

FOCUSED FEASIBILITY STUDY
HERS Industrial Park, Mukilteo, Washington
Prepared for: Russell Road Industrial Park, LLC

Project No. 140252 • March 10, 2020



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Aspect Consulting, LLC



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Acronyms

Aspect	Aspect Consulting, LLC
ARAR	applicable or relevant and appropriate requirements
BETX	benzene, toluene, ethylbenzene, and xylenes
cPAH	carcinogenic polycyclic aromatic hydrocarbons
CAP	Cleanup Action Plan
COCs	constituents of concern
CSM	conceptual site model
Ecology	Washington Department of Ecology
EDB	ethylene dibromide
EDC	ethylene dichloride
FS	Feasibility Study
GPR	ground penetrating radar
mg/kg	milligrams/kilograms
µg/L	micrograms per liter
MTBE	methyl tert-butyl ether
MTCA	Model Toxics Control Act
NFA	No Further Action
PCB	polychlorinated biphenyls
PCE	tetrachloroethylene
RAOs	Remedial Action Objectives
RI	Remedial Investigation
SVE	soil vapor extraction
TCE	trichloroethylene
TEE	Terrestrial Ecological Evaluation
TPH	total petroleum hydrocarbons
UST	Underground Storage Tank
VCP	Voluntary Cleanup Program
VOC	volatile organic compound

1 Introduction

1.1 Purpose

This Focused Feasibility Study (FFS) has been prepared by Aspect Consulting, LLC (Aspect) on behalf of Russell Road Industrial Park LLC (RRIP). RRIP is conducting investigation and cleanup of the property located at 4403 Russell Road in Mukilteo, Washington (the Property) under the Washington State Department of Ecology (Ecology) Voluntary Cleanup Program (VCP). The site, which consists of where contamination released at the Property has come to be located, includes the Property and portions of adjacent properties (collectively referred to as the Site). It is registered with Ecology as VCP Site No. NW1554.

A Remedial Investigation and Feasibility Study (RI/FS) Report prepared by Aspect (Aspect, 2015) described the nature and extent of contamination at the Site and evaluated potential remedies. In response to Ecology comments on the RI/FS Report (Ecology, 2016), Aspect prepared a Groundwater Classification and Proposed Cleanup Standards Report (Aspect 2018), which proposed Site cleanup standards based on a groundwater potability analysis. In a letter dated June 28, 2018, (Opinion Letter: Ecology, 2018), Ecology provided an opinion that included the following:

- Characterization of the Site is sufficient to establish cleanup standards and select a cleanup action.
- Current groundwater data is needed to confirm the Site's compliance with MTCA.
- Cleanup standards must consider groundwater and a potential drinking water source and the standard point of compliance for groundwater is groundwater throughout the Site.
- The vapor intrusion pathway must be considered during the development of cleanup levels and cleanup actions for the Site.
- Cleanup performed to date does not meet cleanup standards at the Site.
- Wells damaged during previous cleanup actions (injection of oxidants) should be decommissioned and replaced to evaluate groundwater conditions within the concentrated plume area.

Based on the Opinion Letter and subsequent communications with Ecology, Aspect conducted the following work:

- Performing groundwater monitoring at Site wells not used for oxidant injections¹.

¹ A plan for replacing and sampling damaged monitoring wells would be part of the selected remedy.

- Conducting a vapor intrusion assessment.
- Preparing this FFS, which documents the groundwater sampling and vapor intrusion assessment results, provides updated cleanup standards, evaluates potential remedies to achieve Site closure, and selects a preferred cleanup action.

This report is organized as follows:

- **Section 1** summarizes background information about the Site, including Site history, the CSM (geology, hydrogeology, and nature and extent of contamination), and an exposure pathway assessment.
- **Section 2** describes the cleanup requirements, including remedial action objectives (RAOs), applicable or relevant and appropriate requirements (ARARs), cleanup levels and points of compliance.
- **Section 3** provides a focused feasibility study (FFS) including screening of remediation technologies, identifying and evaluating three remedial alternatives, and selecting a preferred remedy.
- **Section 4** provides references used in the preparation of this report.

1.2 Site Description and History

The Property is located at 4403 Russell Road in Mukilteo, Washington (Figure 1-1). The Property includes eight tax parcels, six of which are owned by RRIP, one of which is owned by the Blunt Family LLC (4480 Chennault Beach Road), and one of which are owned by the International Church of the Foursquare Gospel (4424 Chennault Beach Road). Surrounding properties are generally commercial and industrial. Current use of the Property includes real estate offices, a church, and storage. A Site map showing tax parcels, building footprints, and groundwater monitoring well locations is provided on Figure 1-2.

Historical use of the Property is described in the RI/FS Report (Aspect, 2015), and has included the following suspected sources of contamination:

- A 550-gallon heating oil underground storage tank (UST) was located on the south side of building 4493.
- A floor drain in Building 4433 in the area of operations formerly by Exotic Metals Welding was connected to the storm drain system north of the building, and contained oil staining in 1995.
- Former operations of Intermec Corporation and King Machine, which occupied the north end of Building 4403, are suspected of using and releasing tetrachloroethylene (PCE) and trichloroethylene (TCE). In 1995, oily sludge was observed in catch basin #34, located east of Building 4403.
- Absolute Cleaning Services used PCE and kerosene, which were stored or used in Buildings 4433 and 4403.

The primary source of volatile organic compound (VOC) contamination in soil and groundwater appears to have originated from former and existing storm drains located east of the former Intermec space in Building 4403. These storm drains consist of catch basins connected to perforated lateral piping to infiltrate water into the subsurface.

Interim Actions. Previous remedial actions are described in the RI/FS Report and include the following:

- **1995:** Removal of the former heating oil UST and 25 tons of petroleum-contaminated soil. Soil and groundwater confirmation samples indicated no exceedances of Method A cleanup levels.
- **1995:** Removal of 1 cubic yard of petroleum-contaminated soil from the Exotic Tool Welding floor drain. Confirmation samples indicated no exceedances of Method A cleanup levels.
- **1996:** 25 tons of petroleum-contaminated soil was removed from around Catch Basin #34. No confirmation samples were collected.
- **2006:** Three rounds of *in situ* chemical oxidation using Fenton's Reagent were applied to the area of PCE and TCE groundwater contamination east and northeast of Building 4403.

1.3 Conceptual Site Model

The CSM, including Site geology and hydrogeology and the nature and extent of contamination, is described in detail in the RI/FS Report and an updated CSM is provided in the Groundwater Classification and Proposed Cleanup Standards Report (Aspect 2018). This section provides a summary of the key CSM elements relevant to this FFS and includes additional information requested by Ecology in its Opinion Letter.

1.3.1 Geology

Site geology includes the following:

- Silty sand, from surface to a maximum depth of approximately 15 feet, interpreted as fill
- Dense, heterogeneous, non-sorted mixture of silt, sand and gravel (glacial till), from beneath the fill to a maximum depth of 177 feet
- Dense sand, beneath the glacial till, interpreted as Advance Outwash deposits (Esperance sand)

1.3.2 Hydrogeology

Groundwater occurs as a perched zone above and within the glacial till. Groundwater above the glacial till occurs at depths ranging from 2 to 7 feet and is likely influenced by the stormwater infiltration system. The general direction of groundwater flow is to the north-northwest. A groundwater contour map from October 2019 is included in Appendix A.

1.3.3 Nature and Extent of Contamination

Soil and groundwater data collected through 2015 is provided in tables and on figures in the RI/FS Report. The constituents of concern (COCs), based on constituents with exceedances of the Model Toxics Control Act (MTCA) Method A cleanup levels, are as follows:

- **COCs in soil:** PCE, TCE.
- **COCs in groundwater:** PCE, TCE, cis-1,2-dichloroethene (cis-DCE), vinyl chloride (VC), methylene chloride, diesel-range total petroleum hydrocarbons (TPH), oil-range TPH, and arsenic.

The occurrence of Site COCs in soil, groundwater, and soil vapor are summarized below.

1.3.3.1 COC Occurrences in Soil

Soil data for COCs were presented in Table 4.1 of the RI/FS Report. Soil samples collected from MW-16 and MW-16D at depths ranging from 5 to 65 feet exceeding the MTCA Method A cleanup level for PCE and/or TCE, and a soil sample collected from MW-21 at a depth of 9 to 10 feet exceeded the MTCA Method A cleanup level for TCE. The maximum concentrations detected were 0.13 mg/kg PCE (MW-16D, at a depth of 5 feet) and 4.9 mg/kg TCE (MW-16, at a depth of 15.5 to 16 feet).

1.3.3.2 COC Occurrences in Groundwater

Historical groundwater data for COCs through 2015 were presented in Table 4.2 and Figures 7A through 7E of the RI/FS Report (Aspect, 2015). Groundwater sampling was conducted in October 2019 as described in Appendix A²; that data is tabulated in Appendix A (Table A-1). Occurrences of cVOCs, TPH, and arsenic in groundwater are summarized below.

cVOCs. Concentrations of PCE and TCE measured in October 2019 are shown on Figure 1-3. These concentrations were generally consistent with historical data. The estimated extent of the PCE/TCE plume based on historical and current data is shown on Figure 1-3. Elevated concentrations of other cVOCs have been detected within the PCE/TCE plume footprint.

cVOC concentrations in deep monitoring wells (MW-2D and MW-16D) in October 2019 were not detected above Method A cleanup levels.

TPH. In October 2019, diesel- and oil-range TPH concentrations did not exceed Method A cleanup levels. Historical data indicated intermittent detections slightly above cleanup levels at wells MW-3, MW-6, MW-9, MW-16D, and MW-19, at a maximum concentration of 950 ug/L oil-range TPH (MW-9).

Arsenic. In October 2019, arsenic exceeded the MTCA Method A cleanup level at 4 wells, as shown on Figure 1-4, at a maximum concentration of 49 ug/L (MW-17). Arsenic exceedances are not collocated with exceedances of other contaminants and do not exhibit a particular pattern of occurrence. These occurrences may be related to natural

² Groundwater sampling in October 2019 included all site wells except those previously used as injection points for remediation.

background, affected by fill materials, and/or influenced by the stormwater infiltration system at the Site.

1.3.3.3 COC Occurrences in Soil Vapor

In October 2019, two soil vapor samples were collected within the PCE/TCE plume footprint, as described in Appendix A. These samples were collected at locations with the greatest potential for vapor intrusion, based on the magnitude of soil or groundwater contamination and the presence of enclosed, occupied structures. Locations are shown on Figure 1-3. VOCs, including PCE and TCE, were not detected in either sample, and detection limits were below the applicable soil vapor screening levels. Therefore, vapor intrusion was not identified as a pathway of concern under current Site conditions.

1.4 Exposure Pathway Assessment

The primary exposure associated with the presence of COCs at the Site is for human health. Terrestrial ecological risk is not considered a viable exposure pathway because of the developed nature of the Site and surroundings, and Ecology has concurred that the Site meets the initial Terrestrial Ecological Evaluation exclusion criteria (Ecology, 2018).

Potential exposure pathways that may affect human health include soil, groundwater, and vapor intrusion. The following sections present a description of these potential exposure pathways at the Site.

1.4.1 Soil Exposure Pathway

The soil direct-contact pathway considers both dermal contact and ingestion of soil from beneath the Site, to a maximum depth of 15 feet below ground surface (bgs). None of the detected COC concentrations exceed MTCA Method B direct contact cleanup levels for unrestricted use. Therefore, this pathway does not represent an unacceptable risk at the Site.

1.4.2 Groundwater Exposure Pathway

This pathway includes ingestion of groundwater at the Site. Potable water for the Site is supplied by the City of Mukilteo; there are no drinking water supply wells near the Site. It is unlikely that Site groundwater will be used for drinking water in the near future, so this pathway does not represent an unacceptable risk under current Site conditions. However, current groundwater data are above MTCA Method A cleanup levels, and Ecology has indicated that Site groundwater should be considered a potential future drinking water source. Therefore, additional actions may be needed to protect this pathway for the future.

1.4.3 Vapor Exposure Pathway

The vapor intrusion pathway includes exposure to volatilized gases in air that have migrated from soil gas. A vapor intrusion assessment conducted in October 2019 determined that vapor intrusion risk to current buildings was not a concern. However, based on the concentrations of PCE and TCE in soil and groundwater, this pathway may need to be reevaluated if Site use changes.

2 Cleanup Requirements

This section presents the cleanup action objectives, applicable or relevant and appropriate requirements (ARARs), and cleanup standards for the cleanup action.

2.1 Remedial Action Objectives

Remedial action objectives consist of the key goals that the selected remedial action will achieve. The objective for the cleanup action is to remediate contaminated soil and groundwater at the Site that pose a potential threat to human health via the potential exposure pathways in an efficient and cost-effective manner to the maximum extent practicable.

The specific goal of the cleanup is to reduce concentrations of COCs in soil and groundwater at the Site below their applicable cleanup levels to the extent practicable to meet MTCA requirements and obtain an NFA determination from Ecology. Concentrations of COCs may remain above their applicable cleanup levels with Ecology approval if a restrictive covenant is placed on the affected properties.

2.2 Applicable or Relevant and Appropriate Requirements

The most applicable or relevant and appropriate requirement for the Site is Ecology's MTCA cleanup levels and regulations that address the implementation of a cleanup under MTCA (Chapter 173.105D RCW; Chapter 173-340 WAC). Other potentially applicable or relevant and appropriate requirements include:

- State Water Pollution Control Act (Chapter 90.48 RCW)
- Water Resources Act (Chapter 90.54 RCW)
- Washington State Hazardous Waste Management Act (Chapter 70.105 RCW)
- State Dangerous Waste Regulation (Chapter 173-303 WAC)
- Solid waste management Reduction and Recycling (Chapter 70.95 RCW)
- Minimum Standards for Construction and Maintenance of Wells (Chapter 173-160 RCW)
- Washington Clean Air Act (Chapter 70.94 RCW)
- Puget Sound Clean Air Agency Regulations (<http://www.pscleanair.org>)
- Occupational Safety and Health Act (OSHA), 29 CFR Subpart 1910.120
- Washington Industrial Safety and Health Act (WISHA)
- Archaeological and Cultural Resources Act (Chapter 43.53 RCW)

- State Environmental Policy Act (Chapter 43.21C RCW, Chapter 173-802 WAC, and Chapter 197-11 WAC)

2.3 Cleanup Standards

Cleanup standards for the Site include establishing cleanup levels and the points of compliance at which those cleanup levels will be attained. The following presents a discussion of the proposed cleanup levels and points of compliance for the Site.

2.3.1 Cleanup Levels

Cleanup levels are based on the potential exposure pathways identified in the exposure assessment (direct contact with soil, ingestion of groundwater). They include consideration of cross-media transport pathways (i.e., soil leaching to groundwater).

Proposed cleanup levels for affected media at the Site are as follows:

- **Soil** – MTCA Method A cleanup levels for unrestricted land use.
- **Groundwater** – MTCA Method A cleanup levels for protection of drinking water as a beneficial use.

2.3.2 Points of Compliance

The standard points of compliance for affected media at the Site are as follows:

- **Soil for protection from direct contact.** Ground surface to a depth of 15 feet.
- **Soil for protection of groundwater.** Throughout the Site.
- **Groundwater for protection of drinking water.** Extending vertically from the uppermost level of the saturated zone to the lowest-most depth potentially affected.

When it is not practicable to achieve cleanup levels in soil at the standard points of compliance, the cleanup action may involve containment of hazardous substances. Remedies involving containment may still be determined to comply with cleanup standards, provided: 1) the selected remedy is permanent to the maximum extent practicable; 2) the cleanup action is protective of human health and the environment; and 3) appropriate institutional controls, including compliance monitoring and periodic reviews, are implemented (173-340-740(6)(f) WAC).

3 Focused Feasibility Study

This FFS considers the requirements under 173-340-350 WAC, Site-specific conditions, and the criteria defined in 173-340-360 WAC for screening and evaluation of potentially feasible remedial alternatives for the Site.

3.1 Potential Remedial Technologies

Potential remedial technologies for addressing the residual soil and groundwater impacts at the Site include:

- **Institutional Controls (ICs).** Measures to limit or prohibit activities that may interfere with the integrity of a cleanup action or result in exposure to hazardous substances (e.g., limitations on the use of the Property or resources, such as an environmental covenant or maintenance requirements for engineering controls).
- **Engineering Controls (ECs).** Containment and/or mitigation systems designed to prevent or limit the movement of, or the exposure to, hazardous substances (e.g., paving/capping, vapor barriers).
- **Monitored Natural Attenuation (MNA).** Monitoring the reduction of contaminants through natural processes over time (e.g., biodegradation).
- **Soil Vapor Extraction (SVE).** Extracting contaminants in the form of soil vapor and introducing oxygen into the unsaturated zone to enhance microbial activity.
- **Air Sparging (AS).** Injecting air into contaminated groundwater to volatilize contaminants (typically collected with an SVE system).
- **Dual-Phase Extraction (DPE).** Extracting and treating contaminated groundwater and vapor.
- **In Situ Chemical Oxidation (ISCO).** Injecting or mixing an oxidant, such as potassium permanganate or sodium persulfate, into the soil to react with and destroy contaminants.
- **Enhanced Anaerobic Biodegradation (EAB).** Introducing carbon and/or nutrients to the subsurface to stimulate microbial biodegradation of contaminants.
- **In Situ Chemical Reduction (ISCR).** Injecting, emplacing, or mixing a reductant, such as zero-valent iron, into the soil to react with and destroy contaminants.
- **In Situ Thermal Treatment (ISTT).** Heating the soil to volatilize and extract contaminants for above-ground treatment.
- **Soil Excavation.** Removal of impacted soil followed by off-site disposal.

3.2 Remedial Technology Screening

These remedial technologies have been applied at sites with similar conditions and chemical occurrences. The following technologies are not retained for the following reasons:

- The effectiveness of AS and SVE is expected to be limited because the perched water table is very shallow, and the majority of residual soil impacts are located beneath the water table within low-permeability soils.
- The effectiveness of DPE will similarly be limited by low-permeability soils, low-yielding groundwater, and relatively insoluble contaminants. Furthermore, the cost of this technology is relatively high.
- ISCO was previously applied at the Site in three separate injections rounds, and while it reduced PCE and TCE concentrations, it was not able to significantly shrink the plume footprint.
- The cost for ISTT is very high for shallow soil contamination when compared to excavation, and implementation of ISTT would cause significant site disruptions.

The remaining technologies were retained for the following reasons:

- ICs and ECs are easily implemented at a relatively low cost and are an effective means to prevent unacceptable exposures to residual contamination.
- MNA is easily implemented at a relatively low cost and can be an effective component for sites where ICs and ECs can reliably control exposure pathways, particularly when combined with active treatment technologies.
- EAB and ISCR are complimentary and are often combined through amendment mixtures, although site-specific testing may indicate one or the other is more effective. These technologies can be effective with moderate costs even with low-permeability or heterogeneous soils, although effectiveness is highly site-specific and typically requires pilot testing.
- Soil excavation and off-site disposal is often the most effective method, particularly for low-permeability soils, when impacted soil is accessible.

3.3 Development of Remedial Alternatives

Based on the screening of remedial technologies, three remedial alternatives were developed for comparison with MTCA criteria for cleanup actions using the technologies retained in the initial screening:

- Alternative 1 – ICs and MNA
- Alternative 2 – EAB/ISCR of cVOCs with ICs and MNA
- Alternative 3 – Soil Excavation of cVOCs with ICs and MNA

These alternatives are described in the following sections. Feasibility-level cost estimates (+50/-30 percent) for each alternative were developed in accordance EPA cost-estimating guidance (EPA, 2000) and professional experience with similar projects. Future costs

were calculated using net-present value analysis. Cost-estimate details and assumptions for Alternatives 1, 2, and 3 are provided in Tables 3-1, 3-2 and 3-3, respectively, and discussed below.

3.3.1 Alternative 1—Institutional Controls and Monitored Natural Attenuation

This alternative supplements the interim remedial actions of ISCO (for cVOC treatment) and soil removal (for TPH). The purpose of this alternative is to provide protection of human health and the environment until it can be demonstrated that natural attenuation has reduced COC concentrations below applicable cleanup standards. This alternative involves the following elements:

- Placing an environmental covenant on affected parcels of the Property to control subsurface activities and potential exposure (e.g., restricting groundwater withdrawal).
- Conducting an MNA analysis, including quarterly monitoring of geochemical parameters in groundwater for one year.
- Periodic performance monitoring of groundwater to confirm effectiveness of the remedy and confirm the residual plume is stable or shrinking.
- Confirmation soil sampling to assess the performance of MNA for remediation of residual soil impacts.

As part of this alternative, existing monitoring wells that were used for remediation by ISCO injection would be decommissioned, and approximately 4 replacement wells would be installed to help monitor the PCE/TCE plume. Groundwater monitoring at the Site would be conducted for all Site COCs (VOCs, arsenic, and TPH). The monitoring well network, including potential replacement wells, and parcels requiring an environmental covenant are shown on Figure 3-1.

Contaminant concentrations have declined as a result of interim measures. TPH concentrations were below cleanup levels in October 2019, although more confirmation monitoring data is needed to evaluate seasonality. Based on the groundwater concentration trends to date, arsenic, PCE and/or TCE are expected to exceed cleanup levels into the foreseeable future. The time for monitoring under this alternative is assumed to be 30 years for cost-estimating purposes.

Quarterly groundwater monitoring including geochemical parameters for MNA would be performed for one year to establish seasonal trends. Subsequent groundwater monitoring is assumed to be conducted annually until the plume is demonstrated to be stable or shrinking (assumed, for cost estimating purposes, to be 5 years), at which time an NFA would be requested. Subsequent monitoring would be conducted once every 5 years to support 5-year reviews. Confirmation soil sampling within the PCE/TCE plume footprint is assumed to be conducted in Year 30.

The estimated cost of this alternative is \$327,000 as shown in Table 3-1.

3.3.2 Alternative 2— EAB/ISCR of cVOCs with Institutional Controls and Monitored Natural Attenuation

This alternative supplements the measures identified in Alternative 1 by adding active treatment using enhanced anaerobic bioremediation and/or in-situ chemical reduction (specific amendment mixture to be determined during design) to achieve treatment of cVOCs to the extent practicable. It involves the following elements:

- Conducting an EAB/ISCR pilot test and preparing a design and performance monitoring plan.
- Implementation of EAB/ISCR, by injecting amendments. Injection methods, amendments, quantities, and injection locations would be based on pilot testing results.
- Conducting soil and groundwater performance monitoring.
- If treatment to the extent practicable results in residual concentrations above cleanup levels:
 - ◆ Placing an environmental covenant on affected parcels of the Property to control subsurface activities and potential exposure.
 - ◆ Periodic performance monitoring of groundwater for cVOCs, arsenic, and diesel-and oil-range TPH, to assess the effectiveness of the remedy and confirm the residual plume is stable or shrinking.

As with Alternative 1, existing monitoring wells that were previously used for remediation by ISCO injection would be decommissioned. Approximately four additional wells would be installed to support design and pilot testing.

If the pilot test indicates that EAB/ISCR is effective at reducing cVOC concentrations, the pilot test data would be used to design full-scale implementation of EAB/ISCR within the cVOC plume area. It is anticipated that EAB/ISCR will destroy contaminant mass and reduce the restoration time frame, but that the effectiveness of active treatment will reach a point of diminishing returns and would transition to MNA with institutional controls. At the cessation of active treatment, if residual contamination remains on the Property above cleanup levels, an environmental covenant would be placed on the affected parcels and a No Further Action letter would be requested from Ecology.

For cost estimating purposes, we have assumed that EAB/ISCR would be implemented in two injection events using direct-push technology within the first 4 years followed by MNA. The target injection depth – 16 feet – is close to the practicable limit of direct-push injection based on previous investigations; therefore, the costs include a contingency for auger-drilled injection points in targeted locations. A conceptual injection layout that includes 3 injection transects perpendicular to the groundwater plume, a potential monitoring well network, and parcels requiring an environmental covenant are shown on Figure 3-2.

Groundwater monitoring is assumed to be conducted semi-annually during EAB implementation to evaluate performance. Subsequent groundwater monitoring is assumed

to be conducted annually until the plume is demonstrated to be stable or shrinking (assumed, for cost estimating purposes, to be 5 years), at which time an NFA would be requested. Subsequent monitoring would be conducted in year 10 to support the 5-year review.

The estimated cost of this alternative is \$489,000 as shown in Table 3-2.

3.3.3 Alternative 3—Soil Excavation

This alternative assumes that accessible soil exceeding cleanup levels will be excavated and removed. For the purposes of this evaluation, we have assumed soil that cannot be removed without underpinning or removing existing buildings is inaccessible, but that drainage utilities (catch basins and piping) can be temporarily removed and replaced to facilitate cleanup. The maximum practicable excavation depth, considering neighboring buildings and the depth to groundwater, is assumed to be approximately 16 feet, and that a maximum allowable sideslope without engineered shoring is 1H:1V.

This alternative involves the following elements:

- Removal of accessible soil exceeding cleanup levels within the cVOC plume.
- Confirmation soil sampling at the limits of excavation.
- Placing an environmental covenant on affected parcels of the Property to control subsurface activities and potential exposure.
- Periodic performance monitoring of groundwater to assess the effectiveness of the remedy and confirm the residual plume is stable or shrinking.

The limits of contaminated soil to be removed would be determined during a design investigation. Excavated soil would be characterized and disposed of at a permitted landfill, and the excavated area backfilled with clean imported material. Removed pavement and any temporarily removed utilities would be replaced to restore area. A contained-in determination may be requested to dispose of soil with cVOC concentrations below the hazardous waste characteristic at a Subtitle D (non-hazardous) landfill. For cost estimating purposes, it is assumed that 10 percent of the excavated soil would be disposed of at a Subtitle C (hazardous) landfill and the remainder at a Subtitle D landfill.

It is assumed that due to access constraints, residual contamination will remain on the Property above cleanup levels. After monitoring confirms that the groundwater plume is stable or shrinking, an environmental covenant would be placed on the affected parcels and a No Further Action letter would be requested from Ecology. The assumed excavation area, monitoring well network, and parcels requiring an environmental covenant are shown on Figure 3-3.

Groundwater monitoring would be conducted semi-annually for two years following excavation and then be conducted on an annual basis until the plume is demonstrated to be stable or shrinking. Subsequent groundwater monitoring is assumed to be conducted annually until the plume is demonstrated to be stable or shrinking (assumed, for cost estimating purposes, to be 5 years), at which time an NFA would be requested. Subsequent monitoring would be conducted in year 10 to support the 5-year review.

The estimated cost of this alternative is \$1,869,000 as shown in Table 3-3.

3.4 Evaluation of Remedial Alternatives

MTCA requires that remedial alternatives for a site satisfy certain “threshold” criteria, as specified in 173-340-360(2) WAC:

- Protect human health and the environment
- Comply with cleanup standards
- Comply with applicable state and federal laws
- Provide for compliance monitoring

In addition to meeting the threshold criteria, cleanup action alternatives under MTCA must also satisfy these “other” requirements:

- Use of permanent solutions to the maximum extent practicable
- Provide for a reasonable restoration time frame
- Consider public concerns

These criteria represent the minimum requirements for an acceptable cleanup action alternative under MTCA. All remedial alternatives being considered for this Site meet these criteria as summarized in Table 3-4.

3.5 Disproportionate Cost Analysis

In addition to meeting the minimum requirements for a cleanup action, MTCA also allows for consideration of cost in selecting among competing remedial alternatives (173-240-360(3)(e) WAC). If the cost of one alternative is disproportionately higher than another when compared to the benefits afforded by each alternative, then the lower-cost alternative can be selected. The test for making this determination is stated in MTCA as follows: “*Costs are disproportionate to benefits if the incremental costs of the alternative over that of a lower cost alternative exceed the incremental degree of benefits achieved by the alternative over the other lower cost alternative.*” MTCA requires evaluation of the following criteria when conducting a DCA:

- Protectiveness
- Permanence
- Effectiveness over the long-term
- Management of short-term risks
- Technical and administrative implementability
- Consideration of public concerns

For this comparison, the evaluation of each remedial alternative relative to these criteria is summarized in Table 3-4. Alternative 2 is identified as the preferred remedial alternative for the Site because it provides benefits when compared to Alternative 1 by reducing the restoration time frame for cVOCs for only a modest increase in cost, while

the cost to implement Alternative 3 is disproportionately higher than Alternative 2 and does not provide a significant benefit to restoration timeframe.

4 References

Aspect Consulting, LLC (Aspect), 2015, Remedial Investigation/Feasibility Study, HERS Industrial Park, Mukilteo, Washington, November 2015.

Aspect Consulting, LLC (Aspect), 2018, Draft Groundwater Classification Report and Proposed Cleanup Standards, HERS Industrial Park Site, Mukilteo, Washington, January 29, 2018.

Washington State Department of Ecology (Ecology), 2016, Opinion pursuant to WAC 173-340-515(5) on Remedial Investigation/Feasibility Study for the HERS Industrial Park Site, Facility/Site ID No. 127256, VCP No. NW1554, November 8, 2016.

Washington State Department of Ecology (Ecology), 2018, Letter to Mr. Romeo Gonyea Re: Further Action at the following Site: HERS Industrial Park, June 28, 2018.

5 Limitations

Work for this project was performed for Russell Road Industrial Park LLC (Client), and this report was prepared in accordance with generally accepted professional practices for the nature and conditions of work completed in the same or similar localities, at the time the work was performed. This report does not represent a legal opinion. No other warranty, expressed or implied, is made.

All reports prepared by Aspect Consulting for the Client apply only to the services described in the Agreement(s) with the Client. Any use or reuse by any party other than the Client is at the sole risk of that party, and without liability to Aspect Consulting. Aspect Consulting's original files/reports shall govern in the event of any dispute regarding the content of electronic documents furnished to others.

Please refer to Appendix B titled “Report Limitations and Guidelines for Use” for additional information governing the use of this report.

TABLES

Table 3-1 - Cost Estimate for Alternative 1

Project No. 140252 Mukilteo, Washington

Site:	Hers Industrial Park				
Remedial Action Description:	Institutional Controls and Monitored Natural Attenuation				
Cost Estimate Accuracy:	Feasibility Study Level (+50/-30 percent)				
Key Assumptions and Quantities:	10 existing wells 4 new wells 5 years to NFA 30 year monitoring				
CONSTRUCTION COSTS					
Item	Quantity	Unit	Unit Cost	Total Cost	Notes
Professional Services					
Decommission damaged wells	8	ea	\$ 2,500	\$ 20,000	overdrill wells with damaged seals
New monitoring wells	4	ea	\$ 4,000	\$ 16,000	2 inch, shallow wells
IDW disposal	24	drums	\$ 350	\$ 8,400	assume F-listed
MNA characterization	1	LS	\$ 50,000	\$ 50,000	14 wells, quarterly monitoring, one year, and report
Environmental Covenant Support	1	LS	\$ 5,000	\$ 5,000	Figures and descriptions for covenants
Subtotal Professional Services				\$ 99,400	
Tax	10%			\$ 9,940	
Contingency	20%			\$ 21,868	
Total Estimated for Professional Services				\$ 131,000	Rounded to the nearest thousand dollars
ESTIMATED CONSTRUCTION COST				\$ 131,000	Rounded to the nearest thousand dollars
MONITORING COSTS					
Item	Quantity	Unit	Unit Cost	Total Cost	Notes
Groundwater Monitoring Per Event (14 wells)					
labor	26	hr	\$ 128	\$ 3,328	
equipment	3	days	\$ 340	\$ 1,020	
IDW	1	ls	\$ 1,000	\$ 1,000	
analytical	14	ea	\$ 334	\$ 4,669	VOCs, arsenic, TPH-Dx
Subtotal Groundwater Monitoring Per Event (14 wells)				\$ 10,017	
Project Management and Reporting Per Groundwater Monitoring Event					
project management	4	hr	\$ 230	\$ 920	
data management	2	hr	\$ 128	\$ 256	
data analysis and evaluation	8	hr	\$ 173	\$ 1,384	
reporting	16	hr	\$ 173	\$ 2,768	
Subtotal Project Management and Reporting Per Groundwater Monitoring Event				\$ 5,328	
1.9% Annual discount rate					
Confirmation Monitoring and Reporting					
Groundwater - annually through year 10	10	each	\$ 15,345	\$ 138,562	net present value
Groundwater - Year 15	1	each	\$ 15,345	\$ 11,571	net present value
Groundwater - Year 20	1	each	\$ 15,345	\$ 10,531	net present value
Groundwater - Year 25	1	each	\$ 15,345	\$ 9,585	net present value
Groundwater - Year 30	1	each	\$ 15,345	\$ 8,725	net present value
Soil sampling and well decommissioning at Year 30	1	each	\$ 30,000	\$ 17,057	net present value
ESTIMATED MONITORING COSTS				\$ 196,000	Rounded to the nearest thousand dollars
TOTAL ESTIMATED NPV COST:				\$ 327,000	

Table 3-2 - Cost Estimate for Alternative 2

Project No. 140252, Mukilteo, Washington

Site:	Hers Industrial Park				
Remedial Action Description:	EAB/ISCR				
Cost Estimate Accuracy:	Feasibility Study Level (+50/-30 percent)				
Key Assumptions and Quantities:					
injection depth	16 feet				
injection point spacing	6 feet				
average length of transects	50 feet				
number of transects	3				
number of injection points	25				
number of points/day	8				
Amendment capacity	250 gal/point				
CONSTRUCTION COSTS					
Item	Quantity	Unit	Unit Cost	Total Cost	Notes
EAB/ISCR Treatment					
Field scale pilot testing	1 ls	\$	50,000	\$ 50,000	engineers estimate - 50-foot-long injection transect
EAnB injection - direct-push	6 days	\$	8,000	\$ 48,000	2 injection events
EAnB injection - auger (contingency)	1 ls	\$	12,000	\$ 12,000	
soil cuttings mgmt and disposal	30 drum	\$	350	\$ 10,500	injection and well decommissioning/installation
decon and development water disposal	8 drum	\$	350	\$ 2,800	
EAnB amendments	12500 lb	\$	2.5	\$ 31,250	10% solution; 2 injection events
Application equipment, mob/demob	2 ea	\$	10,000	\$ 20,000	tanks, pumps, etc.
Subtotal				\$ 174,550	
Tax	10%			\$ 17,455	
Contingency	25%			\$ 48,001	
Total Estimated for EAB/ISCR				\$ 240,000	Rounded to the nearest thousand dollars
Professional Services					
Decommission damaged wells	8 ea	\$	2,500	\$ 20,000	overdrill wells with damaged seals
New monitoring wells	4 ea	\$	4,000	\$ 16,000	2 inch, shallow wells
Groundwater performance monitoring	4 ea	\$	10,000	\$ 40,000	EAB parameters, 4 extra events, 6 wells to supplement site-wide monitoring
Design	1 LS	\$	15,000	\$ 15,000	
Project management, construction oversight and monitoring	2 ea	\$	15,000	\$ 30,000	2 injection events
Construction reporting and documentation	1 LS	\$	10,000	\$ 10,000	
Environmental Covenant Support	1 LS	\$	5,000	\$ 5,000	Figures and descriptions for covenant
Subtotal Professional Services				\$ 136,000	
Contingency	20%			\$ 27,200	
Total Estimated for Professional Services				\$ 163,000	Rounded to the nearest thousand dollars
ESTIMATED CONSTRUCTION COST				\$ 403,000	Rounded to the nearest thousand dollars
MONITORING COSTS					
Item	Quantity	Unit	Unit Cost	Total Cost	Notes
Groundwater Monitoring Per Event (14 wells)					
labor	26 hr	\$	128	\$ 3,328	
equipment	3 day	\$	340	\$ 1,020	
IDW	1 ls	\$	1,000	\$ 1,000	
analytical	14 ea	\$	334	\$ 4,669	VOCs, arsenic, TPH-Dx
Subtotal Groundwater Monitoring Per Event (14 wells)				\$ 10,017	
Project Management and Reporting Per Groundwater Monitoring Event					
project management	4 hr	\$	230	\$ 920	
data management	2 hr	\$	128	\$ 256	
data analysis and evaluation	8 hr	\$	173	\$ 1,384	
reporting	16 hr	\$	173	\$ 2,768	
Subtotal Project Management and Reporting Per Groundwater Monitoring Event				\$ 5,328	
				1.6%	Annual discount rate
Confirmation Monitoring and Reporting					
Annually for Years 1-5	5 each	\$	15,345	\$ 73,175	net present value
Year 10	1 each	\$	15,345	\$ 13,093	net present value
ESTIMATED MONITORING COSTS				\$ 86,000	Rounded to the nearest thousand dollars
TOTAL ESTIMATED NPV COST:				\$ 489,000	

Table 3-3 - Cost Estimate for Alternative 3

Project No. 140252, Mukilteo, Washington

Site:	Hers Industrial Park				
Remedial Action Description:	Excavation and Off-Site Disposal				
Cost Estimate Accuracy:	Feasibility Study Level (+50/-30 percent)				
Key Assumptions and Quantities:		Quantities			
	5000 sf	excavation area			
	16 ft	excavation depth			
	300 ft	excavation perimeter			
	3,052 cy	total excavation volume			
	1.65 ton/cy	soil density			
no structural support or engineered shoring					
CONSTRUCTION COSTS					
Item	Quantity	Unit	Unit Cost	Total Cost	Notes
Excavation and Off-Site Disposal					
Mobilization/demobilization, TESC	1	LS	\$ 10,000	\$ 10,000	
Pre-construction submittals and permitting	1	LS	\$ 15,000	\$ 15,000	
Excavate and load soil for offsite disposal	5,036	TON	\$ 14	\$ 70,498	
Transport and dispose of F-listed contaminated soil	504	TON	\$ 230	\$ 115,818	assumes 10% of soil not eligible for CID
Transport and dispose of contained-in contaminated soil	4,532	TON	\$ 134	\$ 607,288	
Import, place, and compact gravel borrow to surface	5,036	TON	\$ 29	\$ 146,031	
remove/replace asphalt	5,000	sf	\$ 12	\$ 60,000	
utility protection	1	LS	\$ 35,000	\$ 35,000	includes replacement of catch basin and infiltration piping
Analytical sampling	40	each	\$ 368	\$ 14,720	24hr TAT
Subtotal Excavation and Off-Site Disposal				\$ 1,074,355	
Tax	10%			\$ 107,435	
Contingency	35%			\$ 413,627	higher contingency for excavation than in-situ treatment
Total Estimated for Excavation and Off-Site Disposal				\$ 1,595,000	Rounded to the nearest thousand dollars
Professional Services					
Design investigation	1	LS	\$ 50,000	\$ 50,000	
Decommission damaged wells	8	ea	\$ 2,500	\$ 20,000	overdrill wells with damaged seals
New monitoring wells	4	ea	\$ 4,000	\$ 16,000	2 inch, shallow wells
Project management, construction oversight and monitoring	1	LS	\$ 30,000	\$ 30,000	
Construction reporting and documentation	1	LS	\$ 25,000	\$ 25,000	
Environmental Covenant Support	1	LS	\$ 5,000	\$ 5,000	Figures and descriptions for covenant
Subtotal Professional Services				\$ 146,000	
Contingency	20%			\$ 29,200	
Total Estimated for Professional Services				\$ 175,000	Rounded to the nearest thousand dollars
ESTIMATED CONSTRUCTION COST				\$ 1,770,000	Rounded to the nearest thousand dollars
MONITORING COSTS					
Item	Quantity	Unit	Unit Cost	Total Cost	Notes
Groundwater Monitoring Per Event (14 wells)					
labor	26	hr	\$ 128	\$ 3,328	
IDW	1	ls	\$ 1,000	\$ 1,000	
equipment	3	day	\$ 340	\$ 1,020	
analytical	14	ea	\$ 334	\$ 4,669	VOCs, arsenic, TPH-Dx
Subtotal Groundwater Monitoring Per Event (14 wells)				\$ 10,017	
Project Management and Reporting Per Groundwater Monitoring Event					
project management	4	hr	\$ 230	\$ 920	
data management	2	hr	\$ 128	\$ 256	
data analysis and evaluation	8	hr	\$ 173	\$ 1,384	
reporting	16	hr	\$ 173	\$ 2,768	
Subtotal Project Management and Reporting Per Groundwater Monitoring Event				\$ 5,328	
1.9% Annual discount rate					
Confirmation Monitoring and Reporting					
Semi-annually for Years 1-2	4	each	\$ 15,345	\$ 58,572	net present value
Annually for Years 4-5	2	each	\$ 15,345	\$ 28,199	net present value
Year 10	1	each	\$ 15,345	\$ 12,712	net present value
ESTIMATED MONITORING COSTS				\$ 99,000	Rounded to the nearest thousand dollars
TOTAL ESTIMATED NPV COST:				\$ 1,869,000	

Table 3-4 - Summary of Remedial Alternative Evaluation

Project No. 140252, Mukilteo, Washington

Alternative Number	Alternative 1	Alternative 2	Alternative 3
Description	MNA with Institutional Controls	EAB/ISCR with MNA and Institutional Controls	Soil Excavation with MNA and Institutional Controls
Overall Alternative Ranking	6.3	7.3	6.9
Compliance with MTCA Threshold Criteria			
Protection of Human Health and the Environment	Yes	Yes	Yes
Compliance with Cleanup Standards	Yes	Yes	Yes
Compliance with Applicable State and Federal Laws	Yes	Yes	Yes
Provision for Compliance Monitoring	Yes	Yes	Yes
Restoration Time Frame	30 years	10 years	10 years
Evaluation Criteria			
Protectiveness (30% Weighted Factor):	6 Protective of exposure pathways through the combination of engineering and institutional controls, lengthy timeframe required.	8 Protective of exposure pathways, reduces potential restoration timeframe.	9 Considered protective of exposure pathways, reduces potential restoration timeframe, removes accessible contaminated soil
Permanence (20% Weighted Factor):	7 Natural attenuation will permanently reduce the volume and concentration of residual impacted soil and groundwater over lengthy timeframe.	7 Contaminant mass is permanently reduced through chemical treatment.	6 Volume of impacted soil and groundwater on site is reduced; however, contaminated soil transported to landfill rather than destroyed.
Long-Term Effectiveness (20% Weighted Factor):	4 Relies on natural attenuation to reduce soil and groundwater impacts, requires institutional and engineering controls, and monitoring	7 Shorter restoration time frame. Institutional controls are reliably protective for the low concentrations remaining in place.	7 Shorter restoration time frame, but will still require monitoring of inaccessible contamination.
Short-Term Risk Management (10% Weighted Factor):	9 Lowest risk, involves minimal construction activities	8 Slight risk from drilling and injection activities	6 Modest amount of risk from construction activities, including volatilization of contaminants during excavation.
Implementability (10% Weighted Factor):	9 Highest implementability, requires planning and implementation of monitoring program	8 High implementability. Drilling and injection will require coordination with tenants but should not significantly interfere with site operations.	6 Greatest impact to site tenants during excavation activities.
Public Concerns (10% Weighted Factor):	5 Relatively long restoration time frame	5 Limited disruption and inconvenience to tenants from construction activities	4 Some disruption and inconvenience to tenant from construction activities.
Cost:	\$327,000	\$489,000	\$1,869,000

Note:

For each evaluation criterion, technologies are ranked on a scale of 1 to 10, with 1 representing the lowest protectiveness, permanence, effectiveness, risk and implementability, or greatest level of public concern.

Aspect Consulting

3/10/2020

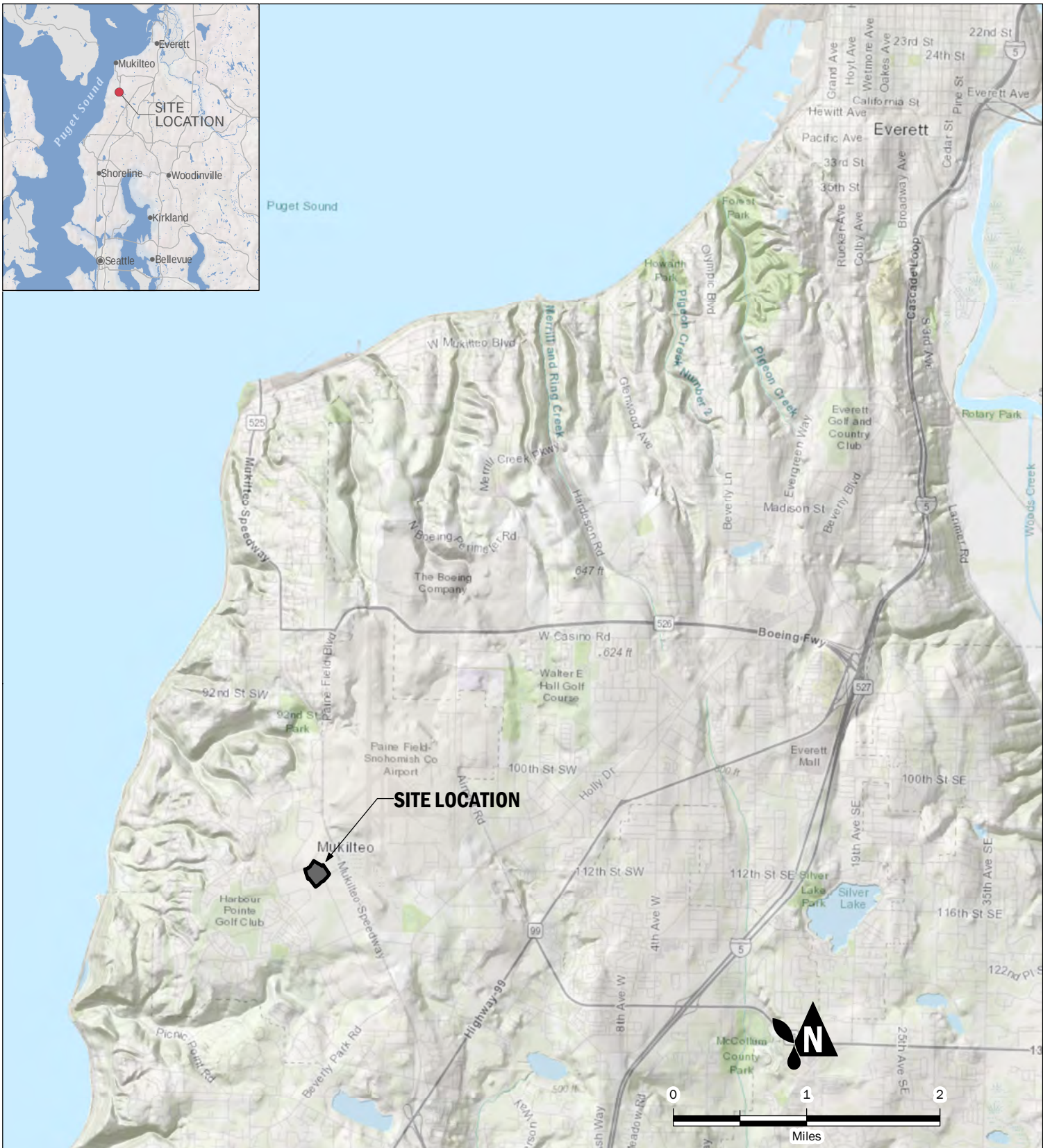
V:\140252 HERS Industrial Park\Deliverables\FFS\Cost Estimate tables

Table 3-4

FFS

Page 1 of 1

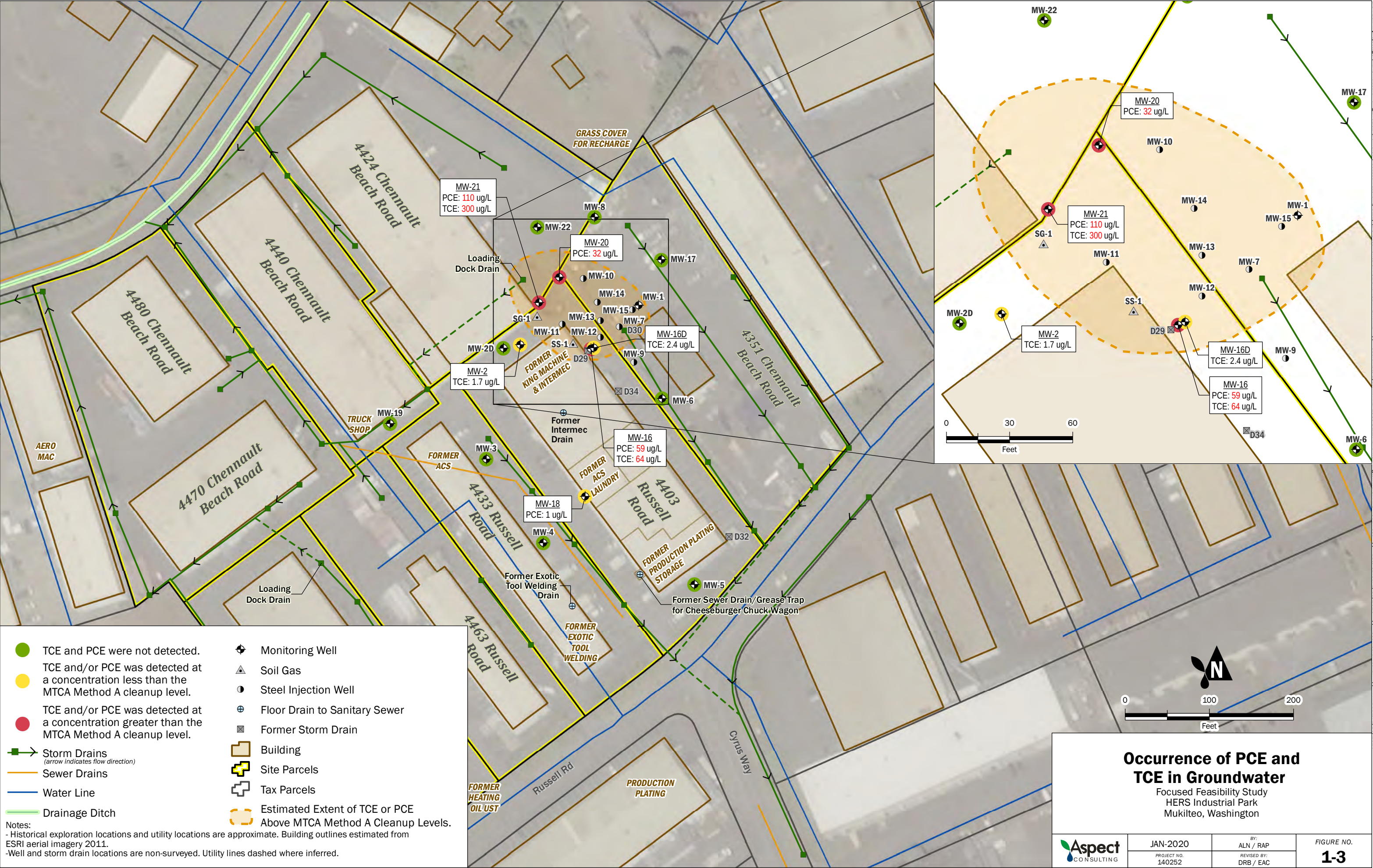
FIGURES

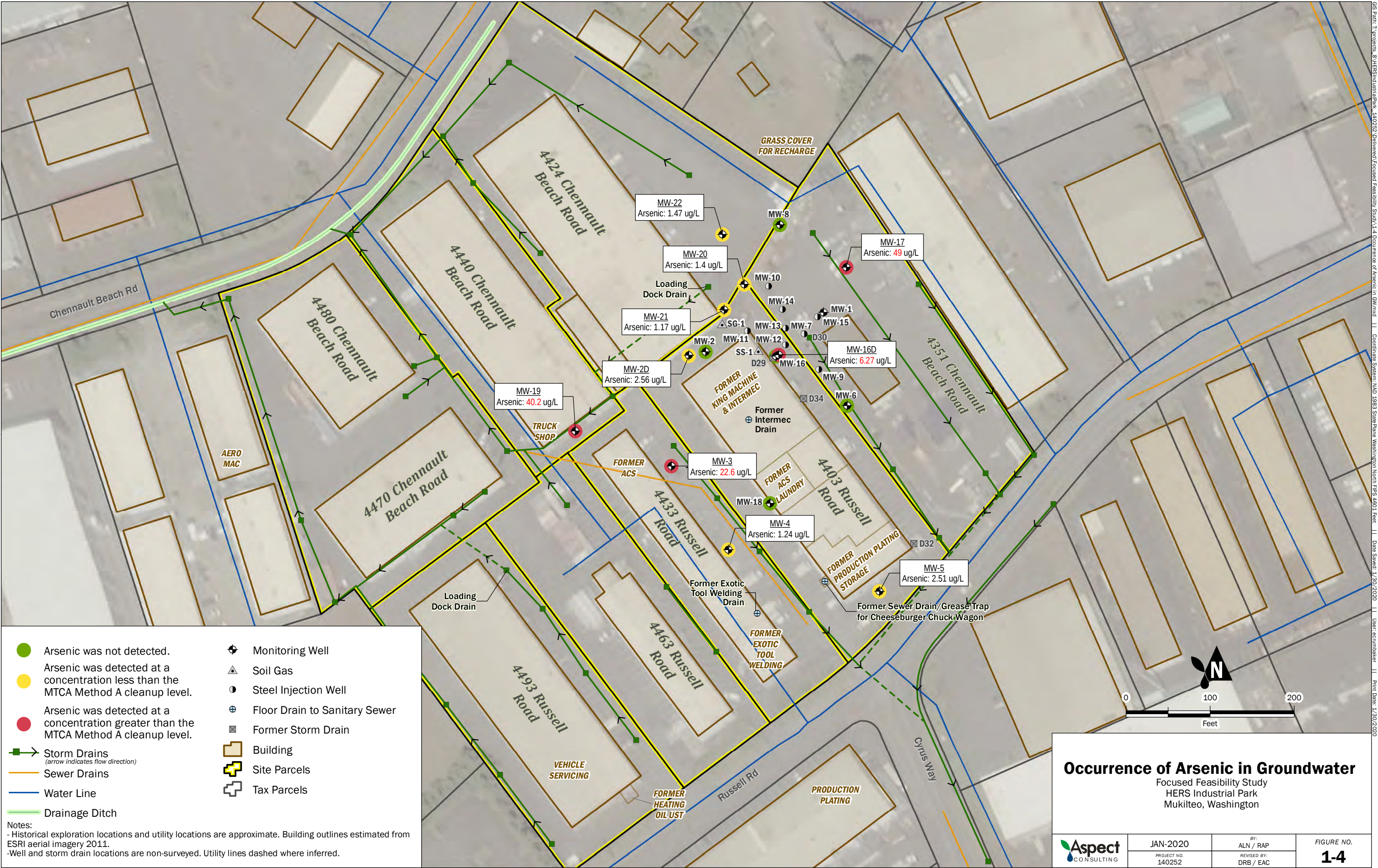


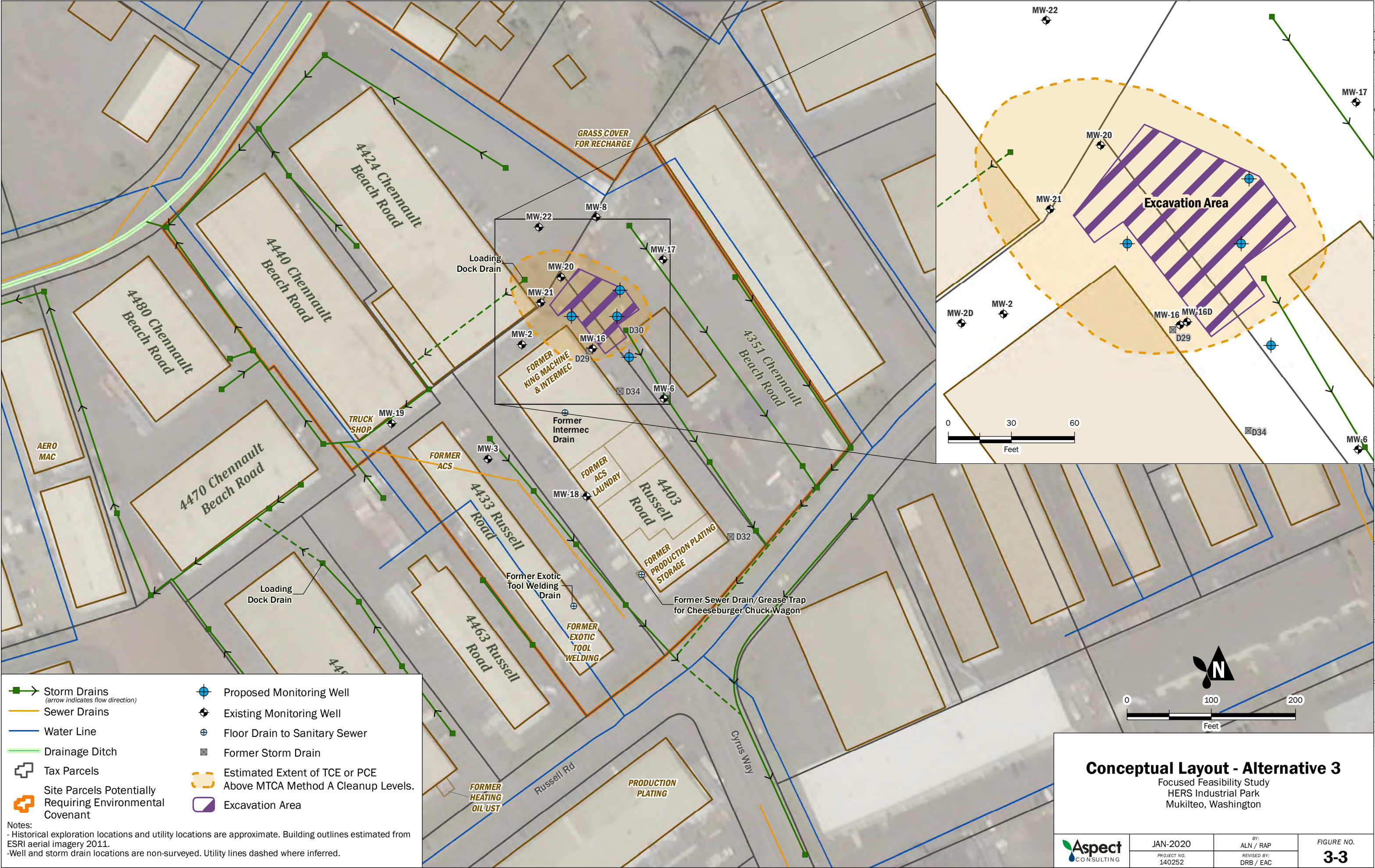
Vicinity Map

Focused Feasibility Study
HERS Industrial Park
Mukilteo, Washington

	JAN-2020	BY: ALN / RAP	FIGURE NO. 1-1
	PROJECT NO. 140252	REVISED BY: EAC	







APPENDIX A

Groundwater and Soil

Gas Sampling Results

Memo – October 2019

MEMORANDUM

Project No. 140252

March 10, 2020

To: Jason Bontrager
Russell Road Industrial Park, LLC
17600 147th Street SE PMB 222
Monroe, WA 98275

From:



March 10, 2020

Jeremy Porter, PE
Sr. Associate Engineer
jporter@aspectconsulting.com



Daniel Babcock, GIT
Staff Geologist
dbabcock@aspectconsulting.com

Re: Groundwater and Soil Gas Sampling Results – October 2019

Aspect Consulting, LLC (Aspect) prepared this memorandum to document the results of groundwater monitoring and soil gas sampling conducted in October 2019 at the property located at 4403 Russell Road, Mukilteo, Washington and adjacent parcels (collectively, the HERS Industrial Park site [Site]) (Figure 1). The 2019 groundwater sampling event included collection of samples from 15 monitoring wells at the Site. This memorandum presents a description of the work performed in October 2019 and a summary of the results.

Soil Gas Evaluation

The soil gas evaluation was performed to determine the presence, nature, and extent of volatile contaminants of potential concern in soil gas beneath commercial buildings on the Subject Property above or adjacent to the PCE/TCE groundwater plume. This section describes the soil gas sampling methods and results.

Utility Location

Applied Professional Services, Inc. (APS) was retained by Aspect to perform the private locate. APS confirmed the proposed locations for the soil gas sampling points were clear of subsurface utilities during a site visit on October 8, 2019.

Soil Gas Sampling

Soil gas sampling was performed on October 8, 2019 in general accordance with the Guidance for Evaluating Soil Vapor Intrusion in *Washington State: Investigation and Remedial Action* (Washington State Department of Ecology [Ecology], 2018).

Two soil gas samples (SG-1 & SS-1) were collected at locations shown on Figure 1. Temporary pins were installed by drilling a 5/8-inch hole through the concrete slab to collect a subslab soil gas sample at SS-1 and in deeper soil three feet beneath the asphalt pavement at SG-1 (maximum practicable depth of the sampling equipment), cleaning the hole using a brush and vacuum, and using a silicon seal between the vapor pin and the clean hole. Following sample collection, the vapor pin was removed, and the hole patched with rapid set concrete.

The subslab soil gas samples were collected using a laboratory-supplied, evacuated, 1-liter (L) SUMMA canister with 150 milliliter per minute (mL/min) flow controller, according to the following procedure:

- A shut-in test was performed by inducing a vacuum to the sampling train (including Teflon tubing up to the vapor pin, fittings, and connections to the SUMMA canister). A minimum vacuum of 20 inches of mercury was applied for a period of 5 minutes. No change in vacuum was observed during the shut-in test.
- The vapor pin was then enclosed in a leak-testing shroud and helium tracer gas was applied until a minimum of 30 percent helium was measured inside the shroud. Approximately 700 mL of subslab vapor was purged through each vapor pin before measuring the purged subslab vapor for helium with a handheld helium meter in order to verify integrity of the silicon seal between the vapor pin and concrete slab.
- After confirming that no significant leakage was present in the sampling train or around the vapor pin seal, the SUMMA canister was opened and allowed to fill at 150 mL/min over approximately 5 minutes until the canister vacuum reached -5 inches of mercury.

Samples were transferred under appropriate chain-of-custody documentation to Friedman and Bruya, Inc., of Seattle, Washington. Samples were analyzed using U.S. Environmental Protection Agency (EPA) Method TO-15 for volatile organic compounds (VOCs).

Soil Gas Results

The analytical results of the subslab soil gas sampling were compared to the MTCA Method B screening levels and are summarized in Table 1. No VOCs were detected at either SG-1 or SS-1 at concentrations exceeding their respective MTCA Method B screening levels (Table 1). Laboratory reports are attached.

Groundwater Monitoring

Groundwater Sampling and Analysis

In October 2019 Aspect collected depth-to-water data and groundwater samples from 15 monitoring wells at the Site. All monitoring wells appeared to be in satisfactory condition for sampling, and included locking monument covers and secure, sealed well caps. Water levels were measured from the top of each monitoring well casing to the nearest 0.01 foot. 12 wells were purged in accordance with U.S. Environmental Protection Agency (EPA) low-flow purge

techniques until water quality parameters stabilized and, due to drawdown during low-flow purging, three monitoring wells were purged in accordance with EPA Multiple Volume Purge techniques until the purging of three well volumes was met. Groundwater samples were collected from each well following parameter stabilization or after three well volumes were purged. The groundwater samples were submitted to Friedman & Bruya, Inc. in Seattle, Washington, for chemical analysis of dissolved arsenic by EPA 6020, Diesel-, and heavy oil-range petroleum hydrocarbons by Northwest Method NWTPH-Dx, VOCs by EPA Method 8260C.

Groundwater Results

Groundwater levels measured in the monitoring wells in October 2019 ranged from 2.65 feet to 5.68 feet below the top of monitoring well casings in the shallow monitoring wells. The groundwater flow direction in October 2019 was generally to the north-northwest based on water level measurements. Groundwater elevation contours are shown on Figure 1.

Monitoring wells sampled in October 2019 are shown on Figure 1. The laboratory report is attached. Analytical results are summarized in Table 2, and are summarized as follows:

VOCs. Concentrations of Tetrachloroethene (PCE), Trichloroethene (TCE), and/or vinyl chloride (VC) were detected above MTCA Method A cleanup levels in three of the monitoring wells (MW-16, MW-20, & MW-21) in October 2019. The laboratory did not detect concentrations of VOCs above MTCA cleanup levels in the other wells. The highest concentrations of PCE (110 ug/L) and TCE (300 ug/L) were reported in groundwater collected from MW-21.

Arsenic. Concentrations of Arsenic were detected above the MTCA Method A cleanup level in four of the monitoring wells (MW-3, MW-16D, MW-17, & MW-19). The highest concentration of arsenic (49 ug/L) was detected in groundwater collected from MW-17.

TPH. Concentrations of Diesel-range TPH were not detected above the MTCA Method A cleanup level in any of the monitoring wells that were sampled.

References

Washington State Department of Ecology (Ecology), 2018, Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action, Publication No. 09-09-047, dated April 2018.

Limitations

Work for this project was performed for Russell Road Industrial Park, LLC (Client), and this letter was prepared in accordance with generally accepted professional practices for the nature and conditions of work completed in the same or similar localities, at the time the work was performed. This letter does not represent a legal opinion. No other warranty, expressed or implied, is made.

All reports prepared by Aspect Consulting for the Client apply only to the services described in the Agreement(s) with the Client. Any use or reuse by any party other than the Client is at the sole risk of that party, and without liability to Aspect Consulting. Aspect Consulting's original files/reports shall govern in the event of any dispute regarding the content of electronic documents furnished to others.

Russell Road Industrial Park, LLC

March 10, 2020

MEMORANDUM

Project No. 140252

Attachments: Table A-1 – Soil Gas Sampling Results
Table A-2 – Groundwater Sampling Results
Figure 1 – Sampling Locations and Groundwater Elevation Contours – October 2019
Attachment 1 - Laboratory Certificates of Analysis

V:\140252 HERS Industrial Park\Deliverables\FFS\Data Memo (Appendix A)\App A Data Memo.docx

TABLES

Project No. 140252 , 4403 Russell Road, Mukilteo, Washington

Bold - Analyte Detected
 Blue Shaded - Detected result exceeded screening level
 U - Analyte not detected at or above Reporting Limit (RL) shown
 UJ - Analyte not detected and the Reporting Limit (RL) is an estimate
 R - Result value estimated
 X - Chromatographic pattern does not match fuel standard used for q
 D - Dissolved Fraction (filtered) sample result
 T - Total Fraction (unfiltered) sample result

Table A-2. HERS Industrial Park Soil Gas Analytical Results

Project No. 140252 , 4403 Russell Road, Mukilteo, Washington

Location			Date Sample	SG-1 10/08/2019 SG-1	SS-1 10/08/2019 SS-1
Analyte	Unit	MTCA Method B Screening Levels For Soil Gas			
VOCs					
1,1,1-Trichloroethane	ug/m3	76000	< 3 U	< 3 U	
1,1,2-Trichloroethane	ug/m3	3	< 0.6 U	< 0.6 U	
1,1-Dichloroethane	ug/m3	52	< 2.2 U	< 2.2 U	
1,1-Dichloroethene	ug/m3	3000	< 2.2 U	< 2.2 U	
1,2-Dichloroethane (EDC)	ug/m3	3.2	< 0.22 U	< 0.22 U	
1,2-Dichloropropane	ug/m3	23	< 1.3 U	< 1.3 U	
Chloroethane	ug/m3	150000	< 15 U	< 15 U	
cis-1,2-Dichloroethene (cDCE)	ug/m3		< 2.2 U	< 2.2 U	
Tetrachloroethene (PCE)	ug/m3	320	< 37 U	< 37 U	
trans-1,2-Dichloroethene	ug/m3		< 2.2 U	< 2.2 U	
Trichloroethene (TCE)	ug/m3	12	< 1.5 U	< 1.5 U	
Vinyl Chloride	ug/m3	9.4	< 1.4 U	< 1.4 U	

Bold - Analyte Detected

Blue Shaded - Detected result exceeded screening level

U - Analyte not detected at or above Reporting Limit (RL) shown

FIGURES

ATTACHMENT 1

Laboratory Certificates of Analysis

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

October 24, 2019

Jeremy Porter, Project Manager
Aspect Consulting, LLC
710 2nd Ave S, Suite 550
Seattle, WA 98104

Dear Mr Porter:

Included are the results from the testing of material submitted on October 9, 2019 from the Russell Rd 140252, F&BI 910188 project. There are 6 pages included in this report.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Data Aspect
ASP1024R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on October 9, 2019 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC Russell Rd 140252, F&BI 910188 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Aspect Consulting, LLC</u>
910188 -01	SS-1
910188 -02	SG-1

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	SS-1	Client:	Aspect Consulting, LLC
Date Received:	10/09/19	Project:	Russell Rd 140252, F&BI 910188
Date Collected:	10/08/19	Lab ID:	910188-01 1/5.5
Date Analyzed:	10/16/19	Data File:	101539.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

	%	Lower	Upper
Surrogates:	Recovery:	Limit:	Limit:
4-Bromofluorobenzene	83	70	130

Compounds:	Concentration	
	ug/m3	ppbv
Vinyl chloride	<1.4	<0.55
Chloroethane	<15	<5.5
1,1-Dichloroethene	<2.2	<0.55
trans-1,2-Dichloroethene	<2.2	<0.55
1,1-Dichloroethane	<2.2	<0.55
cis-1,2-Dichloroethene	<2.2	<0.55
1,2-Dichloroethane (EDC)	<0.22	<0.055
1,1,1-Trichloroethane	<3	<0.55
Trichloroethene	<1.5	<0.28
1,2-Dichloropropane	<1.3	<0.28
1,1,2-Trichloroethane	<0.6	<0.11
Tetrachloroethene	<37	<5.5

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	SG-1	Client:	Aspect Consulting, LLC
Date Received:	10/09/19	Project:	Russell Rd 140252, F&BI 910188
Date Collected:	10/08/19	Lab ID:	910188-02 1/5.5
Date Analyzed:	10/16/19	Data File:	101540.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	83	70	130

Compounds:	Concentration	
	ug/m3	ppbv
Vinyl chloride	<1.4	<0.55
Chloroethane	<15	<5.5
1,1-Dichloroethene	<2.2	<0.55
trans-1,2-Dichloroethene	<2.2	<0.55
1,1-Dichloroethane	<2.2	<0.55
cis-1,2-Dichloroethene	<2.2	<0.55
1,2-Dichloroethane (EDC)	<0.22	<0.055
1,1,1-Trichloroethane	<3	<0.55
Trichloroethene	<1.5	<0.28
1,2-Dichloropropane	<1.3	<0.28
1,1,2-Trichloroethane	<0.6	<0.11
Tetrachloroethene	<37	<5.5

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	Russell Rd 140252, F&BI 910188
Date Collected:	Not Applicable	Lab ID:	09-2465 mb
Date Analyzed:	10/15/19	Data File:	101517.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

	%	Lower	Upper
Surrogates:	Recovery:	Limit:	Limit:
4-Bromofluorobenzene	82	70	130

Compounds:	Concentration	
	ug/m3	ppbv
Vinyl chloride	<0.26	<0.1
Chloroethane	<2.6	<1
1,1-Dichloroethene	<0.4	<0.1
trans-1,2-Dichloroethene	<0.4	<0.1
1,1-Dichloroethane	<0.4	<0.1
cis-1,2-Dichloroethene	<0.4	<0.1
1,2-Dichloroethane (EDC)	<0.04	<0.01
1,1,1-Trichloroethane	<0.55	<0.1
Trichloroethene	<0.27	<0.05
1,2-Dichloropropane	<0.23	<0.05
1,1,2-Trichloroethane	<0.11	<0.02
Tetrachloroethene	<6.8	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 10/24/19

Date Received: 10/09/19

Project: Russell Rd 140252, F&BI 910188

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES
FOR VOLATILES BY METHOD TO-15**

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Vinyl chloride	ppbv	5	92	70-130
Chloroethane	ppbv	5	92	70-130
1,1-Dichloroethene	ppbv	5	99	70-130
trans-1,2-Dichloroethene	ppbv	5	94	70-130
1,1-Dichloroethane	ppbv	5	95	70-130
cis-1,2-Dichloroethene	ppbv	5	93	70-130
1,2-Dichloroethane (EDC)	ppbv	5	99	70-130
1,1,1-Trichloroethane	ppbv	5	99	70-130
1,2-Dichloropropane	ppbv	5	90	70-130
Trichloroethene	ppbv	5	97	70-130
1,1,2-Trichloroethane	ppbv	5	84	70-130
Tetrachloroethene	ppbv	5	90	70-130

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht - The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

Page # _____ of _____

TURNAROUND TIME

~~Standard~~ RUSH

Rush charges authorized by: _____

SAMPLE DISPOSAL

~~Dispose after 30 days~~

☐ Archive Samples

☐ Other _____

[illegible]

FORMS\COC\COCTO-15.DOC

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: 	Dale B. Black	Aspect	10/9/19	1724
Received by: 	VINTT	FB/	10/9/19	1722
Relinquished by:				
Received by:				

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

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fbi@isomedia.com
www.friedmanandbruya.com

October 22, 2019

Jeremy Porter, Project Manager
Aspect Consulting, LLC
710 2nd Ave S, Suite 550
Seattle, WA 98104

Dear Mr Porter:

Included are the results from the testing of material submitted on October 9, 2019 from the Russell Rd 140252, F&BI 910191 project. There are 42 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Data Aspect
ASP1022R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on October 9, 2019 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC Russell Rd 140252, F&BI 910191 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Aspect Consulting, LLC</u>
910191 -01	MW-5-100719
910191 -02	MW-6-100719
910191 -03	MW-17-100719
910191 -04	MW-22-100719
910191 -05	MW-18-100719
910191 -06	MW-20-100719
910191 -07	MW-4-100819
910191 -08	MW-8-100819
910191 -09	MW-2-100819
910191 -10	MW-19-100819
910191 -11	MW-3-100819
910191 -12	MW-21-100819
910191 -13	MW-2D-100919
910191 -14	MW-16-100919
910191 -15	MW-16D-100919

1,1-Dichloroethane in the 8260C laboratory control sample duplicate exceeded the acceptance criteria. The analyte was not detected in the sample, therefore the data were acceptable.

All other quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 10/22/19

Date Received: 10/09/19

Project: Russell Rd 140252, F&BI 910191

Date Extracted: 10/10/19 and 10/15/19

Date Analyzed: 10/10/19 and 10/15/19

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES
FOR TOTAL PETROLEUM HYDROCARBONS AS
DIESEL AND MOTOR OIL
USING METHOD NWTPH-Dx**
Results Reported as ug/L (ppb)

<u>Sample ID</u> Laboratory ID	<u>Diesel Range</u> (C ₁₀ -C ₂₅)	<u>Motor Oil Range</u> (C ₂₅ -C ₃₆)	<u>Surrogate</u> (% Recovery) (Limit 51-134)
MW-5-100719 910191-01	68 x	<250	115
MW-6-100719 910191-02	<50	<250	119
MW-17-100719 910191-03	140 x	<250	118
MW-22-100719 910191-04	95 x	<250	126
MW-18-100719 910191-05	<50	<250	118
MW-20-100719 910191-06	<50	<250	106
MW-4-100819 910191-07	<50	<250	100
MW-8-100819 910191-08	190 x	410	107
MW-2-100819 910191-09	<50	<250	113
MW-19-100819 910191-10	230 x	280	107
MW-3-100819 910191-11	400 x	430 x	86

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 10/22/19

Date Received: 10/09/19

Project: Russell Rd 140252, F&BI 910191

Date Extracted: 10/10/19 and 10/15/19

Date Analyzed: 10/10/19 and 10/15/19

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES
FOR TOTAL PETROLEUM HYDROCARBONS AS
DIESEL AND MOTOR OIL
USING METHOD NWTPH-D_x
Results Reported as ug/L (ppb)**

<u>Sample ID</u> Laboratory ID	<u>Diesel Range</u> (C ₁₀ -C ₂₅)	<u>Motor Oil Range</u> (C ₂₅ -C ₃₆)	<u>Surrogate</u> (% Recovery) (Limit 51-134)
MW-21-100819 910191-12	80 x	<250	103
MW-2D-100919 910191-13	93 x	<250	97
MW-16-100919 910191-14	150 x	<250	111
MW-16D-100919 910191-15	<50	<250	107
Method Blank 09-2485 MB	<50	<250	104
Method Blank 09-2524 MB	<50	<250	110

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 6020B

Client ID:	MW-5-100719	Client:	Aspect Consulting, LLC
Date Received:	10/09/19	Project:	Russell Rd 140252, F&BI 910191
Date Extracted:	10/16/19	Lab ID:	910191-01
Date Analyzed:	10/16/19	Data File:	910191-01.067
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
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Arsenic	2.51
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FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 6020B

Client ID:	MW-6-100719	Client:	Aspect Consulting, LLC
Date Received:	10/09/19	Project:	Russell Rd 140252, F&BI 910191
Date Extracted:	10/16/19	Lab ID:	910191-02
Date Analyzed:	10/16/19	Data File:	910191-02.110
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
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Arsenic	<1
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FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 6020B

Client ID:	MW-17-100719	Client:	Aspect Consulting, LLC
Date Received:	10/09/19	Project:	Russell Rd 140252, F&BI 910191
Date Extracted:	10/16/19	Lab ID:	910191-03
Date Analyzed:	10/16/19	Data File:	910191-03.111
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
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Arsenic	49.0
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FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 6020B

Client ID:	MW-22-100719	Client:	Aspect Consulting, LLC
Date Received:	10/09/19	Project:	Russell Rd 140252, F&BI 910191
Date Extracted:	10/16/19	Lab ID:	910191-04
Date Analyzed:	10/16/19	Data File:	910191-04.112
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
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Arsenic	1.47
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FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 6020B

Client ID:	MW-18-100719	Client:	Aspect Consulting, LLC
Date Received:	10/09/19	Project:	Russell Rd 140252, F&BI 910191
Date Extracted:	10/16/19	Lab ID:	910191-05
Date Analyzed:	10/16/19	Data File:	910191-05.113
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
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Arsenic	<1
---------	----

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 6020B

Client ID:	MW-20-100719	Client:	Aspect Consulting, LLC
Date Received:	10/09/19	Project:	Russell Rd 140252, F&BI 910191
Date Extracted:	10/16/19	Lab ID:	910191-06
Date Analyzed:	10/16/19	Data File:	910191-06.114
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
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Arsenic	1.40
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FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 6020B

Client ID:	MW-4-100819	Client:	Aspect Consulting, LLC
Date Received:	10/09/19	Project:	Russell Rd 140252, F&BI 910191
Date Extracted:	10/16/19	Lab ID:	910191-07
Date Analyzed:	10/16/19	Data File:	910191-07.115
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
----------	-----------------------------

Arsenic	1.24
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FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 6020B

Client ID:	MW-8-100819	Client:	Aspect Consulting, LLC
Date Received:	10/09/19	Project:	Russell Rd 140252, F&BI 910191
Date Extracted:	10/16/19	Lab ID:	910191-08
Date Analyzed:	10/16/19	Data File:	910191-08.116
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
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Arsenic	<1
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FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 6020B

Client ID:	MW-2-100819	Client:	Aspect Consulting, LLC
Date Received:	10/09/19	Project:	Russell Rd 140252, F&BI 910191
Date Extracted:	10/16/19	Lab ID:	910191-09
Date Analyzed:	10/16/19	Data File:	910191-09.117
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
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Arsenic	<1
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FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 6020B

Client ID:	MW-19-100819	Client:	Aspect Consulting, LLC
Date Received:	10/09/19	Project:	Russell Rd 140252, F&BI 910191
Date Extracted:	10/16/19	Lab ID:	910191-10
Date Analyzed:	10/16/19	Data File:	910191-10.118
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
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Arsenic	40.2
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FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 6020B

Client ID:	MW-3-100819	Client:	Aspect Consulting, LLC
Date Received:	10/09/19	Project:	Russell Rd 140252, F&BI 910191
Date Extracted:	10/16/19	Lab ID:	910191-11
Date Analyzed:	10/16/19	Data File:	910191-11.121
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
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Arsenic	22.6
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FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 6020B

Client ID:	MW-21-100819	Client:	Aspect Consulting, LLC
Date Received:	10/09/19	Project:	Russell Rd 140252, F&BI 910191
Date Extracted:	10/16/19	Lab ID:	910191-12
Date Analyzed:	10/16/19	Data File:	910191-12.122
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
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Arsenic	1.17
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FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 6020B

Client ID:	MW-2D-100919	Client:	Aspect Consulting, LLC
Date Received:	10/09/19	Project:	Russell Rd 140252, F&BI 910191
Date Extracted:	10/16/19	Lab ID:	910191-13
Date Analyzed:	10/16/19	Data File:	910191-13.123
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
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Arsenic	2.56
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FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 6020B

Client ID:	MW-16-100919	Client:	Aspect Consulting, LLC
Date Received:	10/09/19	Project:	Russell Rd 140252, F&BI 910191
Date Extracted:	10/16/19	Lab ID:	910191-14
Date Analyzed:	10/16/19	Data File:	910191-14.124
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
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Arsenic	<1
---------	----

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 6020B

Client ID:	MW-16D-100919	Client:	Aspect Consulting, LLC
Date Received:	10/09/19	Project:	Russell Rd 140252, F&BI 910191
Date Extracted:	10/16/19	Lab ID:	910191-15
Date Analyzed:	10/16/19	Data File:	910191-15.125
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
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Arsenic	6.27
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FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	NA	Project:	Russell Rd 140252, F&BI 910191
Date Extracted:	10/16/19	Lab ID:	I9-659 mb
Date Analyzed:	10/16/19	Data File:	I9-659 mb.065
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
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Arsenic	<1
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FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID: MW-5-100719	Client: Aspect Consulting, LLC
Date Received: 10/09/19	Project: Russell Rd 140252, F&BI 910191
Date Extracted: 10/11/19	Lab ID: 910191-01
Date Analyzed: 10/11/19	Data File: 101144.D
Matrix: Water	Instrument: GCMS4
Units: ug/L (ppb)	Operator: MS/AEN

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	57	121
Toluene-d8	100	63	127
4-Bromofluorobenzene	98	60	133

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.2	Dibromochloromethane	<1
Bromomethane	<1	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<1	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<1
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<1
2-Butanone (MEK)	<10	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<1	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<1	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<1	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,3-Dichlorobenzene	<1
Bromodichloromethane	<1	1,4-Dichlorobenzene	<1
Dibromomethane	<1	1,2-Dichlorobenzene	<1
4-Methyl-2-pentanone	<10	1,2-Dibromo-3-chloropropane	<10
cis-1,3-Dichloropropene	<1	1,2,4-Trichlorobenzene	<1
Toluene	<1	Hexachlorobutadiene	<1
trans-1,3-Dichloropropene	<1	Naphthalene	<1
1,1,2-Trichloroethane	<1	1,2,3-Trichlorobenzene	<1
2-Hexanone	<10		

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID: MW-6-100719	Client: Aspect Consulting, LLC
Date Received: 10/09/19	Project: Russell Rd 140252, F&BI 910191
Date Extracted: 10/11/19	Lab ID: 910191-02
Date Analyzed: 10/11/19	Data File: 101145.D
Matrix: Water	Instrument: GCMS4
Units: ug/L (ppb)	Operator: MS/AEN

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	57	121
Toluene-d8	99	63	127
4-Bromofluorobenzene	96	60	133

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.2	Dibromochloromethane	<1
Bromomethane	<1	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<1	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<1
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<1
2-Butanone (MEK)	<10	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<1	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<1	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<1	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,3-Dichlorobenzene	<1
Bromodichloromethane	<1	1,4-Dichlorobenzene	<1
Dibromomethane	<1	1,2-Dichlorobenzene	<1
4-Methyl-2-pentanone	<10	1,2-Dibromo-3-chloropropane	<10
cis-1,3-Dichloropropene	<1	1,2,4-Trichlorobenzene	<1
Toluene	<1	Hexachlorobutadiene	<1
trans-1,3-Dichloropropene	<1	Naphthalene	<1
1,1,2-Trichloroethane	<1	1,2,3-Trichlorobenzene	<1
2-Hexanone	<10		

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID: MW-17-100719	Client: Aspect Consulting, LLC
Date Received: 10/09/19	Project: Russell Rd 140252, F&BI 910191
Date Extracted: 10/11/19	Lab ID: 910191-03
Date Analyzed: 10/11/19	Data File: 101146.D
Matrix: Water	Instrument: GCMS4
Units: ug/L (ppb)	Operator: MS/AEN

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	57	121
Toluene-d8	100	63	127
4-Bromofluorobenzene	99	60	133

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.2	Dibromochloromethane	<1
Bromomethane	<1	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<1	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<1
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<1
2-Butanone (MEK)	<10	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<1	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<1	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<1	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,3-Dichlorobenzene	<1
Bromodichloromethane	<1	1,4-Dichlorobenzene	<1
Dibromomethane	<1	1,2-Dichlorobenzene	<1
4-Methyl-2-pentanone	<10	1,2-Dibromo-3-chloropropane	<10
cis-1,3-Dichloropropene	<1	1,2,4-Trichlorobenzene	<1
Toluene	<1	Hexachlorobutadiene	<1
trans-1,3-Dichloropropene	<1	Naphthalene	<1
1,1,2-Trichloroethane	<1	1,2,3-Trichlorobenzene	<1
2-Hexanone	<10		

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID: MW-22-100719	Client: Aspect Consulting, LLC
Date Received: 10/09/19	Project: Russell Rd 140252, F&BI 910191
Date Extracted: 10/11/19	Lab ID: 910191-04
Date Analyzed: 10/12/19	Data File: 101147.D
Matrix: Water	Instrument: GCMS4
Units: ug/L (ppb)	Operator: MS/AEN

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	57	121
Toluene-d8	99	63	127
4-Bromofluorobenzene	97	60	133

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.2	Dibromochloromethane	<1
Bromomethane	<1	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<1	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<1
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<1
2-Butanone (MEK)	<10	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<1	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<1	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<1	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,3-Dichlorobenzene	<1
Bromodichloromethane	<1	1,4-Dichlorobenzene	<1
Dibromomethane	<1	1,2-Dichlorobenzene	<1
4-Methyl-2-pentanone	<10	1,2-Dibromo-3-chloropropane	<10
cis-1,3-Dichloropropene	<1	1,2,4-Trichlorobenzene	<1
Toluene	<1	Hexachlorobutadiene	<1
trans-1,3-Dichloropropene	<1	Naphthalene	<1
1,1,2-Trichloroethane	<1	1,2,3-Trichlorobenzene	<1
2-Hexanone	<10		

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID: MW-18-100719	Client: Aspect Consulting, LLC
Date Received: 10/09/19	Project: Russell Rd 140252, F&BI 910191
Date Extracted: 10/11/19	Lab ID: 910191-05
Date Analyzed: 10/12/19	Data File: 101148.D
Matrix: Water	Instrument: GCMS4
Units: ug/L (ppb)	Operator: MS/AEN

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	57	121
Toluene-d8	100	63	127
4-Bromofluorobenzene	99	60	133

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	1.0
Vinyl chloride	<0.2	Dibromochloromethane	<1
Bromomethane	<1	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<1	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<1
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<1
2-Butanone (MEK)	<10	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<1	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<1	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<1	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,3-Dichlorobenzene	<1
Bromodichloromethane	<1	1,4-Dichlorobenzene	<1
Dibromomethane	<1	1,2-Dichlorobenzene	<1
4-Methyl-2-pentanone	<10	1,2-Dibromo-3-chloropropane	<10
cis-1,3-Dichloropropene	<1	1,2,4-Trichlorobenzene	<1
Toluene	<1	Hexachlorobutadiene	<1
trans-1,3-Dichloropropene	<1	Naphthalene	<1
1,1,2-Trichloroethane	<1	1,2,3-Trichlorobenzene	<1
2-Hexanone	<10		

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-20-100719	Client:	Aspect Consulting, LLC
Date Received:	10/09/19	Project:	Russell Rd 140252, F&BI 910191
Date Extracted:	10/11/19	Lab ID:	910191-06
Date Analyzed:	10/12/19	Data File:	101149.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	MS/AEN

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	57	121
Toluene-d8	101	63	127
4-Bromofluorobenzene	98	60	133

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	32
Vinyl chloride	<0.2	Dibromochloromethane	<1
Bromomethane	<1	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<1	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<1
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<1
2-Butanone (MEK)	<10	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<1	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<1	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<1	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,3-Dichlorobenzene	<1
Bromodichloromethane	<1	1,4-Dichlorobenzene	<1
Dibromomethane	<1	1,2-Dichlorobenzene	<1
4-Methyl-2-pentanone	<10	1,2-Dibromo-3-chloropropane	<10
cis-1,3-Dichloropropene	<1	1,2,4-Trichlorobenzene	<1
Toluene	<1	Hexachlorobutadiene	<1
trans-1,3-Dichloropropene	<1	Naphthalene	<1
1,1,2-Trichloroethane	<1	1,2,3-Trichlorobenzene	<1
2-Hexanone	<10		

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID: MW-4-100819	Client: Aspect Consulting, LLC
Date Received: 10/09/19	Project: Russell Rd 140252, F&BI 910191
Date Extracted: 10/11/19	Lab ID: 910191-07
Date Analyzed: 10/12/19	Data File: 101150.D
Matrix: Water	Instrument: GCMS4
Units: ug/L (ppb)	Operator: MS/AEN

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	57	121
Toluene-d8	100	63	127
4-Bromofluorobenzene	97	60	133

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.2	Dibromochloromethane	<1
Bromomethane	<1	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<1	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<1
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<1
2-Butanone (MEK)	<10	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<1	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<1	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<1	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,3-Dichlorobenzene	<1
Bromodichloromethane	<1	1,4-Dichlorobenzene	<1
Dibromomethane	<1	1,2-Dichlorobenzene	<1
4-Methyl-2-pentanone	<10	1,2-Dibromo-3-chloropropane	<10
cis-1,3-Dichloropropene	<1	1,2,4-Trichlorobenzene	<1
Toluene	<1	Hexachlorobutadiene	<1
trans-1,3-Dichloropropene	<1	Naphthalene	<1
1,1,2-Trichloroethane	<1	1,2,3-Trichlorobenzene	<1
2-Hexanone	<10		

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-8-100819	Client:	Aspect Consulting, LLC
Date Received:	10/09/19	Project:	Russell Rd 140252, F&BI 910191
Date Extracted:	10/11/19	Lab ID:	910191-08
Date Analyzed:	10/12/19	Data File:	101151.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	MS/AEN

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	57	121
Toluene-d8	100	63	127
4-Bromofluorobenzene	98	60	133

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.2	Dibromochloromethane	<1
Bromomethane	<1	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<1	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<1
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<1
2-Butanone (MEK)	<10	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<1	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<1	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<1	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,3-Dichlorobenzene	<1
Bromodichloromethane	<1	1,4-Dichlorobenzene	<1
Dibromomethane	<1	1,2-Dichlorobenzene	<1
4-Methyl-2-pentanone	<10	1,2-Dibromo-3-chloropropane	<10
cis-1,3-Dichloropropene	<1	1,2,4-Trichlorobenzene	<1
Toluene	<1	Hexachlorobutadiene	<1
trans-1,3-Dichloropropene	<1	Naphthalene	<1
1,1,2-Trichloroethane	<1	1,2,3-Trichlorobenzene	<1
2-Hexanone	<10		

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID: MW-2-100819	Client: Aspect Consulting, LLC
Date Received: 10/09/19	Project: Russell Rd 140252, F&BI 910191
Date Extracted: 10/11/19	Lab ID: 910191-09
Date Analyzed: 10/12/19	Data File: 101152.D
Matrix: Water	Instrument: GCMS4
Units: ug/L (ppb)	Operator: MS/AEN

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	57	121
Toluene-d8	101	63	127
4-Bromofluorobenzene	99	60	133

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.2	Dibromochloromethane	<1
Bromomethane	<1	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<1	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<1
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<1
2-Butanone (MEK)	<10	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<1	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<1	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	1.7	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,3-Dichlorobenzene	<1
Bromodichloromethane	<1	1,4-Dichlorobenzene	<1
Dibromomethane	<1	1,2-Dichlorobenzene	<1
4-Methyl-2-pentanone	<10	1,2-Dibromo-3-chloropropane	<10
cis-1,3-Dichloropropene	<1	1,2,4-Trichlorobenzene	<1
Toluene	<1	Hexachlorobutadiene	<1
trans-1,3-Dichloropropene	<1	Naphthalene	<1
1,1,2-Trichloroethane	<1	1,2,3-Trichlorobenzene	<1
2-Hexanone	<10		

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID: MW-19-100819	Client: Aspect Consulting, LLC
Date Received: 10/09/19	Project: Russell Rd 140252, F&BI 910191
Date Extracted: 10/11/19	Lab ID: 910191-10
Date Analyzed: 10/12/19	Data File: 101153.D
Matrix: Water	Instrument: GCMS4
Units: ug/L (ppb)	Operator: MS/AEN

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	57	121
Toluene-d8	100	63	127
4-Bromofluorobenzene	98	60	133

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.2	Dibromochloromethane	<1
Bromomethane	<1	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<1	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<1
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<1
2-Butanone (MEK)	<10	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<1	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<1	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<1	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,3-Dichlorobenzene	<1
Bromodichloromethane	<1	1,4-Dichlorobenzene	<1
Dibromomethane	<1	1,2-Dichlorobenzene	<1
4-Methyl-2-pentanone	<10	1,2-Dibromo-3-chloropropane	<10
cis-1,3-Dichloropropene	<1	1,2,4-Trichlorobenzene	<1
Toluene	<1	Hexachlorobutadiene	<1
trans-1,3-Dichloropropene	<1	Naphthalene	<1
1,1,2-Trichloroethane	<1	1,2,3-Trichlorobenzene	<1
2-Hexanone	<10		

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID: MW-3-100819	Client: Aspect Consulting, LLC
Date Received: 10/09/19	Project: Russell Rd 140252, F&BI 910191
Date Extracted: 10/11/19	Lab ID: 910191-11
Date Analyzed: 10/12/19	Data File: 101154.D
Matrix: Water	Instrument: GCMS4
Units: ug/L (ppb)	Operator: MS/AEN

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	98	57	121
Toluene-d8	100	63	127
4-Bromofluorobenzene	98	60	133

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.2	Dibromochloromethane	<1
Bromomethane	<1	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<1	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<1
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<1
2-Butanone (MEK)	<10	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<1	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<1	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<1	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,3-Dichlorobenzene	<1
Bromodichloromethane	<1	1,4-Dichlorobenzene	<1
Dibromomethane	<1	1,2-Dichlorobenzene	<1
4-Methyl-2-pentanone	<10	1,2-Dibromo-3-chloropropane	<10
cis-1,3-Dichloropropene	<1	1,2,4-Trichlorobenzene	<1
Toluene	<1	Hexachlorobutadiene	<1
trans-1,3-Dichloropropene	<1	Naphthalene	<1
1,1,2-Trichloroethane	<1	1,2,3-Trichlorobenzene	<1
2-Hexanone	<10		

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID: MW-21-100819	Client: Aspect Consulting, LLC
Date Received: 10/09/19	Project: Russell Rd 140252, F&BI 910191
Date Extracted: 10/11/19	Lab ID: 910191-12
Date Analyzed: 10/12/19	Data File: 101155.D
Matrix: Water	Instrument: GCMS4
Units: ug/L (ppb)	Operator: MS/AEN

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	57	121
Toluene-d8	100	63	127
4-Bromofluorobenzene	96	60	133

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	110
Vinyl chloride	1.6	Dibromochloromethane	<1
Bromomethane	<1	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	3.1	m,p-Xylene	<2
Hexane	<1	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	1.1	Bromoform	<1
1,1-Dichloroethane	1.4	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	68	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<1
2-Butanone (MEK)	<10	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<1	2-Chlorotoluene	<1
1,1,1-Trichloroethane	2.2	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<1	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	310 ve	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,3-Dichlorobenzene	<1
Bromodichloromethane	<1	1,4-Dichlorobenzene	<1
Dibromomethane	<1	1,2-Dichlorobenzene	<1
4-Methyl-2-pentanone	<10	1,2-Dibromo-3-chloropropane	<10
cis-1,3-Dichloropropene	<1	1,2,4-Trichlorobenzene	<1
Toluene	<1	Hexachlorobutadiene	<1
trans-1,3-Dichloropropene	<1	Naphthalene	<1
1,1,2-Trichloroethane	<1	1,2,3-Trichlorobenzene	<1
2-Hexanone	<10		

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260D

Client Sample ID: MW-21-100819	Client: Aspect Consulting, LLC
Date Received: 10/09/19	Project: Russell Rd 140252, F&BI 910191
Date Extracted: 10/11/19	Lab ID: 910191-12 1/10
Date Analyzed: 10/18/19	Data File: 101739.D
Matrix: Water	Instrument: GCMS4
Units: ug/L (ppb)	Operator: MS/AEN

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	57	121
Toluene-d8	98	63	127
4-Bromofluorobenzene	97	60	133

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<10	1,3-Dichloropropane	<10
Chloromethane	<100	Tetrachloroethene	100
Vinyl chloride	<2	Dibromochloromethane	<10
Bromomethane	<10	1,2-Dibromoethane (EDB)	<10
Chloroethane	<10	Chlorobenzene	<10
Trichlorofluoromethane	<10	Ethylbenzene	<10
Acetone	<500	1,1,1,2-Tetrachloroethane	<10
1,1-Dichloroethene	<10	m,p-Xylene	<20
Hexane	<10	o-Xylene	<10
Methylene chloride	<50	Styrene	<10
Methyl t-butyl ether (MTBE)	<10	Isopropylbenzene	<10
trans-1,2-Dichloroethene	<10	Bromoform	<10
1,1-Dichloroethane	<10	n-Propylbenzene	<10
2,2-Dichloropropane	<10	Bromobenzene	<10
cis-1,2-Dichloroethene	70	1,3,5-Trimethylbenzene	<10
Chloroform	<10	1,1,2,2-Tetrachloroethane	<10
2-Butanone (MEK)	<100	1,2,3-Trichloropropane	<10
1,2-Dichloroethane (EDC)	<10	2-Chlorotoluene	<10
1,1,1-Trichloroethane	<10	4-Chlorotoluene	<10
1,1-Dichloropropene	<10	tert-Butylbenzene	<10
Carbon tetrachloride	<10	1,2,4-Trimethylbenzene	<10
Benzene	<3.5	sec-Butylbenzene	<10
Trichloroethene	300	p-Isopropyltoluene	<10
1,2-Dichloropropane	<10	1,3-Dichlorobenzene	<10
Bromodichloromethane	<10	1,4-Dichlorobenzene	<10
Dibromomethane	<10	1,2-Dichlorobenzene	<10
4-Methyl-2-pentanone	<100	1,2-Dibromo-3-chloropropane	<100
cis-1,3-Dichloropropene	<10	1,2,4-Trichlorobenzene	<10
Toluene	<10	Hexachlorobutadiene	<10
trans-1,3-Dichloropropene	<10	Naphthalene	<10
1,1,2-Trichloroethane	<10	1,2,3-Trichlorobenzene	<10
2-Hexanone	<100		

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-2D-100919	Client:	Aspect Consulting, LLC
Date Received:	10/09/19	Project:	Russell Rd 140252, F&BI 910191
Date Extracted:	10/11/19	Lab ID:	910191-13
Date Analyzed:	10/12/19	Data File:	101156.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	MS/AEN

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	57	121
Toluene-d8	100	63	127
4-Bromofluorobenzene	97	60	133

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.2	Dibromochloromethane	<1
Bromomethane	<1	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<1	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<1
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<1
2-Butanone (MEK)	<10	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<1	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<1	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<1	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,3-Dichlorobenzene	<1
Bromodichloromethane	<1	1,4-Dichlorobenzene	<1
Dibromomethane	<1	1,2-Dichlorobenzene	<1
4-Methyl-2-pentanone	<10	1,2-Dibromo-3-chloropropane	<10
cis-1,3-Dichloropropene	<1	1,2,4-Trichlorobenzene	<1
Toluene	<1	Hexachlorobutadiene	<1
trans-1,3-Dichloropropene	<1	Naphthalene	<1
1,1,2-Trichloroethane	<1	1,2,3-Trichlorobenzene	<1
2-Hexanone	<10		

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-16-100919	Client:	Aspect Consulting, LLC
Date Received:	10/09/19	Project:	Russell Rd 140252, F&BI 910191
Date Extracted:	10/11/19	Lab ID:	910191-14
Date Analyzed:	10/12/19	Data File:	101157.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	MS/AEN

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	57	121
Toluene-d8	100	63	127
4-Bromofluorobenzene	97	60	133

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	59
Vinyl chloride	2.8	Dibromochloromethane	<1
Bromomethane	<1	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	1.1	m,p-Xylene	<2
Hexane	<1	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	1.9	Bromoform	<1
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	140	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<1
2-Butanone (MEK)	<10	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<1	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<1	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	64	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,3-Dichlorobenzene	<1
Bromodichloromethane	<1	1,4-Dichlorobenzene	<1
Dibromomethane	<1	1,2-Dichlorobenzene	<1
4-Methyl-2-pentanone	<10	1,2-Dibromo-3-chloropropane	<10
cis-1,3-Dichloropropene	<1	1,2,4-Trichlorobenzene	<1
Toluene	<1	Hexachlorobutadiene	<1
trans-1,3-Dichloropropene	<1	Naphthalene	<1
1,1,2-Trichloroethane	<1	1,2,3-Trichlorobenzene	<1
2-Hexanone	<10		

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-16D-100919	Client:	Aspect Consulting, LLC
Date Received:	10/09/19	Project:	Russell Rd 140252, F&BI 910191
Date Extracted:	10/11/19	Lab ID:	910191-15
Date Analyzed:	10/12/19	Data File:	101158.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	MS/AEN

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	57	121
Toluene-d8	99	63	127
4-Bromofluorobenzene	97	60	133

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.2	Dibromochloromethane	<1
Bromomethane	<1	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<1	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<1
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<1
2-Butanone (MEK)	<10	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<1	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<1	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	2.4	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,3-Dichlorobenzene	<1
Bromodichloromethane	<1	1,4-Dichlorobenzene	<1
Dibromomethane	<1	1,2-Dichlorobenzene	<1
4-Methyl-2-pentanone	<10	1,2-Dibromo-3-chloropropane	<10
cis-1,3-Dichloropropene	<1	1,2,4-Trichlorobenzene	<1
Toluene	<1	Hexachlorobutadiene	<1
trans-1,3-Dichloropropene	<1	Naphthalene	<1
1,1,2-Trichloroethane	<1	1,2,3-Trichlorobenzene	<1
2-Hexanone	<10		

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	Russell Rd 140252, F&BI 910191
Date Extracted:	10/11/19	Lab ID:	09-2457 mb
Date Analyzed:	10/11/19	Data File:	101110.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	MS/AEN

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	57	121
Toluene-d8	105	63	127
4-Bromofluorobenzene	90	60	133

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.2	Dibromochloromethane	<1
Bromomethane	<1	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<1	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<1
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<1
2-Butanone (MEK)	<10	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<1	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<1	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<1	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,3-Dichlorobenzene	<1
Bromodichloromethane	<1	1,4-Dichlorobenzene	<1
Dibromomethane	<1	1,2-Dichlorobenzene	<1
4-Methyl-2-pentanone	<10	1,2-Dibromo-3-chloropropane	<10
cis-1,3-Dichloropropene	<1	1,2,4-Trichlorobenzene	<1
Toluene	<1	Hexachlorobutadiene	<1
trans-1,3-Dichloropropene	<1	Naphthalene	<1
1,1,2-Trichloroethane	<1	1,2,3-Trichlorobenzene	<1
2-Hexanone	<10		

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 10/22/19

Date Received: 10/09/19

Project: Russell Rd 140252, F&BI 910191

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER
SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS
DIESEL EXTENDED USING METHOD NWTPH-D_x**

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	ug/L (ppb)	2,500	88	92	58-134	4

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 10/22/19

Date Received: 10/09/19

Project: Russell Rd 140252, F&BI 910191

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER
SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS
DIESEL EXTENDED USING METHOD NWTPH-D_x**

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	ug/L (ppb)	2,500	92	88	58-134	4

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 10/22/19

Date Received: 10/09/19

Project: Russell Rd 140252, F&BI 910191

**QUALITY ASSURANCE RESULTS
FOR THE ANALYSIS OF WATER SAMPLES
FOR DISSOLVED METALS USING EPA METHOD 6020B**

Laboratory Code: 910191-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	ug/L (ppb)	10	2.51	101	101	75-125	0

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	ug/L (ppb)	10	94	80-120

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 10/22/19

Date Received: 10/09/19

Project: Russell Rd 140252, F&BI 910191

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260C

Laboratory Code: 910191-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Dichlorodifluoromethane	ug/L (ppb)	50	<1	97	10-172
Chloromethane	ug/L (ppb)	50	<10	94	25-166
Vinyl chloride	ug/L (ppb)	50	<0.2	98	36-166
Bromomethane	ug/L (ppb)	50	<1	99	47-169
Chloroethane	ug/L (ppb)	50	<1	94	46-160
Trichlorofluoromethane	ug/L (ppb)	50	<1	54	44-165
Acetone	ug/L (ppb)	250	<50	78	10-182
1,1-Dichloroethene	ug/L (ppb)	50	<1	103	60-136
Hexane	ug/L (ppb)	50	<1	88	52-150
Methylene chloride	ug/L (ppb)	50	<5	100	67-132
Methyl t-butyl ether (MTBE)	ug/L (ppb)	50	<1	102	74-127
trans-1,2-Dichloroethene	ug/L (ppb)	50	<1	97	72-129
1,1-Dichloroethane	ug/L (ppb)	50	<1	99	70-128
2,2-Dichloropropane	ug/L (ppb)	50	<1	81	36-154
cis-1,2-Dichloroethene	ug/L (ppb)	50	<1	98	71-127
Chloroform	ug/L (ppb)	50	<1	100	65-132
2-Butanone (MEK)	ug/L (ppb)	250	<10	90	10-129
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	<1	98	48-149
1,1,1-Trichloroethane	ug/L (ppb)	50	<1	99	60-146
1,1-Dichloropropene	ug/L (ppb)	50	<1	97	69-133
Carbon tetrachloride	ug/L (ppb)	50	<1	106	56-152
Benzene	ug/L (ppb)	50	<0.35	95	76-125
Trichloroethene	ug/L (ppb)	50	<1	93	66-135
1,2-Dichloropropane	ug/L (ppb)	50	<1	97	78-125
Bromodichloromethane	ug/L (ppb)	50	<1	103	61-150
Dibromomethane	ug/L (ppb)	50	<1	96	66-141
4-Methyl-2-pentanone	ug/L (ppb)	250	<10	97	10-185
cis-1,3-Dichloropropene	ug/L (ppb)	50	<1	102	72-132
Toluene	ug/L (ppb)	50	<1	94	76-122
trans-1,3-Dichloropropene	ug/L (ppb)	50	<1	100	76-130
1,1,2-Trichloroethane	ug/L (ppb)	50	<1	99	68-131
2-Hexanone	ug/L (ppb)	250	<10	96	10-185
1,3-Dichloropropane	ug/L (ppb)	50	<1	95	71-128
Tetrachloroethene	ug/L (ppb)	50	<1	95	10-226
Dibromochloromethane	ug/L (ppb)	50	<1	109	70-139
1,2-Dibromoethane (EDB)	ug/L (ppb)	50	<1	97	69-134
Chlorobenzene	ug/L (ppb)	50	<1	94	77-122
Ethylbenzene	ug/L (ppb)	50	<1	95	69-135
1,1,1,2-Tetrachloroethane	ug/L (ppb)	50	<1	104	73-137
m,p-Xylene	ug/L (ppb)	100	<2	96	69-135
o-Xylene	ug/L (ppb)	50	<1	97	60-140
Styrene	ug/L (ppb)	50	<1	98	71-133
Isopropylbenzene	ug/L (ppb)	50	<1	97	65-142
Bromoform	ug/L (ppb)	50	<1	103	65-142
n-Propylbenzene	ug/L (ppb)	50	<1	93	58-144
Bromobenzene	ug/L (ppb)	50	<1	92	75-124
1,3,5-Trimethylbenzene	ug/L (ppb)	50	<1	93	66-137
1,1,2,2-Tetrachloroethane	ug/L (ppb)	50	<1	99	51-154
1,2,3-Trichloropropane	ug/L (ppb)	50	<1	97	53-150
2-Chlorotoluene	ug/L (ppb)	50	<1	92	66-127
4-Chlorotoluene	ug/L (ppb)	50	<1	94	65-130
tert-Butylbenzene	ug/L (ppb)	50	<1	96	65-137
1,2,4-Trimethylbenzene	ug/L (ppb)	50	<1	93	59-146
sec-Butylbenzene	ug/L (ppb)	50	<1	92	64-140
p-Isopropyltoluene	ug/L (ppb)	50	<1	91	65-141
1,3-Dichlorobenzene	ug/L (ppb)	50	<1	94	72-123
1,4-Dichlorobenzene	ug/L (ppb)	50	<1	92	69-126
1,2-Dichlorobenzene	ug/L (ppb)	50	<1	93	69-128
1,2-Dibromo-3-chloropropane	ug/L (ppb)	50	<10	105	32-164
1,2,4-Trichlorobenzene	ug/L (ppb)	50	<1	95	66-136
Hexachlorobutadiene	ug/L (ppb)	50	<1	84	60-143
Naphthalene	ug/L (ppb)	50	<1	98	44-164
1,2,3-Trichlorobenzene	ug/L (ppb)	50	<1	96	69-148

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 10/22/19

Date Received: 10/09/19

Project: Russell Rd 140252, F&BI 910191

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260C

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Dichlorodifluoromethane	ug/L (ppb)	50	118	137	25-158	15
Chloromethane	ug/L (ppb)	50	143	146	45-156	2
Vinyl chloride	ug/L (ppb)	50	141	142	50-154	1
Bromomethane	ug/L (ppb)	50	134	138	55-143	3
Chloroethane	ug/L (ppb)	50	136	139	58-146	2
Trichlorofluoromethane	ug/L (ppb)	250	131	137	50-150	4
Acetone	ug/L (ppb)	250	106	114	53-131	7
1,1-Dichloroethene	ug/L (ppb)	50	124	130	67-136	5
Hexane	ug/L (ppb)	50	116	124	57-137	7
Methylene chloride	ug/L (ppb)	50	123	127	39-148	3
Methyl t-butyl ether (MTBE)	ug/L (ppb)	50	121	126	64-147	4
trans-1,2-Dichloroethene	ug/L (ppb)	50	117	123	68-128	5
1,1-Dichloroethane	ug/L (ppb)	50	116	123 vo	79-121	6
2,2-Dichloropropane	ug/L (ppb)	50	129	135	55-143	5
cis-1,2-Dichloroethene	ug/L (ppb)	50	115	123	80-123	7
Chloroform	ug/L (ppb)	50	108	116	80-121	7
2-Butanone (MEK)	ug/L (ppb)	250	102	114	57-149	11
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	109	118	73-132	8
1,1,1-Trichloroethane	ug/L (ppb)	50	118	125	81-125	6
1,1-Dichloropropene	ug/L (ppb)	50	107	116	77-129	8
Carbon tetrachloride	ug/L (ppb)	50	124	131	75-158	5
Benzene	ug/L (ppb)	50	108	114	69-134	5
Trichloroethene	ug/L (ppb)	50	103	109	79-113	6
1,2-Dichloropropane	ug/L (ppb)	50	106	113	77-123	6
Bromodichloromethane	ug/L (ppb)	50	116	124	81-133	7
Dibromomethane	ug/L (ppb)	50	106	112	82-125	6
4-Methyl-2-pentanone	ug/L (ppb)	250	115	124	65-138	8
cis-1,3-Dichloropropene	ug/L (ppb)	50	118	125	82-132	6
Toluene	ug/L (ppb)	50	90	95	72-122	5
trans-1,3-Dichloropropene	ug/L (ppb)	50	101	107	80-136	6
1,1,2-Trichloroethane	ug/L (ppb)	50	89	95	75-124	7
2-Hexanone	ug/L (ppb)	250	88	99	60-136	12
1,3-Dichloropropene	ug/L (ppb)	50	91	98	76-126	7
Tetrachloroethene	ug/L (ppb)	50	92	96	76-121	4
Dibromochloromethane	ug/L (ppb)	50	113	118	84-133	4
1,2-Dibromoethane (EDB)	ug/L (ppb)	50	89	96	82-115	8
Chlorobenzene	ug/L (ppb)	50	93	98	83-114	5
Ethylbenzene	ug/L (ppb)	50	97	102	77-124	5
1,1,1,2-Tetrachloroethane	ug/L (ppb)	50	106	109	84-127	3
m,p-Xylene	ug/L (ppb)	100	94	99	81-112	5
o-Xylene	ug/L (ppb)	50	96	99	81-121	3
Styrene	ug/L (ppb)	50	96	103	84-119	7
Isopropylbenzene	ug/L (ppb)	50	98	102	80-117	4
Bromoform	ug/L (ppb)	50	117	118	74-136	1
n-Propylbenzene	ug/L (ppb)	50	93	98	74-126	5
Bromobenzene	ug/L (ppb)	50	89	94	80-121	5
1,3,5-Trimethylbenzene	ug/L (ppb)	50	91	96	78-123	5
1,1,2,2-Tetrachloroethane	ug/L (ppb)	50	94	101	66-126	7
1,2,3-Trichloropropane	ug/L (ppb)	50	88	97	67-124	10
2-Chlorotoluene	ug/L (ppb)	50	88	93	77-127	6
4-Chlorotoluene	ug/L (ppb)	50	89	95	78-128	7
tert-Butylbenzene	ug/L (ppb)	50	95	99	80-123	4
1,2,4-Trimethylbenzene	ug/L (ppb)	50	93	98	79-122	5
sec-Butylbenzene	ug/L (ppb)	50	93	97	80-116	4
p-Isopropyltoluene	ug/L (ppb)	50	94	99	81-123	5
1,3-Dichlorobenzene	ug/L (ppb)	50	89	95	83-113	7
1,4-Dichlorobenzene	ug/L (ppb)	50	88	95	83-107	8
1,2-Dichlorobenzene	ug/L (ppb)	50	89	94	84-112	5
1,2-Dibromo-3-chloropropane	ug/L (ppb)	50	107	108	57-141	1
1,2,4-Trichlorobenzene	ug/L (ppb)	50	88	92	72-130	4
Hexachlorobutadiene	ug/L (ppb)	50	88	92	53-141	4
Naphthalene	ug/L (ppb)	50	90	96	64-133	6
1,2,3-Trichlorobenzene	ug/L (ppb)	50	86	91	65-136	6

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht - The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

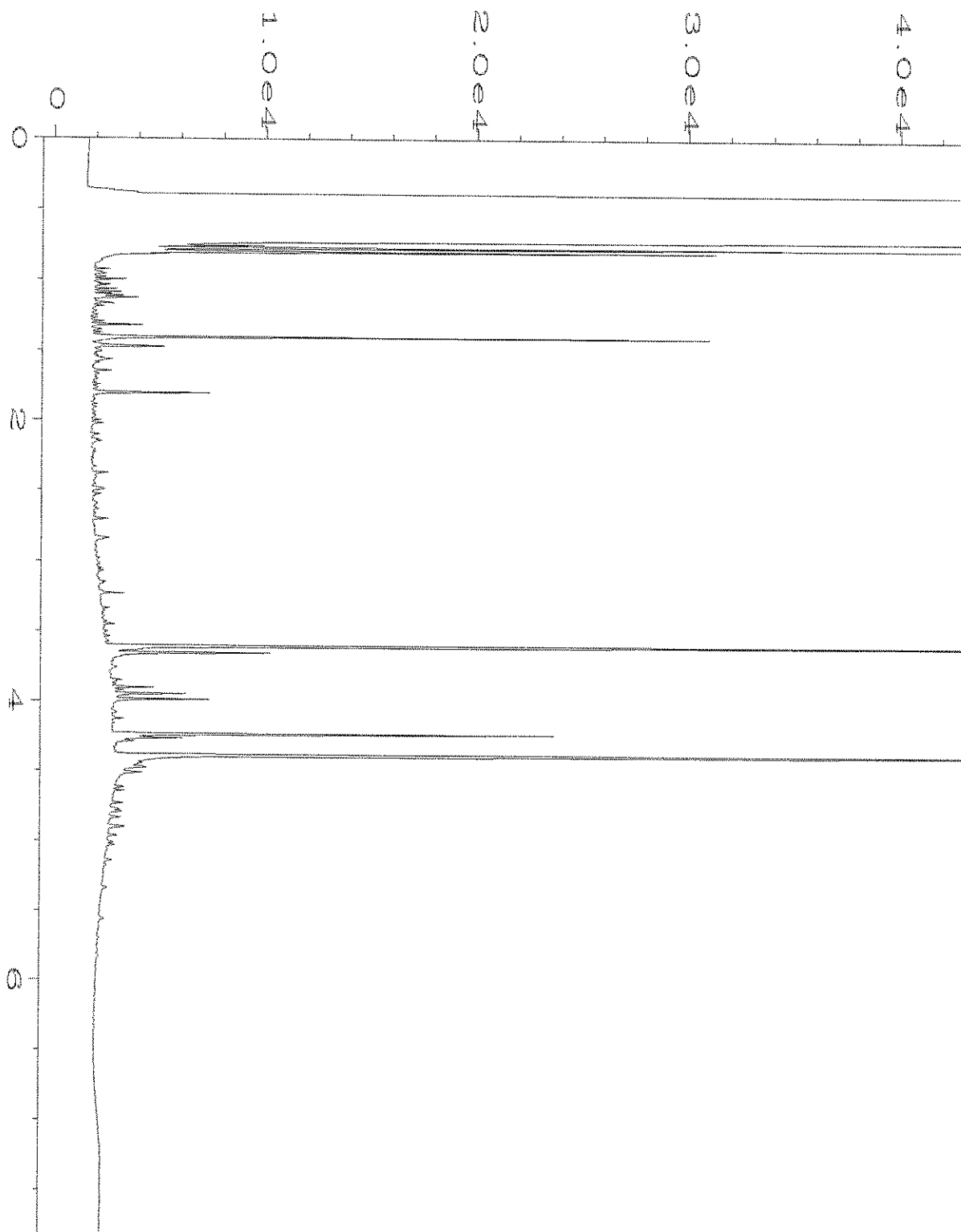
nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

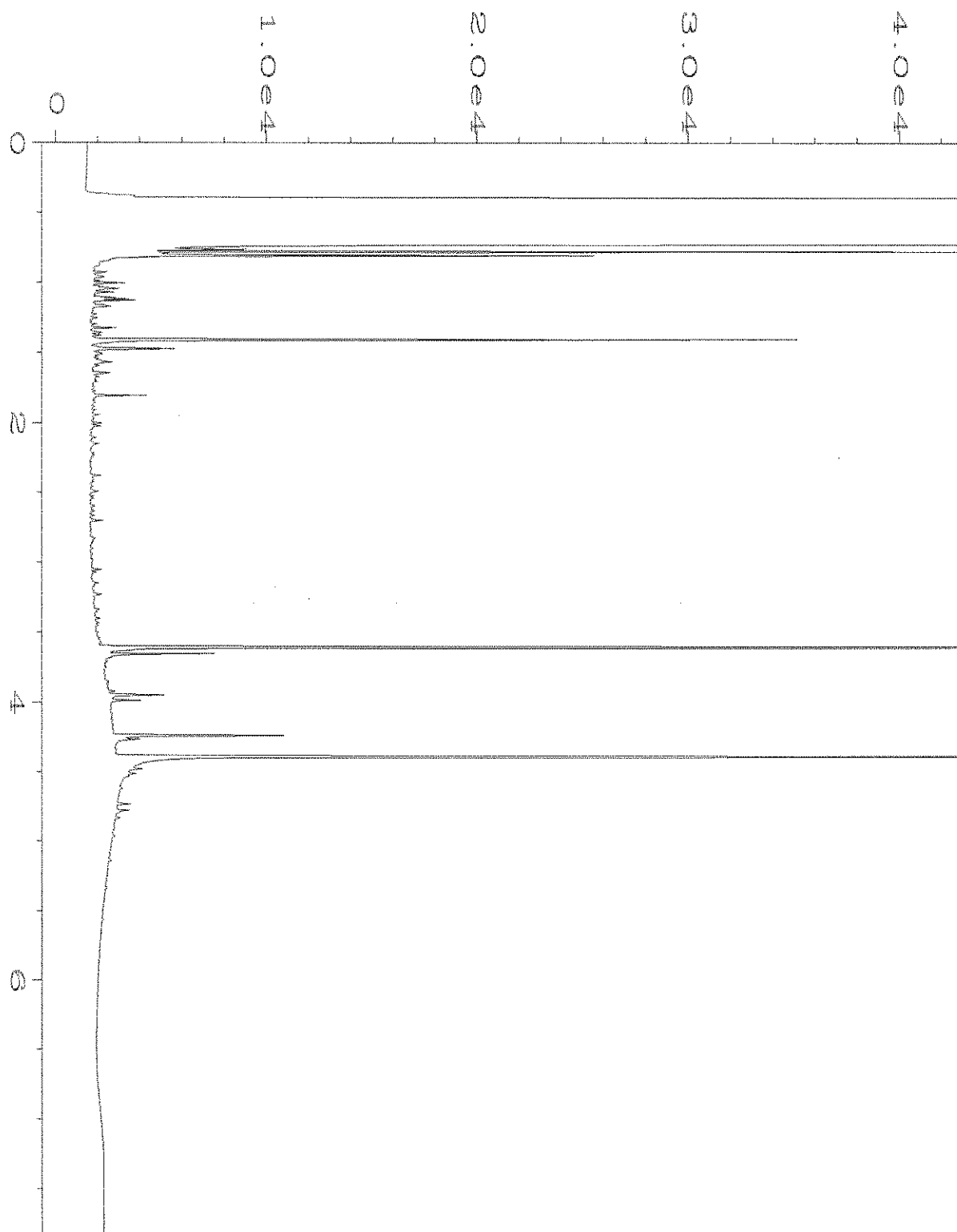
ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

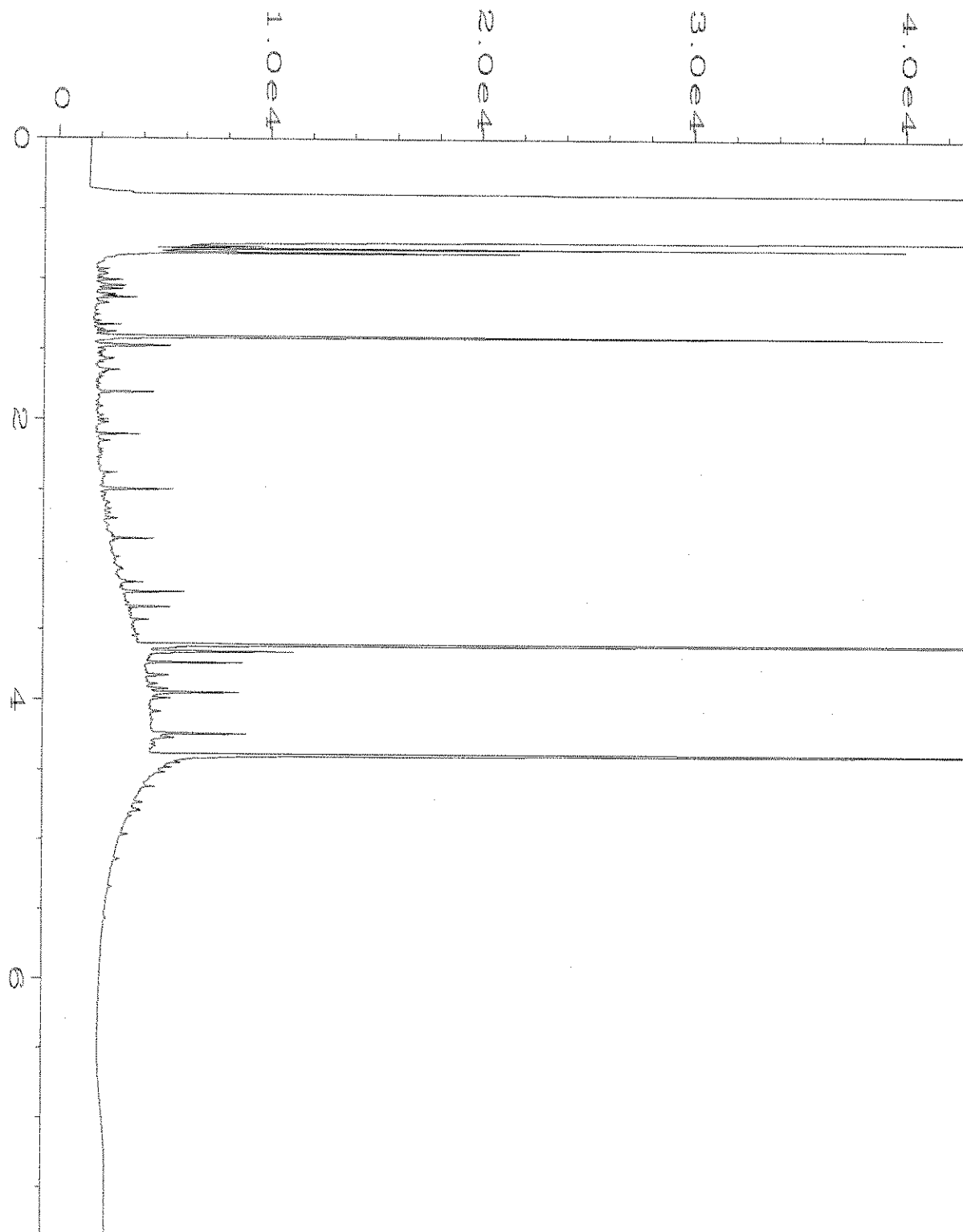
x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.



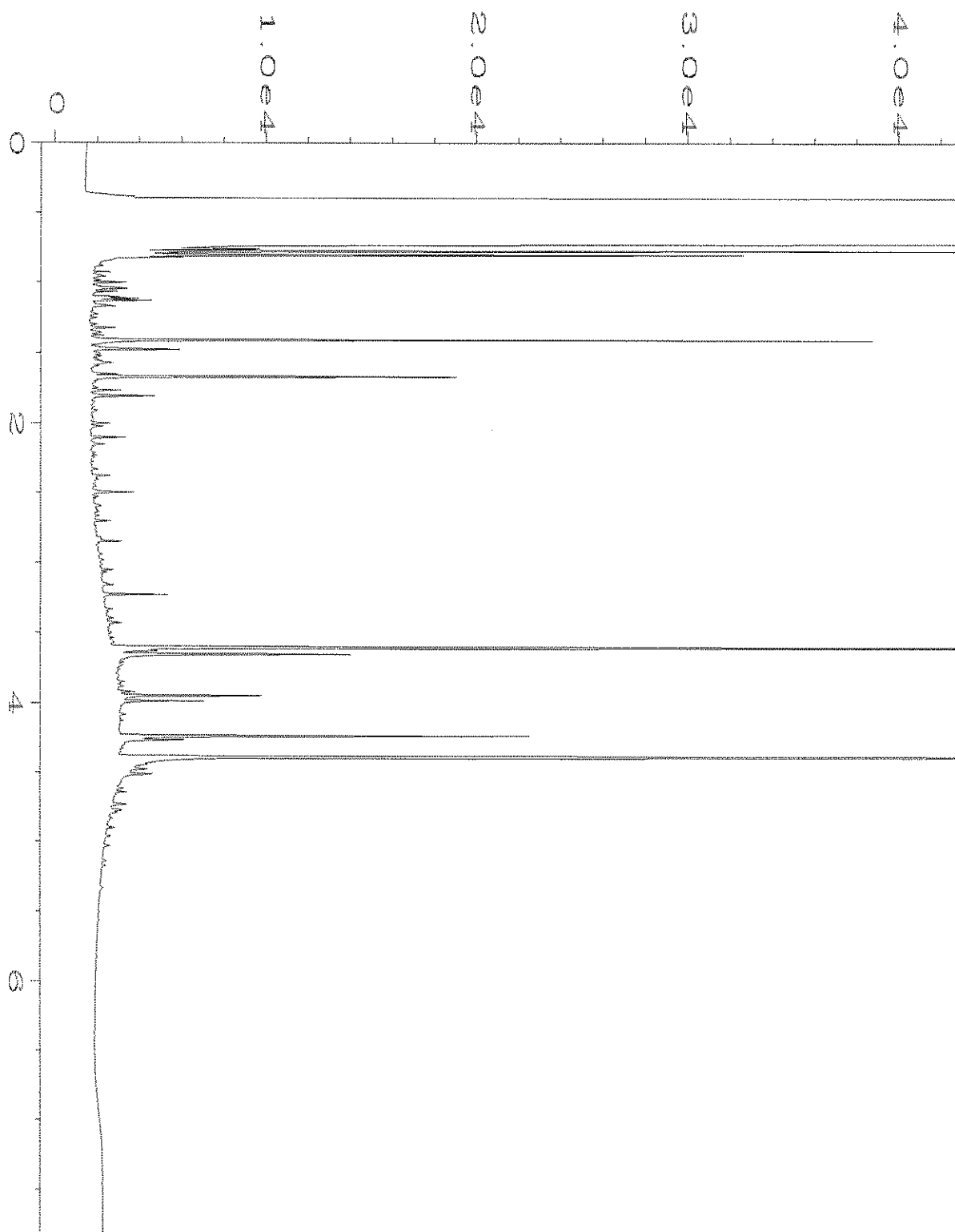
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Operator	: TL	Vial Number	: 36
Instrument	: GC#4	Injection Number	: 1
Sample Name	: 910191-01	Sequence Line	: 11
Run Time Bar Code:		Instrument Method	: DX.MTH
Acquired on	: 15 Oct 19 08:05 PM	Analysis Method	: DEFAULT.MTH
Report Created on:	16 Oct 19 12:24 PM		



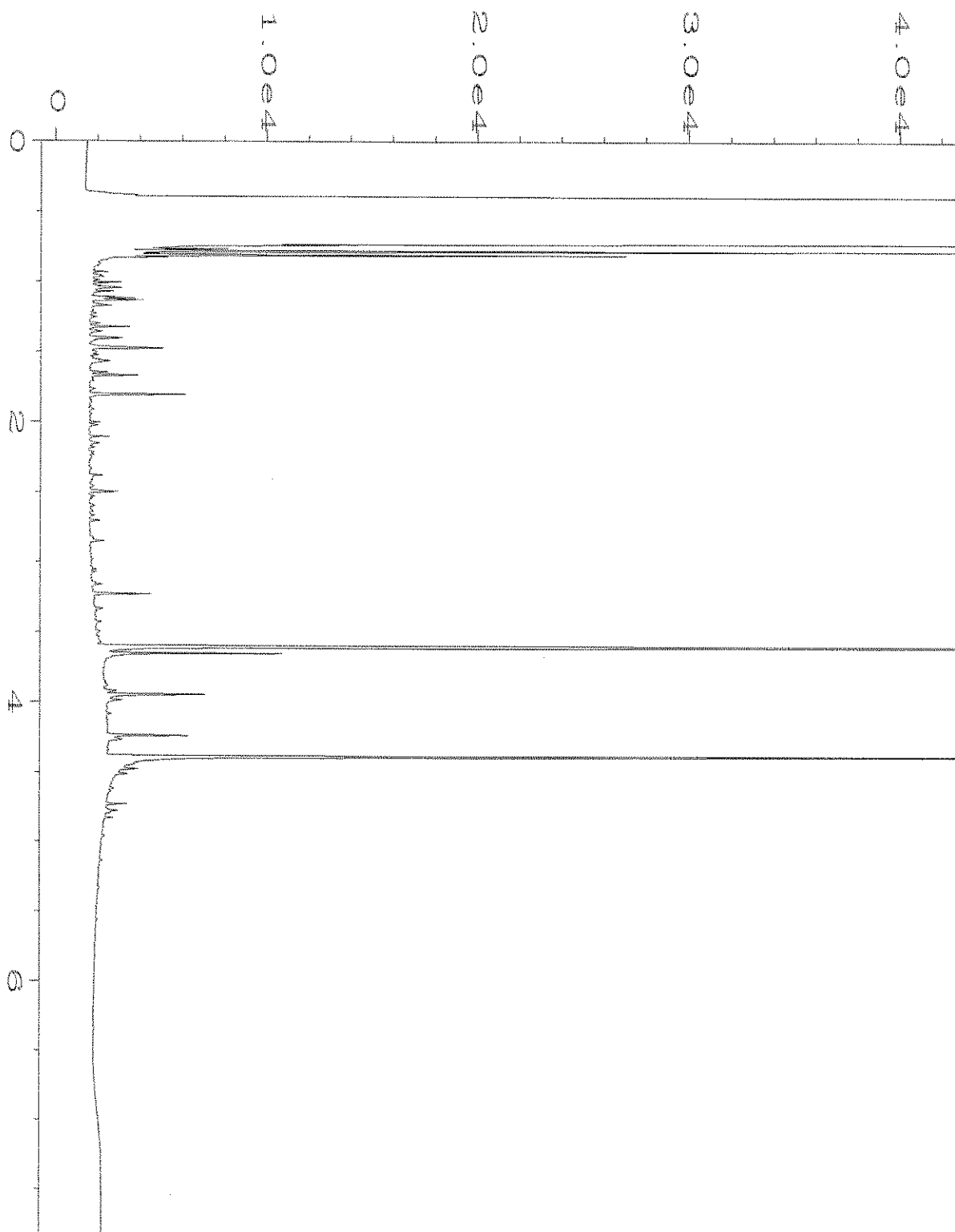
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Operator	: TL	Vial Number	: 37
Instrument	: GC#4	Injection Number	: 1
Sample Name	: 910191-02	Sequence Line	: 11
Run Time Bar Code:		Instrument Method	: DX.MTH
Acquired on	: 15 Oct 19 08:18 PM	Analysis Method	: DEFAULT.MTH
Report Created on:	16 Oct 19 12:24 PM		



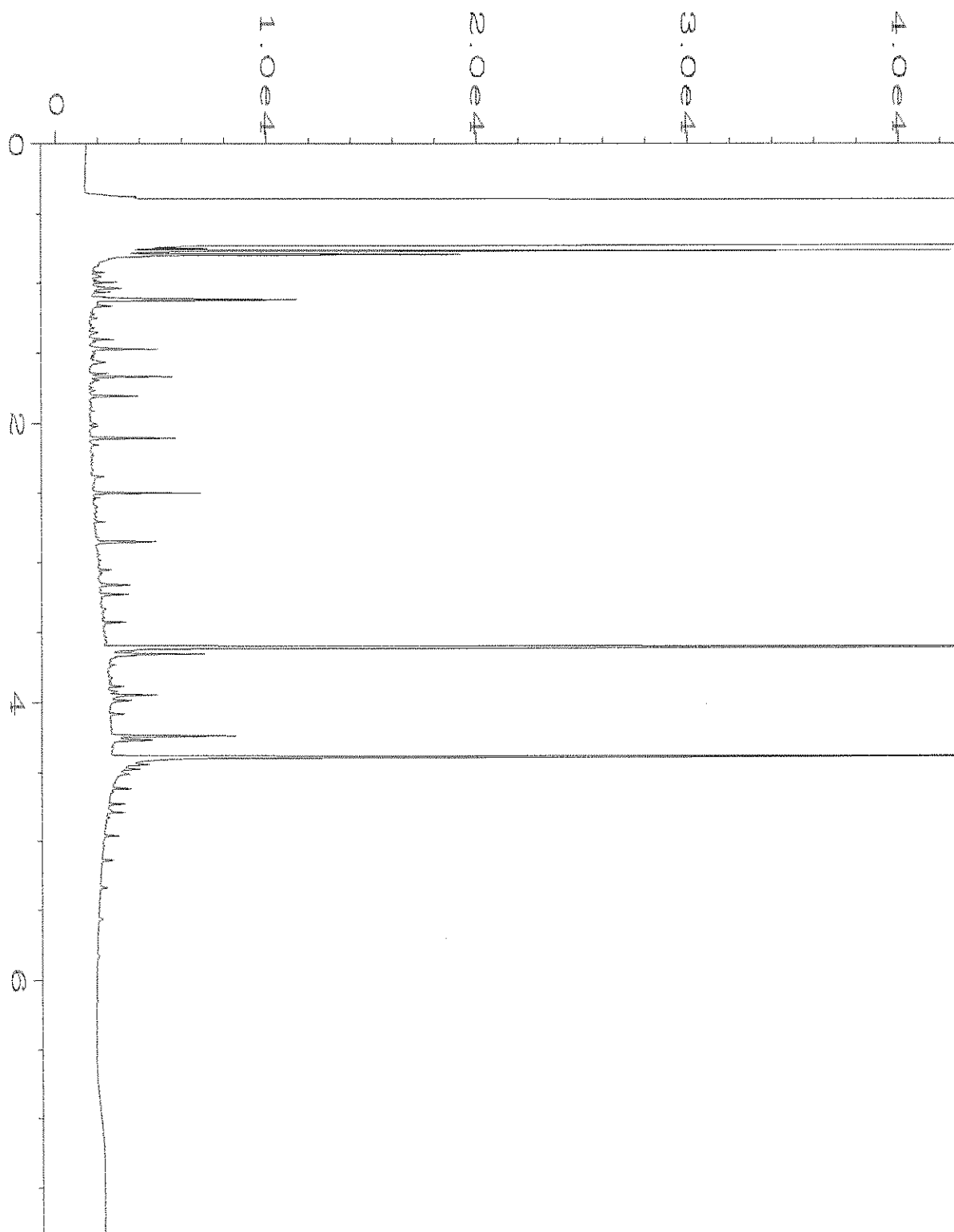
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Operator	: TL	Vial Number	: 38
Instrument	: GC#4	Injection Number	: 1
Sample Name	: 910191-03	Sequence Line	: 11
Run Time Bar Code:		Instrument Method:	DX.MTH
Acquired on	: 15 Oct 19 08:30 PM	Analysis Method	: DEFAULT.MTH
Report Created on:	16 Oct 19 12:24 PM		



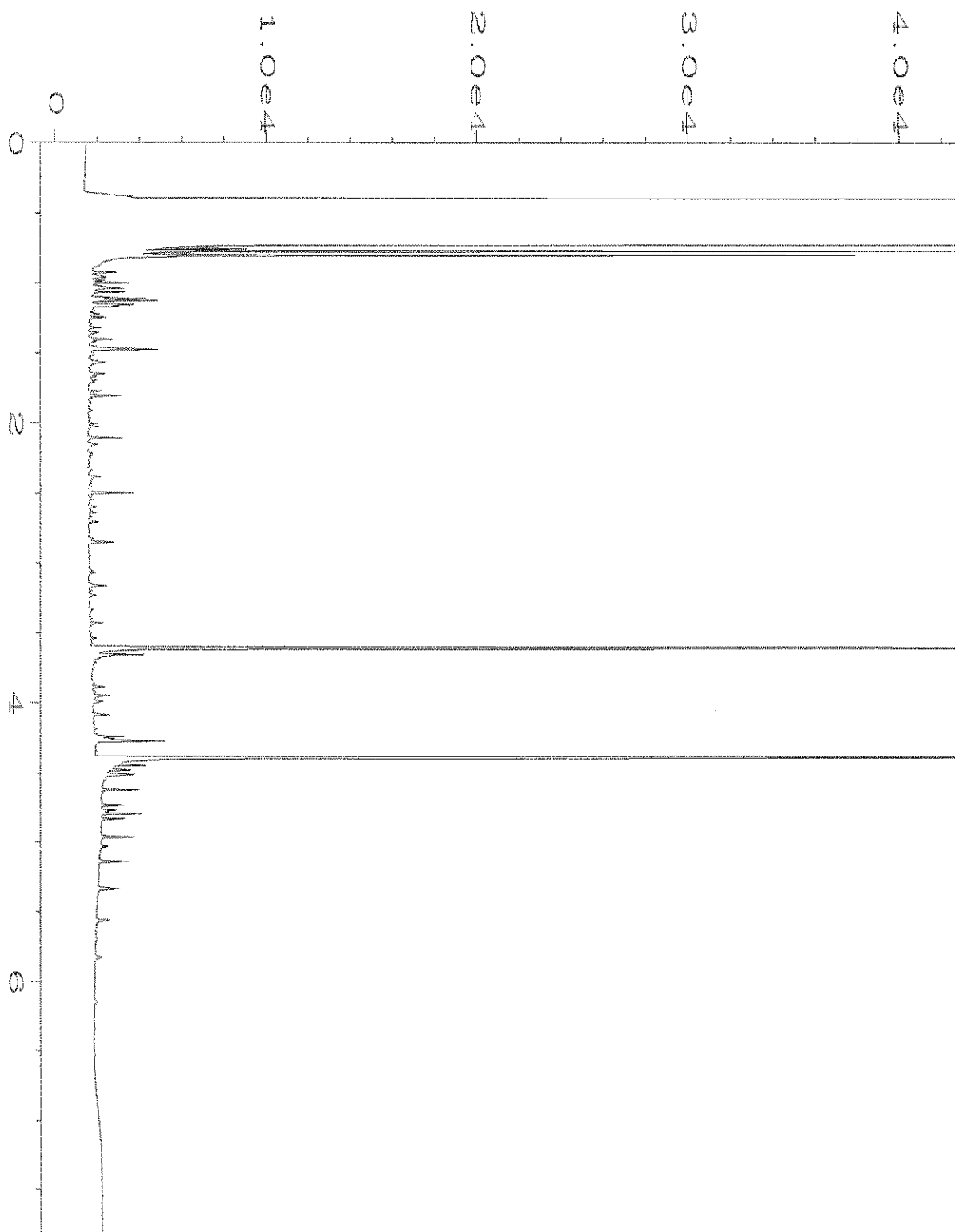
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Operator	: TL	Vial Number	: 39
Instrument	: GC#4	Injection Number	: 1
Sample Name	: 910191-04	Sequence Line	: 11
Run Time Bar Code:		Instrument Method	: DX.MTH
Acquired on	: 15 Oct 19 08:42 PM	Analysis Method	: DEFAULT.MTH
Report Created on:	16 Oct 19 12:24 PM		



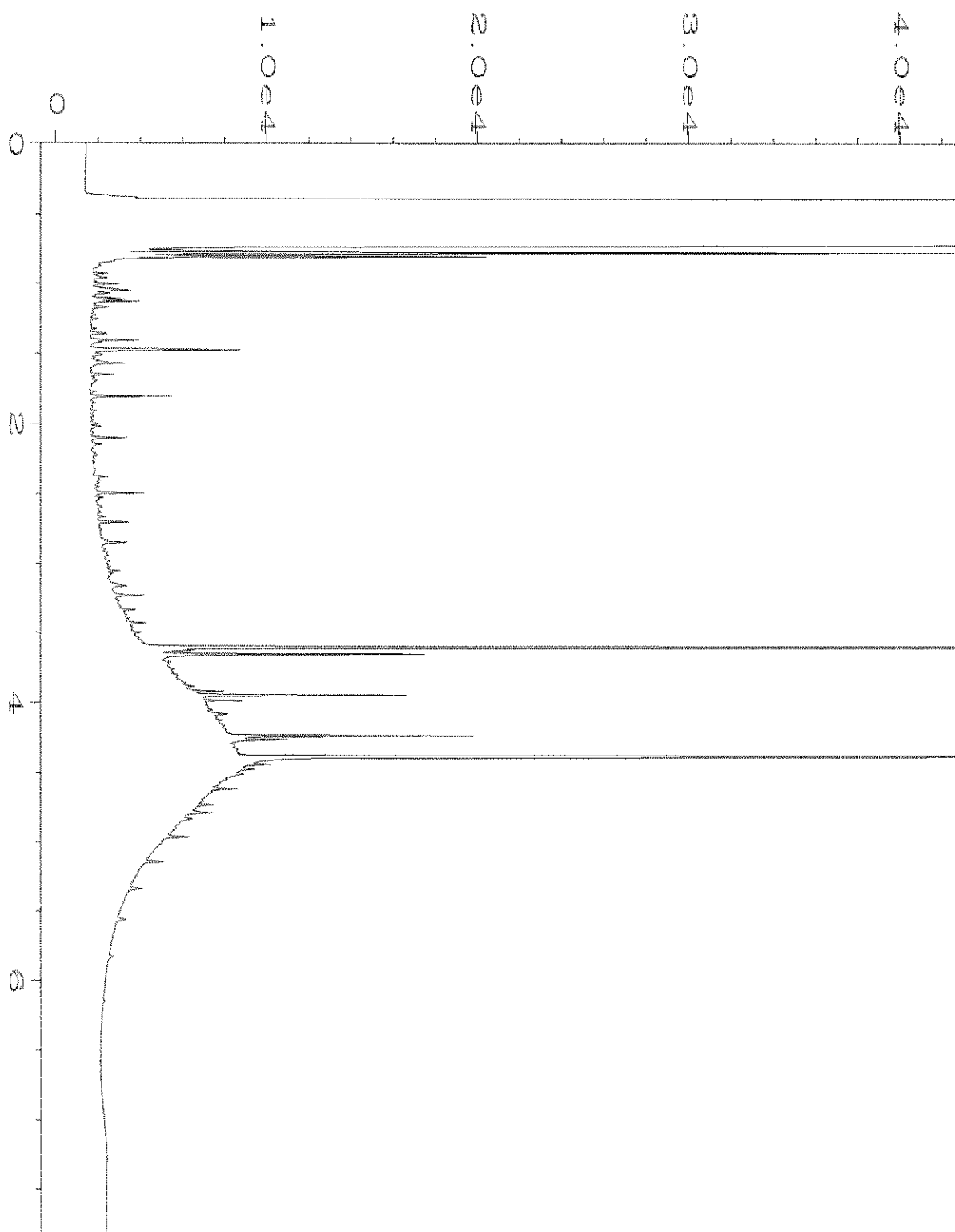
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Operator	: TL	Vial Number	: 40
Instrument	: GC#4	Injection Number	: 1
Sample Name	: 910191-05	Sequence Line	: 11
Run Time Bar Code:		Instrument Method	: DX.MTH
Acquired on	: 15 Oct 19 08:54 PM	Analysis Method	: DEFAULT.MTH
Report Created on:	16 Oct 19 12:24 PM		



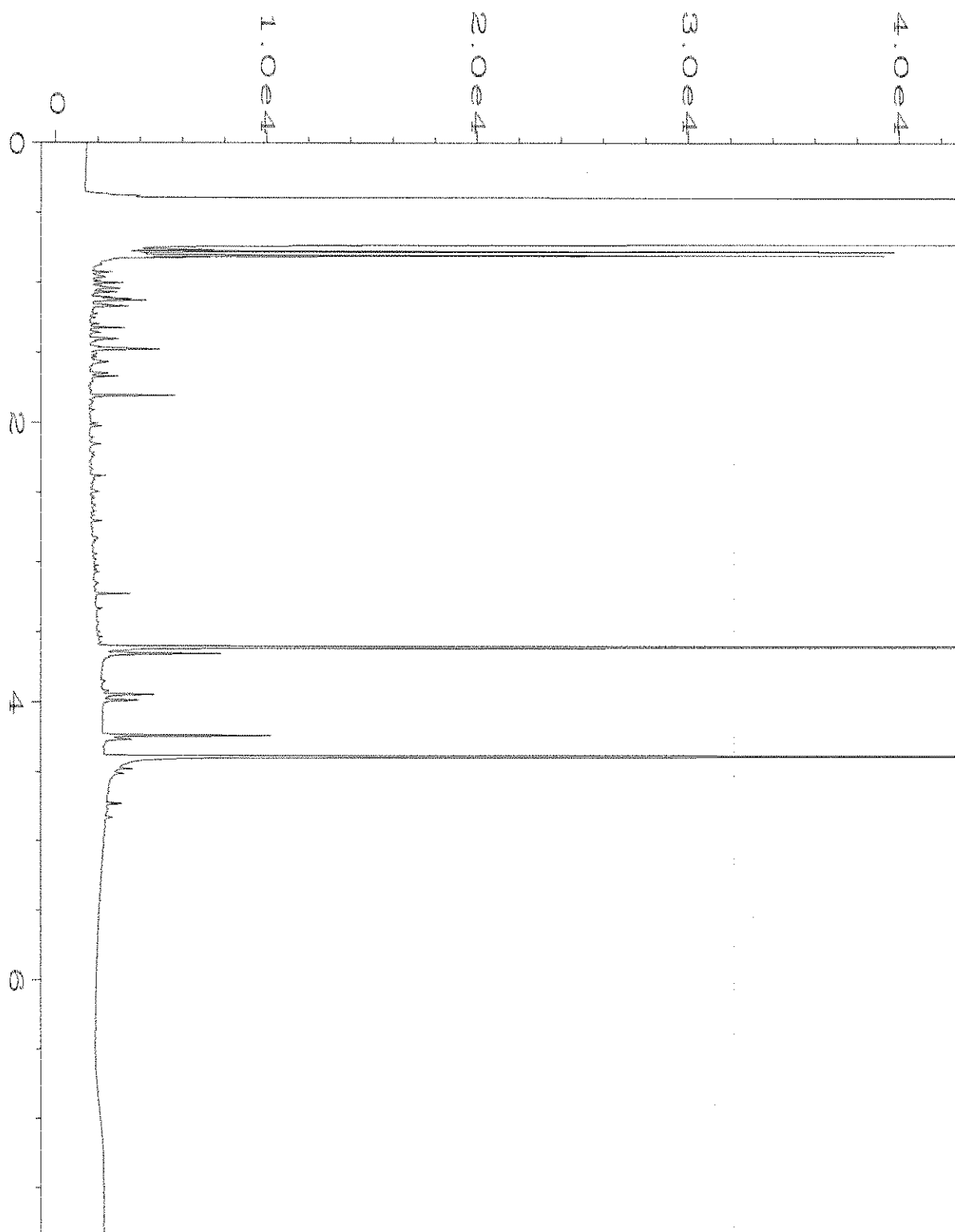
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Operator	: TL	Vial Number	: 41
Instrument	: GC#4	Injection Number	: 1
Sample Name	: 910191-06	Sequence Line	: 11
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Report Created on:	16 Oct 19 12:24 PM		



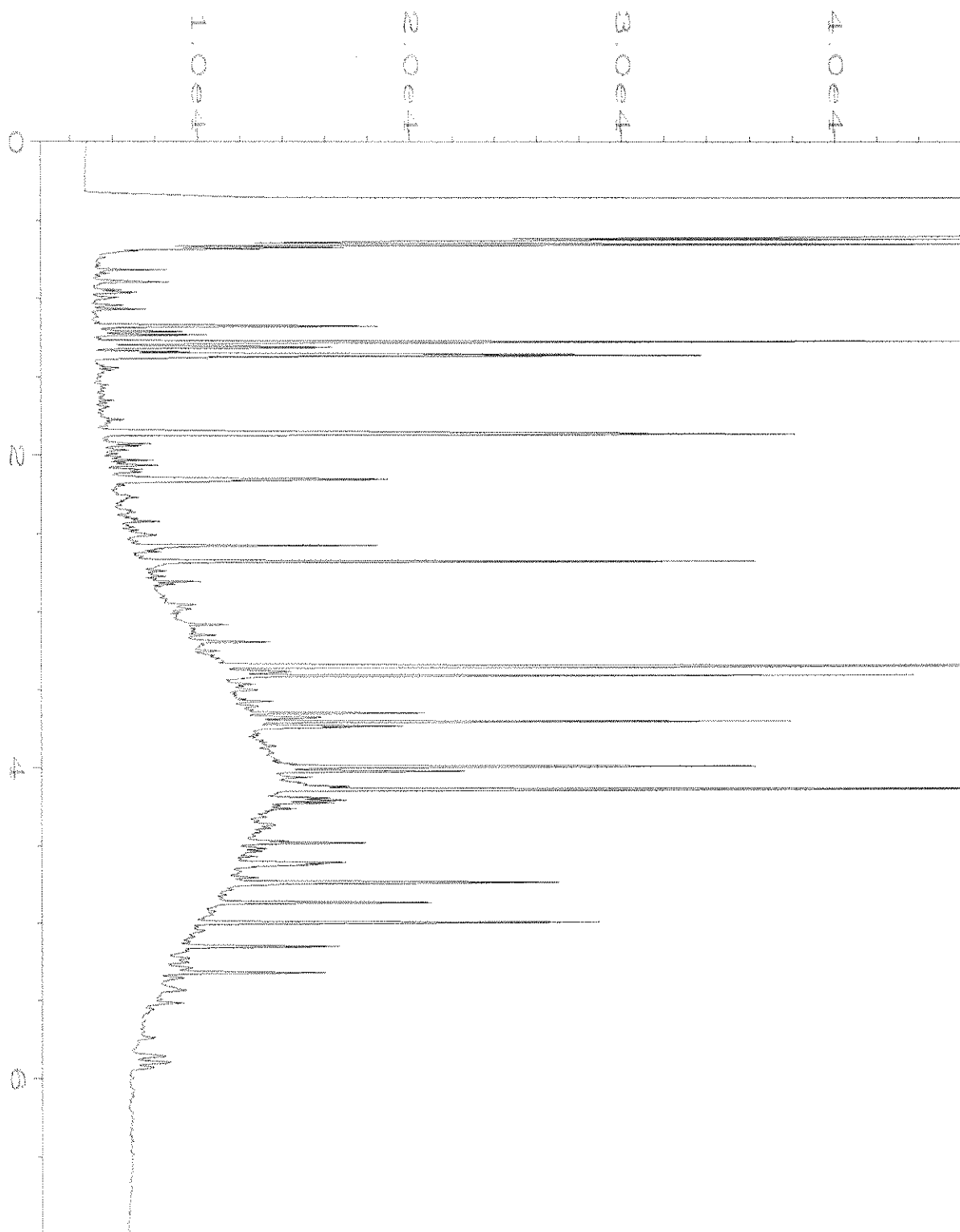
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Sample Name	: 910191-07	Sequence Line	: 11
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Report Created on:	16 Oct 19 12:25 PM		



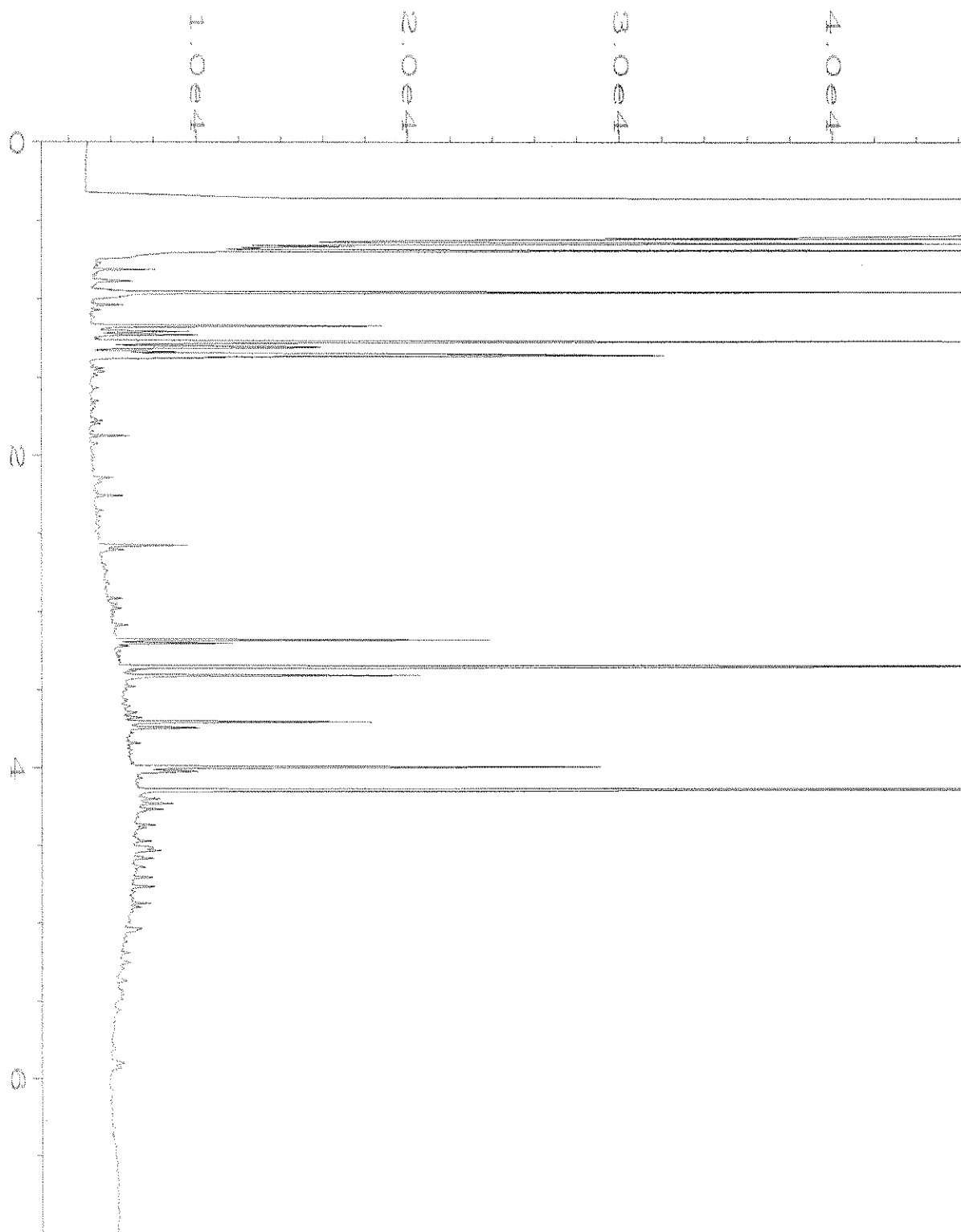
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Instrument	: GC#4	Injection Number	: 1
Sample Name	: 910191-08	Sequence Line	: 11
Run Time Bar Code:		Instrument Method	: DX.MTH
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Report Created on:	16 Oct 19 12:25 PM		



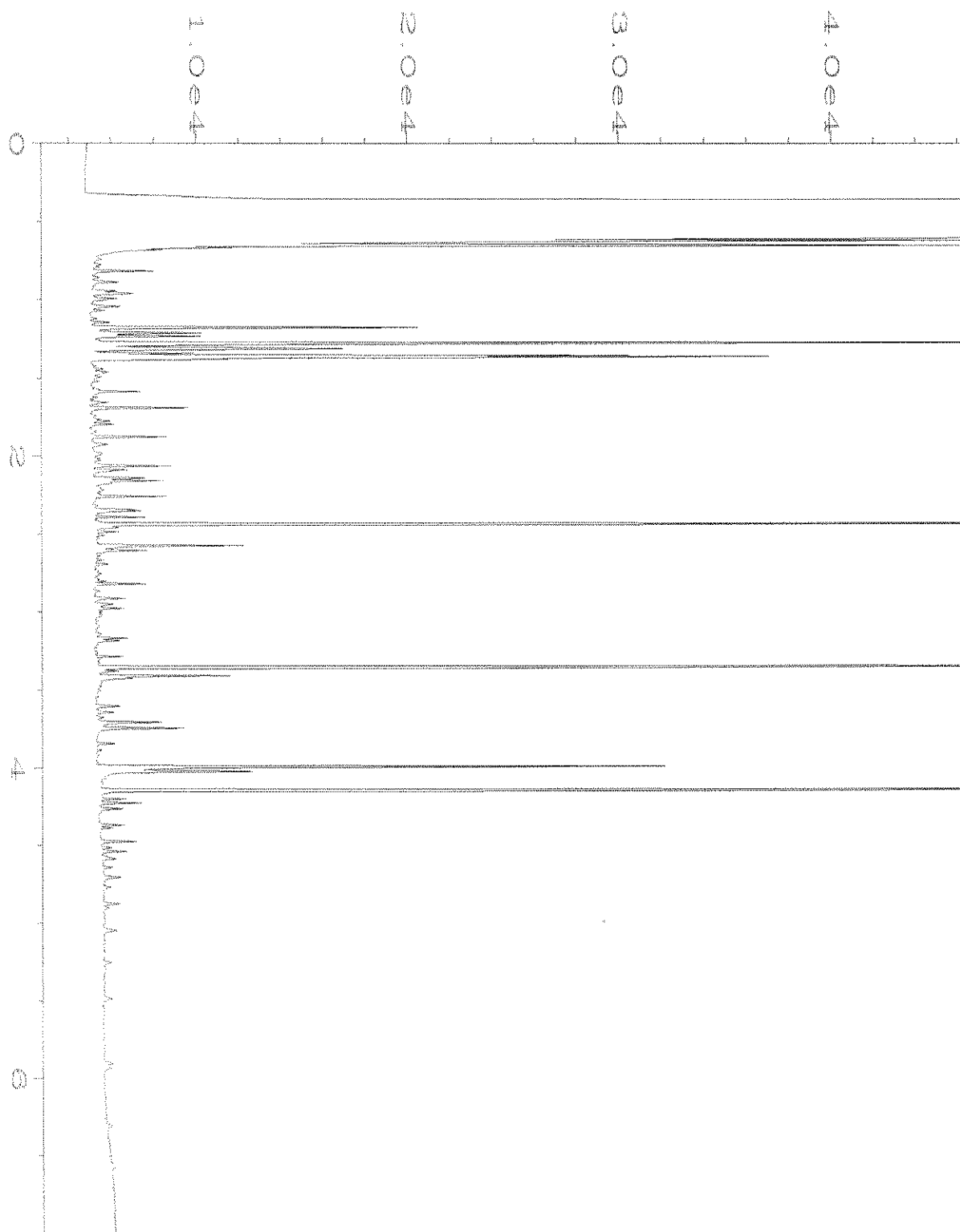
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Operator	: TL	Vial Number	: 44
Instrument	: GC#4	Injection Number	: 1
Sample Name	: 910191-09	Sequence Line	: 11
Run Time Bar Code:		Instrument Method	: DX.MTH
Acquired on	: 15 Oct 19 09:43 PM	Analysis Method	: DEFAULT.MTH
Report Created on:	16 Oct 19 12:25 PM		



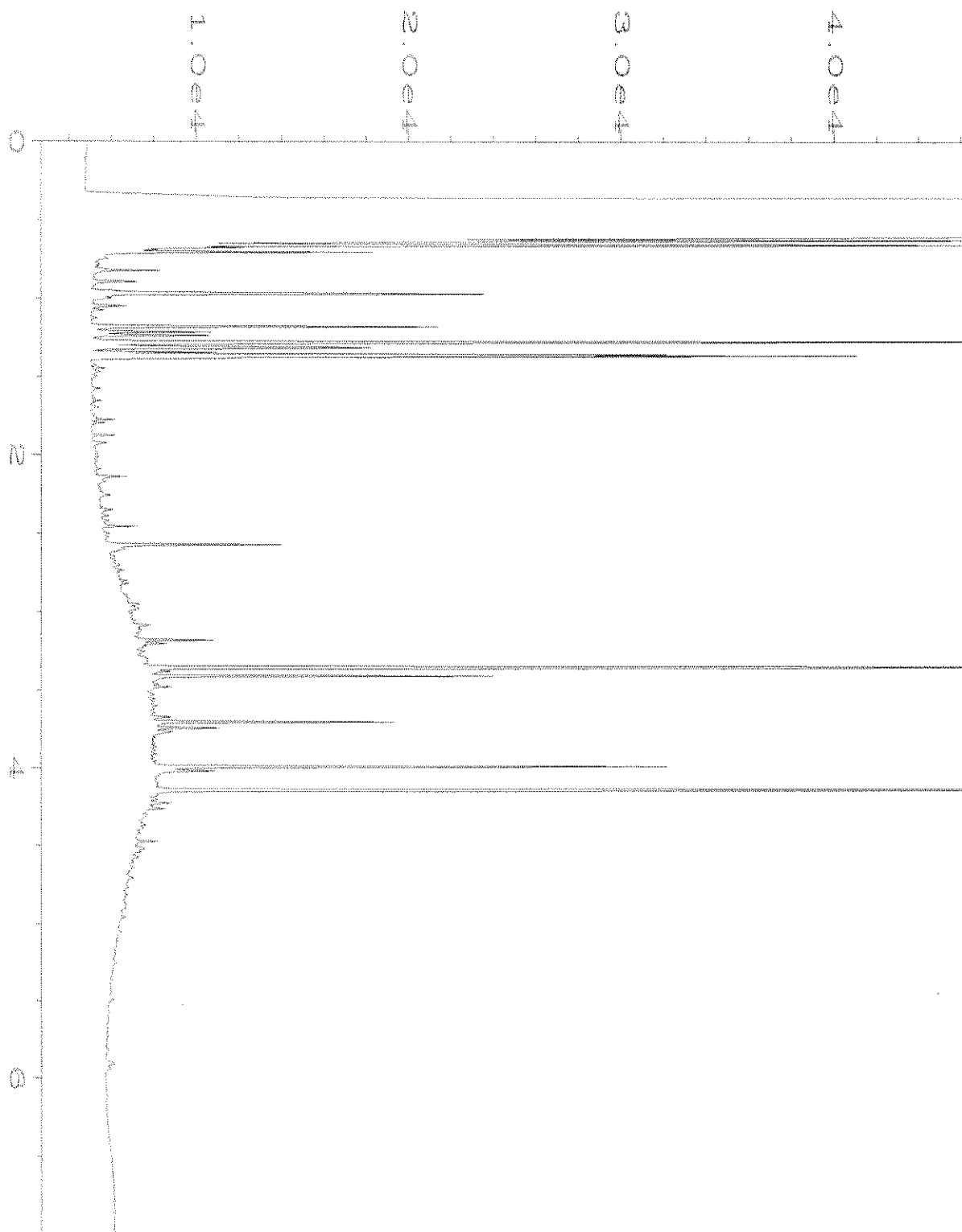
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Operator	: TL	Vial Number	: 28
Instrument	: GC6	Injection Number	: 1
Sample Name	: 910191-11	Sequence Line	: 5
Run Time Bar Code:		Instrument Method	: DX.MTH
Acquired on	: 10 Oct 19 03:54 PM	Analysis Method	: DEFAULT.MTH
Report Created on:	: 11 Oct 19 11:09 AM		



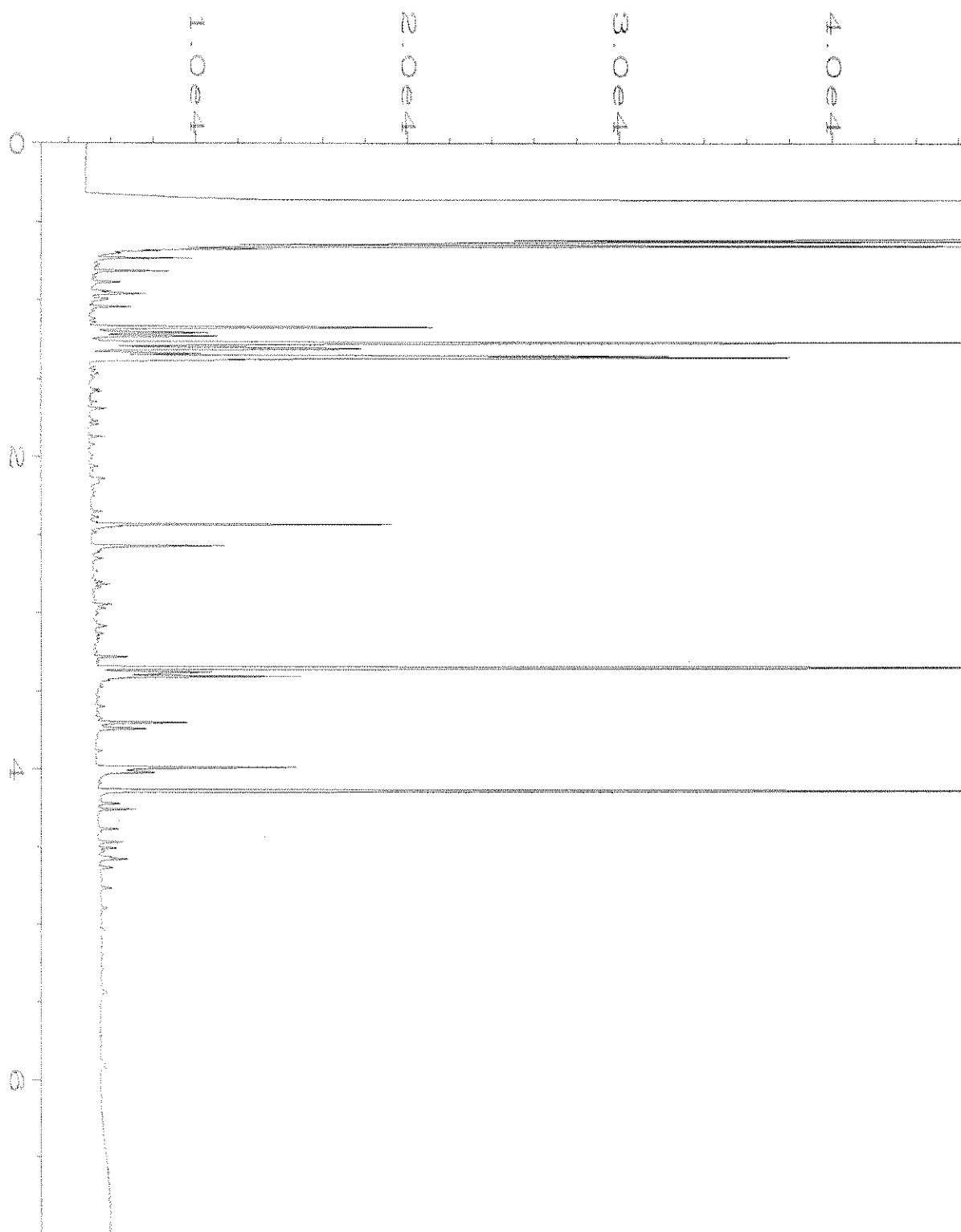
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Operator	: TL	Vial Number	: 29
Instrument	: GC6	Injection Number	: 1
Sample Name	: 910191-12	Sequence Line	: 5
Run Time Bar Code:		Instrument Method	: DX.MTH
Acquired on	: 10 Oct 19 04:05 PM	Analysis Method	: DEFAULT.MTH
Report Created on:	11 Oct 19 11:09 AM		



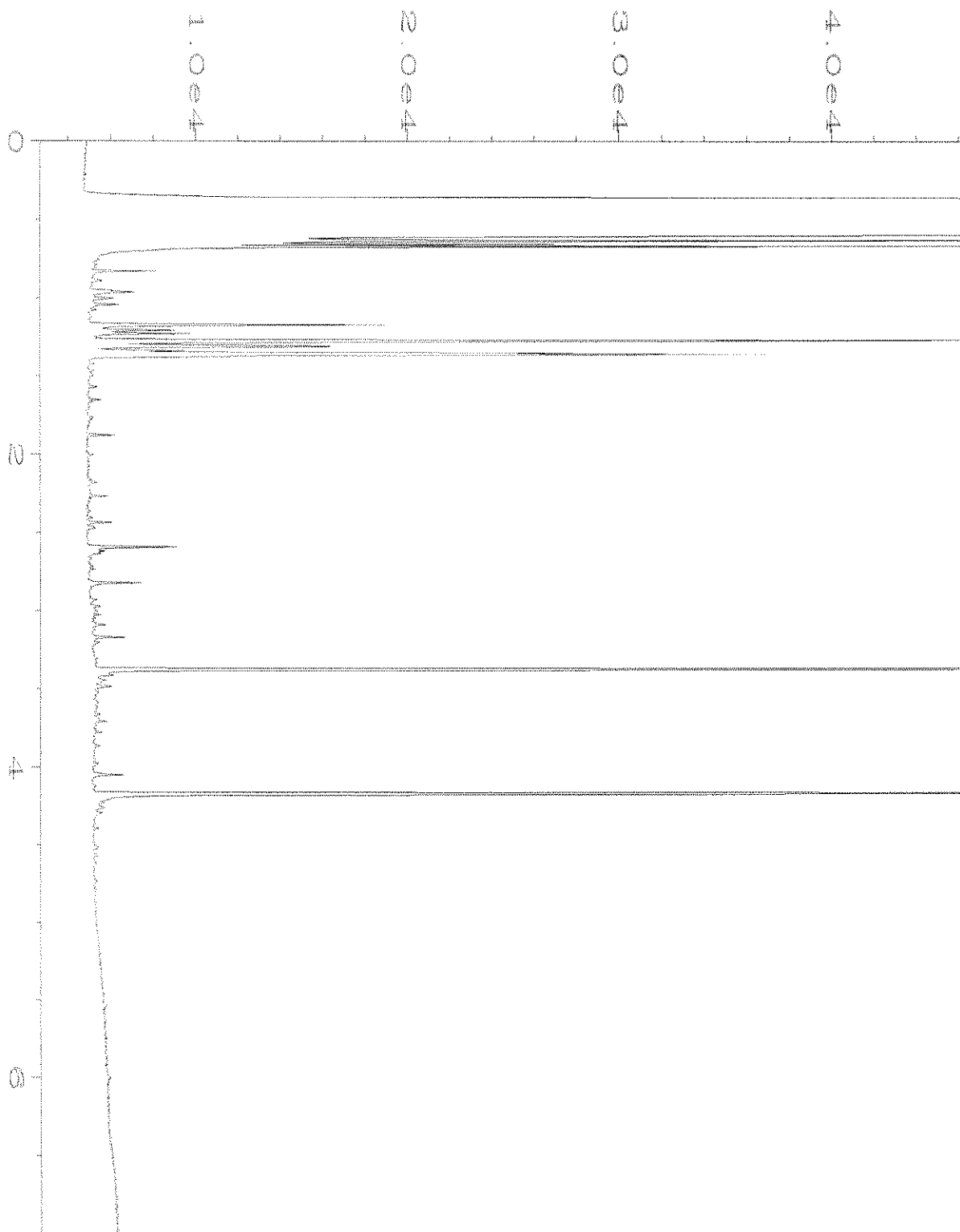
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Operator	: TL	Vial Number	: 30
Instrument	: GC6	Injection Number	: 1
Sample Name	: 910191-13	Sequence Line	: 5
Run Time Bar Code:		Instrument Method	: DX.MTH
Acquired on	: 10 Oct 19 04:16 PM	Analysis Method	: DEFAULT.MTH
Report Created on:	11 Oct 19 11:09 AM		



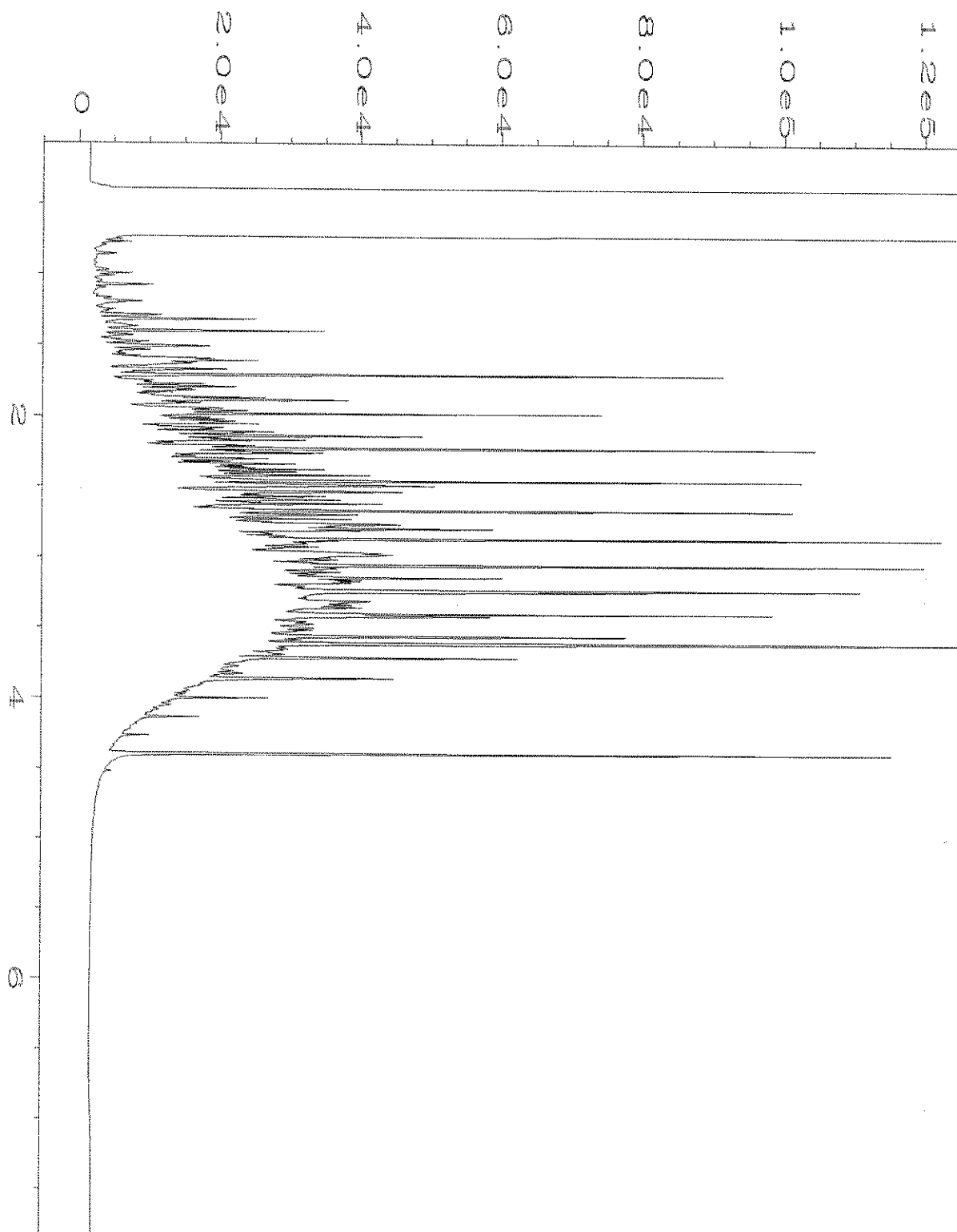
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Operator	: TL	Vial Number	: 31
Instrument	: GC6	Injection Number	: 1
Sample Name	: 910191-14	Sequence Line	: 5
Run Time Bar Code:		Instrument Method	: DX.MTH
Acquired on	: 10 Oct 19 04:27 PM	Analysis Method	: DEFAULT.MTH
Report Created on:	11 Oct 19 11:09 AM		



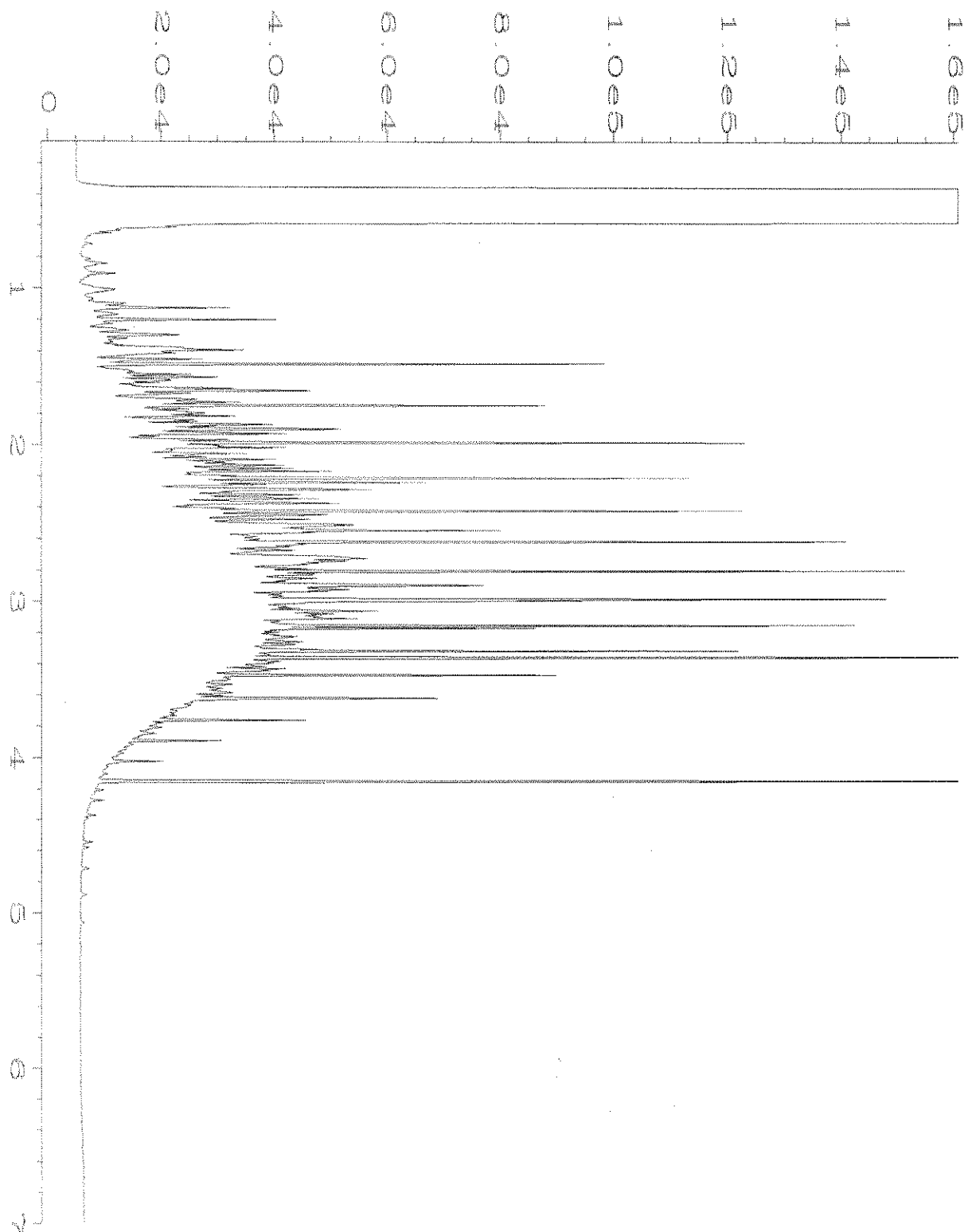
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Operator	: TL	Vial Number	: 32
Instrument	: GC6	Injection Number	: 1
Sample Name	: 910191-15	Sequence Line	: 5
Run Time Bar Code:		Instrument Method	: DX.MTH
Acquired on	: 10 Oct 19 04:38 PM	Analysis Method	: DEFAULT.MTH
Report Created on:	11 Oct 19 11:10 AM		



Data File Name	: C:\HPCHEM\6\DATA\10-10-19\022F0301.D	Page Number	: 1
Operator	: TL	Vial Number	: 22
Instrument	: GC6	Injection Number	: 1
Sample Name	: 09-2485 mb	Sequence Line	: 3
Run Time Bar Code:		Instrument Method	: DX.MTH
Acquired on	: 10 Oct 19 02:17 PM	Analysis Method	: DEFAULT.MTH
Report Created on:	: 11 Oct 19 11:09 AM		



Data File Name	: C:\HPCHEM\4\DATA\10-15-19\003F0201.D	Page Number	: 1
Operator	: TL	Vial Number	: 3
Instrument	: GC#4	Injection Number	: 1
Sample Name	: 500 Dx 58-62F	Sequence Line	: 2
Run Time Bar Code:		Instrument Method	: DX.MTH
Acquired on	: 15 Oct 19 06:20 AM	Analysis Method	: DEFAULT.MTH
Report Created on:	16 Oct 19 11:50 AM		



Data File Name	: C:\HPCHEM\6\DATA\10-10-19\003F0201.D	Page Number	: 1
Operator	: TL	Vial Number	: 3
Instrument	: GC6	Injection Number	: 1
Sample Name	: 500 Dx 58-62F	Sequence Line	: 2
Run Time Bar Code:		Instrument Method	: DX.MTH
Acquired on	: 10 Oct 19 06:55 AM	Analysis Method	: DEFAULT.MTH
Report Created on:	11 Oct 19 11:08 AM		

910191

SAMPLE CHAIN OF CUSTODY

ME 10/09/19

WWS/ALM/CSS

Page # 1 of 2

Report To Jeremy PorterCompany Aspect Consulting

Address _____

City, State, ZIP _____

Phone 360.617.0449 Email Jeremy.Porter@aspectconsulting.com

SAMPLERS (signature) _____

PROJECT NAME

Russell Rd

PO #

140252

REMARKS

INVOICE TO

TURNAROUND TIME
☒ Standard turnaround
☐ RUSH
Rush charges authorized by: _____SAMPLE DISPOSAL
☐ Archive samples
☐ Other _____
Default: Dispose after 30 days

Project specific RLS? - Yes / No

ANALYSES REQUESTED

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Diesel & oil Range Hydrocarbons	Dissolved Arsenic	* Field 11.14.19	Notes
MJ-5-100719	01A-H	10/7/19	0950	Wtts	8					X			(X)	(X)		3-pp DG 10/14/19 ME
MJ-6-100719	02		1110		8					X			(X)	(X)		First 4 samples have EXT 3 vials this was a mistake on samples and for collected extra.
MJ-17-100719	03		1215		8					X			(X)	(X)		
MJ-22-100719	04		1320		8					X			(X)	(X)		
MJ-18-100719	05A-E		1515		8					X			(X)	(X)		
MJ-20-100719	06		1620		5					X			(X)	(X)		
MJ-4-100819	07	10/8/19	1120		5					X			(X)	(X)		
MJ-8-100819	08		1310		5					X			(X)	(X)		
MJ-2-100819	09		1600		5					X			(X)	(X)		
MJ-19-100819	10		1435		5					X			(X)	(X)		

SIGNATURE

PRINT NAME

COMPANY

DATE

TIME

Friedman & Bruya, Inc.

3012 16th Avenue West

Seattle, WA 98119-2029

Ph. (206) 285-8282

Relinquished by: _____

Received by: _____

Relinquished by: _____

Received by: _____

PRINT NAME

COMPANY

DATE

TIME

Samples received at

4:00

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: 	David Black	Assect	10/9/19	1723
Received by: 	J. M. H.	FBI	10/9/19	1723
Relinquished by:				
Received by:		Samples received at	4 °C	

APPENDIX B

Report Limitations and Guidelines for Use

REPORT LIMITATIONS AND USE GUIDELINES

Reliance Conditions for Third Parties

This report was prepared for the exclusive use of the Client. No other party may rely on this report or the product of our services without the express written consent of Aspect Consulting, LLC (Aspect). This limitation is to provide our firm with reasonable protection against liability claims by third parties with whom there would otherwise be no contractual conditions or limitations and guidelines governing their use of the report. Within the limitations of scope, schedule and budget, our services have been executed in accordance with our Agreement with the Client and recognized standards of professionals in the same locality and involving similar conditions.

Services for Specific Purposes, Persons and Projects

Aspect has performed the services in general accordance with the scope and limitations of our Agreement. This report has been prepared for the exclusive use of the Client and their authorized third parties, approved in writing by Aspect. This report is not intended for use by others, and the information contained herein is not applicable to other properties.

This report is not, and should not, be construed as a warranty or guarantee regarding the presence or absence of hazardous substances or petroleum products that may affect the subject property. The report is not intended to make any representation concerning title or ownership to the subject property. If real property records were reviewed, they were reviewed for the sole purpose of determining the subject property's historical uses. All findings, conclusions, and recommendations stated in this report are based on the data and information provided to Aspect, current use of the subject property, and observations and conditions that existed on the date and time of the report.

Aspect structures its services to meet the specific needs of our clients. Because each environmental study is unique, each environmental report is unique, prepared solely for the specific client and subject property. This report should not be applied for any purpose or project except the purpose described in the Agreement.

This Report Is Project-Specific

Aspect considered a number of unique, project-specific factors when establishing the Scope of Work for this project and report. You should not rely on this report if it was:

- Not prepared for you
- Not prepared for the specific purpose identified in the Agreement
- Not prepared for the specific real property assessed
- Completed before important changes occurred concerning the subject property, project or governmental regulatory actions

If changes are made to the project or subject property after the date of this report, Aspect should be retained to assess the impact of the changes with respect to the conclusions contained in the report.

Geoscience Interpretations

The geoscience practices (geotechnical engineering, geology, and environmental science) require interpretation of spatial information that can make them less exact than other engineering and natural science disciplines. It is important to recognize this limitation in evaluating the content of the report. If you are unclear how these "Report Limitations and Use Guidelines" apply to your project or site, you should contact Aspect.

Discipline-Specific Reports Are Not Interchangeable

The equipment, techniques and personnel used to perform an environmental study differ significantly from those used to perform a geotechnical or geologic study and vice versa. For that reason, a geotechnical engineering or geologic report does not usually address any environmental findings, conclusions or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. Similarly, environmental reports are not used to address geotechnical or geologic concerns regarding the subject property.

Environmental Regulations Are Not Static

Some hazardous substances or petroleum products may be present near the subject property in quantities or under conditions that may have led, or may lead, to contamination of the subject property, but are not included in current local, state or federal regulatory definitions of hazardous substances or petroleum products or do not otherwise present potential liability. Changes may occur in the standards for appropriate inquiry or regulatory definitions of hazardous substance and petroleum products; therefore, this report has a limited useful life.

Property Conditions Change Over Time

This report is based on conditions that existed at the time the study was performed. The findings and conclusions of this report may be affected by the passage of time (for example, Phase I ESA reports are applicable for 180 days), by events such as a change in property use or occupancy, or by natural events, such as floods, earthquakes, slope failure or groundwater fluctuations. If more than six months have passed since issuance of our report, or if any of the described events may have occurred following the issuance of the report, you should contact Aspect so that we may evaluate whether changed conditions affect the continued reliability or applicability of our conclusions and recommendations.

Phase I ESAs – Uncertainty Remains After Completion

Aspect has performed the services in general accordance with the scope and limitations of our Agreement and the current version of the “Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process”, ASTM E1527, and U.S. Environmental Protection Agency (EPA)'s Federal Standard 40 CFR Part 312 "Innocent Landowners, Standards for Conducting All Appropriate Inquiries".

No ESA can wholly eliminate uncertainty regarding the potential for recognized environmental conditions in connection with subject property. Performance of an ESA study is intended to reduce, but not eliminate, uncertainty regarding the potential for environmental conditions affecting the subject property. There is always a potential that areas with contamination that were not identified during this ESA exist at the subject property or in the study area. Further evaluation of such potential would require additional research, subsurface exploration, sampling and/or testing.

Historical Information Provided by Others

Aspect has relied upon information provided by others in our description of historical conditions and in our review of regulatory databases and files. The available data does not provide definitive information with regard to all past uses, operations or incidents affecting the subject property or adjacent properties. Aspect makes no warranties or guarantees regarding the accuracy or completeness of information provided or compiled by others.

Exclusion of Mold, Fungus, Radon, Lead, and HBM

Aspect's services do not include the investigation, detection, prevention or assessment of the presence of molds, fungi, spores, bacteria, and viruses, and/or any of their byproducts. Accordingly, this report does not include any interpretations, recommendations, findings, or conclusions regarding the detection, assessment, prevention or abatement of molds, fungi, spores, bacteria, and viruses, and/or any of their byproducts. Aspect's services also do not include the investigation or assessment of hazardous building materials (HBM) such as asbestos, polychlorinated biphenyls (PCBs) in light ballasts, lead based paint, asbestos-containing building materials, urea-formaldehyde insulation in on-site structures or debris or any other HBMs. Aspect's services do not include an evaluation of radon or lead in drinking water, unless specifically requested.