



SEATTLE • PORTLAND

October 5, 2016

Kimberly Johnson  
Contract Specialist  
Construction Acquisitions Division  
General Services Administration  
Public Buildings Service, R10  
400-15<sup>th</sup> Street SW  
Auburn, WA 98001

**Re: Groundwater Quarterly Monitoring Report # 4, Fall 2016  
Federal Center South Underground Storage Tank  
Facility/Site ID No. 18866  
Voluntary Cleanup Program No. NW2930  
Contract Number GS-P-10-15-LT-7032  
PDN: EP-GS-P-10-15-LT-7032**

**Dear Ms. Johnson:**

Kane Environmental, Inc. (Kane Environmental) is pleased to present this attached memorandum summarizing four quarters of groundwater conducted at 4735 East Marginal Way South in Seattle, Washington (the Property).

**Executive Summary**

The Property is located adjacent to the Duwamish Waterway. The southeastern portion of the Property contained three (3) underground storage tanks (USTs), which were removed from the Property in 2014. The region of the former USTs is the area of concern (AOC).

At the time of the UST removal and assessment, none of the analyzed soil samples contained either detectable concentrations of petroleum hydrocarbons, or concentrations in exceedance of the MTCA Method A soil cleanup level. However, the base of excavation was below the water table, and a sample of water collected from the excavation contained 230 micrograms per liter (ug/L) diesel, and 300 ug/L heavy oil which, when combined per State protocol, exceeded the MTCA Method A Groundwater Cleanup Level of 500 ug/L.

Based on this detection, Kane Environmental was retained to install four (4) monitoring wells at the Property. Three wells were installed in the footprint of the former UST excavation, and the fourth well was installed in an assumed downgradient location.

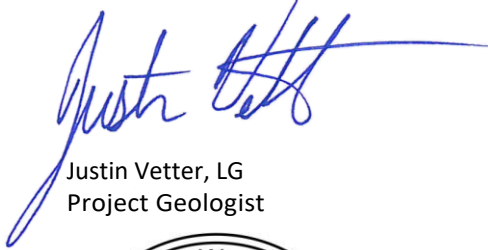
Kane Environmental conducted four rounds of groundwater sampling in in December, 2015, March, 2016, June, 2016, and September, 2016. Diesel range petroleum hydrocarbons (DRO) were not detected in any of the samples in any of the sampling events. Heavy oil range petroleum hydrocarbons (RRO) were either not detected at laboratory reporting limits or were detected at concentrations below the MTCA Method A Groundwater Cleanup Level in December, 2015, March, 2016, June, 2016, and September, 2016.

3815 Woodland Park Ave, Suite 102 • Seattle, WA 98103  
Mailing: PO Box 31936 Seattle WA 98103  
Office (206) 691 0476 • Fax (206) 675 0650  
[www.kane-environmental.com](http://www.kane-environmental.com)

Based on the analytical results of the groundwater monitoring, no constituents of concern concentrations exceeded the MTCA Method A Groundwater Cleanup Level in December, 2015, March, 2016, June, 2016, or September, 2016. Based on four consecutive quarters of groundwater monitoring results in compliance with the MTCA Method A Groundwater Cleanup Level, an application for No Further Action (NFA) may be made with Ecology.

We appreciate this opportunity to assist you on this project. If you have any questions or require further assistance, please do not hesitate to contact us.

Sincerely,  
**KANE ENVIRONMENTAL, INC.**



Justin Vetter, LG  
Project Geologist



Vance Atkins, LHG  
Senior Hydrogeologist



JUSTIN VETTER



VANCE ATKINS



## MEMORANDUM

To: Kimberly Johnson  
General Service Administration

From: Mr. Justin Vetter, LG, Kane Environmental, Inc.  
Mr. Vance Atkins, LHG, Kane Environmental, Inc.

Date: October 5, 2016

Re: Federal Center South Underground Storage Tank  
Facility/Site ID No. 18866  
Voluntary Cleanup Program No. NW2930  
Contract Number GS-P-10-15-LT-7032  
PDN: EP-GS-P-10-15-LT-7032  
Groundwater Quarterly Monitoring #4, Fall 2016

Two handwritten signatures in blue ink are present. The top signature is a cursive signature that appears to read "Justin Vetter". Below it is another signature that appears to read "Vance Atkins".

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Kane Environmental, Inc. (Kane Environmental) is pleased to present this memorandum regarding the groundwater monitoring conducted at 4735 East Marginal Way South in Seattle, Washington (the Property) (Vicinity Map included as Figure 1) in December, 2015, March, 2016, June, 2016, and September, 2016. This was the fourth quarter of groundwater performance monitoring.

### BACKGROUND

Federal Center South is located at 4735 East Marginal Way South, in Seattle, Washington (the Property), adjacent to the Duwamish Waterway. It is comprised of King County tax parcel 357320-0975. The southeastern portion of the Property contained three (3) underground storage tanks (USTs) which were removed from the Property in 2014. The region of the former USTs is the area of concern (AOC).

Figure 1 is a Vicinity Map, and Figure 2 displays a Site Plan showing the entire Property. Figure 3 shows a Site Plan Detail showing the AOC and groundwater monitoring well installation locations.

A report titled *Underground Storage Tank Closure Report*, completed by The Riley Group, Inc. (RGI), dated July 23, 2014, was reviewed by Kane Environmental. This report detailed the decommissioning and removal of three (3) approximately 30,000-gallon USTs which had been installed by a former operator of the Property (Ford Motor Company) for storage of Bunker-C fuel and heating oil.

According to the RGI report, the USTs were decommissioned (pumped, rinsed, and inerted), prior to removal on March 18 and 19, 2014. The USTs were reported to be in good condition, and no releases from the USTs were noted. Collection and analysis of ten (10) soil samples from the UST excavation

yielded only one (1) detection of petroleum (diesel) in soil, at a concentration below the applicable State cleanup level. Since the bottoms of the USTs were located below the water table, and the excavation contained water after removal of the USTs, a sample of the excavation water was collected for petroleum analysis. *This water sample contained 230 micrograms per liter (ug/L) diesel, and 300 ug/L heavy oil which, when combined according to State protocol, exceeded the regulatory limit of 500 ug/L.*

The following scope of work was performed to assess the groundwater conditions mentioned above: Kane Environmental was contracted to oversee the installation of groundwater monitoring wells for the investigation of groundwater in an area that was excavated in 2014 for the removal of three USTs. In addition, Kane Environmental developed the wells, and is scheduled to sample them quarterly for analysis of total petroleum hydrocarbons (TPH) in the diesel and heavy oil ranges.

This is the fourth of the four quarterly sampling reports.

## **GROUNDWATER MONITORING**

A total of four monitoring wells were installed on the Property. Monitoring wells KMW-1, KMW-2, and KMW-4 are located within the extents of the former UST excavation. Monitoring well KMW-3 is located west of the former UST excavation, in an assumed down-gradient position (Figure 3).

### **Well Installation**

Wells KMW-1 through KMW-4 were installed on November 24, 2015. Kane Environmental retained ESN Northwest (ESN), an Ecology-licensed drilling contractor. ESN utilized a direct-push drilling rig to advance a temporary three-inch diameter casing. The one-inch diameter well screen, casing, and other well construction materials were installed through the casing as it was withdrawn. Soil samples were not collected during the well installation, and direct observations of subsurface materials was not available. The wells were completed in accordance with Washington State regulations with surface completions of traffic-rated flush mount monuments.

Wells KMW-1, KMW-2, and KMW-4 were installed within the footprint of the former UST excavation. Very dense materials, possible quarry spall installed into base of the excavation, were encountered between 13 and 15 feet below ground surface (bgs) in these borings. The drilling rig met refusal on these materials, and the wells were installed to the total depth of the borings. Well KMW-3 was installed in soils west of the former UST excavation. The boring was advanced to the total target depth of 20 feet bgs.

Well depths and screened intervals are summarized on Table 1.

**TABLE 1**  
**Well Completions**

<i>Well Name</i>	<i>Date Installed</i>	<i>Total Depth (ft bgs)</i>	<i>Screened Interval, (ft bgs)</i>
KMW-1	11/24/2015	14	8-14
KMW-2	11/24/2015	14.5	8.5-14.5
KMW-3	11/24/2015	20	8-20
KMW-4	11/24/2015	15	8-15

The wells were developed by Kane on December 1, 2015. Wells were developed by pumping to remove turbidity. Approximately two to five gallons of water were removed from each well until pumped water appeared clear, with no observed turbidity.

#### **Groundwater Sampling Methodology**

The groundwater sampling procedure for each well, including Quality Assurance/Quality Control (QA/QC) procedures, is described below in detail. The groundwater monitoring wells were sampled on December 12, 2015, March 9, 2016, June 9, 2016, and September 19, 2016.

- Depth to groundwater in the well was measured with a decontaminated electric water interface probe. The probe was cleaned withalconox and rinsed with de-ionized water between sampling activities. The depth to groundwater in each well was measured directly after the previous well (within approximately five minutes total), in order to minimize any tidal influence.
- Groundwater collected from the well was sampled using a peristaltic pump with new polyethylene tubing. Low-flow sampling methodologies per United States Environmental Protection Agency (USEPA) guidelines were employed, with field parameters allowed to stabilize for the last three readings prior to sampling. Field parameters included pH, temperature, conductivity, and total dissolved solids (TDS) using a HANNA® 991300 hand-held meter.
- Groundwater samples were placed into appropriate laboratory-supplied, pre-cleaned and preserved containers for analysis.
- The groundwater samples were immediately placed into ice-filled coolers and subsequently transported to Fremont Analytical Environmental Laboratory (Fremont) in Seattle, Washington, under standard chain-of-custody protocols.

### **Analytical Methodology**

Groundwater samples were submitted to the laboratory and analyzed for Total Petroleum Hydrocarbons (TPH) as diesel and heavy oil by Washington Department of Ecology (Ecology) approved method NWTPH-Dx/Dx-Extended. Silica gel cleanup was completed on the March, 2016 and June, 2016 samples, to remove non-petroleum hydrocarbons (common in a riparian depositional environment, such as near the Property), in order to provide analytic results representative of any petroleum hydrocarbons.

All analyses were performed in accordance with Fremont's in-house Quality Assurance/Quality Control Plans. Sample analyses were performed in compliance with EPA analytical methods and Ecology guidelines. Samples were analyzed within specified holding times. All detection limits were within method requirements and no factors appeared to adversely affect data quality. Internal test methods run by the laboratory to ensure data accuracy and reproducibility include method blanks, method blank duplicates, surrogate blanks, and surrogate blank duplicates.

Sampling was performed in general accordance with USEPA low-flow sampling methodologies. Depth to groundwater within each well and stabilized parameters are summarized below in Table 2.

**TABLE 2**  
**Groundwater Depths and Field Parameters**

<i>Well Name</i>	<i>Date</i>	<i>Depth to Groundwater (ft bgs)</i>	<i>pH</i>	<i>Temperature (° C)</i>	<i>Total Dissolved Solids (ppm)</i>	<i>Conductivity (µS)</i>
KMW-1	12/4/2015	9.19	6.92	14.7	540	1082
	3/9/2016	8.39	7.10	11.2	384	767
	6/9/2016	10.24	6.96	14.2	393	785
	9/19/2016	10.91	7.13	18.0	435	870
KMW-2	12/4/2015	9.11	6.87	15.2	583	1166
	3/9/2016	9.71	7.11	12.5	504	1010
	6/9/2016	10.16	6.86	14.4	370	741
	9/19/2016	10.75	7.13	16.9	407	817
KMW-3	12/4/2015	9.76	6.67	15.0	>2000*	>3999*
	3/9/2016	8.55	7.17	11.3	436	872
	6/9/2016	10.60	6.87	13.7	339	1082
	9/19/2016	11.24	6.89	16.4	>2000*	>3999*
KMW-4	12/4/2015	9.27	6.93	14.7	559	1117
	3/9/2016	8.48	7.15	11.1	416	832
	6/9/2016	10.32	6.92	14.7	403	805
	9/19/2016	10.99	7.14	17.7	442	884

*Notes:*

\* - Parameter was out of range for the instrument, with a value greater than that shown above.

## **FINDINGS**

Diesel range petroleum hydrocarbons (DRO) were not detected in any of the samples in any of the sampling events. Heavy oil range petroleum hydrocarbons (RRO) were not detected at laboratory reporting limits or at concentrations below the MTCA Method A Groundwater Cleanup Level in December, 2015, March, 2016, June, 21016, and September, 2016. Please note that Total Petroleum Hydrocarbons is the cumulative concentration of DRO and RRO, except in cases in which separate products are known to be present; Bunker C is known to have been present, but elutes in both DRO and RRO petroleum ranges and may not be identified as a specific product.

Groundwater sample analytical results are summarized below in Table 3. The full laboratory analytical reports are included as Attachment A.

**TABLE 3**  
**Summary of Diesel and Heavy Oil TPH in Groundwater**

<i>Sample ID</i>	<i>Sample Date</i>	<i>Total Petroleum Hydrocarbons- Diesel (DRO)</i>	<i>Total Petroleum Hydrocarbons- Heavy Oil (RRO)</i>	<i>Total Petroleum Hydrocarbons*</i>
		$\mu\text{g/L}$	$\mu\text{g/L}$	$\mu\text{g/L}$
KMW-1	12/4/2015	nd	311	311
	3/9/2016	nd	nd	nd
	6/9/2016	nd	nd	nd
	9/19/2016	nd	192	192
KMW-2	12/4/2015	nd	254	254
	3/9/2016	nd	nd	nd
	6/19/2016	nd	nd	nd
	9/19/2016	nd	239	239
KMW-3	12/4/2015	nd	175	175
	3/9/2016	nd	187	187
	6/9/2016	nd	nd	nd
	9/19/2016	nd	110	110
KMW-4	12/4/2015	nd	411	411
	3/9/2016	nd	166	166
	6/9/2016	nd	nd	nd
	9/19/2016	nd	156	156
<i>Method Reporting Limit<sup>a</sup></i>		50.1	100	-
<i>MTCA Method A Cleanup Level for Groundwater</i>		500	500	500

*Notes:*

$\mu\text{g/L}$  = micrograms per liter (equivalent to parts per billion [ppb]).

nd = not detected at Method Reporting Limit.

a = Reporting Limits vary (see Attachment A). Highest limit shown.

\* = Total Petroleum Hydrocarbons is the cumulative concentration of DRO and RRO, except in cases in which separate products are known to be present; Bunker C is known to have been present, but elutes in both DRO and RRO petroleum ranges and may not be identified as a specific product.

- = Total Petroleum Hydrocarbons is the sum of any DRO and RRO (see corresponding note in table, above) - see reporting limits for each component.

## **CONCLUSIONS**

Based on the analytical results of the groundwater monitoring, no constituents of concern (CoC) concentrations exceeded the MTCA Method A Groundwater Cleanup Level in December, 2015, March, 2016, June, 2016, or September, 2016. Based on four consecutive quarters with heavy oil range petroleum hydrocarbons (RRO) not detected at laboratory reporting limits or at concentrations below the MTCA Method A Groundwater Cleanup Level, an application for No Further Action (NFA) may be made with Ecology.

**FIGURES**

Figure 1 – Vicinity Map

Figure 2 – Site Plan

Figure 3 – Quarterly Monitoring Analytical Results

**TABLES**

Table 1 – Well Completions

Table 2 – Groundwater Depths and Field Parameters

Table 3 – Summary of Diesel and Heavy Oil TPH in Groundwater

**ATTACHMENTS**

Attachment A – Laboratory Analytical Reports

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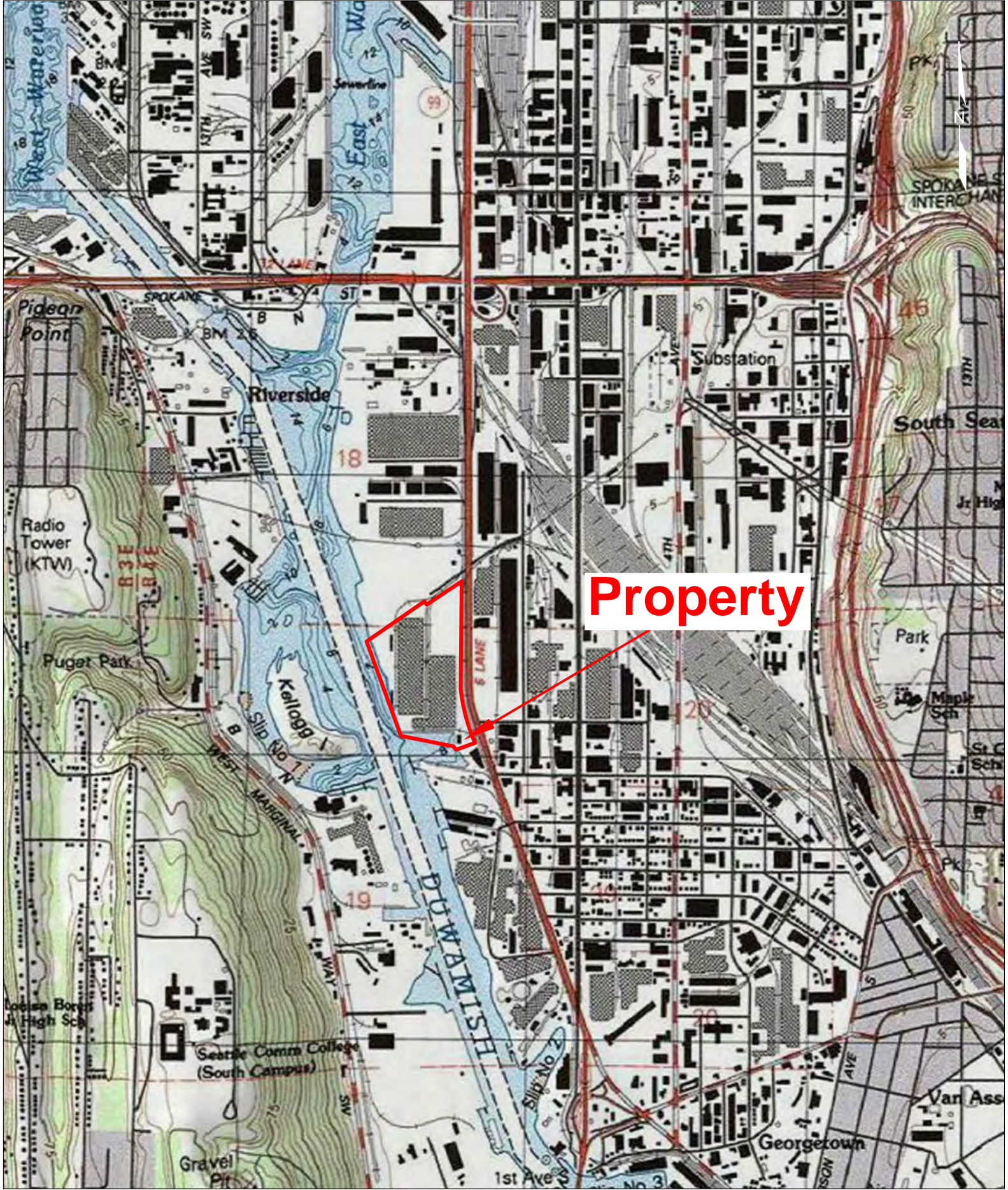
## **LIMITATIONS**

Kane Environmental has performed this work in accordance with generally accepted professional practices for the nature and conditions of the work completed in the same locality and at the same time as the work was performed, and with the terms and conditions as set forth in our proposal.

In preparing this report, Kane Environmental relied on oral statements made by certain individuals. Kane Environmental has not conducted an independent examination of the facts contained in referenced materials and/or statements. Kane Environmental shall not be responsible for conditions or consequences arising from relevant facts that were concealed, withheld, or not fully disclosed at the time the report was prepared. Facts and conditions referenced in this report may change over time and the conclusions and recommendations set forth herein are applicable only to the facts and conditions as described at the time the work was performed. Conclusions were made within the operative constraints of the scope of work, budget, and schedule for this project.

Our assessment of the Property may change as new data become available, either from persons familiar with the site or during additional site studies, exploration, or sampling. This report is intended for the exclusive use of the General Service Administration, and its designated assignees for specific application to the referenced subject property. It is not meant to represent a legal opinion. No other warranty, express or implied, is made.

## FIGURES



Project No. 78901

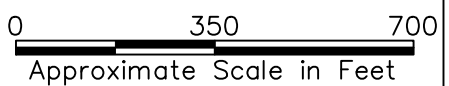
Federal Center South  
4735 East Marginal Way South  
Seattle, Washington

Figure 1  
Vicinity Map



LEGEND

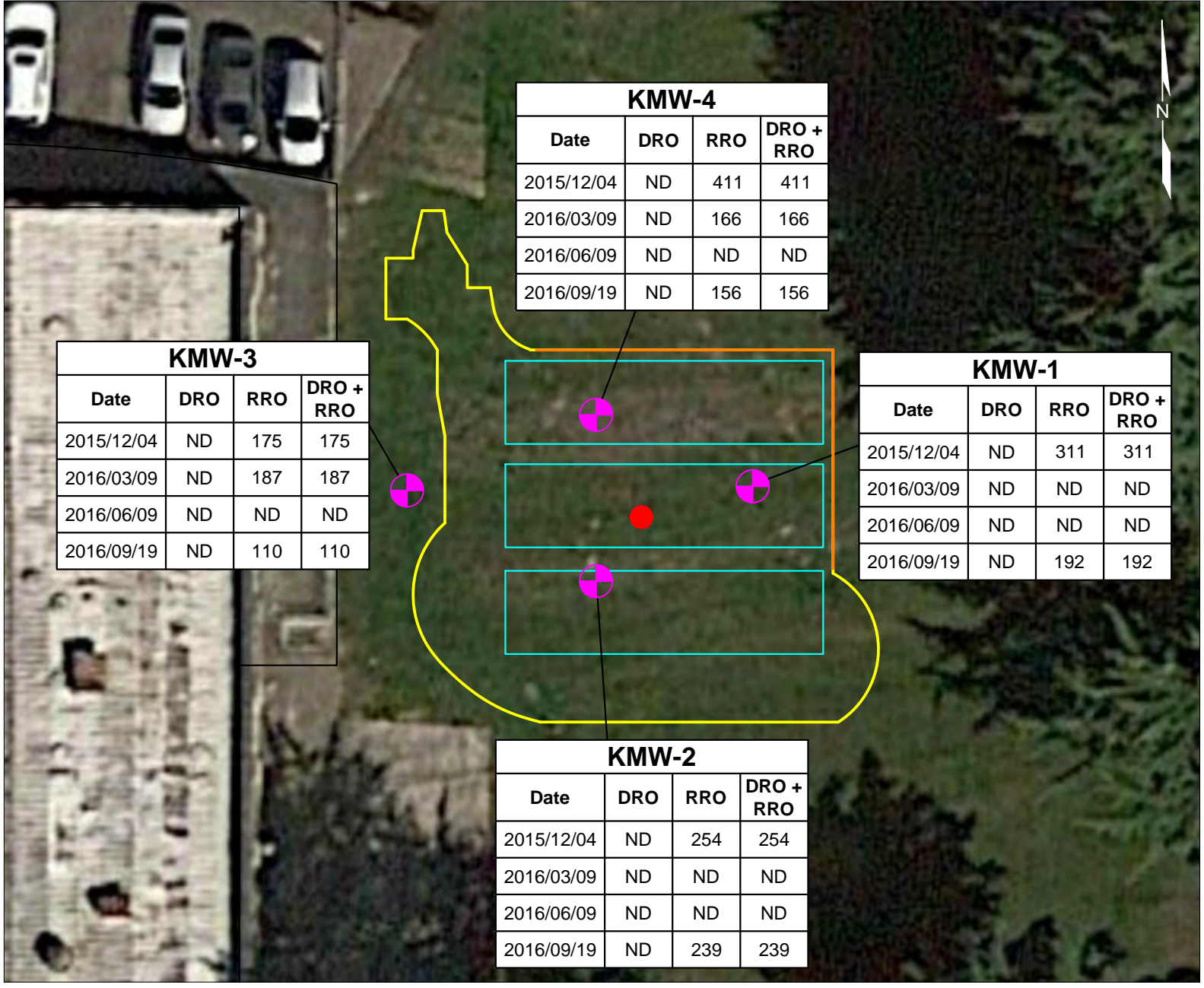
— Approximate Location of Property Boundary



Project No. 78901

**Federal Center South**  
4735 East Marginal Way South  
Seattle, Washington

**Figure 2**  
Site Plan



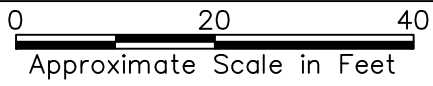
KMW-4			
Date	DRO	RRO	DRO + RRO
2015/12/04	ND	411	411
2016/03/09	ND	166	166
2016/06/09	ND	ND	ND
2016/09/19	ND	156	156

KMW-3			
Date	DRO	RRO	DRO + RRO
2015/12/04	ND	175	175
2016/03/09	ND	187	187
2016/06/09	ND	ND	ND
2016/09/19	ND	110	110

KMW-1			
Date	DRO	RRO	DRO + RRO
2015/12/04	ND	311	311
2016/03/09	ND	ND	ND
2016/06/09	ND	ND	ND
2016/09/19	ND	192	192

KMW-2			
Date	DRO	RRO	DRO + RRO
2015/12/04	ND	254	254
2016/03/09	ND	ND	ND
2016/06/09	ND	ND	ND
2016/09/19	ND	239	239

LEGEND



- Extent of 2014 Riley Group UST Excavation
- Underground Retaining Wall
- Groundwater Monitoring Well
- Heavy Oil Exceedance, Groundwater, 2014 Riley Group
- Former UST

All locations are approximate.



Project No. 78901

**Federal Center South**  
4735 East Marginal Way South  
Seattle, Washington

**Figure 3**  
Quarterly Monitoring  
Analytical Results

**ATTACHMENT A  
LABORATORY ANALYTICAL REPORTS**



3600 Fremont Ave. N.

Seattle, WA 98103

T: (206) 352-3790

F: (206) 352-7178

[info@fremontanalytical.com](mailto:info@fremontanalytical.com)

**Kane Environmental, Inc.**

Justin Vetter

3815 Woodland Park Ave N, Ste. 102

Seattle, WA 98103

**RE: FCS**

**Lab ID: 1512050**

December 09, 2015

**Attention Justin Vetter:**

Fremont Analytical, Inc. received 5 sample(s) on 12/4/2015 for the analyses presented in the following report.

***Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.***

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

A handwritten signature in black ink, appearing to read "Chelsea Ward", written in a cursive style.

Chelsea Ward  
Project Manager



Date: 12/09/2015

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**CLIENT:** Kane Environmental, Inc.  
**Project:** FCS  
**Lab Order:** 1512050

## Work Order Sample Summary

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Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1512050-001	KMW-1:W	12/04/2015 1:05 PM	12/04/2015 4:17 PM
1512050-002	KMW-2:W	12/04/2015 1:50 PM	12/04/2015 4:17 PM
1512050-003	KMW-3:W	12/04/2015 2:28 PM	12/04/2015 4:17 PM
1512050-004	KMW-4:W	12/04/2015 3:15 PM	12/04/2015 4:17 PM
1512050-005	Trip Blank	12/04/2015 10:41 AM	12/04/2015 4:17 PM

---

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

**CLIENT:** Kane Environmental, Inc.

**Project:** FCS

---

WorkOrder Narrative:

**I. SAMPLE RECEIPT:**

Samples receipt information is recorded on the attached Sample Receipt Checklist.

**II. GENERAL REPORTING COMMENTS:**

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples to ensure method criteria are achieved throughout the entire analytical process.

**III. ANALYSES AND EXCEPTIONS:**

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

### Qualifiers:

- \* - Flagged value is not within established control limits
- B - Analyte detected in the associated Method Blank
- D - Dilution was required
- E - Value above quantitation range
- H - Holding times for preparation or analysis exceeded
- I - Analyte with an internal standard that does not meet established acceptance criteria
- J - Analyte detected below Reporting Limit
- N - Tentatively Identified Compound (TIC)
- Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
- S - Spike recovery outside accepted recovery limits
- ND - Not detected at the Reporting Limit
- R - High relative percent difference observed

### Acronyms:

- %Rec - Percent Recovery
- CCB - Continued Calibration Blank
- CCV - Continued Calibration Verification
- DF - Dilution Factor
- HEM - Hexane Extractable Material
- ICV - Initial Calibration Verification
- LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
- MB or MBLANK - Method Blank
- MDL - Method Detection Limit
- MS/MSD - Matrix Spike / Matrix Spike Duplicate
- PDS - Post Digestion Spike
- Ref Val - Reference Value
- RL - Reporting Limit
- RPD - Relative Percent Difference
- SD - Serial Dilution
- SGT - Silica Gel Treatment
- SPK - Spike
- Surr - Surrogate



# Analytical Report

WO#: 1512050

Date Reported: 12/9/2015

**CLIENT:** Kane Environmental, Inc.

**Project:** FCS

**Lab ID:** 1512050-001

**Collection Date:** 12/4/2015 1:05:00 PM

**Client Sample ID:** KMW-1:W

**Matrix:** Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b><u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u></b>					Batch ID: 12538	Analyst: EC
Diesel (Fuel Oil)	ND	49.6		µg/L	1	12/8/2015 12:28:00 PM
Heavy Oil	311	99.3		µg/L	1	12/8/2015 12:28:00 PM
Surr: 2-Fluorobiphenyl	79.0	50-150		%Rec	1	12/8/2015 12:28:00 PM
Surr: o-Terphenyl	76.0	50-150		%Rec	1	12/8/2015 12:28:00 PM

**Lab ID:** 1512050-002

**Collection Date:** 12/4/2015 1:50:00 PM

**Client Sample ID:** KMW-2:W

**Matrix:** Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b><u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u></b>					Batch ID: 12538	Analyst: EC
Diesel (Fuel Oil)	ND	50.0		µg/L	1	12/8/2015 1:31:00 PM
Heavy Oil	254	100		µg/L	1	12/8/2015 1:31:00 PM
Surr: 2-Fluorobiphenyl	84.5	50-150		%Rec	1	12/8/2015 1:31:00 PM
Surr: o-Terphenyl	83.9	50-150		%Rec	1	12/8/2015 1:31:00 PM

**Lab ID:** 1512050-003

**Collection Date:** 12/4/2015 2:28:00 PM

**Client Sample ID:** KMW-3:W

**Matrix:** Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b><u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u></b>					Batch ID: 12538	Analyst: EC
Diesel (Fuel Oil)	ND	49.9		µg/L	1	12/8/2015 2:03:00 PM
Heavy Oil	175	99.8		µg/L	1	12/8/2015 2:03:00 PM
Surr: 2-Fluorobiphenyl	80.5	50-150		%Rec	1	12/8/2015 2:03:00 PM
Surr: o-Terphenyl	81.0	50-150		%Rec	1	12/8/2015 2:03:00 PM



**CLIENT:** Kane Environmental, Inc.

**Project:** FCS

**Lab ID:** 1512050-004

**Collection Date:** 12/4/2015 3:15:00 PM

**Client Sample ID:** KMW-4:W

**Matrix:** Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b><u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u></b>				Batch ID: 12538		Analyst: EC
Diesel (Fuel Oil)	ND	49.7		µg/L	1	12/8/2015 3:06:00 PM
Heavy Oil	411	99.3		µg/L	1	12/8/2015 3:06:00 PM
Surr: 2-Fluorobiphenyl	86.6	50-150		%Rec	1	12/8/2015 3:06:00 PM
Surr: o-Terphenyl	92.6	50-150		%Rec	1	12/8/2015 3:06:00 PM

**Work Order:** 1512050  
**CLIENT:** Kane Environmental, Inc.  
**Project:** FCS

**QC SUMMARY REPORT**  
**Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

Sample ID <b>LCS-12538</b>	SampType: <b>LCS</b>	Units: <b>µg/L</b>				Prep Date: <b>12/7/2015</b>	RunNo: <b>26454</b>				
Client ID: <b>LCSW</b>	Batch ID: <b>12538</b>					Analysis Date: <b>12/8/2015</b>	SeqNo: <b>499281</b>				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	841	49.9	998.4	0	84.2	65	135				
Surr: 2-Fluorobiphenyl	68.2		79.87		85.4	50	150				
Surr: o-Terphenyl	63.5		79.87		79.5	50	150				

Sample ID <b>MB-12538</b>	SampType: <b>MBLK</b>	Units: <b>µg/L</b>				Prep Date: <b>12/7/2015</b>	RunNo: <b>26454</b>				
Client ID: <b>MBLKW</b>	Batch ID: <b>12538</b>					Analysis Date: <b>12/8/2015</b>	SeqNo: <b>499282</b>				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	ND	49.8									
Heavy Oil	ND	99.6									
Surr: 2-Fluorobiphenyl	56.8		79.67		71.3	50	150				
Surr: o-Terphenyl	58.7		79.67		73.7	50	150				

Sample ID <b>1512050-001BDUP</b>	SampType: <b>DUP</b>	Units: <b>µg/L</b>				Prep Date: <b>12/7/2015</b>	RunNo: <b>26454</b>				
Client ID: <b>KMW-1:W</b>	Batch ID: <b>12538</b>					Analysis Date: <b>12/8/2015</b>	SeqNo: <b>499278</b>				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	ND	49.8						0		30	
Heavy Oil	476	99.5						310.6	42.1	30	R
Surr: 2-Fluorobiphenyl	71.4		79.62		89.7	50	150		0		
Surr: o-Terphenyl	71.8		79.62		90.2	50	150		0		

**NOTES:**

R - High RPD observed. The method is in control as indicated by the LCS.

Sample ID <b>1512050-003BDUP</b>	SampType: <b>DUP</b>	Units: <b>µg/L</b>				Prep Date: <b>12/7/2015</b>	RunNo: <b>26454</b>				
Client ID: <b>KMW-3:W</b>	Batch ID: <b>12538</b>					Analysis Date: <b>12/8/2015</b>	SeqNo: <b>499307</b>				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	ND	49.9						0		30	
Heavy Oil	146	99.7						174.5	17.9	30	
Surr: 2-Fluorobiphenyl	59.2		79.76		74.2	50	150		0		



**Work Order:** 1512050  
**CLIENT:** Kane Environmental, Inc.  
**Project:** FCS

**QC SUMMARY REPORT**  
**Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

Sample ID	<b>1512050-003BDUP</b>	SampType:	<b>DUP</b>	Units:	<b>µg/L</b>	Prep Date:	<b>12/7/2015</b>	RunNo:	<b>26454</b>		
Client ID:	<b>KMW-3:W</b>	Batch ID:	<b>12538</b>			Analysis Date:	<b>12/8/2015</b>	SeqNo:	<b>499307</b>		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: o-Terphenyl	60.8		79.76		76.3	50	150		0		

Client Name: **KANE**

 Work Order Number: **1512050**

 Logged by: **Clare Griggs**

 Date Received: **12/4/2015 4:17:00 PM**

### Chain of Custody

1. Is Chain of Custody complete? Yes  No  Not Present
2. How was the sample delivered? Client

### Log In

3. Coolers are present? Yes  No  NA
4. Shipping container/cooler in good condition? Yes  No
5. Custody Seals present on shipping container/cooler?  
(Refer to comments for Custody Seals not intact) Yes  No  Not Required
6. Was an attempt made to cool the samples? Yes  No  NA
7. Were all items received at a temperature of >0°C to 10.0°C \* Yes  No  NA
8. Sample(s) in proper container(s)? Yes  No
9. Sufficient sample volume for indicated test(s)? Yes  No
10. Are samples properly preserved? Yes  No
11. Was preservative added to bottles? Yes  No  NA
12. Is there headspace in the VOA vials? Yes  No  NA
13. Did all samples containers arrive in good condition(unbroken)? Yes  No
14. Does paperwork match bottle labels? Yes  No
15. Are matrices correctly identified on Chain of Custody? Yes  No
16. Is it clear what analyses were requested? Yes  No
17. Were all holding times able to be met? Yes  No

### Special Handling (if applicable)

18. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified:	<input type="text"/>	Date:	<input type="text"/>
By Whom:	<input type="text"/>	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

19. Additional remarks:

### Item Information

Item #	Temp °C
Cooler	2.0
Sample	6.1



# Fremont

3500 Fremont Ave N.  
Seattle, WA 98103

Tel: 206-352-3790  
Fax: 206-352-7178

Date: 2015/12/04  
Page: 1 of 1

Laboratory Project No (Internal): 1512050

## Chain of Custody Record

Client: Kane Environmental  
 Address: 3815 Woodland Park Ave N, Suite 102  
 City, State, Zip: Seattle WA 98103  
 Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_

Project Name: FCS  
 Project No: E-Morgan Way S  
 Location: Justin Vetter  
 Report To (PM): jv@kane-environmental.com  
 PM Email: \_\_\_\_\_  
 Collected by: JV

\*Matrix Codes: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOCs (EPA 8160 / 624)	OX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCOI)	Diesel/Heavy Oil Range Organics (DHCO)	SVOCs (EPA 8270 / 625)	PAHs (EPA 8270 - 514)	PCBs (EPA 8092 / 608)	Metals** (EPA 6020 / 200.9)	Total (T) / Dissolved (D)	Anions (EC)***	EDB (816)	Comments
1 KMW-1:W	2015/12/04	1305	W	X	X	X	X	X	X	X	X	X	X	X	X	X	Hold Gx/BTEX
2 KMW-2:W		1350	W	X	X	X	X	X	X	X	X	X	X	X	X	X	Hold Gx/BTEX
3 KMW-3:W		1428	W	X	X	X	X	X	X	X	X	X	X	X	X	X	Hold Gx/BTEX
4 KMW-4:W		1515	W	X	X	X	X	X	X	X	X	X	X	X	X	X	Hold Gx/BTEX
5																	
6																	
7																	
8																	
9																	
10																	

\*\*Metals Analysis (Circle): NICKEL-5, COPPER-8, PRIORITY POLLUTANTS, TAL, INDIUM, AR, NI, AS, B, BA, BE, CA, CD, CO, CR, CU, FE, HG, K, MG, MN, MO, NA, NI, PB, SP, SE, SR, TI, U, V, ZN

\*\*\*Anions (Circle): Nitrate, Nitrite, Chloride, Sulfate, Bromide, Orthophosphate, Fluoride, Nitrate-Nitrite

Sample Disposal:  Return to Client  Disposal by Lab (a fee may be assessed if samples are retained after 30 days)

Turn-around times for samples received after 4:00pm will begin on the following business day.

Relinquished: [Signature] Date/Time: 2015-12-04 @ 1617  
 Received: [Signature] Date/Time: 2015-12-04 @ 1617

TAT -> Same Day, Next Day, 2 Day, 3 Day, STO

\*Please coordinate with the lab in advance



3600 Fremont Ave. N.

Seattle, WA 98103

T: (206) 352-3790

F: (206) 352-7178

[info@fremontanalytical.com](mailto:info@fremontanalytical.com)

**Kane Environmental, Inc.**

Justin Vetter

3815 Woodland Park Ave N, Ste. 102  
Seattle, WA 98103

**RE: Federal Center South**

**Lab ID: 1603114**

March 16, 2016

**Attention Justin Vetter:**

Fremont Analytical, Inc. received 4 sample(s) on 3/9/2016 for the analyses presented in the following report.

***Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.***

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

A handwritten signature in black ink, appearing to read "Chelsea Ward", written in a cursive style.

Chelsea Ward  
Project Manager



Date: 03/16/2016

---

**CLIENT:** Kane Environmental, Inc.  
**Project:** Federal Center South  
**Lab Order:** 1603114

## Work Order Sample Summary

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Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1603114-001	KMW-1:W	03/09/2016 2:44 PM	03/09/2016 4:21 PM
1603114-002	KMW-2:W	03/09/2016 1:30 PM	03/09/2016 4:21 PM
1603114-003	KMW-3:W	03/09/2016 1:55 PM	03/09/2016 4:21 PM
1603114-004	KMW-4:W	03/09/2016 2:20 PM	03/09/2016 4:21 PM

---

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

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**CLIENT:** Kane Environmental, Inc.**Project:** Federal Center South

---

**I. SAMPLE RECEIPT:**

Samples receipt information is recorded on the attached Sample Receipt Checklist.

**II. GENERAL REPORTING COMMENTS:**

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

**III. ANALYSES AND EXCEPTIONS:**

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Prep Comments for METHOD (PREP-DX-W), SAMPLE (1603114-001A) required Silica Gel Cleanup Procedure (Using Method No 3630C).

Prep Comments for METHOD (PREP-DX-W), SAMPLE (1603114-002A) required Silica Gel Cleanup Procedure (Using Method No 3630C).

Prep Comments for METHOD (PREP-DX-W), SAMPLE (1603114-003A) required Silica Gel Cleanup Procedure (Using Method No 3630C).

Prep Comments for METHOD (PREP-DX-W), SAMPLE (1603114-004A) required Silica Gel Cleanup Procedure (Using Method No 3630C).

### Qualifiers:

- \* - Flagged value is not within established control limits
- B - Analyte detected in the associated Method Blank
- D - Dilution was required
- E - Value above quantitation range
- H - Holding times for preparation or analysis exceeded
- I - Analyte with an internal standard that does not meet established acceptance criteria
- J - Analyte detected below Reporting Limit
- N - Tentatively Identified Compound (TIC)
- Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
- S - Spike recovery outside accepted recovery limits
- ND - Not detected at the Reporting Limit
- R - High relative percent difference observed

### Acronyms:

- %Rec - Percent Recovery
- CCB - Continued Calibration Blank
- CCV - Continued Calibration Verification
- DF - Dilution Factor
- HEM - Hexane Extractable Material
- ICV - Initial Calibration Verification
- LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
- MB or MBLANK - Method Blank
- MDL - Method Detection Limit
- MS/MSD - Matrix Spike / Matrix Spike Duplicate
- PDS - Post Digestion Spike
- Ref Val - Reference Value
- RL - Reporting Limit
- RPD - Relative Percent Difference
- SD - Serial Dilution
- SGT - Silica Gel Treatment
- SPK - Spike
- Surr - Surrogate



# Analytical Report

WO#: 1603114

Date Reported: 3/16/2016

**CLIENT:** Kane Environmental, Inc.

**Project:** Federal Center South

**Lab ID:** 1603114-001

**Collection Date:** 3/9/2016 2:44:00 PM

**Client Sample ID:** KMW-1:W

**Matrix:** Groundwater

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
----------	--------	----	------	-------	----	---------------

**Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

Batch ID: 13195

Analyst: EC

Diesel (Fuel Oil)	ND	50.0		µg/L	1	3/11/2016 2:03:00 PM
Heavy Oil	ND	99.9		µg/L	1	3/11/2016 2:03:00 PM
Surr: 2-Fluorobiphenyl	84.1	50-150		%Rec	1	3/11/2016 2:03:00 PM
Surr: o-Terphenyl	92.0	50-150		%Rec	1	3/11/2016 2:03:00 PM

**Lab ID:** 1603114-002

**Collection Date:** 3/9/2016 1:30:00 PM

**Client Sample ID:** KMW-2:W

**Matrix:** Groundwater

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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**Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

Batch ID: 13195

Analyst: EC

Diesel (Fuel Oil)	ND	49.9		µg/L	1	3/11/2016 2:34:00 PM
Heavy Oil	ND	99.9		µg/L	1	3/11/2016 2:34:00 PM
Surr: 2-Fluorobiphenyl	87.3	50-150		%Rec	1	3/11/2016 2:34:00 PM
Surr: o-Terphenyl	94.6	50-150		%Rec	1	3/11/2016 2:34:00 PM

**Lab ID:** 1603114-003

**Collection Date:** 3/9/2016 1:55:00 PM

**Client Sample ID:** KMW-3:W

**Matrix:** Groundwater

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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**Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

Batch ID: 13195

Analyst: EC

Diesel (Fuel Oil)	ND	49.9		µg/L	1	3/11/2016 3:06:00 PM
Heavy Oil	187	99.8		µg/L	1	3/11/2016 3:06:00 PM
Surr: 2-Fluorobiphenyl	98.1	50-150		%Rec	1	3/11/2016 3:06:00 PM
Surr: o-Terphenyl	106	50-150		%Rec	1	3/11/2016 3:06:00 PM



**CLIENT:** Kane Environmental, Inc.

**Project:** Federal Center South

**Lab ID:** 1603114-004

**Collection Date:** 3/9/2016 2:20:00 PM

**Client Sample ID:** KMW-4:W

**Matrix:** Groundwater

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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**Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

Batch ID: 13195

Analyst: EC

Diesel (Fuel Oil)	ND	49.7		µg/L	1	3/11/2016 3:37:00 PM
Heavy Oil	166	99.4		µg/L	1	3/11/2016 3:37:00 PM
Surr: 2-Fluorobiphenyl	88.7	50-150		%Rec	1	3/11/2016 3:37:00 PM
Surr: o-Terphenyl	96.1	50-150		%Rec	1	3/11/2016 3:37:00 PM

**Work Order:** 1603114  
**CLIENT:** Kane Environmental, Inc.  
**Project:** Federal Center South

**QC SUMMARY REPORT**  
**Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

Sample ID <b>MB-13195</b>	SampType: <b>MBLK</b>	Units: <b>µg/L</b>			Prep Date: <b>3/10/2016</b>	RunNo: <b>28168</b>					
Client ID: <b>MBLKW</b>	Batch ID: <b>13195</b>				Analysis Date: <b>3/11/2016</b>	SeqNo: <b>529667</b>					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	ND	49.9									
Heavy Oil	ND	99.9									
Surr: 2-Fluorobiphenyl	56.8		79.91		71.1	50	150				
Surr: o-Terphenyl	63.7		79.91		79.7	50	150				

Sample ID <b>LCS-13195</b>	SampType: <b>LCS</b>	Units: <b>µg/L</b>			Prep Date: <b>3/10/2016</b>	RunNo: <b>28168</b>					
Client ID: <b>LCSW</b>	Batch ID: <b>13195</b>				Analysis Date: <b>3/11/2016</b>	SeqNo: <b>529666</b>					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	733	49.9	997.7	0	73.4	65	135				
Surr: 2-Fluorobiphenyl	63.0		79.81		78.9	50	150				
Surr: o-Terphenyl	67.5		79.81		84.5	50	150				

Sample ID <b>1603092-001BMS</b>	SampType: <b>MS</b>	Units: <b>µg/L</b>			Prep Date: <b>3/10/2016</b>	RunNo: <b>28168</b>					
Client ID: <b>BATCH</b>	Batch ID: <b>13195</b>				Analysis Date: <b>3/11/2016</b>	SeqNo: <b>529660</b>					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	487	49.7	994.1	0	49.0	65	135				S
Surr: 2-Fluorobiphenyl	60.9		79.53		76.6	50	150				
Surr: o-Terphenyl	35.9		79.53		45.1	50	150				S

**NOTES:**

S - Outlying spike recovery(ies) observed. A duplicate analysis was performed with similar results indicating a possible matrix effect.

S - Low surrogate recovery caused by emulsions during extraction procedure. The method is in control as indicated by the Laboratory Control Sample (LCS).

Sample ID <b>1603092-001BMSD</b>	SampType: <b>MSD</b>	Units: <b>µg/L</b>			Prep Date: <b>3/10/2016</b>	RunNo: <b>28168</b>					
Client ID: <b>BATCH</b>	Batch ID: <b>13195</b>				Analysis Date: <b>3/11/2016</b>	SeqNo: <b>529663</b>					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	478	50.0	999.6	0	47.8	65	135	487.0	1.91	30	S
Surr: 2-Fluorobiphenyl	61.5		79.97		76.9	50	150		0	0	
Surr: o-Terphenyl	33.0		79.97		41.2	50	150		0	0	S

**Work Order:** 1603114  
**CLIENT:** Kane Environmental, Inc.  
**Project:** Federal Center South

**QC SUMMARY REPORT**  
**Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

Sample ID <b>1603092-001BMSD</b>	SampType: <b>MSD</b>	Units: <b>µg/L</b>	Prep Date: <b>3/10/2016</b>	RunNo: <b>28168</b>							
Client ID: <b>BATCH</b>	Batch ID: <b>13195</b>	Analysis Date: <b>3/11/2016</b>	SeqNo: <b>529663</b>								
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

**NOTES:**

- S - Outlying spike recovery(ies) observed. A duplicate analysis was performed with similar results indicating a possible matrix effect.
- S - Low surrogate recovery caused by emulsions during extraction procedure. The method is in control as indicated by the Laboratory Control Sample (LCS).

Sample ID <b>1603099-001BDUP</b>	SampType: <b>DUP</b>	Units: <b>µg/L</b>	Prep Date: <b>3/10/2016</b>	RunNo: <b>28168</b>							
Client ID: <b>BATCH</b>	Batch ID: <b>13195</b>	Analysis Date: <b>3/11/2016</b>	SeqNo: <b>529662</b>								
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	49.9						0		30	
Heavy Oil	ND	99.7						0		30	
Surr: 2-Fluorobiphenyl	73.0		79.79		91.5	50	150		0		
Surr: o-Terphenyl	79.1		79.79		99.2	50	150		0		

Sample ID <b>1603127-001BDUP</b>	SampType: <b>DUP</b>	Units: <b>µg/L</b>	Prep Date: <b>3/10/2016</b>	RunNo: <b>28168</b>							
Client ID: <b>BATCH</b>	Batch ID: <b>13195</b>	Analysis Date: <b>3/11/2016</b>	SeqNo: <b>530021</b>								
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	56.5						0		30	
Heavy Oil	ND	113						0		30	
Surr: 2-Fluorobiphenyl	75.4		90.32		83.5	50	150		0		
Surr: o-Terphenyl	85.2		90.32		94.3	50	150		0		

Client Name: **KANE**  
 Logged by: **Clare Griggs**

Work Order Number: **1603114**  
 Date Received: **3/9/2016 4:21:00 PM**

### Chain of Custody

1. Is Chain of Custody complete? Yes  No  Not Present   
 2. How was the sample delivered? Client

### Log In

3. Coolers are present? Yes  No  NA   
 4. Shipping container/cooler in good condition? Yes  No   
 5. Custody Seals present on shipping container/cooler?  
 (Refer to comments for Custody Seals not intact) Yes  No  Not Required   
 6. Was an attempt made to cool the samples? Yes  No  NA   
 7. Were all items received at a temperature of >0°C to 10.0°C \* Yes  No  NA   
 8. Sample(s) in proper container(s)? Yes  No   
 9. Sufficient sample volume for indicated test(s)? Yes  No   
 10. Are samples properly preserved? Yes  No   
 11. Was preservative added to bottles? Yes  No  NA   
 12. Is there headspace in the VOA vials? Yes  No  NA   
 13. Did all samples containers arrive in good condition(unbroken)? Yes  No   
 14. Does paperwork match bottle labels? Yes  No   
 15. Are matrices correctly identified on Chain of Custody? Yes  No   
 16. Is it clear what analyses were requested? Yes  No   
 17. Were all holding times able to be met? Yes  No

### Special Handling (if applicable)

18. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified:	<input type="text"/>	Date	<input type="text"/>
By Whom:	<input type="text"/>	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

19. Additional remarks:

### Item Information

Item #	Temp °C
Cooler	0.4
Sample	1.0



# Fremont

ANALYTICAL

3600 Fremont Ave N.  
Seattle, WA 98103

Tel: 206-352-3790  
Fax: 206-352-1178

Date: 2016/03/09

Page: 1 of 1

Laboratory Project No (Internal):

11003114

## Chain of Custody Record

Client:

Kene Environmental

Project Name:

Federal Center South

Address:

Project No:

7890 I  
Federal Center South, Seattle

City, State, Zip:

Location:

Justin Vetter

Telephone:

Report To (PM):

justin@kene-environmental.com

\*Matrix Codes: A = Air, Aq = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOCs (EPA 8260 / 624)	GV/TEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Di Range Organics (DH)	SVOCs (EPA 8270 / 625)	PAHs (EPA 8270 / 625)	PCBs (EPA 8082 / 608)	Metals** (EPA 6030 / 200.8)	Total (T)   Dissolved (D)	Anions (IC)**	EDS (8011)	Comments
1 KMW-1=W	2/4/09	1444	GW														
2 KMW-2=W		1330					X										
3 KMW-3=W		1355					X										
4 KMW-4=W		1420					X										
5																	
6																	
7																	
8																	
9																	
10																	

\*\*Metals Analysis (Circle): MTCA-5 RFA-8 Priority Pollutants TAL Individual: Ag Al As B Ba Be C Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Tl U V Zn

\*\*\*Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide Orthophosphate Fluoride Nitrate-Nitrite

Sample Disposal:  Return to Client  Disposal by Lab (A fee may be assessed if samples are retained after 90 days)

Retained  Released

Relinquished  Date/Time: 2016-03-09 @ 16:21

Received  Date/Time: 2/21/16

Turn-around times for samples received after 4:00pm will begin on the following business day.

Special Remarks: Silica gel clamp

TAT → SameDay<sup>®</sup> NextDay<sup>®</sup> 2 Day 3 Day (STD)

\*Please coordinate with the Lab in advance



**Kane Environmental, Inc.**

Justin Vetter  
3815 Woodland Park Ave N, Ste. 102  
Seattle, WA 98103

**RE: Federal Center South**

**Lab ID: 1606139**

June 16, 2016

**Attention Justin Vetter:**

Fremont Analytical, Inc. received 4 sample(s) on 6/9/2016 for the analyses presented in the following report.

***Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.***

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Chelsea Ward  
Project Manager



Date: 06/16/2016

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**CLIENT:** Kane Environmental, Inc.  
**Project:** Federal Center South  
**Lab Order:** 1606139

## Work Order Sample Summary

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Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1606139-001	KMW-1 060916	06/09/2016 9:18 AM	06/09/2016 2:48 PM
1606139-002	KMW-2 060916	06/09/2016 9:58 AM	06/09/2016 2:48 PM
1606139-003	KMW-3 060916	06/09/2016 10:34 AM	06/09/2016 2:48 PM
1606139-004	KMW-4 060916	06/09/2016 11:18 AM	06/09/2016 2:48 PM

---

**CLIENT:** Kane Environmental, Inc.

**Project:** Federal Center South

---

**I. SAMPLE RECEIPT:**

Samples receipt information is recorded on the attached Sample Receipt Checklist.

**II. GENERAL REPORTING COMMENTS:**

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

**III. ANALYSES AND EXCEPTIONS:**

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Prep Comments for METHOD (PREP-DX-W), SAMPLE (1606139-001A) required Silica Gel Cleanup Procedure (Using Method No 3630C).

Prep Comments for METHOD (PREP-DX-W), SAMPLE (1606139-002A) required Silica Gel Cleanup Procedure (Using Method No 3630C).

Prep Comments for METHOD (PREP-DX-W), SAMPLE (1606139-003A) required Silica Gel Cleanup Procedure (Using Method No 3630C).

Prep Comments for METHOD (PREP-DX-W), SAMPLE (1606139-004A) required Silica Gel Cleanup Procedure (Using Method No 3630C).

### Qualifiers:

- \* - Flagged value is not within established control limits
- B - Analyte detected in the associated Method Blank
- D - Dilution was required
- E - Value above quantitation range
- H - Holding times for preparation or analysis exceeded
- I - Analyte with an internal standard that does not meet established acceptance criteria
- J - Analyte detected below Reporting Limit
- N - Tentatively Identified Compound (TIC)
- Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
- S - Spike recovery outside accepted recovery limits
- ND - Not detected at the Reporting Limit
- R - High relative percent difference observed

### Acronyms:

- %Rec - Percent Recovery
- CCB - Continued Calibration Blank
- CCV - Continued Calibration Verification
- DF - Dilution Factor
- HEM - Hexane Extractable Material
- ICV - Initial Calibration Verification
- LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
- MB or MBLANK - Method Blank
- MDL - Method Detection Limit
- MS/MSD - Matrix Spike / Matrix Spike Duplicate
- PDS - Post Digestion Spike
- Ref Val - Reference Value
- RL - Reporting Limit
- RPD - Relative Percent Difference
- SD - Serial Dilution
- SGT - Silica Gel Treatment
- SPK - Spike
- Surr - Surrogate



**CLIENT:** Kane Environmental, Inc.

**Project:** Federal Center South

**Lab ID:** 1606139-001

**Collection Date:** 6/9/2016 9:18:00 AM

**Client Sample ID:** KMW-1 060916

**Matrix:** Groundwater

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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**Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

Batch ID: 13990

Analyst: WC

Diesel (Fuel Oil)	ND	50.0		µg/L	1	6/15/2016 4:15:00 PM
Heavy Oil	ND	100		µg/L	1	6/15/2016 4:15:00 PM
Surr: 2-Fluorobiphenyl	74.0	50-150		%Rec	1	6/15/2016 4:15:00 PM
Surr: o-Terphenyl	76.4	50-150		%Rec	1	6/15/2016 4:15:00 PM

**Lab ID:** 1606139-002

**Collection Date:** 6/9/2016 9:58:00 AM

**Client Sample ID:** KMW-2 060916

**Matrix:** Groundwater

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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**Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

Batch ID: 13990

Analyst: WC

Diesel (Fuel Oil)	ND	50.1		µg/L	1	6/15/2016 4:48:00 PM
Heavy Oil	ND	100		µg/L	1	6/15/2016 4:48:00 PM
Surr: 2-Fluorobiphenyl	70.2	50-150		%Rec	1	6/15/2016 4:48:00 PM
Surr: o-Terphenyl	68.6	50-150		%Rec	1	6/15/2016 4:48:00 PM

**Lab ID:** 1606139-003

**Collection Date:** 6/9/2016 10:34:00 AM

**Client Sample ID:** KMW-3 060916

**Matrix:** Groundwater

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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**Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

Batch ID: 13990

Analyst: WC

Diesel (Fuel Oil)	ND	49.9		µg/L	1	6/15/2016 5:21:00 PM
Heavy Oil	ND	99.8		µg/L	1	6/15/2016 5:21:00 PM
Surr: 2-Fluorobiphenyl	68.2	50-150		%Rec	1	6/15/2016 5:21:00 PM
Surr: o-Terphenyl	69.2	50-150		%Rec	1	6/15/2016 5:21:00 PM



**CLIENT:** Kane Environmental, Inc.

**Project:** Federal Center South

**Lab ID:** 1606139-004

**Collection Date:** 6/9/2016 11:18:00 AM

**Client Sample ID:** KMW-4 060916

**Matrix:** Groundwater

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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**Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

Batch ID: 13990

Analyst: WC

Diesel (Fuel Oil)	ND	49.8		µg/L	1	6/15/2016 6:59:00 PM
Heavy Oil	ND	99.6		µg/L	1	6/15/2016 6:59:00 PM
Surr: 2-Fluorobiphenyl	68.2	50-150		%Rec	1	6/15/2016 6:59:00 PM
Surr: o-Terphenyl	66.4	50-150		%Rec	1	6/15/2016 6:59:00 PM

**Work Order:** 1606139  
**CLIENT:** Kane Environmental, Inc.  
**Project:** Federal Center South

**QC SUMMARY REPORT**  
**Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

Sample ID <b>MB-13990</b>	SampType: <b>MBLK</b>	Units: <b>µg/L</b>	Prep Date: <b>6/14/2016</b>	RunNo: <b>29979</b>							
Client ID: <b>MBLKW</b>	Batch ID: <b>13990</b>		Analysis Date: <b>6/15/2016</b>	SeqNo: <b>566456</b>							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	ND	50.0									
Heavy Oil	ND	100									
Surr: 2-Fluorobiphenyl	55.7		80.06		69.6	50	150				
Surr: o-Terphenyl	54.2		80.06		67.7	50	150				

Sample ID <b>LCS-13990</b>	SampType: <b>LCS</b>	Units: <b>µg/L</b>	Prep Date: <b>6/14/2016</b>	RunNo: <b>29979</b>							
Client ID: <b>LCSW</b>	Batch ID: <b>13990</b>		Analysis Date: <b>6/15/2016</b>	SeqNo: <b>566454</b>							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	699	50.0	999.7	0	69.9	65	135				
Surr: 2-Fluorobiphenyl	58.1		79.97		72.7	50	150				
Surr: o-Terphenyl	53.1		79.97		66.4	50	150				

Sample ID <b>LCS-13990</b>	SampType: <b>LCS</b>	Units: <b>µg/L</b>	Prep Date: <b>6/14/2016</b>	RunNo: <b>29979</b>							
Client ID: <b>LCSW02</b>	Batch ID: <b>13990</b>		Analysis Date: <b>6/15/2016</b>	SeqNo: <b>566455</b>							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	783	50.0	1,000	0	78.3	65	135	698.9	11.3	30	
Surr: 2-Fluorobiphenyl	62.8		80.00		78.5	50	150		0		
Surr: o-Terphenyl	58.7		80.00		73.4	50	150		0		

Sample ID <b>1606139-004ADUP</b>	SampType: <b>DUP</b>	Units: <b>µg/L</b>	Prep Date: <b>6/14/2016</b>	RunNo: <b>29979</b>							
Client ID: <b>KMW-4 060916</b>	Batch ID: <b>13990</b>		Analysis Date: <b>6/15/2016</b>	SeqNo: <b>566570</b>							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	ND	50.1						0		30	
Heavy Oil	ND	100						0		30	
Surr: 2-Fluorobiphenyl	59.7		80.10		74.5	50	150		0		
Surr: o-Terphenyl	60.1		80.10		75.1	50	150		0		



**Work Order:** 1606139  
**CLIENT:** Kane Environmental, Inc.  
**Project:** Federal Center South

**QC SUMMARY REPORT**  
**Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

Sample ID	<b>1606139-004ADUP</b>	SampType:	<b>DUP</b>	Units:	<b>µg/L</b>	Prep Date:	<b>6/14/2016</b>	RunNo:	<b>29979</b>		
Client ID:	<b>KMW-4 060916</b>	Batch ID:	<b>13990</b>			Analysis Date:	<b>6/15/2016</b>	SeqNo:	<b>566570</b>		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Client Name: **KANE**  
 Logged by: **Clare Griggs**

Work Order Number: **1606139**  
 Date Received: **6/9/2016 2:48:00 PM**

### Chain of Custody

1. Is Chain of Custody complete? Yes  No  Not Present   
 2. How was the sample delivered? Client

### Log In

3. Coolers are present? Yes  No  NA   
 4. Shipping container/cooler in good condition? Yes  No   
 5. Custody Seals present on shipping container/cooler?  
 (Refer to comments for Custody Seals not intact) Yes  No  Not Required   
 6. Was an attempt made to cool the samples? Yes  No  NA   
 7. Were all items received at a temperature of >0°C to 10.0°C\* Yes  No  NA   
**Please refer to item information.**  
 8. Sample(s) in proper container(s)? Yes  No   
 9. Sufficient sample volume for indicated test(s)? Yes  No   
 10. Are samples properly preserved? Yes  No   
 11. Was preservative added to bottles? Yes  No  NA   
 12. Is there headspace in the VOA vials? Yes  No  NA   
 13. Did all samples containers arrive in good condition(unbroken)? Yes  No   
 14. Does paperwork match bottle labels? Yes  No   
 15. Are matrices correctly identified on Chain of Custody? Yes  No   
 16. Is it clear what analyses were requested? Yes  No   
 17. Were all holding times able to be met? Yes  No

### Special Handling (if applicable)

18. Was client notified of all discrepancies with this order? Yes  No  NA

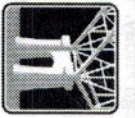
Person Notified:	<input type="text"/>	Date:	<input type="text"/>
By Whom:	<input type="text"/>	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

19. Additional remarks:

### Item Information

Item #	Temp °C
Cooler	15.9
Sample	15.1

\* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C



# Fremont

3600 Fremont Ave N.  
Seattle, WA 98103

Tel: 206-352-3790  
Fax: 206-352-7178

Date: 6/9/16

Page: 1 of 1

Laboratory Project No (Internal):

1006139

## Chain of Custody Record

Client: Kare Environmental  
Address: \_\_\_\_\_  
City, State, Zip: \_\_\_\_\_  
Telephone: \_\_\_\_\_

Project Name: Federal Center South  
Project No: 78901  
Location: Seattle  
Report To (PM): Jusha  
PM Email: \_\_\_\_\_  
Collected by: \_\_\_\_\_

\*Matrix Codes: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	Analytes										Comments							
				VOCs (EPA 8260 / 624)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SVOCs (EPA 8270 / 625)	PAHs (EPA 8082 / 608)	PCBs (EPA 8020 / 200.8)	Metals** (EPA 6020 / 200.8)		Total (T) / Dissolved (D)	Anions (C)***	EDB (8011)				
1 KMW-1 060916	6/9	0918	GW																		
2 KMW-2 060916		0958																			
3 KMW-3 060916		1034																			
4 KMW-4 060916		1118																			
5																					
6																					
7																					
8																					
9																					
10																					

\*\*Metals Analysis (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Tl U V Zn

\*\*Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Sample Disposal:  Return to Client  Disposal by Lab (A fee may be assessed if samples are retained after 30 days.)

Retained:  Date/Time: 6/9/16 14:48

Relinquished:  Date/Time: 6/9/16 14:48

Special Remarks: Silica Gel Cleanup by

TAT → SameDay NextDay 2 Day 3 Day STD

www.fremontanalytical.com



3600 Fremont Ave. N.  
Seattle, WA 98103  
T: (206) 352-3790  
F: (206) 352-7178  
info@fremontanalytical.com

**Kane Environmental, Inc.**

Justin Vetter  
3815 Woodland Park Ave N, Ste. 102  
Seattle, WA 98103

**RE: Federal Center South**

**Lab ID: 1609255**

September 27, 2016

**Attention Justin Vetter:**

Fremont Analytical, Inc. received 4 sample(s) on 9/20/2016 for the analyses presented in the following report.

***Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.***

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

A handwritten signature in black ink, appearing to read "Chelsea Ward", written in a cursive style.

Chelsea Ward  
Project Manager

DoD/ELAP Certification #L2371, ISO/ICC 17025:2005  
ORELAP Certification: WA 100009-007 (NELAP Recognized)



Date: 09/27/2016

---

**CLIENT:** Kane Environmental, Inc.  
**Project:** Federal Center South  
**Lab Order:** 1609255

## Work Order Sample Summary

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Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1609255-001	KMW-1:W	09/19/2016 12:10 PM	09/20/2016 10:53 AM
1609255-002	KMW-2:W	09/19/2016 12:34 PM	09/20/2016 10:53 AM
1609255-003	KMW-3:W	09/19/2016 1:03 PM	09/20/2016 10:53 AM
1609255-004	KMW-4:W	09/19/2016 1:33 PM	09/20/2016 10:53 AM

---

**CLIENT:** Kane Environmental, Inc.

**Project:** Federal Center South

---

**I. SAMPLE RECEIPT:**

Samples receipt information is recorded on the attached Sample Receipt Checklist.

**II. GENERAL REPORTING COMMENTS:**

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

**III. ANALYSES AND EXCEPTIONS:**

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

### Qualifiers:

- \* - Flagged value is not within established control limits
- B - Analyte detected in the associated Method Blank
- D - Dilution was required
- E - Value above quantitation range
- H - Holding times for preparation or analysis exceeded
- I - Analyte with an internal standard that does not meet established acceptance criteria
- J - Analyte detected below Reporting Limit
- N - Tentatively Identified Compound (TIC)
- Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
- S - Spike recovery outside accepted recovery limits
- ND - Not detected at the Reporting Limit
- R - High relative percent difference observed

### Acronyms:

- %Rec - Percent Recovery
- CCB - Continued Calibration Blank
- CCV - Continued Calibration Verification
- DF - Dilution Factor
- HEM - Hexane Extractable Material
- ICV - Initial Calibration Verification
- LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
- MB or MBLANK - Method Blank
- MDL - Method Detection Limit
- MS/MSD - Matrix Spike / Matrix Spike Duplicate
- PDS - Post Digestion Spike
- Ref Val - Reference Value
- RL - Reporting Limit
- RPD - Relative Percent Difference
- SD - Serial Dilution
- SGT - Silica Gel Treatment
- SPK - Spike
- Surr - Surrogate



**CLIENT:** Kane Environmental, Inc.

**Project:** Federal Center South

**Lab ID:** 1609255-001

**Collection Date:** 9/19/2016 12:10:00 PM

**Client Sample ID:** KMW-1:W

**Matrix:** Groundwater

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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**Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

Batch ID: 14918

Analyst: WC

Diesel (Fuel Oil)	ND	50.0		µg/L	1	9/26/2016 4:07:00 PM
Heavy Oil	192	100		µg/L	1	9/26/2016 4:07:00 PM
Surr: 2-Fluorobiphenyl	76.3	50-150		%Rec	1	9/26/2016 4:07:00 PM
Surr: o-Terphenyl	79.6	50-150		%Rec	1	9/26/2016 4:07:00 PM

**Lab ID:** 1609255-002

**Collection Date:** 9/19/2016 12:34:00 PM

**Client Sample ID:** KMW-2:W

**Matrix:** Groundwater

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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**Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

Batch ID: 14918

Analyst: WC

Diesel (Fuel Oil)	ND	49.9		µg/L	1	9/26/2016 5:12:00 PM
Heavy Oil	239	99.8		µg/L	1	9/26/2016 5:12:00 PM
Surr: 2-Fluorobiphenyl	75.5	50-150		%Rec	1	9/26/2016 5:12:00 PM
Surr: o-Terphenyl	59.3	50-150		%Rec	1	9/26/2016 5:12:00 PM

**Lab ID:** 1609255-003

**Collection Date:** 9/19/2016 1:03:00 PM

**Client Sample ID:** KMW-3:W

**Matrix:** Groundwater

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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**Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

Batch ID: 14918

Analyst: WC

Diesel (Fuel Oil)	ND	49.7		µg/L	1	9/26/2016 5:44:00 PM
Heavy Oil	110	99.4		µg/L	1	9/26/2016 5:44:00 PM
Surr: 2-Fluorobiphenyl	76.8	50-150		%Rec	1	9/26/2016 5:44:00 PM
Surr: o-Terphenyl	78.9	50-150		%Rec	1	9/26/2016 5:44:00 PM



**CLIENT:** Kane Environmental, Inc.

**Project:** Federal Center South

**Lab ID:** 1609255-004

**Collection Date:** 9/19/2016 1:33:00 PM

**Client Sample ID:** KMW-4:W

**Matrix:** Groundwater

<b>Analyses</b>	<b>Result</b>	<b>RL</b>	<b>Qual</b>	<b>Units</b>	<b>DF</b>	<b>Date Analyzed</b>
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**Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

Batch ID: 14918

Analyst: WC

Diesel (Fuel Oil)	ND	49.9		µg/L	1	9/26/2016 6:17:00 PM
Heavy Oil	156	99.9		µg/L	1	9/26/2016 6:17:00 PM
Surr: 2-Fluorobiphenyl	80.1	50-150		%Rec	1	9/26/2016 6:17:00 PM
Surr: o-Terphenyl	81.5	50-150		%Rec	1	9/26/2016 6:17:00 PM

**Work Order:** 1609255  
**CLIENT:** Kane Environmental, Inc.  
**Project:** Federal Center South

**QC SUMMARY REPORT**  
**Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

Sample ID <b>MB-14918</b>	SampType: <b>MBLK</b>	Units: <b>µg/L</b>	Prep Date: <b>9/23/2016</b>	RunNo: <b>31978</b>							
Client ID: <b>MBLKW</b>	Batch ID: <b>14918</b>		Analysis Date: <b>9/26/2016</b>	SeqNo: <b>604508</b>							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	ND	50.1									
Heavy Oil	ND	100									
Surr: 2-Fluorobiphenyl	58.2		80.21		72.5	50	150				
Surr: o-Terphenyl	63.7		80.21		79.4	50	150				

Sample ID <b>LCS-14918</b>	SampType: <b>LCS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/23/2016</b>	RunNo: <b>31978</b>							
Client ID: <b>LCSW</b>	Batch ID: <b>14918</b>		Analysis Date: <b>9/26/2016</b>	SeqNo: <b>604506</b>							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	763	50.1	1,002	0	76.2	65	135				
Surr: 2-Fluorobiphenyl	63.2		80.14		78.8	50	150				
Surr: o-Terphenyl	66.2		80.14		82.6	50	150				

Sample ID <b>LCSW02</b>	SampType: <b>LCSW02</b>	Units: <b>µg/L</b>	Prep Date: <b>9/23/2016</b>	RunNo: <b>31978</b>							
Client ID: <b>LCSW02</b>	Batch ID: <b>14918</b>		Analysis Date: <b>9/26/2016</b>	SeqNo: <b>604507</b>							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	836	50.0	999.3	0	83.7	65	135	763.5	9.10	30	
Surr: 2-Fluorobiphenyl	61.6		79.95		77.1	50	150		0		
Surr: o-Terphenyl	62.9		79.95		78.7	50	150		0		

Sample ID <b>1609255-001ADUP</b>	SampType: <b>DUP</b>	Units: <b>µg/L</b>	Prep Date: <b>9/23/2016</b>	RunNo: <b>31978</b>							
Client ID: <b>KMW-1:W</b>	Batch ID: <b>14918</b>		Analysis Date: <b>9/26/2016</b>	SeqNo: <b>604494</b>							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	ND	49.9						0		30	
Heavy Oil	198	99.8						191.6	3.28	30	
Surr: 2-Fluorobiphenyl	56.5		79.84		70.8	50	150		0		
Surr: o-Terphenyl	59.6		79.84		74.7	50	150		0		



**Work Order:** 1609255  
**CLIENT:** Kane Environmental, Inc.  
**Project:** Federal Center South

**QC SUMMARY REPORT**  
**Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

Sample ID	<b>1609255-001ADUP</b>	SampType:	<b>DUP</b>	Units:	<b>µg/L</b>	Prep Date:	<b>9/23/2016</b>	RunNo:	<b>31978</b>		
Client ID:	<b>KMW-1:W</b>	Batch ID:	<b>14918</b>			Analysis Date:	<b>9/26/2016</b>	SeqNo:	<b>604494</b>		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Client Name: **KANE**  
 Logged by: **Clare Griggs**

Work Order Number: **1609255**  
 Date Received: **9/20/2016 10:53:00 AM**

### Chain of Custody

1. Is Chain of Custody complete? Yes  No  Not Present   
 2. How was the sample delivered? Client

### Log In

3. Coolers are present? Yes  No  NA   
 4. Shipping container/cooler in good condition? Yes  No   
 5. Custody Seals present on shipping container/cooler?  
 (Refer to comments for Custody Seals not intact) Yes  No  Not Required   
 6. Was an attempt made to cool the samples? Yes  No  NA   
 7. Were all items received at a temperature of >0°C to 10.0°C \* Yes  No  NA   
 8. Sample(s) in proper container(s)? Yes  No   
 9. Sufficient sample volume for indicated test(s)? Yes  No   
 10. Are samples properly preserved? Yes  No   
 11. Was preservative added to bottles? Yes  No  NA   
 12. Is there headspace in the VOA vials? Yes  No  NA   
 13. Did all samples containers arrive in good condition(unbroken)? Yes  No   
 14. Does paperwork match bottle labels? Yes  No   
 15. Are matrices correctly identified on Chain of Custody? Yes  No   
 16. Is it clear what analyses were requested? Yes  No   
 17. Were all holding times able to be met? Yes  No

### Special Handling (if applicable)

18. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified:	<input type="text"/>	Date	<input type="text"/>
By Whom:	<input type="text"/>	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

19. Additional remarks:

### Item Information

Item #	Temp °C
Cooler	6.2
Sample	9.6

\* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

