2019 Annual Report

Former Kelly-Moore Manufacturing Facility
5400-5800 Airport Way South
Seattle, Washington
Facility/Site #2163
VCP #NW2305
Project # 0146970060

Prepared for:

Kelly-Moore Paint Company, Inc.
301 W Hurst Boulevard, Hurst, Texas 76053

September 28, 2020

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Prepared for:

Kelly-Moore Paint Company, Inc.
301 W Hurst Boulevard, Hurst, Texas 76053

Prepared by:

Wood Environment & Infrastructure Solutions, Inc.
600 University Street, Suite 600
Seattle, Washington
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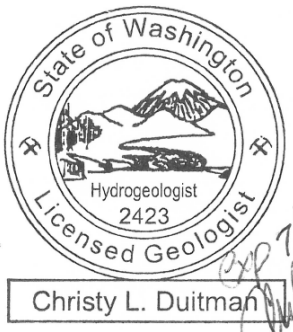
September 28, 2020



Prepared by: _____ Date: September 28, 2020
Christy L. Duitman, LG, LHg
Associate Geologist, Project Manager

Reviewed/Approved By: _____ Date: September 28, 2020
Kathleen Goodman, LG, LHg
Principal Hydrogeologist

Table of Contents

List of Figures

List of Tables

List of Appendices

List of Acronyms and Abbreviations

µg/L	micrograms per liter
Amec Foster Wheeler	Amec Foster Wheeler Environment & Infrastructure, Inc.
BNSF	BNSF Railway Company
CATOX	catalytic thermal oxidizer
Ecology	Washington Department of Ecology
EPA	U.S. Environmental Protection Agency
FID	flame ionization detector
Kelly-Moore	Kelly-Moore Paint Company, Inc.
MRE	destruction removal efficiency
MTCA	Model Toxics Control Act
NAVD88	North American Vertical Datum of 1988
O&M	operation and maintenance
PAHs	polycyclic aromatic hydrocarbons
PSCAA	Puget Sound Clean Air Agency
Site	former Kelly-Moore manufacturing facility located at 5400-5800 Airport Way South, Seattle, Washington
SVE	soil vapor extraction
TPH	total petroleum hydrocarbons
TPH-D	total petroleum hydrocarbons in the diesel range
TPH-G	total petroleum hydrocarbons in the gasoline range
TPH-O	total petroleum hydrocarbons in the motor oil range
VCP	Washington State Voluntary Cleanup Program
VOCs	volatile organic compounds
Wood	Wood Environment & Infrastructure Solutions, Inc.

1.0 Introduction

1.1 Purpose

Wood Environment & Infrastructure Solutions, Inc. (Wood), prepared this report on behalf of Kelly-Moore Paint Company, Inc. (Kelly-Moore), for the former Kelly-Moore manufacturing facility located at 5400-5800 Airport Way South, Seattle, Washington (Site; Figure 1). Kelly-Moore's objective is to conduct remedial action at the Site in compliance with requirements established by the Washington State Department of Ecology (Ecology) under the state Model Toxics Control Act (MTCA) via the Washington State Voluntary Cleanup Program (VCP) and attain No Further Action status for the Site.

This report presents the results of groundwater and Site monitoring activities as summarized below.

- Dry season groundwater monitoring (August 2019);
- Wet season groundwater monitoring (March 2020);
- Soil vapor extraction (SVE) system operation and maintenance (O&M; June 2019 to May 2020); and
- Air sparge system O&M (June 2019 to May 2020).

Groundwater monitoring results and O&M activities from May 2018 through May 2019 were reported in the 2018 *Summary of Investigations and Remedial Actions* report dated October 8, 2019 (Wood, 2019b).

1.2 Background

The Site is located on the east side of Airport Way South at the intersection of South Lucile Street and Airport Way South in the Georgetown neighborhood of Seattle, Washington (Figure 1), and covers approximately 2.7 acres. The Site is bordered on the north by BNSF Railway Company (BNSF) tracks and the Olympic Foundry, on the west by Airport Way South and the Airport Way South overpass, on the east by BNSF tracks and a steep hillside, and on the south by an Interstate 5 connector ramp overpass (Figure 1).

The Site has been used for a variety of industrial purposes since the early 1900s, and Kelly-Moore acquired the Site in 1994. Kelly-Moore used portions of the Site as a paint manufacturing plant for blending paints and pigments between approximately 1994 and 2008, and vacated the property by 2010. Kelly-Moore sold the southern portion of the Site to JST Georgetown, LLC, in 2011, and sold the northern portion of the Site to NCD GeorgeTown, LLC, in 2014. The new owners of the northern parcel demolished all of the former buildings and warehouses in 2015, during which time Kelly-Moore directed Wood (formerly Amec Foster Wheeler Environment & Infrastructure, Inc. [Amec Foster Wheeler]) to perform additional interim remedial actions and address known areas of contamination that were not accessible prior to the demolition. Construction of the new building on the northern parcel was completed in 2016. Elysian Brewing Company is the primary tenant of the new building constructed on this parcel, using it for brewing beer. The southern parcel is also leased by Elysian Brewing Company, which moved into the warehouse in 2011 to add bottling capacity to its operations.

2.0 Groundwater Monitoring

The groundwater monitoring program consists of collecting groundwater samples from eight wells twice a year, once during the dry season (August) and once during the wet season (March). Groundwater monitoring has been conducted twice a year since June 2016. Tables 1 through 3 provide information on groundwater elevations, field parameters, and groundwater analytical results. Groundwater sampling

during the March 2020 wet season was limited to readily accessible locations due to the outbreak of COVID-19. Wood was unable to obtain permission to access monitoring wells located inside the building due to the possibility of exposure and spread of the disease to workers. As a result, four monitoring wells were not sampled during the wet season: KMW-02, KMW-03, KMW-07, and KMW-08.

2.1 Water Level Measurements and Hydrogeology

The groundwater monitoring program includes measuring water levels in each of the eight monitoring wells. The reference points for determining water level elevations are the tops of the polyvinyl chloride well casings, which have been surveyed relative to mean sea level (North American Vertical Datum of 1988 [NAVD88]). To reduce variation in groundwater level measurements, static water levels for all wells are measured on the same day and before the wells are purged and sampled. Groundwater levels were measured to the nearest 0.01 foot using an electronic water level meter. Groundwater measurements from August 20, 2019, and March 11, 2020, are presented in Table 1.

Groundwater elevation contours for water level measurements collected in August 2019 and March 2020 are presented on Figures 2 and 3, respectively. Water level measurements collected in August 2019 and March 2020 indicate that groundwater generally flows to the west-southwest, in agreement with measurements from previous years (Wood, 2018). Groundwater elevations across the Site vary seasonally, with higher groundwater elevations in the wet season and lower elevations in the dry season. The wet season/dry season range of elevations observed during the 2019–2020 reporting period was approximately 2 feet of elevation difference.

2.2 Groundwater Sampling Methodology

Groundwater samples were collected on August 20, 2019, for the dry season and on March 11, 2020, for the wet season. The groundwater samples were collected in accordance with the procedures outlined in the *Additional Investigation Work Plan* (Amec Foster Wheeler, 2016). Samples were collected using a peristaltic pump with pre-installed dedicated polyethylene tubing using U.S. Environmental Protection Agency (EPA) low-flow sampling techniques. Groundwater parameters were measured at each well during purging using a YSI multi-parameter water quality meter and were recorded on field data sheets (Appendix A). Parameters measured were turbidity, pH, dissolved oxygen, specific conductivity, and oxidation reduction potential (Table 2). Representative unfiltered groundwater samples were collected upon stabilization of the water quality parameters over the course of three consecutive measurements.

Groundwater sample containers were filled directly from the pump tubing and were immediately placed on ice. Samples were transported under chain-of-custody protocols to Friedman & Bruya, Inc., in Seattle, Washington, for laboratory analyses. Each groundwater sample during the reporting period was analyzed for the following:

- Volatile organic compounds (VOCs) by EPA Method 8260C;
- Polycyclic aromatic hydrocarbons (PAHs) by EPA Method 8270D with selected ion monitoring for some compounds;
- Total metals (arsenic, chromium, copper, lead, mercury, nickel, and zinc) by EPA Method 6020B;
- Total petroleum hydrocarbons (TPH) in the gasoline range (TPH-G) by Ecology method NWTPH Gx; and
- TPH in the diesel and motor oil ranges (TPH-D and TPH-O) by Ecology Method NWTPH-Dx.

Laboratory data packages and data validation memoranda are included in Appendix B.

2.3 Data Validation Results

The groundwater monitoring results for the dry and wet season events were reviewed in accordance with the Quality Assurance Projection Plan (Amec Foster Wheeler, 2016, Attachment B). Documentation provided in the analytical data package was acceptable, data quality was acceptable, and results from these samples may be considered usable with the limitations described in the data validation assessment summary. Data qualifiers added during validation are summarized below:

- August 2019:
  - Wood J-HD: qualified one primary sample for acenaphthylene and TPH-O. Wood J-qualified the detected results because of potential analytical imprecision.
  - Wood J-HS: qualified one primary sample for TPH-G. Wood J-qualified the detected results because of potential analytical bias.
  - Wood UJ-LM: qualified one primary sample for non-detected benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, and benzo(a)pyrene analytical results from the unspiked native sample due to potential low analytical bias.
  - Wood EXC: qualified one primary and one duplicate sample for analysis of arsenic, chromium, copper, nickel, and zinc. Multiple results for the same parameter were reported by the laboratory.
- March 2020:
  - Wood J-IS: qualified three primary samples for analysis of chromium, copper, and nickel. Wood determined that the laboratory's J-qualified results should be considered reportable, Wood J-qualified the result to indicated that it should be considered an estimated value.
  - Wood J-HD: qualified two primary samples for zinc and TPH-D. Wood J-qualified the detected results because of potential analytical imprecision.
  - Wood EXC: qualified four primary samples and one duplicate sample for analysis of chromium, copper, nickel, and zinc, and one primary and one duplicate sample for toluene, ethylbenzene, m,p-xylene, and o-xylene. Multiple results for the same parameter were reported by the laboratory.

A list of qualified data is presented in the data validation assessment summary (Appendix B).

2.4 Groundwater Analytical Results

Groundwater results for commonly detected compounds are presented in Table 3, along with the results for detected compounds in sampling events conducted since 2011.

2.4.1 Total Petroleum Hydrocarbons

The highest concentrations of TPH-G have been observed in the groundwater from KMW-04, KMW-06, KMW-09, and KMW-10. During the most recent sampling event conducted in March 2020, the concentrations of TPH-G exceeded the Site screening level (also the MTCA Method A Cleanup Level) of 800 micrograms per liter (µg/L) (where benzene is present), at wells KMW-04 (37,000 µg/L), KMW-06 (3,900 J-HS µg/L), and KMW-09 (940 µg/L).

TPH-D and/or TPH-O have been detected in the groundwater from all of the monitoring wells except for KMW-07 at least once since sampling began in 2011. During the most recent sampling event in March 2020, the concentrations of TPH-D exceeded the Site screening level (also the MTCA Method A Cleanup

Level) of 500 µg/L at all four wells samples [KMW-04 (2,300 µg/L), KMW-06 (26,000 J-HD µg/L), KMW-09 (13,000 µg/L), and KMW-10 (4,400 µg/L)].

2.4.2 Volatile Organic Compounds

Groundwater samples were analyzed for the full list of VOC compounds. Toluene, ethylbenzene, and xylenes compounds were the most frequently detected VOCs, and were predominantly detected in the central area of the Site, where high concentrations of TPH-G also have been detected. These detections are most prevalent in the groundwater from KMW-04, and concentrations appear to have decreased over time, like the TPH-G concentrations in the groundwater from KMW-04. We expect to see VOC concentrations decrease in groundwater at KMW-04 as SVE and air sparging continue to target the western portion of the property.

Other VOC compounds detected in the groundwater during the reporting period are 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, acetone, ethylbenzene, xylenes, and toluene which were detected in the groundwater collected from KMW-04 and/or KMW-10 during one or both sampling events (August 2019 and/or March 2020).

Chlorinated VOCs were not detected in groundwater samples collected from the monitoring wells during the 2019 and 2020 sampling events, which is consistent with historical results.

2.4.3 Carcinogenic Polycyclic Aromatic Hydrocarbons

Carcinogenic PAHs were detected during the March 2020 groundwater sampling event at KMW-06 and were below the Site screening level for the total Toxicity Equivalency Quotient; no detections were observed during the August 2019 sampling event.

2.4.4 Metals

Groundwater samples were analyzed for total arsenic, chromium, copper, lead, mercury, nickel, and zinc. The concentrations of metals in the groundwater samples were below Site screening levels, except for arsenic. For the 2019 and 2020 sampling events, arsenic was detected at concentrations that exceed the Ecology background level of 5.0 µg/L at KMW-04 during the August 2019 (17.5 µg/L) and March 2020 (9.62 µg/L) sampling events, KMW-06 during March 2020 (6.07 µg/L), and at KMW-10 during the March 2020 (6.66 µg/L) sampling event.

3.0 Soil Vapor Extraction/Air Sparge System Operations

3.1 Design, Installation, and Operations

3.1.1 SVE System Design and Installation

SVE and air sparging technologies were selected to address past subsurface releases of hydrocarbons associated with former paint manufacturing activities at the Site. SVE uses a vacuum to extract soil vapors from the subsurface, while air sparging injects air into the saturated zone to help volatilize hydrocarbons to increase the contaminant removal rate. Both methods introduce or help move oxygen into and through the subsurface, which also promotes aerobic biodegradation of residual hydrocarbons.

A series of eight horizontal SVE wells (SVE-01 through SVE-08) were installed beneath the building during redevelopment in 2015. After building construction was completed, a second set of five horizontal SVE wells (SVE-09 through SVE-13) were installed in the parking lot on the western side of the Site. A set of five air sparge wells were installed between the western SVE wells. Figure 4 shows the locations of the SVE horizontal wells at the Site, and Figure 5 shows the locations of the air sparge wells. Applicable permits

and construction details were included in the *2017 Summary of Investigations and Remedial Actions* (Wood, 2018).

The SVE wells installed under the building were routed to a common manifold (referred to as the eastern manifold) located in a walkway between the north warehouse and the south warehouse. The SVE wells installed on the west side of the building were routed to the western manifold, which is located in a fenced-off area near the treatment equipment. Figure 6 shows the current configuration of the SVE and air sparge system.

The SVE blower and air sparge compressor were installed adjacent to the western manifold along with a catalytic thermal oxidizer (CATOX) unit. The CATOX unit is used to treat the extracted soil vapor as well as volatized hydrocarbons sparged from the shallow groundwater recovered by the western SVE wells. The treatment system was permitted with the Puget Sound Clean Air Agency (PSCAA) as detailed in the *2017 Summary of Investigations and Remedial Actions* (Wood, 2018) and as approved by PSCAA per Order of Approval to Construct, Install or Establish No. 11291 dated February 22, 2017.

Figure 7 is a process and instrumentation diagram showing the SVE system and the treatment equipment. As shown, both SVE manifolds route extracted soil vapor to the CATOX treatment unit. The combined SVE and air sparging system is equipped with automatic controls and an auto-dialer that notifies Wood personnel if the CATOX system has shut down or if specific maintenance tasks are required, such as disposal of condensate water that is produced by the SVE wells. The system is equipped with a 250-gallon polyethylene tote to store condensate water produced by the SVE wells, and the tote is monitored by the control system to shut down the SVE blower at high float level to reduce the risk of overfilling. The air sparging pump is configured to shut down immediately upon failure of the SVE system.

3.1.2 SVE and Air Sparge Operations

The SVE system operated continuously between November 2017 and October 2018. In October 2018, a vehicle crashed into the treatment compound area, and the treatment system was promptly shut down until the damaged components could be inspected and repaired. The SVE system was restarted in April 2019 after completion of repairs and operated independently until the air sparge system repairs were completed and the system began operating in late May 2019. Between May 29, 2019. and September 4, 2019, and January 9, 2020, and May 31, 2020, both the air sparge and SVE systems weres operated continuously with the exception of short periods for system maintenance. The system was shut down twice during the annual monitoring period, as described below.

- The system was shut down on September 4, 2019, due to observed system operation inefficiencies (Wood, 2019a). Troubleshooting and maintenance were performed on the system, and the system was restarted on January 8, 2020. Performance monitoring samples observed by field instruments and air samples collected the following day, on Janaury 9, 2020, exceeded permit limits. Laboratory results were received on January 22, 2020, and the system was shut off at that time. Initial startup concentrations are usually higher than during extended operation and the CATOX may have not reached consistent minimum operating temperature at time of sample collection. The system was restarted on February 14, 2020, when performance monitoring samples were collected and confirmed CATOX operation met permit limits.
- The system was shut down on February 19, 2020, due to malfuction of the air sparging system compressor. The compressor was repaired and placed back online on February 21, 2020, when field readings confirmed CATOX performance compliance. Performance monitoring samples collected on March 17, 2020, met permit limits.

3.2 SVE and Air Sparge Performance Evaluation

3.2.1 CATOX Performance Monitoring and Regulatory Compliance

Since initial startup of the SVE system in November 2017, performance monitoring vapor samples have been collected monthly from the CATOX influent vapor stream sampling port and at the effluent sample port on the emissions stack. In compliance with PSCAA Registration No. 29932, monthly performance monitoring samples are field-analyzed by a flame ionization detector (FID) calibrated to 100 parts per million hexane. FID readings are reported on field forms presented in Appendix C. Monthly performance monitoring samples are also submitted to Friedman & Bruya, Inc., in Seattle, Washington, for analysis of benzene and TPH as hexane. Monthly FID readings and monthly analytical results for SVE performance monitoring from June 2019 through May 2020 are summarized on Table 5, and analytical reports are provided in Appendix D.

Individual SVE well vapor samples were submitted for laboratory analysis of benzene during SVE startup (November 2017) and during and after air sparging startup (May 2019 and June 2019). Analytical data for individual SVE well samples collected in November 2017 and May and June 2019 are provided in Table 4.

CATOX performance is determined by its mass removal efficiency (MRE) for recovered soil vapor compounds. MRE is calculated from results of FID field readings and analytical laboratory testing of samples collected at the CATOX influent and at the effluent emissions stack. These data are shown in Table 5. MREs generally exceed 95 percent and demonstrate compliant system performance. Despite generally compliant MREs, reported MREs fell below permit requirements during September 2019 and January and February 2020 monthly visits. In all cases, the system was shut down, and extensive system troubleshooting and maintenance were performed as described in Section 3.1.2. Since March 2020, field FID and laboratory analytical results have met permit requirements (Table 5.).

3.2.2 SVE and Air Sparge Optimization and Performance Monitoring

Since 2017, an estimated 3843 pounds of TPH (as hexane equivalent using FID results) have been removed from the subsurface by the SVE system in conjunction with the air-sparge system. Table 5 summarizes the performance data The mass removal rate was calculated from the measured influent concentration and system flow rate during each monthly Site visit, and is based on the total system runtime between Site visits (using CATOX hour meters). Thus, the removal rate is high when the influent concentration is high (such as during air sparge startup) and low when the influent concentrations are low (such as during winter months when groundwater levels are elevated).

Mass removal rates are highest in the summer months when SVE concentrations are high due to lower groundwater levels, which causes the smear zone to be exposed for volatilization and recovery of volatile constituents that are present by the SVE system. We continue to optimize the flow from the SVE wells to maximize the concentration of hydrocarbons in the CATOX influent. The highest-concentration SVE wells have been SVE-03, SVE-05, SVE-10, and SVE-12. After air sparging began in May 2019, concentrations increased in all western wells except for SVE-09. We will continue to monitor SVE well concentrations and target high-concentration areas with SVE and air sparging to improve mass removal rates.

Elevated Site groundwater levels during the winter reduce the vadose zone thickness and volume and SVE influent concentrations. SVE concentrations at all wells fluctuate with the seasonal cycle, which may seasonally reduce SVE mass removal rates. Wet season operations are less efficient due to intermittent alarm conditions and periodic shutdowns associated with increased condensate production at the CATOX knockout pot. We will continue to operate the SVE and air sparge systems during the wet season and will work to optimize mass removal during dry season operations.

4.0 Upcoming Tasks

The following actions will have been conducted before the end of 2020:

- Groundwater samples were collected for the dry season sampling event on August 19-20, 2020.
- SVE and air sparging system inspections (including performance monitoring sampling) will occur at least monthly. On-site personnel will continue to optimize SVE and air sparging operating conditions in order to maximize mass removal rates and CATOX performance.
- Kelly-Moore and Ecology would like to continue working together to take the necessary steps to eventually obtain "No Further Action" for the Site.

5.0 References

Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler), 2016. Additional Investigation Work Plan, Former Kelly-Moore Manufacturing Facility, 5400–5580 Airport Way South, Seattle, Washington, June.

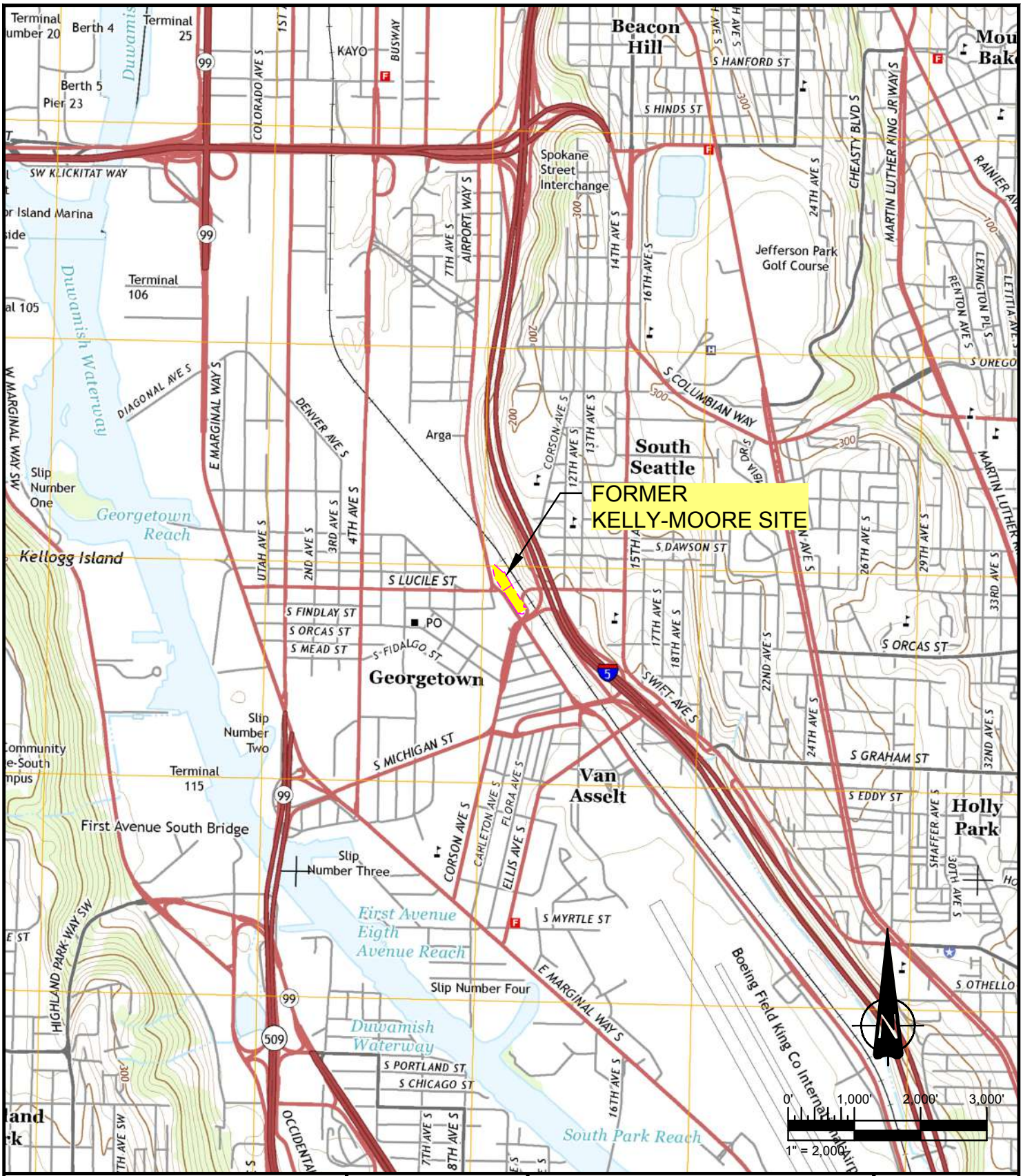
Puget Sound Clean Air Agency (PSCAA), 2017. Order of Approval to Construct, Install, or Establish, Kelly Moore Paint Company 5400 Airport Way S, Seattle, Washington, February 22.

Wood Environment & Infrastructure Solutions, Inc. (Wood), 2018. 2017 Summary of Investigations and Remedial Actions, Former Kelly-Moore Manufacturing Facility, 5400-5580 Airport Way South, Seattle, Washington, June 5.

Wood, 2019a. Shut-down Notification, Former Kelly-Moore Manufacturing Facility, 5400-5580 Airport Way South, Seattle, Washington, September 27.

Wood, 2019b. 2018 Summary of Investigations and Remedial Actions, Former Kelly-Moore Manufacturing Facility, 5400-5580 Airport Way South, Seattle, Washington, October 8.

Figures



KELLY-MOORE PAINT COMPANY	wood.	REMEDIAL INVESTIGATION FEASIBILITY STUDY	DATE: JULY 2020
			SCALE: 1" = 2,000'
Wood Environment & Infrastructure Solutions, Inc. 600 University Street, Suite 600 Seattle, WA 98101		SITE VICINITY MAP	PROJECT NO.: 0146970060
			FIGURE: 1

DRAWN BY: SD CHECKED BY: CD

KMW-08
10.85

KMW-03R
10.84

KMW-02R
10.85

KMW-07
10.84

10.8

10.7

KMW-04
10.67

KMW-06
10.71

KMW-09
10.66

10.6

KMW-10
10.50

AIRPORT WAY SOUTH

AIRPORT WAY SOUTH

S. LUCILE ST.

LEGEND:

- PROPERTY LINE
- KMW-04 11.96 — MONITORING WELL LOCATION AND GROUNDWATER ELEVATION IN FEET BELOW MEAN SEA LEVEL (NAVD88-FT)
- 12.0 — GROUNDWATER ELEVATION CONTOUR
- ESTIMATED GROUNDWATER FLOW DIRECTION
- RAILROAD TRACK

0' 30' 60' 90'

1" = 60'

DRAWN BY: SD CHECKED BY: CD

KELLY-MOORE PAINT COMPANY

Wood Environment & Infrastructure Solutions, Inc.
600 University Street, Suite 600
Seattle, WA 98101

wood.

REMEDIAL INVESTIGATION
FEASIBILITY STUDY

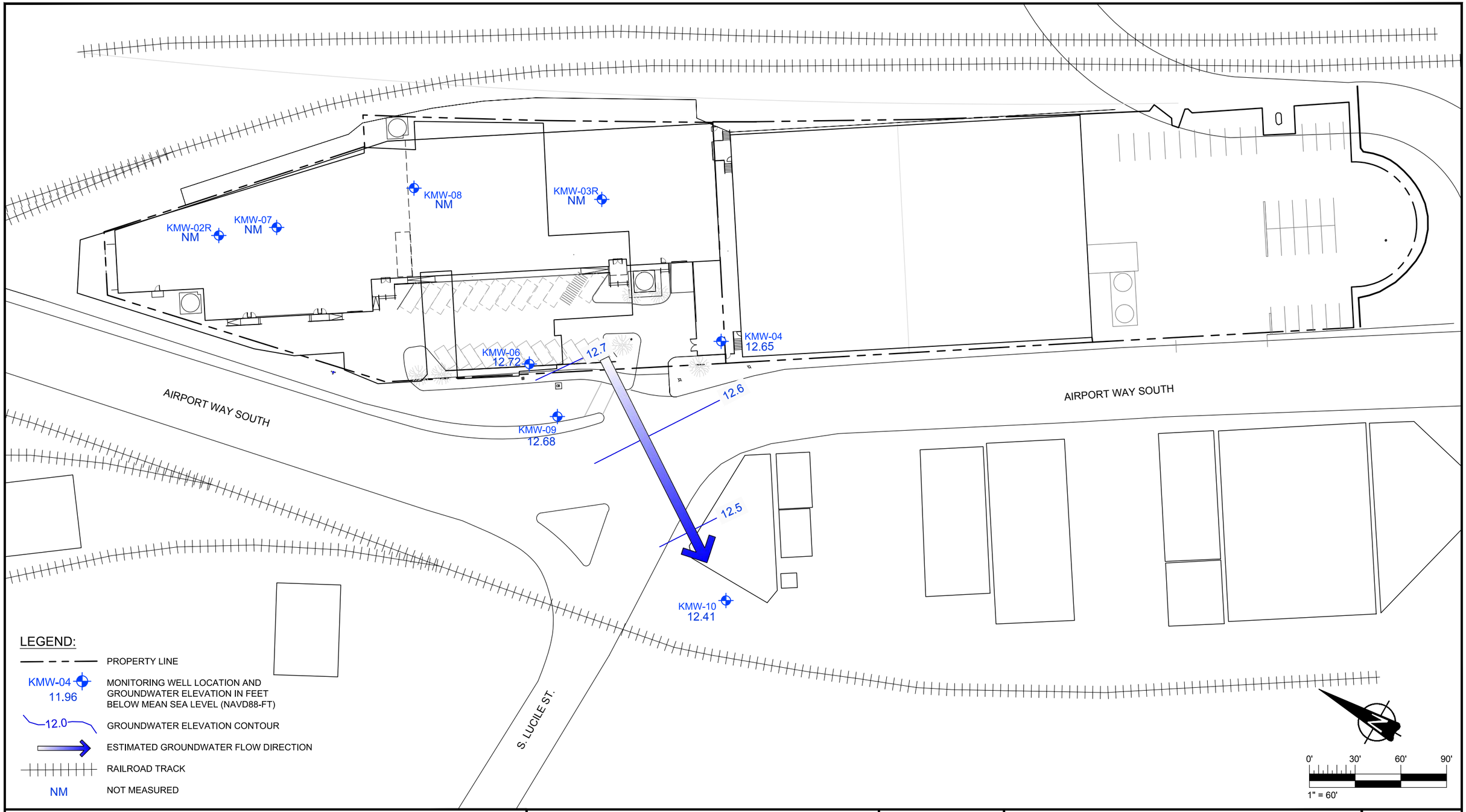
AUGUST 2019 DRY SEASON
GROUNDWATER CONTOURS

DATE: JULY 2020

SCALE: 1" = 60'

PROJECT NO.: 0146970060

FIGURE: 2



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KELLY-MOORE PAINT COMPANY

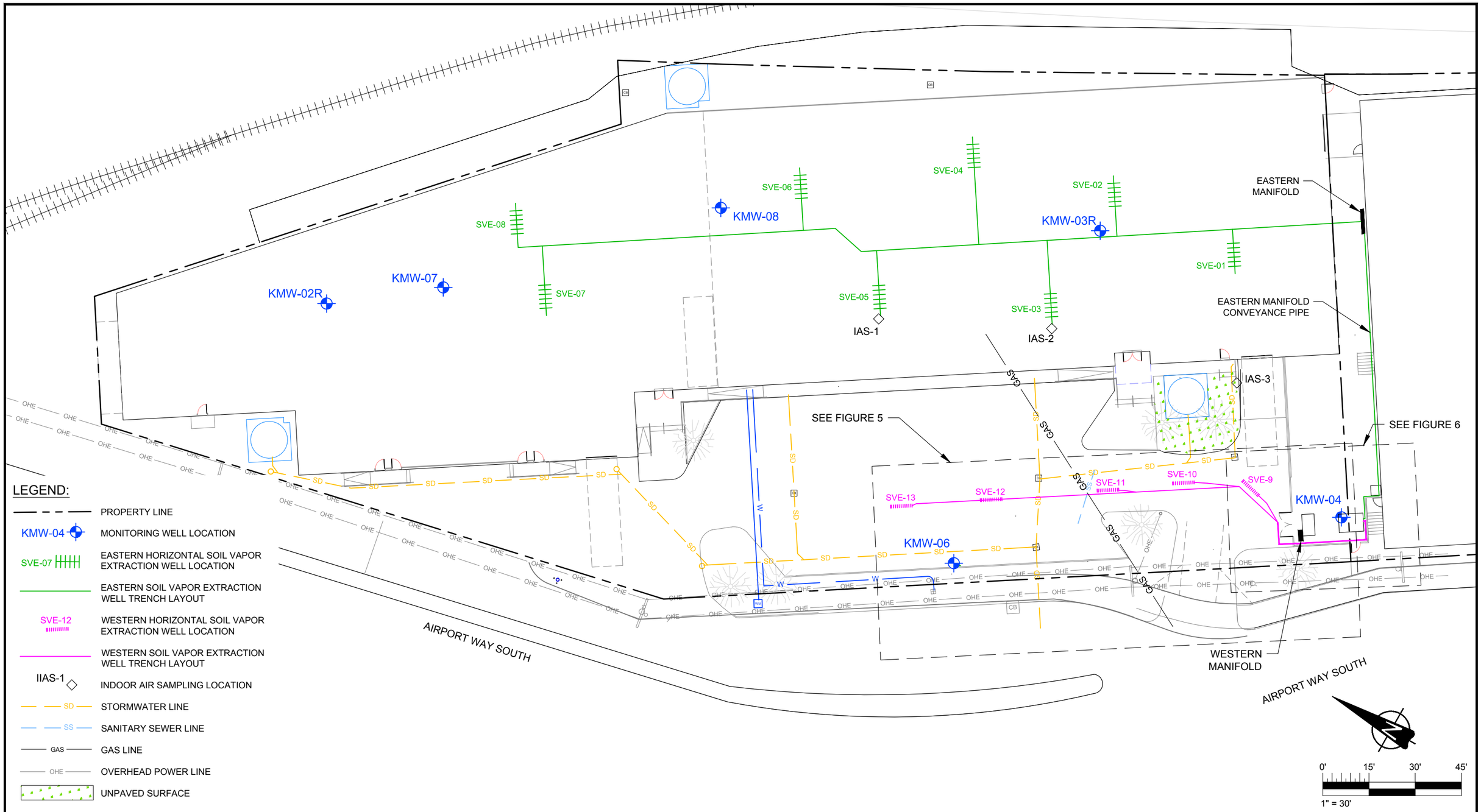
Wood Environment & Infrastructure Solutions, Inc.
600 University Street, Suite 600
Seattle, WA 98101

wood.

REMEDIAL INVESTIGATION
FEASIBILITY STUDY

MARCH 2020 WET SEASON
GROUNDWATER CONTOURS

DATE: JULY 2020
SCALE: 1" = 60'
PROJECT NO.: 0146970060
FIGURE: 3



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KELLY-MOORE PAINT COMPANY

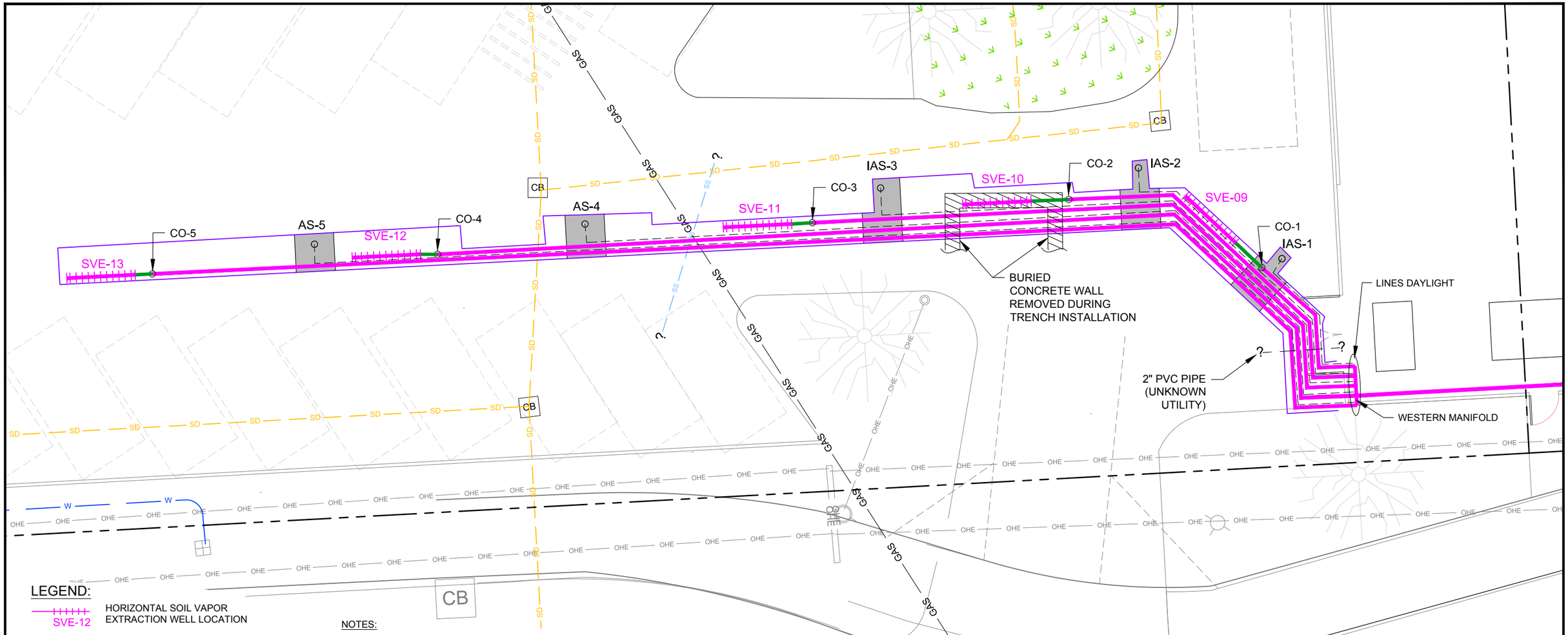
Wood Environment & Infrastructure Solutions, Inc.
600 University Street, Suite 600
Seattle, WA 98101

wood.

REMEDIAL INVESTIGATION
FEASIBILITY STUDY

SVE WELL LAYOUT

DATE: JULY 2020
SCALE: 1" = 30'
PROJECT NO.: 0146970060
FIGURE: 4



LEGEND:

- SVE-12 — HORIZONTAL SOIL VAPOR EXTRACTION WELL LOCATION
- SOIL VAPOR EXTRACTION CONVEYANCE PIPING (4" SCH 40 PVC)
- 4" PVC CLEANOUT
- AIR SPARGE LINE (1" SCH 80 PVC)
- AS-5 — AIR SPARGE WELL
- SD — STORMWATER LINE
- SS — SANITARY SEWER LINE
- TRENCH OUTLINE
- LOW PERMEABILITY FILL
- UNPAVED SURFACE

NOTES:

1. THE LOCATION AND ALIGNMENT OF THE TRENCH WAS INTENDED TO MINIMIZE UTILITY CROSSINGS.
2. EXCAVATED SOIL WAS DISPOSED OFFSITE AS SOLID WASTE, EXCEPT THE PAVEMENT BASE COARSE.
3. PAVEMENT BASE COURSE WAS REUSED.
4. THE INTENT OF THE DESIGN WAS TO CREATE HIGH PERMEABILITY ZONES FOR THE SVE PIPING, SEPARATED BY LOW PERMEABILITY BARRIERS.
5. ALL BACKFILL AROUND THE PIPING WAS 1" TO 1/4" CLEAN GRAVEL.AND COVERED WITH A CONTINUOUS LAYER OF 20 MIL PVC GEOMEMBRANE. THE REMAINDER OF THE TRENCH WAS BACKFILLED WITH SEATTLE TYPE 17 GRAVEL UP TO THE PAVEMENT SUBGRADE.
6. THE LOW PERMEABILITY ZONES WERE BACKFILLED WITH SILTY SOIL MIXED CEMENT.

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KELLY-MOORE PAINT COMPANY

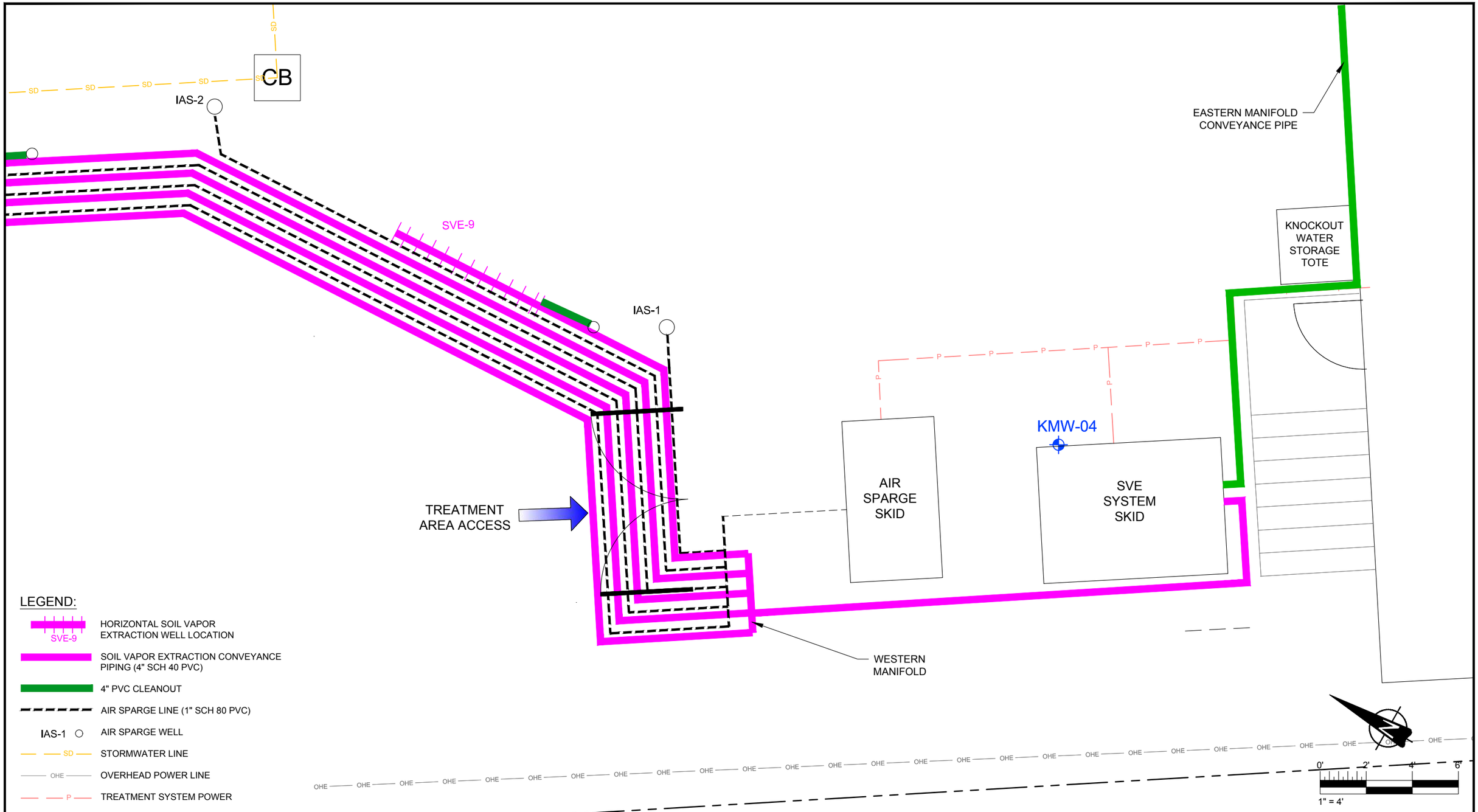
Wood Environment & Infrastructure Solutions, Inc.
600 University Street, Suite 600
Seattle, WA 98101

wood.

REMEDIAL INVESTIGATION
FEASIBILITY STUDY

WESTERN SVE & AIR SPARGE TRENCH

DATE: JULY 2020
SCALE: 1" = 10'
PROJECT NO.: 0146970060
FIGURE: 5



LEGEND:

- SVE-9 — HORIZONTAL SOIL VAPOR EXTRACTION WELL LOCATION
- SOIL VAPOR EXTRACTION CONVEYANCE PIPING (4" SCH 40 PVC)
- 4" PVC CLEANOUT
- AIR SPARGE LINE (1" SCH 80 PVC)
- IAS-1 — AIR SPARGE WELL
- SD — STORMWATER LINE
- OHE — OVERHEAD POWER LINE
- P — TREATMENT SYSTEM POWER

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KELLY-MOORE PAINT COMPANY

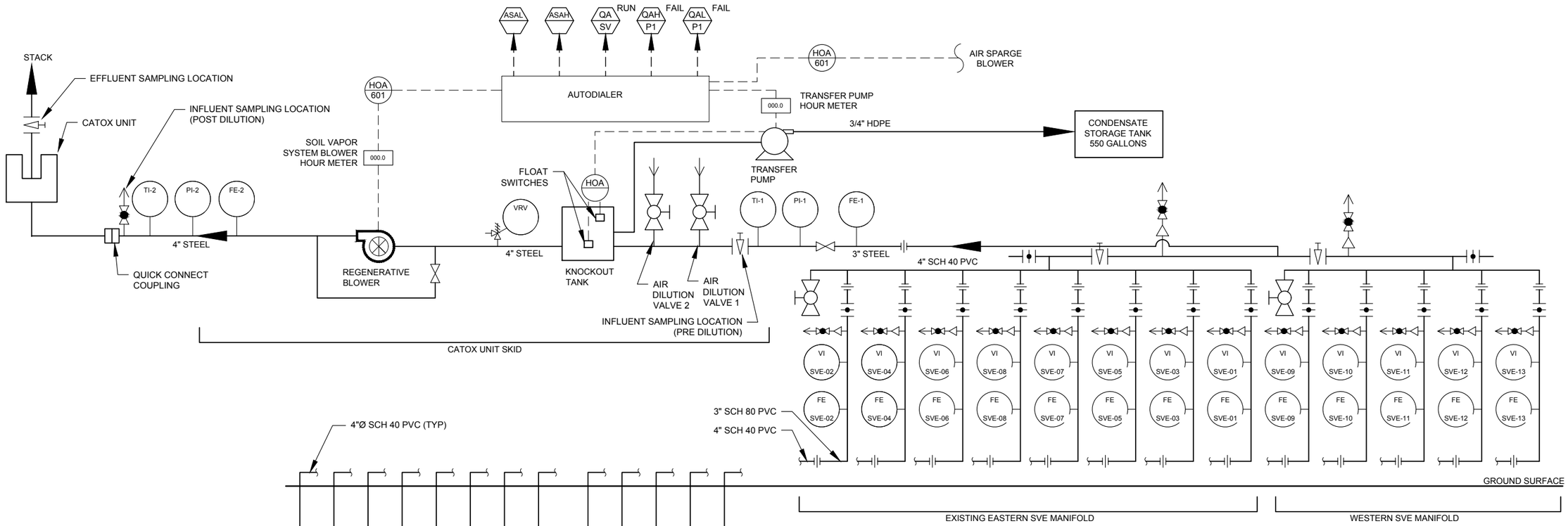
Wood Environment &
Infrastructure Solutions, Inc.
600 University Street, Suite 600
Seattle, WA 98101

wood.

REMEDIAL INVESTIGATION
FEASIBILITY STUDY

TREATMENT SYSTEM PLAN VIEW

DATE: JULY 2020
SCALE: 1" = 4'
PROJECT NO.: 0146970060
FIGURE: 6



PIPING SYMBOLS

- UNION
- COMPRESSION PLUG
- BUTTERFLY VALVE
- GATE VALVE
- AIR DILUTION BALL VALVE
- REDUCER
- 1/4" SAMPLE PORT
- MICROSEEPS SAMPLE PORT

EQUIPMENT SYMBOLS

- REGENERATIVE BLOWER
- TRANSFER PUMP

INSTRUMENT LEGEND

- FIELD MOUNTED
- CONTROL PANEL MOUNTED
- VRV — VACUUM RELIEF VALVE
- VI — VACUUM INDICATOR
- TI — TEMPERATURE INDICATOR
- FE — FLOW ELEMENT
- HOA 601 — HAND OFF AUTO

INSTRUMENT LEGEND CON'T

- QA SV — EVENT ALARM
- QAL P1 — TRANSFER PUMP FAIL ALARM
- QAH P1 — TRANSFER PUMP HIGH LEVEL SWITCH FAIL ALARM
- ASAH — AIR SPARGE BLOWER HIGH PRESSURE ALARM
- ASAL — AIR SPARGE BLOWER LOW PRESSURE ALARM

ABBREVIATIONS

TYP	TYPICAL
PVC	POLYVINYL CHLORIDE
SCH	SCHEDULE
GAC	GRANULAR ACTIVATED CARBON

DRAWN BY: SD CHECKED BY: CD

KELLY-MOORE PAINT COMPANY

Wood Environment & Infrastructure Solutions, Inc.
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wood.

REMEDIAL INVESTIGATION
FEASIBILITY STUDY

CATOX SYSTEM PROCESS AND INSTRUMENTATION DIAGRAM

DATE: JULY 2020
SCALE: N/A
PROJECT NO.: 0146970060
FIGURE: 7

Tables

TABLE 1: GROUNDWATER ELEVATIONS

Former Kelly-Moore Manufacturing Facility, Seattle, Washington

Well ID	WCS North Zone		Ground Surface Elevation	TOC Elevation	Date	Depth to Water (feet below TOC)	Groundwater Elevation (feet)[1]
	Northing	Easting					
KMW-02R[1]	205743.8677	1273010.429	22.01	21.63	8/31/2017	9.58	12.05
					1/26/2018	7.56	14.07
					8/15/2018	9.96	11.67
					2/7/2019	9.17	12.46
					8/20/2019	10.78	10.85
					3/11/2020	NM	NM
KMW-03R[1]	205538.1	1273156.6	21.99	21.54	8/31/2017	9.52	12.02
					1/26/2018	7.87	13.67
					8/15/2018	9.93	11.61
					2/7/2019	9.37	12.17
					8/20/2019	10.7	10.84
					3/11/2020	NM	NM
KMW-04[1]	205423.6	1273115.0	18.90	18.56	8/31/2017	6.63	11.93
					1/26/2018	5.35	13.21
					8/15/2018	7.06	11.50
					2/7/2019	6.60	11.96
					8/20/2019	7.89	10.67
					3/11/2020	5.91	12.65
KMW-06[1]	205525.2	1273039.2	20.16	19.80	8/31/2017	7.87	11.93
					1/26/2018	6.48	13.32
					8/15/2018	8.29	11.51
					2/7/2019	7.77	12.03
					8/20/2019	9.09	10.71
					3/11/2020	7.08	12.72
KMW-07[1]	205713.7	1273034.0	22.00	21.63	8/31/2017	9.57	12.06
					1/26/2018	7.93	13.70
					8/15/2018	9.96	11.67
					2/7/2019	9.21	12.42
					8/20/2019	10.79	10.84
					3/11/2020	NM	NM

TABLE 1: GROUNDWATER ELEVATIONS

Former Kelly-Moore Manufacturing Facility, Seattle, Washington

Well ID	WCS North Zone		Ground Surface Elevation	TOC Elevation	Date	Depth to Water (feet below TOC)	Groundwater Elevation (feet)[1]
	Northing	Easting					
KMW-08[1]	205648.5	1273101.3	22.03	21.65	8/31/2017	9.59	12.06
					1/26/2018	7.72	13.93
					8/15/2018	10.00	11.65
					2/7/2019	9.31	12.34
					8/20/2019	10.80	10.85
					3/11/2020	NM	NM
KMW-09[2]	205508.9	1273025.5	18.60	18.14	8/31/2017	6.24	11.90
					1/26/2018	4.86	13.28
					8/15/2018	6.64	11.50
					2/7/2019	6.15	11.99
					8/20/2019	7.48	10.66
					3/11/2020	5.46	12.68
KMW-10[2]	205336.2	1272955.0	20.84	20.39	8/31/2017	8.61	11.78
					1/26/2018	7.51	12.88
					8/15/2018	9.01	11.38
					2/7/2019	8.65	11.74
					8/20/2019	9.89	10.50
					3/11/2020	7.98	12.41

Notes:

1. Survey completed on June 30, 2016, by Duane Hartman & Associates.
2. Survey completed on December 13, 2016, by Duane Hartman & Associates.
3. Coordinate System and Zone: Washington State Plane, North Zone Coordinates.
   Horizontal Datum: NAD 83(91), North Zone, US feet.
   Vertical Datum: NAVD88, US feet.

Abbreviations:

NAD = North American Datum
NAVD88 = North American Vertical Datum of 1988
TOC = top of casing
WCS = Washington Coordinate System

TABLE 2: GROUNDWATER PARAMETERS

Former Kelly-Moore Manufacturing Facility, Seattle, Washington

Well ID	Date	pH	SC (ms/cm)	ORP (mv)	DO (mg/L)
KMW-02R	8/31/2017	5.89	0.175	142.9	0.21
	1/26/2018	5.99	0.199	150.9	0.28
	8/16/2018	5.85	0.173	274	0.55
	2/8/2019	5.95	0.245	130.1	0.81
	8/20/2019	5.76	0.211	121	2.97
	3/11/2020	NM	NM	NM	NM
KMW-03R	8/31/2017	7.07	0.477	-117.2	0.15
	1/26/2018	7.27	0.454	-102.2	0.19
	8/16/2018	7.03	0.378	112	0.47
	2/8/2019	6.97	0.582	-87	0.51
	8/20/2019	6.90	0.613	-47	2.19
	3/11/2020	NM	NM	NM	NM
KMW-04	8/31/2017	6.31	0.485	-92.0	0.07
	1/25/2018	6.40	0.276	-40.0	0.58
	8/16/2018	6.09	0.326	99.0	0.63
	2/7/2019	6.22	0.341	-74.0	0.62
	8/20/2019	6.26	0.352	-52.0	2.38
	3/11/2020	6.15	0.293	-51.0	0.42
KMW-06	8/31/2017	6.35	0.453	-90.3	0.10
	1/24/2018	6.56	0.314	-91.4	0.24
	8/16/2018	6.33	0.421	-39	0.37
	2/7/2019	6.18	0.635	-32	0.65
	8/19/2019	6.32	0.49	-66	2.38
	3/11/2020	5.7	0.9	27.1	2.45
KMW-07	8/31/2017	6.02	0.283	56.2	0.15
	1/26/2018	6.32	0.280	56.1	0.32
	8/16/2018	6.02	0.211	268	0.6
	2/8/2019	6.23	0.318	51.1	0.52
	8/20/2019	5.96	0.249	106	2.93
	3/11/2020	NM	NM	NM	NM
KMW-08	8/31/2017	6.15	0.177	1.90	0.10
	1/26/2018	5.98	0.526	32.9	0.50
	8/16/2018	5.95	0.211	248	0.58
	2/8/2019	6.05	0.25	91.4	0.74
	8/20/2019	5.58	2.508	133.7	2.26
	3/11/2020	NM	NM	NM	NM
KMW-09	8/31/2017	6.32	0.415	-95.1	0.21
	1/24/2018	6.56	0.396	-79.5	0.40
	8/16/2018	6.35	0.387	-24	0.47
	2/7/2019	6.42	0.4	-69	0.57
	8/20/2019	6.4	0.314	-47	3.05
	3/11/2020	6.16	0.512	-55.6	0.35

TABLE 2: GROUNDWATER PARAMETERS

Former Kelly-Moore Manufacturing Facility, Seattle, Washington

Well ID	Date	pH	SC (ms/cm)	ORP (mv)	DO (mg/L)
KMW-10	8/31/2017	6.21	0.567	-86.3	0.15
	1/25/2018	6.46	0.656	-69.4	0.28
	8/16/2018	6.25	0.416	-15	0.46
	2/7/2019	6.53	0.43	-82	0.49
	8/19/2019	6.26	0.612	-67	3.26
	3/11/2020	6.39	0.542	-63	0.37

Abbreviations
DO = disolved oxygen
mg/L = milligrams per liter
ms/cm = millisiemens per centimeter
mv = millivolts
NM = not measured
ORP = oxidation reduction potential
SC = specific conductivity

TABLE 3: GROUNDWATER ANALYTICAL RESULTS

Former Kelly-Moore Manufacturing Facility, Seattle, Washington

Analyte[1,2]	Preliminary Screening Level [3]	KMW-01			KMW-02/02R[4]										
		3/28/2011	8/4/2011	6/7/2013	3/28/2011	8/4/2011	6/7/2013	6/30/2016	11/10/2016	9/1/2017	1/26/2018	8/16/2018	2/8/2019	8/20/2019	3/11/2020[6]
Total Metals (µg/L)															
Arsenic	5	3.3 U	3.3 U	--	3.3 U	3.3 U	--	3.3 U	3.3 U	3.3 U	3.3 U	1.0 U	1.0 U	1.0 U	--
Chromium	50	11 U	--	--	11 U	--	--	11 U	11 U	11 U	11 U	1.0 U	1.0 U	1.0 U	--
Copper	640	--	11 U	--	--	11 U	--	--	--	--	--	5.0 U	5.0 U	5.0 U	--
Lead	15	1.1 U	1.1 U	--	1.1 U	1.1 U	--	1.1 U	1.1 U	1.1 U	1.1 U	1.0 U	1.0 U	1.0 U	--
Mercury	2	--	--	--	--	--	--	0.5 U	0.50 U	0.50 U	0.50 U	1.0 U	1.0 U	1.0 U	--
Nickel	100	--	--	--	--	--	--	--	--	--	--	**1.82**	**2.15**	**2.13**	--
Zinc	4800	--	--	--	--	--	--	--	--	--	--	5.0 U	5.0 U	**6.47**	--
Carcinogenic Polycyclic Aromatic Hydrocarbons (µg/L)															
Benzo(a)anthracene		0.0098 U	0.0095 U	--	0.0098 U	0.0096 U	--	0.0095 U	0.0094 U	0.0099 U	0.011 U	0.06 U	0.04 U	0.04 U	--
Benzo(a)pyrene	0.023	0.0098 U	0.0095 U	--	0.0098 U	0.0096 U	--	0.0095 U	0.0094 U	0.0099 U	0.011 U	0.06 U	0.04 U	0.04 U	--
Benzo(b)fluoranthene		0.0098 U	0.0095 U	--	0.0098 U	0.0096 U	--	0.0095 U	0.0094 U	0.0099 U	0.011 U	0.06 U	0.04 U	0.04 U	--
Benzo(j,k)fluoranthene		0.0098 U	0.0095 U	--	0.0098 U	0.0096 U	--	0.0095 U	0.0094 U	0.0099 U	0.011 U	0.06 U	0.04 U	0.04 U	--
Chrysene		0.0098 U	0.0095 U	--	0.0098 U	0.0096 U	--	0.0095 U	0.0094 U	0.0099 U	0.011 U	0.06 U	0.04 U	0.04 U	--
Dibenz(a,h)anthracene		0.0098 U	0.0095 U	--	0.0098 U	0.0096 U	--	0.0095 U	0.0094 U	0.0099 U	0.011 U	0.06 U	0.04 U	0.04 U	--
Indeno(1,2,3-cd)pyrene		0.0098 U	0.0095 U	--	0.0098 U	0.0096 U	--	0.0095 U	0.0094 U	0.0099 U	0.011 U	0.06 U	0.04 U	0.04 U	--
Total cPAHs	0.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls (µg/L)															
Aroclor 1016		--	--	--	--	--	--	0.047 U	--	--	--	--	--	--	--
Aroclor 1221		--	--	--	--	--	--	0.047 U	--	--	--	--	--	--	--
Aroclor 1232		--	--	--	--	--	--	0.047 U	--	--	--	--	--	--	--
Aroclor 1242		--	--	--	--	--	--	0.047 U	--	--	--	--	--	--	--
Aroclor 1248		--	--	--	--	--	--	0.047 U	--	--	--	--	--	--	--
Aroclor 1254		--	--	--	--	--	--	0.047 U	--	--	--	--	--	--	--
Aroclor 1260	0.04	--	--	--	--	--	--	0.047 U	--	--	--	--	--	--	--
Total Petroleum Hydrocarbons (µg/L)															
Gasoline Range Organics	800	100 U	100 U	100 U	100 U	100 U	100 U	500 U	100 U	100 U	100 U	100 U	100 U	100 U	--
Diesel Range Organics	500	--	--	--	--	--	--	**260**	260 U	0.27 U	260 U	50 U	60 U	50 U	--
Lube Oil	500	--	--	--	--	--	--	410 U	410 U	0.43 U	410 U	250 U	300 U	250 U	--
Volatile Organic Compounds (µg/L)															
1,2,4-Trimethylbenzene	80	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	1.0 U	1.0 U	1.0 U	--
1,3,5-Trimethylbenzene	80	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	1.0 U	1.0 U	1.0 U	--
Acetone	7200	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	12 U	5.0 U	5.0 U	5.0 U	50 U	50 U	50 U	--
Benzene	0.8	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.35 U	0.35 U	0.35 U	--
Ethylbenzene	700	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	1.0 U	1.0 U	1.0 U	--
m,p-Xylene	1600	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	2.0 U	2.0 U	2.0 U	--
Naphthalene	160	1.0 U	1.0 U	1.4 U	1.0 U	1.0 U	1.4 U	1.0 U	1.3 U	1.0 U	1.0 U	0.06 U	0.4 U	1.0 U	--
o-Xylene	1600	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	1.0 U	1.0 U	1.0 U	--
Toluene	640	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--
Trichloroethene	0.54	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	1.0 U	1.0 U	1.0 U	--
Vinyl Chloride	0.03	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--

Notes:

1. Data qualifiers are as follows:
   - U = The analyte was not detected at the reporting limit indicated.
   - J = The value is an estimate.
   - UJ = The analyte was not detected at the estimated reporting limit indicated.
   - IS= Internal standard recoverty is outside of limits.
   - HS= Surrogate recovery is outsided of laboratory-specified limits.
   - HD= Imprecision between duplicate results
   - x = The sample chromatigraphic pattern does not resemble the fuel standard used for quantification.
2. Bold values indicate detections.
3. Preliminary Screening Level as defined on Table 2 Selection of Preliminary Groundwater Screening Levels (Ecology, 2019).
4. KMW-02 was abandoned by backfilling with bentonite on February 4, 2015, and was replaced June 28, 2016.
5. KMW-03 was destroyed during building demolition on June 3, 2015, and was replaced June 27, 2016.
6. Well not sampled due to Covid-19 site access restrictions.

Abbreviations:

-- = not analyzed
µg/L = micrograms per liter
cPAHS = carcinogenic polycyclic aromatic hydrocarbons

(D) = duplicate sample collected
mg/L - milligram per liter

R = replaced

Concentration Exceeds Preliminary Screening Level

TABLE 3: GROUNDWATER ANALYTICAL RESULTS

Former Kelly-Moore Manufacturing Facility, Seattle, Washington

Analyte[1,2]	Preliminary Screening Level [3]	KMW-03/03R[5]														
		3/28/2011	3/28/2011 (D)	8/4/2011	4/4/2013	6/7/2013	3/10/2015	7/1/2016	11/10/2016	11/10/2016 (D)	9/1/2017	1/26/2018	8/16/2018	2/8/2019	8/20/2019	3/11/2020[6]
Total Metals (µg/L)																
Arsenic	5	3.3 U	3.3 U	3.3 U	--	--	--	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	1.0 U	1.0 U	1.0 U	--
Chromium	50	11 U	11 U	--	--	--	--	11 U	11 U	11 U	11 U	11 U	1.0 U	1.47	1.0 U	--
Copper	640	--	--	11 U	--	--	--	--	--	--	--	--	5.0 U	5.0 U	5.0 U	--
Lead	15	1.1 U	1.1 U	1.1 U	--	--	--	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.0 U	1.0 U	1.0 U	--
Mercury	2	--	--	--	--	--	--	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	1.0 U	1.0 U	1.0 U	--
Nickel	100	--	--	--	--	--	--	--	--	--	--	--	**1.46**	**1.67**	**2.51**	**--**
Zinc	4800	--	--	--	--	--	--	--	--	--	--	--	5.0 U	5.0 U	5.0 U	--
Carcinogenic Polycyclic Aromatic Hydrocarbons (µg/L)																
Benzo(a)anthracene		0.0096 U	0.0095 U	0.0095 U	--	--	--	**0.018**	0.0095 U	0.0095 U	0.0098 U	0.011 U	0.06 U	0.04 U	0.04 U	--
Benzo(a)pyrene	0.023	0.0096 U	0.0095 U	0.0095 U	--	--	--	**0.011**	0.0095 U	0.0095 U	0.0098 U	0.011 U	0.06 U	0.04 U	0.04 U	--
Benzo(b)fluoranthene		0.0096 U	0.0095 U	0.0095 U	--	--	--	**0.011**	0.0095 U	0.0095 U	0.0098 U	0.011 U	0.06 U	0.04 U	0.04 U	--
Benzo(j,k)fluoranthene		0.0096 U	0.0095 U	0.0095 U	--	--	--	0.0095 U	0.0095 U	0.0095 U	0.0098 U	0.011 U	0.06 U	0.04 U	0.04 U	--
Chrysene		0.0096 U	0.0095 U	0.0095 U	--	--	--	**0.012**	0.0095 U	0.0095 U	0.0098 U	0.011 U	0.06 U	0.04 U	0.04 U	--
Dibenz(a,h)anthracene		0.0096 U	0.0095 U	0.0095 U	--	--	--	0.0095 U	0.0095 U	0.0095 U	0.0098 U	0.011 U	0.06 U	0.04 U	0.04 U	--
Indeno(1,2,3-cd)pyrene		0.0096 U	0.0095 U	0.0095 U	--	--	--	**0.011**	0.0095 U	0.0095 U	0.0098 U	0.011 U	0.06 U	0.04 U	0.04 U	--
Total cPAHs	0.2	--	--	--	--	--	--	**0.016**	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls (µg/L)																
Aroclor 1016		--	--	--	--	--	--	0.047 U	--	--	--	--	--	--	--	--
Aroclor 1221		--	--	--	--	--	--	0.047 U	--	--	--	--	--	--	--	--
Aroclor 1232		--	--	--	--	--	--	0.047 U	--	--	--	--	--	--	--	--
Aroclor 1242		--	--	--	--	--	--	0.047 U	--	--	--	--	--	--	--	--
Aroclor 1248		--	--	--	--	--	--	0.047 U	--	--	--	--	--	--	--	--
Aroclor 1254		--	--	--	--	--	--	0.047 U	--	--	--	--	--	--	--	--
Aroclor 1260	0.04	--	--	--	--	--	--	0.047 U	--	--	--	--	--	--	--	--
Total Petroleum Hydrocarbons (µg/L)																
Gasoline Range Organics	800	**7,700**	**7,000**	**6,100**	**1,800**	**1,100**	**1,100**	**300**	**130**	**170**	**270**	**150**	**290**	**140**	**170**	**--**
Diesel Range Organics	500	--	--	--	--	--	--	**660 J**	310 U	280 U	**330**	**510**	**350**	**1700**	**2800 x**	**--**
Lube Oil	500	--	--	--	--	--	--	410 U	410 U	410 U	430 U	410 U	250 U	300 U	250 U	--
Volatile Organic Compounds (µg/L)																
1,2,4-Trimethylbenzene	80	--	--	--	1.0 U	0.20 U	--	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	1.0 U	1.0 U	1.0 U	--
1,3,5-Trimethylbenzene	80	--	--	--	1.0 U	0.20 U	--	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	1.0 U	1.0 U	1.0 U	--
Acetone	7200	--	--	--	25 U	5.0 U	--	12 U	**7.9**	**6.5**	5.0 U	5.0 U	50 U	50 U	50 U	--
Benzene	0.8	**8.1**	**8.4**	4.0 U	1.0 U	**0.41**	--	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.35 U	0.35 U	0.35 U	--
Ethylbenzene	700	**3,100**	**2,700**	**2,400**	**170**	**27**	--	**1.4**	**0.33**	**0.34**	0.20 U	0.20 U	1.0 U	1.0 U	1.0 U	--
m,p-Xylene	1600	**18**	**18**	**7.1**	2.0 U	0.4 U	--	**2.1**	**1.0**	**0.97**	0.40 U	0.40 U	2.0 U	2.0 U	2.0 U	--
Naphthalene	160	--	--	--	**19**	**9.8**	--	1.0 U	1.3 U	1.3 U	1.0 U	1.0 U	**0.078**	**0.4 U**	1.0 U	--
o-Xylene	1600	4.0 U	4.0 U	4.0 U	1.0 U	0.20 U	--	**0.35**	**0.35**	**0.37**	0.20 U	0.20 U	1.0 U	1.0 U	1.0 U	--
Toluene	640	4.0 U	4.0 U	4.0 U	5.0 U	1.0 U	--	**1.1**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--
Trichloroethene	0.54	--	--	--	1.0 U	0.20 U	--	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	1.0 U	1.0 U	1.0 U	--
Vinyl Chloride	0.03	--	--	--	1.0 U	0.20 U	--	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--

Notes:

1. Data qualifiers are as follows:
   - U = The analyte was not detected at the reporting limit indicated.
   - J = The value is an estimate.
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4. KMW-02 was abandoned by backfilling with bentonite on February 4, 2015, and was replaced June 28, 2016.
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6. Well not sampled due to Covid-19 site access restrictions.

Abbreviations:

-- = not analyzed
µg/L = micrograms per liter
cPAHS = carcinogenic polycyclic aromatic hydrocarbons

(D) = duplicate sample collected
mg/L - milligram per liter

R = replaced

Concentration Exceeds Preliminary Screening Level

TABLE 3: GROUNDWATER ANALYTICAL RESULTS

Former Kelly-Moore Manufacturing Facility, Seattle, Washington

Analyte[1,2]	Preliminary Screening Level [3]	KMW-04														KMW-05		
		3/28/2011	8/4/2011	8/4/2011 (D)	6/7/2013	3/10/2015	6/30/2016	6/30/2016 (D)	11/11/2016	8/31/2017	1/25/2018	8/16/2018	2/7/2019	8/20/2019	3/11/2020	3/28/2011	8/4/2011	6/7/2013
Total Metals (µg/L)																		
Arsenic	5	**12**	**12**	**10**	--	--	**12**	**12**	**20**	**14**	**7.6**	**14.5**	**17.4**	**17.5**	**9.62**	3.3 U	3.3 U	--
Chromium	50	11 U	--	--	--	--	11 U	11 U	11 U	11 U	11 U	1.0 UJ	**1.58**	10 U	10 U	11 U	--	--
Copper	640	--	11 U	11 U	--	--	--	--	--	--	--	5.0 UJ	**24.7**	50 U	**58.1**	--	11 U	--
Lead	15	1.1 U	1.1 U	1.1 U	--	--	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.0 U	**1.51**	**2.23**	**1.45**	1.1 U	1.1 U	--
Mercury	2	--	--	--	--	--	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	1.0 U	1.0 U	1.0 U	1 U	--	--	--
Nickel	100	--	--	--	--	--	--	--	--	--	--	**2.43 J**	**1.98**	10 U	**1.21 J-IS**	--	--	--
Zinc	4800	--	--	--	--	--	--	--	--	--	--	5.0 UJ	5.0 U	50 U	50 U	--	--	--
Carcinogenic Polycyclic Aromatic Hydrocarbons (µg/L)																		
Benzo(a)anthracene		0.012 U	0.0095 U	0.0095 U	--	--	**0.011**	**0.014**	0.0094 U	0.0096 U	0.010 U	0.06 U	0.04 U	0.04 U	0.04 U	0.0095 U	0.0095 U	--
Benzo(a)pyrene	0.023	0.012 U	0.0095 U	0.0095 U	--	--	0.0095 UJ	**0.015 J**	0.0094 U	0.0096 U	0.010 U	0.06 U	0.04 U	0.04 U	0.04 U	0.0095 U	0.0095 U	--
Benzo(b)fluoranthene		0.012 U	0.0095 U	0.0095 U	--	--	0.0095 UJ	**0.022 J**	0.0094 U	**0.0120**	0.010 U	0.06 U	0.04 U	0.04 U	0.04 U	0.0095 U	0.0095 U	--
Benzo(j,k)fluoranthene		0.012 U	0.0095 U	0.0095 U	--	--	0.0095 U	0.0095 U	0.0094 U	0.0096 U	0.010 U	0.06 U	0.04 U	0.04 U	0.04 U	0.0095 U	0.0095 U	--
Chrysene		0.012 U	0.0095 U	0.0095 U	--	--	0.0095 U	0.0095 U	0.0094 U	**0.0100**	0.010 U	0.06 U	0.04 U	0.04 U	0.04 U	0.0095 U	0.0095 U	--
Dibenz(a,h)anthracene		0.012 U	0.0095 U	0.0095 U	--	--	0.0095 U	0.0095 U	0.0094 U	0.0096 U	0.010 U	0.06 U	0.04 U	0.04 U	0.04 U	0.0095 U	0.0095 U	--
Indeno(1,2,3-cd)pyrene		0.012 U	0.0095 U	0.0095 U	--	--	0.0095 UJ	**0.016 J**	0.0094 U	0.0096 U	0.010 U	0.06 U	0.04 U	0.04 U	0.04 U	0.0095 U	0.0095 U	--
Total cPAHs	0.2	--	--	--	--	--	**0.008**	**0.021**	--	**0.008**	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls (µg/L)																		
Aroclor 1016		--	--	--	--	--	0.048 U	0.047 U	--	--	--	--	--	--	--	--	--	--
Aroclor 1221		--	--	--	--	--	0.048 U	0.047 U	--	--	--	--	--	--	--	--	--	--
Aroclor 1232		--	--	--	--	--	0.048 U	0.047 U	--	--	--	--	--	--	--	--	--	--
Aroclor 1242		--	--	--	--	--	0.048 U	0.047 U	--	--	--	--	--	--	--	--	--	--
Aroclor 1248		--	--	--	--	--	0.048 U	0.047 U	--	--	--	--	--	--	--	--	--	--
Aroclor 1254		--	--	--	--	--	0.048 U	0.047 U	--	--	--	--	--	--	--	--	--	--
Aroclor 1260	0.04	--	--	--	--	--	0.048 U	0.047 U	--	--	--	--	--	--	--	--	--	--
Total Petroleum Hydrocarbons (µg/L)																		
Gasoline Range Organics	800	**75,000**	**55,000**	**50,000**	**48,000**	**27,000**	**27,000**	**27,000**	**63,000**	**8,000**	**9,000**	**33,000**	**31,000**	**82,000**	**37,000**	100 U	100 U	100 U
Diesel Range Organics	500	--	--	--	--	--	**3,000 J**	**2,700 J**	6,400 U	**1,600**	**1,700**	**2,000**	**2,600**	**4300 x**	**2,300**	--	--	--
Lube Oil	500	--	--	--	--	--	**510**	**870**	410 U	440 U	410 U	250 U	300 U	250 U	250 U	--	--	--
Volatile Organic Compounds (µg/L)																		
1,2,4-Trimethylbenzene	80	--	--	--	**77**	--	**44 J**	**65 J**	**160**	**97**	**110**	**54**	**67**	**170**	**130**	--	--	0.20 U
1,3,5-Trimethylbenzene	80	--	--	--	20 U	--	20 U	**20**	**52**	**30**	50 U	**17**	**33**	100 U	**61**	--	--	0.20 U
Acetone	7200	--	--	--	500 U	--	1,200 U	1,200 U	1,000 U	500 U	1300 U	50 U	500 U	5000 U	**150**	--	--	5.0 U
Benzene	0.8	**10**	**13**	**13**	20 U	--	20 U	20 U	20 U	20 U	50 U	0.35 U	3.5 U	35 U	0.35 U	1.0 U	1.0 U	0.20 U
Ethylbenzene	700	**5,700**	**3,700**	**3,400**	**3,400**	--	**3,700**	**4,300**	**5,200**	**4,300**	**4,700**	**2,600**	**2,800**	**6,700**	**3,000**	1.0 U	1.0 U	0.20 U
m,p-Xylene	1600	**12,000**	**8,500**	**7,700**	**6,800**	--	**7,100**	**7,900**	**12,000**	**7,800**	**12,000**	**6,400**	**6,100**	**19,000**	**7,500**	1.0 U	1.0 U	0.4 U
Naphthalene	160	--	--	--	140 U	--	100 U	100 U	100 U	100 U	250 U	**5.1**	**3.3**	100 U	**5.5**	--	--	1.4 U
o-Xylene	1600	**3,400**	**2,100**	**1,900**	**2,200**	--	**1,700**	**1,700**	**3,600**	**1,900**	**3,600**	**1,500**	**1,300**	**4,600**	**1,400**	1.0 U	1.0 U	0.20 U
Toluene	640	**7,400**	**5,800**	**5,500**	**3,800**	--	**1,400**	**1,300**	**5,300**	**980**	**5,500**	**610**	**190**	**1,500**	**380**	1.0 U	1.0 U	1 U
Trichloroethene	0.54	--	--	--	20 U	--	20 U	20 U	20 U	20 U	50 U	1.0 U	10 U	100 U	1 U	--	--	0.20 U
Vinyl Chloride	0.03	--	--	--	20 U	--	2.0 U	2.0 U	2.0 U	20 U	50 U	0.20 U	2.0 U	20 U	0.2 U	--	--	0.20 U

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(D) = duplicate sample collected
mg/L - milligram per liter

R = replaced

Concentration Exceeds Preliminary Screening Level

TABLE 3: GROUNDWATER ANALYTICAL RESULTS

Former Kelly-Moore Manufacturing Facility, Seattle, Washington

Analyte[1,2]	Preliminary Screening Level [3]	KMW-06								KMW-07							
		6/30/2016	11/11/2016	8/31/2017	1/24/2018	8/16/2018	2/7/2019	8/19/2019	3/11/2020	7/1/2016	11/10/2016	9/1/2017	1/26/2018	8/16/2018	2/8/2019	8/20/2019	3/11/2020[6]
Total Metals (µg/L)																	
Arsenic	5	**3.5**	**3.4**	3.3 U	3.3 U	**4.83**	**3.04**	10 U	**6.07**	3.3 U	3.3 U	3.3 U	3.3 U	1.0 U	1.0 U	1.0 U	--
Chromium	50	11 U	11 U	11 U	11 U	**2.48 J**	**2**	10 U	**3.78 J-IS**	11 U	11 U	11 U	11 U	1.0 U	1.0 U	1.0 U	--
Copper	640	--	--	--	--	**11.9 J**	**19.4**	50 U	**149**	--	--	--	--	5.0 U	5.0 U	5.0 U	--
Lead	15	**3.7**	**1.1**	**2.7**	**7.3**	**5.61**	**2.04**	**2.57**	**4.7**	1.1 U	1.1 U	1.1 U	1.1 U	1.0 U	1.0 U	1.0 U	--
Mercury	2	0.5 U	0.50 U	0.50 U	0.50 U	1.0 U	1.0 U	1.0 U	1 U	0.5 U	0.50 U	0.50 U	0.50 U	1.0 U	1.0 U	1.0 U	--
Nickel	100	--	--	--	--	**1.38 J**	**7.79**	10 U	**26.8**	--	--	--	--	1.0 U	**1.36**	**1.22**	**--**
Zinc	4800	--	--	--	--	**5.72 J**	**135**	50 U	**392 J-HD**	--	--	--	--	5.0 U	5.0 U	5.0 U	--
Carcinogenic Polycyclic Aromatic Hydrocarbons (µg/L)																	
Benzo(a)anthracene		**0.047**	**0.013**	**0.041**	**0.055**	0.06 U	0.04 U	0.04 U	0.04 U	0.0095 U	0.0095 U	0.0099 U	0.011 U	0.06 U	0.04 U	0.04 U	--
Benzo(a)pyrene	0.023	**0.038**	**0.022**	**0.033**	**0.071**	0.06 U	0.04 U	0.04 U	**0.075**	0.0095 U	0.0095 U	0.0099 U	0.011 U	0.06 U	0.04 U	0.04 U	--
Benzo(b)fluoranthene		**0.047**	**0.021**	**0.034**	**0.082**	0.06 U	0.04 U	0.04 U	**0.084**	0.0095 U	0.0095 U	0.0099 U	0.011 U	0.06 U	0.04 U	0.04 U	--
Benzo(j,k)fluoranthene		**0.018**	**0.031**	**0.018**	**0.034**	0.06 U	0.04 U	0.04 U	0.04 U	0.0095 U	0.0095 U	0.0099 U	0.011 U	0.06 U	0.04 U	0.04 U	--
Chrysene		**0.035**	**0.028**	**0.032**	**0.062**	0.06 U	0.04 U	0.04 U	**0.051**	0.0095 U	0.0095 U	0.0099 U	0.011 U	0.06 U	0.04 U	0.04 U	--
Dibenz(a,h)anthracene		0.0095 U	0.0095 U	0.0095 U	**0.0110**	0.06 U	0.04 U	0.04 U	0.04 U	0.0095 U	0.0095 U	0.0099 U	0.011 U	0.06 U	0.04 U	0.04 U	--
Indeno(1,2,3-cd)pyrene		**0.028**	**0.023**	**0.023**	**0.054**	0.06 U	0.04 U	0.04 U	**0.074**	0.0095 U	0.0095 U	0.0099 U	0.011 U	0.06 U	0.04 U	0.04 U	--
Total cPAHs	0.2	**0.053**	**0.032**	**0.045**	**0.095**	--	--	--	**0.103**	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls (µg/L)																	
Aroclor 1016		0.047 U	--	--	--	--	--	--		0.047 U	--	--	--	--	--	--	--
Aroclor 1221		0.047 U	--	--	--	--	--	--		0.047 U	--	--	--	--	--	--	--
Aroclor 1232		0.047 U	--	--	--	--	--	--		0.047 U	--	--	--	--	--	--	--
Aroclor 1242		0.047 U	--	--	--	--	--	--		0.047 U	--	--	--	--	--	--	--
Aroclor 1248		0.047 U	--	--	--	--	--	--		0.047 U	--	--	--	--	--	--	--
Aroclor 1254		0.047 U	--	--	--	--	--	--		0.047 U	--	--	--	--	--	--	--
Aroclor 1260	0.04	0.047 U	--	--	--	--	--	--		0.047 U	--	--	--	--	--	--	--
Total Petroleum Hydrocarbons (µg/L)																	
Gasoline Range Organics	800	**2,700**	**850**	**1,600**	**1,300**	**4,000**	**2,200**	**3,200**	**3900 J-HS**	500 U	100 U	100 U	100 U	100 U	100 U	100 U	--
Diesel Range Organics	500	**5,400 J**	**3,500**	**4,400**	**4,200**	**8,600**	**19,000**	**14000 x**	**26000 J-HD**	260 U	260 U	280 U	260 U	50 U	60 U	50 U	--
Lube Oil	500	**1,500 J**	**1,200**	**1,600**	**600**	**680**	**790**	**820 x**	**1500**	410 U	420 U	450 U	410 U	250 U	300 U	250 U	--
Volatile Organic Compounds (µg/L)																	
1,2,4-Trimethylbenzene	80	0.20 U	0.20 U	0.20 U	0.20 U	1.0 U	1.0 U	1.0 U	1 U	0.20 U	0.20 U	0.20 U	0.20 U	1.0 U	1.0 U	1.0 U	--
1,3,5-Trimethylbenzene	80	0.20 U	0.20 U	0.20 U	0.20 U	1.0 U	1.0 U	1.0 U	1 U	0.20 U	0.20 U	0.20 U	0.20 U	1.0 U	1.0 U	1.0 U	--
Acetone	7200	12 U	5.0 U	5.0 U	5.0 U	50 U	50 U	50 U	50 U	12 U	**6.5**	5.0 U	5.0 U	50 U	50.0 U	50 U	--
Benzene	0.8	0.20 U	0.20 U	0.20 U	0.20 U	0.35 U	0.35 U	0.35 U	0.35 U	0.20 U	0.20 U	0.20 U	0.20 U	0.35 U	0.35 U	0.35 U	--
Ethylbenzene	700	**0.38**	**0.25**	**0.27**	0.20 U	1.0 U	1.0 U	1.0 U	1 U	0.20 U	0.20 U	0.20 U	0.20 U	1.0 U	1.0 U	1.0 U	--
m,p-Xylene	1600	**1.4**	**0.92**	**1.6**	**0.42**	2.0 U	2.0 U	2.0 U	2 U	0.4 U	**0.44**	0.40 U	0.40 U	2.0 U	2.0 U	2.0 U	--
Naphthalene	160	1.0 U	1.3 U	1.0 U	1.0 U	**0.16**	0.4 U	0.4 U	1 U	1.0 U	1.3 U	1.0 U	1.0 U	0.06 U	0.4 U	0.4 U	--
o-Xylene	1600	**0.64**	**0.49**	**0.47**	0.20 U	1.0 U	1.0 U	1.0 U	1 U	0.20 U	0.20 U	0.20 U	0.20 U	1.0 U	1.0 U	1.0 U	--
Toluene	640	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--
Trichloroethene	0.54	0.20 U	0.20 U	0.20 U	0.20 U	1.0 U	1.0 U	1.0 U	1 U	0.20 U	0.20 U	0.20 U	0.20 U	1.0 U	1.0 U	1.0 U	--
Vinyl Chloride	0.03	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	--

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Concentration Exceeds Preliminary Screening Level

TABLE 3: GROUNDWATER ANALYTICAL RESULTS

Former Kelly-Moore Manufacturing Facility, Seattle, Washington

Analyte[1,2]	Preliminary Screening Level [3]	KMW-08								KMW-09						
		7/1/2016	11/10/2016	9/1/2017	1/26/2018	8/16/2019	2/8/2019	8/20/2019	3/11/2020[6]	11/11/2016	8/31/2017	1/24/2018	8/16/2018	2/7/2019	8/20/2019	3/11/2020
Total Metals (µg/L)																
Arsenic	5	3.3 U	3.3 U	3.3 U	3.3 U	1.0 U	1.0 U	10 U	--	3.3 U	3.3 U	3.3 U	**2.04**	1.0 U	10 U	**1.8**
Chromium	50	11 U	11 U	11 U	11 U	1.0 U	1.0 U	10 U	--	11 U	11 U	11 U	**1.40 J**	**1.12**	10 U	**1.16 J-IS**
Copper	640	--	--	--	--	5.0 U	5.0 U	50 U	--	--	--	--	**5.62 J**	5.0 U	50 U	**10.6 J-IS**
Lead	15	1.1 U	1.1 U	1.1 U	1.1 U	1.0 U	1.0 U	10 U	--	1.1 U	1.1 U	**3.0**	**3.1**	1.0 U	1.0 U	1 U
Mercury	2	0.5 U	0.50 U	0.50 U	0.50 U	1.0 U	1.0 U	10 U	--	0.50 U	0.50 U	0.50 U	1.0 U	1.0 U	1.0 U	1 U
Nickel	100	--	--	--	--	**1.11**	**1.99**	**25.9**	--	--	--	--	**1.25 J**	1.0 U	10 U	**1.85 J-IS**
Zinc	4800	--	--	--	--	5.0 U	10.1	50 U	--	--	--	--	5.0 UJ	5.0 U	50 U	50 U
Carcinogenic Polycyclic Aromatic Hydrocarbons (µg/L)																
Benzo(a)anthracene		**0.086**	**0.015**	**0.012**	**0.018**	0.06 U	0.04 U	0.04 U	--	0.0098 U	0.0098 U	**0.020**	0.06 U	0.04 U	0.04 U	0.04 U
Benzo(a)pyrene	0.023	**0.11**	**0.013**	0.010 U	**0.015**	0.06 U	0.04 U	0.04 U	--	0.0098 U	0.0098 U	**0.021**	0.06 U	0.04 U	0.04 U	0.04 U
Benzo(b)fluoranthene		**0.12**	**0.020**	0.010 U	**0.018**	0.06 U	0.04 U	0.04 U	--	0.0098 U	0.0098 U	**0.017**	0.06 U	0.04 U	0.04 U	0.04 U
Benzo(j,k)fluoranthene		**0.046**	0.0095 U	0.010 U	0.012 U	0.06 U	0.04 U	0.04 U	--	0.0098 U	0.0098 U	**0.015**	0.06 U	0.04 U	0.04 U	0.04 U
Chrysene		**0.09**	**0.042**	**0.012**	**0.028**	0.06 U	0.04 U	0.04 U	--	0.0098 U	0.0098 U	**0.018**	0.06 U	0.04 U	0.04 U	0.04 U
Dibenz(a,h)anthracene		**0.024**	0.0095 U	0.010 U	0.012 U	0.06 U	0.04 U	0.04 U	--	0.0098 U	0.0098 U	0.011 U	0.06 U	0.04 U	0.04 U	0.04 U
Indeno(1,2,3-cd)pyrene		**0.063**	0.0095 U	0.010 U	0.012 U	0.06 U	0.04 U	0.04 U	--	0.0098 U	0.0098 U	**0.0130**	0.06 U	0.04 U	0.04 U	0.04 U
Total cPAHs	0.2	**0.14**	**0.018**	**0.008**	**0.021**	--	--	--	--	--	--	**0.028**	--	--	--	--
Polychlorinated Biphenyls (µg/L)																
Aroclor 1016		0.047 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1221		0.047 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1232		0.047 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1242		0.047 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1248		0.047 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1254		0.047 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1260	0.04	0.047 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Petroleum Hydrocarbons (µg/L)																
Gasoline Range Organics	800	**1,000**	**400**	**130**	**120**	**230**	**120**	100 U	--	**370**	**360**	**760**	**940**	**450**	**300**	**940**
Diesel Range Organics	500	**770 J**	370 U	300 U	**450**	**160**	**440**	**170 x**	--	**1,700**	**2,300**	**3,100**	**3,600**	**3,100**	**3400 x**	**13,000**
Lube Oil	500	410 U	410 U	480 U	410 U	250 U	300 U	250 U	--	**660**	**810**	**690**	**360**	300 U	**330 x**	**580**
Volatile Organic Compounds (µg/L)																
1,2,4-Trimethylbenzene	80	0.20 U	0.20 U	0.20 U	0.20 U	1.0 U	1.0 U	1.0 U	--	0.2 U	0.20 U	0.20 U	1.0 U	1.0 U	1.0 U	1 U
1,3,5-Trimethylbenzene	80	0.20 U	0.20 U	0.20 U	0.20 U	1.0 U	1.0 U	1.0 U	--	0.2 U	0.20 U	0.20 U	1.0 U	1.0 U	1.0 U	1 U
Acetone	7200	12 U	**10**	5.0 U	5.0 U	50 U	50.0 U	50 U	--	5.0 U	5.0 U	5.0 U	50 U	50 U	50 U	50 U
Benzene	0.8	0.20 U	**0.20**	0.20 U	0.20 U	0.35 U	0.35 U	0.35 U	--	0.2 U	0.20 U	0.20 U	0.35 U	0.35 U	0.35 U	0.35 U
Ethylbenzene	700	0.20 U	**0.31**	**0.36**	0.20 U	1.0 U	1.0 U	1.0 U	--	**3.1**	0.20 U	**0.44**	1.0 U	1.0 U	1.0 U	1 U
m,p-Xylene	1600	0.4 U	**0.76**	**0.69**	0.40 U	2.0 U	2.0 U	2.0 U	--	**0.51**	0.40 U	0.40 U	2.0 U	2.0 U	2.0 U	2 U
Naphthalene	160	**1.5**	1.3 U	1.0 U	1.0 U	0.06 U	0.4 U	1.0 U	--	1.3 U	1.0 U	1.0 U	**0.12**	1.0 U	1.0 U	0.4 U
o-Xylene	1600	0.20 U	**0.34**	0.20 U	0.20 U	1.0 U	1.0 U	1.0 U	--	0.2 U	0.20 U	0.20 U	1.0 U	1.0 U	1.0 U	1 U
Toluene	640	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U
Trichloroethene	0.54	0.20 U	0.20 U	0.20 U	0.20 U	1.0 U	1.0 U	1.0 U	--	0.2 U	0.20 U	0.20 U	1.0 U	1.0 U	1.0 U	1 U
Vinyl Chloride	0.03	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	--	0.2 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U

Notes:

1. Data qualifiers are as follows:
   - U = The analyte was not detected at the reporting limit indicated.
   - J = The value is an estimate.
   - UJ = The analyte was not detected at the estimated reporting limit indicated.
   - IS= Internal standard recoverty is outside of limits.
   - HS= Surrogate recovery is outsided of laboratory-specified limits.
   - HD= Imprecision between duplicate results
   - x = The sample chromatigraphic pattern does not resemble the fuel standard used for quantification.
2. Bold values indicate detections.
3. Preliminary Screening Level as defined on Table 2 Selection of Preliminary Groundwater Screening Levels (Ecology, 2019).
4. KMW-02 was abandoned by backfilling with bentonite on February 4, 2015, and was replaced June 28, 2016.
5. KMW-03 was destroyed during building demolition on June 3, 2015, and was replaced June 27, 2016.
6. Well not sampled due to Covid-19 site access restrictions.

Abbreviations:

-- = not analyzed
µg/L = micrograms per liter
cPAHS = carcinogenic polycyclic aromatic hydrocarbons

(D) = duplicate sample collected
mg/L - milligram per liter

R = replaced

Concentration Exceeds Preliminary Screening Level

TABLE 3: GROUNDWATER ANALYTICAL RESULTS

Former Kelly-Moore Manufacturing Facility, Seattle, Washington

Analyte[1,2]	Preliminary Screening Level [3]	KMW-10							
		11/11/2016	8/31/2017	1/25/2018	1/25/2018 (D)	8/16/2018	2/7/2019	8/19/2019	3/11/2020
Total Metals (µg/L)									
Arsenic	5	**9.1**	**10**	**6.8**	**5.7**	**4.61**	**6.72**	10 U	**6.66**
Chromium	50	11 U	11 U	11 U	11 U	**1.35 J**	**2.00 J**	10 U	10 U
Copper	640	--	--	--	--	5.0 UJ	5.0 UJ	50 U	50 U
Lead	15	1.1 U	1.1 U	**1.1**	1.1 U	1.0 U	1.0 U	1.0 U	1 U
Mercury	2	0.50 U	0.50 U	0.50 U	0.50 U	1.0 U	1.0 U	1.0 U	1 U
Nickel	100	--	--	--	--	1.0 UJ	1.0 UJ	10 U	10 U
Zinc	4800	--	--	--	--	5.0 UJ	5.0 UJ	50 U	50 U
Carcinogenic Polycyclic Aromatic Hydrocarbons (µg/L)									
Benzo(a)anthracene		0.0098 U	0.0094 U	0.011 U	0.011 U	0.06 U	0.04 U	0.04 U	0.04 U
Benzo(a)pyrene	0.023	0.0098 U	0.0094 U	0.011 U	0.011 U	0.06 U	0.04 U	0.04 U	0.04 U
Benzo(b)fluoranthene		0.0098 U	0.0094 U	0.011 U	0.011 U	0.06 U	0.04 U	0.04 U	0.04 U
Benzo(j,k)fluoranthene		0.0098 U	0.0094 U	0.011 U	0.011 U	0.06 U	0.04 U	0.04 U	0.04 U
Chrysene		0.0098 U	0.0094 U	0.011 U	0.011 U	0.06 U	0.04 U	0.04 U	0.04 U
Dibenz(a,h)anthracene		0.0098 U	0.0094 U	0.011 U	0.011 U	0.06 U	0.04 U	0.04 U	0.04 U
Indeno(1,2,3-cd)pyrene		0.0098 U	0.0094 U	0.011 U	0.011 U	0.06 U	0.04 U	0.04 U	0.04 U
Total cPAHs	0.2	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls (µg/L)									
Aroclor 1016		--	--	--	--	--	--	--	--
Aroclor 1221		--	--	--	--	--	--	--	--
Aroclor 1232		--	--	--	--	--	--	--	--
Aroclor 1242		--	--	--	--	--	--	--	--
Aroclor 1248		--	--	--	--	--	--	--	--
Aroclor 1254		--	--	--	--	--	--	--	--
Aroclor 1260	0.04	--	--	--	--	--	--	--	--
Total Petroleum Hydrocarbons (µg/L)									
Gasoline Range Organics	800	**110**	**3,400**	**270**	**260**	**4,800**	**200**	**2,800**	**130**
Diesel Range Organics	500	1,300 U	**1,800**	**2,300**	**2,300**	**1,400**	**970**	**2700 x**	**4,400**
Lube Oil	500	420 U	430 U	410 U	410 U	250 U	320 U	250 U	250 U
Volatile Organic Compounds (µg/L)									
1,2,4-Trimethylbenzene	80	**3.7**	**53**	**2.7**	**5.4**	**38**	1.0 U	**40**	1 U
1,3,5-Trimethylbenzene	80	**0.38**	**23**	**0.9**	**1.7**	**19**	1.0 U	**22**	1 U
Acetone	7200	5.0 U	100 U	5.0 U	5.0 U	50 U	50 U	50 U	50 U
Benzene	0.8	**0.7**	**8.2**	0.20 U	0.20 U	**1.5**	0.35 U	**1.5**	0.35 U
Ethylbenzene	700	**1.6**	**810**	**14**	**30**	**370**	1.0 U	**3.4**	1 U
m,p-Xylene	1600	**11**	**1100**	**28**	**65**	**1100**	**6**	**890**	2 U
Naphthalene	160	1.3 U	20 U	1.0 U	1.0 U	**0.51**	0.4 U	1.0 U	0.4 U
o-Xylene	1600	**0.29**	**22**	**0.42**	**0.58**	1.0 U	1.0 U	1.0 U	1 U
Toluene	640	1.0 U	20 U	**1.0**	**1.0**	1.0 U	1.0 U	1.0 U	1 U
Trichloroethene	0.54	0.2 U	4.0 U	0.20 U	0.20 U	1.0 U	1.0 U	1.0 U	1 U
Vinyl Chloride	0.03	0.2 U	4.0 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U

Notes:

1. Data qualifiers are as follows:
   - U = The analyte was not detected at the reporting limit indicated.
   - J = The value is an estimate.
   - UJ = The analyte was not detected at the estimated reporting limit indicated.
   - IS= Internal standard recoverty is outside of limits.
   - HS= Surrogate recovery is outsided of laboratory-specified limits.
   - HD= Imprecision between duplicate results
   - x = The sample chromatigraphic pattern does not resemble the fuel standard used for quantification.
2. Bold values indicate detections.
3. Preliminary Screening Level as defined on Table 2 Selection of Preliminary Groundwater Screening Levels (Ecology, 2019).
4. KMW-02 was abandoned by backfilling with bentonite on February 4, 2015, and was replaced June 28, 2016.
5. KMW-03 was destroyed during building demolition on June 3, 2015, and was replaced June 27, 2016.
6. Well not sampled due to Covid-19 site access restrictions.

Abbreviations:

-- = not analyzed
µg/L = micrograms per liter
cPAHS = carcinogenic polycyclic aromatic hydrocarbons

(D) = duplicate sample collected
mg/L - milligram per liter

R = replaced

Concentration Exceeds Preliminary Screening Level

TABLE 4: SOIL VAPOR EXTRACTION SYSTEM ANALYTICAL SUMMARY[1, 2, 3]

Former Kelly-Moore Manufacturing Facility, Seattle, Washington

Sample	Date[4]	Benzene (mg/m^3)	TPH as Hexane (mg/m^3)
Western SVE Wells			
SVE-09	11/7/17	**0.069**	**310**
	5/30/19	<0.1	**630**
	6/4/19	<0.1	**440**
SVE-10	11/7/17	**0.53**	**820 J**
	5/30/19	<0.5	**3,500**
	6/4/19	<0.5	**2,300**
SVE-11	11/7/17	**0.069**	**220**
	5/30/19	<0.1	**1,300**
	6/4/19	<0.1	**660**
SVE-12	11/7/17	**0.44**	**1,400 J**
	5/30/19	<0.1	**3,300**
	6/4/19	<0.2	**1,400**
SVE-13	11/7/17	**0.23**	**600 J**
	5/30/19	<0.1	**2,100**
	6/4/19	<0.1	**760**
Eastern SVE Wells			
SVE-02	11/7/17	<0.03	**3.4**
	5/30/19	<0.1	<10
	6/4/19	<0.1	**14**
SVE-04	11/7/17	<0.03	**310**
	5/30/19	<0.1	**470**
	6/4/19	<0.1	**400**
SVE-06	11/7/17	**0.041**	**280**
	5/30/19	<0.1	**36**
	6/4/19	<0.1	**33**
SVE-08	11/7/17	<0.03	**65**
	5/30/19	<0.1	**30**
	6/4/19	<0.1	**16**
SVE-07	11/7/17	<0.03	**82**
	5/30/19	<0.1	**70**
	6/4/19	<0.1	**230**
SVE-05	11/7/17	**0.50**	**2,200 J**
	5/30/19	<0.2	**5,100**
	6/4/19	<0.5	**3,500**
SVE-03	11/7/17	**1.1**	**1,900 J**
	5/30/19	<0.2	**1,900**
	6/4/19	<0.1	**2,400**
SVE-01	11/7/17	**0.14**	**450**
	5/30/19	<0.1	**10**
	6/4/19	<0.1	**14**

Notes:

1. Data qualifiers are as follows:
   J = the result is estimated because the concentration exceeded the calibration range of the instrument.
2. **Bold** values indicate results above the reporting limits.
3. Analytes that were not detected above the method detection limit are listed as less than the detection limit.
4. The SVE system began operating without air sparging on November 7, 2017. The SVE did not operate between October 16, 2018 and April 1, 2019. SVE system with air sparge began operating on May 29, 2019.

Abbreviations:

SVE = soil vapor extraction

TPH = total petroleum hydrocarbons

TABLE 4: SOIL VAPOR EXTRACTION SYSTEM ANALYTICAL SUMMARY[1, 2, 3]

Former Kelly-Moore Manufacturing Facility, Seattle, Washington

Sample	Date[4]	Benzene (mg/m^3)	TPH as Hexane (mg/m^3)
Eastern SVE Wells (continued)			
Influent	11/7/17	**0.18**	**650 J**
	5/30/19	<0.1	**1,100**
	6/4/19	<0.1	**640**
	1/9/20	<0.5	**8,200**
	2/21/20	<0.1	**33**
	3/17/20	<0.00011	**135**
	4/20/20	**0.035**	**90**
	5/18/20	<0.049	**110**
Effluent	11/7/17	<0.03	**28**
	5/30/19	<0.1	**41**
	6/4/19	<0.1	**20**
	1/9/20	<0.1	**1,400**
	2/21/20	<0.1	<10
	3/17/20	<0.00086	<2.2
	4/20/20	<0.0023	<2.3
	5/18/20	<0.0099	<1.1

Notes:

1. Data qualifiers are as follows:
   J = the result is estimated because the concentration exceeded the calibration range of the instrument.
2. **Bold** values indicate results above the reporting limits.
3. Analytes that were not detected above the method detection limit are listed as less than the detection limit.
4. The SVE system began operating without air sparging on November 7, 2017. The SVE did not operate between October 16, 2018 and April 1, 2019. SVE system with air sparge began operating on May 29, 2019.

Abbreviations:

SVE = soil vapor extraction

TPH = total petroleum hydrocarbons

TABLE 5: SVE/CATOX and PSCAA Permit Compliance Results
Former Kelly-Moore Manufacturing Facility, Seattle, Washington

Date	CATOX Results (Influent / Effluent)						CATOX Operation			Mass Removal / Removal Rates											Pre-Control Emission Rate for PSCAA**	
	FID Field Readings		Laboratory Results							FID Results*				Laboratory Results - TPH Gasoline Range				Laboratory Results - Benzene					
			Total TPH-Gasoline Range		Benzene																	
	Influent (ppm)	Effluent (ppm)	Influent (µg/m^3)	Effluent (µg/m3)	Influent (µg/m3)	Effluent (µg/m3)	Extraction Rate (scfm)	Hour Meter (hours)	Operational Hours of Interval (hours)	Mass Removal Efficiency (%)	Mass Removal Rate (lbs/day)	Mass Removed per Interval (lbs)	Cumulative Mass Removed (lbs)	Mass Removal Efficiency (%)	Mass Removal Rate (lbs/day)	Mass Removed per Interval (lbs)	Cumulative Mass Removed (lbs)	Mass Removal Efficiency (%)	Mass Removal Rate (lbs/day)	Mass Removed per Interval (lbs)	Cumulative Mass Removed (lbs)	TPH Emission Rate (lbs/day)	Benzene Emission Rate (lbs/day)
6/4/2019	50.4	1.2	640,000	20,000	100.0	99.0	154	1,515.0	121.8	97.6%	2.40	24.4	1,743.7	96.9%	8.6	60.7	1,356.8	1.0%	0.00001	0.00007	0.00866	8.87	0.001
7/2/2019	150.0	1.6	100	99	100.0	99.0	154	2,182.6	667.6	98.9%	7.23	133.9	1,877.7	1.0%	0.0	119.5	1,476.2	1.0%	0.00001	0.00039	0.00905	0.00	0.001
8/7/2019	149.3	0.0	100	99	220.0	99.0	371	3,012.0	829.4	100.0%	17.53	427.8	2,305.5	1.0%	0.0	0.0	1,476.2	55.0%	0.00404	0.07002	0.07907	0.00	0.007
9/4/2019	348.0	248.0	100	99	100.0	99.0	0	3,563.0	551.0	28.7%	0.00	402.4	2,707.9	1.0%	0.0	0.001	1,476.2	1.0%	0.00000	0.09272	0.17179	0.00	0.000
1/9/2020	6,333.0	2,075.0	8,200	1,400	500.0	100.0	78	3,598.0	35.0	67.2%	105.10	153.3	2,861.2	82.9%	0.0	0.1	1,476.3	80.0%	0.00281	0.00205	0.17384	0.06	0.004
2/14/2020	55.0	1.3	180,000	20,000	100.0	99.0	198	3,897.0	299.0	97.6%	3.36	675.6	3,536.8	88.9%	2.9	18.1	1,494.4	1.0%	0.00002	0.01760	0.19143	3.21	0.002
3/17/2020	100.9	7.6	135,000	2,200	11.0	0.9	225	4,056.0	159.0	92.5%	6.64	33.1	3,569.9	98.4%	2.7	18.3	1,512.7	92.2%	0.00021	0.00074	0.19217	2.73	0.000
4/20/2020	98.9	4.8	90,000	2,300	35.0	2.3	155	4,854.0	798.0	95.1%	4.62	187.2	3,757.1	97.4%	1.2	65.0	1,577.7	93.4%	0.00046	0.01099	0.20316	1.26	0.000
5/18/2020	6.2	0.3	110,000	1,100	5.9	0.9	138	5,525.0	671.0	95.2%	0.26	68.1	3,825.2	99.0%	1.4	36.0	1,613.7	84.9%	0.00006	0.00724	0.21041	1.37	0.000
6/16/2020	25.0	1.3	170,000	1,300	65.0	1.0	150	6,141.0	616.0	94.8%	1.12	17.7	3,843.0	99.2%	2.3	46.6	1,660.3	98.5%	0.00086	0.01188	0.22229	2.29	0.001
Permit		< 10 ppm								See below											**Permit**	**2.74**	**0.018**

* = mass as equivalent hexane
** = Pre-control inlet emissions based on laboratory data

Conversions / Constants

Hexane Mol Weight =	86	grams/mol
Molar Volume =	24.45	liters
1 meter =	3.28	feet
1 pound =	453592	milligrams
1 day =	1440	minutes

Acronyms

µg/m^3 - micrograms per cubic meter
% - percent
CATOX - Catalytic Oxidizers
FID - Flame Ionization Detector
lbs - pounds
ppm - parts per million
ppmv - parts per million by volume
PSCAA - Puget Sound Clean Air Agency
scfm - standard cubic feet per minute
TPH - total petroleum hydrocarbons

PSCAA Permit No. 11291 Requirements:

FID Field Reading for Removal Efficiency / Discharge Concentration
1) Greater than or equal to 97% if inlet TPH is greater than or equal to 200 ppmv (measured as hexane with FID).
2) Greater than or equal to 90% if inlet TPH is less than 200 ppmv (measured as hexane with FID).
3) Effluent at less than or equal to 10 ppmv (measured as hexane with FID).
4) CATOX flow rate must not exceed 300 scfm.
5) Use only electric CATOX.
6) CATOX temperature must be a minimum of 650F degrees.
7) System must shutdown if CATOX temperature drops below 650F degrees during normal operation.
8) CATOX must have sensor to monitor system temperature continuously.

No Air Treatment Controls are Required if:
9) Inlet TPH emissions are less than or equal to 2.74 lbs/day
10) Inlet benzene emissions are less than equal to 0.018 lbs/day

Notes:

1) System was shutdown on September 4, 2019, as CATOX results did not meet mass removal efficiency per PSCAA permit requirements.

2) The mass of contaminant removed per interval is typically averaged over the interval using the average rate of removal of the current data and the prior date multiplied by the hour meter reading for the interval. For the September 4, 2019 mass removed, the removal rate from the prior visit was applied to the amount of time shown on the hour meter reading for the September 4, 2019.

3) Benzene and TPH-Gasoline Range influent and effluent laboratory results that are 100 and 99 µg/m3 represent samples that were below the detection level of 100 µg/m3. The 99 value is used to keep the calculations from dividing by zero (0). Actual values could be lower than shown.

4) Results that would be above influent emission rates to allow no treatment per PSCAA permit.

5) The January 9, 2020 field results reflect the CATOX system restart after months of being offline and is not indicative of continuous operation. Initial startup concentrations are usually higher than during extended operation and CATOX may not have been consistently reached above minimum temperature which is required for removal efficiency.

Appendix A

wood.

GROUNDWATER SAMPLING LOG
Low Flow Sampling

MONITORING WELL/PIEZOMETER NUMBER- KMW-02R

Project Name: Kelly-Moore

Date: 08/20/19

Project Number: 14697009

Weather Conditions: SUNNY

Location: Seattle, WA

Sampler: Lucas Kerner

Wind Speed/Direction: N/A

WELL INFORMATION

Casing Diameter (in): 2"

Top of Casing Elevation (ft): 21.63'

Initial Depth to Water (ft): 10.78

Wellhead Condition: OKAY

Groundwater Elevation (ft): 10.85

Depth of Well Casing (ft):

Actual Purge Volume (gal): 2 gal

PURGING MEASUREMENTS

WL (ft btoc)	Time	pH (std. units)	SC (ms/cm)	Temp. (°C)	ORP (mv)	DO (mg/L)	Turbidity (NTUs)	Notes
10.78	0925	5.85	0.216	14.5	88	5.87	10.83	
10.78	0928	5.83	0.213	14.5	92	5.17	7.15	
10.78	0931	5.81	0.211	14.6	96.5	4.64	4.54	
10.78	0934	5.80	0.211	14.6	102.3	4.08	4.68	
10.78	0937	5.79	0.211	14.6	107	3.74	4.96	
10.78	0940	5.77	0.211	14.6	112	3.46	4.50	
10.78	0943	5.76	0.211	14.6	115	3.26	4.25	
10.78	0946	5.75	0.211	14.6	118	3.09	4.16	
10.78	0949	5.76	0.211	14.6	121	2.97	4.10	
~~10.78~~	~~0952~~	STABLE						

Sample ID No.: KMW-02R-082019

Water Level Ind. Model & No.: Solinst Model 101

ORP/DO Meter Model & No.: YSI-Pro Dss

Purge Equipment Used: Peristaltic Pump with dedicated tubing

Sampling Equipment Used: YSI Pro Dss

Purge Start Time: 09:22

Purge Completion Time: 0949 ~~09:55, 0952~~

Average Purge Rate (mL/min): 275

Analytical Lab: Friedman & Bruya Inc.

Sample Collection Time: 0955

Purging Method: SAA

Sample Containers Used: Lab Provided

Chemical Analyses: See COC

Other Field Observations:

wood.

GROUNDWATER SAMPLING LOG
Low Flow Sampling

MONITORING WELL/PIEZOMETER NUMBER- KMW-03R

Project Name: Kelly-Moore

Date: 08/20/19

Project Number: 14697009

Weather Conditions: SUNNY

Location: Seattle, WA

Sampler: Lucas Kerner

Wind Speed/Direction: N/A

WELL INFORMATION

Casing Diameter (in): 2"

Top of Casing Elevation (ft): 21.54'

Initial Depth to Water (ft): 10.70

Wellhead Condition: OKAY

Groundwater Elevation (ft): 10.84

Depth of Well Casing (ft):

Actual Purge Volume (gal): 7 gal

PURGING MEASUREMENTS

WL (ft btoc)	Time	pH (std. units)	SC (ms/cm)	Temp. (°C)	ORP (mv)	DO (mg/L)	Turbidity (NTUs)	Notes
10.70	1155	6.78	0.822	18.8	68	5.34	6.40	
10.70	1158	6.87	0.781	18.5	10.2	~~10.41~~	3.62	
10.70	1201	6.88	0.751	18.5	-12	3.53	3.68	
10.70	1204	6.88	0.722	18.5	-23	3.10	3.74	
10.70	1207	6.88	0.701	18.4	-29	2.90	3.75	
10.70	1210	6.89	0.680	18.4	-34	2.71	3.95	
10.70	1213	6.89	0.657	18.4	-39	2.48	4.30	
10.70	1216	6.90	0.637	18.4	-43	2.34	4.63	
10.70	1219	6.90	0.624	18.4	-46	2.25	5.01	
10.70	1222	6.90	0.613	18.4	-47	2.19	4.78	

Sample ID No.: KMW-03R-082019

Water Level Ind. Model & No.: Solinst Model 101

ORP/DO Meter Model & No.: YSI-Pro Dss

Purge Equipment Used: Peristaltic Pump with dedicated tubing

Sampling Equipment Used: YSI Pro Dss

Purge Start Time: 11:52

Purge Completion Time: 12:22

Average Purge Rate (mL/min): 200

Analytical Lab: Friedman & Bruya Inc.

Sample Collection Time: 12:25

Purging Method: SAA

Sample Containers Used: Lab Provided

Chemical Analyses: See COC

Other Field Observations:

wood.

GROUNDWATER SAMPLING LOG
Low Flow Sampling

MONITORING WELL/PIEZOMETER NUMBER- KMW-04

Project Name: Kelly-Moore

Date: 08/20/2019

Project Number: 14697009

Weather Conditions: SUNNY

Location: Seattle, WA

Sampler: Lucas Kerner

Wind Speed/Direction: N/A

WELL INFORMATION

Casing Diameter (in): 2"

Top of Casing Elevation (ft): 18.56'

Initial Depth to Water (ft): 7.89

Wellhead Condition: GRAY - ORANGE H_2O inside

Groundwater Elevation (ft):

Depth of Well Casing (ft):

Actual Purge Volume (gal):

PURGING MEASUREMENTS

WL (ft btoc)	Time	pH (std. units)	SC (ms/cm)	Temp. (°C)	ORP (mv)	DO (mg/L)	Turbidity (NTUs)	Notes
7.89	1345	6.65	0.417	17.7	-30	6.26	9.69	
7.89	1348	6.44	0.375	17.8	-40	5.04	11.30	
7.89	1351	6.35	0.354	18.1	-42.3	4.22	15.0	
7.89	1354	6.32	0.347	18.2	-46	3.53	7.8	
7.89	1357	6.29	0.349	18.1	-44	3.04	11.2	
7.89	1400	6.28	0.351	18.1	-50	2.86	10.8	
	1403	6.27	0.351	18.2	-50	2.70	10.7	
	1406	6.27	0.351	18.1	-51	2.56	10.5	
	1409	6.26	0.351	18.1	-51	2.43	10.6	
	1412	6.26	0.352	18.1	-52	2.38	10.8	
1L								

Sample ID No.: KMW-04-~~0815~~ 082019

Water Level Ind. Model & No.: Solinst Model 101

ORP/DO Meter Model & No.: YSI-Pro Dss

Purge Equipment Used: Peristaltic Pump with dedicated tubing

Sampling Equipment Used: YSI Pro Dss

Purge Start Time: 1342

Purge Completion Time: 1417

Average Purge Rate (mL/min): 200

Analytical Lab: Friedman & Bruya Inc.

Sample Collection Time: 1415

Purging Method: SAA

Sample Containers Used: Lab Provided

Chemical Analyses: See COC

Other Field Observations:

wood.

GROUNDWATER SAMPLING LOG
Low Flow Sampling

MONITORING WELL/PIEZOMETER NUMBER- KMW-06

Project Name: Kelly-Moore

Date: 08/19/19

Project Number: 14697009

Weather Conditions: 65° Sunny

Location: Seattle, WA

Sampler: Lucas Kerner

Wind Speed/Direction: 0

WELL INFORMATION

Casing Diameter (in): 2"

Top of Casing Elevation (ft): 19.80'

Initial Depth to Water (ft): 9.09

Wellhead Condition: OKAY

Groundwater Elevation (ft):

Depth of Well Casing (ft):

Actual Purge Volume (gal):

PURGING MEASUREMENTS

WL (ft btoc)	Time	pH (std. units)	SC (ms/cm)	Temp. (°C)	ORP (mv)	DO (mg/L)	Turbidity (NTUs)	Notes
9.09 ~~1350~~	1354	6.35	0.568	19.8	-1.5	6.80	14.01	
9.09	1357	6.31	0.557	19.6	-7.7	5.10	16.98	
9.09	1400	6.31	0.534	19.7	-42	4.10	21.21	
9.09	1403	6.32	0.523	19.7	-48	3.70	23.47	
9.09	1406	6.32	0.506	19.7	-54	3.33	23.88	
9.09	1409	6.32	0.507	20.2	-59	2.98	23.67	
9.09	1412	6.32	0.504	20.0	-60.5	2.83	21.57	
9.09	1415	6.32	0.499	20.0	-62	2.70	20.80	
9.09	1418	6.32	0.496	20.0	-64	2.50	20.75	
9.09	1421	6.32	0.493	20.0	-65	2.40	20.48	
9.09	1424	6.32	0.490	20.0	-66	2.38	20.65	

Sample ID No.: KMW-06- 081919

Water Level Ind. Model & No.: Solinst Model 101

ORP/DO Meter Model & No.: YSI-Pro Dss

Purge Equipment Used: Peristaltic Pump with dedicated tubing

Sampling Equipment Used: YSI Pro Dss

Purge Start Time: 1351

Purge Completion Time: ~~1430~~ 1425

Average Purge Rate (mL/min): 150

Analytical Lab: Friedman & Bruya Inc.

Sample Collection Time: 1430

Purging Method: SAA

Sample Containers Used: Lab Provided

Chemical Analyses: See COC

Other Field Observations: MS/MSD taken. 27 bottles → 18 VOAs, 6 Amber 3 metals.

wood.

GROUNDWATER SAMPLING LOG
Low Flow Sampling

MONITORING WELL/PIEZOMETER NUMBER- KMW-07

Project Name: Kelly-Moore

Date: 08/20/19

Project Number: 14697009

Weather Conditions: OKAY

Location: Seattle, WA

Sampler: Lucas Kerner

Wind Speed/Direction: N/A

WELL INFORMATION

Casing Diameter (in): 2"

Top of Casing Elevation (ft): 21.63'

Initial Depth to Water (ft): 10.79

Wellhead Condition: OKAY

Groundwater Elevation (ft): 10.84

Depth of Well Casing (ft):

Actual Purge Volume (gal):

PURGING MEASUREMENTS

WL (ft btoc)	Time	pH (std. units)	SC (ms/cm)	Temp. (°C)	ORP (mv)	DO (mg/L)	Turbidity (NTUs)	Notes
10.79	10:15	6.15	0.213	16.1	192	7.21	16.28	
10.79	10:18	6.14	0.213	16.1	176	6.38	18.43	
10.79	10:21	6.09	0.211	16.2	136	4.81	18.25	
10.79	10:24	6.05	0.218	16.2	125	4.39	15.15	
10.79	10:27	6.01	0.229	16.2	116	3.78	12.76	
10.79	10:30	5.99	0.232	16.2	112.5	3.48	11.4	
10.79	10.33	5.97	0.246	16.2	105	3.75	11.6	
10.79	10:36	5.96	0.245	16.2	106	3.09	11.5	
10.79	10:39	5.96	0.247	16.2	100	3.01	11.6	
10.79	10:42	5.96	0.245	16.2	100	2.93	11.4	

Sample ID No.: KMW-07-08 2019

Water Level Ind. Model & No.: Solinst Model 101

ORP/DO Meter Model & No.: YSI-Pro Dss

Purge Equipment Used: Peristaltic Pump with dedicated tubing

Sampling Equipment Used: YSI Pro Dss

Purge Start Time: 10:12

Purge Completion Time: 10:42

Average Purge Rate (mL/min): 200

Analytical Lab: Friedman & Bruya Inc.

Sample Collection Time: 1045

Purging Method: SAA

Sample Containers Used: Lab Provided

Chemical Analyses: See COC

Other Field Observations:

wood.

GROUNDWATER SAMPLING LOG
Low Flow Sampling

MONITORING WELL/PIEZOMETER NUMBER- KMW-08

Project Name: Kelly-Moore

Date: 08/20/19

Project Number: 14697009

Weather Conditions: SUNNY

Location: Seattle, WA

Sampler: Lucas Kerner

Wind Speed/Direction: N/A

WELL INFORMATION

Casing Diameter (in): 2"

Top of Casing Elevation (ft): 21.65'

Initial Depth to Water (ft): 10.80

Wellhead Condition: OKAY

Groundwater Elevation (ft):

Depth of Well Casing (ft):

Actual Purge Volume (gal): 2

PURGING MEASUREMENTS

WL (ft btoc)	Time	pH (std. units)	SC (ms/cm)	Temp. (°C)	ORP (mv)	DO (mg/L)	Turbidity (NTUs)	Notes
10.8	11:03	5.69	2.02	21.0	160	5.25	48.2	ORANGE FLOC
10.8	11:06	5.65	2.154	21.0	152.6	4.80	32.65	
10.8	11:09	5.63	2.266	21.0	141	3.95	26	
10.8	11:12	5.62	2.347	21.1	136.3	~~3.45~~ 3.45	16.32	
10.8	11:15	5.62	2.397	21.1	133	3.23	14.8	
10.8	11:18	5.61	2.453	21.0	133	2.83	9.16	
10.8	11:21	5.60	2.472	21.0	132.9	2.66	8.33	
10.8	11:24	5.59	2.488	21.0	133.1	2.50	7.88	
10.8	11:27	5.58	2.501	21.0	133.4	2.33	7.40	
10.8	11:30	5.58	2.508	21.1	133.7	2.26	7.52	

Sample ID No.: KMW-08- 082019

Water Level Ind. Model & No.: Solinst Model 101

ORP/DO Meter Model & No.: YSI-Pro Dss

Purge Equipment Used: Peristaltic Pump with dedicated tubing

Sampling Equipment Used: YSI Pro Dss

Purge Start Time: 11:00

Purge Completion Time: 11:30

Average Purge Rate (mL/min): 150

Analytical Lab: Friedman & Bruya Inc.

Sample Collection Time: 11:35

Purging Method: SAA

Sample Containers Used: Lab Provided

Chemical Analyses: See COC

Other Field Observations: Did not stabilize after 30 min purge.

wood.

GROUNDWATER SAMPLING LOG
Low Flow Sampling

MONITORING WELL/PIEZOMETER NUMBER- KMW-09

Project Name: Kelly-Moore

Date: 08/2019

Project Number: 14697009

Weather Conditions: SUNNY

Location: Seattle, WA

Sampler: Lucas Kerner

Wind Speed/Direction: N/A

WELL INFORMATION

Casing Diameter (in): 2"

Top of Casing Elevation (ft): 18.14'

Initial Depth to Water (ft): 7.48'

Wellhead Condition: OKAY

Groundwater Elevation (ft):

Depth of Well Casing (ft):

Actual Purge Volume (gal): 2 Gallons

PURGING MEASUREMENTS

WL (ft btoc)	Time	pH (std. units)	SC (ms/cm)	Temp. (°C)	ORP (mv)	DO (mg/L)	Turbidity (NTUs)	Notes
7.48	0827	6.79	0.329	18.1	89.0	9.53	6.63	
7.48	0830	6.35	0.327	17.8	22	7.25	5.67	
7.48	0833	6.33	0.321	18.1	-8.3	5.71	4.79	
7.48	0836	6.34	0.315	18.2	-20	5.03	5.82	
7.48	0839	6.36	0.313	18.3	-28	4.50	7.53	
7.48	0842	6.38	0.312	18.4	-35	3.98	15.60	
7.48	0845	6.39	0.313	18.5	-39	3.67	19.26	
7.48	0848	6.40	0.313	18.5	-41	3.50	23.15	
7.48	0851	6.40	0.315	18.6	-44.3	3.25	8.72	
7.48	0854	6.40	0.314	18.6	-47	3.05	8.70	
			Parameters	did	not	stabilize	after	30 min Purge.

Sample ID No.: KMW-09- 08 2019

Water Level Ind. Model & No.: Solinst Model 101

ORP/DO Meter Model & No.: YSI-Pro Dss

Purge Equipment Used: Peristaltic Pump with dedicated tubing

Sampling Equipment Used: YSI Pro Dss

Purge Start Time: 0824

Purge Completion Time: 0854

Average Purge Rate (mL/min): 225mL/min

Analytical Lab: Friedman & Bruya Inc.

Sample Collection Time: 0855

Purging Method: SAA

Sample Containers Used: Lab Provided

Chemical Analyses: See COC

Other Field Observations:

wood.

GROUNDWATER SAMPLING LOG
Low Flow Sampling

MONITORING WELL/PIEZOMETER NUMBER- KMW-10

Project Name: Kelly-Moore

Date: 08/19/2019

Project Number: 14697009

Weather Conditions: 68°F Cloudy

Location: Seattle, WA

Sampler: Lucas Kerner

Wind Speed/Direction: N/A

WELL INFORMATION

Casing Diameter (in): 2"

Top of Casing Elevation (ft): 20.39'

Initial Depth to Water (ft): 9.89'

Wellhead Condition: OKAY

Groundwater Elevation (ft): 10.50

Depth of Well Casing (ft):

Actual Purge Volume (gal):

PURGING MEASUREMENTS

WL (ft btoc)	Time	pH (std. units)	SC (ms/cm)	Temp. (°C)	ORP (mv)	DO (mg/L)	Turbidity (NTUs)	Notes
9.89	11:43							
9.89	11:46	6.48	0.640	16.8	-25.2	7.80	38.52	
9.89	11:49	6.31	0.625	16.6	-52	5.51	24.96	
9.89	11:52	6.28	0.621	16.6	-61	4.47	22.00	
9.89	11:55	6.28	0.619	16.6	-64	3.94	23	
9.89	11:58	6.28	0.616	16.6	-66	3.59	21.57	
9.89	12:01	6.27	0.614	16.6	-67.3	3.24	19.64	
9.89	12:04	6.26	0.612	16.9	-67	3.26	20.21	
	1205	Parameters Stable						

Sample ID No.: KMW-10- 081919

Water Level Ind. Model & No.: Solinst Model 101

ORP/DO Meter Model & No.: YSI-Pro Dss

Purge Equipment Used: Peristaltic Pump with dedicated tubing

Sampling Equipment Used: YSI Pro Dss

Purge Start Time: 11:43

Purge Completion Time: 1205

Average Purge Rate (mL/min): 200

Analytical Lab: Friedman & Bruya Inc.

Sample Collection Time: 1206

Purging Method: SAA

Sample Containers Used: Lab Provided

Chemical Analyses: See COC

Other Field Observations: Duplicate: KMW-10-9-081919 taken @ 1208

WATER LEVEL MONITORING RECORD

wood.

Project Name: Kelly-Moore Project and Task Number: 14697009

Date: 02/07/2019 Measured by: L. Kerner Instrument Used: Water Level Meter

Note: For you convenience, the following abbreviations may be used.

P = Pumping I = Inaccessible D = Dedicated Pump
ST = Steel Tape ES = Electric Sounder MP = Measuring Point WL = Water Level

Well No.	Time	MP Elevation (feet)	Water Level Below MP (feet)	Water Level Elevation (feet)	Previous Water Level Below MP	Remarks
KMW-02R	11:04	21.63'	10.78	10.85	9.17	
KMW-03R	10:59	24.54'	10.70	10.84	9.37	
KMW-04	11:12	18.56'	7.89	10.67	6.60	
KMW-06	11:07	19.80'	9.09	10.71	7.77	
KMW-07	11:03	21.63'	10.79	10.84	9.21	
KMW-08	11:01	21.65'	10.80	10.85	9.31	
KMW-09	11:09	18.14'	7.49	10.66	6.15	
KMW-10	10:50	20.39'	9.89	10.50	8.65	

wood.

GROUNDWATER SAMPLING LOG
Low Flow Sampling

MONITORING WELL/PIEZOMETER NUMBER- KMW-04

Project Name: Kelly-Moore

Date: 03/11/20

Project Number: 14697009

Weather Conditions: RAIN

Location: Seattle, WA

Sampler: Lucas Kerner

Wind Speed/Direction: N/A

WELL INFORMATION

Casing Diameter (in): 2"

Top of Casing Elevation (ft): 18.56'

Initial Depth to Water (ft): 5.91

Wellhead Condition: OKAY

Groundwater Elevation (ft): _____

Depth of Well Casing (ft): _____

Actual Purge Volume (gal): 1.5 gal

PURGING MEASUREMENTS

WL (ft btoc)	Time	pH (std. units)	SC (ms/cm)	Temp. (°C)	ORP (mv)	DO (mg/L)	Turbidity (NTUs)	Notes
5.91	1335	6.09	0.277	12.4	-17.1	1.12	25	
5.91	1338	6.10	0.275	12.6	-30.5	0.74	25	
5.91	1341	6.14	0.281	12.7	-42	0.57	25	
5.92	1344	6.15	0.283	12.6	-47	0.51	26	
5.93	1347	6.16	0.286	12.5	-49	0.46	25	
5.93	1350	6.17	0.290	12.5	-51	0.45	26	
5.93	1353	6.15	0.292	12.5	-51	0.43	26	
5.93	1356	6.15	0.293	12.5	-51	0.42	25	
	Stable							

Sample ID No.: KMW-04-03112O

Water Level Ind. Model & No.: Solinst Model 101

ORP/DO Meter Model & No.: YSI-Pro Dss

Purge Equipment Used: Peristaltic Pump with dedicated tubing

Sampling Equipment Used: YSI Pro Dss

Purge Start Time: 1332

Purge Completion Time: 1356

Average Purge Rate (mL/min): 150

Analytical Lab: Friedman & Bruya Inc.

Sample Collection Time: 14:05

Purging Method: SAA

Sample Containers Used: Lab Provided

Chemical Analyses: See COC

Other Field Observations: DUPLICATE: KMW-04-9-031120 @ 14:10

wood.

GROUNDWATER SAMPLING LOG
Low Flow Sampling

MONITORING WELL/PIEZOMETER NUMBER- KMW-06

Project Name: Kelly-Moore
Date: 3/11/2020
Project Number: 14697009
Weather Conditions: OVERCAST
Location: Seattle, WA
Sampler: Lucas Kerner
Wind Speed/Direction: N/A

WELL INFORMATION

Casing Diameter (in): 2"
Top of Casing Elevation (ft): 19.80'
Initial Depth to Water (ft): 7.08
Wellhead Condition: OKAY
Groundwater Elevation (ft):
Depth of Well Casing (ft):
Actual Purge Volume (gal):

PURGING MEASUREMENTS

WL (ft btoc)	Time	pH (std. units)	SC (ms/cm)	Temp. (°C)	ORP (mv)	DO (mg/L)	Turbidity (NTUs)	Notes
7.11	11:56	5.70	0.906	14.3	28.9	3.96	27.0	
7.10	11:59	5.71	0.908	14.2	27.6	3.27	28.1	
7.11	12:02	5.71	0.905	13.9	27.1	2.43	30.4	
7.11	12:05	5.70	0.902	14.0	27.6	2.40	30.1	
7.11	12:08	5.70	0.900	14.0	27.1	2.45	30.2	
	12:11							
	12:14				Stable			
	12:17							
	12:20							
	12:23							

Sample ID No.: KMW-06- 03112020
Water Level Ind. Model & No.: Solinst Model 101
ORP/DO Meter Model & No.: YSI-Pro Dss
Purge Equipment Used: Peristaltic Pump with dedicated tubing
Sampling Equipment Used: YSI Pro Dss

Purge Start Time: 11:53
Purge Completion Time: ~~12:23~~ 12:08
Average Purge Rate (mL/min): 200
Analytical Lab: Friedman & Bruya Inc.
Sample Collection Time: 12:25
Purging Method: SAA
Sample Containers Used: Lab Provided
Chemical Analyses: See COC

Other Field Observations: MS/MSD taken. 27 bottles. 18 voas, 6 amber, & 3 metals

wood.

GROUNDWATER SAMPLING LOG
Low Flow Sampling

MONITORING WELL/PIEZOMETER NUMBER- KMW-09

Project Name: Kelly-Moore
Date: 3/11/2020
Project Number: 14697009
Weather Conditions: OVERCAST
Location: Seattle, WA
Sampler: Lucas Kerner
Wind Speed/Direction: N/A

WELL INFORMATION

Casing Diameter (in): 2"
Top of Casing Elevation (ft): 18.14'
Initial Depth to Water (ft): 5.46'
Wellhead Condition: OKAY
Groundwater Elevation (ft):
Depth of Well Casing (ft):
Actual Purge Volume (gal): 2 gallons

PURGING MEASUREMENTS

WL (ft btoc)	Time	pH (std. units)	SC (ms/cm)	Temp. (°C)	ORP (mv)	DO (mg/L)	Turbidity (NTUs)	Notes
5.48	11:09	6.07	0.553	14.2	-47.6	1.89	58.4	
5.48	11:12	6.29	0.538	14.2	-34.9	2.00	49.7	Emptied Cell
5.48	11:15	6.13	0.537	14.2	-38.8	0.83	49.3	
5.46	11:18	6.14	0.529	14.3	-44.0	0.50	40.1	
5.47	11:21	6.15	0.521	14.3	-47.0	0.45	38.0	
5.48	11:24	6.16	0.518	14.3	-51	0.41	35.0	
5.48	11:27	6.16	0.516	14.3	-52	0.40	31.0	
5.48	11:30	6.16	0.515	14.3	-53.4	0.38	29.0	
5.47	11:33	6.16	0.513	14.3	-54.8	0.36	27.0	
5.47	11:36	6.16	0.512	14.3	-55.6	0.35	24.9	

Sample ID No.: KMW-09- 03112020
Water Level Ind. Model & No.: Solinst Model 101
ORP/DO Meter Model & No.: YSI-Pro Dss
Purge Equipment Used: Peristaltic Pump with dedicated tubing
Sampling Equipment Used: YSI Pro Dss

Purge Start Time: 11:06
Purge Completion Time: 11:36
Average Purge Rate (mL/min): 250
Analytical Lab: Friedman & Bruya Inc.
Sample Collection Time: 11:40
Purging Method: SAA
Sample Containers Used: Lab Provided
Chemical Analyses: See COC

Other Field Observations: Turbidity did not stabilize after 30 min purge.

wood.

GROUNDWATER SAMPLING LOG
Low Flow Sampling

MONITORING WELL/PIEZOMETER NUMBER- KMW-10

Project Name: Kelly-Moore

Date: 03/11/20

Project Number: 14697009

Weather Conditions: OVERCAST

Location: Seattle, WA

Sampler: Lucas Kerner

Wind Speed/Direction: N/A

WELL INFORMATION

Casing Diameter (in): 2"

Top of Casing Elevation (ft): 20.39'

Initial Depth to Water (ft): 7.98

Wellhead Condition: OKAY

Groundwater Elevation (ft):

Depth of Well Casing (ft):

Actual Purge Volume (gal): 1 gallon

PURGING MEASUREMENTS

WL (ft btoc)	Time	pH (std. units)	SC (ms/cm)	Temp. (°C)	ORP (mv)	DO (mg/L)	Turbidity (NTUs)	Notes
8.00	14:39	6.3	0.539	14.2	-29	1.05	42	
8.01	1442	6.31	0.540	14.4	-41	0.70	41	
8.01	1445	6.32	0.542	14.5	-48	0.52	39	
8.01	1448	6.34	0.543	14.6	-52	0.47	37	
8.01	1451	6.35	0.542	14.6	-54	0.44	30	
8.01	1454	6.35	~~0.551~~ 0.541	14.7	-55	0.43	32	
8.01	1457	6.37	0.542	14.8	-59	0.42	29	
8.01	1500	6.38	0.544	14.8	-62	0.39	23	
8.01	1503	6.39	0.544	14.9	-61.9	0.38	19	
8.01	1506	6.39	0.54	14.9	-63	0.37	18	

Sample ID No.: KMW-10-031120

Water Level Ind. Model & No.: Solinst Model 101

ORP/DO Meter Model & No.: YSI-Pro Dss

Purge Equipment Used: Peristaltic Pump with dedicated tubing

Sampling Equipment Used: YSI Pro Dss

Purge Start Time: 1436

Purge Completion Time: 1506

Average Purge Rate (mL/min): 150

Analytical Lab: Friedman & Bruya Inc.

Sample Collection Time: 15:10

Purging Method: SAA

Sample Containers Used: Lab Provided

Chemical Analyses: See COC

Other Field Observations: ~~Duplicate: KMW-10-9~~ ~~taken @ :~~

WATER LEVEL MONITORING RECORD

wood.

Project Name: Kelly-Moore Project and Task Number: 14697009

Date: 3/11/2020 Measured by: L. Kerner Instrument Used: Water Level Meter

Note: For you convenience, the following abbreviations may be used.

P = Pumping I = Inaccessible D = Dedicated Pump

ST = Steel Tape ES = Electric Sounder MP = Measuring Point WL = Water Level

Well No.	Time	MP Elevation (feet)	Water Level Below MP (feet)	Water Level Elevation (feet)	Previous Water Level Below MP	Remarks
~~KMW-02R~~		~~21.63'~~				
~~KMW-03R~~		~~24.54'~~				
KMW-04	10:55	18.56'	5.91			
KMW-06	10:35	19.80'	7.08			
~~KMW-07~~		~~21.63'~~				
~~KMW-08~~		~~21.65'~~				
KMW-09	10:39	18.14'	5.40			
KMW-10	10:40	20.39'	7.98			

* All wells allowed 30 min. Ventilation/equilibrium.

Appendix B

ORGANIC DATA ASSESSMENT SUMMARY

Project Information			
Project Name:	Kelly-Moore Paint	Lab Name:	Friedman & Bruya, Inc.
Project Number:	0146970060.0010	Lab Report Number:	003197
Reviewer's Name:	Marie Bevier	Number of Samples:	6
Review Date:	06/29/2020	Matrix:	Water

Field Sample Identification	Collection Date	Laboratory Sample Identification	Notes
KMW-04-031120	March 11, 2020	003197-01	
KMW-04-9-031120	March 11, 2020	003197-02	
KMW-06-031120	March 11, 2020	003197-03	Matrix Spike/Matrix Spike Duplicate
KMW-09-031120	March 11, 2020	003197-04	
KMW-10-031120	March 11, 2020	003197-05	
Trip Blanks	--	003197-06	

Assessment Summary					
Parameter:	**Gasoline-Range Organics (GRO) by NWTPH-Gx**	**Diesel Range Organics (DRO) and Oil Range Organics (ORO) by NWTPH-Dx**	**Metals by EPA Method 6020B**	**Volatile Organic Compounds (VOCs) by EPA Method 8260D**	**Polycyclic Aromatic Hydrocarbons (PAHs) by 8270E SIM**
1. Chain of Custody	Chain of custody is complete, except there is no sample date for the trip blank. The trip blank was provided by the laboratory and the lack of a sample date is not interpreted to adversely affect data usability.				
2. Receipt Temperature	The recorded receipt temperature is acceptable at 3 degrees Celsius.				
3. Hold Time	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
4. Blank Detections	None	None	None	None	None
5. Surrogate Recoveries	Qualified [a]	Acceptable	Not Applicable	Acceptable	Acceptable
6. Laboratory Control Sample (LCS) Recoveries	Acceptable	Acceptable	Acceptable	Informational [j]	Acceptable
7. LCS/LCS Duplicate (LCSD) Precision	Not applicable	Acceptable	Not Applicable	Acceptable	Acceptable
8. Matrix Spike (MS) Recoveries	Informational [b]	Informational [c]	Informational [f]	Informational [k]	Not Applicable
9. MS,MS Duplicate (MSD) Precision	Acceptable	Qualified [d]	Qualified [g]	Acceptable	Not Applicable

Assessment Summary					
Parameter:	**Gasoline-Range Organics (GRO) by NWTPH-Gx**	**Diesel Range Organics (DRO) and Oil Range Organics (ORO) by NWTPH-Dx**	**Metals by EPA Method 6020B**	**Volatile Organic Compounds (VOCs) by EPA Method 8260D**	**Polycyclic Aromatic Hydrocarbons (PAHs) by 8270E SIM**
10. Other Quality Control Issues	None	Informational [e]	Reporting [h] Qualified [i]	Reporting [l]	None

Qualifier definition	
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

Reason code definitions	
EXC	This result has been excluded from the dataset.
HD	Imprecision between duplicate results.
HS	Surrogate recovery is outside of laboratory-specified limits.
IS	Internal standard recovery is outside of limits.

Notes	Description	Action Required
a	According to the laboratory's notes, the surrogate recovery for sample KMW-06-031120 was outside of limits due to matrix effects in the GRO analysis.	Wood J qualified the detected GRO result from this sample because of potential analytical bias. (Qualifier and reason code: J-HS)
b	GRO recoveries were high at 233% and 196% in the MS and MSD performed on sample KMW-06-031120.	The concentration detected in the unspiked native sample was almost four times greater than the spike concentration and it is not possible to assess data usability for this analyte in this sample based on MS recoveries.
c	DRO recovery was low at 1% in the MSD performed on sample KMW-06-031120.	The concentration detected in the unspiked native sample was more than 10 times greater than the spike concentration and it is not possible to assess data usability for this analyte in this sample based on MS recoveries.
d	The relative percent difference (RPD) between MS and MSD results for DRO was high at 196%.	Wood J qualified the detected DRO result from sample KMW-06-031120 because of potential analytical imprecision. (Qualifier and reason code: J-HD)
e	According to the laboratory's notes, the chromatographic patterns from the DRO and ORO analyses of samples KMW-06-031120 and KMW-09-031120; and the DRO analysis of samples KMW-04-031120, KMW-04-9-031120, and KMW-10-031120 do not match the fuel standards used for quantitation.	None.
f	Copper recovery was low at 74% in the MS and zinc recoveries were high at 149% in the MS and low at 68% in the MSD performed on sample KMW-06-031120.	The copper and zinc concentrations detected in the unspiked native sample were greater than 7 times the spike concentrations and it is not possible to assess data usability for these analytes in this sample based on MS recoveries.
g	The RPD between MS and MSD results for zinc was high at 68%.	Wood J qualified the detected zinc result from sample KMW-06-031120 because of potential analytical imprecision. (Qualifier and reason code: J-HD)

Notes	Description	Action Required
h	According to the laboratory's notes, there were internal standard failures in the metal analyses. The laboratory analyzed the samples at dilutions and the internal standard recoveries were acceptable in the diluted analyses, but the laboratory reported both sets of results.	When there were multiple results for the same parameter in the same sample, Wood generally chose to call the result that was not qualified reportable, unless the analyte was detected in one or both of analyses, then the higher detected result was considered reportable and the other result was excluded from the dataset. (Reason code: EXC)
i	The laboratory J qualified results with internal standard recoveries outside of limits.	If Wood determined that the laboratory's J qualified results should be considered reportable, Wood J qualified the result to indicate that it should be considered an estimated value. (Qualifier and reason code: J-IS)
j	trans-1,2-Dichloroethene (119%,LCS), 1,1,1-trichloroethane (120%, LCS), m,p-xylene (114%, 113%), and o-xylene (118%, LCS) recoveries were high in the LCS and/or LCSD associated with the initial VOC analysis of the samples reviewed in this report.	These analytes either were not detected in the associated sample or were not reported from a dilution and data usability is not adversely affected by the potential high analytical bias.
k	4-Methyl-2-pentanone (156%, 148%), 1,1,2-trichloroethane (119%, MS), 2-hexanone (144%, 136%), 1,3-dichloropropane (117%, MS), 1,1,2,2-tetrachloroethane (164%, 163%), 1,2,3-trichloropropane (134%, 129%), 1,2-dibromo-3-chloropropne (141%, 139%), and naphthalene (158%, 156%) recoveries were high in the MS and/or MSD performed on sample KMW-06-031120.	Recoveries were high, and these analytes were not detected in the unspiked native sample. Data usability is not adversely affected by the potential high analytical bias.
l	The laboratory ve qualified results with concentrations greater than the calibration range.	The laboratory reanalyzed all results with ve qualified data at 1:100 dilutions and reported all results from both analyses. Wood excluded the ve qualified results from the original analyses and excluded all results from the 1:100 dilution, except for the results from the analytes that were ve qualified in the undiluted analyses. (Reason code: EXC)

Data Qualified During Validation

Sample Identification	Method	Parameter	Concentration	Qualifier and Reason Code
KMW-04-031120	6020B	Chromium	< 1 µg/L	EXC
KMW-04-031120	6020B	Copper	30.4 µg/L	EXC
KMW-04-031120	6020B	Nickel	1.21 µg/L	J-IS
KMW-04-031120	6020B	Nickel	< 10 µg/L	EXC
KMW-04-031120	6020B	Zinc	< 5 µg/L	EXC
KMW-04-031120	8260D	Toluene	400 µg/L	EXC
KMW-04-031120	8260D	Ethylbenzene	990 µg/L	EXC
KMW-04-031120	8260D	m,p-Xylene	3,200 µg/L	EXC
KMW-04-031120	8260D	o-Xylene	1,500 µg/L	EXC
KMW-04-031120	8260D	All results from the 1:100 dilution, except for toluene, ethylbenzene, m,p-xylene, and o-xylene		EXC
KMW-04-9-031120	6020B	Chromium	< 1 µg/L	EXC
KMW-04-9-031120	6020B	Copper	28.4 µg/L	EXC
KMW-04-9-031120	6020B	Nickel	1.16 µg/L	J-IS
KMW-04-9-031120	6020B	Nickel	< 10 µg/L	EXC
KMW-04-9-031120	6020B	Zinc	< 5 µg/L	EXC
KMW-04-9-031120	8260D	Toluene	380 µg/L	EXC
KMW-04-9-031120	8260D	Ethylbenzene	930 µg/L	EXC
KMW-04-9-031120	8260D	m,p-Xylene	2,900 µg/L	EXC
KMW-04-9-031120	8260D	o-Xylene	1,300 µg/L	EXC

Data Qualified During Validation				
Sample Identification	**Method**	**Parameter**	**Concentration**	**Qualifier and Reason Code**
KMW-04-9-031120	8260D	All results from the 1:100 dilution, except for toluene, ethylbenzene, m,p-xylene, and o-xylene		EXC
KMW-06-031120	NWTPH-Gx	GRO	3,900 µg/L	J-HS
KMW-06-031120	NWTPH-Dx	DRO	26,000 µg/L	J-HD
KMW-06-031120	6020B	Chromium	3.78 µg/L	J-IS
KMW-06-031120	6020B	Chromium	< 10 µg/L	EXC
KMW-06-031120	6020B	Copper	116 µg/L	EXC
KMW-06-031120	6020B	Nickel	20.4 µg/L	EXC
KMW-06-031120	6020B	Zinc	274 µg/L	EXC
KMW-06-031120	6020B	Zinc	392 µg/L	J-HD
KMW-09-031120	6020B	Chromium	1.16 µg/L	J-IS
KMW-09-031120	6020B	Chromium	< 10 µg/L	EXC
KMW-09-031120	6020B	Copper	10.6 µg/L	J-IS
KMW-09-031120	6020B	Copper	< 50 µg/L	EXC
KMW-09-031120	6020B	Nickel	1.85 µg/L	J-IS
KMW-09-031120	6020B	Nickel	< 10 µg/L	EXC
KMW-09-031120	6020B	Zinc	< 5 µg/L	EXC
KMW-10-031120	6020B	Chromium	< 1 µg/L	EXC
KMW-10-031120	6020B	Copper	< 5 µg/L	EXC
KMW-10-031120	6020B	Nickel	< 1 µg/L	EXC
KMW-10-031120	6020B	Zinc	< 5 µg/L	EXC

Notes:
< = less than
µg/L = micrograms per liter

ORGANIC DATA ASSESSMENT SUMMARY

Project Information			
Project Name:	Kelly-Moore Paint	Lab Name:	Friedman & Bruya, Inc.
Project Number:	0146970060.0010	Lab Report Number:	902134
Reviewer's Name:	Marie Bevier	Number of Samples:	10
Review Date:	06/30/2020	Matrix:	Water

Field Sample Identification	Collection Date	Laboratory Sample Identification	Notes
KMW-02R-020819	02/08/2019	902134 -01	
KMW-03R-020819	02/08/2019	902134 -02	
KMW-04-020719	02/07/2019	902134 -03	
KMW-06-020719	02/07/2019	902134 -04	Matrix spike/matrix spike duplicate
KMW-08-020819	02/08/2019	902134 -05	
KMW-09-020719	02/07/2019	902134 -06	
KMW-10-020719	02/07/2019	902134 -07	
KMW-10-9-020719	02/07/2019	902134 -08	
KMW-7-020819	02/08/2019	902134 -09	
Trip Blanks		902134 -10	

Assessment Summary					
Parameter:	**Gasoline-Range Organics (GRO) by NWTPH-Gx**	**Diesel Range Organics (DRO) and Oil Range Organics (ORO) by NWTPH-Dx**	**Polycyclic Aromatic Hydrocarbons (PAHs) by 8270D SIM**	**Metals by EPA Method 6020B**	**Volatile Organic Compounds (VOCs) by EPA Method 8260C**
1. Chain of Custody	Chain of custody is complete, except there is no sample date or time for the trip blank. The trip blank was provided by the laboratory and the lack of a sample date and time is not interpreted to adversely affect data usability.				
2. Receipt Temperature	The recorded receipt temperature is acceptable at 2 degrees Celsius.				
3. Hold Time	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
4. Blank Detections	None	None	None	None	Acceptable
5. Surrogate Recoveries	Qualified [a]	Acceptable	Acceptable	Not Applicable	Acceptable
6. Laboratory Control Sample (LCS) Recoveries	Acceptable	Acceptable	Acceptable	Acceptable	Informational [k]

Assessment Summary					
Parameter:	**Gasoline-Range Organics (GRO) by NWTPH-Gx**	**Diesel Range Organics (DRO) and Oil Range Organics (ORO) by NWTPH-Dx**	**Polycyclic Aromatic Hydrocarbons (PAHs) by 8270D SIM**	**Metals by EPA Method 6020B**	**Volatile Organic Compounds (VOCs) by EPA Method 8260C**
7. LCS/LCS Duplicate (LCSD) Precision	Not Applicable	Acceptable	Acceptable	Not Applicable	Not Applicable
8. Matrix Spike (MS) Recoveries	Informational [b]	Informational [c]	Qualified [f] Informational [g]	Acceptable	Acceptable
9. MS,MS Duplicate (MSD) Precision	Acceptable	Qualified [d]	Qualified [h] Informational [i]	Acceptable	Acceptable
10. Other Quality Control Issues	None	Informational [e]	None	Reporting [j]	Reporting [l]

Qualifier definitions	
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

Reason code definitions	
EXC	This result has been excluded from the dataset.
HD	Imprecision between duplicate results.
HS	Surrogate recovery is outside of laboratory-specified limits.
LM	Low matrix spike recovery. Result may be biased low.

Notes	Description	Action Required
a	According to the laboratory's notes, the surrogate recovery for sample KMW-06-020719 was outside of limits due to matrix effects in the GRO analysis.	Wood J qualified the detected GRO result from this sample because of potential analytical bias. (Qualifier and reason code: J-HS)
b	GRO recoveries were high at 140% and 154% in the MS and MSD performed on sample KMW-06-020719.	The GRO concentration detected in the unspiked native sample was more than twice the spike concentration and it is not possible to assess data usability for this analyte in this sample based on MS recoveries.
c	DRO was not recovered from the MSD performed on sample KMW-06-020719.	The DRO concentration detected in the unspiked native sample was more than eight times the spike concentration and it is not possible to assess data usability for this analyte in this sample based on MS recoveries.
d	The relative percent difference (RPD) between DRO results was high at 200% in the MS and MSD performed on sample KMW-06-020719.	Wood J qualified the DRO result from the unspiked native sample due to potential analytical imprecision. (Qualifier and reason code: J-HD)

Notes	Description	Action Required
e	According to the laboratory's notes, DRO results from samples KMW-03R-020819, KMW-04-020719, KMW-06-020719, KMW-08-020819, KMW-09-020719, KMW-10-020719, KMW-0-9-020719, and the ORO result from sample KMW-06-020719 do not match the hydrocarbon patterns from the standards used for quantitation.	None
f	Benzo(a)anthracene (53%), chrysene (48%), benzo(b)fluoranthene (45%), benzo(k)fluoranthene (38%), and benzo(a)pyrene (42%) recoveries were low in the MS performed on sample KMW-06-020719.	Wood UJ qualified the non-detected benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, and benzo(a)pyrene results from the unspiked native sample due to potential low analytical bias. (Qualifier and reason code: UJ-LM)
g	Acenaphthylene recoveries were low at 26% and 2% in the MS and MSD performed on sample KMW-06-020719.	The acenaphthylene concentration detected in the unspiked native sample was 28 times the spike concentration and it is not possible to assess data usability for this analyte in this sample based on MS recovery.
h	The RPD between acenaphthylene results was high at 171% in the MS and MSD performed on sample KMW-06-020719.	Wood J qualified the detected acenaphthylene result from the unspiked native sample due to potential analytical imprecision. (Qualifier and reason code: J-HD)
i	RPDs between benzo(a)anthracene (26%), chrysene (25%), benzo(b)fluoranthene (36%), benzo(k)fluoranthene (55%), benzo(a)pyrene (42%), indeno(1,2,3-cd)pyrene (55%), dibenz(a,h)anthracene (61%), and benzo(g,h,i)perylene (54%) results were high in the MS and MSD performed on sample KMW-06-020719.	These analytes were not detected in the unspiked native sample and data usability is not adversely affected by the potential analytical imprecision.
j	According to the laboratory's notes, there were internal standard failures in the metal analyses. The laboratory analyzed the samples at dilutions and the internal standard recoveries were acceptable in the diluted analyses, but the laboratory reported both sets of results.	When there were multiple results for the same parameter in the same sample, Wood generally chose to call the result that was not qualified reportable, unless the analyte was detected in one or both of analyses, then the higher detected result was considered reportable and the other result was excluded from the dataset. (Reason code: EXC)
k	1,1-Dichloroethane recovery was high at 122% in the LCS associated with the analysis of these samples.	1,1-Dichloroethane was not detected in the associated samples and data usability is not adversely affected by the potential high analytical bias.
l	The laboratory ve qualified results with concentrations greater than the calibration range.	The laboratory reanalyzed all results with ve qualified data at 1:100 dilutions and reported all results from both analyses. Wood excluded the ve qualified results from the original analyses and excluded all results from the 1:100 dilution, except for the results from the analytes that were ve qualified in the undiluted analyses. (Reason code: EXC)

Data Qualified During Validation				
Sample Identification	**Method**	**Parameter**	**Concentration**	**Qualifier and Reason Code**
KMW-04-020719	8260C	Ethylbenzene	2,500 µg/L	EXC
KMW-04-020719	8260C	m,p-Xylene	5,400 µg/L	EXC
KMW-04-020719	8260C	All results except for ethylbenzene and m,p-xylene from the 1:100 dilution.		EXC
KMW-06-020719	NWTPH-Gx	GRO	2,200 µg/L	J-HS
KMW-06-020719	NWTPH-Dx	DRO	19,000 µg/L	J-HD
KMW-06-020719	8270D SIM	Acenaphthylene	28 µg/L	J-HD
KMW-06-020719	8270D SIM	Benzo(a)anthracene	< 0.04 µg/L	UJ-LM
KMW-06-020719	8270D SIM	Chrysene	< 0.04 µg/L	UJ-LM
KMW-06-020719	8270D SIM	Benzo(b)fluoranthene	< 0.04 µg/L	UJ-LM
KMW-06-020719	8270D SIM	Benzo(k)fluoranthene	< 0.04 µg/L	UJ-LM
KMW-06-020719	8270D SIM	Benzo(a)pyrene	< 0.04 µg/L	UJ-LM
KMW-10-020719	6020B	Chromium	2.00 µg/L	EXC
KMW-10-020719	6020B	Copper	< 5 µg/L	EXC
KMW-10-020719	6020B	Nickel	< 1 µg/L	EXC
KMW-10-020719	6020B	Zinc	< 5 µg/L	EXC
KMW-10-020719	6020B	Arsenic	6.55 µg/L	EXC
KMW-10-9-020719	6020B	Chromium	2.00 µg/L	EXC
KMW-10-9-020719	6020B	Copper	< 5 µg/L	EXC
KMW-10-9-020719	6020B	Nickel	< 1 µg/L	EXC
KMW-10-9-020719	6020B	Zinc	< 5 µg/L	EXC
KMW-10-9-020719	6020B	Arsenic	6.38 µg/L	EXC

Notes:
< = less than
µg/L = micrograms per liter

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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March 23, 2020

Lucas Kerner, Project Manager
Wood Environment & Infrastructure Solutions, Inc.
One Union Square
600 University Street, Suite 600
Seattle, WA 98101

Dear Mr Kerner:

Included are the results from the testing of material submitted on March 12, 2020 from the Kelly Moore 01469709, F&BI 003197 project. There are 38 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 should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
WEI0323R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on March 12, 2020 by Friedman & Bruya, Inc. from the Wood Environment & Infrastructure Solutions Kelly Moore 01469709, F&BI 003197 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Wood Environment & Infrastructure Solutions
003197 -01	KMW-04-031120
003197 -02	KMW-04-9-031120
003197 -03	KMW-06-031120
003197 -04	KMW-09-031120
003197 -05	KMW-10-031120
003197 -06	Trip Blanks

A 6020B internal standard failed the acceptance criteria for the samples. The sample was diluted and reanalyzed with acceptable results. Both data sets were reported.

The m,p-xylene and o-xylene laboratory control samples exceeded the acceptance criteria. Samples KMW-04-031120 and KMW-04-9-031120 were diluted and reported without qualifiers.

All quality control requirements were acceptable.

Date of Report: 03/23/20
Date Received: 03/12/20
Project: Kelly Moore 01469709, F&BI 003197
Date Extracted: 03/16/20
Date Analyzed: 03/16/20 and 03/17/20

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Gasoline Range	Surrogate (% Recovery) (Limit 51-134)
KMW-04-031120 003197-01 1/10	37,000	129
KMW-04-9-031120 003197-02 1/10	35,000	129
KMW-06-031120 003197-03	3,900	ip
KMW-09-031120 003197-04	940	111
KMW-10-031120 003197-05	130	91
Method Blank 00-642 MB	<100	93

Date of Report: 03/23/20
Date Received: 03/12/20
Project: Kelly Moore 01469709, F&BI 003197
Date Extracted: 03/12/20
Date Analyzed: 03/12/20

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)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 41-152)
KMW-04-031120 003197-01	2,300 x	<250	54
KMW-04-9-031120 003197-02	2,300 x	<250	59
KMW-06-031120 003197-03	26,000 x	1,500 x	64
KMW-09-031120 003197-04	13,000 x	580 x	77
KMW-10-031120 003197-05	4,400 x	<250	95
Method Blank 00-632 MB	<50	<250	144

Analysis For Total Metals By EPA Method 6020B

Client ID:	KMW-04-031120	Client:	Wood Environment & Infrastructure Solutions
Date Received:	03/12/20	Project:	Kelly Moore 01469709
Date Extracted:	03/13/20	Lab ID:	003197-01
Date Analyzed:	03/13/20	Data File:	003197-01.094
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	9.62
Chromium	<1 J
Copper	30.4 J
Lead	1.45
Mercury	<1
Nickel	1.21 J
Zinc	<5 J

Analysis For Total Metals By EPA Method 6020B

Client ID:	KMW-04-031120	Client:	Wood Environment & Infrastructure Solutions
Date Received:	03/12/20	Project:	Kelly Moore 01469709
Date Extracted:	03/13/20	Lab ID:	003197-01 x10
Date Analyzed:	03/16/20	Data File:	003197-01 x10.077
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Chromium	<10
Copper	58.1
Nickel	<10
Zinc	<50

Analysis For Total Metals By EPA Method 6020B

Client ID:	KMW-04-9-031120	Client:	Wood Environment & Infrastructure Solutions
Date Received:	03/12/20	Project:	Kelly Moore 01469709
Date Extracted:	03/13/20	Lab ID:	003197-02
Date Analyzed:	03/13/20	Data File:	003197-02.095
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	9.88
Chromium	<1 J
Copper	28.4 J
Lead	1.45
Mercury	<1
Nickel	1.16 J
Zinc	<5 J

Analysis For Total Metals By EPA Method 6020B

Client ID:	KMW-04-9-031120	Client:	Wood Environment & Infrastructure Solutions
Date Received:	03/12/20	Project:	Kelly Moore 01469709
Date Extracted:	03/13/20	Lab ID:	003197-02 x10
Date Analyzed:	03/16/20	Data File:	003197-02 x10.078
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Chromium	<10
Copper	54.2
Nickel	<10
Zinc	<50

Analysis For Total Metals By EPA Method 6020B

Client ID:	KMW-06-031120	Client:	Wood Environment & Infrastructure Solutions
Date Received:	03/12/20	Project:	Kelly Moore 01469709
Date Extracted:	03/13/20	Lab ID:	003197-03
Date Analyzed:	03/13/20	Data File:	003197-03.096
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	6.07
Chromium	3.78 J
Copper	116 J
Lead	4.70
Mercury	<1
Nickel	20.4 J
Zinc	274 J

Analysis For Total Metals By EPA Method 6020B

Client ID:	KMW-06-031120	Client:	Wood Environment & Infrastructure Solutions
Date Received:	03/12/20	Project:	Kelly Moore 01469709
Date Extracted:	03/13/20	Lab ID:	003197-03 x10
Date Analyzed:	03/16/20	Data File:	003197-03 x10.079
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Chromium	<10
Copper	149
Nickel	26.8
Zinc	392

Analysis For Total Metals By EPA Method 6020B

Client ID:	KMW-09-031120	Client:	Wood Environment & Infrastructure Solutions
Date Received:	03/12/20	Project:	Kelly Moore 01469709
Date Extracted:	03/13/20	Lab ID:	003197-04
Date Analyzed:	03/13/20	Data File:	003197-04.099
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	1.80
Chromium	1.16 J
Copper	10.6 J
Lead	<1
Mercury	<1
Nickel	1.85 J
Zinc	<5 J

Analysis For Total Metals By EPA Method 6020B

Client ID:	KMW-09-031120	Client:	Wood Environment & Infrastructure Solutions
Date Received:	03/12/20	Project:	Kelly Moore 01469709
Date Extracted:	03/13/20	Lab ID:	003197-04 x10
Date Analyzed:	03/16/20	Data File:	003197-04 x10.085
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Chromium	<10
Copper	<50
Nickel	<10
Zinc	<50

Analysis For Total Metals By EPA Method 6020B

Client ID:	KMW-10-031120	Client:	Wood Environment & Infrastructure Solutions
Date Received:	03/12/20	Project:	Kelly Moore 01469709
Date Extracted:	03/13/20	Lab ID:	003197-05
Date Analyzed:	03/13/20	Data File:	003197-05.100
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	6.66
Chromium	<1 J
Copper	<5 J
Lead	<1
Mercury	<1
Nickel	<1 J
Zinc	<5 J

Analysis For Total Metals By EPA Method 6020B

Client ID:	KMW-10-031120	Client:	Wood Environment & Infrastructure Solutions
Date Received:	03/12/20	Project:	Kelly Moore 01469709
Date Extracted:	03/13/20	Lab ID:	003197-05 x10
Date Analyzed:	03/16/20	Data File:	003197-05 x10.086
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Chromium	<10
Copper	<50
Nickel	<10
Zinc	<50

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Wood Environment & Infrastructure Solutions
Date Received:	NA	Project:	Kelly Moore 01469709
Date Extracted:	03/13/20	Lab ID:	I0-153 mb
Date Analyzed:	03/13/20	Data File:	I0-153 mb.068
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Chromium	<1
Copper	<5
Lead	<1
Mercury	<1
Nickel	<1
Zinc	<5

Analysis For Volatile Compounds By EPA Method 8260D

Client Sample ID:	KMW-04-031120	Client:	Wood Environment & Infrastructure Solutions
Date Received:	03/12/20	Project:	Kelly Moore 01469709
Date Extracted:	03/13/20	Lab ID:	003197-01
Date Analyzed:	03/14/20	Data File:	031362.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	105	50	150
Toluene-d8	100	50	150
4-Bromofluorobenzene	106	50	150

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	990 ve
Acetone	150	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	3,200 ve jl
Hexane	7.7	o-Xylene	1,500 ve jl
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	32
trans-1,2-Dichloroethene	<1	Bromoform	<1
1,1-Dichloroethane	<1	n-Propylbenzene	29
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	61
Chloroform	<1	1,1,2,2-Tetrachloroethane	<1
2-Butanone (MEK)	41	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	130
Benzene	<0.35	sec-Butylbenzene	1.6
Trichloroethene	<1	p-Isopropyltoluene	1.6
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	400 ve	Hexachlorobutadiene	<1
trans-1,3-Dichloropropene	<1	Naphthalene	5.5
1,1,2-Trichloroethane	<1	1,2,3-Trichlorobenzene	<1
2-Hexanone	<10		

Analysis For Volatile Compounds By EPA Method 8260D

Client Sample ID:	KMW-04-031120	Client:	Wood Environment & Infrastructure Solutions
Date Received:	03/12/20	Project:	Kelly Moore 01469709
Date Extracted:	03/19/20	Lab ID:	003197-01 1/100
Date Analyzed:	03/19/20	Data File:	031930.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	94	57	121
Toluene-d8	100	63	127
4-Bromofluorobenzene	100	60	133

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<100	1,3-Dichloropropane	<100
Chloromethane	<1,000	Tetrachloroethene	<100
Vinyl chloride	<20	Dibromochloromethane	<100
Bromomethane	<100	1,2-Dibromoethane (EDB)	<100
Chloroethane	<100	Chlorobenzene	<100
Trichlorofluoromethane	<100	Ethylbenzene	3,000
Acetone	<5,000	1,1,1,2-Tetrachloroethane	<100
1,1-Dichloroethene	<100	m,p-Xylene	7,500
Hexane	<100	o-Xylene	1,400
Methylene chloride	<500	Styrene	<100
Methyl t-butyl ether (MTBE)	<100	Isopropylbenzene	<100
trans-1,2-Dichloroethene	<100	Bromoform	<100
1,1-Dichloroethane	<100	n-Propylbenzene	<100
2,2-Dichloropropane	<100	Bromobenzene	<100
cis-1,2-Dichloroethene	<100	1,3,5-Trimethylbenzene	<100
Chloroform	<100	1,1,2,2-Tetrachloroethane	<100
2-Butanone (MEK)	<1,000	1,2,3-Trichloropropane	<100
1,2-Dichloroethane (EDC)	<100	2-Chlorotoluene	<100
1,1,1-Trichloroethane	<100	4-Chlorotoluene	<100
1,1-Dichloropropene	<100	tert-Butylbenzene	<100
Carbon tetrachloride	<100	1,2,4-Trimethylbenzene	120
Benzene	<35	sec-Butylbenzene	<100
Trichloroethene	<100	p-Isopropyltoluene	<100
1,2-Dichloropropane	<100	1,3-Dichlorobenzene	<100
Bromodichloromethane	<100	1,4-Dichlorobenzene	<100
Dibromomethane	<100	1,2-Dichlorobenzene	<100
4-Methyl-2-pentanone	<1,000	1,2-Dibromo-3-chloropropane	<1,000
cis-1,3-Dichloropropene	<100	1,2,4-Trichlorobenzene	<100
Toluene	380	Hexachlorobutadiene	<100
trans-1,3-Dichloropropene	<100	Naphthalene	<100
1,1,2-Trichloroethane	<100	1,2,3-Trichlorobenzene	<100
2-Hexanone	<1,000		

Analysis For Volatile Compounds By EPA Method 8260D

Client Sample ID:	KMW-04-9-031120	Client:	Wood Environment & Infrastructure Solutions
Date Received:	03/12/20	Project:	Kelly Moore 01469709
Date Extracted:	03/13/20	Lab ID:	003197-02
Date Analyzed:	03/14/20	Data File:	031363.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	105	50	150
Toluene-d8	102	50	150
4-Bromofluorobenzene	108	50	150

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	930 ve
Acetone	130	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	2,900 ve jl
Hexane	7.4	o-Xylene	1,300 ve jl
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	30
trans-1,2-Dichloroethene	<1	Bromoform	<1
1,1-Dichloroethane	<1	n-Propylbenzene	29
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	59
Chloroform	<1	1,1,2,2-Tetrachloroethane	<1
2-Butanone (MEK)	41	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	130
Benzene	<0.35	sec-Butylbenzene	1.6
Trichloroethene	<1	p-Isopropyltoluene	1.6
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	380 ve	Hexachlorobutadiene	<1
trans-1,3-Dichloropropene	<1	Naphthalene	5.5
1,1,2-Trichloroethane	<1	1,2,3-Trichlorobenzene	<1
2-Hexanone	<10		

Analysis For Volatile Compounds By EPA Method 8260D

Client Sample ID:	KMW-04-9-031120	Client:	Wood Environment & Infrastructure Solutions
Date Received:	03/12/20	Project:	Kelly Moore 01469709
Date Extracted:	03/19/20	Lab ID:	003197-02 1/100
Date Analyzed:	03/19/20	Data File:	031931.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	92	57	121
Toluene-d8	100	63	127
4-Bromofluorobenzene	98	60	133

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<100	1,3-Dichloropropane	<100
Chloromethane	<1,000	Tetrachloroethene	<100
Vinyl chloride	<20	Dibromochloromethane	<100
Bromomethane	<100	1,2-Dibromoethane (EDB)	<100
Chloroethane	<100	Chlorobenzene	<100
Trichlorofluoromethane	<100	Ethylbenzene	3,300
Acetone	<5,000	1,1,1,2-Tetrachloroethane	<100
1,1-Dichloroethene	<100	m,p-Xylene	8,200
Hexane	<100	o-Xylene	1,500
Methylene chloride	<500	Styrene	<100
Methyl t-butyl ether (MTBE)	<100	Isopropylbenzene	<100
trans-1,2-Dichloroethene	<100	Bromoform	<100
1,1-Dichloroethane	<100	n-Propylbenzene	<100
2,2-Dichloropropane	<100	Bromobenzene	<100
cis-1,2-Dichloroethene	<100	1,3,5-Trimethylbenzene	<100
Chloroform	<100	1,1,2,2-Tetrachloroethane	<100
2-Butanone (MEK)	<1,000	1,2,3-Trichloropropane	<100
1,2-Dichloroethane (EDC)	<100	2-Chlorotoluene	<100
1,1,1-Trichloroethane	<100	4-Chlorotoluene	<100
1,1-Dichloropropene	<100	tert-Butylbenzene	<100
Carbon tetrachloride	<100	1,2,4-Trimethylbenzene	130
Benzene	<35	sec-Butylbenzene	<100
Trichloroethene	<100	p-Isopropyltoluene	<100
1,2-Dichloropropane	<100	1,3-Dichlorobenzene	<100
Bromodichloromethane	<100	1,4-Dichlorobenzene	<100
Dibromomethane	<100	1,2-Dichlorobenzene	<100
4-Methyl-2-pentanone	<1,000	1,2-Dibromo-3-chloropropane	<1,000
cis-1,3-Dichloropropene	<100	1,2,4-Trichlorobenzene	<100
Toluene	360	Hexachlorobutadiene	<100
trans-1,3-Dichloropropene	<100	Naphthalene	<100
1,1,2-Trichloroethane	<100	1,2,3-Trichlorobenzene	<100
2-Hexanone	<1,000		

Analysis For Volatile Compounds By EPA Method 8260D

Client Sample ID:	KMW-06-031120	Client:	Wood Environment & Infrastructure Solutions
Date Received:	03/12/20	Project:	Kelly Moore 01469709
Date Extracted:	03/13/20	Lab ID:	003197-03
Date Analyzed:	03/17/20	Data File:	031743.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	MS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	95	50	150
Toluene-d8	104	50	150
4-Bromofluorobenzene	102	50	150

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	3.5
trans-1,2-Dichloroethene	<1	Bromoform	<1
1,1-Dichloroethane	<1	n-Propylbenzene	4.5
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		

Analysis For Volatile Compounds By EPA Method 8260D

Client Sample ID:	KMW-09-031120	Client:	Wood Environment & Infrastructure Solutions
Date Received:	03/12/20	Project:	Kelly Moore 01469709
Date Extracted:	03/13/20	Lab ID:	003197-04
Date Analyzed:	03/17/20	Data File:	031744.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	MS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	92	50	150
Toluene-d8	105	50	150
4-Bromofluorobenzene	101	50	150

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	5.7
trans-1,2-Dichloroethene	<1	Bromoform	<1
1,1-Dichloroethane	<1	n-Propylbenzene	5.7
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		

Analysis For Volatile Compounds By EPA Method 8260D

Client Sample ID:	KMW-10-031120	Client:	Wood Environment & Infrastructure Solutions
Date Received:	03/12/20	Project:	Kelly Moore 01469709
Date Extracted:	03/13/20	Lab ID:	003197-05
Date Analyzed:	03/17/20	Data File:	031745.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	MS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	91	50	150
Toluene-d8	106	50	150
4-Bromofluorobenzene	98	50	150

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	2.1
trans-1,2-Dichloroethene	<1	Bromoform	<1
1,1-Dichloroethane	<1	n-Propylbenzene	1.6
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		

Analysis For Volatile Compounds By EPA Method 8260D

Client Sample ID:	Method Blank	Client:	Wood Environment & Infrastructure Solutions
Date Received:	Not Applicable	Project:	Kelly Moore 01469709
Date Extracted:	03/13/20	Lab ID:	00-613 mb
Date Analyzed:	03/13/20	Data File:	031337.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	106	50	150
Toluene-d8	96	50	150
4-Bromofluorobenzene	98	50	150

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		

Analysis For Volatile Compounds By EPA Method 8260D

Client Sample ID:	Method Blank	Client:	Wood Environment & Infrastructure Solutions
Date Received:	Not Applicable	Project:	Kelly Moore 01469709
Date Extracted:	03/18/20	Lab ID:	00-697 mb
Date Analyzed:	03/19/20	Data File:	031914.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	90	57	121
Toluene-d8	100	63	127
4-Bromofluorobenzene	102	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		

Analysis For Semivolatile Compounds By EPA Method 8270E SIM

Client Sample ID:	KMW-04-031120	Client:	Wood Environment & Infrastructure Solutions
Date Received:	03/12/20	Project:	Kelly Moore 01469709
Date Extracted:	03/12/20	Lab ID:	003197-01 1/2
Date Analyzed:	03/13/20	Data File:	031306.D
Matrix:	Water	Instrument:	GCMS6
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	64	31	160
Benzo(a)anthracene-d12	59	25	165

Compounds:	Concentration ug/L (ppb)
Naphthalene	1.9
Acenaphthylene	<0.04
Acenaphthene	0.044
Fluorene	<0.04
Phenanthrene	<0.04
Anthracene	<0.04
Fluoranthene	<0.04
Pyrene	0.042
Benz(a)anthracene	<0.04
Chrysene	<0.04
Benzo(a)pyrene	<0.04
Benzo(b)fluoranthene	<0.04
Benzo(k)fluoranthene	<0.04
Indeno(1,2,3-cd)pyrene	<0.04
Dibenz(a,h)anthracene	<0.04
Benzo(g,h,i)perylene	<0.04

Analysis For Semivolatile Compounds By EPA Method 8270E SIM

Client Sample ID:	KMW-04-9-031120	Client:	Wood Environment & Infrastructure Solutions
Date Received:	03/12/20	Project:	Kelly Moore 01469709
Date Extracted:	03/12/20	Lab ID:	003197-02 1/2
Date Analyzed:	03/13/20	Data File:	031307.D
Matrix:	Water	Instrument:	GCMS6
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	62	31	160
Benzo(a)anthracene-d12	58	25	165

Compounds:	Concentration ug/L (ppb)
Naphthalene	2.0
Acenaphthylene	<0.04
Acenaphthene	0.043
Fluorene	<0.04
Phenanthrene	<0.04
Anthracene	<0.04
Fluoranthene	<0.04
Pyrene	0.041
Benz(a)anthracene	<0.04
Chrysene	<0.04
Benzo(a)pyrene	<0.04
Benzo(b)fluoranthene	<0.04
Benzo(k)fluoranthene	<0.04
Indeno(1,2,3-cd)pyrene	<0.04
Dibenz(a,h)anthracene	<0.04
Benzo(g,h,i)perylene	<0.04

Analysis For Semivolatile Compounds By EPA Method 8270E SIM

Client Sample ID:	KMW-06-031120	Client:	Wood Environment & Infrastructure Solutions
Date Received:	03/12/20	Project:	Kelly Moore 01469709
Date Extracted:	03/12/20	Lab ID:	003197-03 1/2
Date Analyzed:	03/13/20	Data File:	031308.D
Matrix:	Water	Instrument:	GCMS6
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	64	31	160
Benzo(a)anthracene-d12	72	25	165

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.4
Acenaphthylene	0.20
Acenaphthene	0.39
Fluorene	0.29
Phenanthrene	<0.04
Anthracene	<0.04
Fluoranthene	0.074
Pyrene	0.27
Benz(a)anthracene	<0.04
Chrysene	0.051
Benzo(a)pyrene	0.075
Benzo(b)fluoranthene	0.084
Benzo(k)fluoranthene	<0.04
Indeno(1,2,3-cd)pyrene	0.074
Dibenz(a,h)anthracene	<0.04
Benzo(g,h,i)perylene	0.073

Analysis For Semivolatile Compounds By EPA Method 8270E SIM

Client Sample ID:	KMW-09-031120	Client:	Wood Environment & Infrastructure Solutions
Date Received:	03/12/20	Project:	Kelly Moore 01469709
Date Extracted:	03/12/20	Lab ID:	003197-04 1/2
Date Analyzed:	03/13/20	Data File:	031311.D
Matrix:	Water	Instrument:	GCMS6
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	82	31	160
Benzo(a)anthracene-d12	92	25	165

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.4
Acenaphthylene	0.081
Acenaphthene	2.8
Fluorene	0.54
Phenanthrene	<0.04
Anthracene	<0.04
Fluoranthene	<0.04
Pyrene	0.093
Benz(a)anthracene	<0.04
Chrysene	<0.04
Benzo(a)pyrene	<0.04
Benzo(b)fluoranthene	<0.04
Benzo(k)fluoranthene	<0.04
Indeno(1,2,3-cd)pyrene	<0.04
Dibenz(a,h)anthracene	<0.04
Benzo(g,h,i)perylene	<0.04

Analysis For Semivolatile Compounds By EPA Method 8270E SIM

Client Sample ID:	KMW-10-031120	Client:	Wood Environment & Infrastructure Solutions
Date Received:	03/12/20	Project:	Kelly Moore 01469709
Date Extracted:	03/12/20	Lab ID:	003197-05 1/2
Date Analyzed:	03/13/20	Data File:	031312.D
Matrix:	Water	Instrument:	GCMS6
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	80	31	160
Benzo(a)anthracene-d12	102	25	165

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.4
Acenaphthylene	<0.04
Acenaphthene	<0.04
Fluorene	<0.04
Phenanthrene	<0.04
Anthracene	<0.04
Fluoranthene	<0.04
Pyrene	<0.04
Benz(a)anthracene	<0.04
Chrysene	<0.04
Benzo(a)pyrene	<0.04
Benzo(b)fluoranthene	<0.04
Benzo(k)fluoranthene	<0.04
Indeno(1,2,3-cd)pyrene	<0.04
Dibenz(a,h)anthracene	<0.04
Benzo(g,h,i)perylene	<0.04

Analysis For Semivolatile Compounds By EPA Method 8270E SIM

Client Sample ID:	Method Blank	Client:	Wood Environment & Infrastructure Solutions
Date Received:	Not Applicable	Project:	Kelly Moore 01469709
Date Extracted:	03/12/20	Lab ID:	00-631 mb
Date Analyzed:	03/13/20	Data File:	031305.D
Matrix:	Water	Instrument:	GCMS6
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	89	31	160
Benzo(a)anthracene-d12	108	25	165

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.2
Acenaphthylene	<0.02
Acenaphthene	<0.02
Fluorene	<0.02
Phenanthrene	<0.02
Anthracene	<0.02
Fluoranthene	<0.02
Pyrene	<0.02
Benz(a)anthracene	<0.02
Chrysene	<0.02
Benzo(a)pyrene	<0.02
Benzo(b)fluoranthene	<0.02
Benzo(k)fluoranthene	<0.02
Indeno(1,2,3-cd)pyrene	<0.02
Dibenz(a,h)anthracene	<0.02
Benzo(g,h,i)perylene	<0.02

Date of Report: 03/23/20
Date Received: 03/12/20
Project: Kelly Moore 01469709, F&BI 003197

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 003197-03 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Gasoline	ug/L (ppb)	1,000	3,900	233 b	196 b	53-117	17 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Gasoline	ug/L (ppb)	1,000	104	69-134

Date of Report: 03/23/20
Date Received: 03/12/20
Project: Kelly Moore 01469709, F&BI 003197

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

Laboratory Code: 003197-03 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	ug/L (ppb)	2,500	26,000	108 b	1 b	50-150	196 b

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	108	63-142	16

Date of Report: 03/23/20
Date Received: 03/12/20
Project: Kelly Moore 01469709, F&BI 003197

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

Laboratory Code: 003197-03 x10 (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	<10	110	111	75-125	1
Chromium	ug/L (ppb)	20	<10	95	92	75-125	3
Copper	ug/L (ppb)	20	149	74 b	90 b	75-125	20 b
Lead	ug/L (ppb)	10	<10	98	97	75-125	1
Mercury	ug/L (ppb)	5	<10	93	94	75-125	1
Nickel	ug/L (ppb)	20	26.8	89	92	75-125	3
Zinc	ug/L (ppb)	50	392	149 b	68 b	75-125	75 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	ug/L (ppb)	10	87	80-120
Chromium	ug/L (ppb)	20	96	80-120
Copper	ug/L (ppb)	20	95	80-120
Lead	ug/L (ppb)	10	92	80-120
Mercury	ug/L (ppb)	5	91	80-120
Nickel	ug/L (ppb)	20	97	80-120
Zinc	ug/L (ppb)	50	90	80-120

Date of Report: 03/23/20
Date Received: 03/12/20
Project: Kelly Moore 01469709, F&BI 003197

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

Laboratory Code: 003197-03 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Dichlorodifluoromethane	ug/L (ppb)	50	<1	91	87	55-137	4
Chloromethane	ug/L (ppb)	50	<10	98	94	57-129	4
Vinyl chloride	ug/L (ppb)	50	<0.2	102	99	61-139	3
Bromomethane	ug/L (ppb)	50	<1	94	91	20-265	3
Chloroethane	ug/L (ppb)	50	<1	99	96	55-149	3
Trichlorofluoromethane	ug/L (ppb)	50	<1	100	97	65-137	3
Acetone	ug/L (ppb)	250	<50	135	122	48-149	10
1,1-Dichloroethene	ug/L (ppb)	50	<1	102	99	71-123	3
Hexane	ug/L (ppb)	50	<1	95	90	44-139	5
Methylene chloride	ug/L (ppb)	50	<5	96	93	61-126	3
Methyl t-butyl ether (MTBE)	ug/L (ppb)	50	<1	124	118	68-125	5
trans-1,2-Dichloroethene	ug/L (ppb)	50	<1	101	99	72-122	2
1,1-Dichloroethane	ug/L (ppb)	50	<1	105	101	79-113	4
2,2-Dichloropropane	ug/L (ppb)	50	<1	76	74	48-157	3
cis-1,2-Dichloroethene	ug/L (ppb)	50	<1	106	103	63-126	3
Chloroform	ug/L (ppb)	50	<1	105	102	77-117	3
2-Butanone (MEK)	ug/L (ppb)	250	<10	135	128	70-135	5
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	<1	107	104	70-119	3
1,1,1-Trichloroethane	ug/L (ppb)	50	<1	101	99	75-121	2
1,1-Dichloropropene	ug/L (ppb)	50	<1	107	105	67-121	2
Carbon tetrachloride	ug/L (ppb)	50	<1	99	96	70-132	3
Benzene	ug/L (ppb)	50	<0.35	101	98	75-114	3
Trichloroethene	ug/L (ppb)	50	<1	105	103	73-122	2
1,2-Dichloropropane	ug/L (ppb)	50	<1	105	101	80-111	4
Bromodichloromethane	ug/L (ppb)	50	<1	105	100	78-117	5
Dibromomethane	ug/L (ppb)	50	<1	113	109	73-125	4
4-Methyl-2-pentanone	ug/L (ppb)	250	<10	156 vo	148 vo	79-140	5
cis-1,3-Dichloropropene	ug/L (ppb)	50	<1	102	98	76-120	4
Toluene	ug/L (ppb)	50	<1	99	97	73-117	2
trans-1,3-Dichloropropene	ug/L (ppb)	50	<1	104	100	75-122	4
1,1,2-Trichloroethane	ug/L (ppb)	50	<1	119 vo	114	81-116	4
2-Hexanone	ug/L (ppb)	250	<10	144 vo	136 vo	74-127	6
1,3-Dichloropropane	ug/L (ppb)	50	<1	117 vo	112	80-113	4
Tetrachloroethene	ug/L (ppb)	50	<1	93	93	40-155	0
Dibromochloromethane	ug/L (ppb)	50	<1	109	105	69-129	4
1,2-Dibromoethane (EDB)	ug/L (ppb)	50	<1	119	118	79-120	1
Chlorobenzene	ug/L (ppb)	50	<1	103	101	75-115	2
Ethylbenzene	ug/L (ppb)	50	6.6	90	88	66-124	2
1,1,1,2-Tetrachloroethane	ug/L (ppb)	50	<1	107	106	76-130	1
m,p-Xylene	ug/L (ppb)	100	17	91	89	63-128	2
o-Xylene	ug/L (ppb)	50	3.1	103	101	64-129	2
Styrene	ug/L (ppb)	50	<1	106	105	56-142	1
Isopropylbenzene	ug/L (ppb)	50	3.7	106	104	74-122	2
Bromoform	ug/L (ppb)	50	<1	116	108	49-138	7
n-Propylbenzene	ug/L (ppb)	50	5.0	98	96	65-129	2
Bromobenzene	ug/L (ppb)	50	<1	104	100	70-121	4
1,3,5-Trimethylbenzene	ug/L (ppb)	50	<1	105	102	60-138	3
1,1,2,2-Tetrachloroethane	ug/L (ppb)	50	<1	164 vo	163 vo	77-120	1
1,2,3-Trichloropropane	ug/L (ppb)	50	<1	134 vo	129 vo	62-125	4
2-Chlorotoluene	ug/L (ppb)	50	<1	100	97	40-159	3
4-Chlorotoluene	ug/L (ppb)	50	<1	100	98	76-122	2
tert-Butylbenzene	ug/L (ppb)	50	<1	113	111	74-125	2
1,2,4-Trimethylbenzene	ug/L (ppb)	50	<1	102	100	59-136	2
sec-Butylbenzene	ug/L (ppb)	50	<1	107	102	69-127	5
p-Isopropyltoluene	ug/L (ppb)	50	<1	104	101	64-132	3
1,3-Dichlorobenzene	ug/L (ppb)	50	<1	94	93	77-113	1
1,4-Dichlorobenzene	ug/L (ppb)	50	<1	98	95	75-110	3
1,2-Dichlorobenzene	ug/L (ppb)	50	<1	102	100	70-120	2
1,2-Dibromo-3-chloropropane	ug/L (ppb)	50	<10	141 vo	139 vo	69-129	1
1,2,4-Trichlorobenzene	ug/L (ppb)	50	<1	105	105	66-123	0
Hexachlorobutadiene	ug/L (ppb)	50	<1	88	84	53-136	5
Naphthalene	ug/L (ppb)	50	<1	158 vo	156 vo	60-145	1
1,2,3-Trichlorobenzene	ug/L (ppb)	50	<1	118	116	59-130	2

Date of Report: 03/23/20
Date Received: 03/12/20
Project: Kelly Moore 01469709, F&BI 003197

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

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	114	108	50-157	5
Chloromethane	ug/L (ppb)	50	116	113	62-130	3
Vinyl chloride	ug/L (ppb)	50	124	120	70-128	3
Bromomethane	ug/L (ppb)	50	117	111	60-143	5
Chloroethane	ug/L (ppb)	50	122	119	66-149	2
Trichlorofluoromethane	ug/L (ppb)	50	122	119	65-138	2
Acetone	ug/L (ppb)	250	99	101	44-145	2
1,1-Dichloroethene	ug/L (ppb)	50	121	120	72-121	1
Hexane	ug/L (ppb)	50	110	109	51-153	1
Methylene chloride	ug/L (ppb)	50	108	109	63-132	1
Methyl t-butyl ether (MTBE)	ug/L (ppb)	50	109	108	70-122	1
trans-1,2-Dichloroethene	ug/L (ppb)	50	119 vo	117	76-118	2
1,1-Dichloroethane	ug/L (ppb)	50	112	112	77-119	0
2,2-Dichloropropane	ug/L (ppb)	50	121	114	62-141	6
cis-1,2-Dichloroethene	ug/L (ppb)	50	114	114	76-119	0
Chloroform	ug/L (ppb)	50	108	108	78-117	0
2-Butanone (MEK)	ug/L (ppb)	250	98	99	48-150	1
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	87	88	75-116	1
1,1,1-Trichloroethane	ug/L (ppb)	50	120 vo	116	80-116	3
1,1-Dichloropropene	ug/L (ppb)	50	105	105	78-119	0
Carbon tetrachloride	ug/L (ppb)	50	118	115	72-128	3
Benzene	ug/L (ppb)	50	105	105	75-116	0
Trichloroethene	ug/L (ppb)	50	100	100	72-119	0
1,2-Dichloropropane	ug/L (ppb)	50	105	105	79-121	0
Bromodichloromethane	ug/L (ppb)	50	96	99	76-120	3
Dibromomethane	ug/L (ppb)	50	89	91	79-121	2
4-Methyl-2-pentanone	ug/L (ppb)	250	98	97	54-153	1
cis-1,3-Dichloropropene	ug/L (ppb)	50	95	97	76-128	2
Toluene	ug/L (ppb)	50	104	104	79-115	0
trans-1,3-Dichloropropene	ug/L (ppb)	50	92	93	76-128	1
1,1,2-Trichloroethane	ug/L (ppb)	50	93	97	78-120	4
2-Hexanone	ug/L (ppb)	250	91	93	49-147	2
1,3-Dichloropropane	ug/L (ppb)	50	93	94	81-111	1
Tetrachloroethene	ug/L (ppb)	50	99	98	78-109	1
Dibromochloromethane	ug/L (ppb)	50	98	99	63-140	1
1,2-Dibromoethane (EDB)	ug/L (ppb)	50	95	96	82-118	1
Chlorobenzene	ug/L (ppb)	50	104	104	80-113	0
Ethylbenzene	ug/L (ppb)	50	110	109	83-111	1
1,1,1,2-Tetrachloroethane	ug/L (ppb)	50	111	111	76-125	0
m,p-Xylene	ug/L (ppb)	100	114 vo	113 vo	81-112	1
o-Xylene	ug/L (ppb)	50	118 vo	115	81-117	3
Styrene	ug/L (ppb)	50	112	111	83-121	1
Isopropylbenzene	ug/L (ppb)	50	116	114	78-118	2
Bromoform	ug/L (ppb)	50	103	102	40-161	1
n-Propylbenzene	ug/L (ppb)	50	107	107	81-115	0
Bromobenzene	ug/L (ppb)	50	100	101	80-113	1
1,3,5-Trimethylbenzene	ug/L (ppb)	50	112	112	83-117	0
1,1,2,2-Tetrachloroethane	ug/L (ppb)	50	92	92	79-118	0
1,2,3-Trichloropropane	ug/L (ppb)	50	94	95	74-116	1
2-Chlorotoluene	ug/L (ppb)	50	107	107	79-112	0
4-Chlorotoluene	ug/L (ppb)	50	105	104	80-116	1
tert-Butylbenzene	ug/L (ppb)	50	109	109	81-119	0
1,2,4-Trimethylbenzene	ug/L (ppb)	50	110	110	81-121	0
sec-Butylbenzene	ug/L (ppb)	50	110	110	83-123	0
p-Isopropyltoluene	ug/L (ppb)	50	109	109	81-117	0
1,3-Dichlorobenzene	ug/L (ppb)	50	100	100	80-115	0
1,4-Dichlorobenzene	ug/L (ppb)	50	101	101	77-112	0
1,2-Dichlorobenzene	ug/L (ppb)	50	104	103	79-115	1
1,2-Dibromo-3-chloropropane	ug/L (ppb)	50	95	92	62-133	3
1,2,4-Trichlorobenzene	ug/L (ppb)	50	104	103	75-119	1
Hexachlorobutadiene	ug/L (ppb)	50	107	108	70-116	1
Naphthalene	ug/L (ppb)	50	100	99	72-131	1
1,2,3-Trichlorobenzene	ug/L (ppb)	50	99	98	74-122	1

Date of Report: 03/23/20
Date Received: 03/12/20
Project: Kelly Moore 01469709, F&BI 003197

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

Laboratory Code: 003285-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Dichlorodifluoromethane	ug/L (ppb)	<1	<1	nm
Chloromethane	ug/L (ppb)	<2	<2	nm
Vinyl chloride	ug/L (ppb)	<0.2	<0.2	nm
Bromomethane	ug/L (ppb)	<1	<1	nm
Chloroethane	ug/L (ppb)	<0.2	<0.2	nm
Trichlorofluoromethane	ug/L (ppb)	<0.2	<0.2	nm
Acetone	ug/L (ppb)	<50	<50	nm
1,1-Dichloroethene	ug/L (ppb)	<0.2	<0.2	nm
Hexane	ug/L (ppb)	<1	<1	nm
Methylene chloride	ug/L (ppb)	<5	<5	nm
Methyl t-butyl ether (MTBE)	ug/L (ppb)	<1	<1	nm
trans-1,2-Dichloroethene	ug/L (ppb)	<0.2	<0.2	nm
1,1-Dichloroethane	ug/L (ppb)	<0.2	<0.2	nm
2,2-Dichloropropane	ug/L (ppb)	<0.2	<0.2	nm
cis-1,2-Dichloroethene	ug/L (ppb)	<0.2	<0.2	nm
Chloroform	ug/L (ppb)	<0.2	<0.2	nm
2-Butanone (MEK)	ug/L (ppb)	<10	<10	nm
1,2-Dichloroethane (EDC)	ug/L (ppb)	<1	<1	nm
1,1,1-Trichloroethane	ug/L (ppb)	<0.2	<0.2	nm
1,1-Dichloropropene	ug/L (ppb)	<0.2	<0.2	nm
Carbon tetrachloride	ug/L (ppb)	<0.2	<0.2	nm
Benzene	ug/L (ppb)	<0.2	<0.2	nm
Trichloroethene	ug/L (ppb)	<0.2	<0.2	nm
1,2-Dichloropropane	ug/L (ppb)	<0.2	<0.2	nm
Bromodichloromethane	ug/L (ppb)	<0.2	<0.2	nm
Dibromomethane	ug/L (ppb)	<1	<1	nm
4-Methyl-2-pentanone	ug/L (ppb)	<10	<10	nm
cis-1,3-Dichloropropene	ug/L (ppb)	<1	<1	nm
Toluene	ug/L (ppb)	<0.2	<0.2	nm
trans-1,3-Dichloropropene	ug/L (ppb)	<1	<1	nm
1,1,2-Trichloroethane	ug/L (ppb)	<0.2	<0.2	nm
2-Hexanone	ug/L (ppb)	<10	<10	nm
1,3-Dichloropropane	ug/L (ppb)	<0.2	<0.2	nm
Tetrachloroethene	ug/L (ppb)	<0.2	<0.2	nm
Dibromochloromethane	ug/L (ppb)	<0.2	<0.2	nm
1,2-Dibromoethane (EDB)	ug/L (ppb)	<1	<1	nm
Chlorobenzene	ug/L (ppb)	<0.2	<0.2	nm
Ethylbenzene	ug/L (ppb)	<0.2	<0.2	nm
1,1,1,2-Tetrachloroethane	ug/L (ppb)	<0.2	<0.2	nm
m,p-Xylene	ug/L (ppb)	<0.4	<0.4	nm
o-Xylene	ug/L (ppb)	<0.2	<0.2	nm
Styrene	ug/L (ppb)	<1	<1	nm
Isopropylbenzene	ug/L (ppb)	<1	<1	nm
Bromoform	ug/L (ppb)	<1	<1	nm
n-Propylbenzene	ug/L (ppb)	<1	<1	nm
Bromobenzene	ug/L (ppb)	<1	<1	nm
1,3,5-Trimethylbenzene	ug/L (ppb)	<1	<1	nm
1,1,2,2-Tetrachloroethane	ug/L (ppb)	<0.2	<0.2	nm
1,2,3-Trichloropropane	ug/L (ppb)	<0.03	<0.03	nm
2-Chlorotoluene	ug/L (ppb)	<0.2	<0.2	nm
4-Chlorotoluene	ug/L (ppb)	<0.2	<0.2	nm
tert-Butylbenzene	ug/L (ppb)	<1	<1	nm
1,2,4-Trimethylbenzene	ug/L (ppb)	<0.2	<0.2	nm
sec-Butylbenzene	ug/L (ppb)	<1	<1	nm
p-Isopropyltoluene	ug/L (ppb)	<1	<1	nm
1,3-Dichlorobenzene	ug/L (ppb)	<0.2	0.26	nm
1,4-Dichlorobenzene	ug/L (ppb)	<0.2	0.27	nm
1,2-Dichlorobenzene	ug/L (ppb)	<0.2	0.23	nm
1,2-Dibromo-3-chloropropane	ug/L (ppb)	<0.8	<0.8	nm
1,2,4-Trichlorobenzene	ug/L (ppb)	<1	<1	nm
Hexachlorobutadiene	ug/L (ppb)	<0.2	0.41	nm
Naphthalene	ug/L (ppb)	<1	<1	nm
1,2,3-Trichlorobenzene	ug/L (ppb)	<0.2	0.59	nm

Date of Report: 03/23/20
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Project: Kelly Moore 01469709, F&BI 003197

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

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	104	109	25-158	5
Chloromethane	ug/L (ppb)	50	110	122	45-156	10
Vinyl chloride	ug/L (ppb)	50	117	125	50-154	7
Bromomethane	ug/L (ppb)	50	120	128	55-143	6
Chloroethane	ug/L (ppb)	50	111	114	58-146	3
Trichlorofluoromethane	ug/L (ppb)	250	106	115	50-150	8
Acetone	ug/L (ppb)	250	93	87	53-131	7
1,1-Dichloroethene	ug/L (ppb)	50	109	118	67-136	8
Hexane	ug/L (ppb)	50	88	91	57-137	3
Methylene chloride	ug/L (ppb)	50	102	93	39-148	9
Methyl t-butyl ether (MTBE)	ug/L (ppb)	50	101	89	64-147	13
trans-1,2-Dichloroethene	ug/L (ppb)	50	97	89	68-128	9
1,1-Dichloroethane	ug/L (ppb)	50	100	89	79-121	12
2,2-Dichloropropane	ug/L (ppb)	50	103	90	55-143	13
cis-1,2-Dichloroethene	ug/L (ppb)	50	94	88	80-123	7
Chloroform	ug/L (ppb)	50	97	90	80-121	7
2-Butanone (MEK)	ug/L (ppb)	250	87	79	57-149	10
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	84	81	73-132	4
1,1,1-Trichloroethane	ug/L (ppb)	50	99	92	81-125	7
1,1-Dichloropropene	ug/L (ppb)	50	90	89	77-129	1
Carbon tetrachloride	ug/L (ppb)	50	106	99	75-158	7
Benzene	ug/L (ppb)	50	90	86	69-134	5
Trichloroethene	ug/L (ppb)	50	88	87	79-113	1
1,2-Dichloropropane	ug/L (ppb)	50	91	88	77-123	3
Bromodichloromethane	ug/L (ppb)	50	89	98	81-133	10
Dibromomethane	ug/L (ppb)	50	89	90	82-125	1
4-Methyl-2-pentanone	ug/L (ppb)	250	89	93	65-138	4
cis-1,3-Dichloropropene	ug/L (ppb)	50	87	99	82-132	13
Toluene	ug/L (ppb)	50	98	89	72-122	10
trans-1,3-Dichloropropene	ug/L (ppb)	50	100	102	80-136	2
1,1,2-Trichloroethane	ug/L (ppb)	50	103	99	75-124	4
2-Hexanone	ug/L (ppb)	250	103	94	60-136	9
1,3-Dichloropropane	ug/L (ppb)	50	93	93	76-126	0
Tetrachloroethene	ug/L (ppb)	50	99	94	76-121	5
Dibromochloromethane	ug/L (ppb)	50	117	113	84-133	3
1,2-Dibromoethane (EDB)	ug/L (ppb)	50	96	100	82-115	4
Chlorobenzene	ug/L (ppb)	50	93	93	83-114	0
Ethylbenzene	ug/L (ppb)	50	93	92	77-124	1
1,1,1,2-Tetrachloroethane	ug/L (ppb)	50	109	102	84-127	7
m,p-Xylene	ug/L (ppb)	100	94	92	81-112	2
o-Xylene	ug/L (ppb)	50	95	92	81-121	3
Styrene	ug/L (ppb)	50	97	98	84-119	1
Isopropylbenzene	ug/L (ppb)	50	98	93	80-117	5
Bromoform	ug/L (ppb)	50	115	117	74-136	2
n-Propylbenzene	ug/L (ppb)	50	89	91	74-126	2
Bromobenzene	ug/L (ppb)	50	94	99	80-121	5
1,3,5-Trimethylbenzene	ug/L (ppb)	50	94	95	78-123	1
1,1,2,2-Tetrachloroethane	ug/L (ppb)	50	97	101	66-126	4
1,2,3-Trichloropropane	ug/L (ppb)	50	90	94	67-124	4
2-Chlorotoluene	ug/L (ppb)	50	89	91	77-127	2
4-Chlorotoluene	ug/L (ppb)	50	89	93	78-128	4
tert-Butylbenzene	ug/L (ppb)	50	95	98	80-123	3
1,2,4-Trimethylbenzene	ug/L (ppb)	50	95	93	79-122	2
sec-Butylbenzene	ug/L (ppb)	50	95	95	80-116	0
p-Isopropyltoluene	ug/L (ppb)	50	94	94	81-123	0
1,3-Dichlorobenzene	ug/L (ppb)	50	95	98	83-113	3
1,4-Dichlorobenzene	ug/L (ppb)	50	95	96	83-107	1
1,2-Dichlorobenzene	ug/L (ppb)	50	99	96	84-112	3
1,2-Dibromo-3-chloropropane	ug/L (ppb)	50	112	105	57-141	6
1,2,4-Trichlorobenzene	ug/L (ppb)	50	100	97	72-130	3
Hexachlorobutadiene	ug/L (ppb)	50	94	91	53-141	3
Naphthalene	ug/L (ppb)	50	103	101	64-133	2
1,2,3-Trichlorobenzene	ug/L (ppb)	50	97	98	65-136	1

Date of Report: 03/23/20
Date Received: 03/12/20
Project: Kelly Moore 01469709, F&BI 003197

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR PAHS BY EPA METHOD 8270E SIM

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Naphthalene	ug/L (ppb)	1	74	77	57-114	4
Acenaphthylene	ug/L (ppb)	1	81	81	65-119	0
Acenaphthene	ug/L (ppb)	1	77	80	66-118	4
Fluorene	ug/L (ppb)	1	82	87	64-125	6
Phenanthrene	ug/L (ppb)	1	81	84	67-120	4
Anthracene	ug/L (ppb)	1	85	90	65-122	6
Fluoranthene	ug/L (ppb)	1	85	88	65-127	3
Pyrene	ug/L (ppb)	1	82	85	62-130	4
Benz(a)anthracene	ug/L (ppb)	1	89	92	60-118	3
Chrysene	ug/L (ppb)	1	87	90	66-125	3
Benzo(b)fluoranthene	ug/L (ppb)	1	80	82	55-135	2
Benzo(k)fluoranthene	ug/L (ppb)	1	83	86	62-125	4
Benzo(a)pyrene	ug/L (ppb)	1	81	84	58-127	4
Indeno(1,2,3-cd)pyrene	ug/L (ppb)	1	79	84	36-142	6
Dibenz(a,h)anthracene	ug/L (ppb)	1	83	91	37-133	9
Benzo(g,h,i)perylene	ug/L (ppb)	1	74	77	34-135	4

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.

003197

SAMPLE CHAIN OF CUSTODY

ME 03/12/20

Page # 1 of 1

VW5/AI2/AO

Report To Lucas Kerner

Company Wood PLC

Address 600 University St. Ste #600

City, State, ZIP Seattle, WA 98101

Phone 208-316-7223 Email lucas.kerner@woodplc.com

SAMPLERS (*signature*) Lucas Kerner

PROJECT NAME: Kelly-Moore

PO #: 01469709

REMARKS

INVOICE TO

Project specific RLs? - Yes / No

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Archive samples
- [ ] Other
- Default: Dispose after 30 days

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	Total Metals				Notes
KMW-04-031120	01 A-I	03/11/20	14:05	Water	9	X	X			X	X		X				
KMW-04-9-031120	02 A-I	↓	14:10	↓	9	X	X			X	X		X				
~~KMW-06-031120~~																	
KMW-06-031120	03 A-AA		12:25		27	X	X			X	X		X				MS/MSD
KMW-09-031120	04 A-I		11:40		9	X	X			X	X		X				
KMW-10-031120	05-A-I	↓	15:10		9	X	X			X	X		X				
Trip Blanks	06 A B			↓	2												

ANALYSES REQUESTED

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Lucas Kerner	Wood	3/12/20	9:41
Received by:	Nhan Phan	F & B I	3/12/20	09:41
Relinquished by:				
Received by:		Samples received at 3 °C		

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282

FRIEDMAN & BRUYA, INC.

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February 18, 2019

Crystal Thimsen, Project Manager
Wood Environment & Infrastructure Solutions, Inc.
One Union Square
600 University Street, Suite 600
Seattle, WA 98101

Dear Ms Thimsen:

Included are the results from the testing of material submitted on February 8, 2019 from the Kelly Moore 14697009, F&BI 902134 project. There are 45 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 should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
WEI0218R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on February 8, 2019 by Friedman & Bruya, Inc. from the Wood Environment & Infrastructure Solutions Kelly Moore 14697009, F&BI 902134 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Wood Environment & Infrastructure Solutions
902134 -01	KMW-02R-020819
902134 -02	KMW-03R-020819
902134 -03	KMW-04-020719
902134 -04	KMW-06-020719
902134 -05	KMW-08-020819
902134 -06	KMW-09-020719
902134 -07	KMW-10-020719
902134 -08	KMW-10-9-020719
902134 -09	KMW-7-020819
902134 -10	Trip Blanks

A 6020B internal standard failed the acceptance criteria for samples KMW-10-020719 and KMW-10-9-020719. The samples were diluted and reanalyzed with acceptable results. Both data sets were reported.

The 8270D matrix spike and matrix spike duplicate failed the relative percent difference for several compounds. The analytes were not detected therefore the data were acceptable.

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

All other quality control requirements were acceptable.

Date of Report: 02/18/19
Date Received: 02/08/19
Project: Kelly Moore 14697009, F&BI 902134
Date Extracted: 02/12/19
Date Analyzed: 02/12/19

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Gasoline Range	Surrogate (% Recovery) (Limit 51-134)
KMW-02R-020819 902134-01	<100	92
KMW-03R-020819 902134-02	140	97
KMW-04-020719 902134-03 1/10	31,000	108
KMW-06-020719 902134-04	2,200	ip
KMW-08-020819 902134-05	120	96
KMW-09-020719 902134-06	450	107
KMW-10-020719 902134-07	200	109
KMW-10-9-020719 902134-08	210	109
KMW-7-020819 902134-09	<100	94
Method Blank 09-321 MB	<100	103

Date of Report: 02/18/19
Date Received: 02/08/19
Project: Kelly Moore 14697009, F&BI 902134
Date Extracted: 02/12/19
Date Analyzed: 02/12/19

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)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 47-140)
KMW-02R-020819 902134-01 1/1.2	<60	<300	95
KMW-03R-020819 902134-02 1/1.2	1,700 x	<300	110
KMW-04-020719 902134-03 1/1.2	2,600 x	<300	64
KMW-06-020719 902134-04 1/1.2	19,000 x	790 x	63
KMW-08-020819 902134-05 1/1.2	440 x	<300	102
KMW-09-020719 902134-06 1/1.2	3,100 x	<300	64
KMW-10-020719 902134-07 1/1.3	970 x	<320	75
KMW-10-9-020719 902134-08 1/1.2	1,300 x	<300	105
KMW-7-020819 902134-09 1/1.2	<60	<300	106
Method Blank 09-358 MB	<60	<300	100

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID:	KMW-02R-020819	Client:	Wood Environment & Infrastructure Solutions
Date Received:	02/08/19	Project:	Kelly Moore 14697009
Date Extracted:	02/12/19	Lab ID:	902134-01 1/2
Date Analyzed:	02/13/19	Data File:	021311.D
Matrix:	Water	Instrument:	GCMS6
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	99	31	160
Benzo(a)anthracene-d12	112	25	165

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.4
Acenaphthylene	<0.04
Acenaphthene	<0.04
Fluorene	<0.04
Phenanthrene	<0.04
Anthracene	<0.04
Fluoranthene	<0.04
Pyrene	<0.04
Benz(a)anthracene	<0.04
Chrysene	<0.04
Benzo(a)pyrene	<0.04
Benzo(b)fluoranthene	<0.04
Benzo(k)fluoranthene	<0.04
Indeno(1,2,3-cd)pyrene	<0.04
Dibenz(a,h)anthracene	<0.04
Benzo(g,h,i)perylene	<0.04

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID:	KMW-03R-020819	Client:	Wood Environment & Infrastructure Solutions
Date Received:	02/08/19	Project:	Kelly Moore 14697009
Date Extracted:	02/12/19	Lab ID:	902134-02 1/2
Date Analyzed:	02/13/19	Data File:	021312.D
Matrix:	Water	Instrument:	GCMS6
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	97	31	160
Benzo(a)anthracene-d12	111	25	165

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.4
Acenaphthylene	1.7
Acenaphthene	0.14
Fluorene	0.099
Phenanthrene	0.041
Anthracene	<0.04
Fluoranthene	<0.04
Pyrene	<0.04
Benz(a)anthracene	<0.04
Chrysene	<0.04
Benzo(a)pyrene	<0.04
Benzo(b)fluoranthene	<0.04
Benzo(k)fluoranthene	<0.04
Indeno(1,2,3-cd)pyrene	<0.04
Dibenz(a,h)anthracene	<0.04
Benzo(g,h,i)perylene	<0.04

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID:	KMW-04-020719	Client:	Wood Environment & Infrastructure Solutions
Date Received:	02/08/19	Project:	Kelly Moore 14697009
Date Extracted:	02/12/19	Lab ID:	902134-03 1/2
Date Analyzed:	02/13/19	Data File:	021313.D
Matrix:	Water	Instrument:	GCMS6
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	80	31	160
Benzo(a)anthracene-d12	80	25	165

Compounds:	Concentration ug/L (ppb)
Naphthalene	3.3
Acenaphthylene	<0.04
Acenaphthene	0.069
Fluorene	<0.04
Phenanthrene	<0.04
Anthracene	<0.04
Fluoranthene	<0.04
Pyrene	<0.04
Benz(a)anthracene	<0.04
Chrysene	<0.04
Benzo(a)pyrene	<0.04
Benzo(b)fluoranthene	<0.04
Benzo(k)fluoranthene	<0.04
Indeno(1,2,3-cd)pyrene	<0.04
Dibenz(a,h)anthracene	<0.04
Benzo(g,h,i)perylene	<0.04

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID:	KMW-06-020719	Client:	Wood Environment & Infrastructure Solutions
Date Received:	02/08/19	Project:	Kelly Moore 14697009
Date Extracted:	02/12/19	Lab ID:	902134-04 1/2
Date Analyzed:	02/13/19	Data File:	021314.D
Matrix:	Water	Instrument:	GCMS6
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	83	31	160
Benzo(a)anthracene-d12	87	25	165

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.4
Acenaphthylene	28 ve
Acenaphthene	0.71
Fluorene	0.36
Phenanthrene	<0.04
Anthracene	<0.04
Fluoranthene	0.11
Pyrene	0.15
Benz(a)anthracene	<0.04
Chrysene	<0.04
Benzo(a)pyrene	<0.04
Benzo(b)fluoranthene	<0.04
Benzo(k)fluoranthene	<0.04
Indeno(1,2,3-cd)pyrene	<0.04
Dibenz(a,h)anthracene	<0.04
Benzo(g,h,i)perylene	<0.04

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID:	KMW-06-020719	Client:	Wood Environment & Infrastructure Solutions
Date Received:	02/08/19	Project:	Kelly Moore 14697009
Date Extracted:	02/12/19	Lab ID:	902134-04 1/100
Date Analyzed:	02/14/19	Data File:	021411.D
Matrix:	Water	Instrument:	GCMS6
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	80 d	31	160
Benzo(a)anthracene-d12	74 d	25	165

Compounds:	Concentration ug/L (ppb)
Naphthalene	<20
Acenaphthylene	38
Acenaphthene	<2
Fluorene	<2
Phenanthrene	<2
Anthracene	<2
Fluoranthene	<2
Pyrene	<2
Benz(a)anthracene	<2
Chrysene	<2
Benzo(a)pyrene	<2
Benzo(b)fluoranthene	<2
Benzo(k)fluoranthene	<2
Indeno(1,2,3-cd)pyrene	<2
Dibenz(a,h)anthracene	<2
Benzo(g,h,i)perylene	<2

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID:	KMW-08-020819	Client:	Wood Environment & Infrastructure Solutions
Date Received:	02/08/19	Project:	Kelly Moore 14697009
Date Extracted:	02/12/19	Lab ID:	902134-05 1/2
Date Analyzed:	02/13/19	Data File:	021317.D
Matrix:	Water	Instrument:	GCMS6
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	95	31	160
Benzo(a)anthracene-d12	109	25	165

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.4
Acenaphthylene	<0.04
Acenaphthene	0.15
Fluorene	0.26
Phenanthrene	<0.04
Anthracene	0.095
Fluoranthene	0.14
Pyrene	0.20
Benz(a)anthracene	<0.04
Chrysene	<0.04
Benzo(a)pyrene	<0.04
Benzo(b)fluoranthene	<0.04
Benzo(k)fluoranthene	<0.04
Indeno(1,2,3-cd)pyrene	<0.04
Dibenz(a,h)anthracene	<0.04
Benzo(g,h,i)perylene	<0.04

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID:	KMW-09-020719	Client:	Wood Environment & Infrastructure Solutions
Date Received:	02/08/19	Project:	Kelly Moore 14697009
Date Extracted:	02/12/19	Lab ID:	902134-06 1/2
Date Analyzed:	02/13/19	Data File:	021318.D
Matrix:	Water	Instrument:	GCMS6
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	83	31	160
Benzo(a)anthracene-d12	93	25	165

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.4
Acenaphthylene	4.5
Acenaphthene	2.4
Fluorene	0.34
Phenanthrene	<0.04
Anthracene	<0.04
Fluoranthene	<0.04
Pyrene	<0.04
Benz(a)anthracene	<0.04
Chrysene	<0.04
Benzo(a)pyrene	<0.04
Benzo(b)fluoranthene	<0.04
Benzo(k)fluoranthene	<0.04
Indeno(1,2,3-cd)pyrene	<0.04
Dibenz(a,h)anthracene	<0.04
Benzo(g,h,i)perylene	<0.04

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID:	KMW-10-020719	Client:	Wood Environment & Infrastructure Solutions
Date Received:	02/08/19	Project:	Kelly Moore 14697009
Date Extracted:	02/12/19	Lab ID:	902134-07 1/2
Date Analyzed:	02/13/19	Data File:	021319.D
Matrix:	Water	Instrument:	GCMS6
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	78	31	160
Benzo(a)anthracene-d12	90	25	165

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.4
Acenaphthylene	<0.04
Acenaphthene	0.041
Fluorene	<0.04
Phenanthrene	<0.04
Anthracene	<0.04
Fluoranthene	<0.04
Pyrene	<0.04
Benz(a)anthracene	<0.04
Chrysene	<0.04
Benzo(a)pyrene	<0.04
Benzo(b)fluoranthene	<0.04
Benzo(k)fluoranthene	<0.04
Indeno(1,2,3-cd)pyrene	<0.04
Dibenz(a,h)anthracene	<0.04
Benzo(g,h,i)perylene	<0.04

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID:	KMW-10-9-020719	Client:	Wood Environment & Infrastructure Solutions
Date Received:	02/08/19	Project:	Kelly Moore 14697009
Date Extracted:	02/12/19	Lab ID:	902134-08 1/2
Date Analyzed:	02/13/19	Data File:	021320.D
Matrix:	Water	Instrument:	GCMS6
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	89	31	160
Benzo(a)anthracene-d12	98	25	165

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.4
Acenaphthylene	<0.04
Acenaphthene	0.049
Fluorene	<0.04
Phenanthrene	<0.04
Anthracene	<0.04
Fluoranthene	<0.04
Pyrene	<0.04
Benz(a)anthracene	<0.04
Chrysene	<0.04
Benzo(a)pyrene	<0.04
Benzo(b)fluoranthene	<0.04
Benzo(k)fluoranthene	<0.04
Indeno(1,2,3-cd)pyrene	<0.04
Dibenz(a,h)anthracene	<0.04
Benzo(g,h,i)perylene	<0.04

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID:	KMW-7-020819	Client:	Wood Environment & Infrastructure Solutions
Date Received:	02/08/19	Project:	Kelly Moore 14697009
Date Extracted:	02/12/19	Lab ID:	902134-09 1/2
Date Analyzed:	02/13/19	Data File:	021321.D
Matrix:	Water	Instrument:	GCMS6
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	96	31	160
Benzo(a)anthracene-d12	106	25	165

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.4
Acenaphthylene	<0.04
Acenaphthene	<0.04
Fluorene	<0.04
Phenanthrene	<0.04
Anthracene	<0.04
Fluoranthene	<0.04
Pyrene	<0.04
Benz(a)anthracene	<0.04
Chrysene	<0.04
Benzo(a)pyrene	<0.04
Benzo(b)fluoranthene	<0.04
Benzo(k)fluoranthene	<0.04
Indeno(1,2,3-cd)pyrene	<0.04
Dibenz(a,h)anthracene	<0.04
Benzo(g,h,i)perylene	<0.04

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID:	Method Blank	Client:	Wood Environment & Infrastructure Solutions
Date Received:	Not Applicable	Project:	Kelly Moore 14697009
Date Extracted:	02/12/19	Lab ID:	09-359 mb
Date Analyzed:	02/13/19	Data File:	021306.D
Matrix:	Water	Instrument:	GCMS6
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	96	31	160
Benzo(a)anthracene-d12	107	25	165

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.2
Acenaphthylene	<0.02
Acenaphthene	<0.02
Fluorene	<0.02
Phenanthrene	<0.02
Anthracene	<0.02
Fluoranthene	<0.02
Pyrene	<0.02
Benz(a)anthracene	<0.02
Chrysene	<0.02
Benzo(a)pyrene	<0.02
Benzo(b)fluoranthene	<0.02
Benzo(k)fluoranthene	<0.02
Indeno(1,2,3-cd)pyrene	<0.02
Dibenz(a,h)anthracene	<0.02
Benzo(g,h,i)perylene	<0.02

Analysis For Total Metals By EPA Method 6020B

Client ID:	KMW-02R-020819	Client:	Wood Environment & Infrastructure Solutions
Date Received:	02/08/19	Project:	Kelly Moore 14697009
Date Extracted:	02/12/19	Lab ID:	902134-01
Date Analyzed:	02/12/19	Data File:	902134-01.096
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Chromium	<1
Copper	<5
Lead	<1
Mercury	<1
Nickel	2.15
Zinc	<5

Analysis For Total Metals By EPA Method 6020B

Client ID:	KMW-03R-020819	Client:	Wood Environment & Infrastructure Solutions
Date Received:	02/08/19	Project:	Kelly Moore 14697009
Date Extracted:	02/12/19	Lab ID:	902134-02
Date Analyzed:	02/12/19	Data File:	902134-02.103
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Chromium	1.47
Copper	<5
Lead	<1
Mercury	<1
Nickel	1.67
Zinc	<5

Analysis For Total Metals By EPA Method 6020B

Client ID:	KMW-04-020719	Client:	Wood Environment & Infrastructure Solutions
Date Received:	02/08/19	Project:	Kelly Moore 14697009
Date Extracted:	02/12/19	Lab ID:	902134-03
Date Analyzed:	02/12/19	Data File:	902134-03.104
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	17.4
Chromium	1.58
Copper	24.7
Lead	1.51
Mercury	<1
Nickel	1.98
Zinc	<5

Analysis For Total Metals By EPA Method 6020B

Client ID:	KMW-06-020719	Client:	Wood Environment & Infrastructure Solutions
Date Received:	02/08/19	Project:	Kelly Moore 14697009
Date Extracted:	02/12/19	Lab ID:	902134-04
Date Analyzed:	02/12/19	Data File:	902134-04.105
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	3.04
Chromium	2.00
Copper	19.4
Lead	2.04
Mercury	<1
Nickel	7.79
Zinc	135

Analysis For Total Metals By EPA Method 6020B

Client ID:	KMW-08-020819	Client:	Wood Environment & Infrastructure Solutions
Date Received:	02/08/19	Project:	Kelly Moore 14697009
Date Extracted:	02/12/19	Lab ID:	902134-05
Date Analyzed:	02/12/19	Data File:	902134-05.109
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Chromium	<1
Copper	<5
Lead	<1
Mercury	<1
Nickel	1.99
Zinc	10.1

Analysis For Total Metals By EPA Method 6020B

Client ID:	KMW-09-020719	Client:	Wood Environment & Infrastructure Solutions
Date Received:	02/08/19	Project:	Kelly Moore 14697009
Date Extracted:	02/12/19	Lab ID:	902134-06
Date Analyzed:	02/12/19	Data File:	902134-06.110
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Chromium	1.12
Copper	<5
Lead	<1
Mercury	<1
Nickel	<1
Zinc	<5

Analysis For Total Metals By EPA Method 6020B

Client ID:	KMW-10-020719	Client:	Wood Environment & Infrastructure Solutions
Date Received:	02/08/19	Project:	Kelly Moore 14697009
Date Extracted:	02/12/19	Lab ID:	902134-07
Date Analyzed:	02/12/19	Data File:	902134-07.111
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	6.72
Chromium	2.00 J
Copper	<5 J
Lead	<1
Mercury	<1
Nickel	<1 J
Zinc	<5 J

Analysis For Total Metals By EPA Method 6020B

Client ID:	KMW-10-020719	Client:	Wood Environment & Infrastructure Solutions
Date Received:	02/08/19	Project:	Kelly Moore 14697009
Date Extracted:	02/12/19	Lab ID:	902134-07 x2
Date Analyzed:	02/13/19	Data File:	902134-07 x2.030
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	6.55
Chromium	2.33
Copper	<10
Lead	<2
Mercury	<2
Nickel	<2
Zinc	<10

Analysis For Total Metals By EPA Method 6020B

Client ID:	KMW-10-9-020719	Client:	Wood Environment & Infrastructure Solutions
Date Received:	02/08/19	Project:	Kelly Moore 14697009
Date Extracted:	02/12/19	Lab ID:	902134-08
Date Analyzed:	02/12/19	Data File:	902134-08.112
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	6.52
Chromium	2.00 J
Copper	<5 J
Lead	<1
Mercury	<1
Nickel	<1 J
Zinc	<5 J

Analysis For Total Metals By EPA Method 6020B

Client ID:	KMW-10-9-020719	Client:	Wood Environment & Infrastructure Solutions
Date Received:	02/08/19	Project:	Kelly Moore 14697009
Date Extracted:	02/12/19	Lab ID:	902134-08 x2
Date Analyzed:	02/13/19	Data File:	902134-08 x2.031
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	6.38
Chromium	2.17
Copper	<10
Lead	<2
Mercury	<2
Nickel	<2
Zinc	<10

Analysis For Total Metals By EPA Method 6020B

Client ID:	KMW-7-020819	Client:	Wood Environment & Infrastructure Solutions
Date Received:	02/08/19	Project:	Kelly Moore 14697009
Date Extracted:	02/12/19	Lab ID:	902134-09
Date Analyzed:	02/12/19	Data File:	902134-09.113
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Chromium	<1
Copper	<5
Lead	<1
Mercury	<1
Nickel	1.36
Zinc	<5

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Wood Environment & Infrastructure Solutions
Date Received:	NA	Project:	Kelly Moore 14697009
Date Extracted:	02/12/19	Lab ID:	I9-95 mb
Date Analyzed:	02/12/19	Data File:	I9-95 mb.094
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Chromium	<1
Copper	<5
Lead	<1
Mercury	<1
Nickel	<1
Zinc	<5

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	KMW-02R-020819	Client:	Wood Environment & Infrastructure Solutions
Date Received:	02/08/19	Project:	Kelly Moore 14697009
Date Extracted:	02/14/15	Lab ID:	902134-01
Date Analyzed:	02/14/19	Data File:	021421.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	MS

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

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	KMW-03R-020819	Client:	Wood Environment & Infrastructure Solutions
Date Received:	02/08/19	Project:	Kelly Moore 14697009
Date Extracted:	02/14/15	Lab ID:	902134-02
Date Analyzed:	02/14/19	Data File:	021422.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	MS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	98	57	121
Toluene-d8	99	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	1.5
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:	KMW-04-020719	Client:	Wood Environment & Infrastructure Solutions
Date Received:	02/08/19	Project:	Kelly Moore 14697009
Date Extracted:	02/14/15	Lab ID:	902134-03 1/10
Date Analyzed:	02/14/19	Data File:	021431.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	MS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	103	57	121
Toluene-d8	94	63	127
4-Bromofluorobenzene	90	60	133

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<10	1,3-Dichloropropane	<10
Chloromethane	<100	Tetrachloroethene	<10
Vinyl chloride	<2	Dibromochloromethane	<10
Bromomethane	<10	1,2-Dibromoethane (EDB)	<10
Chloroethane	<10	Chlorobenzene	<10
Trichlorofluoromethane	<10	Ethylbenzene	2,500 ve
Acetone	<500	1,1,1,2-Tetrachloroethane	<10
1,1-Dichloroethene	<10	m,p-Xylene	5,400 ve
Hexane	<10	o-Xylene	1,200
Methylene chloride	<50	Styrene	<10
Methyl t-butyl ether (MTBE)	<10	Isopropylbenzene	26
trans-1,2-Dichloroethene	<10	Bromoform	<10
1,1-Dichloroethane	<10	n-Propylbenzene	23
2,2-Dichloropropane	<10	Bromobenzene	<10
cis-1,2-Dichloroethene	<10	1,3,5-Trimethylbenzene	33
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	67
Benzene	<3.5	sec-Butylbenzene	<10
Trichloroethene	<10	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	190	Hexachlorobutadiene	<10
trans-1,3-Dichloropropene	<10	Naphthalene	<10
1,1,2-Trichloroethane	<10	1,2,3-Trichlorobenzene	<10
2-Hexanone	<100		

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	KMW-04-020719	Client:	Wood Environment & Infrastructure Solutions
Date Received:	02/08/19	Project:	Kelly Moore 14697009
Date Extracted:	02/14/15	Lab ID:	902134-03 1/100
Date Analyzed:	02/14/19	Data File:	021430.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	MS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	57	121
Toluene-d8	100	63	127
4-Bromofluorobenzene	102	60	133

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<100	1,3-Dichloropropane	<100
Chloromethane	<1,000	Tetrachloroethene	<100
Vinyl chloride	<20	Dibromochloromethane	<100
Bromomethane	<100	1,2-Dibromoethane (EDB)	<100
Chloroethane	<100	Chlorobenzene	<100
Trichlorofluoromethane	<100	Ethylbenzene	2,800
Acetone	<5,000	1,1,1,2-Tetrachloroethane	<100
1,1-Dichloroethene	<100	m,p-Xylene	6,100
Hexane	<100	o-Xylene	1,300
Methylene chloride	<500	Styrene	<100
Methyl t-butyl ether (MTBE)	<100	Isopropylbenzene	<100
trans-1,2-Dichloroethene	<100	Bromoform	<100
1,1-Dichloroethane	<100	n-Propylbenzene	<100
2,2-Dichloropropane	<100	Bromobenzene	<100
cis-1,2-Dichloroethene	<100	1,3,5-Trimethylbenzene	<100
Chloroform	<100	1,1,2,2-Tetrachloroethane	<100
2-Butanone (MEK)	<1,000	1,2,3-Trichloropropane	<100
1,2-Dichloroethane (EDC)	<100	2-Chlorotoluene	<100
1,1,1-Trichloroethane	<100	4-Chlorotoluene	<100
1,1-Dichloropropene	<100	tert-Butylbenzene	<100
Carbon tetrachloride	<100	1,2,4-Trimethylbenzene	<100
Benzene	<35	sec-Butylbenzene	<100
Trichloroethene	<100	p-Isopropyltoluene	<100
1,2-Dichloropropane	<100	1,3-Dichlorobenzene	<100
Bromodichloromethane	<100	1,4-Dichlorobenzene	<100
Dibromomethane	<100	1,2-Dichlorobenzene	<100
4-Methyl-2-pentanone	<1,000	1,2-Dibromo-3-chloropropane	<1,000
cis-1,3-Dichloropropene	<100	1,2,4-Trichlorobenzene	<100
Toluene	190	Hexachlorobutadiene	<100
trans-1,3-Dichloropropene	<100	Naphthalene	<100
1,1,2-Trichloroethane	<100	1,2,3-Trichlorobenzene	<100
2-Hexanone	<1,000		

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	KMW-06-020719	Client:	Wood Environment & Infrastructure Solutions
Date Received:	02/08/19	Project:	Kelly Moore 14697009
Date Extracted:	02/14/15	Lab ID:	902134-04
Date Analyzed:	02/14/19	Data File:	021428.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	MS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	57	121
Toluene-d8	99	63	127
4-Bromofluorobenzene	106	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	8.3
trans-1,2-Dichloroethene	<1	Bromoform	<1
1,1-Dichloroethane	<1	n-Propylbenzene	12
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	1.2
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		

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	KMW-08-020819	Client:	Wood Environment & Infrastructure Solutions
Date Received:	02/08/19	Project:	Kelly Moore 14697009
Date Extracted:	02/14/15	Lab ID:	902134-05
Date Analyzed:	02/14/19	Data File:	021423.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	MS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	107	57	121
Toluene-d8	98	63	127
4-Bromofluorobenzene	95	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		

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	KMW-09-020719	Client:	Wood Environment & Infrastructure Solutions
Date Received:	02/08/19	Project:	Kelly Moore 14697009
Date Extracted:	02/14/15	Lab ID:	902134-06
Date Analyzed:	02/14/19	Data File:	021424.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	MS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	57	121
Toluene-d8	107	63	127
4-Bromofluorobenzene	100	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	1.6
trans-1,2-Dichloroethene	<1	Bromoform	<1
1,1-Dichloroethane	<1	n-Propylbenzene	1.6
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		

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	KMW-10-020719	Client:	Wood Environment & Infrastructure Solutions
Date Received:	02/08/19	Project:	Kelly Moore 14697009
Date Extracted:	02/14/15	Lab ID:	902134-07
Date Analyzed:	02/14/19	Data File:	021425.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	MS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	57	121
Toluene-d8	106	63	127
4-Bromofluorobenzene	105	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	6.0
Hexane	<1	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	10
trans-1,2-Dichloroethene	<1	Bromoform	<1
1,1-Dichloroethane	<1	n-Propylbenzene	8.5
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		

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	KMW-10-9-020719	Client:	Wood Environment & Infrastructure Solutions
Date Received:	02/08/19	Project:	Kelly Moore 14697009
Date Extracted:	02/14/15	Lab ID:	902134-08
Date Analyzed:	02/14/19	Data File:	021426.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	MS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	57	121
Toluene-d8	104	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	6.1
Hexane	<1	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	9.1
trans-1,2-Dichloroethene	<1	Bromoform	<1
1,1-Dichloroethane	<1	n-Propylbenzene	7.5
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		

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	KMW-7-020819	Client:	Wood Environment & Infrastructure Solutions
Date Received:	02/08/19	Project:	Kelly Moore 14697009
Date Extracted:	02/14/15	Lab ID:	902134-09
Date Analyzed:	02/14/19	Data File:	021427.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	MS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	57	121
Toluene-d8	94	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		

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Trip Blanks	Client:	Wood Environment & Infrastructure Solutions
Date Received:	02/08/19	Project:	Kelly Moore 14697009
Date Extracted:	02/14/15	Lab ID:	902134-10
Date Analyzed:	02/14/19	Data File:	021429.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	MS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	57	121
Toluene-d8	103	63	127
4-Bromofluorobenzene	100	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		

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	Wood Environment & Infrastructure Solutions
Date Received:	Not Applicable	Project:	Kelly Moore 14697009
Date Extracted:	02/14/19	Lab ID:	09-0281 mb
Date Analyzed:	02/14/19	Data File:	021413.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	MS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	105	57	121
Toluene-d8	102	63	127
4-Bromofluorobenzene	103	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		

Date of Report: 02/18/19
Date Received: 02/08/19
Project: Kelly Moore 14697009, F&BI 902134

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 902134-04 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Gasoline	ug/L (ppb)	1,000	2,200	140 b	154 b	53-117	10

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Gasoline	ug/L (ppb)	1,000	103	69-134

Date of Report: 02/18/19
Date Received: 02/08/19
Project: Kelly Moore 14697009, F&BI 902134

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

Laboratory Code: 902134-04 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	ug/L (ppb)	3,000	19,000	140 b	0 b	64-141	200 b

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)	3,000	105	108	61-133	3

Date of Report: 02/18/19
Date Received: 02/08/19
Project: Kelly Moore 14697009, F&BI 902134

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR PAHS BY EPA METHOD 8270D SIM

Laboratory Code: 902134-04 1/2 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Naphthalene	ug/L (ppb)	1	<0.4	84	80	10-172	5
Acenaphthylene	ug/L (ppb)	1	28	26 b	2 b	38-137	171 b
Acenaphthene	ug/L (ppb)	1	0.71	49 b	53 b	20-150	8 b
Fluorene	ug/L (ppb)	1	0.36	49 b	50 b	10-181	2 b
Phenanthrene	ug/L (ppb)	1	<0.04	67	67	58-109	0
Anthracene	ug/L (ppb)	1	<0.04	70	71	47-114	1
Fluoranthene	ug/L (ppb)	1	0.11	71	77	10-171	8
Pyrene	ug/L (ppb)	1	0.15	65	74	63-107	13
Benz(a)anthracene	ug/L (ppb)	1	<0.04	53 vo	69	60-93	26 vo
Chrysene	ug/L (ppb)	1	<0.04	48 vo	62	60-102	25 vo
Benzo(b)fluoranthene	ug/L (ppb)	1	<0.04	45 vo	65	62-91	36 vo
Benzo(k)fluoranthene	ug/L (ppb)	1	<0.04	38 vo	67	51-98	55 vo
Benzo(a)pyrene	ug/L (ppb)	1	<0.04	42 vo	64	60-86	42 vo
Indeno(1,2,3-cd)pyrene	ug/L (ppb)	1	<0.04	34	60	10-98	55 vo
Dibenz(a,h)anthracene	ug/L (ppb)	1	<0.04	31	58	10-97	61 vo
Benzo(g,h,i)perylene	ug/L (ppb)	1	<0.04	31	54	10-102	54 vo

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Naphthalene	ug/L (ppb)	1	88	92	67-116	4
Acenaphthylene	ug/L (ppb)	1	100	103	65-119	3
Acenaphthene	ug/L (ppb)	1	98	102	66-118	4
Fluorene	ug/L (ppb)	1	99	107	64-125	8
Phenanthrene	ug/L (ppb)	1	88	89	67-120	1
Anthracene	ug/L (ppb)	1	91	96	65-122	5
Fluoranthene	ug/L (ppb)	1	88	97	65-127	10
Pyrene	ug/L (ppb)	1	96	92	62-130	4
Benz(a)anthracene	ug/L (ppb)	1	96	100	60-118	4
Chrysene	ug/L (ppb)	1	91	94	66-125	3
Benzo(b)fluoranthene	ug/L (ppb)	1	103	101	55-135	2
Benzo(k)fluoranthene	ug/L (ppb)	1	97	105	62-125	8
Benzo(a)pyrene	ug/L (ppb)	1	96	100	58-127	4
Indeno(1,2,3-cd)pyrene	ug/L (ppb)	1	104	105	36-142	1
Dibenz(a,h)anthracene	ug/L (ppb)	1	87	93	37-133	7
Benzo(g,h,i)perylene	ug/L (ppb)	1	90	97	34-135	7

Date of Report: 02/18/19
Date Received: 02/08/19
Project: Kelly Moore 14697009, F&BI 902134

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

Laboratory Code: 902134-04 (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	3.04	109	110	75-125	1
Chromium	ug/L (ppb)	20	2.00	88	89	75-125	1
Copper	ug/L (ppb)	20	19.4	86	89	75-125	3
Lead	ug/L (ppb)	10	2.04	101	102	75-125	1
Mercury	ug/L (ppb)	5	<1	114	117	75-125	3
Nickel	ug/L (ppb)	20	7.79	84	86	75-125	2
Zinc	ug/L (ppb)	50	135	96	101	75-125	5

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	ug/L (ppb)	10	100	80-120
Chromium	ug/L (ppb)	20	101	80-120
Copper	ug/L (ppb)	20	103	80-120
Lead	ug/L (ppb)	10	102	80-120
Mercury	ug/L (ppb)	5	116	80-120
Nickel	ug/L (ppb)	20	102	80-120
Zinc	ug/L (ppb)	50	105	80-120

Date of Report: 02/18/19
Date Received: 02/08/19
Project: Kelly Moore 14697009, F&BI 902134

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

Laboratory Code: 902134-04 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Dichlorodifluoromethane	ug/L (ppb)	50	<1	102	102	10-172	0
Chloromethane	ug/L (ppb)	50	<10	98	99	25-166	1
Vinyl chloride	ug/L (ppb)	50	<0.2	101	101	36-166	0
Bromomethane	ug/L (ppb)	50	<1	96	95	47-169	1
Chloroethane	ug/L (ppb)	50	<1	98	97	46-160	1
Trichlorofluoromethane	ug/L (ppb)	50	<1	105	101	44-165	4
Acetone	ug/L (ppb)	250	<50	83	83	10-182	0
1,1-Dichloroethene	ug/L (ppb)	50	<1	102	99	60-136	3
Hexane	ug/L (ppb)	50	<1	99	93	52-150	6
Methylene chloride	ug/L (ppb)	50	<5	106	109	67-132	3
Methyl t-butyl ether (MTBE)	ug/L (ppb)	50	<1	91	91	74-127	0
trans-1,2-Dichloroethene	ug/L (ppb)	50	<1	97	98	72-129	1
1,1-Dichloroethane	ug/L (ppb)	50	<1	100	94	70-128	6
2,2-Dichloropropane	ug/L (ppb)	50	<1	100	95	36-154	5
cis-1,2-Dichloroethene	ug/L (ppb)	50	<1	97	93	71-127	4
Chloroform	ug/L (ppb)	50	<1	96	89	65-132	8
2-Butanone (MEK)	ug/L (ppb)	250	<10	89	84	10-129	6
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	<1	102	99	69-133	3
1,1,1-Trichloroethane	ug/L (ppb)	50	<1	98	89	60-146	10
1,1-Dichloropropene	ug/L (ppb)	50	<1	98	95	69-133	3
Carbon tetrachloride	ug/L (ppb)	50	<1	100	96	56-152	4
Benzene	ug/L (ppb)	50	<0.35	98	95	76-125	3
Trichloroethene	ug/L (ppb)	50	<1	92	94	66-135	2
1,2-Dichloropropane	ug/L (ppb)	50	<1	88	95	78-125	8
Bromodichloromethane	ug/L (ppb)	50	<1	91	99	61-150	8
Dibromomethane	ug/L (ppb)	50	<1	87	94	66-141	8
4-Methyl-2-pentanone	ug/L (ppb)	250	<10	90	99	10-185	10
cis-1,3-Dichloropropene	ug/L (ppb)	50	<1	90	96	72-132	6
Toluene	ug/L (ppb)	50	<1	91	98	76-122	7
trans-1,3-Dichloropropene	ug/L (ppb)	50	<1	88	101	76-130	14
1,1,2-Trichloroethane	ug/L (ppb)	50	<1	97	101	68-131	4
2-Hexanone	ug/L (ppb)	250	<10	102	102	10-185	0
1,3-Dichloropropane	ug/L (ppb)	50	<1	99	98	71-128	1
Tetrachloroethene	ug/L (ppb)	50	<1	100	99	10-226	1
Dibromochloromethane	ug/L (ppb)	50	<1	107	106	70-139	1
1,2-Dibromoethane (EDB)	ug/L (ppb)	50	<1	101	101	69-134	0
Chlorobenzene	ug/L (ppb)	50	<1	95	95	77-122	0
Ethylbenzene	ug/L (ppb)	50	<1	99	95	69-135	4
1,1,1,2-Tetrachloroethane	ug/L (ppb)	50	<1	98	101	73-137	3
m,p-Xylene	ug/L (ppb)	100	<2	96	96	69-135	0
o-Xylene	ug/L (ppb)	50	<1	93	92	60-140	1
Styrene	ug/L (ppb)	50	<1	98	97	71-133	1
Isopropylbenzene	ug/L (ppb)	50	8.3	93	93	65-142	0
Bromoform	ug/L (ppb)	50	<1	107	106	65-142	1
n-Propylbenzene	ug/L (ppb)	50	12	108 b	103 b	58-144	5 b
Bromobenzene	ug/L (ppb)	50	<1	107	105	75-124	2
1,3,5-Trimethylbenzene	ug/L (ppb)	50	<1	103	98	66-137	5
1,1,2,2-Tetrachloroethane	ug/L (ppb)	50	<1	118	119	51-154	1
1,2,3-Trichloropropane	ug/L (ppb)	50	<1	108	104	53-150	4
2-Chlorotoluene	ug/L (ppb)	50	<1	106	99	66-127	7
4-Chlorotoluene	ug/L (ppb)	50	<1	105	99	65-130	6
tert-Butylbenzene	ug/L (ppb)	50	<1	98	95	65-137	3
1,2,4-Trimethylbenzene	ug/L (ppb)	50	<1	100	95	59-146	5
sec-Butylbenzene	ug/L (ppb)	50	1.2	98	100	64-140	2
p-Isopropyltoluene	ug/L (ppb)	50	<1	95	97	65-141	2
1,3-Dichlorobenzene	ug/L (ppb)	50	<1	97	98	72-123	1
1,4-Dichlorobenzene	ug/L (ppb)	50	<1	95	95	69-126	0
1,2-Dichlorobenzene	ug/L (ppb)	50	<1	96	94	69-128	2
1,2-Dibromo-3-chloropropane	ug/L (ppb)	50	<10	116	124	32-164	7
1,2,4-Trichlorobenzene	ug/L (ppb)	50	<1	106	105	66-136	1
Hexachlorobutadiene	ug/L (ppb)	50	<1	104	103	60-143	1
Naphthalene	ug/L (ppb)	50	<1	116	113	44-164	3
1,2,3-Trichlorobenzene	ug/L (ppb)	50	<1	108	108	69-148	0

Date of Report: 02/18/19
Date Received: 02/08/19
Project: Kelly Moore 14697009, F&BI 902134

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	Acceptance Criteria
Dichlorodifluoromethane	ug/L (ppb)	50	121	25-158
Chloromethane	ug/L (ppb)	50	112	45-156
Vinyl chloride	ug/L (ppb)	50	116	50-154
Bromomethane	ug/L (ppb)	50	110	55-143
Chloroethane	ug/L (ppb)	50	116	58-146
Trichlorofluoromethane	ug/L (ppb)	250	119	50-150
Acetone	ug/L (ppb)	250	93	53-131
1,1-Dichloroethene	ug/L (ppb)	50	116	67-136
Hexane	ug/L (ppb)	50	116	57-137
Methylene chloride	ug/L (ppb)	50	128	39-148
Methyl t-butyl ether (MTBE)	ug/L (ppb)	50	115	64-147
trans-1,2-Dichloroethene	ug/L (ppb)	50	122	68-128
1,1-Dichloroethane	ug/L (ppb)	50	122 vo	79-121
2,2-Dichloropropane	ug/L (ppb)	50	129	55-143
cis-1,2-Dichloroethene	ug/L (ppb)	50	119	80-123
Chloroform	ug/L (ppb)	50	114	80-121
2-Butanone (MEK)	ug/L (ppb)	250	97	57-149
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	101	73-132
1,1,1-Trichloroethane	ug/L (ppb)	50	108	83-130
1,1-Dichloropropene	ug/L (ppb)	50	106	77-129
Carbon tetrachloride	ug/L (ppb)	50	110	75-158
Benzene	ug/L (ppb)	50	101	69-134
Trichloroethene	ug/L (ppb)	50	96	80-120
1,2-Dichloropropane	ug/L (ppb)	50	98	77-123
Bromodichloromethane	ug/L (ppb)	50	96	81-133
Dibromomethane	ug/L (ppb)	50	93	82-125
4-Methyl-2-pentanone	ug/L (ppb)	250	89	65-138
cis-1,3-Dichloropropene	ug/L (ppb)	50	93	82-132
Toluene	ug/L (ppb)	50	100	72-122
trans-1,3-Dichloropropene	ug/L (ppb)	50	88	80-136
1,1,2-Trichloroethane	ug/L (ppb)	50	96	75-124
2-Hexanone	ug/L (ppb)	250	79	60-136
1,3-Dichloropropane	ug/L (ppb)	50	87	76-126
Tetrachloroethene	ug/L (ppb)	50	103	76-121
Dibromochloromethane	ug/L (ppb)	50	101	84-133
1,2-Dibromoethane (EDB)	ug/L (ppb)	50	88	82-125
Chlorobenzene	ug/L (ppb)	50	94	83-114
Ethylbenzene	ug/L (ppb)	50	103	77-124
1,1,1,2-Tetrachloroethane	ug/L (ppb)	50	114	84-127
m,p-Xylene	ug/L (ppb)	100	101	83-125
o-Xylene	ug/L (ppb)	50	105	81-121
Styrene	ug/L (ppb)	50	100	84-119
Isopropylbenzene	ug/L (ppb)	50	104	85-117
Bromoform	ug/L (ppb)	50	107	74-136
n-Propylbenzene	ug/L (ppb)	50	99	74-126
Bromobenzene	ug/L (ppb)	50	96	80-121
1,3,5-Trimethylbenzene	ug/L (ppb)	50	103	78-123
1,1,2,2-Tetrachloroethane	ug/L (ppb)	50	98	66-126
1,2,3-Trichloropropane	ug/L (ppb)	50	92	67-124
2-Chlorotoluene	ug/L (ppb)	50	101	77-127
4-Chlorotoluene	ug/L (ppb)	50	95	78-128
tert-Butylbenzene	ug/L (ppb)	50	104	80-123
1,2,4-Trimethylbenzene	ug/L (ppb)	50	104	79-122
sec-Butylbenzene	ug/L (ppb)	50	109	80-125
p-Isopropyltoluene	ug/L (ppb)	50	106	81-123
1,3-Dichlorobenzene	ug/L (ppb)	50	98	85-116
1,4-Dichlorobenzene	ug/L (ppb)	50	95	84-121
1,2-Dichlorobenzene	ug/L (ppb)	50	98	85-116
1,2-Dibromo-3-chloropropane	ug/L (ppb)	50	110	57-141
1,2,4-Trichlorobenzene	ug/L (ppb)	50	107	72-130
Hexachlorobutadiene	ug/L (ppb)	50	110	53-141
Naphthalene	ug/L (ppb)	50	112	64-133
1,2,3-Trichlorobenzene	ug/L (ppb)	50	111	65-136

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.

SAMPLE CHAIN OF CUSTODY

902134

ME 02-08-19

UW5/COS/1

Report To Crystal Thimsen

Company Wood

Address 600 University St #600

City, State, ZIP Seattle, WA 98101

Phone 781-724-1019 Email crystal.thimsen@woodplc.com

SAMPLERS (*signature*)

PROJECT NAME: Kelly Moore

PO #: 14697009

REMARKS

INVOICE TO

Page # _____ of _____

TURNAROUND TIME
- ☐ Standard Turnaround AL 4
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Dispose after 30 days
- ☐ Archive Samples
- ☐ Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM	Total Metals				Notes
						ANALYSES REQUESTED											
KMW-02R-020819	01A-	2/8/19	945	Water	9		X	X		X		X	X				
KMW-03R-020819	02	2/8/19	1140		9												
KMW-04-020719	03	2/7/19	1115		9												
KMW-06-020719	04	2/7/19	1340		19									#10 15/450 cm Metals			MS/MSD
KMW-08-020819	05	2/8/19	1040		9												
KMW-09-020719	06	2/7/19	1515		9												
KMW-10-020719	07	2/7/19	1245		9												
KMW-10-9-020719	08	2/7/19	1250		9												
KMW-7-020819	09	2/8/19	1220		9												
TRIP-BLANKS	10	—	—		6												

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Lucas Kerner	Wood	2/8/19	1407
Received by:	Liz Webber-Bruya	FTBI	2/8/19	1407
Relinquished by:				
Received by:		Samples received at 2 °C		

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282

Appendix C

SVE System Monthly Inspection Log. *Kelly Moore.* Date: 07-02-2019

Visual/Audio Inspection. Located at; 5400 Airport Way South Seattle, WA

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	y	
Control Pump (Regenerative Blower)	y	(On / Off)
Entrainment Pump (Transfer Pump)	y	(Auto / Hand / Off)
Pressure Gauges/Flow Meters	y	
Knockout Tank (record level)	y	% full 25%. Manual drain/Pumped to Tote.
Knockout Water Tote (record level)	y	% full 15%.
Dilution Valve Status	y	100% Closed
Recirculation Valve Status	y	100% Closed

* = System adjustments

CATOX Screen Readings

Item	Units	Reading	Operating Range
Hour Meter	H-M	2182.65	Hr - min
Catox In (T_1)	°F	639 °F	>650
Catox Out (T_2)	°F	612 °F	600 – 650
Heat Ex (T_3)	°F	361 °F	300 – 400
Flow	SCFM	154 CFM	<300
LEL	%	2	5-15

System Gauge Readings

* To 16.5 "WC

Item	Units	Reading
FE – 1	"WC	13.5 "WC
PI – 1	"WC (vacuum)	3.9 "WC
TI – 1	°F	62 F
FE-2	"WC	0 "WC

0920. Bump Test FID - 97. PPM From 100 ppm Hexane

FID Measurements

Location	Time	FID Reading (ppm)	Valve Position (record notch)	Vacuum ("WC)	Differential Pressure ("WC)
Western Manifold	1026-Hrs	38.4 PPM			
* SVE – 13	1024-Hrs	58.0 PPM	7 TO 3 TO 4	4.50" WC	0.060 "WC
* SVE – 12	1022 HRS	52.9 PPM	7 TO 3 TO 4	7.00 "WC	0.006 "WC
* SVE – 11	1020 Hrs	23.8 PPM	7 TO 3 TO 4	5.00 "WC	~~4.735 "WC~~ 0.093 "WC G-41.
* SVE – 10	1018 Hrs	69.5 PPM	~~7~~ TO 3 TO 4	7.25 "WC	0.009 "WC
* SVE – 09	1017 Hrs	15.9 PPM	4 TO 3	4.25 "WC	0.22 "WC
Eastern manifold	1105 Hrs	154.0 PPM			
SVE - 01	1106 Hrs	4.5 PPM	2	0.50 "WC	0.0 "WC
* SVE – 03	1108 Hrs	213.0 PPM	3 TO 7	6.75 "WC	0.08 "WC
* SVE – 05	1110 HRS	457.0 PPM	4 TO 7	7.00 "WC	0.012 "WC
SVE – 07	1112 HRS	5.7 PPM	2	7.75 "WC	0.005 "WC
SVE – 08	1113 HRS	0.3 PPM	2	7.50 "WC	0.001 "WC
SVE – 06	1115 HRS	0.0 PPM	2	2.00 "WC	0.001 "WC
SVE – 04	1117 HRS	30.3 PPM	2	2.00 "WC	0.001 "WC
SVE – 02	1118 HRS	0.0 PPM	2	4.50 "WC	0.002 "WC
SVE Influent	0939 Hrs	53.00 PPM			
SVE Effluent	0937 Hrs	0.0 PPM			

Influent Sample ID: 070219-INF
Influent Sample Time: 0951-HRS

Effluent Sample ID: 070219-EFF
Effluent Sample Time: 0942-HRS

Field Representative (Print and Sign): George Hagan Date of Visit: 07-02-19

* = System adjustments

FID VALUES AFTER ADJUSTMENTS
EFF 1.6 PPM - INF - 150.0 PPM

AS System Monthly Inspection Log, *Kelly Moore.* Date: 07-02-2019

Visual/Audio Inspection

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	Y	
Regenerative Blower	Y	(Auto) / Hand / Off)
Heat Exchanger	Y	(Auto) / Hand / Off)
Pressure Gauges/Flow Meters	Y	
Vent Valve Status	Y	open 75%, ADJUSTED TO 60% open

System Gauge Readings

Before Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Sparge Blower	Hour's / Minutes	832.7	H-M
PI – 3	psi	5.25 PSI	0 - 30
TI – 3	°F	173°F	150 – 200

After Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Heat Exchanger	Hour's / Minutes	833.1	H - M
PI – 4	psi	4.5 PSI	0 - 30
TI – 4	°F	80°F	150 – 200

Air Flow Monitoring

Location	Time	Valve Position (record appx angle)	Pressure (psi)	Air Flow (SCFM)
AS – 1 *	0916 Hrs	30% open TO 40%	3.0 PSI	9.0 TO 11.0
AS – 2 *	0916 Hrs	30%, open TO 40%	2.5 PSI	9.0 TO 11.0
AS – 3 *	0917 Hrs	30%, open TO 45%	3.0 PSI	11.25 TO 13.5
AS – 4 *	0917 Hrs	30%. open TO 35%	3.0 PSI	10.0 TO 12.0
AS – 5 *	0917 Hrs	30%, open TO 35%	2.5 PSI	10.0 TO 12.0

Additional Notes.

See Log Book With Todays date.

LEL CALIBRATED, CONFIRMED ZERO & SETTING AND 25% LEL SETTING

Field Representative (Print and Sign): George Hagan Date of Visit: 07-02-19

* = System adjustments

SVE System Monthly Inspection Log. *Kelly Moore.* Date: 07-25-19

Visual/Audio Inspection. Located at; 5400 Airport Way South Seattle, WA

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	Y	
Control Pump (Regenerative Blower)	Y	(On) / Off)
Entrainment Pump (Transfer Pump)	Y	(Auto) / Hand / Off)
Pressure Gauges/Flow Meters	Y	
Knockout Tank (record level)	Y	% full 1-% Full Removed 15 gal
Knockout Water Tote (record level)	Y	% full 12% Full @ 50 gal
Dilution Valve Status	Y	
Recirculation Valve Status	Y	

CATOX Screen Readings

Item	Units	Reading	Operating Range
Hour Meter	H-M	2716	Hrs
Catox In (T_1)	°F	624	>650
Catox Out (T_2)	°F	638	600 – 650
Heat Ex (T_3)	°F	379	300 – 400
Flow	SCFM	N.M.	<300
LEL	%	2	5-15

System Gauge Readings

Not Measured

Item	Units	Reading
FE – 1	"WC	~~14.5" H_2O~~ gly
PI – 1	"WC (vacuum)	14.5" H_2O
TI – 1	°F	73°F
FE-2	"WC	0.4" H_2O

FID Measurements

Location	Time	FID Reading (ppm)	Valve Position (record notch)	Vacuum ("WC)	Differential Pressure ("WC)
Western Manifold					
SVE – 13	Alarm	Response –	No Measurements Taken		
SVE – 12					
SVE – 11					
SVE – 10					
SVE – 09					
Eastern manifold					
SVE - 01					
SVE – 03					
SVE – 05					
SVE – 07					
SVE – 08					
SVE – 06					
SVE – 04					
SVE – 02					
SVE Influent					
SVE Effluent					

Influent Sample ID: N/A
Influent Sample Time: —

Effluent Sample ID: N/A
Effluent Sample Time: —

Field Representative (Print and Sign): George Hagan Date of Visit: 07-25-19

AS System Monthly Inspection Log, *Kelly Moore.* Date: 07-25-19

Visual/Audio Inspection

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	y	
Regenerative Blower	y	(Auto / Hand / Off)
Heat Exchanger	y	(Auto / Hand / Off)
Pressure Gauges/Flow Meters	y	
Vent Valve Status	y	Approx 60% open

System Gauge Readings

Before Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Sparge Blower	Hour's / Minutes	1365	
PI – 3	psi	4.5	0 - 30
TI – 3	°F	182°F	150 – 200

After Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Heat Exchanger	Hour's / Minutes	1366.2	
PI – 4	psi	2.4	0 - 30
TI – 4	°F	97°F	150 – 200

Air Flow Monitoring

Location	Time	Valve Position (record appx angle)	Pressure (psi)	Air Flow (SCFM)
AS – 1	1700 - Hrs	Approx - 40% open	2.75	12.00
AS – 2		40% open	2.40	12.75
AS – 3		40% open	3.00	13.50
AS – 4		35% open	3.00	12.50
AS – 5		45% open	2.40	11.50

Additional Notes.

Alarm Response: System off @ arrival, No indication as of why from the Control panel. I suspect a power bump due to the high Heat and the electrical use in the area.

System operational @ my departure.

Field Representative (Print and Sign): George Hogan Date of Visit: 07-25-19

SVE System Monthly Inspection Log. *Kelly Moore.* Date: 8-5-2019

Visual/Audio Inspection. Located at; 5400 Airport Way South Seattle, WA

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	yes	
Control Pump (Regenerative Blower)	yes	(On) / Off)
Entrainment Pump (Transfer Pump)	yes	(Auto) / Hand / Off)
Pressure Gauges/Flow Meters	yes	
Knockout Tank (record level)	yes	% full 3%
Knockout Water Tote (record level)	yes	% full 15% @ 53 gal
Dilution Valve Status	yes	closed 100%
Recirculation Valve Status	yes	closed 100%

CATOX Screen Readings

Item	Units	Reading	Operating Range
Hour Meter	H-M	29666.	Hrs
Catox In (T_1)	°F	614 °F	>650
Catox Out (T_2)	°F	659 °F	600 – 650
Heat Ex (T_3)	°F	386 °F	300 – 400
Flow	SCFM	No Measurement	<300
LEL	%	- 8	5-15

System Gauge Readings

Item	Units	Reading
FE – 1	"WC	No Measurement
PI – 1	"WC (vacuum)	14.5" H_2O
TI – 1	°F	68 °F
FE-2 *	"WC	0.05" H_2O

* Pulled + Cleaned the FE-2 Airflow Pitot Tube, Airflow being recorded @ 1.45" H_2O

FID Measurements

Location	Time	FID Reading (ppm)	Valve Position (record notch)	Vacuum ("WC)	Differential Pressure ("WC)
Western Manifold					
SVE – 13					
SVE – 12	No Measurements today. Alarm Response, System Restart.				
SVE – 11					
SVE – 10					
SVE – 09					
Eastern manifold					
SVE - 01					
SVE – 03					
SVE – 05					
SVE – 07					
SVE – 08					
SVE – 06					
SVE – 04					
SVE – 02					
SVE Influent					
SVE Effluent					

Influent Sample ID: N/A
Influent Sample Time: _____

Effluent Sample ID: N/A
Effluent Sample Time: _____

Field Representative (Print and Sign): George Hagen Date of Visit: 08-05-2019

AS System Monthly Inspection Log, *Kelly Moore.* Date: 08/05/2019

Visual/Audio Inspection

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	yes	
Regenerative Blower	yes	(Auto) / Hand / Off)
Heat Exchanger	yes	(Auto) / Hand / Off)
Pressure Gauges/Flow Meters	yes	
Vent Valve Status	yes	open 60% ?

System Gauge Readings

Before Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Sparge Blower	Hour's / Minutes	1616.3	Hr - Mi
PI – 3	psi	4.5 PSI	0 - 30
TI – 3	°F	174 F	150 – 200

After Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Heat Exchanger	Hour's / Minutes	1616.7	H . M.
PI – 4	psi	~~GAGE~~ 3.25 PSI	0 - 30
TI – 4	°F	91 F	150 – 200

Air Flow Monitoring

Location	Time	Valve Position (record appx 0=open angle)	Pressure (psi)	Air Flow (SCFM)
AS – 1	1127 Hrs	0 - 40%	2.75	12.00
AS – 2		0 - 40%	2.5	13.00
AS – 3		0 - 40%	3.0	13.25
AS – 4		0 - 35%	3.0	12.50
AS – 5		0 - 45%	2.5	11.00

Additional Notes.

Alarm Response, System off @ My arrival, HHLL @ H_2O K.O. Tank indicated on Panel. L.L. @ K.O. Tank @ 3% full & Tote approx 15% Full. Proved HHLL Float + Transfer pump @ K.O. Tank. Restarted The System + Monitored. Changed Paper in chart recorder - it was empty. Pulled FEZ airflow Pitot Tube, Cleaned & drained Moisture, Recorded data, Housekeeping & ~~Weed~~ Weed removal done. All operational @ my departure.

Field Representative (Print and Sign): George Hoagan Date of Visit: 8/5/19

SVE System Monthly Inspection Log. *Kelly Moore.* Date: 8.8.19

Visual/Audio Inspection. Located at; 5400 Airport Way South Seattle, WA

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	Y	
Control Pump (Regenerative Blower)	Y	(On) / Off)
Entrainment Pump (Transfer Pump)	Y	(Auto) / Hand / Off)
Pressure Gauges/Flow Meters	Y	
Knockout Tank (record level)	Y	% full 1%
Knockout Water Tote (record level)	Y	% full 16% @ 60 gal
Dilution Valve Status	Y	
Recirculation Valve Status	Y	

CATOX Screen Readings

Item	Units	Reading	Operating Range
Hour Meter	H-M	3023.58 @ 1005 Hrs	
Catox In (T_1)	°F	612	>650
Catox Out (T_2)	°F	666	600 – 650
Heat Ex (T_3)	°F	389	300 – 400
Flow	SCFM	Not Measured	<300
LEL	%	9	5-15

System Gauge Readings

Item	Units	Reading
FE – 1	"WC	Not Measured
PI – 1	"WC (vacuum)	14.5
TI – 1	°F 68	68
FE-2	"WC	1.2"

FID Measurements

Alarm responce, System off @ my arrival, Restarted with out issue.

Location	Time	FID Reading (ppm)	Valve Position (record notch)	Vacuum ("WC)	Differential Pressure ("WC)
Western Manifold					
SVE – 13	No Measurements				
SVE – 12					
SVE – 11					
SVE – 10					
SVE – 09					
Eastern manifold					
SVE - 01					
SVE – 03					
SVE – 05					
SVE – 07					
SVE – 08					
SVE – 06					
SVE – 04					
SVE – 02					
SVE Influent					
SVE Effluent					

Influent Sample ID: N/A
Influent Sample Time: —

Effluent Sample ID: N/A
Effluent Sample Time: —

Field Representative (Print and Sign): George Horgan Date of Visit: 8/8/19

AS System Monthly Inspection Log, *Kelly Moore.* Date: 8-8-19

Visual/Audio Inspection

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	Y	
Regenerative Blower	Y	(Auto) / Hand / Off)
Heat Exchanger	Y	(Auto) / Hand / Off)
Pressure Gauges/Flow Meters	Y	
Vent Valve Status	Y	open Approx 60'/.

System Gauge Readings

Before Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Sparge Blower	Hour's / Minutes	1672.4 @1004 Hrs	
PI – 3	psi	4.5	0 - 30
TI – 3	°F	165	150 – 200

After Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Heat Exchanger	Hour's / Minutes	1672.8 @1004 Hrs	
PI – 4	psi	4	0 - 30
TI – 4	°F	84	150 – 200

Air Flow Monitoring

Location	Time	Valve Position (record appx angle)	Pressure (psi)	Air Flow (SCFM)
AS – 1	1030	35'/. 0	2.75	12
AS – 2	"	35'/. 0	2.50	12.5
AS – 3	"	40'/. 0	3.0	13.25
AS – 4	"	45'/. 0	3.0	12.50
AS – 5	"	40'/. 0	2.5	12.0

Additional Notes.

Alarm response, System off @ my arrival. no obvious reason, The System restarted with out issue. Replaced ink cartidge for chart Paper. Monitored operation's, all appears normal @ my departure - O.J @ 1035-Hrs

Field Representative (Print and Sign): George Keegan Date of Visit: 8/8/19

SVE System Monthly Inspection Log. *Kelly Moore.* Date: 8-16-19

Visual/Audio Inspection. Located at; 5400 Airport Way South Seattle, WA

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	y	
Control Pump (Regenerative Blower)	y	(On) / Off)
Entrainment Pump (Transfer Pump)	y	(Auto) / Hand / Off)
Pressure Gauges/Flow Meters	y	
Knockout Tank (record level)	y	% full 0% Full
Knockout Water Tote (record level)	y	% full 18% Full @ 70 Gal - +10gal in 11-days.
Dilution Valve Status	y	
Recirculation Valve Status	y	

CATOX Screen Readings

Item	Units	Reading	Operating Range
Hour Meter	H-M	3148.1	@1000 Hrs.
Catox In (T_1)	°F	632	>650
Catox Out (T_2)	°F	687	600 – 650
Heat Ex (T_3)	°F	404	300 – 400
Flow	SCFM	Not Measured	<300
LEL	%	- 2	5-15

System Gauge Readings

Item	Units	Reading
FE – 1	"WC	Not measured
PI – 1	"WC (vacuum)	14.50" H_2O ~~weigh~~
TI – 1	°F	68°F
FE-2	"WC	1.60 " H_2O

FID Measurements

Location	Time	FID Reading (ppm)	Valve Position (record notch)	Vacuum ("WC)	Differential Pressure ("WC)
Western Manifold					
SVE – 13	Alarm Response, No Data Collected Today.				
SVE – 12					
SVE – 11					
SVE – 10					
SVE – 09					
Eastern manifold					
SVE - 01					
SVE – 03					
SVE – 05					
SVE – 07					
SVE – 08					
SVE – 06					
SVE – 04					
SVE – 02					
SVE Influent					
SVE Effluent					

Influent Sample ID: N/A
Influent Sample Time: —

Effluent Sample ID: N/A
Effluent Sample Time: —

Field Representative (Print and Sign): George Hergan Date of Visit: 8-16-19

AS System Monthly Inspection Log, *Kelly Moore.* Date: 8-16-19

Visual/Audio Inspection

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	y	
Regenerative Blower	y	(Auto) / Hand / Off)
Heat Exchanger	y	(Auto) / Hand / Off)
Pressure Gauges/Flow Meters	y	
Vent Valve Status	y	

System Gauge Readings

Before Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Sparge Blower	Hour's / Minutes	1796.3	@1000 Hrs
PI – 3	psi	4.5	0 - 30
TI – 3	°F	163	150 – 200

After Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Heat Exchanger	Hour's / Minutes	1796:7	@1000 Hrs
PI – 4	psi	3.5	0 - 30
TI – 4	°F	86	150 – 200

Air Flow Monitoring

Location	Time	Valve Position (record appx angle)	Pressure (psi)	Air Flow (SCFM)
AS – 1	1111-Hrs	35%.0	2.75	12.25
AS – 2		35%.0	2.40	13.00
AS – 3		40%.0	3.00	13.00
AS – 4		45%.0	3.00	12.50
AS – 5		45%.0	2.50	12.00

Additional Notes. ALARM RESPONSE. I.O. ENV on site from 0630 to approx 0800, they were unable to Restart system. SYS OFF @ my ARRIVAL. TROUBLE SHOT, FOUND THERMAL PROTECTION TRIPPED ON SVE DRIVE MOTOR START UP COIL. RESET, STARTED SYSTEM, MONITORED AMP's, MOTOR PULLING 27 AMPS ACCROSS EACH LEG. COIL SET @ 23.5 AMP's. ADJUSTED COIL TO 27 AMP's. MONITORING OP's, RECORDING DRIVE MOTOR AMP's EVERY 0.5-HRS. AMP's STABLE FROM 25.5 TO 27.5 - THIS APPEARS NORMAL FOR THE DRIVE MOTOR BASED ON THE DATA PLATE ON THE MOTOR. PULLED & CLEANED THE FE2 PITOT TUBE. LEL METER IS BAD, NOT HOLDING CALIBRATION, RECORDED DATA, OUT @ 1130 Hrs

Field Representative (Print and Sign): George Hogan Date of Visit: 08-16-2019

ALL OP's APPEAR NORMAL @ my DEPARTURE.

SVE System Monthly Inspection Log. *Kelly Moore.* Date: 08-07-2019

Visual/Audio Inspection. Located at; 5400 Airport Way South Seattle, WA

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	Y	
Control Pump (Regenerative Blower)	Y	(On) / Off)
Entrainment Pump (Transfer Pump)	Y	(Auto) / Hand / Off)
Pressure Gauges/Flow Meters	Y	
Knockout Tank (record level)	Y	% full 8 %. Full @ 8,5 gal -
Knockout Water Tote (record level)	Y	% full 13 %. Full @ 53 gal
Dilution Valve Status	Y	
Recirculation Valve Status	Y	

CATOX Screen Readings

Item	Units	Reading	Operating Range
Hour Meter	H-M	3012.76	Hrs ^ Mins
Catox In (T_1)	°F	617 °F	>650
Catox Out (T_2)	°F	653 °F	600 – 650
Heat Ex (T_3)	°F	388 °F	300 – 400
Flow	SCFM	~~660 CFM~~ 371 CFM	OK <300
LEL	%	~~8~~ 7	5-15

AFTER LEL CALIBRATION THE VALUE IS 7.

System Gauge Readings

Item	Units	Reading
FE – 1	"WC	3,70" H_2O
PI – 1	"WC (vacuum)	14,50" H_2O Vac
TI – 1	°F	66 °F
FE-2	"WC	1.5 "WC-Flow

FID Measurements

FID Bump Test @ 0820 Hrs 101.8 ppm

Location	Time	FID Reading (ppm)	Valve Position (record notch)	Vacuum ("WC)	Differential Pressure ("WC)
Western Manifold	0914-Hrs	78,50 PPM			
SVE – 13	0920-Hrs	60,60 PPM	3	3.5 "WC	0,034 "WC
SVE – 12	0922-Hrs	139,10 PPM	4	8.5 "WC	0,022 "WC
SVE – 11	0924-Hrs	38,40 PPM	4	3.5 "WC	0,049 "WC
SVE – 10	0926-Hrs	136,00 PPM	4	8,25 "WC	0,006 "WC
SVE – 09	0928-Hrs	66,00 PPM	4	3,50 "WC	0,018 "WC
Eastern manifold	1011-Hrs	270,00 PPM			
SVE - 01	1013-Hrs	5,40 PPM	2	0,50 "WC	0,003 "WC
SVE – 03	1015-Hrs	378,00 PPM	7	6,50 "WC	0,024 "WC
SVE – 05	1017-Hrs	715,00 PPM	7	7,00 "WC	0,021 "WC
SVE – 07	1019-Hrs	16,40 PPM	2	8,50 "WC	0,010 "WC
SVE – 08	1021-Hrs	5,70 PPM	2	8,00 "WC	0,003 "WC
SVE – 06	1023-Hrs	1,90 PPM	2	2,00 "WC	0,004 "WC
SVE – 04	1025-Hrs	49,50 PPM	2	2,00 "WC	0,004 "WC
SVE – 02	1028-Hrs	5,80 PPM	2	2,50 "WC	0,004 "WC
SVE Influent	0834	149,3 PPM			
SVE Effluent	0831	0,0 PPM			

Influent Sample ID: INF-080719
Influent Sample Time: 0846-Hrs.

Effluent Sample ID: EFF-080719
Effluent Sample Time: 0840-Hrs

Field Representative (Print and Sign): George Hagan Date of Visit: 08/07/2019

LEL CALIBRATED. ZERO SPAN WAS OFF BY ~~-15~~ - 176.4 DC VOLTS. ADJUSTED ZERO SPAN TO ZERO.

AS System Monthly Inspection Log, *Kelly Moore.* Date: 08-07-2019

Visual/Audio Inspection

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	Y	
Regenerative Blower	Y	(Auto) / Hand / Off)
Heat Exchanger	Y	(Auto) / Hand / Off)
Pressure Gauges/Flow Meters	Y	
Vent Valve Status	Y	open approx. 60%.

System Gauge Readings

Before Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Sparge Blower	Hour's / Minutes	1662.1	hh - min
PI – 3	psi	4.5 PSI	0 - 30
TI – 3	°F	160 °F	150 – 200

After Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Heat Exchanger	Hour's / Minutes	1662.5	hh - min
PI – 4	psi	4.5 PSI	0 - 30
TI – 4	°F	79 °F	150 – 200

Air Flow Monitoring

Location	Time	Valve Position (record appx angle)	Pressure (psi)	Air Flow (SCFM)
AS – 1	0910 - Hrs	40 % open	2.75	12.0
AS – 2	"	40 % open	2.50	11.75
AS – 3	"	40 % open	3.00	13.00
AS – 4	"	45 % open	3.00	12.95
AS – 5	"	45 % - open	2.50	12.00

Additional Notes.

All operational Conf arrival, I screened the influent + Effluent Vapor streams via FID, then I collected the August 2019 systems Vapor samples. I recorded system's data, I recorded the West then East Manifold data. I Pulled + Cleaned the system air flows Pitot tube, Valves was @ zero. I Calibrated the LEL sensor, the Zero pod is not holding Zero. I made no adjustments to the system. @ 1230 Hrs I secured + departed the site for WOOD's Seattle office to drop off System Vapor samples + the FID Rental.

Field Representative (Print and Sign): Corey Hogan Date of Visit: 08/07/2019

SVE System Monthly Inspection Log. *Kelly Moore.* Date: 8/19/19

Visual/Audio Inspection. Located at; 5400 Airport Way South Seattle, WA

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	System	
Control Pump (Regenerative Blower)	off	(On / Off)
Entrainment Pump (Transfer Pump)		(Auto / Hand / Off)
Pressure Gauges/Flow Meters		
Knockout Tank (record level)		% full
Knockout Water Tote (record level)		% full
Dilution Valve Status		
Recirculation Valve Status		

CATOX Screen Readings

Item	Units	Reading	Operating Range
Hour Meter	H-M	N/A	
Catox In (T_1)	°F		>650
Catox Out (T_2)	°F		600 – 650
Heat Ex (T_3)	°F		300 – 400
Flow	SCFM		<300
LEL	%		5-15

System Gauge Readings

Item	Units	Reading
FE – 1	"WC	N/A
PI – 1	"WC (vacuum)	
TI – 1	°F	
FE-2	"WC	

SVE Hr Meter @ 3220 Hrs @ 1330.

FID Measurements

Location	Time	FID Reading (ppm)	Valve Position (record notch)	Vacuum ("WC)	Differential Pressure ("WC)
Western Manifold					
SVE – 13					
SVE – 12					
SVE – 11					
SVE – 10					
SVE – 09					
Eastern manifold					
SVE - 01					
SVE – 03					
SVE – 05					
SVE – 07					
SVE – 08					
SVE – 06					
SVE – 04					
SVE – 02					
SVE Influent					
SVE Effluent					

Influent Sample ID: N/A
Influent Sample Time: ____

Effluent Sample ID: N/A
Effluent Sample Time: ____

Field Representative (Print and Sign): George Hogan Date of Visit: 8/19/19

See Page 2 of 2 for Notes.

AS System Monthly Inspection Log, *Kelly Moore.* Date: 8/19/19

Visual/Audio Inspection

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	System off	
Regenerative Blower		(Auto / Hand / Off)
Heat Exchanger		(Auto / Hand / Off)
Pressure Gauges/Flow Meters		
Vent Valve Status		

System Gauge Readings

Before Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Sparge Blower	Hour's / Minutes	N/A	
PI – 3	psi		0 - 30
TI – 3	°F		150 – 200

After Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Heat Exchanger	Hour's / Minutes	N/A	
PI – 4	psi		0 - 30
TI – 4	°F		150 – 200

Air Flow Monitoring

Location	Time	Valve Position (record appx angle)	Pressure (psi)	Air Flow (SCFM)
AS – 1				
AS – 2				
AS – 3				
AS – 4				
AS – 5				

Additional Notes.

System off, found a 40 amp fuse for the drive Motor blown. I.O. Environmental to respond to the site with an ~~electrical~~ electrician.

Field Representative (Print and Sign): George Hogan Date of Visit: 8/19/19

SVE System Monthly Inspection Log. *Kelly Moore.* Date: 3/21/2019

Visual/Audio Inspection. Located at; 5400 Airport Way South Seattle, WA

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	Y	
Control Pump (Regenerative Blower)	Y	(On) / Off)
Entrainment Pump (Transfer Pump)	Y	(Auto) / Hand / Off)
Pressure Gauges/Flow Meters	Y	
Knockout Tank (record level)	Y	% full 0%
Knockout Water Tote (record level)	Y	% full 18%. Full @ 70 gal
Dilution Valve Status	Y	
Recirculation Valve Status	Y	

CATOX Screen Readings

Item	Units	Reading	Operating Range
Hour Meter	H-M	3221.96	H. M. C1025Hr
Catox In (T_1)	°F	653	>650
Catox Out (T_2)	°F	687	600 – 650
Heat Ex (T_3)	°F	405	300 – 400
Flow	SCFM	No Measurement	<300
LEL	%	~ 3	5-15

System Gauge Readings

Item	Units	Reading
FE – 1	"WC	Not Measured
PI – 1	"WC (vacuum)	15.5 "H2O
TI – 1	°F	66° F
FE-2	"WC	1.4 "WC

FID Measurements

Location	Time	FID Reading (ppm)	Valve Position (record notch)	Vacuum ("WC)	Differential Pressure ("WC)
Western Manifold					
SVE – 13	System	Restart today - No data collected			
SVE – 12					
SVE – 11					
SVE – 10					
SVE – 09					
Eastern manifold					
SVE - 01					
SVE – 03					
SVE – 05					
SVE – 07					
SVE – 08					
SVE – 06					
SVE – 04					
SVE – 02					
SVE Influent					
SVE Effluent					

Influent Sample ID: N/A
Influent Sample Time: —

Effluent Sample ID: N/A
Effluent Sample Time: —

Field Representative (Print and Sign): George Hagan Date of Visit: 9.21.2019 gh

AS System Monthly Inspection Log, *Kelly Moore.* Date: 8-21-19

Visual/Audio Inspection

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	Y	
Regenerative Blower	Y	(Auto) / Hand / Off)
Heat Exchanger	Y	(Auto) / Hand / Off)
Pressure Gauges/Flow Meters	Y	
Vent Valve Status	Y	60% open

System Gauge Readings

Before Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Sparge Blower	Hour's / Minutes	1869.8 H.M	@1025 Hrs
PI – 3	psi	4.5	0 - 30
TI – 3	°F	~~4.5~~ 163°F	150 – 200

After Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Heat Exchanger	Hour's / Minutes	1870.2 H.M	@1025 Hrs
PI – 4	psi	3.5	0 - 30
TI – 4	°F	84°F	150 – 200

Air Flow Monitoring

Location	Time	Valve Position (record appx angle)	Pressure (psi)	Air Flow (SCFM)
AS – 1	1030 Hrs	0 - 90%	2.75	12.00
AS – 2		0 - 40%	2.25	12.75
AS – 3		0 - 45%	3.0	13.00
AS – 4		0 - 45%	2.75	12.75
AS – 5		0 - 45%	2.5	12.00

O = open

Additional Notes.

On site @ 0745 Hrs. Nate with E.O. Env on site, Benny with Keltally Ele on Site @ 0805 Hrs. Nate has tightened Blower Drive Belt & Greased Motor. Benny Replaced 3 - 40 Amp Fuses. Confirmed Drive Motor, Voltage, Amperage is working correctly. System Restart @ 0900 Hrs. I monitored op's and Recorded System's Data. All operations appear Normal @ my departure @ 1100 Hrs

Field Representative (Print and Sign): George Hogan Date of Visit: 8-21-19

SVE System Monthly Inspection Log. *Kelly Moore.* Date: 9-4-2019

Visual/Audio Inspection. Located at; 5400 Airport Way South Seattle, WA

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	Y	
Control Pump (Regenerative Blower)	Y	(On / Off)
Entrainment Pump (Transfer Pump)	Y	(Auto / Hand / Off)
Pressure Gauges/Flow Meters	Y	
Knockout Tank (record level)	Y	% full 50%. Full @ 20 gal - PUMPED TO TOTE.
Knockout Water Tote (record level)	Y	% full 20%, Full @ 80 gal
Dilution Valve Status	Y	
Recirculation Valve Status	Y	

CATOX Screen Readings

Item	Units	Reading	Operating Range
Hour Meter	H-M	35603 Hr	@ 16 Hrs/day
Catox In (T_1)	°F	N/A	>650
Catox Out (T_2)	°F		600 – 650
Heat Ex (T_3)	°F		300 – 400
Flow	SCFM		<300
LEL	%		5-15

System Gauge Readings

Item	Units	Reading
FE – 1	"WC	N/A
PI – 1	"WC (vacuum)	
TI – 1	°F	
FE-2	"WC	

FID Measurements

FID Bump Test @ 0900 – 99.4
@ 1145 – 99.0
Recalibrated FID @ 1429 Avg 99.9 ppm
FID Bump Test @ 1550 Avg 100.1 ppm

Location	Time	FID Reading (ppm)	Valve Position (record notch)	Vacuum ("WC)	Differential Pressure ("WC)
Western Manifold					
SVE – 13	NO SAMPLES OR DATA COLLECTED TODAY,				
SVE – 12		THE THERMAL VOC DESTRUCTION IS VERY LOW			
SVE – 11					
SVE – 10					
SVE – 09					
Eastern manifold					
SVE - 01					
SVE – 03					
SVE – 05					
SVE – 07					
SVE – 08					
SVE – 06					
SVE – 04					
SVE – 02					
SVE Influent	1546	348 ppm			
SVE Effluent	1545	248 PPM			

Influent Sample ID: N/A
Influent Sample Time: —

Effluent Sample ID: N/A
Effluent Sample Time: —

Field Representative (Print and Sign): George Hagen Date of Visit: 9-4-2019

Set Point Temp increased from 650°F To 700°F @ 1141

AS System Monthly Inspection Log, *Kelly Moore.* Date: 9-4-2019

Visual/Audio Inspection

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	Y	
Regenerative Blower	Y	(Auto) / Hand / Off)
Heat Exchanger	Y	(Auto) / Hand / Off)
Pressure Gauges/Flow Meters	Y	
Vent Valve Status	Y	

System Gauge Readings

Before Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Sparge Blower	Hour's / Minutes	2208.4	@1600 Hrs
PI – 3	psi	N/A	0 - 30
TI – 3	°F		150 – 200

After Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Heat Exchanger	Hour's / Minutes	2209.4	@1600 Hrs
PI – 4	psi	N/A	0 - 30
TI – 4	°F		150 – 200

Air Flow Monitoring

Location	Time	Valve Position (record appx angle)	Pressure (psi)	Air Flow (SCFM)
AS – 1	System shut down @ 1600 -		Due to poor VOC destruction.	
AS – 2				
AS – 3				
AS – 4				
AS – 5				

Additional Notes.

System operational @ my arrival. On site for September 2019 Vapor sampling. Screened Eff & Inf Vapor Streams Via FID. 125-EFF, 230ppm INF. VOC distruction Very low. Pulled air flow Pitot Tube & Cleaned. Recalibrated LEL Increased op Temp Room 650 to 750'F Measured VOC's EFF 143ppm INF 227ppm. shut down SVE & allowed to Cool. Inspected Catalist & Took Video, appears O.K. Set Temp @ 800'F to Clean Run - 1Hr & Restarted Vapor Streams @1500. EFF - 248 ppm – INF 348 ppm. Distruction Very Low, shut Down System @1600 Hrs

Field Representative (Print and Sign) George Hagan Date of Visit: 9-4-2019

SVE System Monthly Inspection Log. *Kelly Moore.* Date: 01-09-2020

Visual/Audio Inspection. Located at; 5400 Airport Way South Seattle, WA

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	Yes	VAC GAUGES (2 of 3) @ MANIFOLD ARE DAMAGED NOT WORKING - PIPE + VALVES OK
Control Pump (Regenerative Blower)	YES	(On / Off) ON.
Entrainment Pump (Transfer Pump)	YES	(Auto / Hand / Off) AUTO
Pressure Gauges/Flow Meters	YES	VAC GAUGES @ MANIFOLDS HAVE ISSUES
Knockout Tank (record level)	YES	% full 0 %
Knockout Water Tote (record level)	YES	% full 35 %
Dilution Valve Status	YES	CLOSED 100 %
Recirculation Valve Status	YES	OPEN 100 %

CATOX Screen Readings

Item	Units	Reading	Operating Range
Hour Meter	H-M	3598.7	H.M.
Catox In (T_1)	°F	799	>650
Catox Out (T_2)	°F	927	600 – 650
Heat Ex (T_3)	°F	561	300 – 400
Flow	SCFM	~78	<300
LEL	%	14	5-15

System Gauge Readings

Item	Units	Reading
FE – 1	"WC	– 0.40" WC
PI – 1	"WC (vacuum)	2.25" WC
TI – 1	°F	36 °F
FE-2	"WC	0.40" WC

* FID FLAME OUT.

FID Measurements

FID FLAME OUT @ INF SCREENING, ALSO FLAME OUT @ VOC SCREENING OF SVE WELLS 12 + 13. FID WOULD NOT RESTART AFTER LAST FLAM OUT @ SVE-12 VOC SCREENING.

Location	Time	FID Reading (ppm)	Valve Position (record notch)	Vacuum ("WC)	Differential Pressure ("WC)
Western Manifold	NO READING				
SVE – 13	1315-HRS	*>6333 PPM	4	0.00"	0.100"
SVE – 12	1320-HRS	* 920 PPM	4	0.50"	0.010"
SVE – 11	1308	NO FID	4	1.20"	0.005"
SVE – 10	1305		4	1.00"	0.007"
SVE – 09	1300		5	0.100"	0.010"
Eastern manifold	NO READING	NO FID			
SVE - 01	1339		6	0.00"	0.007"
SVE – 03	1344		1	0.50"	0.015"
SVE – 05	1343		1	0.00"	0.007"
SVE – 07	1341		6	0.00"	0.009"
SVE – 08	1341		6	1.75"	0.001"
SVE – 06	1340		6	0.50"	0.006"
SVE – 04	1340		6	~~0.00~~ 1.00"	0.005"
SVE – 02			6	12.0" - BROKEN	0.007"
SVE Influent	1250	*>6333 PPM			
SVE Effluent	1235	2075 PPM			

Influent Sample ID: INF-010920
Influent Sample Time: 1250 - HRS

Effluent Sample ID: EFF - 010920
Effluent Sample Time: 1235 HRS

Field Representative (Print and Sign): G. Hagan
G. KLOCKEMAN
George Hagan

Date of Visit: 01-09-2020

AS System Monthly Inspection Log, *Kelly Moore*. Date: 01-09-2020

Visual/Audio Inspection

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	N/A	
Regenerative Blower		(Auto / Hand / Off)
Heat Exchanger		(Auto / Hand / Off)
Pressure Gauges/Flow Meters		
Vent Valve Status		

System Gauge Readings

Before Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Sparge Blower	Hour's / Minutes	N/A	
PI – 3	psi		0 - 30
TI – 3	°F		150 – 200

After Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Heat Exchanger	Hour's / Minutes	N/A	
PI – 4	psi		0 - 30
TI – 4	°F		150 – 200

Air Flow Monitoring

Location	Time	Valve Position (record appx angle)	Pressure (psi)	Air Flow (SCFM)
AS – 1	N/A			
AS – 2				
AS – 3				
AS – 4				
AS – 5				

Additional Notes. System (CATOX) RESTART AFTER NEW CATALYST CELL + SEAL ON 1-7-20 RESTART CATOX 1-8-20 AFTER SEAL SET OVERNIGHT. ADJUST & MONITORED FOR VOL'S +D,E, 1-9-20. SVE-CATOX OPERATION @ARRIVAL. MONITOR VOC'S FOR DE. FID KEPT SHUTTING DOWN. DESTRUCTION EFFIENCY + VOC VALUES UNKNOW. COLLECTED JAN-2020 Sys VAPOR SAMPLES & DELIVERED TO LAB. SYSTEM (CATOX) DATA READ & RECORDED AIR SPARGE SYSTEM OFF UNTIL WE KNOW (CATOX) DE. CATOX OPERATIONAL @ OUR DEPARTURE.

Field Representative (Print and Sign): George Hoagum Date of Visit: 1-9-20

SVE System Monthly Inspection Log. *Kelly Moore.* Date: 2-7-20

Visual/Audio Inspection. Located at; 5400 Airport Way South Seattle, WA

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	yes	
Control Pump (Regenerative Blower)	yes	(On / Off) ON
Entrainment Pump (Transfer Pump)	yes	(Auto / Hand / Off) Auto
Pressure Gauges/Flow Meters	yes	
Knockout Tank (record level)	yes	% full 3%. 4 gallons
Knockout Water Tote (record level)	yes	% full 30%. 80 gallons
Dilution Valve Status	yes	100%. Closed
Recirculation Valve Status	yes	70%. Closed

CATOX Screen Readings

Item	Units	Reading	Operating Range
Hour Meter	H-M	3732	
Catox In (T_1)	°F	666°F	>650
Catox Out (T_2)	°F	621°F	600 – 650
Heat Ex (T_3)	°F	370°F	300 – 400
Flow	SCFM	154	<300
LEL	%	6	5-15

System Gauge Readings

Item	Units	Reading
FE – 1	"WC	0.009" on 165 SCFM
PI – 1	"WC (vacuum)	16"
TI – 1	°F	46°F
FE-2	"WC	1.4"

FID Measurements

Location	Time	~~FID~~ PID Reading (ppm)	Valve Position (record notch)	Vacuum ("WC)	Differential Pressure ("WC)
Western Manifold	1342 Hrs	218 PPM			
SVE – 13	1352 Hrs	116 PPM	2	0.75"	0.010"
SVE – 12	1350 Hrs	322. PPM	7	1.00"	0.009"
SVE – 11	1349 Hrs	124. PPM	2	1.25"	0.010"
SVE – 10	1347 Hrs	271 PPM	7	15"	0.009"
SVE – 09	1345 Hrs	6 PPM	2	0.0"	0.010"
Eastern manifold	1411 Hrs	220 PPM			
SVE - 01	1406 Hrs	0.8 PPM	2	0.0"	0.008"
SVE – 03	1407 Hrs	624 PPM	7	12.25"	0.009"
SVE – 05	1409 Hrs	185 PPM	7	12.25"	0.009"
SVE – 07	1405 Hrs	4.6 PPM	2	0.0"	0.009"
SVE – 08	1404 Hrs	2.00 PPM	2	11.5"	0.008"
SVE – 06	1403 Hrs	3.0 PPM	2	3"	0.009"
SVE – 04	1402 Hrs	15.5 PPM	2	3.75"	0.008"
SVE – 02	1401 Hrs	10.5 PPM	2	8.25	0.008"
SVE Influent	1311	373 PPM	> DE. @ 98.2%, VIA PID.		
SVE Effluent	1300	6.6 PPM			

Influent Sample ID: INF-02072020
Influent Sample Time: 1308

Effluent Sample ID: EFF-02072020
Effluent Sample Time: 1302

Field Representative (Print and Sign): George Hagan
GAVIN KLOCKEMAN

Date of Visit: 02/07-2020

AS System Monthly Inspection Log, *Kelly Moore*. Date: 02-07-20

Visual/Audio Inspection

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	yes	
Regenerative Blower	yes	(Auto / Hand / Off)
Heat Exchanger	yes	(Auto / Hand / Off)
Pressure Gauges/Flow Meters	yes	
Vent Valve Status	yes	

System Gauge Readings

Before Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Sparge Blower	Hour's / Minutes	2213.4	Hrs min.
PI – 3	psi	12.5 PSI	0 - 30
TI – 3	°F	193 °F	150 – 200

After Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Heat Exchanger	Hour's / Minutes	2213.8	Hrs. min.
PI – 4	psi	9.5 PSI	0 - 30
TI – 4	°F	72 °F	150 – 200

Air Flow Monitoring

Location	Time	Valve Position (record appx angle)	Pressure (psi)	Air Flow (SCFM)
AS – 1	1418 Hrs	20% open	3.5	6.5
AS – 2	1418 Hrs	20% open	3.0	5.5
AS – 3	1419 Hrs	20% open	3.5	6.0
AS – 4	1420 Hrs	20% open	3.5	6.0
AS – 5	1420 Hrs	20% open	3.5	6.0

Additional Notes.

System restart Today after CAT CELL SEAL replacement on 1-29-2020 FID Flamed out @ 133 ppm Several times, it just would not work today We Slowly added Process air + reduced dilution air, our destruction efficiencies were > 97% Via PID. Air Sparge Activated adjusted + Monitored. System's data read + recorded. George Hagan + Gavin Blackman off site @ 1500 Hrs. Samples to Lab.

Field Representative (Print and Sign): George Hagan Date of Visit: 2/7/2020

SVE System Monthly Inspection Log. *Kelly Moore.* Date: 2-14-2020

Visual/Audio Inspection. Located at; 5400 Airport Way South Seattle, WA

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	Yes	
Control Pump (Regenerative Blower)	Yes	(On / Off)
Entrainment Pump (Transfer Pump)	Yes	(Auto / Hand / Off)
Pressure Gauges/Flow Meters	Yes	
Knockout Tank (record level) Yes	10	% full
Knockout Water Tote (record level) Yes	30	% full
Dilution Valve Status Yes	100% closed	
Recirculation Valve Status	Yes	open

CATOX Screen Readings

Item	Units	Reading	Operating Range
Hour Meter	H-M	3897	
Catox In (T_1)	°F	665	>650
Catox Out (T_2)	°F	602	600 – 650
Heat Ex (T_3)	°F	367	300 – 400
Flow	SCFM	198.	<300
LEL	%	~~0~~ 3 GH	5-15

System Gauge Readings

Adjusted airflow 4 to 200SCFM

Item	Units	Reading
FE – 1	"WC GK	~~200SCFM~~ ~~170SCFM~~ or .01" WC
PI – 1	"WC (vacuum)	~~10" WC~~ GK 20.5" WC
TI – 1	°F	40°F
FE-2	"WC	~~170SCFM~~ 0.01" GK

FID Measurements

PID CALIBRATED TO 100ppm HEXANE G.H.

Location	Time	PID ~~FID~~ Reading (ppm)	Valve Position (record notch)	Vacuum ("WC)	Differential Pressure ("WC)
Western Manifold	11:05	33.4			
SVE – 13	11:04	1.2	2	0.75"	.009"
SVE – 12	11:02	58.7	7	1.5"	.010"
SVE – 11	11:00	5.5	2	1"	.010"
SVE – 10	10:58	35.2	7	16"	.010"
SVE – 09	~~10:57~~ 10:55	1.9	2	~~0~~	.010"
Eastern manifold	11:37	13.5 ppm			
SVE - 01	11:17	3.2	2	~~0~~	.007"
SVE – 03	11:26 Hrs	19.8	7	14"	.007"
SVE – 05	11:24	~~50~~	7	14.5"	.007"
SVE – 07	11:20	~~5~~10	2 To 7	~~0~~	.007"
SVE – 08	11:28 Hrs	5.2	2	13"	.008"
SVE – 06	11:29 Hrs	2.16	2	1"	.008"
SVE – 04	11:32 Hrs	1.3	2	5"	.007
SVE – 02	11:33 Hrs	1.1	2	10.5"	.007
SVE Influent	10:14	55 ppm			
SVE Effluent	10:11	1.3 ppm			

Influent Sample ID: INF-02142020
Influent Sample Time: 10:29

Effluent Sample ID: EFF-02142020
Effluent Sample Time: 10:26

Field Representative (Print and Sign): Gracin Klockeman Date of Visit: 2-14-2020

AS System Monthly Inspection Log, *Kelly Moore.* Date: 2-14-20

Visual/Audio Inspection

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	y	
Regenerative Blower	y	(Auto) / Hand / Off)
Heat Exchanger	y	(Auto) / Hand / Off)
Pressure Gauges/Flow Meters	y	
Vent Valve Status	y	open 90%.

System Gauge Readings

Before Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Sparge Blower	Hour's / Minutes	2377	
PI – 3	psi	11.5	0 - 30
TI – 3	°F	185	150 – 200

After Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Heat Exchanger	Hour's / Minutes	2378	
PI – 4	psi	10	0 - 30
TI – 4	°F	68	150 – 200

Air Flow Monitoring

Location	Time	Valve Position (record appx angle)	Pressure (psi)	Air Flow (SCFM)
AS – 1	1135 - 1645	20%. open	3.5	6.5
AS – 2	"	"	3.0	5.5
AS – 3	"	"	3.5	6.0
AS – 4	"	"	3.5	6.0
AS – 5	"	"	3.5	6.0

Additional Notes.

Changed the air flow to 200 SCFM post inspection. Re-Took the February 2020 System's Vapor samples. Recorded System data.

C. Hagan

Field Representative (Print and Sign): Gavin Klockeman Date of Visit: 2-14-2020

SVE System Monthly Inspection Log. *Kelly Moore.* *Date*: 02-21-20

Visual/Audio Inspection. Located at; 5400 Airport Way South Seattle, WA

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	Y	
Control Pump (Regenerative Blower)	Y	(On / Off)
Entrainment Pump (Transfer Pump)	Y	(Auto / Hand / Off)
Pressure Gauges/Flow Meters	Y	
Knockout Tank (record level)	Y	% full
Knockout Water Tote (record level)	Y	% full ~~0 gal~~ 98 gal 40% full
Dilution Valve Status	Y	
Recirculation Valve Status	Y	

CATOX Screen Readings

Item	Units	Reading	Operating Range
Hour Meter	H-M	4053	
Catox In (T_1)	°F	822°F	>650
Catox Out (T_2)	°F	726°F	600 – 650
Heat Ex (T_3)	°F	450°F	300 – 400
Flow	SCFM	105	<300
LEL	%	N/A	5-15

LEL Sensor NO Longer Working, Bypassed To allow operation.

System Gauge Readings

Item	Units	Reading
FE – 1	"WC	0.013"
PI – 1	"WC (vacuum)	6"
TI – 1	°F	48°F
FE-2	"WC	0

FID Measurements

Location	Time	FID Reading (ppm)		Valve Position (record notch)	Vacuum ("WC)	Differential Pressure ("WC)
Western Manifold	N/A	N/A				
SVE – 13				N/A	N/A	N/A
SVE – 12						
SVE – 11						
SVE – 10						
SVE – 09						
Eastern manifold						
SVE - 01						
SVE – 03						
SVE – 05						
SVE – 07						
SVE – 08						
SVE – 06						
SVE – 04						
SVE – 02		TVA 1000	MICRO FID			
SVE Influent		4.0	19.5			
SVE Effluent		2.2	15.3			

Influent Sample ID: INF_02212020
Influent Sample Time: 1335

Effluent Sample ID: EFF_02212020
Effluent Sample Time: 1330

Field Representative (Print and Sign): G Hogan G Klevemann Date of Visit: 2-21-20

AS System Monthly Inspection Log, *Kelly Moore.* Date: 2-21-20

Visual/Audio Inspection

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	Y	
Regenerative Blower	Y	(Auto / Hand / Off)
Heat Exchanger	Y	(Auto / Hand / Off)
Pressure Gauges/Flow Meters	Y	
Vent Valve Status	Y	

LOCK OUT TAG OUT ON CONTROL PANEL,

System Gauge Readings

Before Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Sparge Blower	Hour's / Minutes	2497	
PI – 3	psi	N/A	0 - 30
TI – 3	°F		150 – 200

After Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Heat Exchanger	Hour's / Minutes	2497	
PI – 4	psi	N/A	0 - 30
TI – 4	°F		150 – 200

Air Flow Monitoring

Location	Time	Valve Position (record appx angle)	Pressure (psi)	Air Flow (SCFM)
AS – 1	N/A	N/A	N/A	N/A
AS – 2				
AS – 3				
AS – 4				
AS – 5				

Additional Notes. Air Sparge Compressor Shut down 2/19/20 - it is Vibrating Badly & Leaking Oil. 2-21-20 BECKWITH & KUFFEL ONSITE @ 0800 HR. The removed the Sparge Compressor to be repaired or replaced. SVE-CATOX off @ our arrival. High water @ K.O. Tank. Restarted SVE-CATOX, Brought to Temp. Screened VOC's via 2-FID'S DE Below 50'/. Collected a second set of influent & effluent Vapor samples for lab. Shut down SVE-CATOX. The LEL Sensor is broken, LEL Value > 110'/. By passed to ~~operated~~ OPERATE SVE-CATOX for the day.

Field Representative (Print and Sign): G. Hogan Date of Visit: 2/21/20

G. Klockemon

SVE System Monthly Inspection Log. *Kelly Moore.* Date: 3-17-2020

Visual/Audio Inspection. Located at; 5400 Airport Way South Seattle, WA

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	Yes	
Control Pump (Regenerative Blower)	Yes	(On / Off)
Entrainment Pump (Transfer Pump)	Yes	(Auto / Hand / Off)
Pressure Gauges/Flow Meters	Yes	
Knockout Tank (record level)	Yes	% full 0%
Knockout Water Tote (record level)	Yes	% full 35%
Dilution Valve Status	yes	100% Closed
Recirculation Valve Status	yes	85% Closed

CATOX Screen Readings

Item	Units	Reading	Operating Range
Hour Meter	H-M	4056	
Catox In (T_1)	°F	659	>650
Catox Out (T_2)	°F	603	600 – 650
Heat Ex (T_3)	°F	370	300 – 400
Flow	SCFM	225	<300
LEL	%	—	5-15

↳ read 110; not correct

System Gauge Readings

Item	Units	Reading
FE – 1	"WC	0.015"
PI – 1	"WC (vacuum)	12.5" H_2O
TI – 1	°F	44° F
FE-2	"WC	1.2" WC

FID Measurements

Location	Time	FID Reading (ppm)	Valve Position (record notch)	Vacuum ("WC)	Differential Pressure ("WC)
Western Manifold	1127	13.2			
SVE – 13	1114	2.0	ok 6	1"	.014"
SVE – 12	1117	2.5	1	10.5"	.015"
SVE – 11	1119	0.8	ok 6	1"	.014"
SVE – 10	1122	59.6	1	10.5"	.015"
SVE – 09	1124	2.1	ok 6	Q	.014"
Eastern manifold	1153	111.0			
SVE - 01	1142	0.5	6	0	.021"
SVE – 03	1147	90.5	1	9"	.015"
SVE – 05	1149	325.0	1	12"	.014"
SVE – 07	1151	12.1	1	1.2"	.015"
SVE – 08	1139	0.9	6	ok ~~10~~ 9.5"	.014"
SVE – 06	1138	0.6	6	2.4"	.013"
SVE – 04	1135	2.3	6	2.5"	.013"
SVE – 02	1133	1.3	6	2.6"	.013"
SVE Influent	1246	100.9			
SVE Effluent	1243	7.6			

* Influent Sample ID: INF_03172020
Influent Sample Time: 13:09

* Effluent Sample ID: EFF-03172020
Effluent Sample Time: 12:54

Field Representative (Print and Sign): Gavin Blockeman Date of Visit: 3-17-2020
George Hagan

* INFLUENT + EFFLUENT SAMPLES WERE COLLECTED VIA 1-LITER SUMMA VESSELS. ANALYSIS REQUEST IS BTEX BY TO-15 + TPH-G AS HEXANE.

AS System Monthly Inspection Log, *Kelly Moore*. Date: 3-17-2020

Visual/Audio Inspection

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	Yes	
Regenerative Blower out for repair		(Auto / Hand / Off)
Heat Exchanger	Yes	(Auto / Hand / Off)
Pressure Gauges/Flow Meters	Yes	
Vent Valve Status	?	Blower out for repair

System Gauge Readings

Before Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Sparge Blower	Hour's / Minutes	2497	
PI – 3	psi	—	0 - 30
TI – 3	°F	—	150 – 200

After Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Heat Exchanger	Hour's / Minutes	2497	
PI – 4	psi	—	0 - 30
TI – 4	°F	—	150 – 200

Air Flow Monitoring

Location	Time	Valve Position (record appx angle)	Pressure (psi)	Air Flow (SCFM)
AS – 1	Unit offline, blower out for Repair			
AS – 2				
AS – 3				
AS – 4				
AS – 5				

Additional Notes.

CATOX RESTART. MARCH 2020 SYSTEM VAPOR SAMPLES COLLECTED. RECORDED ALL SYSTEM'S DATA. SVE - CATOX OPERATIONAL @ OUR DEPARTURE.

C. Horgan

Field Representative (Print and Sign): Gavin Blackemore Date of Visit: 3-17-2020

SVE System Monthly Inspection Log. *Kelly Moore.* *Date*: 4-13-2020

Visual/Audio Inspection. Located at; 5400 Airport Way South Seattle, WA

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	Yes	
Control Pump (Regenerative Blower)	Yes	(On / Off)
Entrainment Pump (Transfer Pump)	Yes	(Auto / Hand / Off)
Pressure Gauges/Flow Meters	Yes	
Knockout Tank (record level)	Yes ~~55 gal~~	% full 33% full
Knockout Water Tote (record level)	Yes ~~40 gal~~	% full 40% full
Dilution Valve Status	~~Yes~~	Fully Closed
Recirculation Valve Status	Yes	

CATOX Screen Readings

Item	Units	Reading	Operating Range
Hour Meter	H-M	4703	
Catox In (T_1)	°F	660	>650
Catox Out (T_2)	°F	626	600 – 650
Heat Ex (T_3)	°F	398	300 – 400
Flow	SCFM	220	<300
LEL	%	—	5-15

LDNot working

System Gauge Readings

Item	Units	Reading
FE – 1	"WC	0.015"
PI – 1	"WC (vacuum)	6"
TI – 1	°F	52° F
FE-2	"WC	3.5"

FID Measurements

Location	Time	FID Reading (ppm)	Valve Position (record notch)	Vacuum ("WC)	Differential Pressure ("WC)
Western Manifold					
SVE – 13					
SVE – 12					
SVE – 11					
SVE – 10		NO DATA COLLECTED TODAY			
SVE – 09					
Eastern manifold					
SVE - 01					
SVE – 03					
SVE – 05					
SVE – 07					
SVE – 08					
SVE – 06					
SVE – 04					
SVE – 02					
SVE Influent	1347	245			
SVE Effluent	1345	5.0			

Influent Sample ID: _____
Influent Sample Time: _____

Effluent Sample ID: _____
Effluent Sample Time: _____

Field Representative (Print and Sign): _____ Date of Visit: 4-13-2020

Gavin Klockeman

~~DE 97.96%~~

AS System Monthly Inspection Log, *Kelly Moore.* Date: 4-13-2020

Visual/Audio Inspection

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	Yes	
Regenerative Blower	Yes	(Auto / Hand / Off)
Heat Exchanger	Yes	(Auto / Hand / Off)
Pressure Gauges/Flow Meters	Yes	
Vent Valve Status	Yes	

System Gauge Readings

Before Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Sparge Blower	Hour's / Minutes	2498 Hours	
PI – 3	psi	11	0 - 30
TI – 3	°F	75	150 – 200

After Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Heat Exchanger	Hour's / Minutes	2499 Hours	
PI – 4	psi	6	0 - 30
TI – 4	°F	80	150 – 200

Air Flow Monitoring

° from horizontal

Location	Time	Valve Position (record appx angle)	Pressure (psi)	Air Flow (SCFM)
AS – 1	1403	20°	2.5	10
AS – 2	1403	20°	2.0	9.6
AS – 3	1404	20°	2.5	9.5
AS – 4	1404	20°	2.5	9.4
AS – 5	1405	20°	2.0	9.5

Additional Notes.

DE = 98%; Air Sparge reinstalled and system up and running. Saw a significant increase in influent concentrations. Adjust belt to avoid wear. Pumped water into knockout tank to test float sensors. Worked properly. LEL sensor still reads "110".

Field Representative (Print and Sign): [signature] Date of Visit: 4-13-2020

Gavin Klockeman
George Hagan JHA.

SVE System Monthly Inspection Log. *Kelly Moore.* Date: 4-20-2020

Visual/Audio Inspection. Located at; 5400 Airport Way South Seattle, WA

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	Yes	
Control Pump (Regenerative Blower)	Yes	(On) / Off)
Entrainment Pump (Transfer Pump)	Yes	(Auto) / Hand / Off)
Pressure Gauges/Flow Meters	Yes	
Knockout Tank (record level)	Yes	% full 30 %
Knockout Water Tote (record level)	Yes	% full 40 %
Dilution Valve Status	Yes	Closed 100 %
Recirculation Valve Status	Yes	

CATOX Screen Readings

Item	Units	Reading	Operating Range
Hour Meter	H-M	4854	
Catox In (T_1)	°F	696	>650
Catox Out (T_2)	°F	658	600 – 650
Heat Ex (T_3)	°F	413	300 – 400
Flow	SCFM	65	<300
LEL	%	—	5-15

LEL Broken

System Gauge Readings

Item	Units	Reading
FE – 1	"WC	0.011"
PI – 1	"WC (vacuum)	4.5"
TI – 1	°F	50°F
FE-2	"WC	1.8"

FID Measurements

Location	Time	FID Reading (ppm)	Valve Position (record notch)	Vacuum ("WC)	Differential Pressure ("WC)
Western Manifold	10:04	23.8			
SVE – 13	10:05	29.8	4	1.5"	.012"
SVE – 12	10:03	26.2	1	2"	.011"
SVE – 11	10:02	8.0	5	1"	.011"
SVE – 10	9:59	73.0	1	3.5"	.010"
SVE – 09	9:58	2.7	5	-0	.011"
Eastern manifold	10:34	37.2			
SVE - 01	10:32	5.0	6	-0	.012"
SVE – 03	10:30	10.9	1	1.25"	.012"
SVE – 05	10:28	94.6	1	3.0"	.012"
SVE – 07	10:25	5.3	1	3.5"	.013"
SVE – 08	10:23	2.2	6	3.5"	.012"
SVE – 06	10:22	2.7	6	-0	.012"
SVE – 04	10:20	5.9	6	1.5"	.011"
SVE – 02	10:16	7.2	6	2.5"	.012"
SVE Influent	915	98.9			
SVE Effluent	915	4.8			

Influent Sample ID: INF-4-20-2020
Influent Sample Time: 9:34

Effluent Sample ID: EFF-4-20-2020
Effluent Sample Time: 9:24

Field Representative (Print and Sign): [signature] Date of Visit: 4-20-2020

Gavin Hockeman
George Hagan IHA

AS System Monthly Inspection Log, *Kelly Moore.* Date: 4-20-2020

Visual/Audio Inspection

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	yes	
Regenerative Blower	yes	(Auto / Hand / Off)
Heat Exchanger	yes	(Auto / Hand / Off)
Pressure Gauges/Flow Meters	yes	~~Pressure gauges have some condition~~
Vent Valve Status	yes	

GK

System Gauge Readings

Before Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Sparge Blower	Hour's / Minutes	2649	
PI – 3	psi	9	0 - 30
TI – 3	°F	205°F	150 – 200

After Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Heat Exchanger	Hour's / Minutes	2649	
PI – 4	psi	8.5	0 - 30
TI – 4	°F	73°F	150 – 200

Air Flow Monitoring

Location	Time	Valve Position (record appx angle)	Pressure (psi)	Air Flow (SCFM)
AS – 1	9:53	20°	3.5	10
AS – 2	9:54		3.0	9.5
AS – 3	9:54		3.5	9.5
AS – 4	9:54		3.5	9.5
AS – 5	9:55		3.0	9.5

Additional Notes.

AS-5 is getting very ~~dark~~ dirty. DE: 95.17o. NO issues regarding inspection. Collect full round of data for April inspection. Conducted housekeeping tasks. Samples collected using TO15 canisters.

Field Representative (Print and Sign): _____ Date of Visit: 4-20-2020

Grain Klockeman
George Hagan JHA

SVE System Monthly Inspection Log. *Kelly Moore.* Date: 5-18-2020

Visual/Audio Inspection. Located at; 5400 Airport Way South Seattle, WA

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	Yes	
Control Pump (Regenerative Blower)	Yes	(On / Off)
Entrainment Pump (Transfer Pump)	Yes	(Auto / Hand / Off)
Pressure Gauges/Flow Meters	Yes	
Knockout Tank (record level)	Yes	% full 40%
Knockout Water Tote (record level)	Yes	% full 40%
Dilution Valve Status	Yes	Fully closed
Recirculation Valve Status	Yes	~~Adjusted to set flow @~~ 40% open GK

CATOX Screen Readings

Item	Units	Reading	Operating Range
Hour Meter	H-M	5525	
Catox In (T_1)	°F	687	>650
Catox Out (T_2)	°F	657	600 – 650
Heat Ex (T_3)	°F	419	300 – 400
Flow	SCFM	138	<300
LEL	%	NOT IN USE gk	5-15

System Gauge Readings

Item	Units	Reading
FE – 1	"WC	.017"
PI – 1	"WC (vacuum)	6.5" H_2O
TI – 1	°F	55
FE-2	"WC	138 SCFM @ 21.5 Amps on motor

FID Measurements

Location	Time	FID Reading (ppm)	Valve Position (record notch)	Vacuum ("WC)	Differential Pressure ("WC)
Western Manifold	929	4.2			
SVE – 13	927	3.9	4	2	.017
SVE – 12	926	3.4	7	2	.017
SVE – 11	924	3.2	3	1	.017
SVE – 10	923	24.3	7	3	.017
SVE – 09	921	1.4	3	~~0~~	.016
Eastern manifold	949	45.9			
SVE - 01	947	2.7	2	~~0~~	.017
SVE – 03	945	49.8	7	4	.017
SVE – 05	942	85.5	7	3	.017
SVE – 07	940	4.6	7	5.5	.017
SVE – 08	938	1.3	2	4.5	.018
SVE – 06	937	2.2	2	2	.019
SVE – 04	935	26.8	2 TO 5	1.5	.02
SVE – 02	933	0.6	2	2.5	.016
SVE Influent	~~948~~ @ 915	6.2	D.E. CALCULATED @ 95%		
SVE Effluent	~~950~~	0.3			

Influent Sample ID: INF-5-18-2020
Influent Sample Time: 1014

Effluent Sample ID: EFF-5-18-2020
Effluent Sample Time: 1020

Field Representative (Print and Sign): [signature] Date of Visit: 5-18-2020
Gavin Klockeman
George Hagan - IHA.

AS System Monthly Inspection Log, *Kelly Moore.* Date: 5-18-2020

Visual/Audio Inspection

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	Yes	
Regenerative Blower	Yes	(Auto / Hand / Off)
Heat Exchanger	Yes	(Auto / Hand / Off)
Pressure Gauges/Flow Meters	Yes	
Vent Valve Status	Yes	OPEN 60%.

System Gauge Readings

Before Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Sparge Blower	Hour's / Minutes	3320	
PI – 3	psi	9	0 - 30
TI – 3	°F	220	150 – 200

After Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Heat Exchanger	Hour's / Minutes	3320	
PI – 4	psi	9	0 - 30
TI – 4	°F	76	150 – 200

Air Flow Monitoring

Location	Time	Valve Position (record appx angle)	Pressure (psi)	Air Flow (SCFM)
AS – 1	905	20°	2.5	9.7
AS – 2	906		1.75	9.5
AS – 3	906		2	9.5
AS – 4	906		2.5	9.25
AS – 5	906		2	9.5

Additional Notes. AIR FLOW GAUGE.

AS-5 has a lot of black build up compare to AS-1 - AS-4. Field Screen DE = 95%. SVE4 opened to position 5. Excessive water in vacuum gages on SVE pipes. SVE5 gage needs replacement. Noise coming from heat ex, sounds like something may be coming loose. Was inspected and couldn't see any issues. Also, we replaced belt guard and chart paper for CATOX.

Field Representative (Print and Sign): [signature] Date of Visit: 5-18-2020

Gavin Hockenberry
George Hagan - JHA.

Appendix D

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

March 27, 2020

John Long, Project Manager
Wood Environment & Infrastructure Solutions, Inc.
One Union Square
600 University Street, Suite 600
Seattle, WA 98101

Dear Mr Long:

Included are the results from the testing of material submitted on March 17, 2020 from the Kelly Moore, F&BI 003279 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 should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
WEI0327R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on March 17, 2020 by Friedman & Bruya, Inc. from the Wood Environment & Infrastructure Solutions Kelly Moore, F&BI 003279 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Wood Environment & Infrastructure Solutions
003279 -01	EFF_03172020
003279 -02	INF_03172020

All quality control requirements were acceptable.

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	EFF_03172020	Client:	Wood Environment & Infrastructure Solutions
Date Received:	03/17/20	Project:	Kelly Moore, F&BI 003279
Date Collected:	03/17/20	Lab ID:	003279-01 1/2.7
Date Analyzed:	03/24/20	Data File:	032329.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	101	70	130

Compounds:	Concentration ug/m3	ppbv
2-Propanol	<23	<9.4
Benzene	<0.86	<0.27
Toluene	<51	<13
Ethylbenzene	<1.2	<0.27
m,p-Xylene	<2.3	<0.54
o-Xylene	<1.2	<0.27
Naphthalene	21	4.0
Gasoline Range Organics	<2,200	<540

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	INF_03172020	Client:	Wood Environment & Infrastructure Solutions
Date Received:	03/17/20	Project:	Kelly Moore, F&BI 003279
Date Collected:	03/17/20	Lab ID:	003279-02 1/33
Date Analyzed:	03/24/20	Data File:	032330.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	104	70	130

Compounds:	Concentration ug/m3	ppbv
2-Propanol	<280	<120
Benzene	<11	<3.3
Toluene	<620	<160
Ethylbenzene	22	5.2
m,p-Xylene	75	17
o-Xylene	19	4.4
Naphthalene	16	3.0
Gasoline Range Organics	135,000	33,000

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Method Blank	Client:	Wood Environment & Infrastructure Solutions
Date Received:	Not Applicable	Project:	Kelly Moore, F&BI 003279
Date Collected:	Not Applicable	Lab ID:	00-0716 mb
Date Analyzed:	03/23/20	Data File:	032311.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	105	70	130

Compounds:	Concentration ug/m3	ppbv
2-Propanol	<8.6	<3.5
Benzene	<0.32	<0.1
Toluene	<19	<5
Ethylbenzene	<0.43	<0.1
m,p-Xylene	<0.87	<0.2
o-Xylene	<0.43	<0.1
Naphthalene	<0.26	<0.05
Gasoline Range Organics	<820	<200

Date of Report: 03/27/20
Date Received: 03/17/20
Project: Kelly Moore, F&BI 003279

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

Laboratory Code: 003260-04 1/2.7 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 30)
2-Propanol	ug/m3	<23	<23	nm
Benzene	ug/m3	14	14	0
Toluene	ug/m3	<51	<51	nm
Ethylbenzene	ug/m3	<1.2	<1.2	nm
m,p-Xylene	ug/m3	<2.3	<2.3	nm
o-Xylene	ug/m3	<1.2	<1.2	nm
Naphthalene	ug/m3	<0.71	<0.71	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
2-Propanol	ug/m3	33	94	70-130
Benzene	ug/m3	43	95	70-130
Toluene	ug/m3	51	92	70-130
Ethylbenzene	ug/m3	59	94	70-130
m,p-Xylene	ug/m3	120	98	70-130
o-Xylene	ug/m3	59	97	70-130
Naphthalene	ug/m3	71	113	70-130

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.

003279

SAMPLE CHAIN OF CUSTODY

ME 3/17/20

Page # 1 of 1

Report To John Long
Company Wood Environmental
Address 600 University St. Suite 600
City, State, ZIP Seattle, WA 98101
Phone 206-838-8469 Email John Long

SAMPLERS (*signature*): Gavin Klockeman

PROJECT NAME & ADDRESS: Kelly Moore

PO #:

NOTES:

INVOICE TO

TURNAROUND TIME
☒ Standard
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Default: Clean after 3 days
☐ Archive (Fee may apply)

SAMPLE INFORMATION										ANALYSIS REQUESTED						
Sample Name	Lab ID	Canister ID	Flow Cont. ID	Reporting Level: IA=Indoor Air SG=Soil Gas (Circle One)	Date Sampled	Initial Vac. ("Hg)	Field Initial Time	Final Vac. ("Hg)	Field Final Time	TO15 Full Scan	TO15 BTEXN	TO15 cVOCs	APH	Helium	BTEX by TO-15 TPH-G as Hexane	Notes
EFF-03172020	-01	4180	231	IA / (SG)	3-17-2020										X	Sample dura. = 9 min SN: 4180
INF-03172020	-02	3387	203	IA / (SG)	3-17-2020										X	Sample duration = 5.5 min SN: 3387
		added MS 3/18/20 →		IA / SG												*Both are SG
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG							Samples received at 16 °C					
				IA / SG												

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Gavin Klockeman	JHA	3-17-2020	14:31
Received by:	Nhan Phan	FIBI	3-17-20	14 31
Relinquished by:				
Received by:				

FORMS\COC\COCTO-15.DOC

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

January 14, 2020

John Long, Project Manager
Wood Environment & Infrastructure Solutions, Inc.
One Union Square
600 University Street, Suite 600
Seattle, WA 98101

Dear Mr Long:

Included are the results from the testing of material submitted on January 9, 2020 from the Kelly Moore, F&BI 001117 project. There are 4 pages included in this report.

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

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
WEI0114R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on January 9, 2020 by Friedman & Bruya, Inc. from the Wood Environment & Infrastructure Solutions Kelly Moore, F&BI 001117 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Wood Environment & Infrastructure Solutions
001117 -01	EFF-010920
001117 -02	INF-010920

All quality control requirements were acceptable.

Date of Report: 01/14/20
Date Received: 01/09/20
Project: Kelly Moore, F&BI 001117
Date Extracted: 01/10/20
Date Analyzed: 01/10/20

RESULTS FROM THE ANALYSIS OF AIR SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING MODIFIED METHODS 8021B AND NWTPH-Gx

Results Reported as mg/m^3

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
EFF-010920 001117-01	<0.1	3.5	5.8	12	1,400	99
INF-010920 001117-02 1/5	<0.5	<1	38	77	8,200	102
Method Blank 00-9 MB2	<0.1	<0.2	<0.2	<0.6	<10	81

Date of Report: 01/14/20
Date Received: 01/09/20
Project: Kelly Moore, F&BI 001117

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING MODIFIED EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 001069-04 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	mg/m^3	<0.1	<0.1	nm
Toluene	mg/m^3	<0.2	<0.2	nm
Ethylbenzene	mg/m^3	<0.2	<0.2	nm
Xylenes	mg/m^3	<0.6	<0.6	nm
Gasoline	mg/m^3	<10	<10	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/m^3	5.0	91	70-130
Toluene	mg/m^3	5.0	88	70-130
Ethylbenzene	mg/m^3	5.0	89	70-130
Xylenes	mg/m^3	15	89	70-130
Gasoline	mg/m^3	100	115	86-144

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.

001117

SAMPLE CHAIN OF CUSTODY ME 01-09-20

Page # 1 of 1

Report To John Long
Company WOOD Environmental
Address 600 University St. Suite 600
City, State, ZIP Seattle WA 98101
Phone 206-838-8469 Email John Long

SAMPLERS (*signature*)

PROJECT NAME: Kelly Moore
PO #:

REMARKS:
INVOICE TO:

TURNAROUND TIME
- [X] Standard Turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [X] Dispose after 30 days
- [ ] Archive Samples
- [ ] Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM	BTEX	TPH-Gas			Notes
EFF-010920	01	01-09-2020	1235	Tedlar Bag	1								X	X			
INF-010920	02	01-09-2020	1250	Tedlar Bag	1								X	X			

ANALYSES REQUESTED

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Gavin Klockeman	JHA Env.	1-9-2020	14:5
Received by:		D & H	F+BT	1-9-20	14:50
Relinquished by:					
Received by:					

Samples received at 20 °C

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282

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

February 26, 2020

John Long, Project Manager
Wood Environment & Infrastructure Solutions, Inc.
One Union Square
600 University Street, Suite 600
Seattle, WA 98101

Dear Mr Long:

Included are the results from the testing of material submitted on February 21, 2020 from the Kelly Moore, F&BI 002315 project. There are 4 pages included in this report.

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

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
WEI0226R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on February 21, 2020 by Friedman & Bruya, Inc. from the Wood Environment & Infrastructure Solutions Kelly Moore, F&BI 002315 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Wood Environment & Infrastructure Solutions
002315 -01	EFF_02212020
002315 -02	INF_02212020

All quality control requirements were acceptable.

Date of Report: 02/26/20
Date Received: 02/21/20
Project: Kelly Moore, F&BI 002315
Date Extracted: 02/24/20
Date Analyzed: 02/24/20

RESULTS FROM THE ANALYSIS OF AIR SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING MODIFIED METHODS 8021B AND NWTPH-Gx

Results Reported as mg/m^3

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
EFF_02212020 002315-01	<0.1	<0.2	<0.2	<0.6	<10	79
INF_02212020 002315-02	<0.1	<0.2	<0.2	<0.6	33	82
Method Blank 00-381 MB	<0.1	<0.2	<0.2	<0.6	<10	82

Date of Report: 02/26/20
Date Received: 02/21/20
Project: Kelly Moore, F&BI 002315

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING MODIFIED EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 002315-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	mg/m^3	<0.1	<0.1	nm
Toluene	mg/m^3	<0.2	<0.2	nm
Ethylbenzene	mg/m^3	<0.2	<0.2	nm
Xylenes	mg/m^3	<0.6	<0.6	nm
Gasoline	mg/m^3	<10	<10	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/m^3	5.0	94	70-130
Toluene	mg/m^3	5.0	93	70-130
Ethylbenzene	mg/m^3	5.0	99	70-130
Xylenes	mg/m^3	15	95	70-130
Gasoline	mg/m^3	100	121	86-144

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.

002315

SAMPLE CHA OF CUSTODY ME 02/21/20

Report To John Long
Company Wood Environmental
Address 600 University St. Suite 600
City, State, ZIP Seattle, WA 98101
Phone 2068388461 Email John Long

SAMPLERS (*signature*)	
PROJECT NAME: Kelly Moore	PO #
REMARKS	INVOICE TO

Page # _____ of _____

TURNAROUND TIME
- ☒ Standard Turnaround
- ☐ RUSH _____
- Rush charges authorized by: _____

SAMPLE DISPOSAL
- ☒ Dispose after 30 days
- ☐ Archive Samples
- ☐ Other _____

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM	BTEX	TPH-Gas			Notes
EFF-02212020	01	2-21-2020	13:30	Tedlar Bag	1								X	X			
INF-02212020	02	2-21-2020	13:35	Tedlar Bag	1								X	X			

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Gavin Klockeman	JHA	2-21-2020	1432
Received by:	Nhan Phan	FEBI	2/21/20	1432
Relinquished by:				
Received by:			20	

Samples received at _____ °C

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282

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

May 1, 2020

Paul Stull, Project Manager
Wood Environment & Infrastructure Solutions, Inc.
One Union Square
600 University Street, Suite 600
Seattle, WA 98101

Dear Mr Stull:

Included are the results from the testing of material submitted on April 20, 2020 from the Kelly Moore, F&BI 004205 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 should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: paul.stull@woodplc.com
WEI0501R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on April 20, 2020 by Friedman & Bruya, Inc. from the Wood Environment & Infrastructure Solutions Kelly Moore, F&BI 004205 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Wood Environment & Infrastructure Solutions
004205 -01	INF_4_20_2020
004205 -02	EFF_4_20_2020

The TO-15 gasoline range concentrations were quantified using a single point calibration at 200 ppbv.

All quality control requirements were acceptable.

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	INF_4_20_2020	Client:	Wood Environment & Infrastructure
Date Received:	04/20/20	Project:	Kelly Moore, F&BI 004205
Date Collected:	04/20/20	Lab ID:	004205-01 1/7.0
Date Analyzed:	04/28/20	Data File:	042732.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat/MS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	105	70	130

Compounds:	Concentration ug/m3	ppbv
Benzene	35	11
Toluene	<130	<35
Ethylbenzene	120	27
m,p-Xylene	1,500	340
o-Xylene	420	96
Gasoline Range Organics	90,000	22,000

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	EFF_4_20_2020	Client:	Wood Environment & Infrastructure
Date Received:	04/20/20	Project:	Kelly Moore, F&BI 004205
Date Collected:	04/20/20	Lab ID:	004205-02 1/7.1
Date Analyzed:	04/28/20	Data File:	042731.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat/MS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	113	70	130

Compounds:	Concentration ug/m3	ppbv
Benzene	<2.3	<0.71
Toluene	<130	<35
Ethylbenzene	<3.1	<0.71
m,p-Xylene	<6.2	<1.4
o-Xylene	<3.1	<0.71
Gasoline Range Organics	<2,300	<570

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Method Blank	Client:	Wood Environment & Infrastructure
Date Received:	Not Applicable	Project:	Kelly Moore, F&BI 004205
Date Collected:	Not Applicable	Lab ID:	00-0938 mb
Date Analyzed:	04/27/20	Data File:	042711.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat/MS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	100	70	130

Compounds:	Concentration ug/m3	ppbv
Benzene	<0.32	<0.1
Toluene	<19	<5
Ethylbenzene	<0.43	<0.1
m,p-Xylene	<0.87	<0.2
o-Xylene	<0.43	<0.1
Gasoline Range Organics	<330	<80

Date of Report: 05/01/20
Date Received: 04/20/20
Project: Kelly Moore, F&BI 004205

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

Laboratory Code: 004280-14 1/3.3 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 30)
Benzene	ug/m3	<1.1	<1.1	nm
Toluene	ug/m3	<62	<62	nm
Ethylbenzene	ug/m3	<1.4	<1.4	nm
m,p-Xylene	ug/m3	<2.9	<2.9	nm
o-Xylene	ug/m3	<1.4	<1.4	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/m3	43	88	70-130
Toluene	ug/m3	51	91	70-130
Ethylbenzene	ug/m3	59	92	70-130
m,p-Xylene	ug/m3	120	94	70-130
o-Xylene	ug/m3	59	91	70-130

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.

004205

SAMPLE CHAIN OF CUSTODY

MC 04-20-20

Page # 1 of 1

Report To Paul Stull

Company Woodard Environmental

Address 600 University St. Suite 600

City, State, ZIP Seattle, WA 98101

Phone 5039414044 Email paul.Stull@woodplc.com

SAMPLERS (signature) Gavin Klockeman

PROJECT NAME & ADDRESS: Kelly Moore

PO #:

NOTES:

INVOICE TO:

TURNAROUND TIME
- [x] Standard
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [x] Default: Clean after 3 days
- [ ] Archive (Fee may apply)

SAMPLE INFORMATION										ANALYSIS REQUESTED						
Sample Name	Lab ID	Canister ID	Flow Cont. ID	Reporting Level: IA=Indoor Air SG=Soil Gas (Circle One)	Date Sampled	Initial Vac. ("Hg)	Field Initial Time	Final Vac. ("Hg)	Field Final Time	TO15 Full Scan	TO15 BTEXN	TO15 cVOCs	APH	Helium	BTEX By TO15 TPH-ric as Hexane	Notes
INF_4_20_2020	01	3256	106	IA / (SG)	4-20-20	15	9:34	0	9:39						X	SN: 3256 Dura: 6min
EFF_4_20_2020	02	3675	02	IA / (SG)	1	~~30~~ 15	9:24	0	9:39						X	SN: 3675 Dura: 15min
		B4120		IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Gavin Klockeman	JHA	4-20-2020	1140
Received by:	S. Olson	F+B, Inc	4.20.2011:40A	
Relinquished by:				
Received by:				

Samples received at 22 °C

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

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

May 28, 2020

Paul Stull, Project Manager
Wood Environment & Infrastructure Solutions, Inc.
One Union Square
600 University Street, Suite 600
Seattle, WA 98101

Dear Mr Stull:

Included are the results from the testing of material submitted on May 18, 2020 from the Kelly Moore, F&BI 005221 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 should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
WEI0528R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on May 18, 2020 by Friedman & Bruya, Inc. from the Wood Environment & Infrastructure Solutions Kelly Moore, F&BI 005221 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Wood Environment & Infrastructure Solutions
005221 -01	INF_5-18-2020
005221 -02	EFF_5-18-2020

The TO-15 gasoline range concentrations were quantified using a single point calibration at 100 ppbv.

All quality control requirements were acceptable.

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	INF_5-18-2020	Client:	Wood Environment & Infrastructure
Date Received:	05/18/20	Project:	Kelly Moore, F&BI 005221
Date Collected:	05/18/20	Lab ID:	005221-01 1/14
Date Analyzed:	05/21/20	Data File:	052027.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat/MS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	109	70	130

Compounds:	Concentration ug/m3	ppbv
Hexane	<49	<14
Benzene	5.9	1.8
Toluene	<260	<70
Ethylbenzene	<6.1	<1.4
m,p-Xylene	<12	<2.8
o-Xylene	<6.1	<1.4
Gasoline Range Organics	110,000	27,000

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	EFF_5-18-2020	Client:	Wood Environment & Infrastructure
Date Received:	05/18/20	Project:	Kelly Moore, F&BI 005221
Date Collected:	05/18/20	Lab ID:	005221-02 1/2.8
Date Analyzed:	05/21/20	Data File:	052026.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat/MS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	105	70	130

Compounds:	Concentration ug/m3	ppbv
Hexane	<9.9	<2.8
Benzene	<0.89	<0.28
Toluene	<53	<14
Ethylbenzene	<1.2	<0.28
m,p-Xylene	<2.4	<0.56
o-Xylene	<1.2	<0.28
Gasoline Range Organics	<1,100	<280

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Method Blank	Client:	Wood Environment & Infrastructure
Date Received:	Not Applicable	Project:	Kelly Moore, F&BI 005221
Date Collected:	Not Applicable	Lab ID:	00-1068 mb
Date Analyzed:	05/20/20	Data File:	052011.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat/MS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	111	70	130

Compounds:	Concentration ug/m3	ppbv
Hexane	<3.5	<1
Benzene	<0.32	<0.1
Toluene	<19	<5
Ethylbenzene	<0.43	<0.1
m,p-Xylene	<0.87	<0.2
o-Xylene	<0.43	<0.1
Gasoline Range Organics	<410	<100

Date of Report: 05/28/20
Date Received: 05/18/20
Project: Kelly Moore, F&BI 005221

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

Laboratory Code: 005229-01 1/7.8 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 30)
Hexane	ug/m3	<27	<27	nm
Benzene	ug/m3	3.5	3.3	6
Toluene	ug/m3	<150	<150	nm
Ethylbenzene	ug/m3	5.9	6.1	3
m,p-Xylene	ug/m3	24	25	4
o-Xylene	ug/m3	7.8	8.0	3

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Hexane	ug/m3	48	93	70-130
Benzene	ug/m3	43	91	70-130
Toluene	ug/m3	51	94	70-130
Ethylbenzene	ug/m3	59	95	70-130
m,p-Xylene	ug/m3	120	100	70-130
o-Xylene	ug/m3	59	96	70-130

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.

00522 1

SAMPLE CHAIN OF CUSTODY

ME 05/18/20

Page # 1 of 1

Report To Paul Stull
Company Wood Environmental
Address 600 University St. Suite 6000
City, State, ZIP Seattle, WA 98101
Phone 5039414044 Email paul.stull@woodplc.com

SAMPLERS (signature) Grain Klockeman

PROJECT NAME & ADDRESS: Kelly Moore

PO #:

NOTES:

INVOICE TO:

TURNAROUND TIME
☒ Standard
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☒ Default: Clean after 3 days
☐ Archive (Fee may apply)

SAMPLE INFORMATION										ANALYSIS REQUESTED						
Sample Name	Lab ID	Canister ID	Flow Cont. ID	Reporting Level: IA=Indoor Air SG=Soil Gas (Circle One)	Date Sampled	Initial Vac. ("Hg)	Field Initial Time	Final Vac. ("Hg)	Field Final Time	TO15 Full Scan	TO15 BTEXN	TO15 cVOCs	APH	Helium	BTEX by TO15 TPH-gas Hexane	Notes
INF_5-18-2020	01	3673	109	IA / (SG)	5-18-20	30	1014	-0	1018						X	SN: 3673
EFF_5-18-2020	02	3259	102	IA / (SG)		30	1020	-0	1026						X	SN: 3259
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Grain Klockeman	JHA	5/18/20	1150
Received by:	Nhan Phan	FEBI	V	1150
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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fbi@isomedia.com
www.friedmanandbruya.com

June 10, 2019

Crystal Thimsen, Project Manager
Wood Environment & Infrastructure Solutions, Inc.
One Union Square
600 University Street, Suite 600
Seattle, WA 98101

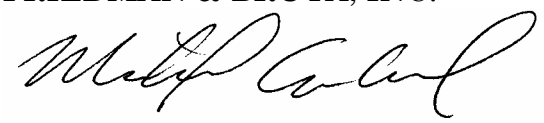
Dear Ms Thimsen:

Included are the results from the testing of material submitted on June 4, 2019 from the Kelly Moore, F&BI 906031 project. There are 5 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 should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
WEI0610R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on June 4, 2019 by Friedman & Bruya, Inc. from the Wood Environment & Infrastructure Solutions Kelly Moore, F&BI 906031 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Wood Environment & Infrastructure Solutions
906031 -01	EFF-060419
906031 -02	INF-060419
906031 -03	SVE09-060419
906031 -04	SVE10-060419
906031 -05	SVE11-060419
906031 -06	SVE12-060419
906031 -07	SVE13-060419
906031 -08	SVE01-060419
906031 -09	SVE03-060419
906031 -10	SVE05-060419
906031 -11	SVE07-060419
906031 -12	SVE08-060419
906031 -13	SVE06-060419
906031 -14	SVE04-060419
906031 -15	SVE02-060419

All quality control requirements were acceptable.

Date of Report: 06/10/19
Date Received: 06/04/19
Project: Kelly Moore, F&BI 906031
Date Extracted: 06/04/19
Date Analyzed: 06/05/19

**RESULTS FROM THE ANALYSIS OF AIR SAMPLES
FOR BENZENE AND TPH AS GASOLINE
USING MODIFIED METHODS 8021B AND NWTPH-Gx**

Results Reported as mg/m^3

Sample ID Laboratory ID	Benzene	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
EFF-060419 906031-01	<0.1	20	86
INF-060419 906031-02	<0.1	640	113
SVE09-060419 906031-03	<0.1	440	105
SVE10-060419 906031-04 1/5	<0.5	2,300	101
SVE11-060419 906031-05	<0.1	660	100
SVE12-060419 906031-06 1/2	<0.2	1,400	98
SVE13-060419 906031-07	<0.1	760	91
SVE01-060419 906031-08	<0.1	14	85
SVE03-060419 906031-09	<0.1	2,400	ip
SVE05-060419 906031-10 1/5	<0.5	3,500	130

Date of Report: 06/10/19
Date Received: 06/04/19
Project: Kelly Moore, F&BI 906031
Date Extracted: 06/04/19
Date Analyzed: 06/05/19

**RESULTS FROM THE ANALYSIS OF AIR SAMPLES
FOR BENZENE AND TPH AS GASOLINE
USING MODIFIED METHODS 8021B AND NWTPH-Gx**

Results Reported as mg/m^3

Sample ID Laboratory ID	Benzene	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
SVE07-060419 906031-11	<0.1	230	91
SVE08-060419 906031-12	<0.1	16	85
SVE06-060419 906031-13	<0.1	33	89
SVE04-060419 906031-14	<0.1	400	103
SVE02-060419 906031-15	<0.1	14	79
Method Blank 09-1280 MB	<0.1	<10	76

Date of Report: 06/10/19
Date Received: 06/04/19
Project: Kelly Moore, F&BI 906031

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR BENZENE AND TPH AS GASOLINE USING MODIFIED EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 906031-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	mg/m^3	<0.1	<0.1	nm
Gasoline	mg/m^3	20	19	5

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/m^3	5.0	91	70-130
Gasoline	mg/m^3	100	131	86-144

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.

906031

SAMPLE CHAIN OF CUSTODY

ME 06/04/19 Page # 1 of 2

Report To CRYSTAL THOMSEN

Company WOOD E+I

Address 600 UNIVERSITY ST. STE 600

City, State, ZIP SEATTLE, WA 98101

Phone 206 839-3469 Email CRYSTAL.THOMSEN@AMECFW.COM

SAMPLERS (signature): George Hagan

PROJECT NAME: Kelly MOORE

PO #:

REMARKS:

INVOICE TO:

TURNAROUND TIME
- ☐ Standard Turnaround
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Dispose after 30 days
- ☐ Archive Samples
- ☐ Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM	Benzene				Notes
						ANALYSES REQUESTED											
EFF-060419	01	6-4-19	0856	1-LITER AIR	ONE TEDLAR BAG			X					X				FID 1.2 PPM
INF-060419	02	" "	0903	" "	"			X					X				FID 50.4 PPM
SVE09-060419	03	" "	0934 ~~0932~~ GH	" "	"			X					X				
SVE10-060419	04	" "	0940 GH ~~0938~~	" "	"			X					X				
SVE11-060419	05	" "	0944 ~~0942~~ GH	" "	"			X					X				
SVE12-060419	06	" "	0949 ~~0946~~ GH	" "	"			X					X				
SVE13-060419	07	" "	0953 ~~0951~~ GH	" "	"			X					X				
SVE01-060419	08	" "	1102	" "	"			X					X				
SVE03-060419	09	" "	1105	" "	"			X					X				
SVE05-060419	10	" "	1109	" "	"			X					X				

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: George Hagan	GEORGE HAGAN	JHA ENV.	6-4-19	1248
Received by:	Eric Foss	FedEx	6/4/19	1240
Relinquished by:				
Received by:			21	

Samples received at ____°C

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282

906031

SAMPLE CHAIN OF CUSTODY

ME 06/04/19

Page # 2 of 2

Report To CRYSTAL THIMSEN

Company WOOD E+I

Address 600 UNIVERSITY ST STE: 600

City, State, ZIP SEATTLE, WA

Phone 206 338-8464 : Email CRYSTAL.THIMSEN@AMECFW.COM

SAMPLERS (signature) George Hagen

PROJECT NAME: Kelly Moore

PO #:

REMARKS:

INVOICE TO:

TURNAROUND TIME
- ☐ Standard Turnaround
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Dispose after 30 days
- ☐ Archive Samples
- ☐ Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM	BENZENE				Notes
						ANALYSES REQUESTED											
SVE07-060419	11	6-4-19	1109	1-LITER AZR	ONE TEDLAR BAG			X					X				
SVE08-060419	12	6-4-19	1117	" "	"			X					X				
SVE06-060419	13	" "	1121	" "	"			X					X				
SVE04-060419	14	" "	1126	" "	"			X					X				
SVE02-060419	15	" "	1129	" "	"			X					X				

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: George Hagen	GEORGE HAGAN	IHA ENV	6-4-19	1248
Received by:	Eric Lom	Fed	6/4/19	12:45
Relinquished by:				
Received by:			21	

Samples received at ____ °C

Friedman & Bruya, Inc.
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Ph. (206) 285-8282