 70 - 130 | | |
| C5-C8 Aliphatics (unadjusted) | ND | | 61.0 | 143 | | ug/L | | NC | 70 - 130 | | |
| C9-C12 Aliphatics (unadjusted) | ND | | 61.0 | 351 | | ug/L | | NC | 70 - 130 | | |
| Benzene | ND | | 20.3 | 22.5 | | ug/L | | 110 | 70 - 130 | | |
| Ethylbenzene | ND | | 20.3 | 22.6 | | ug/L | | 111 | 70 - 130 | | |
| Methyl tert-butyl ether | ND | | 20.3 | 23.0 | | ug/L | | 113 | 70 - 130 | | |
| Naphthalene | ND | | 20.3 | 20.9 | | ug/L | | 103 | 70 - 130 | | |
| Toluene | ND | | 20.3 | 22.5 | | ug/L | | 110 | 70 - 130 | | |
| m,p-Xylene | ND | | 40.7 | 45.1 | | ug/L | | 111 | 70 - 130 | | |
| o-Xylene | ND | | 20.3 | 22.5 | | ug/L | | 111 | 70 - 130 | | |

| *Surrogate* | *MS %Recovery* | *MS Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *96* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *93* | | *70 - 130* |

**Lab Sample ID: 620-22908-1 MSD**
**Matrix: Water**
**Analysis Batch: 42608**

**Client Sample ID: GW-MW108-121024**
**Prep Type: Total/NA**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | ND | | 20.3 | ND | | ug/L | | NC | 70 - 130 | NC | 30 |
| C5-C8 Aliphatics (unadjusted) | ND | | 61.0 | 129 | | ug/L | | NC | 70 - 130 | 10 | 30 |
| C9-C12 Aliphatics (unadjusted) | ND | | 61.0 | 322 | | ug/L | | NC | 70 - 130 | 9 | 30 |
| Benzene | ND | | 20.3 | 20.0 | | ug/L | | 98 | 70 - 130 | 12 | 30 |
| Ethylbenzene | ND | | 20.3 | 19.9 | | ug/L | | 98 | 70 - 130 | 12 | 30 |
| Methyl tert-butyl ether | ND | | 20.3 | 19.7 | | ug/L | | 97 | 70 - 130 | 15 | 30 |
| Naphthalene | ND | | 20.3 | 18.4 | | ug/L | | 90 | 70 - 130 | 13 | 30 |
| Toluene | ND | | 20.3 | 19.9 | | ug/L | | 98 | 70 - 130 | 12 | 30 |
| m,p-Xylene | ND | | 40.7 | 40.1 | | ug/L | | 99 | 70 - 130 | 12 | 30 |
| o-Xylene | ND | | 20.3 | 19.9 | | ug/L | | 98 | 70 - 130 | 12 | 30 |

| *Surrogate* | *MSD %Recovery* | *MSD Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *96* | | *70 - 130* |

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: 620-22908-1 MSD**
**Matrix: Water**
**Analysis Batch: 42608**

**Client Sample ID: GW-MW108-121024**
**Prep Type: Total/NA**

| *Surrogate* | *MSD %Recovery* | *MSD Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (pid)* | *94* | | *70 - 130* |

**Lab Sample ID: MB 620-42639/4**
**Matrix: Water**
**Analysis Batch: 42639**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 12/18/24 12:02 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 12/18/24 12:02 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 12/18/24 12:02 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 12/18/24 12:02 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 12/18/24 12:02 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 12/18/24 12:02 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 12/18/24 12:02 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 12/18/24 12:02 | 1 |
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 12/18/24 12:02 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 12/18/24 12:02 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 12/18/24 12:02 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 12/18/24 12:02 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 12/18/24 12:02 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *101* | | *70 - 130* | | *12/18/24 12:02* | *1* |
| *2,5-Dibromotoluene (pid)* | *100* | | *70 - 130* | | *12/18/24 12:02* | *1* |

**Lab Sample ID: LCS 620-42639/2**
**Matrix: Water**
**Analysis Batch: 42639**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | 20.0 | ND | | ug/L | | 103 | 70 - 130 |
| C5-C8 Aliphatics (unadjusted) | 60.0 | ND | | ug/L | | 102 | 70 - 130 |
| C9-C12 Aliphatics (unadjusted) | 60.0 | ND | | ug/L | | 100 | 70 - 130 |
| Benzene | 20.0 | 21.5 | | ug/L | | 108 | 70 - 130 |
| Ethylbenzene | 20.0 | 21.8 | | ug/L | | 109 | 70 - 130 |
| Methyl tert-butyl ether | 20.0 | 21.6 | | ug/L | | 108 | 70 - 130 |
| Naphthalene | 20.0 | 20.7 | | ug/L | | 104 | 70 - 130 |
| Toluene | 20.0 | 21.6 | | ug/L | | 108 | 70 - 130 |
| m,p-Xylene | 40.0 | 43.8 | | ug/L | | 109 | 70 - 130 |
| o-Xylene | 20.0 | 21.8 | | ug/L | | 109 | 70 - 130 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *102* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *103* | | *70 - 130* |

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: LCSD 620-42639/3**
**Matrix: Water**
**Analysis Batch: 42639**

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

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | | | 20.0 | ND | | ug/L | | 94 | 70 - 130 | 9 | 25 |
| C5-C8 Aliphatics (unadjusted) | | | 60.0 | ND | | ug/L | | 95 | 70 - 130 | 6 | 25 |
| C9-C12 Aliphatics (unadjusted) | | | 60.0 | ND | | ug/L | | 90 | 70 - 130 | 11 | 25 |
| Benzene | | | 20.0 | 19.7 | | ug/L | | 98 | 70 - 130 | 9 | 25 |
| Ethylbenzene | | | 20.0 | 19.9 | | ug/L | | 100 | 70 - 130 | 9 | 25 |
| Methyl tert-butyl ether | | | 20.0 | 20.2 | | ug/L | | 101 | 70 - 130 | 7 | 25 |
| Naphthalene | | | 20.0 | 20.3 | | ug/L | | 102 | 70 - 130 | 2 | 25 |
| Toluene | | | 20.0 | 19.9 | | ug/L | | 100 | 70 - 130 | 8 | 25 |
| m,p-Xylene | | | 40.0 | 40.2 | | ug/L | | 101 | 70 - 130 | 8 | 25 |
| o-Xylene | | | 20.0 | 20.1 | | ug/L | | 100 | 70 - 130 | 8 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *99* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *98* | | *70 - 130* |

**Lab Sample ID: MB 620-42713/4**
**Matrix: Water**
**Analysis Batch: 42713**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C5-C8 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 12/19/24 13:50 | 1 |
| C9-C12 Aliphatics (adjusted) | ND | | 100 | 100 | ug/L | | | 12/19/24 13:50 | 1 |
| C9-C10 Aromatics | ND | | 100 | 100 | ug/L | | | 12/19/24 13:50 | 1 |
| C5-C8 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 12/19/24 13:50 | 1 |
| C9-C12 Aliphatics (unadjusted) | ND | | 100 | 100 | ug/L | | | 12/19/24 13:50 | 1 |
| Benzene | ND | | 5.0 | 5.0 | ug/L | | | 12/19/24 13:50 | 1 |
| Ethylbenzene | ND | | 5.0 | 5.0 | ug/L | | | 12/19/24 13:50 | 1 |
| Methyl tert-butyl ether | ND | | 5.0 | 5.0 | ug/L | | | 12/19/24 13:50 | 1 |
| Naphthalene | ND | | 5.0 | 5.0 | ug/L | | | 12/19/24 13:50 | 1 |
| Toluene | ND | | 5.0 | 5.0 | ug/L | | | 12/19/24 13:50 | 1 |
| m,p-Xylene | ND | | 10 | 10 | ug/L | | | 12/19/24 13:50 | 1 |
| o-Xylene | ND | | 5.0 | 5.0 | ug/L | | | 12/19/24 13:50 | 1 |
| Xylenes, Total | ND | | 15 | 15 | ug/L | | | 12/19/24 13:50 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *99* | | *70 - 130* | | *12/19/24 13:50* | *1* |
| *2,5-Dibromotoluene (pid)* | *96* | | *70 - 130* | | *12/19/24 13:50* | *1* |

**Lab Sample ID: LCS 620-42713/2**
**Matrix: Water**
**Analysis Batch: 42713**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | | | 20.0 | ND | | ug/L | | 98 | 70 - 130 | | |
| C5-C8 Aliphatics (unadjusted) | | | 60.0 | ND | | ug/L | | 96 | 70 - 130 | | |
| C9-C12 Aliphatics (unadjusted) | | | 60.0 | ND | | ug/L | | 95 | 70 - 130 | | |
| Benzene | | | 20.0 | 20.4 | | ug/L | | 102 | 70 - 130 | | |
| Ethylbenzene | | | 20.0 | 20.6 | | ug/L | | 103 | 70 - 130 | | |

## Method: MAVPH2.1 - Massachusetts - Volatile Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: LCS 620-42713/2**
**Matrix: Water**
**Analysis Batch: 42713**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Methyl tert-butyl ether | 20.0 | 20.8 | | ug/L | | 104 | 70 - 130 |
| Naphthalene | 20.0 | 20.2 | | ug/L | | 101 | 70 - 130 |
| Toluene | 20.0 | 20.4 | | ug/L | | 102 | 70 - 130 |
| m,p-Xylene | 40.0 | 41.3 | | ug/L | | 103 | 70 - 130 |
| o-Xylene | 20.0 | 20.6 | | ug/L | | 103 | 70 - 130 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *102* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *103* | | *70 - 130* |

**Lab Sample ID: LCSD 620-42713/3**
**Matrix: Water**
**Analysis Batch: 42713**

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

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| C9-C10 Aromatics | 20.0 | ND | | ug/L | | 94 | 70 - 130 | 4 | 25 |
| C5-C8 Aliphatics (unadjusted) | 60.0 | ND | | ug/L | | 98 | 70 - 130 | 2 | 25 |
| C9-C12 Aliphatics (unadjusted) | 60.0 | ND | | ug/L | | 93 | 70 - 130 | 2 | 25 |
| Benzene | 20.0 | 19.9 | | ug/L | | 100 | 70 - 130 | 2 | 25 |
| Ethylbenzene | 20.0 | 20.3 | | ug/L | | 102 | 70 - 130 | 1 | 25 |
| Methyl tert-butyl ether | 20.0 | 20.5 | | ug/L | | 103 | 70 - 130 | 1 | 25 |
| Naphthalene | 20.0 | 19.9 | | ug/L | | 99 | 70 - 130 | 2 | 25 |
| Toluene | 20.0 | 20.2 | | ug/L | | 101 | 70 - 130 | 1 | 25 |
| m,p-Xylene | 40.0 | 40.5 | | ug/L | | 101 | 70 - 130 | 2 | 25 |
| o-Xylene | 20.0 | 20.3 | | ug/L | | 101 | 70 - 130 | 2 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *2,5-Dibromotoluene (fid)* | *100* | | *70 - 130* |
| *2,5-Dibromotoluene (pid)* | *98* | | *70 - 130* |

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

**Lab Sample ID: MB 620-42715/1-B**
**Matrix: Water**
**Analysis Batch: 42809**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 42715**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 100 | 100 | ug/L | | 12/19/24 10:45 | 12/23/24 10:36 | 1 |
| C19-C36 Aliphatics | ND | | 100 | 100 | ug/L | | 12/19/24 10:45 | 12/23/24 10:36 | 1 |
| C11-C22 Aromatics | ND | | 100 | 100 | ug/L | | 12/19/24 10:45 | 12/23/24 10:36 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 100 | 100 | ug/L | | 12/19/24 10:45 | 12/23/24 10:36 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *58* | | *40 - 140* | *12/19/24 10:45* | *12/23/24 10:36* | *1* |
| *o-Terphenyl (Surr)* | *72* | | *40 - 140* | *12/19/24 10:45* | *12/23/24 10:36* | *1* |
| *2-Fluorobiphenyl (Surr)* | *98* | | *40 - 140* | *12/19/24 10:45* | *12/23/24 10:36* | *1* |

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: LCS 620-42715/2-B**
**Matrix: Water**
**Analysis Batch: 42809**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 42715**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | | | 120 | 64.9 | | ug/L | | 54 | 40 - 140 | | |
| C19-C36 Aliphatics | | | 160 | 194 | | ug/L | | 122 | 40 - 140 | | |
| C11-C22 Aromatics | | | 340 | 209 | | ug/L | | 61 | 40 - 140 | | |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *74* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *59* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *79* | | *40 - 140* |

**Lab Sample ID: LCSD 620-42715/3-B**
**Matrix: Water**
**Analysis Batch: 42809**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 42715**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | | | 120 | 65.4 | | ug/L | | 54 | 40 - 140 | 1 | 25 |
| C19-C36 Aliphatics | | | 160 | 193 | | ug/L | | 121 | 40 - 140 | 1 | 25 |
| C11-C22 Aromatics | | | 340 | 223 | | ug/L | | 66 | 40 - 140 | 7 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *70* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *59* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *78* | | *40 - 140* |

**Lab Sample ID: 620-22908-1 MS**
**Matrix: Water**
**Analysis Batch: 42809**

**Client Sample ID: GW-MW108-121024**
**Prep Type: Total/NA**
**Prep Batch: 42715**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 120 | 78.5 | | ug/L | | 65 | 40 - 140 | | |
| C19-C36 Aliphatics | ND | | 160 | 171 | | ug/L | | 107 | 40 - 140 | | |
| C11-C22 Aromatics | ND | | 340 | 273 | | ug/L | | 80 | 40 - 140 | | |

| *Surrogate* | *MS %Recovery* | *MS Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *57* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *72* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *102* | | *40 - 140* |

**Lab Sample ID: 620-22908-1 MSD**
**Matrix: Water**
**Analysis Batch: 42809**

**Client Sample ID: GW-MW108-121024**
**Prep Type: Total/NA**
**Prep Batch: 42715**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 120 | 94.2 | | ug/L | | 79 | 40 - 140 | 18 | 50 |
| C19-C36 Aliphatics | ND | | 160 | 186 | | ug/L | | 116 | 40 - 140 | 9 | 50 |
| C11-C22 Aromatics | ND | | 340 | 275 | | ug/L | | 81 | 40 - 140 | 1 | 50 |

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: 620-22908-1 MSD**
**Matrix: Water**
**Analysis Batch: 42809**

**Client Sample ID: GW-MW108-121024**
**Prep Type: Total/NA**
**Prep Batch: 42715**

| *Surrogate* | *MSD %Recovery* | *MSD Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *61* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *71* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *100* | | *40 - 140* |

**Lab Sample ID: MB 620-42884/1-B**
**Matrix: Water**
**Analysis Batch: 42908**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 42884**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | ND | | 100 | 100 | ug/L | | 12/27/24 09:56 | 12/30/24 11:10 | 1 |
| C19-C36 Aliphatics | ND | | 100 | 100 | ug/L | | 12/27/24 09:56 | 12/30/24 11:10 | 1 |
| C11-C22 Aromatics | ND | | 100 | 100 | ug/L | | 12/27/24 09:56 | 12/30/24 11:10 | 1 |
| C11-C22 Aromatics (Adjusted) | ND | | 100 | 100 | ug/L | | 12/27/24 09:56 | 12/30/24 11:10 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *74* | | *40 - 140* | *12/27/24 09:56* | *12/30/24 11:10* | *1* |
| *o-Terphenyl (Surr)* | *63* | | *40 - 140* | *12/27/24 09:56* | *12/30/24 11:10* | *1* |
| *2-Fluorobiphenyl (Surr)* | *85* | | *40 - 140* | *12/27/24 09:56* | *12/30/24 11:10* | *1* |

**Lab Sample ID: LCS 620-42884/2-B**
**Matrix: Water**
**Analysis Batch: 42908**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 42884**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | | | 120 | 65.2 | | ug/L | | 54 | 40 - 140 | | |
| C19-C36 Aliphatics | | | 160 | 188 | | ug/L | | 117 | 40 - 140 | | |
| C11-C22 Aromatics | | | 340 | 264 | | ug/L | | 78 | 40 - 140 | | |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *75* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *74* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *102* | | *40 - 140* |

**Lab Sample ID: LCSD 620-42884/3-B**
**Matrix: Water**
**Analysis Batch: 42908**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 42884**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | | | 120 | 64.3 | | ug/L | | 54 | 40 - 140 | 2 | 25 |
| C19-C36 Aliphatics | | | 160 | 184 | | ug/L | | 115 | 40 - 140 | 2 | 25 |
| C11-C22 Aromatics | | | 340 | 247 | | ug/L | | 73 | 40 - 140 | 7 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *71* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *69* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *98* | | *40 - 140* |

## Method: 6010D - Metals (ICP)

**Lab Sample ID: MB 620-42498/1-A**
**Matrix: Water**
**Analysis Batch: 42568**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 42498**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 0.0060 | 0.0016 | mg/L | | 12/13/24 15:10 | 12/16/24 11:53 | 1 |
| Arsenic | ND | | 0.0040 | 0.0014 | mg/L | | 12/13/24 15:10 | 12/16/24 11:53 | 1 |
| Barium | ND | | 0.0050 | 0.00070 | mg/L | | 12/13/24 15:10 | 12/16/24 11:53 | 1 |
| Beryllium | ND | | 0.0020 | 0.00028 | mg/L | | 12/13/24 15:10 | 12/16/24 11:53 | 1 |
| Cadmium | ND | | 0.0025 | 0.00036 | mg/L | | 12/13/24 15:10 | 12/16/24 11:53 | 1 |
| Chromium | ND | | 0.0050 | 0.00093 | mg/L | | 12/13/24 15:10 | 12/16/24 11:53 | 1 |
| Lead | ND | | 0.0075 | 0.0062 | mg/L | | 12/13/24 15:10 | 12/16/24 11:53 | 1 |
| Nickel | ND | | 0.0050 | 0.00087 | mg/L | | 12/13/24 15:10 | 12/16/24 11:53 | 1 |
| Selenium | ND | | 0.015 | 0.0042 | mg/L | | 12/13/24 15:10 | 12/16/24 11:53 | 1 |
| Silver | ND | | 0.0050 | 0.00062 | mg/L | | 12/13/24 15:10 | 12/16/24 11:53 | 1 |
| Thallium | ND | | 0.0050 | 0.0021 | mg/L | | 12/13/24 15:10 | 12/16/24 11:53 | 1 |
| Vanadium | ND | | 0.0050 | 0.0011 | mg/L | | 12/13/24 15:10 | 12/16/24 11:53 | 1 |
| Zinc | ND | | 0.0050 | 0.0016 | mg/L | | 12/13/24 15:10 | 12/16/24 11:53 | 1 |

**Lab Sample ID: LCS 620-42498/2-A**
**Matrix: Water**
**Analysis Batch: 42568**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 42498**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Antimony | 0.750 | 0.704 | | mg/L | | 94 | 80 - 120 |
| Arsenic | 0.750 | 0.852 | | mg/L | | 114 | 80 - 120 |
| Barium | 0.750 | 0.721 | | mg/L | | 96 | 80 - 120 |
| Beryllium | 0.750 | 0.792 | | mg/L | | 106 | 80 - 120 |
| Cadmium | 0.750 | 0.723 | | mg/L | | 96 | 80 - 120 |
| Chromium | 0.750 | 0.723 | | mg/L | | 96 | 80 - 120 |
| Lead | 0.750 | 0.737 | | mg/L | | 98 | 80 - 120 |
| Nickel | 0.750 | 0.723 | | mg/L | | 96 | 80 - 120 |
| Selenium | 0.750 | 0.723 | | mg/L | | 96 | 80 - 120 |
| Silver | 0.750 | 0.686 | | mg/L | | 91 | 80 - 120 |
| Thallium | 0.750 | 0.750 | | mg/L | | 100 | 80 - 120 |
| Vanadium | 0.750 | 0.728 | | mg/L | | 97 | 80 - 120 |
| Zinc | 0.750 | 0.767 | | mg/L | | 102 | 80 - 120 |

**Lab Sample ID: 620-22908-1 MS**
**Matrix: Water**
**Analysis Batch: 42568**

**Client Sample ID: GW-MW108-121024**
**Prep Type: Dissolved**
**Prep Batch: 42498**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.0030 | J | 0.750 | 0.736 | | mg/L | | 98 | 75 - 125 |
| Arsenic | ND | | 0.750 | 0.900 | | mg/L | | 120 | 75 - 125 |
| Barium | 0.084 | | 0.750 | 0.828 | | mg/L | | 99 | 75 - 125 |
| Beryllium | ND | | 0.750 | 0.831 | | mg/L | | 111 | 75 - 125 |
| Cadmium | ND | | 0.750 | 0.730 | | mg/L | | 97 | 75 - 125 |
| Chromium | 0.0019 | J | 0.750 | 0.708 | | mg/L | | 94 | 75 - 125 |
| Lead | ND | | 0.750 | 0.704 | | mg/L | | 94 | 75 - 125 |
| Nickel | 0.0016 | J | 0.750 | 0.702 | | mg/L | | 93 | 75 - 125 |
| Selenium | ND | | 0.750 | 0.772 | | mg/L | | 103 | 75 - 125 |
| Silver | ND | | 0.750 | 0.722 | | mg/L | | 96 | 75 - 125 |
| Thallium | 0.0022 | J | 0.750 | 0.735 | | mg/L | | 98 | 75 - 125 |

## Method: 6010D - Metals (ICP) (Continued)

**Lab Sample ID: 620-22908-1 MS**
**Matrix: Water**
**Analysis Batch: 42568**

**Client Sample ID: GW-MW108-121024**
**Prep Type: Dissolved**
**Prep Batch: 42498**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| Vanadium | ND | | 0.750 | 0.748 | | mg/L | | 100 | 75 - 125 |
| Zinc | 0.0031 | J | 0.750 | 0.772 | | mg/L | | 102 | 75 - 125 |

**Lab Sample ID: 620-22908-1 MSD**
**Matrix: Water**
**Analysis Batch: 42568**

**Client Sample ID: GW-MW108-121024**
**Prep Type: Dissolved**
**Prep Batch: 42498**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.0030 | J | 0.750 | 0.747 | | mg/L | | 99 | 75 - 125 | 1 | 20 |
| Arsenic | ND | | 0.750 | 0.941 | | mg/L | | 125 | 75 - 125 | 4 | 20 |
| Barium | 0.084 | | 0.750 | 0.830 | | mg/L | | 99 | 75 - 125 | 0 | 20 |
| Beryllium | ND | | 0.750 | 0.838 | | mg/L | | 112 | 75 - 125 | 1 | 20 |
| Cadmium | ND | | 0.750 | 0.737 | | mg/L | | 98 | 75 - 125 | 1 | 20 |
| Chromium | 0.0019 | J | 0.750 | 0.722 | | mg/L | | 96 | 75 - 125 | 2 | 20 |
| Lead | ND | | 0.750 | 0.712 | | mg/L | | 95 | 75 - 125 | 1 | 20 |
| Nickel | 0.0016 | J | 0.750 | 0.709 | | mg/L | | 94 | 75 - 125 | 1 | 20 |
| Selenium | ND | | 0.750 | 0.793 | | mg/L | | 106 | 75 - 125 | 3 | 20 |
| Silver | ND | | 0.750 | 0.731 | | mg/L | | 97 | 75 - 125 | 1 | 20 |
| Thallium | 0.0022 | J | 0.750 | 0.747 | | mg/L | | 99 | 75 - 125 | 2 | 20 |
| Vanadium | ND | | 0.750 | 0.752 | | mg/L | | 100 | 75 - 125 | 1 | 20 |
| Zinc | 0.0031 | J | 0.750 | 0.788 | | mg/L | | 105 | 75 - 125 | 2 | 20 |

## Method: 7470A - Mercury (CVAA)

**Lab Sample ID: MB 620-42646/1-A**
**Matrix: Water**
**Analysis Batch: 42773**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 42646**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00020 | 0.00014 | mg/L | | 12/18/24 09:03 | 12/18/24 14:39 | 1 |

**Lab Sample ID: LCS 620-42646/2-A**
**Matrix: Water**
**Analysis Batch: 42773**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 42646**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Mercury | 0.00500 | 0.00496 | | mg/L | | 99 | 85 - 115 |

**Lab Sample ID: 620-22908-1 MS**
**Matrix: Water**
**Analysis Batch: 42773**

**Client Sample ID: GW-MW108-121024**
**Prep Type: Dissolved**
**Prep Batch: 42646**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00500 | 0.00517 | | mg/L | | 103 | 80 - 120 |

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-22908-1

## Method: 7470A - Mercury (CVAA) (Continued)

**Lab Sample ID: 620-22908-1 MSD**
**Matrix: Water**
**Analysis Batch: 42773**

**Client Sample ID: GW-MW108-121024**
**Prep Type: Dissolved**
**Prep Batch: 42646**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.00500 | 0.00507 | | mg/L | | 101 | 80 - 120 | 2 | 20 |

## GC/MS Semi VOA

### Prep Batch: 42715

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-22908-1 | GW-MW108-121024 | Total/NA | Water | 3510C | |
| 620-22908-2 | GW-MW104-121024 | Total/NA | Water | 3510C | |
| 620-22908-3 | GW-MW107-121024 | Total/NA | Water | 3510C | |
| 620-22908-4 | GW-MW106-121024 | Total/NA | Water | 3510C | |
| 620-22908-5 | GW-MW109-121024 | Total/NA | Water | 3510C | |
| 620-22908-6 | GW-MW102R-121024 | Total/NA | Water | 3510C | |
| 620-22908-7 | GW-MW105-121124 | Total/NA | Water | 3510C | |
| 620-22908-8 | GW-MW101-121124 | Total/NA | Water | 3510C | |
| 620-22908-9 | FD-01 | Total/NA | Water | 3510C | |
| MB 620-42715/1-B | Method Blank | Total/NA | Water | 3510C | |
| LCS 620-42715/4-B | Lab Control Sample | Total/NA | Water | 3510C | |
| LCSD 620-42715/5-B | Lab Control Sample Dup | Total/NA | Water | 3510C | |
| 620-22908-1 MS | GW-MW108-121024 | Total/NA | Water | 3510C | |
| 620-22908-1 MSD | GW-MW108-121024 | Total/NA | Water | 3510C | |

### Fraction Batch: 42763

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-22908-1 | GW-MW108-121024 | Total/NA | Water | MA EPH Frac | 42715 |
| 620-22908-2 | GW-MW104-121024 | Total/NA | Water | MA EPH Frac | 42715 |
| 620-22908-3 | GW-MW107-121024 | Total/NA | Water | MA EPH Frac | 42715 |
| 620-22908-4 | GW-MW106-121024 | Total/NA | Water | MA EPH Frac | 42715 |
| 620-22908-5 | GW-MW109-121024 | Total/NA | Water | MA EPH Frac | 42715 |
| 620-22908-6 | GW-MW102R-121024 | Total/NA | Water | MA EPH Frac | 42715 |
| 620-22908-7 | GW-MW105-121124 | Total/NA | Water | MA EPH Frac | 42715 |
| 620-22908-8 | GW-MW101-121124 | Total/NA | Water | MA EPH Frac | 42715 |
| 620-22908-9 | FD-01 | Total/NA | Water | MA EPH Frac | 42715 |
| MB 620-42715/1-B | Method Blank | Total/NA | Water | MA EPH Frac | 42715 |
| LCS 620-42715/4-B | Lab Control Sample | Total/NA | Water | MA EPH Frac | 42715 |
| LCSD 620-42715/5-B | Lab Control Sample Dup | Total/NA | Water | MA EPH Frac | 42715 |
| 620-22908-1 MS | GW-MW108-121024 | Total/NA | Water | MA EPH Frac | 42715 |
| 620-22908-1 MSD | GW-MW108-121024 | Total/NA | Water | MA EPH Frac | 42715 |

### Analysis Batch: 42815

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-22908-1 | GW-MW108-121024 | Total/NA | Water | EPH | 42763 |
| 620-22908-2 | GW-MW104-121024 | Total/NA | Water | EPH | 42763 |
| 620-22908-3 | GW-MW107-121024 | Total/NA | Water | EPH | 42763 |
| 620-22908-4 | GW-MW106-121024 | Total/NA | Water | EPH | 42763 |
| 620-22908-5 | GW-MW109-121024 | Total/NA | Water | EPH | 42763 |
| 620-22908-6 | GW-MW102R-121024 | Total/NA | Water | EPH | 42763 |
| 620-22908-7 | GW-MW105-121124 | Total/NA | Water | EPH | 42763 |
| 620-22908-8 | GW-MW101-121124 | Total/NA | Water | EPH | 42763 |
| 620-22908-9 | FD-01 | Total/NA | Water | EPH | 42763 |
| MB 620-42715/1-B | Method Blank | Total/NA | Water | EPH | 42763 |
| LCS 620-42715/4-B | Lab Control Sample | Total/NA | Water | EPH | 42763 |
| LCSD 620-42715/5-B | Lab Control Sample Dup | Total/NA | Water | EPH | 42763 |
| 620-22908-1 MS | GW-MW108-121024 | Total/NA | Water | EPH | 42763 |
| 620-22908-1 MSD | GW-MW108-121024 | Total/NA | Water | EPH | 42763 |

## GC/MS Semi VOA

### Prep Batch: 42884

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-22908-6 | GW-MW102R-121024 | Total/NA | Water | 3510C | |
| MB 620-42884/1-B | Method Blank | Total/NA | Water | 3510C | |
| LCS 620-42884/4-B | Lab Control Sample | Total/NA | Water | 3510C | |
| LCSD 620-42884/5-B | Lab Control Sample Dup | Total/NA | Water | 3510C | |

### Fraction Batch: 42893

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-22908-6 | GW-MW102R-121024 | Total/NA | Water | MA EPH Frac | 42884 |
| MB 620-42884/1-B | Method Blank | Total/NA | Water | MA EPH Frac | 42884 |
| LCS 620-42884/4-B | Lab Control Sample | Total/NA | Water | MA EPH Frac | 42884 |
| LCSD 620-42884/5-B | Lab Control Sample Dup | Total/NA | Water | MA EPH Frac | 42884 |

### Analysis Batch: 42909

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-22908-6 | GW-MW102R-121024 | Total/NA | Water | EPH | 42893 |
| MB 620-42884/1-B | Method Blank | Total/NA | Water | EPH | 42893 |
| LCS 620-42884/4-B | Lab Control Sample | Total/NA | Water | EPH | 42893 |
| LCSD 620-42884/5-B | Lab Control Sample Dup | Total/NA | Water | EPH | 42893 |

## GC VOA

### Analysis Batch: 42608

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-22908-1 | GW-MW108-121024 | Total/NA | Water | MAVPH2.1 | |
| 620-22908-2 | GW-MW104-121024 | Total/NA | Water | MAVPH2.1 | |
| 620-22908-3 | GW-MW107-121024 | Total/NA | Water | MAVPH2.1 | |
| 620-22908-4 | GW-MW106-121024 | Total/NA | Water | MAVPH2.1 | |
| 620-22908-5 | GW-MW109-121024 | Total/NA | Water | MAVPH2.1 | |
| 620-22908-6 | GW-MW102R-121024 | Total/NA | Water | MAVPH2.1 | |
| 620-22908-7 | GW-MW105-121124 | Total/NA | Water | MAVPH2.1 | |
| 620-22908-8 | GW-MW101-121124 | Total/NA | Water | MAVPH2.1 | |
| 620-22908-9 | FD-01 | Total/NA | Water | MAVPH2.1 | |
| 620-22908-10 | Trip Blank | Total/NA | Water | MAVPH2.1 | |
| MB 620-42608/4 | Method Blank | Total/NA | Water | MAVPH2.1 | |
| LCS 620-42608/2 | Lab Control Sample | Total/NA | Water | MAVPH2.1 | |
| LCSD 620-42608/3 | Lab Control Sample Dup | Total/NA | Water | MAVPH2.1 | |
| 620-22908-1 MS | GW-MW108-121024 | Total/NA | Water | MAVPH2.1 | |
| 620-22908-1 MSD | GW-MW108-121024 | Total/NA | Water | MAVPH2.1 | |

### Analysis Batch: 42639

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-22908-4 - DL | GW-MW106-121024 | Total/NA | Water | MAVPH2.1 | |
| 620-22908-5 - DL | GW-MW109-121024 | Total/NA | Water | MAVPH2.1 | |
| 620-22908-6 - DL | GW-MW102R-121024 | Total/NA | Water | MAVPH2.1 | |
| 620-22908-9 - DL | FD-01 | Total/NA | Water | MAVPH2.1 | |
| MB 620-42639/4 | Method Blank | Total/NA | Water | MAVPH2.1 | |
| LCS 620-42639/2 | Lab Control Sample | Total/NA | Water | MAVPH2.1 | |
| LCSD 620-42639/3 | Lab Control Sample Dup | Total/NA | Water | MAVPH2.1 | |

# QC Association Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-22908-1

## GC VOA

### Analysis Batch: 42713

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-22908-4 - DL2 | GW-MW106-121024 | Total/NA | Water | MAVPH2.1 | |
| 620-22908-5 - DL2 | GW-MW109-121024 | Total/NA | Water | MAVPH2.1 | |
| 620-22908-6 - DL2 | GW-MW102R-121024 | Total/NA | Water | MAVPH2.1 | |
| 620-22908-9 - DL2 | FD-01 | Total/NA | Water | MAVPH2.1 | |
| MB 620-42713/4 | Method Blank | Total/NA | Water | MAVPH2.1 | |
| LCS 620-42713/2 | Lab Control Sample | Total/NA | Water | MAVPH2.1 | |
| LCSD 620-42713/3 | Lab Control Sample Dup | Total/NA | Water | MAVPH2.1 | |

## GC Semi VOA

### Prep Batch: 42715

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-22908-1 | GW-MW108-121024 | Total/NA | Water | 3510C | |
| 620-22908-2 | GW-MW104-121024 | Total/NA | Water | 3510C | |
| 620-22908-3 | GW-MW107-121024 | Total/NA | Water | 3510C | |
| 620-22908-4 | GW-MW106-121024 | Total/NA | Water | 3510C | |
| 620-22908-5 | GW-MW109-121024 | Total/NA | Water | 3510C | |
| 620-22908-6 | GW-MW102R-121024 | Total/NA | Water | 3510C | |
| 620-22908-7 | GW-MW105-121124 | Total/NA | Water | 3510C | |
| 620-22908-8 | GW-MW101-121124 | Total/NA | Water | 3510C | |
| 620-22908-9 | FD-01 | Total/NA | Water | 3510C | |
| MB 620-42715/1-B | Method Blank | Total/NA | Water | 3510C | |
| LCS 620-42715/2-B | Lab Control Sample | Total/NA | Water | 3510C | |
| LCSD 620-42715/3-B | Lab Control Sample Dup | Total/NA | Water | 3510C | |
| 620-22908-1 MS | GW-MW108-121024 | Total/NA | Water | 3510C | |
| 620-22908-1 MSD | GW-MW108-121024 | Total/NA | Water | 3510C | |

### Fraction Batch: 42763

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-22908-1 | GW-MW108-121024 | Total/NA | Water | MA EPH Frac | 42715 |
| 620-22908-2 | GW-MW104-121024 | Total/NA | Water | MA EPH Frac | 42715 |
| 620-22908-3 | GW-MW107-121024 | Total/NA | Water | MA EPH Frac | 42715 |
| 620-22908-4 | GW-MW106-121024 | Total/NA | Water | MA EPH Frac | 42715 |
| 620-22908-5 | GW-MW109-121024 | Total/NA | Water | MA EPH Frac | 42715 |
| 620-22908-6 | GW-MW102R-121024 | Total/NA | Water | MA EPH Frac | 42715 |
| 620-22908-7 | GW-MW105-121124 | Total/NA | Water | MA EPH Frac | 42715 |
| 620-22908-8 | GW-MW101-121124 | Total/NA | Water | MA EPH Frac | 42715 |
| 620-22908-9 | FD-01 | Total/NA | Water | MA EPH Frac | 42715 |
| MB 620-42715/1-B | Method Blank | Total/NA | Water | MA EPH Frac | 42715 |
| LCS 620-42715/2-B | Lab Control Sample | Total/NA | Water | MA EPH Frac | 42715 |
| LCSD 620-42715/3-B | Lab Control Sample Dup | Total/NA | Water | MA EPH Frac | 42715 |
| 620-22908-1 MS | GW-MW108-121024 | Total/NA | Water | MA EPH Frac | 42715 |
| 620-22908-1 MSD | GW-MW108-121024 | Total/NA | Water | MA EPH Frac | 42715 |

### Analysis Batch: 42809

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-22908-1 | GW-MW108-121024 | Total/NA | Water | MAEPH2.1 | 42763 |
| 620-22908-2 | GW-MW104-121024 | Total/NA | Water | MAEPH2.1 | 42763 |
| 620-22908-3 | GW-MW107-121024 | Total/NA | Water | MAEPH2.1 | 42763 |
| 620-22908-4 | GW-MW106-121024 | Total/NA | Water | MAEPH2.1 | 42763 |
| 620-22908-5 | GW-MW109-121024 | Total/NA | Water | MAEPH2.1 | 42763 |

## GC Semi VOA (Continued)

### Analysis Batch: 42809 (Continued)

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| MB 620-42715/1-B | Method Blank | Total/NA | Water | MAEPH2.1 | 42763 |
| LCS 620-42715/2-B | Lab Control Sample | Total/NA | Water | MAEPH2.1 | 42763 |
| LCSD 620-42715/3-B | Lab Control Sample Dup | Total/NA | Water | MAEPH2.1 | 42763 |
| 620-22908-1 MS | GW-MW108-121024 | Total/NA | Water | MAEPH2.1 | 42763 |
| 620-22908-1 MSD | GW-MW108-121024 | Total/NA | Water | MAEPH2.1 | 42763 |

### Analysis Batch: 42852

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-22908-6 | GW-MW102R-121024 | Total/NA | Water | MAEPH2.1 | 42763 |
| 620-22908-7 | GW-MW105-121124 | Total/NA | Water | MAEPH2.1 | 42763 |
| 620-22908-8 | GW-MW101-121124 | Total/NA | Water | MAEPH2.1 | 42763 |
| 620-22908-9 | FD-01 | Total/NA | Water | MAEPH2.1 | 42763 |

### Prep Batch: 42884

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-22908-6 | GW-MW102R-121024 | Total/NA | Water | 3510C | |
| MB 620-42884/1-B | Method Blank | Total/NA | Water | 3510C | |
| LCS 620-42884/2-B | Lab Control Sample | Total/NA | Water | 3510C | |
| LCSD 620-42884/3-B | Lab Control Sample Dup | Total/NA | Water | 3510C | |

### Fraction Batch: 42893

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-22908-6 | GW-MW102R-121024 | Total/NA | Water | MA EPH Frac | 42884 |
| MB 620-42884/1-B | Method Blank | Total/NA | Water | MA EPH Frac | 42884 |
| LCS 620-42884/2-B | Lab Control Sample | Total/NA | Water | MA EPH Frac | 42884 |
| LCSD 620-42884/3-B | Lab Control Sample Dup | Total/NA | Water | MA EPH Frac | 42884 |

### Analysis Batch: 42908

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-22908-6 | GW-MW102R-121024 | Total/NA | Water | MAEPH2.1 | 42893 |
| MB 620-42884/1-B | Method Blank | Total/NA | Water | MAEPH2.1 | 42893 |
| LCS 620-42884/2-B | Lab Control Sample | Total/NA | Water | MAEPH2.1 | 42893 |
| LCSD 620-42884/3-B | Lab Control Sample Dup | Total/NA | Water | MAEPH2.1 | 42893 |

## Metals

### Prep Batch: 42498

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-22908-1 | GW-MW108-121024 | Dissolved | Water | 3005A | |
| 620-22908-2 | GW-MW104-121024 | Dissolved | Water | 3005A | |
| 620-22908-3 | GW-MW107-121024 | Dissolved | Water | 3005A | |
| 620-22908-4 | GW-MW106-121024 | Dissolved | Water | 3005A | |
| 620-22908-5 | GW-MW109-121024 | Dissolved | Water | 3005A | |
| 620-22908-6 | GW-MW102R-121024 | Dissolved | Water | 3005A | |
| 620-22908-7 | GW-MW105-121124 | Dissolved | Water | 3005A | |
| 620-22908-8 | GW-MW101-121124 | Dissolved | Water | 3005A | |
| 620-22908-9 | FD-01 | Dissolved | Water | 3005A | |
| MB 620-42498/1-A | Method Blank | Total/NA | Water | 3005A | |
| LCS 620-42498/2-A | Lab Control Sample | Total/NA | Water | 3005A | |
| 620-22908-1 MS | GW-MW108-121024 | Dissolved | Water | 3005A | |
| 620-22908-1 MSD | GW-MW108-121024 | Dissolved | Water | 3005A | |

## Metals

### Analysis Batch: 42568

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-22908-1 | GW-MW108-121024 | Dissolved | Water | 6010D | 42498 |
| 620-22908-2 | GW-MW104-121024 | Dissolved | Water | 6010D | 42498 |
| 620-22908-3 | GW-MW107-121024 | Dissolved | Water | 6010D | 42498 |
| 620-22908-4 | GW-MW106-121024 | Dissolved | Water | 6010D | 42498 |
| 620-22908-5 | GW-MW109-121024 | Dissolved | Water | 6010D | 42498 |
| 620-22908-6 | GW-MW102R-121024 | Dissolved | Water | 6010D | 42498 |
| 620-22908-7 | GW-MW105-121124 | Dissolved | Water | 6010D | 42498 |
| 620-22908-8 | GW-MW101-121124 | Dissolved | Water | 6010D | 42498 |
| 620-22908-9 | FD-01 | Dissolved | Water | 6010D | 42498 |
| MB 620-42498/1-A | Method Blank | Total/NA | Water | 6010D | 42498 |
| LCS 620-42498/2-A | Lab Control Sample | Total/NA | Water | 6010D | 42498 |
| 620-22908-1 MS | GW-MW108-121024 | Dissolved | Water | 6010D | 42498 |
| 620-22908-1 MSD | GW-MW108-121024 | Dissolved | Water | 6010D | 42498 |

### Prep Batch: 42646

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-22908-1 | GW-MW108-121024 | Dissolved | Water | 7470A | |
| 620-22908-2 | GW-MW104-121024 | Dissolved | Water | 7470A | |
| 620-22908-3 | GW-MW107-121024 | Dissolved | Water | 7470A | |
| 620-22908-4 | GW-MW106-121024 | Dissolved | Water | 7470A | |
| 620-22908-5 | GW-MW109-121024 | Dissolved | Water | 7470A | |
| 620-22908-6 | GW-MW102R-121024 | Dissolved | Water | 7470A | |
| 620-22908-7 | GW-MW105-121124 | Dissolved | Water | 7470A | |
| 620-22908-8 | GW-MW101-121124 | Dissolved | Water | 7470A | |
| 620-22908-9 | FD-01 | Dissolved | Water | 7470A | |
| MB 620-42646/1-A | Method Blank | Total/NA | Water | 7470A | |
| LCS 620-42646/2-A | Lab Control Sample | Total/NA | Water | 7470A | |
| 620-22908-1 MS | GW-MW108-121024 | Dissolved | Water | 7470A | |
| 620-22908-1 MSD | GW-MW108-121024 | Dissolved | Water | 7470A | |

### Analysis Batch: 42773

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-22908-1 | GW-MW108-121024 | Dissolved | Water | 7470A | 42646 |
| 620-22908-2 | GW-MW104-121024 | Dissolved | Water | 7470A | 42646 |
| 620-22908-3 | GW-MW107-121024 | Dissolved | Water | 7470A | 42646 |
| 620-22908-4 | GW-MW106-121024 | Dissolved | Water | 7470A | 42646 |
| 620-22908-5 | GW-MW109-121024 | Dissolved | Water | 7470A | 42646 |
| 620-22908-6 | GW-MW102R-121024 | Dissolved | Water | 7470A | 42646 |
| 620-22908-7 | GW-MW105-121124 | Dissolved | Water | 7470A | 42646 |
| 620-22908-8 | GW-MW101-121124 | Dissolved | Water | 7470A | 42646 |
| 620-22908-9 | FD-01 | Dissolved | Water | 7470A | 42646 |
| MB 620-42646/1-A | Method Blank | Total/NA | Water | 7470A | 42646 |
| LCS 620-42646/2-A | Lab Control Sample | Total/NA | Water | 7470A | 42646 |
| 620-22908-1 MS | GW-MW108-121024 | Dissolved | Water | 7470A | 42646 |
| 620-22908-1 MSD | GW-MW108-121024 | Dissolved | Water | 7470A | 42646 |

# Lab Chronicle

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-22908-1

## Client Sample ID: GW-MW108-121024

**Lab Sample ID: 620-22908-1**

**Date Collected: 12/10/24 12:10**

**Matrix: Water**

**Date Received: 12/12/24 17:14**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 42715 | RWS | EET RI | 12/19/24 10:45 |
| Total/NA | Fraction | MA EPH Frac | | | 42763 | AAH | EET RI | 12/20/24 10:23 |
| Total/NA | Analysis | EPH | | 1 | 42815 | JS | EET RI | 12/23/24 12:31 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 42608 | CLR | EET RI | 12/17/24 21:06 |
| Total/NA | Prep | 3510C | | | 42715 | RWS | EET RI | 12/19/24 10:45 |
| Total/NA | Fraction | MA EPH Frac | | | 42763 | AAH | EET RI | 12/20/24 10:23 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 42809 | JS | EET RI | 12/23/24 16:48 |
| Dissolved | Prep | 3005A | | | 42498 | DJW | EET RI | 12/13/24 15:10 |
| Dissolved | Analysis | 6010D | | 1 | 42568 | JPC | EET RI | 12/16/24 12:05 |
| Dissolved | Prep | 7470A | | | 42646 | PRB | EET RI | 12/18/24 09:03 |
| Dissolved | Analysis | 7470A | | 1 | 42773 | DJW | EET RI | 12/18/24 15:11 |

## Client Sample ID: GW-MW104-121024

**Lab Sample ID: 620-22908-2**

**Date Collected: 12/10/24 15:05**

**Matrix: Water**

**Date Received: 12/12/24 17:14**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 42715 | RWS | EET RI | 12/19/24 10:45 |
| Total/NA | Fraction | MA EPH Frac | | | 42763 | AAH | EET RI | 12/20/24 10:23 |
| Total/NA | Analysis | EPH | | 1 | 42815 | JS | EET RI | 12/23/24 14:04 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 42608 | CLR | EET RI | 12/17/24 21:37 |
| Total/NA | Prep | 3510C | | | 42715 | RWS | EET RI | 12/19/24 10:45 |
| Total/NA | Fraction | MA EPH Frac | | | 42763 | AAH | EET RI | 12/20/24 10:23 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 42809 | JS | EET RI | 12/23/24 18:10 |
| Dissolved | Prep | 3005A | | | 42498 | DJW | EET RI | 12/13/24 15:10 |
| Dissolved | Analysis | 6010D | | 1 | 42568 | JPC | EET RI | 12/16/24 12:23 |
| Dissolved | Prep | 7470A | | | 42646 | PRB | EET RI | 12/18/24 09:03 |
| Dissolved | Analysis | 7470A | | 1 | 42773 | DJW | EET RI | 12/18/24 15:18 |

## Client Sample ID: GW-MW107-121024

**Lab Sample ID: 620-22908-3**

**Date Collected: 12/10/24 15:50**

**Matrix: Water**

**Date Received: 12/12/24 17:14**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 42715 | RWS | EET RI | 12/19/24 10:45 |
| Total/NA | Fraction | MA EPH Frac | | | 42763 | AAH | EET RI | 12/20/24 10:23 |
| Total/NA | Analysis | EPH | | 1 | 42815 | JS | EET RI | 12/23/24 14:27 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 42608 | CLR | EET RI | 12/17/24 22:07 |
| Total/NA | Prep | 3510C | | | 42715 | RWS | EET RI | 12/19/24 10:45 |
| Total/NA | Fraction | MA EPH Frac | | | 42763 | AAH | EET RI | 12/20/24 10:23 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 42809 | JS | EET RI | 12/23/24 18:37 |
| Dissolved | Prep | 3005A | | | 42498 | DJW | EET RI | 12/13/24 15:10 |
| Dissolved | Analysis | 6010D | | 1 | 42568 | JPC | EET RI | 12/16/24 12:29 |
| Dissolved | Prep | 7470A | | | 42646 | PRB | EET RI | 12/18/24 09:03 |
| Dissolved | Analysis | 7470A | | 1 | 42773 | DJW | EET RI | 12/18/24 15:20 |

# Lab Chronicle

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-22908-1

## Client Sample ID: GW-MW106-121024

**Lab Sample ID: 620-22908-4**

**Date Collected: 12/10/24 14:10**
**Matrix: Water**
**Date Received: 12/12/24 17:14**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 42715 | RWS | EET RI | 12/19/24 10:45 |
| Total/NA | Fraction | MA EPH Frac | | | 42763 | AAH | EET RI | 12/20/24 10:23 |
| Total/NA | Analysis | EPH | | 1 | 42815 | JS | EET RI | 12/23/24 14:50 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 42608 | CLR | EET RI | 12/17/24 22:37 |
| Total/NA | Analysis | MAVPH2.1 | DL | 5 | 42639 | RWS | EET RI | 12/18/24 13:54 |
| Total/NA | Analysis | MAVPH2.1 | DL2 | 10 | 42713 | RWS | EET RI | 12/19/24 15:29 |
| Total/NA | Prep | 3510C | | | 42715 | RWS | EET RI | 12/19/24 10:45 |
| Total/NA | Fraction | MA EPH Frac | | | 42763 | AAH | EET RI | 12/20/24 10:23 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 42809 | JS | EET RI | 12/23/24 19:04 |
| Dissolved | Prep | 3005A | | | 42498 | DJW | EET RI | 12/13/24 15:10 |
| Dissolved | Analysis | 6010D | | 1 | 42568 | JPC | EET RI | 12/16/24 12:35 |
| Dissolved | Prep | 7470A | | | 42646 | PRB | EET RI | 12/18/24 09:03 |
| Dissolved | Analysis | 7470A | | 1 | 42773 | DJW | EET RI | 12/18/24 15:22 |

## Client Sample ID: GW-MW109-121024

**Lab Sample ID: 620-22908-5**

**Date Collected: 12/10/24 12:30**
**Matrix: Water**
**Date Received: 12/12/24 17:14**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 42715 | RWS | EET RI | 12/19/24 10:45 |
| Total/NA | Fraction | MA EPH Frac | | | 42763 | AAH | EET RI | 12/20/24 10:23 |
| Total/NA | Analysis | EPH | | 1 | 42815 | JS | EET RI | 12/23/24 15:13 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 42608 | CLR | EET RI | 12/17/24 23:08 |
| Total/NA | Analysis | MAVPH2.1 | DL | 10 | 42639 | RWS | EET RI | 12/18/24 14:24 |
| Total/NA | Analysis | MAVPH2.1 | DL2 | 50 | 42713 | RWS | EET RI | 12/19/24 16:30 |
| Total/NA | Prep | 3510C | | | 42715 | RWS | EET RI | 12/19/24 10:45 |
| Total/NA | Fraction | MA EPH Frac | | | 42763 | AAH | EET RI | 12/20/24 10:23 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 42809 | JS | EET RI | 12/23/24 19:31 |
| Dissolved | Prep | 3005A | | | 42498 | DJW | EET RI | 12/13/24 15:10 |
| Dissolved | Analysis | 6010D | | 1 | 42568 | JPC | EET RI | 12/16/24 12:41 |
| Dissolved | Prep | 7470A | | | 42646 | PRB | EET RI | 12/18/24 09:03 |
| Dissolved | Analysis | 7470A | | 1 | 42773 | DJW | EET RI | 12/18/24 15:24 |

## Client Sample ID: GW-MW102R-121024

**Lab Sample ID: 620-22908-6**

**Date Collected: 12/10/24 10:35**
**Matrix: Water**
**Date Received: 12/12/24 17:14**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 42715 | RWS | EET RI | 12/19/24 10:45 |
| Total/NA | Fraction | MA EPH Frac | | | 42763 | AAH | EET RI | 12/20/24 10:23 |
| Total/NA | Analysis | EPH | | 1 | 42815 | JS | EET RI | 12/23/24 15:37 |
| Total/NA | Prep | 3510C | | | 42884 | CAC | EET RI | 12/27/24 09:56 |
| Total/NA | Fraction | MA EPH Frac | | | 42893 | AAH | EET RI | 12/27/24 14:24 |
| Total/NA | Analysis | EPH | | 1 | 42909 | JS | EET RI | 12/30/24 11:56 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 42608 | CLR | EET RI | 12/17/24 23:38 |

# Lab Chronicle

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-22908-1

## Client Sample ID: GW-MW102R-121024

**Lab Sample ID: 620-22908-6**

**Date Collected: 12/10/24 10:35**

**Matrix: Water**

**Date Received: 12/12/24 17:14**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | MAVPH2.1 | DL | 5 | 42639 | RWS | EET RI | 12/18/24 14:54 |
| Total/NA | Analysis | MAVPH2.1 | DL2 | 25 | 42713 | RWS | EET RI | 12/19/24 17:00 |
| Total/NA | Prep | 3510C | | | 42715 | RWS | EET RI | 12/19/24 10:45 |
| Total/NA | Fraction | MA EPH Frac | | | 42763 | AAH | EET RI | 12/20/24 10:23 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 42852 | JS | EET RI | 12/26/24 11:06 |
| Total/NA | Prep | 3510C | | | 42884 | CAC | EET RI | 12/27/24 09:56 |
| Total/NA | Fraction | MA EPH Frac | | | 42893 | AAH | EET RI | 12/27/24 14:24 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 42908 | JS | EET RI | 12/30/24 12:34 |
| Dissolved | Prep | 3005A | | | 42498 | DJW | EET RI | 12/13/24 15:10 |
| Dissolved | Analysis | 6010D | | 1 | 42568 | JPC | EET RI | 12/16/24 12:47 |
| Dissolved | Prep | 7470A | | | 42646 | PRB | EET RI | 12/18/24 09:03 |
| Dissolved | Analysis | 7470A | | 1 | 42773 | DJW | EET RI | 12/18/24 15:31 |

## Client Sample ID: GW-MW105-121124

**Lab Sample ID: 620-22908-7**

**Date Collected: 12/11/24 08:30**

**Matrix: Water**

**Date Received: 12/12/24 17:14**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 42715 | RWS | EET RI | 12/19/24 10:45 |
| Total/NA | Fraction | MA EPH Frac | | | 42763 | AAH | EET RI | 12/20/24 10:23 |
| Total/NA | Analysis | EPH | | 1 | 42815 | JS | EET RI | 12/23/24 16:00 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 42608 | CLR | EET RI | 12/18/24 00:09 |
| Total/NA | Prep | 3510C | | | 42715 | RWS | EET RI | 12/19/24 10:45 |
| Total/NA | Fraction | MA EPH Frac | | | 42763 | AAH | EET RI | 12/20/24 10:23 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 42852 | JS | EET RI | 12/26/24 11:33 |
| Dissolved | Prep | 3005A | | | 42498 | DJW | EET RI | 12/13/24 15:10 |
| Dissolved | Analysis | 6010D | | 1 | 42568 | JPC | EET RI | 12/16/24 13:05 |
| Dissolved | Prep | 7470A | | | 42646 | PRB | EET RI | 12/18/24 09:03 |
| Dissolved | Analysis | 7470A | | 1 | 42773 | DJW | EET RI | 12/18/24 15:33 |

## Client Sample ID: GW-MW101-121124

**Lab Sample ID: 620-22908-8**

**Date Collected: 12/11/24 08:20**

**Matrix: Water**

**Date Received: 12/12/24 17:14**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 42715 | RWS | EET RI | 12/19/24 10:45 |
| Total/NA | Fraction | MA EPH Frac | | | 42763 | AAH | EET RI | 12/20/24 10:23 |
| Total/NA | Analysis | EPH | | 1 | 42815 | JS | EET RI | 12/23/24 16:24 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 42608 | CLR | EET RI | 12/18/24 00:39 |
| Total/NA | Prep | 3510C | | | 42715 | RWS | EET RI | 12/19/24 10:45 |
| Total/NA | Fraction | MA EPH Frac | | | 42763 | AAH | EET RI | 12/20/24 10:23 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 42852 | JS | EET RI | 12/26/24 12:01 |
| Dissolved | Prep | 3005A | | | 42498 | DJW | EET RI | 12/13/24 15:10 |
| Dissolved | Analysis | 6010D | | 1 | 42568 | JPC | EET RI | 12/16/24 13:11 |

# Lab Chronicle

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-22908-1

## Client Sample ID: GW-MW101-121124

**Lab Sample ID: 620-22908-8**

**Date Collected: 12/11/24 08:20**

**Matrix: Water**

**Date Received: 12/12/24 17:14**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Dissolved | Prep | 7470A | | | 42646 | PRB | EET RI | 12/18/24 09:03 |
| Dissolved | Analysis | 7470A | | 1 | 42773 | DJW | EET RI | 12/18/24 15:35 |

## Client Sample ID: FD-01

**Lab Sample ID: 620-22908-9**

**Date Collected: 12/10/24 08:00**

**Matrix: Water**

**Date Received: 12/12/24 17:14**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 42715 | RWS | EET RI | 12/19/24 10:45 |
| Total/NA | Fraction | MA EPH Frac | | | 42763 | AAH | EET RI | 12/20/24 10:23 |
| Total/NA | Analysis | EPH | | 1 | 42815 | JS | EET RI | 12/23/24 16:47 |
| Total/NA | Analysis | MAVPH2.1 | | 1 | 42608 | CLR | EET RI | 12/18/24 01:09 |
| Total/NA | Analysis | MAVPH2.1 | DL | 5 | 42639 | RWS | EET RI | 12/18/24 15:24 |
| Total/NA | Analysis | MAVPH2.1 | DL2 | 25 | 42713 | RWS | EET RI | 12/19/24 17:30 |
| Total/NA | Prep | 3510C | | | 42715 | RWS | EET RI | 12/19/24 10:45 |
| Total/NA | Fraction | MA EPH Frac | | | 42763 | AAH | EET RI | 12/20/24 10:23 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 42852 | JS | EET RI | 12/26/24 12:29 |
| Dissolved | Prep | 3005A | | | 42498 | DJW | EET RI | 12/13/24 15:10 |
| Dissolved | Analysis | 6010D | | 1 | 42568 | JPC | EET RI | 12/16/24 13:17 |
| Dissolved | Prep | 7470A | | | 42646 | PRB | EET RI | 12/18/24 09:03 |
| Dissolved | Analysis | 7470A | | 1 | 42773 | DJW | EET RI | 12/18/24 15:37 |

## Client Sample ID: Trip Blank

**Lab Sample ID: 620-22908-10**

**Date Collected: 12/10/24 00:00**

**Matrix: Water**

**Date Received: 12/12/24 17:14**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | MAVPH2.1 | | 1 | 42608 | CLR | EET RI | 12/17/24 18:34 |

**Laboratory References:**

EET RI = Eurofins Rhode Island, 646 Camp Ave, North Kingstown, RI 02852, TEL (413)789-9018

# Accreditation/Certification Summary

Client: Nobis Engineering, Inc. Job ID: 620-22908-1
Project/Site: Former L&M - Lunenburg MA

## Laboratory: Eurofins Rhode Island

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

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|
| Massachusetts | State | M-RI907 | 06-30-25 |

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

| Analysis Method | Prep Method | Matrix | Analyte |
|---|---|---|---|
| 6010D | 3005A | Water | Antimony |
| 6010D | 3005A | Water | Arsenic |
| 6010D | 3005A | Water | Barium |
| 6010D | 3005A | Water | Beryllium |
| 6010D | 3005A | Water | Cadmium |
| 6010D | 3005A | Water | Chromium |
| 6010D | 3005A | Water | Lead |
| 6010D | 3005A | Water | Nickel |
| 6010D | 3005A | Water | Selenium |
| 6010D | 3005A | Water | Silver |
| 6010D | 3005A | Water | Thallium |
| 6010D | 3005A | Water | Vanadium |
| 6010D | 3005A | Water | Zinc |
| 7470A | 7470A | Water | Mercury |
| EPH | 3510C | Water | 2-Methylnaphthalene |
| EPH | 3510C | Water | Acenaphthene |
| EPH | 3510C | Water | Acenaphthylene |
| EPH | 3510C | Water | Anthracene |
| EPH | 3510C | Water | Benzo[a]anthracene |
| EPH | 3510C | Water | Benzo[a]pyrene |
| EPH | 3510C | Water | Benzo[b]fluoranthene |
| EPH | 3510C | Water | Benzo[g,h,i]perylene |
| EPH | 3510C | Water | Benzo[k]fluoranthene |
| EPH | 3510C | Water | Chrysene |
| EPH | 3510C | Water | Dibenz(a,h)anthracene |
| EPH | 3510C | Water | Fluoranthene |
| EPH | 3510C | Water | Fluorene |
| EPH | 3510C | Water | Indeno[1,2,3-cd]pyrene |
| EPH | 3510C | Water | Naphthalene |
| EPH | 3510C | Water | Phenanthrene |
| EPH | 3510C | Water | Pyrene |
| MAEPH2.1 | 3510C | Water | C11-C22 Aromatics |
| MAEPH2.1 | 3510C | Water | C11-C22 Aromatics (Adjusted) |
| MAEPH2.1 | 3510C | Water | C19-C36 Aliphatics |
| MAEPH2.1 | 3510C | Water | C9-C18 Aliphatics |
| MAVPH2.1 | | Water | Benzene |
| MAVPH2.1 | | Water | C5-C8 Aliphatics (adjusted) |
| MAVPH2.1 | | Water | C5-C8 Aliphatics (unadjusted) |
| MAVPH2.1 | | Water | C9-C10 Aromatics |
| MAVPH2.1 | | Water | C9-C12 Aliphatics (adjusted) |
| MAVPH2.1 | | Water | C9-C12 Aliphatics (unadjusted) |
| MAVPH2.1 | | Water | Ethylbenzene |
| MAVPH2.1 | | Water | m,p-Xylene |
| MAVPH2.1 | | Water | Methyl tert-butyl ether |
| MAVPH2.1 | | Water | Naphthalene |

# Accreditation/Certification Summary

Client: Nobis Engineering, Inc. Job ID: 620-22908-1
Project/Site: Former L&M - Lunenburg MA

## Laboratory: Eurofins Rhode Island (Continued)

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

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

| Analysis Method | Prep Method | Matrix | Analyte |
|---|---|---|---|
| MAVPH2.1 | | Water | o-Xylene |
| MAVPH2.1 | | Water | Toluene |
| MAVPH2.1 | | Water | Xylenes, Total |

# Method Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-22908-1

| Method | Method Description | Protocol | Laboratory |
|---|---|---|---|
| EPH | Extractable Petroleum Hydrocarbons (GC/MS) | MA DEP | EET RI |
| MAVPH2.1 | Massachusetts - Volatile Petroleum Hydrocarbons (GC) | MA DEP | EET RI |
| MAEPH2.1 | Massachusetts - Extractable Petroleum Hydrocarbons (GC) | MA DEP | EET RI |
| 6010D | Metals (ICP) | SW846 | EET RI |
| 7470A | Mercury (CVAA) | SW846 | EET RI |
| 3005A | Preparation, Total Metals | SW846 | EET RI |
| 3510C | Liquid-Liquid Extraction (Separatory Funnel) | SW846 | EET RI |
| 5030C | Purge and Trap | SW846 | EET RI |
| 7470A | Preparation, Mercury | SW846 | EET RI |
| MA EPH Frac | Massachusetts - Extractable Petroleum Hydrocarbon Fractionation | MA DEP | EET RI |

**Protocol References:**

MA DEP = Massachusetts Department Of Environmental Protection

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

**Laboratory References:**

EET RI = Eurofins Rhode Island, 646 Camp Ave, North Kingstown, RI 02852, TEL (413)789-9018

# Sample Summary

Client: Nobis Engineering, Inc.
Project/Site: Former L&M - Lunenburg MA

Job ID: 620-22908-1

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---|---|---|---|---|
| 620-22908-1 | GW-MW108-121024 | Water | 12/10/24 12:10 | 12/12/24 17:14 |
| 620-22908-2 | GW-MW104-121024 | Water | 12/10/24 15:05 | 12/12/24 17:14 |
| 620-22908-3 | GW-MW107-121024 | Water | 12/10/24 15:50 | 12/12/24 17:14 |
| 620-22908-4 | GW-MW106-121024 | Water | 12/10/24 14:10 | 12/12/24 17:14 |
| 620-22908-5 | GW-MW109-121024 | Water | 12/10/24 12:30 | 12/12/24 17:14 |
| 620-22908-6 | GW-MW102R-121024 | Water | 12/10/24 10:35 | 12/12/24 17:14 |
| 620-22908-7 | GW-MW105-121124 | Water | 12/11/24 08:30 | 12/12/24 17:14 |
| 620-22908-8 | GW-MW101-121124 | Water | 12/11/24 08:20 | 12/12/24 17:14 |
| 620-22908-9 | FD-01 | Water | 12/10/24 08:00 | 12/12/24 17:14 |
| 620-22908-10 | Trip Blank | Water | 12/10/24 00:00 | 12/12/24 17:14 |

22908

# Chain of Custody Record


**Eurofins Rhode Island**
646 Camp Ave
North Kingstown, RI 02852
Phone 413-789-9018 Fax: 413-506-3830


eurofins | Environment Testing

| Client Information | Sampler: P. Moran & S. Stone | Lab PM: Huntley, Agnes R | Carrier Tracking No(s): | COC No: 620-20841-3087 2 |
|---|---|---|---|---|
| Client Contact: Adam Roy | Phone: | E-Mail: Agnes.Huntley@et.eurofinsus com | State of Origin: MA | Page: Page 1 of 1 |
| Company: Nobis Engineering, Inc | PWSID: | | | Job #: |
| Address: 55 Technology Drive Suite 101 | Due Date Requested: | | | |
| City: Lowell | TAT Requested (days): Standard | | | |
| State, Zip: MA, 01851 | Compliance Project: Δ Yes Δ No | | | |
| Phone: 603-520-5849(Tel) | PO #: Purchase Order Requested | | | |
| Email: aroy@nobis-group com | WO #: | | | |
| Project Name: Former L&M - Lunenburg MA | Project #: 62002215 | | | |
| Site | SSOW#: | | | |

**Analysis Requested**

Preservation Codes:
A - HCL
D - HNO3

Other:

620-22908 Chain of Custody

| Sample Identification | Sample Date | Sample Time | Sample Type (C=Comp, G=grab) | Matrix (W=water S=solid, O=waste/oil, BT=Tissue, A=Air) | Field Filtered Sample (Yes or No) | Perform MS/MSD (Yes or No) | MAVPH2.1 - MADEP Volatile Petroleum Hydrocarbons (G | EPH_MS, MAEPH2.1 | 6010MCP, 7470MCP | | | | | | | | Total Number of containers | Special Instructions/Note: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservation Code: | | | | | | | A | A | D | | | | | | | | | |
| 1 GW-MW108-121024 | 12/10/24 | 1210 | G | Water | X | X | X | X | X | | | | | | | | 18 | MS/MSD |
| 2 GW-MW104-121024 | 12/10/24 | 1505 | G | Water | X | | X | X | X | | | | | | | | 6 | |
| 3 GW-MW107-121024 | 12/10/24 | 1550 | G | water | X | | X | X | X | | | | | | | | 6 | |
| 4 GW-MW106-121024 | 12/10/24 | 1410 | G | water | X | | X | X | X | | | | | | | | 6 | |
| 5 GW-MW109-121024 | 12/10/24 | 1230 | G | water | X | | X | X | X | | | | | | | | 6 | |
| 6 GW-MW102R-121024 | 12/10/24 | 1035 | G | water | X | | X | X | X | | | | | | | | 6 | |
| 7 GW-MW105-121124 | 12/11/24 | 0830 | G | water | X | | X | X | X | | | | | | | | 6 | |
| 8 GW-MW101-121124 | 12/11/24 | 0820 | G | water | X | | X | X | X | | | | | | | | 6 | |
| 9 FD-01 | 12/10/24 | 0800 | G | water | X | | X | X | X | | | | | | | | 6 | |
| 10 Trip Blank | | | | | | | X | | | | | | | | | | | |

**Possible Hazard Identification**
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

**Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)**
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested I, II, III, IV, Other (specify): Equis EDD

Special Instructions/QC Requirements

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

| | Relinquished by | Date/Time | Company | Received by | Date/Time | Company |
|---|---|---|---|---|---|---|
| 1 | | 12/11/24 13:00 | Nobis | | 12/12/24 14:02 | GRI |
| 2 | | 12/12/24 17:14 | CRI | | 12/12/24 17:14 | CRI |
| 3 | Relinquished by | Date/Time | Company | Received by | Date/Time | Company |

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 2.6 +0.8 2.8 / 3.6 +0.2 3.8 / 4.6 +0.2 4.8 #6

Ver: 10/10/2024

# Login Sample Receipt Checklist

Client: Nobis Engineering, Inc.

Job Number: 620-22908-1

**Login Number: 22908**
**List Number: 1**
**Creator: Makhoul, Elie**

**List Source: Eurofins Rhode Island**

| Question | Answer | Comment |
|---|---|---|
| Radioactivity wasn't checked or is </= background as measured by a survey meter. | N/A | |
| The cooler's custody seal, if present, is intact. | N/A | |
| Sample custody seals, if present, are intact. | N/A | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| Is the Field Sampler's name present on COC? | True | |
| There are no discrepancies between the containers received and the COC. | True | |
| Samples are received within Holding Time (excluding tests with immediate HTs) | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| Sample Preservation Verified. | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| Containers requiring zero headspace have no headspace or bubble is <6mm (1/4"). | True | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |
| Residual Chlorine Checked. | N/A | |

# APPENDIX E

230165 Revised

*The Commonwealth of Massachusetts*
*Department of Fire Services – Office of the State Fire Marshal*

# RECEIPT OF DISPOSAL OF UNDERGROUND STEEL STORAGE TANK FORMERLY CONTAINING FLAMMABLE LIQUIDS

**NAME AND ADDRESS OF APPROVED TANK YARD:** Allied Recycling Center, Inc.
1901 Main Street
Walpole, MA 02081

**Approved Tank Yard Number:** 0015

**Tank Yard Ledger Number (527 CMR 1.00:66.21.7.8.2):** 2023 0067

I certify under penalty of law that I have personally examined the underground steel storage tank delivered to this "approved tank yard" by (firm, corporation or partnership) Strategic Environmental and accepted same in conformance with 527 CMR 1.00:66.21.7.7 Provisions for Approving Underground Steel Storage Tank Dismantling Yards. A valid permit was issued by the head of the LOCAL fire department FDID# 27162 to transport this tank to this yard.

Name and official title of approved tank yard owner or owners authorized representative:

Signature: Molly E. Title: Scale Date signed: 5/26/2023

| TANK DATA: | TANK REMOVED FROM: |
|---|---|
| Gallons: 10,000 | No. and Street: 925 Massachusetts Ave |
| Previous contents: Gasoline | City and Town: Lunenburg, MA |
| Diameter: | Fire Dept. Permit #: 27162 |
| Length: | Notes: |
| Date Received: 5/26/2023 | |
| Serial # (if available): | |
| Tank I.D. # (Form FP-290): | |

**EACH TANK MUST HAVE A RECEIPT OF DISPOSAL**

**Owner/Operator is responsible for notifying the Department of Environmental Protection:**

Department of Environmental Protection
Bureau of Waste Prevention - UST Program
Boston, MA 02112

**This signed receipt of disposal must be returned to the head of the local fire department.**

Form FP-291 (Rev. 1.2018)

23-0163

*The Commonwealth of Massachusetts*
*Department of Fire Services – Office of the State Fire Marshal*

# RECEIPT OF DISPOSAL OF UNDERGROUND STEEL STORAGE TANK FORMERLY CONTAINING FLAMMABLE LIQUIDS

**NAME AND ADDRESS OF APPROVED TANK YARD:** Allied Recycling Center, Inc.
1901 Main Street
Walpole, MA 02081

**Approved Tank Yard Number:** 0015

**Tank Yard Ledger Number (527 CMR 1.00:66.21.7.8.2):** 2023 0068

**I certify under penalty of law that I have personally examined the underground steel storage tank delivered to this "approved tank yard" by (firm, corporation or partnership)** Strategic Environmental **and accepted same in conformance with 527 CMR 1.00:66.21.7.7 Provisions for Approving Underground Steel Storage Tank Dismantling Yards. A valid permit was issued by the head of the LOCAL fire department FDID#** 27162 **to transport this tank to this yard.**

**Name and official title of approved tank yard owner or owners authorized representative:**

**Signature :** [signature] **Title :** Scale **Date signed:** 5/26/2023

| **TANK DATA:** | **TANK REMOVED FROM:** |
|---|---|
| **Gallons:** 10,000 | **No. and Street:** 925 Massachusetts Ave |
| **Previous contents:** Gasoline | **City and Town:** Lunenburg, MA |
| **Diameter:** | **Fire Dept. Permit #:** 27162 |
| **Length:** | **Notes:** |
| **Date Received:** 5/26/2023 | |
| **Serial # (If available):** | |
| **Tank I.D. # (Form FP-290):** | |

**EACH TANK MUST HAVE A RECEIPT OF DISPOSAL**

**Owner/Operator is responsible for notifying the Department of Environmental Protection:**

Department of Environmental Protection
Bureau of Waste Prevention - UST Program
Boston, MA 02112

**This signed receipt of disposal must be returned to the head of the local fire department.**

23-0166

*The Commonwealth of Massachusetts*
*Department of Fire Services – Office of the State Fire Marshal*

# RECEIPT OF DISPOSAL OF UNDERGROUND STEEL STORAGE TANK FORMERLY CONTAINING FLAMMABLE LIQUIDS

**NAME AND ADDRESS OF APPROVED TANK YARD:** Allied Recycling Center, Inc.
1901 Main Street
Walpole, MA 02081

**Approved Tank Yard Number:** 0015

**Tank Yard Ledger Number (527 CMR 1.00:66.21.7.8.2):** 20230069

I certify under penalty of law that I have personally examined the underground steel storage tank delivered to this "approved tank yard" by (firm, corporation or partnership) Strategic Environmental and accepted same in conformance with 527 CMR 1.00:66.21.7.7 Provisions for Approving Underground Steel Storage Tank Dismantling Yards. A valid permit was issued by the head of the LOCAL fire department FDID# 27162 to transport this tank to this yard.

Name and official title of approved tank yard owner or owners authorized representative:

Signature : Molly C. Title : Scale Date signed: 5/26/2023

| TANK DATA: | TANK REMOVED FROM: |
|---|---|
| Gallons: 10,000 | No. and Street: 925 Massachusetts Ave |
| Previous contents: Gasoline | City and Town: Lunenburg, MA |
| Diameter: | Fire Dept. Permit #: 27162 |
| Length: | Notes: |
| Date Received: | |
| Serial # (if available): | |
| Tank I.D. # (Form FP-290): | |

**EACH TANK MUST HAVE A RECEIPT OF DISPOSAL**

**Owner/Operator is responsible for notifying the Department of Environmental Protection:**

Department of Environmental Protection
Bureau of Waste Prevention - UST Program
Boston, MA 02112

**This signed receipt of disposal must be returned to the head of the local fire department.**

*The Commonwealth of Massachusetts*
*Department of Fire Services – Office of the State Fire Marshal*

# RECEIPT OF DISPOSAL OF UNDERGROUND STEEL STORAGE TANK FORMERLY CONTAINING FLAMMABLE LIQUIDS

**NAME AND ADDRESS OF APPROVED TANK YARD:** Allied Recycling Center, Inc.
1901 Main Street
Walpole, MA 02081

**Approved Tank Yard Number:** 0015

**Tank Yard Ledger Number (527 CMR 1.00:66.21.7.8.2):** 2023 0072

I certify under penalty of law that I have personally examined the underground steel storage tank delivered to this "approved tank yard" by (firm, corporation or partnership) Strategic Env. and accepted same in conformance with 527 CMR 1.00:66.21.7.7 Provisions for Approving Underground Steel Storage Tank Dismantling Yards. A valid permit was issued by the head of the LOCAL fire department FDID# 27162 to transport this tank to this yard.

Name and official title of approved tank yard owner or owners authorized representative:

Signature : [signature] Title : Scale Date signed: 5/31/2023

| TANK DATA: | TANK REMOVED FROM: |
|---|---|
| Gallons: 500 | No. and Street: 935 Mass. Ave. |
| Previous contents: Heating oil | City and Town: Lunenburg, MA |
| Diameter: 48" | Fire Dept. Permit #: 27162 |
| Length: 5' 5" | Notes: |
| Date Received: 5/31/2023 | |
| Serial # (if available): | |
| Tank I.D. # (Form FP-290): | |

**EACH TANK MUST HAVE A RECEIPT OF DISPOSAL**

**Owner/Operator is responsible for notifying the Department of Environmental Protection:**

Department of Environmental Protection
Bureau of Waste Prevention - UST Program
Boston, MA 02112

**This signed receipt of disposal must be returned to the head of the local fire department.**

Make application to local Fire Department.
Fire Department retains original application and issues duplicate as Permit.

# Commonwealth of Massachusetts

## Department of Fire Services - Office of the State Fire Marshal

## APPLICATION and PERMIT

Fee: 0.00

for storage tank removal and transportation to approved tank disposal yard in accordance with the provisions of M.G.L. Chapter 148, Section 38A, 527 CMR 9.00, application is hereby made by:

### Tank Owner

Tank Owner Name (please print) TOWN OF LUNENBURG X _____ (Signature (if applying for permit))

Address 925 MASSACHUSETTS AVE (Street) LUNENBURG (City) MA (State) 01462 (Zip)

### Removal Contractor

Company Name Strategic Environmental Services (Print)

Address 352 Putnam Hill Rd, Sutton, MA 01590 (Print)

Signature (if applying for permit)

☐ IFCI* Certified Other _____

### Containment Assessment

Co. or Individual Nobis Corp (Print)

Address 18 Chenell Dr, Concord, NH 03301 (Print)

Signature (if applying for permit)

☐ IFCI* Certified ☐ LSP # _____ Other _____

### Tank Information

Tank Location 925 MASSACHUSETTS AVE (Street Address) LUNENBURG (City)

Tank Capacity (gallons) 500 Substance Last Stored Heating Oil

Tank Dimensions (diameter x length) 48" x 5'5"

Remarks: Rough Dimensions. Tanks assumed to be steel.

### Disposal Information

Firm transporting waste Strategic Environmental Services State Lic. # MAC300102423

Hazardous waste manifest # _____ E.P.A. # _____

Approved tank disposal yard Allied Recylcing Center Tank yard # 015

Type of inert gas Dry Ice Tank yard address 1901 Main St, Walpole, MA

### Approvals

City or Town Lunenburg FDID# 27162 Permit# 23LUN-5.UR-PM

Date of issue 05/30/2023 Date of expiration _____

Dig safe approval number: 20231905183 Dig Safe Toll Free Tel. Number - 800-322-4844

Signature / Title of Officer granting permit

After removal(s) ("Consumptive Use" fuel oil tanks exempted) send Form FP-290R signed by Local Fire Dept. to UST Regulatory Compliance Unit, Department of Fire Services, P.O. Box 1025, State Road, Stow, MA 01775.

8478

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: MAD981203177
2. Page 1 of: 1
3. Emergency Response Phone: 800-535-5053
4. Waste Tracking Number: 23-0165-01

5. Generator's Name and Mailing Address
Former L+M Service Center
925 Massachusetts Ave.
Lunenburg Mass: 01462
Generator's Phone:

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: Strategic Environmental Service Inc.
U.S. EPA ID Number: MAG300102423

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
NRC Environmental of Maine Inc.
106 main St. South Portland ME. 04106
Facility's Phone: 207-799-0850
U.S. EPA ID Number: MED019051069

| | 9. Waste Shipping Name and Description | 10. Containers No. | 10. Containers Type | 11. Total Quantity | 12. Unit Wt./Vol. | |
|---|---|---|---|---|---|---|
| 1. | Non-RCRA None-D.O.T Regulated material | 001 | CM | 15 | T | |
| 2. | | | | | | |
| 3. | | | | | | |
| 4. | | | | | | |

13. Special Handling Instructions and Additional Information
Roll off truck #215
dumpster # BX30-0389
K23986382SAM

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Caitlin Odell
Signature: Caitlin Odell
Month: 11 Day: 14 Year: 23

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Kevin Pieper
Signature: Kevin Pieper
Month: 11 Day: 14 Year: 23

Transporter 2 Printed/Typed Name
Signature
Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name
Signature
Month: 11 Day: 14 Year: 23

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

169-BLC-O 5 11977 (Rev. 9/09)

DESIGNATED FACILITY TO GENERATOR



18102183

90796187 23-0165-NOR-01 3733149

**NON-HAZARDOUS WASTE MANIFEST**

| 1. Generator ID Number | 2. Page 1 of | 3. Emergency Response Phone | 4. Waste Tracking Number |
|---|---|---|---|
| MAD981203177 | 1 | 800-535-5053 | 23-0165-NOR-01 |

**GENERATOR**

5. Generator's Name and Mailing Address
Former L&M Service Center
925 Massachusetts Avenue
Lunenburg MA 01462
Att: Heather Lemieux
Generator's Phone: 978 582-4130
Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: Strategic Environmental Services, Inc.
U.S. EPA ID Number: MAC300102423

7. Transporter 2 Company Name: Tradebe Transportation LLC
U.S. EPA ID Number: CTD021816829

8. Designated Facility Name and Site Address
Norlite, LLC
628 South Saratoga Street
Cohoes NY 12047
Facility's Phone: 518 235 0030
U.S. EPA ID Number: NYD080469935

| | 9. Waste Shipping Name and Description | 10. Containers No. | 10. Containers Type | 11. Total Quantity | 12. Unit Wt./Vol. | |
|---|---|---|---|---|---|---|
| X | 1UN1203, Gasoline 3, PGII | 002 | TP | x400 | G | |
| | 2. | | | | | |
| | 3. | | | | | |
| | 4. | | | | | |

13. Special Handling Instructions and Additional Information
1)(L) (Gasoline, Water for Reclamation); RCRA exempt per 40 CFR § 261.2(c)(2)(ii) OSCP Fuel exemption; Tradebe Approval: 1000252749 // (_____x55) ERG#128 PM: T. Santa Fe, SES# 23-0165

ER Contact: InfoTrac, Inc.CN#110775 800-535-5053Job# 23-0165

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: x Chris Ruhl - Facilities
Signature: x
Month 08 Day 04 Year 23

**INT'L**

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

**TRANSPORTER**

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Francis P Amero SR
Signature:
Month 08 Day 04 Year 23

Transporter 2 Printed/Typed Name: Michael Bronson
Signature:
Month 8 Day 10 Year 23

**DESIGNATED FACILITY**

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Jennifer Bushey
Signature:
Month 08 Day 14 Year 23

169-BLC-O 5 11977 (Rev. 9/09)

DESIGNATED FACILITY TO GENERATOR

Tradebe Environmental Services, LLC

1433 E 83rd Ave, Suite 200,
Merrillville, IN 46410
www.tradebeusa.com

# CERTIFICATE OF WASTE MANAGEMENT

To whom this may concern

This certificate is to verify that the waste described below, is handled in accordance with local, state, and federal regulations.

Name: Former L&M Service Center

Address: 925 Massachusetts Avenue Lunenburg , MA 01462

Sales Order: 3733149

| **Facility** |
|---|
| TTR Northeast Cohoes<br>628 S. Saratoga Street<br>Cohoes , NY 12047<br>EPA ID: NYD080469935 |

| Profile | Manifest / Page / Line | Quantity | Hcode |
|---|---|---|---|
| 1000252749 | 23-0165-NOR-01 00001/001 | 2.000 TP | H040 |

Robert O´Brien
Executive Vice President of Operations

NORLITE, LLC

Date:08/14/2023

On behalf of its subsidiary:TTR Northeast, LLC

RESPONSIBLE SM
RECYCLING
A commitment to our generators
our employees and our
community.

007378403GBF

90792694 016608463FLE 3710423

Form Approved. OMB No. 2050-0039

| UNIFORM HAZARDOUS WASTE MANIFEST | 1. Generator ID Number | 2. Page 1 of | 3. Emergency Response Phone | 4. Manifest Tracking Number |
|---|---|---|---|---|
| | MAD981203177 | 1 | 800-535-5053 | 016608463 FLE |

**GENERATOR**

5. Generator's Name and Mailing Address
Former L&M Service Center
925 Massachusetts Avenue
Lunenburg MA 01462
Att: Heather Lemieux
Generator's Phone: 978 582-4130

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name
Strategic Environmental Services, Inc.
U.S. EPA ID Number: MAC300102423

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
Tradebe Treatment and Recycling Northeast
410 Shattuck Way
Newington NH 03801
Facility's Phone: 800 345 4525
U.S. EPA ID Number: NHD980521843

| 9a. HM | 9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any)) | 10. Containers No. | 10. Containers Type | 11. Total Quantity | 12. Unit Wt./Vol. | 13. Waste Codes |
|---|---|---|---|---|---|---|
| | 1. Non-RCRA, Non-DOT Regulated Material (Oily Solids) | 003 | DM | x300 | P | MA01 |
| | 2. | | | | | |
| | 3. | | | | | |
| | 4. | | | | | |

14. Special Handling Instructions and Additional Information
1)(S) Petroleum Impacted Absorbents, Debris// Tradebe Approval: 1000202805//
SO# 3710423 (1x55) PM T. Santa Fe
23-0165
Emergency Contact: InfoTrac, Inc.CN#110775 800-535-5053

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: Heather Lemieux (Heather Lemieux) | Signature: Heather Lemieux | Month 7 | Day 26 | Year 23

**INT'L**

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

**TRANSPORTER**

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Francis P Amero Sr | Signature: Francis P Amero Sr | Month 7 | Day 27 | Year 23

Transporter 2 Printed/Typed Name | Signature | Month | Day | Year

**DESIGNATED FACILITY**

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator) U.S. EPA ID Number

Facility's Phone:

18c. Signature of Alternate Facility (or Generator) Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

| 1. | 2. | 3. | 4. |
|---|---|---|---|
| ~~H061~~ H141 | | | |

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name: Carol MacDonald | Signature: Carol MacDonald | Month 7 | Day 28 | Year 23

EPA Form 8700-22 (Rev. 12-17) Previous editions are obsolete.

DESIGNATED FACILITY TO EPA's e-MANIFEST SYSTEM

Tradebe Environmental Services, LLC

1433 E 83rd Ave, Suite 200,
Merrillville, IN 46410
www.tradebeusa.com

# CERTIFICATE OF WASTE MANAGEMENT

To whom this may concern

This certificate is to verify that the waste described below, is handled in accordance with local, state, and federal regulations.

Name: Former L&M Service Center

Address: 925 Massachusetts Avenue Lunenburg , MA 01462

Sales Order: 3710423

| **Facility** |
|---|
| TTR Northeast Newington<br>410 Shattuck Way<br>Newington , NH 03801<br>EPA ID: NHD980521843 |

| Profile | Manifest / Page / Line | Quantity | Hcode |
|---|---|---|---|
| 1000202805 | 016608463FLE 00001/001 | 2.000 DM | N/A |

Robert O´Brien
Executive Vice President of Operations

TRADEBE T&R OF NEWINGTON, LLC

Date:07/28/2023

On behalf of its subsidiary:TTR Northeast, LLC

RESPONSIBLE SM
RECYCLING
A commitment to our generators
our employees and our
community.

90794739 020790255JJK 3719983

# 3719983

Form Approved. OMB No. 2050-0039

| UNIFORM HAZARDOUS WASTE MANIFEST | 1. Generator ID Number | 2. Page 1 of | 3. Emergency Response Phone | 4. Manifest Tracking Number |
|---|---|---|---|---|
| | MAD981203177 | 1 | 800-535-5053 | 020790255 JJK |

**GENERATOR**

5. Generator's Name and Mailing Address — Att: Heather Lemieux
Former L&M Service Center
925 Massachusetts Avenue
Lunenburg MA 01462
Generator's Phone: 978 582-4130

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: Strategic Environmental Services, Inc. — U.S. EPA ID Number: MAC300102423

7. Transporter 2 Company Name: Tradebe Transportation LLC — U.S. EPA ID Number: CTD021816889

8. Designated Facility Name and Site Address — U.S. EPA ID Number
Tradebe Treatment and Recycling of Bridgeport, LLC
50 Cross Street
Bridgeport CT 03310
Facility's Phone: 800 404 4408 — CTD002593887

| 9a. HM | 9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any)) | 10. Containers No. | 10. Containers Type | 11. Total Quantity | 12. Unit Wt./Vol. | 13. Waste Codes | | |
|---|---|---|---|---|---|---|---|---|
| X | 1. NA1993, Combustible liquid, n.o.s. (Fuel oil, water) COMB, PGIII | 001 | TP | X125 | G | CR02 | MA98 | |
| | 2. | | | | | | | |
| | 3. | | | | | | | |
| | 4. | | | | | | | |

14. Special Handling Instructions and Additional Information
1)(L) Virgin Fuel Oil For Reclamation// RCRA exempt per 40 CFR § 261.4(b)(4)// Tradebe Approval: 1000392172// SO#_____ ERG#128 PM: T. Santa Fe SES# 23-0165

ER Contact: InfoTrac, Inc.CN#110775 800-535-5053

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable International and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: x Chris Ruth - Facilities — Signature: x — Month 08 Day 04 Year 23

**INT'L**

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

**TRANSPORTER**

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Francis P Amero Sr — Signature: Francis P Amero Sr — Month 08 Day 04 Year 23

Transporter 2 Printed/Typed Name: Ashley Andrew — Signature: — Month 8 Day 5 Year 23

**DESIGNATED FACILITY**

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

18c. Signature of Alternate Facility (or Generator) — Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

| 1. | 2. | 3. | 4. |
|---|---|---|---|
| H141 | | | |

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name: Annette Garcia — Signature: Annette Garcia — Month 08 Day 07 Year 23

Tradebe Environmental Services, LLC

1433 E 83rd Ave, Suite 200,
Merrillville, IN 46410
www.tradebeusa.com

# CERTIFICATE OF WASTE MANAGEMENT

To whom this may concern

This certificate is to verify that the waste described below, is handled in accordance with local, state, and federal regulations.

Name: Former L&M Service Center

Address: 925 Massachusetts Avenue Lunenburg , MA 01462

Sales Order: 3719983

| **Facility** |
|---|
| TTR Northeast Bridgeport<br>50 Cross Street<br>Bridgeport , CT 06610<br>EPA ID: CTD002593887 |

| Profile | Manifest / Page / Line | Quantity | Hcode |
|---|---|---|---|
| 1000392172 | 020790255JJK 00001/001 | 1.000 TP | N/A |

Robert O´Brien
Executive Vice President of Operations

TRADEBE T&R OF BRIDGEPORT, LLC

Date:08/07/2023

On behalf of its subsidiary:TTR Northeast, LLC

RESPONSIBLE SM
RECYCLING
A commitment to our generators
our employees and our
community.

Please print or type.

Form Approved. OMB No. 2050-0039

**UNIFORM HAZARDOUS WASTE MANIFEST**

1. Generator ID Number: MAD981203177
2. Page 1 of: 2
3. Emergency Response Phone: 508 757-7782
4. Manifest Tracking Number: 024331073 JJK

5. Generator's Name and Mailing Address: Former L&M Service Center, 925 Massachusetts Avenue, Lunenburg MA 01462 — Att: Heather Lemieux
Generator's Phone: 978 582-4130
Generator's Site Address (if different than mailing address):

6. Transporter 1 Company Name: Strategic Environmental Services, Inc.
U.S. EPA ID Number: MAC300102423

7. Transporter 2 Company Name:
U.S. EPA ID Number:

8. Designated Facility Name and Site Address: NRC Environmental of Maine, Inc., 106 Main Street, South Portland ME 04106
Facility's Phone: 207 799-0850
U.S. EPA ID Number: MED019051069

| 9a. HM | 9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any)) | 10. Containers No. | 10. Containers Type | 11. Total Quantity | 12. Unit Wt./Vol. | 13. Waste Codes | | |
|---|---|---|---|---|---|---|---|---|
| | 1 Non-RCRA, Non-DOT State Regulated Oily Material, MA01 | 007 | DM | ~~13830~~ P | | MA01 | | |
| | 2 State Regulated Oily Material For Recycle | 001 | DM | XX55 | G | MA88 | | |
| | 3 Non-RCRA, Non-DOT State Regulated Hydraulic Oil For Recycle | 001 | DM | XX40 | G | MA88 | | |
| | 4 Non-RCRA, Non-DOT State Regulated Oily Debris, MA01 | 003 | DM | X450 | P | MA01 | | |

14. Special Handling Instructions and Additional Information
1)(SI) OWS Tank Bottoms, congealed fuel EMI Approval J23982858SPM, (7 x 55) 2)(L) USE EMI K23986385SPM / Motor Oil Passes Dexsil 1000 For Recycle / (1x55 DM) 3)(L) Passes Dexsil 1000, Non-PCB (1x55 DM) USE Maine Approval K23990847SPM, FORMID-825299-1 4)(S) Hydraulic oil impaced pads, debris, poly; US Ecology L23994033SPM ; Form ID 830320 (3x55) PM: T SantaFe SES 23-0165
ER Contact: Strategic Environmental Services, Inc. PH 508-757-7782

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: [illegible] Signature: Chris Ruth - Sec Director Month 12 Day 28 Year 23

**INT'L**

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

**TRANSPORTER**

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Francis P Amero Sr Signature: Francis P Amero Sr. Month 12 Day 28 Year 23

Transporter 2 Printed/Typed Name: Signature: Month Day Year

**DESIGNATED FACILITY**

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:

18b. Alternate Facility (or Generator) U.S. EPA ID Number
Facility's Phone:

18c. Signature of Alternate Facility (or Generator) Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

| 1. | 2. | 3. | 4. |
|---|---|---|---|
| H-141 | H-141 | H-141 | H-141 |

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a
Printed/Typed Name: DAVID Hart Signature: [signature] Month 12 Day 28 Year 23

EPA Form 8700-22 (Rev. 12-17) Previous editions are obsolete.

DESIGNATED FACILITY TO EPA's e-MANIFEST SYSTEM

Please print or type.

Form Approved. OMB No. 2050-0039

| UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet) | 21. Generator ID Number | 22. Page | 23. Manifest Tracking Number |
|---|---|---|---|
| | MAD981203177 | 2 of 2 | 024331073JJK |

24. Generator's Name

**Former L&M Service Center**

25. Transporter _____ Company Name — U.S. EPA ID Number

26. Transporter _____ Company Name — U.S. EPA ID Number

| 27a. HM | 27b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any)) | 28. Containers No. | 28. Containers Type | 29. Total Quantity | 30. Unit Wt./Vol. | 31. Waste Codes | | |
|---|---|---|---|---|---|---|---|---|
| | 6. Non-RCRA, Non-DOT State Regulated Soil, MA99 | 001 | DM | X300 | P | MA99 | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

32. Special Handling Instructions and Additional Information

5)(S) Hydraulic Oil Impacted Soil Passes One Drop Rule, MA99; US Ecology ME: L23994034SPM Form ID 830373 (1x55)

GENERATOR

TRANSPORTER

33. Transporter _____ Acknowledgment of Receipt of Materials

Printed/Typed Name | Signature | Month | Day | Year

34. Transporter _____ Acknowledgment of Receipt of Materials

Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

H-141

EPA Form 8700-22A (Rev. 12-17) Previous editions are obsolete.

DESIGNATED FACILITY TO EPA's e-MANIFEST SYSTEM

# Ondrick Materials & Recycling, LLC

22 Industry Road, Chicopee, MA 01020

**Ticket** 394879

7/28/23 2:06 PM

| | | |
|---|---|---|
| **Truck ID** | STRATEGIC214 | STRATEGIC214 |
| **Customer** | 2101 | STRATEGIC ENVIRONMENTAL SE |
| **Order** | 23-07-M-12337M | Former L&M Service Station, 925 M |
| **P.O.** | 23-0165 | |
| **Product** | GAS/OIL/PETROLEUM | |
| **Site Addr.** | Former L&M Service Station<br>925 Massachusetts Avenue<br>Lunenburg, MA 01642 | |

**Driver:** _____

**Customer:** _____

**Arrival Time:** _____ **Depart Time:** _____

| | | |
|---|---|---|
| **Gross** | 99520 Lb | |
| **Tare** | 35000 Lb | * |
| **Net** | 32.26 Ton | * |

| | Today | To Date |
|---|---|---|
| **Loads** | 4 | 4 |
| **Qty** | 117.69 | 117.69 |

NOTICE TO PURCHASERS: The Purchaser, through their officer, principal, employee or agent, hereby acknowledges that in consideration of the purchase and loading of product from Ondrick Materials & Construction. LLC. hereafter referred to as Seller, the Purchaser agrees that SELLER'S LIABBILITY, IN TORT, IN NEGLIGENCE OR OTHERWISE SHALL BE LIMITED TO THE AMOUNT OF THE PURCHASE PRICE OF THE SELLER'S PRODUCT AND UNDER NO CIRCUMSTANCE SHALL SELLER BE LIABLE FOR SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES arising out of the fact that the vehicle loaded by the seller for the purchaser was loaded in excess of its permitted and certified capacity. Purchaser, through their officer, principal, employee or agent, further agrees in consideration of the purchase and loading of Seller's product, TO RELEASE, REMISE AND FOREVER DISCHARGE THE SELLER, ITS REPRESENTATIVES, SUCCESSORS AND ASSIGNS OF AND FROM ANY AND ALL DEBTS, DEMANDS. ACTIONS, CAUSES OF ACTION, SUITS, PRECEEDINGS, AGREEMENTS, CONTRACTS, JUDGEMENTS, DAMAGES, EXECUTIONS, CLAIMS AND LIABILITIES WHATSOEVER OF EVERY NATURE AND NAME, WHETHER KNOWN OR UNKNOWN, WHETHER IN LAW OR IN EQUITY, WHICH THE PURCHASER HAS OR MAY HAVE FOR ANY REASON, MATTER OR CAUSE, AND PURCHASER FURTHER INDEMNIFIES AND HOLDS SELLER HARMLESS FROM ANY LOSS, COST, EXPENSE, DAMAGE, OR ATTORNEY'S FEES ARISING OUT OF THE SELLER'S LOADING OF ANY VEHICLE FOR THE PURCHASER IN EXCESS OF ITS PERMITTED AND CERTIFIED CAPACITY

**CAUTION: HOT MATERIAL (275°F-325°F) Avoid contact with skin & eyes - Thermal Burns could result. Fumes count cause nausea or irritation. Seek proper medical assistance in all emergencies. Consult Material Safety Data Sheet for more information. KNOW & RESPECT THE PRODUCTS YOU HANDLE.**

# Ondrick Materials & Recycling, LLC

22 Industry Road, Chicopee, MA 01020

**Ticket** 394841
7/28/23 9:20 AM

| | | |
|---|---|---|
| **Truck ID** | STRATEGIC214 | STRATEGIC214 |
| **Customer** | 2101 | STRATEGIC ENVIRONMENTAL SE |
| **Order** | 23-07-M-12337M | Former L&M Service Station, 925 M |
| **P.O.** | 23-0165 | |
| **Product** | GAS/OIL/PETROLEUM | |
| **Site Addr.** | Former L&M Service Station<br>925 Massachusetts Avenue<br>Lunenburg, MA 01642 | |

**Driver:** _____

**Customer:** _____

**Arrival Time:** _____ **Depart Time:** _____

| | | |
|---|---|---|
| **Gross** | 85300 Lb | |
| **Tare** | 35000 Lb | * |
| **Net** | 25.15 Ton | |

| | Today | To Date |
|---|---|---|
| **Loads** | 2 | 2 |
| **Qty** | 59.74 | 59.74 |

NOTICE TO PURCHASERS: The Purchaser, through their officer, principal, employee or agent, hereby acknowledges that in consideration of the purchase and loading of product from Ondrick Materials & Construction, LLC, hereafter referred to as Seller, the Purchaser agrees that SELLER'S LIABBILITY, IN TORT, IN NEGLIGENCE OR OTHERWISE SHALL BE LIMITED TO THE AMOUNT OF THE PURCHASE PRICE OF THE SELLER'S PRODUCT AND UNDER NO CIRCUMSTANCE SHALL SELLER BE LIABLE FOR SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES arising out of the fact that the vehicle loaded by the seller for the purchaser was loaded in excess of its permitted and certified capacity. Purchaser, through their officer, principal, employee or agent, further agrees in consideration of the purchase and loading of Seller's product, TO RELEASE, REMISE AND FOREVER DISCHARGE THE SELLER, ITS REPRESENTATIVES, SUCCESSORS AND ASSIGNS OF AND FROM ANY AND ALL DEBTS, DEMANDS, ACTIONS, CAUSES OF ACTION, SUITS, PRECEEDINGS, AGREEMENTS, CONTRACTS, JUDGEMENTS, DAMAGES, EXECUTIONS, CLAIMS AND LIABILITIES WHATSOEVER OF EVERY NATURE AND NAME, WHETHER KNOWN OR UNKNOWN, WHETHER IN LAW OR IN EQUITY, WHICH THE PURCHASER HAS OR MAY HAVE FOR ANY REASON, MATTER OR CAUSE, AND PURCHASER FURTHER INDEMNIFIES AND HOLDS SELLER HARMLESS FROM ANY LOSS, COST, EXPENSE, DAMAGE, OR ATTORNEY'S FEES ARISING OUT OF THE SELLER'S LOADING OF ANY VEHICLE FOR THE PURCHASER IN EXCESS OF ITS PERMITTED AND CERTIFIED CAPACITY

**CAUTION: HOT MATERIAL (275°F-325°F) Avoid contact with skin & eyes - Thermal Burns could result. Fumes count cause nausea or irritation. Seek proper medical assistance in all emergencies. Consult Material Safety Data Sheet for more information. KNOW & RESPECT THE PRODUCTS YOU HANDLE.**

**Massachusetts Department of Environmental Protection**
*Bureau of Waste Site Cleanup*

**BILL OF LADING Transport Log Sheet**

Page 1 OF _____

Release Tracking Number: 2 - 22322

**I. LOAD INFORMATION:**

**Load 1:**
Signature of Transporter Representative: Joseph Chu
Date of Shipment: 7/28/23
Time of Shipment: ☑ AM ☐ PM
Truck/Tractor Registration: 214/T-05
Trailer Registration (if any):
Receiving Facility/Temporary Storage Representative: Onsite CG
Date of Receipt: 7-28-23
Time of Receipt: 9:20 ☑ AM ☐ PM
Load Size (cu. yds./tons): 25.15

**Load 2:**
Signature of Transporter Representative: Joseph Chu
Date of Shipment: 7/28/23
Time of Shipment: ☑ AM ☐ PM
Truck/Tractor Registration: 214/T-05
Trailer Registration (if any):
Receiving Facility/Temporary Storage Representative: Onsite CG
Date of Receipt: 7-28-23
Time of Receipt: 2:00 ☐ AM ☑ PM
Load Size (cu. yds./tons): 3226

**Load 3:**
Signature of Transporter Representative:
Date of Shipment:
Time of Shipment: ☐ AM ☐ PM
Truck/Tractor Registration:
Trailer Registration (if any):
Receiving Facility/Temporary Storage Representative:
Date of Receipt:
Time of Receipt: ☐ AM ☐ PM
Load Size (cu. yds./tons):

**Load 4:**
Signature of Transporter Representative:
Date of Shipment:
Time of Shipment: ☐ AM ☐ PM
Truck/Tractor Registration:
Trailer Registration (if any):
Receiving Facility/Temporary Storage Representative:
Date of Receipt:
Time of Receipt: ☐ AM ☐ PM
Load Size (cu. yds./tons):

**Load 5:**
Signature of Transporter Representative:
Date of Shipment:
Time of Shipment: ☐ AM ☐ PM
Truck/Tractor Registration:
Trailer Registration (if any):
Receiving Facility/Temporary Storage Representative:
Date of Receipt:
Time of Receipt: ☐ AM ☐ PM
Load Size (cu. yds./tons):

**Load 6:**
Signatiure of Transporter Representative:
Date of Shipment:
Time of Shipment: ☐ AM ☐ PM
Truck/Tractor Registration:
Trailer Registration (if any):
Receiving Facility/Temporary Storage Representative:
Date of Receipt:
Time of Receipt: ☐ AM ☐ PM
Load Size (cu. yds./tons):

**J. LOG SHEET VOLUME INFORMATION:**
Total Volume Recorded This Page (cu. yds./tons)
Total Carried Forward (cu. yds./tons):
Total Carried Forward and This Page (cu. yds./tons):

# Ondrick Materials & Recycling, LLC

22 Industry Road, Chicopee, MA 01020

**Ticket** 394876
7/28/23 1:51 PM

| | | |
|---|---|---|
| **Truck ID** | STRATEGIC212 | STRATEGIC212 |
| **Customer** | 2101 | STRATEGIC ENVIRONMENTAL SE |
| **Order** | 23-07-M-12337M | Former L&M Service Station, 925 M |
| **P.O.** | 23-0165 | |
| **Product** | GAS/OIL/PETROLEUM | |
| **Site Addr.** | Former L&M Service Station<br>925 Massachusetts Avenue<br>Lunenburg, MA 01642 | |

**Driver:** _____

**Customer:** _____

**Arrival Time:** _____ **Depart Time:** _____

| | | |
|---|---|---|
| **Gross** | 81880 Lb | |
| **Tare** | 30500 Lb | * |
| **Net** | 25.69 Ton | * |

| | Today | To Date |
|---|---|---|
| **Loads** | 3 | 3 |
| **Qty** | 85.43 | 85.43 |

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# Ondrick Materials & Recycling, LLC

22 Industry Road, Chicopee, MA 01020

**Ticket** 394840
7/28/23 9:17 AM

| | | |
|---|---|---|
| **Truck ID** | STRATEGIC212 | STRATEGIC212 |
| **Customer** | 2101 | STRATEGIC ENVIRONMENTAL SE |
| **Order** | 23-07-M-12337M | Former L&M Service Station, 925 M |
| **P.O.** | 23-0165 | |
| **Product** | GAS/OIL/PETROLEUM | |
| **Site Addr.** | Former L&M Service Station<br>925 Massachusetts Avenue<br>Lunenburg, MA 01642 | |

**Driver:** _____

**Customer:** _____

**Arrival Time:** _____ **Depart Time:** _____

| | | |
|---|---|---|
| **Gross** | 99680 Lb | |
| **Tare** | 30500 Lb | * |
| **Net** | 34.59 Ton | * |

| | Today | To Date |
|---|---|---|
| **Loads** | 1 | 1 |
| **Qty** | 34.59 | 34.59 |

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**Massachusetts Department of Environmental Protection**
*Bureau of Waste Site Cleanup*

**BILL OF LADING Transport Log Sheet**

Page 1 OF _____

Release Tracking Number: 2 - 22322

**I. LOAD INFORMATION:**

**Load 1:**
Signature of Transporter Representative:
Date of Shipment: 7/28/23
Time of Shipment: ☐ AM ☐ PM
Truck/Tractor Registration: 1901A
Trailer Registration (if any): 92729
Receiving Facility/Temporary Storage Representative: Onyx CG
Date of Receipt: 7-28-23
Time of Receipt: 9:17 ☑ AM ☐ PM
Load Size (cu. yds./tons): 34.59

**Load 2:**
Signature of Transporter Representative:
Date of Shipment: 7/28/23
Time of Shipment: ☐ AM ☐ PM
Truck/Tractor Registration: 1901A
Trailer Registration (if any): 98725
Receiving Facility/Temporary Storage Representative: Onyx CG
Date of Receipt: 7-28-23
Time of Receipt: 1:50 ☐ AM ☑ PM
Load Size (cu. yds./tons): 25.69

**Load 3:**
Signature of Transporter Representative:
Date of Shipment:
Time of Shipment: ☐ AM ☐ PM
Truck/Tractor Registration:
Trailer Registration (if any):
Receiving Facility/Temporary Storage Representative:
Date of Receipt:
Time of Receipt: ☐ AM ☐ PM
Load Size (cu. yds./tons):

**Load 4:**
Signature of Transporter Representative:
Date of Shipment:
Time of Shipment: ☐ AM ☐ PM
Truck/Tractor Registration:
Trailer Registration (if any):
Receiving Facility/Temporary Storage Representative:
Date of Receipt:
Time of Receipt: ☐ AM ☐ PM
Load Size (cu. yds./tons):

**Load 5:**
Signature of Transporter Representative:
Date of Shipment:
Time of Shipment: ☐ AM ☐ PM
Truck/Tractor Registration:
Trailer Registration (if any):
Receiving Facility/Temporary Storage Representative:
Date of Receipt:
Time of Receipt: ☐ AM ☐ PM
Load Size (cu. yds./tons):

**Load 6:**
Signatiure of Transporter Representative:
Date of Shipment:
Time of Shipment: ☐ AM ☐ PM
Truck/Tractor Registration:
Trailer Registration (if any):
Receiving Facility/Temporary Storage Representative:
Date of Receipt:
Time of Receipt: ☐ AM ☐ PM
Load Size (cu. yds./tons):

**J. LOG SHEET VOLUME INFORMATION:**
Total Volume Recorded This Page (cu. yds./tons)
Total Carried Forward (cu. yds./tons):
Total Carried Forward and This Page (cu. yds./tons):