EMC | Grants Pass * Jacksonville * Medford, OR
GP Office: 1867 Williams Hwy., Suite 216, Grants Pass, OR, 97527
Jville Office: 450 Conestoga Dr., Jacksonville, OR, 97530
Ph: 541-474-9434 * Cell: 541-261-9929 * Fax 541-727-5488
emc@emcengineersscientists.com; http://www.emcengineersscientists.com
- Engineers/Scientists, LLC

January 30, 2023

Oregon Department of Environmental Quality
165 E 7th Ave #100
Eugene, OR 97401

RE: DEQ USTC File No. 20-19-0043
DEQ Facility ID No. 5569

DEQ,

After reviewing the information available for subsurface investigation of the above listed facility located at the address of 3100 E 17th Street, Eugene Oregon, 97403 it appears that a No Further Action (NFA) letter has not been issued for this site by the Department of Environmental Quality. The attached, Exhibit A, Oregon DEQ LUST summary page for general site number 20-19-0043 indicates the site status is ACTIVE.

The LUST report by EMC-Engineers/Scientists, LLC dated 5/14/2019 is attached as Exhibit B. This report includes, on page 5, the results of the soil samples collected during the investigation and none of the six exceeded the limits for exposure pathways under any of the receptor scenarios for the Contaminants of Concern (COC) tested (see attached Exhibit C RBC Table Abridged).

Water samples collected indicated exceedances at two of the seven sample locations. Location D-2, seen on page 8 of Exhibit B, exceeded the ingestion and inhalation from tapwater (RBC_{tw}) exposure pathway for diesel and generic mineral/insulating oil under the receptor scenarios limits for urban and urban residential while remaining well within the occupational receptor scenario limits (see exhibit C). Location D-1, also seen on page 8 of Exhibit B, exceeded the RBC_{tw} exposure pathway for generic mineral/insulating oil under the receptor scenarios limits for urban and urban residential while also remaining within the occupational limit.

If a Risk Based cleanup model were used for the site, EMC's analysis of contaminated mediums, exposure pathways and receptor scenarios would be as follows. Currently the surrounding area is primarily commercial/industrial in nature, as seen in the attached Vicinity Map Exhibit E, and is supplied by a municipal public water system. A search indicates the immediate wells in the vicinity are geotechnical, monitoring or for irrigation use. There is a public water system OR41-01063 that is located 0.8 miles SE of the site (see attached vicinity map) that utilizes groundwater for a mobile home park. However, this park is upgradient from the subject site and is of little concern from the COC's. It is also important to note that the COC levels in the samples are dropping in the down gradient direction according to the ESTIMATED GW GRADIENT – PLAN VIEW, as seen on page 8 of Exhibit B. This would essentially eliminate the residential and urban residential receptor scenarios leaving only the occupational limit. All the sample exceedances are within the RBC_{tw} occupational limits for diesel and generic mineral/insulating oil and thus eliminates all remaining exposure pathways.

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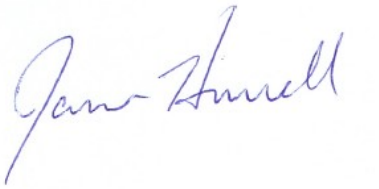
- Engineers/Scientists, LLC

Using this Risk Based model, we are requesting that the Department of Environmental Quality consider an issuance of a NFA for this facility.

Sincerely,



James Harrell, BS, FE
EMC-Engineers/Scientists, LLC

Reviewed by
Jack (John) Akin, MS, PE
EMC Engineers/Scientists, LLC

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EXHIBIT A

LUST SUMMARY PAGE

Oregon Department of Environmental Quality
GLENWOOD TRANSFER STATION

Summary Information

General Site Information

20-19-0043

Basic Incident Information

Site Name:	GLENWOOD TRANSFER STATION	**Received Date:**	01/17/2019
Address:	3100 E 17TH AVE	**Status:**	ACTIVE
	EUGENE, 97403	**Tank Type**:	Regulated Tank
County:	LANE		
		UST Facility Id:	5569
Project Manager	Bruce Scherzinger	Phone Number	(503) 378-5038

Assessment Information

Cause of Release:	OVERFILL	**Source of Release:**	DELIVERY PROBLEM	**Discovery Method:**	DECOMMISSIONING

Media Effected	**Contaminants Released**
>Soil >GroundWater	>UnleadedGas >Diesel

Management Information

Release Stopped Date:	01/17/2019	**Cleanup Start Date:**	01/17/2019	**Cleanup End Date:**	

Work Reported Information

Work Reported	Reported Date
Groundwater Investigation	5/14/2019
20 DAY REPORT	2/11/2019

Site Documents

Click the link to view the document.

File Name	Category	File Size MB	Upload Date
LUST Report w Lab Report.pdf	Reports	5.1359	6/7/2019

This website application cannot be made compliant with the Americans with Disabilities Act. We apologize for any inconvenience and invite you to contact DEQ at 800-452-4011 or email deqinfo@deq.state.or.us for assistance in accessing this site

Department of Environmental Quality
700 NE Multnomah Street, Suite 600 Portland, OR 97232
Hours: Mon-Fri, 8 a.m.-5 p.m

Email: DEQInfo@deq.state.or.us | Phone: 503-229-5696 | Fax: 503-229-6124

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- Engineers/Scientists, LLC

EXHIBIT B

LUST REPORT – SUBSURFACE INVESTIGATION

LUST Report – Subsurface Investigation

For Glenwood Transfer Station

3100 E 17th Avenue,
Eugene, OR 97403

DEQ USTC File No.20-19-0043
DEQ Facility ID No. 5569

Date: 5/14/19

Prepared For: Mr. Tim Cogswell
Lane County Public Works Department

Prepared By:

Jack (John) Akin, MS, PE
EMC-Engineers/Scientists, LLC
450 Conestoga Circle, Jacksonville, OR, 97530
Ph: 541-474-9434, Cell: 541-261-9929

1.0 Introduction

A Site description and environmental background of the Glenwood Transfer Station (GTS), located at 3100 E. 17th Ave., Eugene, OR, is provided in the ODEQ-approved 4-04-19 (revised 4/08/19) Sampling and Analyses Plan (SAP).

After the 2000 gallon gasoline tank (Tank No. AHHHF) and the 12000 gallon diesel tank (Tank No. AHHHG) systems were decommissioned during the second week of January, 2019, initial soil and pit water sampling and analyses were performed, indicating trace petroleum fractions in the pit water.

Due to these findings, a Subsurface Investigation was proposed that included the construction of six geotechic holes (see Section 2.3, Page 4 of this report, and 3.4, Page 7 of the SAP), with Sample No.s D-1, D-2, D-3, G-1, G-2 and G-3, as described below. Groundwater and soil samples were to be analyzed for NWTPH-HCID, followed by quantification of findings (gasoline, diesel and/or heavy weight oils), if any.

ODEQ accepted the proposal and the work was performed on 4/16/19. The methods and results are presented below.

2.0 Soil & Groundwater Sample Collection

Methodology used for soil and groundwater sampling, with any variances, are presented below.

2.1 Soil Sampling

Borings produced continuous cores in 5 foot sections, and each section of each core was inspected by cutting open the core section plastic liner (see photos on Page 10). No indications of petroleum staining or odors were detected in any of the cores, and so only one soil sample was collected from each at the soil/groundwater interface encountered during the event. Soil samples were taken via direct-push techniques as described in ASTM D 6282-98 "Standard Guide for Direct-Push Soil Sampling for Environmental Site Characterizations" and ASTM D 2488-93 "Practice for Description and identification of Soils (Visual-Manual Procedure)".

Bore hole samples were collected by a closed piston discreet sampling system in which a steel sample collection tube, equipped with a cutting shoe and supported piston tip was advanced into the formation (soils) to the beginning of the sample interval.

The rod supporting the probe was removed and the sample tube advanced into the formation, pushing the piston into the collection tube and collecting the soil within a thin-wall polyvinyl chloride (PVC) liner. The cores were then retrieved in the liners, having dimensions of approximately two (2) inches in diameter by five (5) feet long, from the inner part of the sampling tube after the tube was retrieved. Gloves were disposed after each soil sample was collected.

A continuous core was constructed from the surface to where it made sense to stop, based on refusal, depth to groundwater, the presence and interval of any contaminated soils, etc. No physical or visual contamination was encountered in any of these borings. Nevertheless each boring was advanced up to four feet into groundwater and a soil sample collected near the soil/water interface. Soil samples were then collected into four (4) ounce glass jars with Teflon-lined lids for diesel-related analyses, and, for gasoline, since COCs include VOCs or gasoline petroleum fractions, methanol filled sealed plugs & plunger collection methodology were used.

Sample jars were placed in a cooler and delivered to the laboratory. Sample location, depth of collection, date and time were recorded on a chain-of-custody record and submitted to the laboratory with the list of requested analysis. No soil field screening was determined to be useful during this event.

2.2 Groundwater Sampling

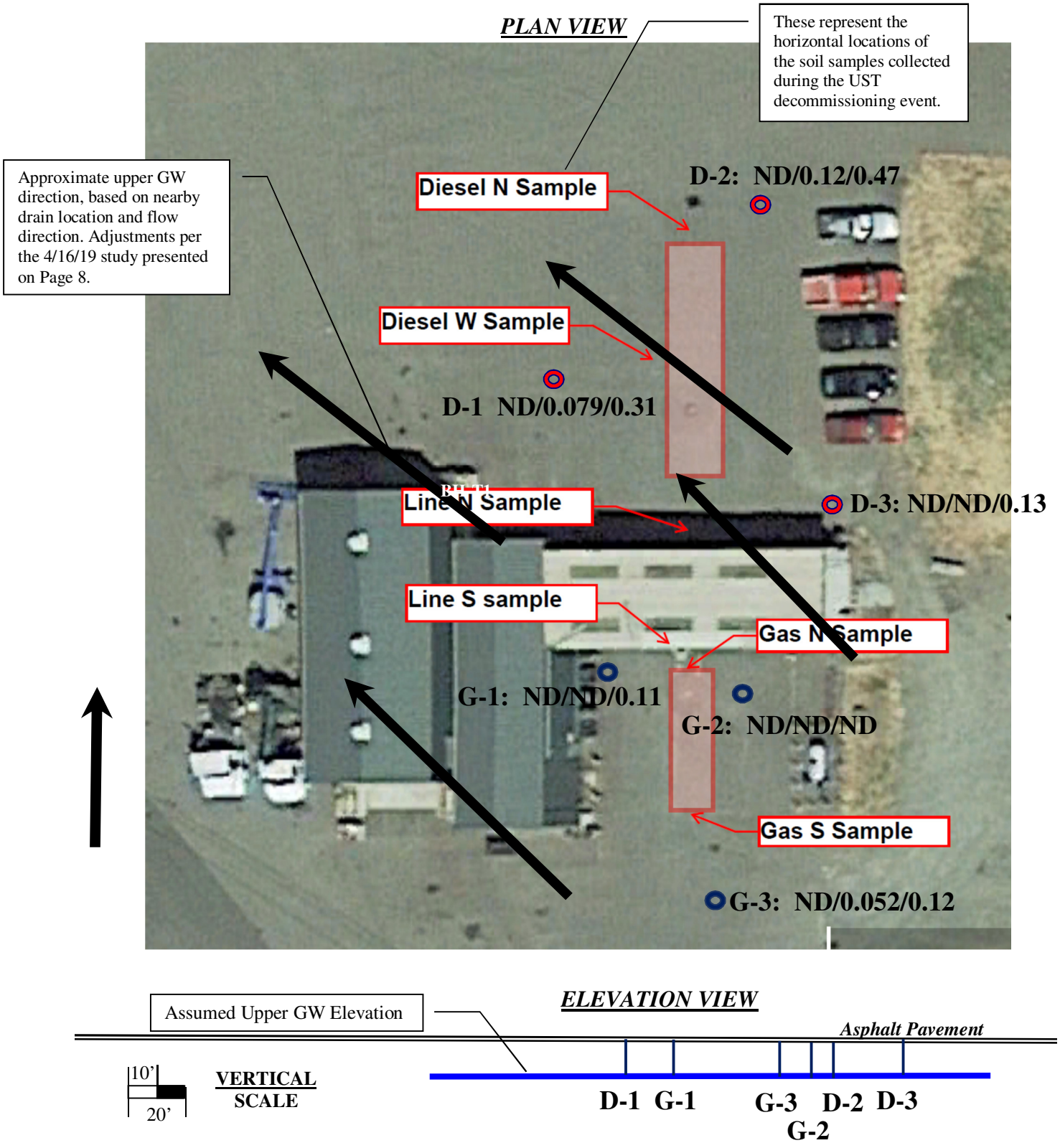
Groundwater samples were collected after each of the six holes was constructed. Each well was allowed to stand idle for a short time to settle turbidity and establish groundwater level equilibrium. Static water level was measured with a clean (decontaminated) water level indicator after samples were collected. The wells were purged with a peristaltic pump prior to sample collection.

Groundwater samples were collected with a peristaltic pump (see photos on Page 10). For each well a temporary casing was installed. Samples were collected into the designated containers from a clean polyethylene tube extending from the pump (see photos on Page 10). Polyethylene tubing, attached risers and protective nitrile gloves were disposed between each borehole. Sample equipment was decontaminated by washing in a dilute non-phosphate soap solution, three (3) rinses in tap water, and a final rinse in distilled/deionized water prior to inserting the disposable PVC liner. All field personnel wore disposable nitrile gloves during sample collection and decontamination procedures.

2.3 Sampling Locations, GW Elevations, Diesel (red circles) and Gasoline (dark blue circles)

All six geotechic holes were constructed and monitored as shown on the in Section 3.4 of the SAP.

A Site sketch with plan views with the groundwater elevations and estimated upper groundwater direction is presented below. Analytical results are summarized in Tables A and B, Pages 5 and 6, respectively.



Values close to samples on above annotated aerialphoto indicate mg/l values for gasoline/diesel/motor oil, respectively, in groundwater media. All soil samples and equipment sample showed none detected (ND) for these COCs.

Table A - Soils

Client Sample ID	Matrix	Analysis Method	Analyte	Result	Unit
41519-D-1	Solid	HCID	#2 Diesel (>C12-C24)	ND	mg/Kg
41519-D-1	Solid	HCID	Gasoline	ND	mg/Kg
41519-D-1	Solid	HCID	Motor Oil	ND	mg/Kg
41519-D-2	Solid	HCID	#2 Diesel (>C12-C24)	ND	mg/Kg
41519-D-2	Solid	HCID	Gasoline	ND	mg/Kg
41519-D-2	Solid	HCID	Motor Oil	ND	mg/Kg
41519-D-3	Solid	HCID	#2 Diesel (>C12-C24)	ND	mg/Kg
41519-D-3	Solid	HCID	Gasoline	ND	mg/Kg
41519-D-3	Solid	HCID	Motor Oil	ND	mg/Kg
41519-G-1	Solid	HCID	#2 Diesel (>C12-C24)	ND	mg/Kg
41519-G-1	Solid	HCID	Gasoline	ND	mg/Kg
41519-G-1	Solid	HCID	Motor Oil	ND	mg/Kg
41519-G-2	Solid	HCID	#2 Diesel (>C12-C24)	ND	mg/Kg
41519-G-2	Solid	HCID	Gasoline	ND	mg/Kg
41519-G-2	Solid	HCID	Motor Oil	ND	mg/Kg
41519-G-3	Solid	HCID	#2 Diesel (>C12-C24)	ND	mg/Kg
41519-G-3	Solid	HCID	Gasoline	ND	mg/Kg
41519-G-3	Solid	HCID	Motor Oil	ND	mg/Kg

Table B - Groundwater

Client Sample ID	Matrix	Analysis Method	Analyte	Result	Unit
41519-D-1	Water	HCID	#2 Diesel (>C12-C24)	0.079	mg/L
41519-D-1	Water	HCID	Gasoline	ND	mg/L
41519-D-1	Water	HCID	Motor Oil	0.31	mg/L
41519-D-2	Water	HCID	#2 Diesel (>C12-C24)	0.12	mg/L
41519-D-2	Water	HCID	Gasoline	ND	mg/L
41519-D-2	Water	HCID	Motor Oil	0.47	mg/L
41519-D-3	Water	HCID	#2 Diesel (>C12-C24)	ND	mg/L
41519-D-3	Water	HCID	Gasoline	ND	mg/L
41519-D-3	Water	HCID	Motor Oil	0.13	mg/L
41519-EQUIP	Water	HCID	#2 Diesel (>C12-C24)	ND	mg/L
41519-EQUIP	Water	HCID	Gasoline	ND	mg/L
41519-EQUIP	Water	HCID	Motor Oil	ND	mg/L
41519-G-1	Water	HCID	#2 Diesel (>C12-C24)	ND	mg/L
41519-G-1	Water	HCID	Gasoline	ND	mg/L
41519-G-1	Water	HCID	Motor Oil	0.11	mg/L
41519-G-2	Water	HCID	#2 Diesel (>C12-C24)	ND	mg/L
41519-G-2	Water	HCID	Gasoline	ND	mg/L
41519-G-2	Water	HCID	Motor Oil	ND	mg/L
41519-G-3	Water	HCID	#2 Diesel (>C12-C24)	0.052	mg/L
41519-G-3	Water	HCID	Gasoline	ND	mg/L
41519-G-3	Water	HCID	Motor Oil	0.12	mg/L

3.0 Summary of Tables A & B

3.1 Soils

No petroleum fractions described as gasoline (C<12), diesel (12<C<24) or heavy weight oil (C>24) were indicated via NW ODEQ HCID method to be present in any of the soil samples collected during this event.

3.2 Groundwater

No petroleum fractions described as gasoline (<C12), diesel (12<C<24) or heavy weight oil (>24) were indicated via NW ODEQ HCID method to be present in any of the groundwater samples collected during this event, with the following exceptions: diesel was detected and therefore quantified in D-1 and D-2, and heavy weight (HW) oil in D-1, D-2, D-3, G-1 and G-3.

3.3 RE Analytical Results: Soils

Analytical results seem to indicate that no significant gasoline, diesel or HW oil fractions have been released to soils close to the two underground storage tanks studied during this event.

3.4 RE Analytical Results: Groundwater

Groundwater appears to be impacted, though it is not clear to what extent by the two decommissioned tanks. Since groundwater gradient appears to be to the north and west, Sample No. G-3 may be considered a background sample. Findings of diesel at this sample location, as well as all samples upgradient (near the former 2000 gallon gasoline tank), don't seem to be from the newly decommissioned diesel tank. Also, the HW oil findings, found in background, as well as near both of the former tanks, indicate previously contaminated groundwater in the vicinity.

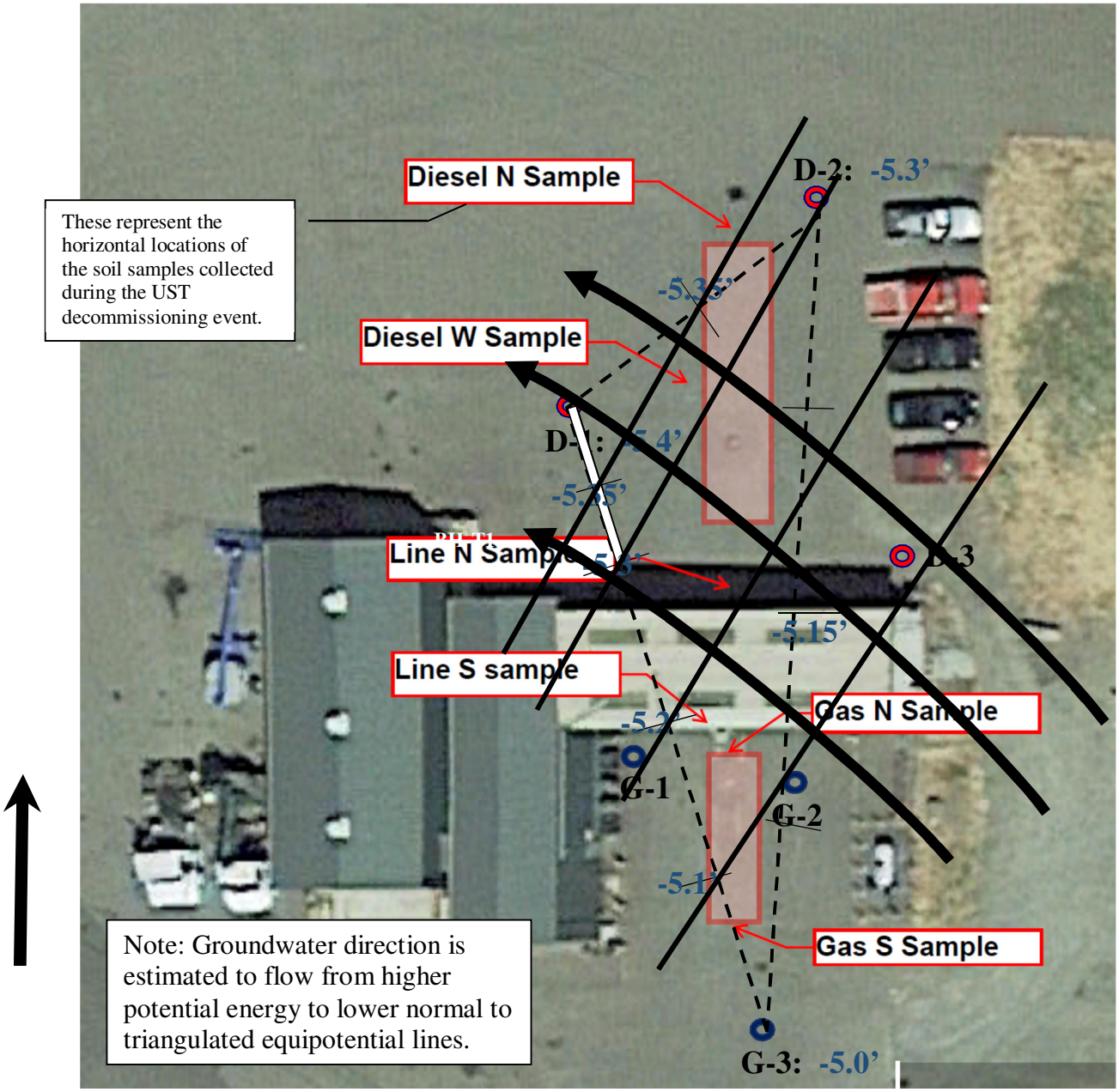
Although the RBCs (Risk-Based Concentrations) don't directly apply to this investigation, the values found in the ODEQ HOT-Specific Table (tapwater section shown on Page 9) can provide insight RE the relative magnitude of the analytical results found in the 4/16/19 GW samples. It is noted that the concentrations of diesel found in D-1 are below RBC_{TW} for all receptor scenarios. The D-2 groundwater sample exceeds RBC_{TW}, however, for Residential and Urban Residential Scenarios. If these two samples are considered representative, it could be stated that, since the concentrations of diesel reduces from D-2 to D-1 (in the down-gradient direction), that we have thereby estimated the extent of the diesel COC. There does seem to be a pre-existing background, however, of diesel in the groundwater in the studied area, indicated by the finding of a low concentration of diesel in the background Sample No. G-3. By the same reasoning, however, the diesel in the background reduces to below lab detect levels, indicating its extent. All other Exposure Pathways for all other Receptor Scenarios shown in this Table show RBCs well above any of the COCs found in this study.

Finally, concentrations of HW oil encountered during the study are not explained by the source uses. The two tanks are reported as historically exclusively used for diesel and gasoline.

Instrument "bleed" into heavier hydrocarbon ranges during analyses generally results from high concentrations of lighter fractions….not the case here. Also, HW is shown upgradient from both sources (G-3). Again, however, we do find HW concentrations below RBC_{TW} for the Occupational Receptor Scenario, and reducing down-gradient to very slightly above those for Residential and Urban-Residential.

If a Risk-based approach was accepted as applicable, aside from the exclusive occupational use of this studied location, it is likely that the elimination of groundwater as a drinking water source, and/or using the existing data to present extents, would be explored.

ESTIMATED GW GRADIENT - PLAN VIEW



SECTION OF ODEQ RBC TABLE

	GROUNDWATER (µg/L (ppb)) Ingestion & Inhalation from Tapwater (RBC_{tw})					
	Residential		Urban Residential		Occupational	
	DS		DS		DS	
		Note		Note		Note
	0.46		2.0		2.1	
	1,100		4,400		6,300	
	1.5		6.7		6.4	
	190		710		830	
it	440		1,800		2000	
	54		230		250	
	59		240		280	
it	510		2,400		2,500	
it	-	>S	-	>S	-	>S
it	0.030		0.11		0.38	
it	0.25		0.80		-	>S
it	-	>S	-	>S	-	>S
it	0.025		0.080		0.47	
it	-	>S	-	>S	-	>S
it	0.025		0.080		0.47	
it	-	>S	-	>S	-	>S
it	280		1,400		1,300	
it	-	>S	-	>S	-	>S
	0.17		0.78		0.72	
it	110		-	>S	-	>S
	14		64		68	
	0.0075		0.034		0.034	
	0.17		0.78		0.78	
	15	L	15	L	15	L
	110		110		450	
	100		100		430	
	300		300		1,300	

SOME SITE PHOTOS

Photo above-left shows core sections of a boring (D-3), with the saturated location identified. Boring equipment was decontaminated after each 5' core section was extracted, as shown in the Photo above-right.

Photo above-left shows a geotechnic hole (D-1) being purged via peristaltic pump prior to sampling. Photo above-right shows sampling from a geotechnic hole (G-1).

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

Laboratory Job ID: 580-85634-1
Client Project/Site: GTS Investigation

For:
EMC-Engineers/Scientists LLC
450 Conestoga Circle
Jacksonville, Oregon 97530

Attn: Jack Akin

Authorized for release by:
5/1/2019 2:15:00 PM

Nathan Lewis, Project Manager I
(253)922-2310
nathan.lewis@testamericainc.com

Table of Contents

Job ID: 580-85634-1

Laboratory: Eurofins TestAmerica, Seattle

Narrative

Job Narrative
580-85634-1

Comments
No additional comments.

Receipt
The samples were received on 4/22/2019 3:35 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 12.9º C, 13.6º C and 13.7º C.

Receipt Exceptions
The following samples were received at the laboratory outside the required temperature criteria: 41519-G-1 (580-85634-1), 41519-G-1 (580-85634-2), 41519-G-2 (580-85634-3), 41519-G-2 (580-85634-4), 41519-G-3 (580-85634-5), 41519-G-3 (580-85634-6), 41519-G-4 (580-85634-7), 41519-G-4 (580-85634-8), 41519-G-5 (580-85634-9), 41519-G-5 (580-85634-10), 41519-G-6 (580-85634-11), 41519-G-6 (580-85634-12) and 41519-EQUIP (580-85634-13). There was no cooling media present in the cooler. The client used dry ice but by the time the coolers arrived at the lab the dry ice had all sublimated.

The following sediment samples were received outside of holding time for 8260: 41519-G-1 (580-85634-1), 41519-G-1 (580-85634-2), 41519-G-2 (580-85634-3), 41519-G-2 (580-85634-4), 41519-G-3 (580-85634-5), 41519-G-3 (580-85634-6), 41519-G-4 (580-85634-7), 41519-G-4 (580-85634-8), 41519-G-5 (580-85634-9), 41519-G-5 (580-85634-10), 41519-G-6 (580-85634-11), 41519-G-6 (580-85634-12) and 41519-EQUIP (580-85634-13). The soil samples were received outside of the 48 hold for the stirbar vials to be placed in a freezer. The water samples were received without enough time to be extracted for 8270 analysis. The 8270 analysis is on hold, contingent on the results of other analyses.

The labels were completed with a pen that bled, resulting in illegible labels. The client did however write the ID on the lot#/preservative labels which is legible.

One or more containers for the following samples were received broken: 41519-G-1 (580-85634-1) and 41519-G-2 (580-85634-3). For sample -1, one 250mL hydrochloric acid (HCl) bottle was broken and for sample -3, Two 1L HCl and two unpreserved 250mL bottles were broken.

GC Semi VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep
Method(s) 3510C: The following samples were extracted from 250mL containers because the 1 L container broke during shipment:41519-G-2 (580-85634-3) and 41519-EQUIP (580-85634-13).

Method(s) 3510C: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 580-299241.

Method(s) 3510C: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 580-299414.

Method(s) 3510C: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 580-299543.

Method(s) 3510C: Samples 41519-D-1 (580-85634-7), 41519-D-2 (580-85634-9) and 41519-D-3 (580-85634-11) were received as heavy sediment. During extraction, emulsion was observed in the sample. This was resolved by MeCl2 rinsing the emulsified sodium sulfate layer used in filtration, then replacing it with a fresh sodium sulfate layer.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Glossary

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

Client Sample Results

Client: EMC-Engineers/Scientists LLC
Project/Site: GTS Investigation

Job ID: 580-85634-1

Client Sample ID: 41519-G-1

Date Collected: 04/16/19 09:00
Date Received: 04/22/19 15:35

Lab Sample ID: 580-85634-1

Matrix: Water

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Motor Oil	**0.11**		0.097	0.097	mg/L		04/24/19 10:53	04/25/19 06:32	1
Gasoline	ND		0.019	0.019	mg/L		04/24/19 10:53	04/25/19 06:32	1
#2 Diesel (>C12-C24)	ND		0.048	0.048	mg/L		04/24/19 10:53	04/25/19 06:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*79*		*50 - 150*	*04/24/19 10:53*	*04/25/19 06:32*	*1*
4-Bromofluorobenzene (Surr)	*51*		*50 - 150*	*04/24/19 10:53*	*04/25/19 06:32*	*1*

Client Sample Results

Client: EMC-Engineers/Scientists LLC
Project/Site: GTS Investigation

Job ID: 580-85634-1

Client Sample ID: 41519-G-1
Date Collected: 04/16/19 09:00
Date Received: 04/22/19 15:35

Lab Sample ID: 580-85634-2
Matrix: Solid
Percent Solids: 70.2

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Motor Oil	ND		140	140	mg/Kg	☼	04/23/19 15:27	04/25/19 11:52	1
Gasoline	ND		28	28	mg/Kg	☼	04/23/19 15:27	04/25/19 11:52	1
#2 Diesel (>C12-C24)	ND		70	70	mg/Kg	☼	04/23/19 15:27	04/25/19 11:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*86*		*50 - 150*	*04/23/19 15:27*	*04/25/19 11:52*	*1*
4-Bromofluorobenzene (Surr)	*78*		*50 - 150*	*04/23/19 15:27*	*04/25/19 11:52*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**70.2**		0.1	0.1	%			04/23/19 14:43	1
Percent Moisture	**29.8**		0.1	0.1	%			04/23/19 14:43	1

Client Sample Results

Client: EMC-Engineers/Scientists LLC
Project/Site: GTS Investigation

Job ID: 580-85634-1

Client Sample ID: 41519-G-2

Date Collected: 04/16/19 10:00
Date Received: 04/22/19 15:35

Lab Sample ID: 580-85634-3

Matrix: Water

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Motor Oil	ND		0.40	0.40	mg/L		04/29/19 09:19	04/30/19 23:43	1
Gasoline	ND		0.081	0.081	mg/L		04/29/19 09:19	04/30/19 23:43	1
#2 Diesel (>C12-C24)	ND		0.20	0.20	mg/L		04/29/19 09:19	04/30/19 23:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*89*		*50 - 150*	*04/29/19 09:19*	*04/30/19 23:43*	*1*
4-Bromofluorobenzene (Surr)	*51*		*50 - 150*	*04/29/19 09:19*	*04/30/19 23:43*	*1*

Client Sample Results

Client: EMC-Engineers/Scientists LLC
Project/Site: GTS Investigation

Job ID: 580-85634-1

Client Sample ID: 41519-G-2
Date Collected: 04/16/19 10:00
Date Received: 04/22/19 15:35

Lab Sample ID: 580-85634-4
Matrix: Solid
Percent Solids: 68.4

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Motor Oil	ND		140	140	mg/Kg	☼	04/23/19 15:27	04/25/19 12:14	1
Gasoline	ND		28	28	mg/Kg	☼	04/23/19 15:27	04/25/19 12:14	1
#2 Diesel (>C12-C24)	ND		69	69	mg/Kg	☼	04/23/19 15:27	04/25/19 12:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*87*		*50 - 150*	*04/23/19 15:27*	*04/25/19 12:14*	*1*
4-Bromofluorobenzene (Surr)	*75*		*50 - 150*	*04/23/19 15:27*	*04/25/19 12:14*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**68.4**		0.1	0.1	%			04/23/19 14:43	1
Percent Moisture	**31.6**		0.1	0.1	%			04/23/19 14:43	1

Client Sample Results

Client: EMC-Engineers/Scientists LLC
Project/Site: GTS Investigation

Job ID: 580-85634-1

Client Sample ID: 41519-G-3

Date Collected: 04/16/19 11:00
Date Received: 04/22/19 15:35

Lab Sample ID: 580-85634-5

Matrix: Water

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Motor Oil	**0.12**		0.096	0.096	mg/L		04/24/19 10:53	04/25/19 06:54	1
Gasoline	ND		0.019	0.019	mg/L		04/24/19 10:53	04/25/19 06:54	1
#2 Diesel (>C12-C24)	**0.052**		0.048	0.048	mg/L		04/24/19 10:53	04/25/19 06:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*76*		*50 - 150*	*04/24/19 10:53*	*04/25/19 06:54*	*1*
4-Bromofluorobenzene (Surr)	*56*		*50 - 150*	*04/24/19 10:53*	*04/25/19 06:54*	*1*

Client Sample Results

Client: EMC-Engineers/Scientists LLC
Project/Site: GTS Investigation

Job ID: 580-85634-1

Client Sample ID: 41519-G-3
Date Collected: 04/16/19 11:00
Date Received: 04/22/19 15:35

Lab Sample ID: 580-85634-6
Matrix: Solid
Percent Solids: 66.1

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Motor Oil	ND		140	140	mg/Kg	☼	04/23/19 15:27	04/25/19 12:36	1
Gasoline	ND		27	27	mg/Kg	☼	04/23/19 15:27	04/25/19 12:36	1
#2 Diesel (>C12-C24)	ND		69	69	mg/Kg	☼	04/23/19 15:27	04/25/19 12:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*84*		*50 - 150*	*04/23/19 15:27*	*04/25/19 12:36*	*1*
4-Bromofluorobenzene (Surr)	*83*		*50 - 150*	*04/23/19 15:27*	*04/25/19 12:36*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**66.1**		0.1	0.1	%			04/23/19 14:43	1
Percent Moisture	**33.9**		0.1	0.1	%			04/23/19 14:43	1

Client: EMC-Engineers/Scientists LLC
Project/Site: GTS Investigation

Job ID: 580-85634-1

Client Sample ID: 41519-D-1
Date Collected: 04/16/19 12:00
Date Received: 04/22/19 15:35

Lab Sample ID: 580-85634-7
Matrix: Water

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Motor Oil	**0.31**		0.097	0.097	mg/L		04/26/19 07:36	04/27/19 15:01	1
Gasoline	ND		0.019	0.019	mg/L		04/26/19 07:36	04/27/19 15:01	1
#2 Diesel (>C12-C24)	**0.079**		0.049	0.049	mg/L		04/26/19 07:36	04/27/19 15:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*77*		*50 - 150*	*04/26/19 07:36*	*04/27/19 15:01*	*1*

Client Sample Results

Client: EMC-Engineers/Scientists LLC
Project/Site: GTS Investigation

Job ID: 580-85634-1

Client Sample ID: 41519-D-1
Date Collected: 04/16/19 12:00
Date Received: 04/22/19 15:35

Lab Sample ID: 580-85634-8
Matrix: Solid
Percent Solids: 70.0

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Motor Oil	ND		130	130	mg/Kg	☼	04/23/19 15:27	04/25/19 12:58	1
Gasoline	ND		26	26	mg/Kg	☼	04/23/19 15:27	04/25/19 12:58	1
#2 Diesel (>C12-C24)	ND		66	66	mg/Kg	☼	04/23/19 15:27	04/25/19 12:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*89*		*50 - 150*	*04/23/19 15:27*	*04/25/19 12:58*	*1*
4-Bromofluorobenzene (Surr)	*77*		*50 - 150*	*04/23/19 15:27*	*04/25/19 12:58*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**70.0**		0.1	0.1	%			04/23/19 14:43	1
Percent Moisture	**30.0**		0.1	0.1	%			04/23/19 14:43	1

Client: EMC-Engineers/Scientists LLC
Project/Site: GTS Investigation

Job ID: 580-85634-1

Client Sample ID: 41519-D-2
Date Collected: 04/16/19 13:00
Date Received: 04/22/19 15:35

Lab Sample ID: 580-85634-9
Matrix: Water

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Motor Oil	**0.47**		0.096	0.096	mg/L		04/26/19 07:36	04/27/19 15:23	1
Gasoline	ND		0.019	0.019	mg/L		04/26/19 07:36	04/27/19 15:23	1
#2 Diesel (>C12-C24)	**0.12**		0.048	0.048	mg/L		04/26/19 07:36	04/27/19 15:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*78*		*50 - 150*	*04/26/19 07:36*	*04/27/19 15:23*	*1*

Client Sample Results

Client: EMC-Engineers/Scientists LLC
Project/Site: GTS Investigation

Job ID: 580-85634-1

Client Sample ID: 41519-D-2
Date Collected: 04/16/19 13:00
Date Received: 04/22/19 15:35

Lab Sample ID: 580-85634-10
Matrix: Solid
Percent Solids: 68.4

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Motor Oil	ND		140	140	mg/Kg	☼	04/23/19 15:27	04/25/19 13:20	1
Gasoline	ND		28	28	mg/Kg	☼	04/23/19 15:27	04/25/19 13:20	1
#2 Diesel (>C12-C24)	ND		71	71	mg/Kg	☼	04/23/19 15:27	04/25/19 13:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*88*		*50 - 150*	*04/23/19 15:27*	*04/25/19 13:20*	*1*
4-Bromofluorobenzene (Surr)	*72*		*50 - 150*	*04/23/19 15:27*	*04/25/19 13:20*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**68.4**		0.1	0.1	%			04/23/19 14:43	1
Percent Moisture	**31.6**		0.1	0.1	%			04/23/19 14:43	1

Client: EMC-Engineers/Scientists LLC
Project/Site: GTS Investigation

Job ID: 580-85634-1

Client Sample ID: 41519-D-3
Date Collected: 04/16/19 14:45
Date Received: 04/22/19 15:35

Lab Sample ID: 580-85634-11
Matrix: Water

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Motor Oil	**0.13**		0.095	0.095	mg/L		04/26/19 07:36	04/27/19 15:45	1
Gasoline	ND		0.019	0.019	mg/L		04/26/19 07:36	04/27/19 15:45	1
#2 Diesel (>C12-C24)	ND		0.048	0.048	mg/L		04/26/19 07:36	04/27/19 15:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*94*		*50 - 150*	*04/26/19 07:36*	*04/27/19 15:45*	*1*

Client Sample Results

Client: EMC-Engineers/Scientists LLC
Project/Site: GTS Investigation

Job ID: 580-85634-1

Client Sample ID: 41519-D-3
Date Collected: 04/16/19 14:45
Date Received: 04/22/19 15:35

Lab Sample ID: 580-85634-12
Matrix: Solid
Percent Solids: 68.0

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Motor Oil	ND		140	140	mg/Kg	☼	04/23/19 15:27	04/25/19 13:43	1
Gasoline	ND		28	28	mg/Kg	☼	04/23/19 15:27	04/25/19 13:43	1
#2 Diesel (>C12-C24)	ND		71	71	mg/Kg	☼	04/23/19 15:27	04/25/19 13:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*89*		*50 - 150*	*04/23/19 15:27*	*04/25/19 13:43*	*1*
4-Bromofluorobenzene (Surr)	*76*		*50 - 150*	*04/23/19 15:27*	*04/25/19 13:43*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**68.0**		0.1	0.1	%			04/23/19 14:43	1
Percent Moisture	**32.0**		0.1	0.1	%			04/23/19 14:43	1

Client: EMC-Engineers/Scientists LLC
Project/Site: GTS Investigation

Job ID: 580-85634-1

Client Sample ID: 41519-EQUIP
Date Collected: 04/16/19 14:00
Date Received: 04/22/19 15:35

Lab Sample ID: 580-85634-13
Matrix: Water

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Motor Oil	ND		0.40	0.40	mg/L		04/29/19 09:19	05/01/19 00:05	1
Gasoline	ND		0.080	0.080	mg/L		04/29/19 09:19	05/01/19 00:05	1
#2 Diesel (>C12-C24)	ND		0.20	0.20	mg/L		04/29/19 09:19	05/01/19 00:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*83*		*50 - 150*	*04/29/19 09:19*	*05/01/19 00:05*	*1*
4-Bromofluorobenzene (Surr)	*54*		*50 - 150*	*04/29/19 09:19*	*05/01/19 00:05*	*1*

Method: NWTPH-HCID - Northwest - Hydrocarbon Identification (GC)

Lab Sample ID: MB 580-299193/1-A
Matrix: Solid
Analysis Batch: 299299

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 299193

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Motor Oil	ND		100	100	mg/Kg		04/23/19 15:27	04/25/19 10:25	1
Gasoline	ND		20	20	mg/Kg		04/23/19 15:27	04/25/19 10:25	1
#2 Diesel (>C12-C24)	ND		50	50	mg/Kg		04/23/19 15:27	04/25/19 10:25	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*87*		*50 - 150*	*04/23/19 15:27*	*04/25/19 10:25*	*1*
4-Bromofluorobenzene (Surr)	*80*		*50 - 150*	*04/23/19 15:27*	*04/25/19 10:25*	*1*

Lab Sample ID: MB 580-299241/1-A
Matrix: Water
Analysis Batch: 299299

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 299241

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Motor Oil	ND		0.10	0.10	mg/L		04/24/19 10:53	04/25/19 06:10	1
Gasoline	ND		0.020	0.020	mg/L		04/24/19 10:53	04/25/19 06:10	1
#2 Diesel (>C12-C24)	ND		0.050	0.050	mg/L		04/24/19 10:53	04/25/19 06:10	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*89*		*50 - 150*	*04/24/19 10:53*	*04/25/19 06:10*	*1*
4-Bromofluorobenzene (Surr)	*75*		*50 - 150*	*04/24/19 10:53*	*04/25/19 06:10*	*1*

Lab Sample ID: MB 580-299414/1-A
Matrix: Water
Analysis Batch: 299508

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 299414

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Motor Oil	ND		0.10	0.10	mg/L		04/26/19 07:36	04/27/19 12:50	1
Gasoline	ND		0.020	0.020	mg/L		04/26/19 07:36	04/27/19 12:50	1
#2 Diesel (>C12-C24)	ND		0.050	0.050	mg/L		04/26/19 07:36	04/27/19 12:50	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*88*		*50 - 150*	*04/26/19 07:36*	*04/27/19 12:50*	*1*

Lab Sample ID: MB 580-299543/1-A
Matrix: Water
Analysis Batch: 299701

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 299543

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Motor Oil	ND		0.40	0.40	mg/L		04/29/19 09:19	04/30/19 23:21	1
Gasoline	ND		0.080	0.080	mg/L		04/29/19 09:19	04/30/19 23:21	1
#2 Diesel (>C12-C24)	ND		0.20	0.20	mg/L		04/29/19 09:19	04/30/19 23:21	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*89*		*50 - 150*	*04/29/19 09:19*	*04/30/19 23:21*	*1*
4-Bromofluorobenzene (Surr)	*69*		*50 - 150*	*04/29/19 09:19*	*04/30/19 23:21*	*1*

Lab Chronicle

Client: EMC-Engineers/Scientists LLC
Project/Site: GTS Investigation

Job ID: 580-85634-1

Client Sample ID: 41519-G-1
Date Collected: 04/16/19 09:00
Date Received: 04/22/19 15:35

Lab Sample ID: 580-85634-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			299241	04/24/19 10:53	KO	TAL SEA
Total/NA	Analysis	NWTPH-HCID		1	299299	04/25/19 06:32	ERZ	TAL SEA

Client Sample ID: 41519-G-1
Date Collected: 04/16/19 09:00
Date Received: 04/22/19 15:35

Lab Sample ID: 580-85634-2
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2540G		1	299185	04/23/19 14:43	BAH	TAL SEA

Client Sample ID: 41519-G-1
Date Collected: 04/16/19 09:00
Date Received: 04/22/19 15:35

Lab Sample ID: 580-85634-2
Matrix: Solid
Percent Solids: 70.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			299193	04/23/19 15:27	BAH	TAL SEA
Total/NA	Analysis	NWTPH-HCID		1	299299	04/25/19 11:52	ERZ	TAL SEA

Client Sample ID: 41519-G-2
Date Collected: 04/16/19 10:00
Date Received: 04/22/19 15:35

Lab Sample ID: 580-85634-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			299543	04/29/19 09:19	DCV	TAL SEA
Total/NA	Analysis	NWTPH-HCID		1	299701	04/30/19 23:43	T1W	TAL SEA

Client Sample ID: 41519-G-2
Date Collected: 04/16/19 10:00
Date Received: 04/22/19 15:35

Lab Sample ID: 580-85634-4
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2540G		1	299185	04/23/19 14:43	BAH	TAL SEA

Client Sample ID: 41519-G-2
Date Collected: 04/16/19 10:00
Date Received: 04/22/19 15:35

Lab Sample ID: 580-85634-4
Matrix: Solid
Percent Solids: 68.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			299193	04/23/19 15:27	BAH	TAL SEA
Total/NA	Analysis	NWTPH-HCID		1	299299	04/25/19 12:14	ERZ	TAL SEA

Lab Chronicle

Client: EMC-Engineers/Scientists LLC
Project/Site: GTS Investigation

Job ID: 580-85634-1

Client Sample ID: 41519-G-3
Date Collected: 04/16/19 11:00
Date Received: 04/22/19 15:35

Lab Sample ID: 580-85634-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			299241	04/24/19 10:53	KO	TAL SEA
Total/NA	Analysis	NWTPH-HCID		1	299299	04/25/19 06:54	ERZ	TAL SEA

Client Sample ID: 41519-G-3
Date Collected: 04/16/19 11:00
Date Received: 04/22/19 15:35

Lab Sample ID: 580-85634-6
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2540G		1	299185	04/23/19 14:43	BAH	TAL SEA

Client Sample ID: 41519-G-3
Date Collected: 04/16/19 11:00
Date Received: 04/22/19 15:35

Lab Sample ID: 580-85634-6
Matrix: Solid
Percent Solids: 66.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			299193	04/23/19 15:27	BAH	TAL SEA
Total/NA	Analysis	NWTPH-HCID		1	299299	04/25/19 12:36	ERZ	TAL SEA

Client Sample ID: 41519-D-1
Date Collected: 04/16/19 12:00
Date Received: 04/22/19 15:35

Lab Sample ID: 580-85634-7
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			299414	04/26/19 07:36	KO	TAL SEA
Total/NA	Analysis	NWTPH-HCID		1	299508	04/27/19 15:01	CJ	TAL SEA

Client Sample ID: 41519-D-1
Date Collected: 04/16/19 12:00
Date Received: 04/22/19 15:35

Lab Sample ID: 580-85634-8
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2540G		1	299185	04/23/19 14:43	BAH	TAL SEA

Client Sample ID: 41519-D-1
Date Collected: 04/16/19 12:00
Date Received: 04/22/19 15:35

Lab Sample ID: 580-85634-8
Matrix: Solid
Percent Solids: 70.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			299193	04/23/19 15:27	BAH	TAL SEA
Total/NA	Analysis	NWTPH-HCID		1	299299	04/25/19 12:58	ERZ	TAL SEA

Lab Chronicle

Client: EMC-Engineers/Scientists LLC
Project/Site: GTS Investigation

Job ID: 580-85634-1

Client Sample ID: 41519-D-2
Lab Sample ID: 580-85634-9
Date Collected: 04/16/19 13:00
Matrix: Water
Date Received: 04/22/19 15:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			299414	04/26/19 07:36	KO	TAL SEA
Total/NA	Analysis	NWTPH-HCID		1	299508	04/27/19 15:23	CJ	TAL SEA

Client Sample ID: 41519-D-2
Lab Sample ID: 580-85634-10
Date Collected: 04/16/19 13:00
Matrix: Solid
Date Received: 04/22/19 15:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2540G		1	299185	04/23/19 14:43	BAH	TAL SEA

Client Sample ID: 41519-D-2
Lab Sample ID: 580-85634-10
Date Collected: 04/16/19 13:00
Matrix: Solid
Date Received: 04/22/19 15:35
Percent Solids: 68.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			299193	04/23/19 15:27	BAH	TAL SEA
Total/NA	Analysis	NWTPH-HCID		1	299299	04/25/19 13:20	ERZ	TAL SEA

Client Sample ID: 41519-D-3
Lab Sample ID: 580-85634-11
Date Collected: 04/16/19 14:45
Matrix: Water
Date Received: 04/22/19 15:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			299414	04/26/19 07:36	KO	TAL SEA
Total/NA	Analysis	NWTPH-HCID		1	299508	04/27/19 15:45	CJ	TAL SEA

Client Sample ID: 41519-D-3
Lab Sample ID: 580-85634-12
Date Collected: 04/16/19 14:45
Matrix: Solid
Date Received: 04/22/19 15:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2540G		1	299185	04/23/19 14:43	BAH	TAL SEA

Client Sample ID: 41519-D-3
Lab Sample ID: 580-85634-12
Date Collected: 04/16/19 14:45
Matrix: Solid
Date Received: 04/22/19 15:35
Percent Solids: 68.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			299193	04/23/19 15:27	BAH	TAL SEA
Total/NA	Analysis	NWTPH-HCID		1	299299	04/25/19 13:43	ERZ	TAL SEA

Lab Chronicle

Client: EMC-Engineers/Scientists LLC
Project/Site: GTS Investigation

Job ID: 580-85634-1

Client Sample ID: 41519-EQUIP

Date Collected: 04/16/19 14:00
Date Received: 04/22/19 15:35

Lab Sample ID: 580-85634-13

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			299543	04/29/19 09:19	DCV	TAL SEA
Total/NA	Analysis	NWTPH-HCID		1	299701	05/01/19 00:05	T1W	TAL SEA

Laboratory References:

TAL SEA = Eurofins TestAmerica, Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: EMC-Engineers/Scientists LLC
Job ID: 580-85634-1
Project/Site: GTS Investigation

Laboratory: Eurofins TestAmerica, Seattle

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	17-024	01-19-20
ANAB	DoD / DOE		L2236	01-19-22
ANAB	ISO/IEC 17025		L2236	01-19-22
California	State Program	9	2901	11-05-19
Montana (UST)	State Program	8	N/A	04-30-20
Oregon	NELAP	10	WA100007	11-05-19
US Fish & Wildlife	Federal		LE058448-0	07-31-19
USDA	Federal		P330-14-00126	02-10-20
Washington	State Program	10	C553	02-17-20

Sample Summary

Client: EMC-Engineers/Scientists LLC
Project/Site: GTS Investigation

Job ID: 580-85634-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-85634-1	41519-G-1	Water	04/16/19 09:00	04/22/19 15:35
580-85634-2	41519-G-1	Solid	04/16/19 09:00	04/22/19 15:35
580-85634-3	41519-G-2	Water	04/16/19 10:00	04/22/19 15:35
580-85634-4	41519-G-2	Solid	04/16/19 10:00	04/22/19 15:35
580-85634-5	41519-G-3	Water	04/16/19 11:00	04/22/19 15:35
580-85634-6	41519-G-3	Solid	04/16/19 11:00	04/22/19 15:35
580-85634-7	41519-D-1	Water	04/16/19 12:00	04/22/19 15:35
580-85634-8	41519-D-1	Solid	04/16/19 12:00	04/22/19 15:35
580-85634-9	41519-D-2	Water	04/16/19 13:00	04/22/19 15:35
580-85634-10	41519-D-2	Solid	04/16/19 13:00	04/22/19 15:35
580-85634-11	41519-D-3	Water	04/16/19 14:45	04/22/19 15:35
580-85634-12	41519-D-3	Solid	04/16/19 14:45	04/22/19 15:35
580-85634-13	41519-EQUIP	Water	04/16/19 14:00	04/22/19 15:35

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Seattle
5755 8th Street E.
Tacoma, WA 98424
Tel. 253-922-2310
Fax 253-922-5047
www.testamericainc.com

580-85634 Chain of Custody

Chain of Custody Record

Client: LANE COUNTY GLENWOOD TRANS. STATION	Client Contact: EMC - ENGRS/SCIENTISTS, LLC
Date:	Chain of Custody Number: 35943
Address: EUGENE	Telephone Number (Area Code)/Fax Number: 541 261 9929 (CELL)
Lab Number: 85634	Page ____ of ____
City:	State: OR
Zip Code:	Sampler: J. AKIN
Lab Contact:	Analysis (Attach list if more space is needed): GRAD TPH Dx; GRAD TPH Gx
Project Name and Location (State): GTS - INVESTIGATION	Billing Contact: Same
Contract/Purchase Order/Quote No.:	

Sample I.D. and Location/Description (Containers for each sample may be combined on one line)	Date	Time	Air	Aqueous	Sed.	Soil	Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	GRAD TPH Dx	GRAD TPH Gx	Special Instructions/Conditions of Receipt
41619 - G-1	4/16/19	900													
- G-2		1000													
- G-3		1100													
- D-1		1200													
- D-2		1300													
~~- D-3~~		~~1445~~													
- EQUIP		1400		X									X	X	

See Bottle order

VOCs 3/05 PAHs done only if dx's or gx's shown 3 quantified from HCID Analyses

Margin: -1 -2 -3 -4 -5 -6 -7 -8 -9 -10 -11 -12 -13

Therm. ID: A2 Cor: 12.9° Unc: 13.3°
Cooler Dsc: Lg Blue
Packing: bub
Cust. Seal: Yes X No
Blue Ice, Wet, Dry, None
FedEx: UPS: Lab Cour: Other:

Therm. ID: A2 Cor: 13.6° Unc: 14.0°
Cooler Dsc: Lg Blue
Packing: bub
Cust. Seal: Yes X No
Blue Ice, Wet, Dry, None
FedEx: UPS: Lab Cour: Other:

Therm. ID: A2 Cor: 13.7° Unc: 14.1°
Cooler Dsc: Lg Green
Packing: bub
Cust. Seal: Yes X No
Blue Ice, Wet, Dry, None
FedEx: UPS: Lab Cour: Other: PriCour

Cooler: ☐ Yes ☐ No Cooler Temp: ______

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For ______ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required (business days): ☐ 24 Hours ☐ 48 Hours ☐ 5 Days ☐ 10 Days ☐ 15 Days ☐ Other ______

QC Requirements (Specify):

	Date	Time		Date	Time
1. Relinquished By Sign/Print: J. AKIN			1. Received By Sign/Print: Tom Blankinship	4/22/19	1535
2. Relinquished By Sign/Print:			2. Received By Sign/Print:		
3. Relinquished By Sign/Print:			3. Received By Sign/Print:		

Comments

DISTRIBUTION: WHITE – Stays with the Samples; CANARY – Returned to Client with Report; PINK – Field Copy

TAL-8274-580 (0210)

Login Sample Receipt Checklist

Client: EMC-Engineers/Scientists LLC

Job Number: 580-85634-1

Login Number: 85634
List Number: 1
Creator: Blankinship, Tom X

List Source: Eurofins TestAmerica, Seattle

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	Refer to Job Narrative for details.
Cooler Temperature is acceptable.	False	Refer to Job Narrative for details.
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	False	Refer to Job Narrative for details.
Sample containers have legible labels.	False	Refer to Job Narrative for details.
Containers are not broken or leaking.	False	Refer to Job Narrative for details.
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	False	Refer to Job Narrative for details.
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

EMC | Grants Pass * Jacksonville * Medford, OR
GP Office: 1867 Williams Hwy., Suite 216, Grants Pass, OR, 97527
Jville Office: 450 Conestoga Dr., Jacksonville, OR, 97530
Ph: 541-474-9434 * Cell: 541-261-9929 * Fax 541-727-5488
emc@emcengineersscientists.com; http://www.emcengineersscientists.com
- Engineers/Scientists, LLC

EXHIBIT C

RISK-BASED CONCENTRATIONS ABRIDGED

State of Oregon Department of Environmental Quality

RISK-BASED CONCENTRATIONS ABRIDGED FOR **LEAKING UNDERGROUND STORAGE TANKS (LUST)** AND H**EATING** O**IL** T**ANKS (HOT)**

Contaminated Medium →		SOIL mg/Kg (ppm)										SOIL mg/Kg (ppm)						SOIL mg/Kg (ppm)						SOIL mg/Kg (ppm)						GROUNDWATER (µg/L (ppb))					
Exposure Pathway →		Soil Ingestion, Dermal Contact, and Inhalation (RBC_{ss})										Volatilization to Outdoor Air (RBC_{so})						Vapor Intrusion into Buildings (RBC_{si})						Leaching to Groundwater (RBC_{sw})						Ingestion & Inhalation from Tapwater (RBC_{tw})					
Receptor Scenario →		Residential		Urban Residential		Occupational		Construction Worker		Excavation Worker		Residential		Urban Residential		Occupational		Residential		Urban Residential		Occupational		Residential		Urban Residential		Occupational		Residential		Urban Residential		Occupational	
Direct or Indirect Pathway (see notes)		DC		DC		DC		DC		DC		IVS		IVS		IVS		IVS		IVS		IVS		IS		IS		IS		DS		DS		DS	
Contaminant	Note		Note		Note		Note		Note		Note		Note		Note		Note		Note		Note		Note		Note		Note		Note		Note		Note		Note
Benzene	c, v	8.2		24		37		380		11,000	>Csat	11		27		50		0.16		0.38		2.1		0.023		0.10		0.10		0.46		2.0		2.1	
Toluene	nc, v	5,800	>Csat	12,000	>Csat	88,000	>Csat	28,000	>Csat	770,000	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat	84		340		490		1,100		4,400		6,300	
Ethylbenzene	c, v	34		110		150		1,700	>Csat	49,000	>Csat	36		85		160		1.3		3.0		17		0.22		0.94		0.90		1.5		6.7		6.4	
Xylenes	nc, v	1,400	>Csat	2,900	>Csat	25,000	>Csat	20,000	>Csat	560,000	>Csat	-	>Csat	-	>Csat	-	>Csat	160		160		-	>Csat	23		87		100		190		710		830	
iso-Propylbenzene (cumene)	nc, v	3,500	>Csat	7,000	>Csat	57,000	>Csat	27,000	>Csat	750,000	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat	96		-	>Csat	-	>Csat	440		1,800		2000	
Trimethylbenzene, 1,2,4-	nc, v	430		860		6,900	>Csat	2,900	>Csat	81,000	>Csat	-	>Csat	-	>Csat	-	>Csat	140		140		-	>Csat	10		43		48		54		230		250	
Trimethylbenzene, 1,3,5-	nc, v	430	>Csat	860	>Csat	6,900	>Csat	2,900	>Csat	81,000	>Csat	-	>Csat	-	>Csat	-	>Csat	98		98		-	>Csat	11		45		53		59		240		280	
Acenaphthene	nc, v	4,700	>Csat	9,400	>Csat	70,000	>Csat	21,000	>Csat	590,000	>Csat	-	>Max	-	>Max	-	>Max	-	>Max	-	>Max	-	>Max	-	>Csat	-	>Csat	-	>Csat	510		2,400		2,500	
Anthracene	nc, v	23,000	>Csat	47,000	>Csat	350,000	>Csat	110,000	>Csat	-	>Max	-	>Max	-	>Max	-	>Max	-	>Max	-	>Max	-	>Max	-	>Csat	-	>Csat	-	>Csat	-	>S	-	>S	-	>S
Benz[a]anthracene	c,v	1.1		2.5		21	>Csat	170	>Csat	4,800	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat	1.6		6.0		-	>Csat	0.030		0.11		0.38	
Benzo[b]fluoranthene	c, nv	1.1		2.5		21	>Csat	170	>Csat	4,900	>Csat	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	-	>Csat	-	>Csat	-	>Csat	0.25		0.80		-	>S
Benzo[k]fluoranthene	c, nv	11	>Csat	25	>Csat	210	>Csat	1,700	>Csat	49,000	>Csat	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	-	>Csat	-	>Csat	-	>Csat	-	>S	-	>S	-	>S
Benzo[a]pyrene (BaP equivalents)**	c, nv	0.11		0.25		2.1		17	>Csat	490	>Csat	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	4.4		-	>Csat	-	>Csat	0.025		0.080		0.47	
Chrysene	c, nv	110	>Csat	250	>Csat	2,100	>Csat	17,000	>Csat	490,000	>Csat	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	-	>Csat	-	>Csat	-	>Csat	-	>S	-	>S	-	>S
Dibenz[a,h]anthracene	c, nv	0.11		0.25		2.1		17	>Csat	490	>Csat	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	-	>Csat	-	>Csat	-	>Csat	0.025		0.080		0.47	
Fluoranthene	nc, nv	2,400	>Csat	4,800	>Csat	30,000	>Csat	10,000	>Csat	280,000	>Csat	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	-	>Csat	-	>Csat	-	>Csat	-	>S	-	>S	-	>S
Fluorene	nc, v	3,100	>Csat	6,300	>Csat	47,000	>Csat	14,000	>Csat	390,000	>Csat	-	>Max	-	>Max	-	>Max	-	>Max	-	>Max	-	>Max	-	>Csat	-	>Csat	-	>Csat	280		1,400		1,300	
Indeno[1,2,3-cd]pyrene	c, nv	1.1		2.5		21	>Csat	170	>Csat	4,800	>Csat	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	-	>Csat	-	>Csat	-	>Csat	-	>S	-	>S	-	>S
Naphthalene	c, v	5.3		25		23		580		16,000	>Csat	6.4		15		83		6.4		15		83		0.077		0.37		0.34		0.17		0.78		0.72	
Pyrene	nc, v	1,800	>Csat	3,600	>Csat	23,000	>Csat	7,500	>Csat	210,000	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat	-	>Csat	110		-	>S	-	>S
MTBE (methyl t-butyl ether)	c, v	250		730		1,100		12,000	>Csat	320,000	>Csat	340		810		1,500		8.5		20		110		0.11		0.50		0.54		14		64		68	
EDB (1,2-dibromoethane)	c, v	0.16		0.53		0.73		9.0		250		0.15		0.35		0.65		0.012		0.028		0.16		0.00012		0.00056		0.00056		0.0075		0.034		0.034	
EDC (1,2-dichloroethane)	c, v	3.6		12		16		200		5,600	>Csat	3.4		8.1		15		0.077		0.18		1.0		0.0028		0.013		0.013		0.17		0.78		0.78	
Lead	nc, nv	400	L	400	L	800	L	800	L	800	L	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	30	L	30	L	30	L	15	L	15	L	15	L
Generic Gasoline	nc, v	1,200		2,500		20,000		9,700		>Max		5,900		5,900		69,000		94		94		>Max		31		31		130		110		110		450	
Generic Diesel/Heating Oil	nc, v	1,100		2,200		14,000		4,600		>Max		>Max		>Max		>Max		>Max		>Max		>Max		9,500		9,500		>Max		100		100		430	
Generic Mineral/Insulating Oil	nc, nv	2,800		5,700		36,000		11,000		>Max		>Max		>Max		>Max		>Max		>Max		>Max		>Max		>Max		>Max		300		300		1,300	

State of Oregon Department of Environmental Quality

Contaminated Medium →	GROUNDWATER (µg/L (ppb))						GROUNDWATER (µg/L (ppb))						GROUNDWATER (µg/L (ppb))		Soil Gas (µg/m³)						AIR (µg/m³)					
Exposure Pathway →	Volatilization to Outdoor Air (RBC_{wo})						Vapor Intrusion into Buildings (RBC_{wi})						GW in Excavation (RBC_{we})		Inhalation (RBC_{SV})						Inhalation (RBC_{air})					
Receptor Scenario →	Residential		Urban Residential		Occupational		Residential		Urban Residential		Occupational		Construction & Excavation Worker		Residential		Urban Residential		Occupational		Residential		Urban Residential		Occupational	
Direct or Indirect Pathway (see notes)	IVW		IVW		IVW		IVW		IVW		IVW		DS		ICA		ICA		ICA		DCA		DCA		DCA	
Contaminant	Note		Note		Note		Note		Note		Note		Note		Note		Note		Note		Note		Note		Note	
Benzene	c, v	3,100		7,400		14,000		210		510		2,800		1,800		72		170		1,600		0.36		0.85		1.6	
Toluene	nc, v	-	>S	-	>S	-	>S	-	>S	-	>S	-	>S	220,000		1,000,000		1,000,000		21,900,000		5200		5200		22000	
Ethylbenzene	c, v	9,900	>S	23,000	>S	43,000	>S	620	>S	1,500	>S	8,200	>S	4,500		220		530		4,900		1.1		2.7		4.9	
Xylenes	nc, v	-	>S	-	>S	-	>S	86,000		86,000		-	>S	23,000		21,000		21,000		440,000		100		100		440	
iso-Propylbenzene (cumene)	nc, v	-	>S	-	>S	-	>S	-	>S	-	>S	-	>S	51,000		83,000		83,000		1,800,000		420		420		1800	
Trimethylbenzene, 1,2,4-	nc, v	-	>S	-	>S	-	>S	50,000		50,000		-	>S	6,300		13,000		13,000		260,000		63		63		260	
Trimethylbenzene, 1,3,5-	nc, v	-	>S	-	>S	-	>S	36,000		36,000		-	>S	7,500		13,000		13,000		260,000		63		63		260	
Acenaphthene	nc, v	-	>S	-	>S	-	>S	-	>S	-	>S	-	>S	-	>S	-	>Pv	-	>Pv	-	>Pv	-	>Pv	-	>Pv	-	>Pv
Anthracene	nc, v	-	>S	-	>S	-	>S	-	>S	-	>S	-	>S	-	>S	-	>Pv	-	>Pv	-	>Pv	-	>Pv	-	>Pv	-	>Pv
Benz[a]anthracene	c, v	-	>S	-	>S	-	>S	-	>S	-	>S	-	>S	-	>S	-	>Pv	-	>Pv	-	>Pv	0.017		0.033		0.20	
Benzo[b]fluoranthene	c, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	-	>S	-	NV	-	NV	-	NV	0.017		0.033		0.20	
Benzo[k]fluoranthene	c, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	-	>S	-	NV	-	NV	-	NV	-	>Pv	-	>Pv	-	>Pv
Benzo[a]pyrene (BaP equivalents)**	c*, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	-	>S	-	NV	-	NV	-	NV	0.0017		0.0021		0.0088	
Chrysene	c, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	-	>S	-	NV	-	NV	-	NV	1.7		3.3		-	>Pv
Dibenz[a,h]anthracene	c, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	-	>S	-	NV	-	NV	-	NV	-	>Pv	-	>Pv	-	>Pv
Fluoranthene	nc, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	-	>S	-	NV	-	NV	-	NV	-	>Pv	-	>Pv	-	>Pv
Fluorene	nc, v	-	>S	-	>S	-	>S	-	>S	-	>S	-	>S	-	>S	-	>Pv	-	>Pv	-	>Pv	-	>Pv	-	>Pv	-	>Pv
Indeno[1,2,3-cd]pyrene	c, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	-	>S	-	NV	-	NV	-	NV	-	>Pv	-	>Pv	-	>Pv
Naphthalene	c, v	3,600		8,500		16,000	>S	840		2,000		11,000		500		17		39		360		0.083		0.20		0.36	
Pyrene	nc, v	-	>S	-	>S	-	>S	-	>S	-	>S	-	>S	-	>S	-	>Pv	-	>Pv	-	>Pv	-	>Pv	-	>Pv	-	>Pv
MTBE (methyl t-butyl ether)	c, v	350,000		830,000		1,500,000		67,000		160,000		870,000		63,000		2,200		5,100		47,000		11		26		47	
EDB (1,2-dibromoethane)	c, v	180		430		790		45		110		590		27		0.94		2.2		20		0.0047		0.011		0.02	
EDC (1,2-dichloroethane)	c, v	2,100		4,900		9,000		300		700		3,900		630		22		51		470		0.11		0.26		0.47	
Lead	nc, nv	-	NV	-	NV	-	NV	-	NV	-	NV	-	NV	-	>S	-	NV	-	NV	-	NV	-	>Pv	-	>Pv	-	>Pv
Generic Gasoline	nc, v	>S		>S		>S		22,000		22,000		>S		14,000		79,000		79,000		1,700,000		390		390		1,700	
Generic Diesel/Heating Oil	nc, v	>S		>S		>S		>S		>S		>S		>S		21,000		21,000		440,000		100		100		440	
Generic Mineral/Insulating Oil	nc, nv	>S		>S		>S		>S		>S		>S		>S		30,000		30,000		620,000		150		150		620	

NOTES:

Direct or Indirect Pathway Codes have the following meanings: DC means it is a direct contact pathway with a limiting value of Csat. IVS means it is an indirect pathway with a limiting value of Csat. DS means it is a direct contact pathway with a limiting value equal to the solubility, S. IVW means it is an indirect pathway with a limiting value equal to the solubility, S. DPA or ICA means it has a limiting value equal to the vapor pressure, Pv.

The symbols in the "**Note**" columns are explained below. The references can be found in *Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites* (DEQ, 2003)

c	This chemical is a known or suspected carcinogen. The RBCs in this row were calculated using equations for carcinogens. To calculate the appropriate RBCs for non-carcinogenic effects, you need to first change the toxicity basis in the spreadsheet from "c" to "nc", and then re-calculate the RBCs. You should use the lower of the calculated RBCs for each exposure scenario. This summary table (but not the associated spreadsheet) includes the lower of the carcinogenic and non-carcinogenic RBCs.
>Csat	This soil RBC exceeds the limit of three-phase equilibrium partitioning. Refer to "ChemData" page for the corresponding value of Csat. Soil concentrations in excess of Csat indicate that free product might be present. See Section B.2.1.4 for additional information.
L	The values for lead reported in this table are not derived from the equations developed in Appendix B. See Section B.3.4 for the source of the lead numbers and information on applying them. Note that the lead values for RBCsw are reported as mg/L rather than mg/kg since they are the results of leaching tests, not soil measurements.
>Max	The constituent RBC for this pathway is greater than 1,000,000 mg/kg or 1,000,000 mg/L. Therefore, these substances are not expected to pose risks in the scenario shown.
NA	Not Available.
nc	This chemical is a noncarcinogen. The RBCs in this row were calculated using equations for noncarcinogens described in Appendix B.
nv	This chemical is considered "nonvolatile" for purposes of the exposure calculations.
>Pv	The air concentration reported for the RBC exceeds the vapor pressure of the pure chemical. It can be assumed that this constituent cannot create an unacceptable risk by this pathway. See Section B.2.1.4 for additional information.
>S	This groundwater RBC exceeds the solubility limit. Refer to Appendix D for the corresponding value of S. Groundwater concentrations in excess of S indicate that free product may be present. See Section B.2.1.4 for additional information.
v	This chemical is classified as "volatile" for purposes of the exposure calculations in this document.
**	Carcinogenic PAHs are considered in aggregate as a chemical class. RBCs for individual carcinogenic PAHs are provided for convenience.
-	When "Show All Values" is not selected on the Main Menu, all RBC values for indirect pathways that exceed a limit (Csat, S, or Pv) are removed from the table and replaced with "-". If you suspect that a chemical may be present at high concentrations on airborne dust rather than vapor, the vapor pressure limit does not apply, so
c*	use the RBCair value. The values shown are based primarily on a cancer endpoint, but there are one or more scenarios where they are based on a noncancer endpoint.

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EXHIBIT D

SAMPLING AND ANALYSIS WORKPLAN

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SAMPLING & ANALYSES WORKPLAN

For Glenwood Transfer Station

3100 E 17th Avenue,
Eugene, OR 97403

DEQ USTC File No.20-19-0043
DEQ Facility ID No. 5569

Date: 4/04/19, Revised 4/08/19

Prepared For: Mr. Tim Cogswell
Lane County Public Works Department

Prepared By:

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1.0 Introduction

Site description

Glenwood Transfer Station (GTS), located at 3100 E. 17th Ave., Eugene, OR is a solid waste disposal and recycling facility, owned by Lane County, Oregon. The station is one of 15 located throughout Lane County. It provides free recycling services for aluminum, antifreeze, computer/electronics, corrugated cardboard, fluorescent lamps, glass bottles and jars, household batteries, juice and milk cartons, lead-acid batteries, magazines, motor oil and filters, paint, paper, plastic bags and sheeting, plastic bottles, scrap metal, styrofoam and tin cans. It also provides fee-based recycling for appliances, concrete, mattresses, propane tanks, tires, woodwaste and yard debris.

GTS is equipped with a recycling materials bins array, and a central receiving transfer pit.

Environmental Background

This facility (ID No. 5569) has been operating two certified underground storage tanks (USTs) on the property. Tank No. AHHHF is a 2000 gallon gasoline tank (shown in Photo 1 below), and Tank No. AHHHG is a 12,000 gallon diesel tank (shown in Photo 2 below). Both are of epoxy-coated steel, or some sort of a factory painted coating. Plumbing to and from these tanks to service dispensers are of double-walled fiberglass. The tanks were decommissioned by Central Services, and inspected once placed on the asphalt surface. No pitting or holes were observed to be on the tank surfaces or welds.

On 1/10/19, during the decommissioning of these two USTs, it was determined that the upper groundwater elevation was above the bottom of both excavations, and so groundwater was in the excavations (shown RE the 12,000 gallon tank pit in Photo 3 below). Subsequently the licensed UST Service Provider and Decommissioning Supervisor collected pit- water samples and delivered them to Analytical Lab Group (ALG), who then submitted them to Nielsons Anaytical Lab, Medford, Or on the following day, with requests for TPH and BETX analyses.

On 1/10/19 soil samples were collected from the tank ends of each tank, according to the UST Decommissioning Report submitted by Central Services, about 6-12 inches below the bottom of the tank, or 10-12 feet below ground surface. Samples were also collected from beneath the piping, close to the dispensers. These samples were submitted to Umpqua Analytical on the same day, with requests for TPH and BETX analyses.

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Pit water sample results returned as shown in Table A below. The soil sample results returned with "no detect" analytical results, shown below in Table B.

Table A: Pit-Water Sample Results

Sample No.	Diesel, mg/L	HW oil, mg/L	Gasoline, mg/L	Benzene, µg/L	Ethyl Benzene, µg/L	Toluene, µg/L	Xylenes, µg/L
001A	1.5	ND[1]	NT[2]	NT	NT	NT	NT
001B	NT	NT	0.282	0.39	2.9	2.8	18
002A	ND	ND	NT	NT	NT	NT	NT
002B	NT	NT	ND	0.72	ND	1.6	ND
Trip Bl.	NT	NT	NT	ND	ND	ND	ND

Table B: Soil Sample Results

Sample No.	Diesel, mg/L	HW oil, mg/L	Gasoline, mg/L	Benzene, µg/L	Ethyl Benzene, µg/L	Toluene, µg/L	Xylenes, µg/L
18-01	ND	ND	ND	NT	NT	NT	NT
18-02	ND	ND	ND	NT	NT	NT	NT
18-03	ND	ND	ND	NT	NT	NT	NT
18-04	ND	ND	ND	NT	NT	NT	NT
18-05	ND	ND	ND	NT	NT	NT	NT
18-06	ND	ND	ND	NT	NT	NT	NT

1. *ND means "parameter no detected above listed method limit;*
2. *NT means "parameter not tested", either because source infers the parameter is not a suspected COC, or because screening analyses inferred parameter is not a suspected COC.*

The analytical results shown in Tables A & B were returned to GTS on 1/16/19. Noting the findings in the Pit-Water samples, an **UST Petroleum Release Form** was submitted by GTS employee Jeff Bishop to the ODEQ the following day.

Jack Akin of EMC-Engineers/Scientists, LLC (EMC) was contracted to assist GTS in the beginning of the first week in February, and so EMC proceeded to fill out and submit an **Initial (Twenty Day) Report Form for UST Cleanup Projects.**

EMC was then requested by GTS to construct and submit this Sampling and Analyses Workplan.

2.0 Proposed Subsurface Investigation – Location and Methodology

Six geotechic holes (see Section 3.4, Page 7) with Sample No.s **D-1, D-2, D-3, G-1, G-2 and G-3** would be constructed as described below (refer to the drawings in Section 3.4, entitled "**Sampling Locations, GW Elevations, Diesel and Gasoline**"). Groundwater and soil samples will be analyzed for NWTPH-HCID, followed by quantification of findings (gasoline, diesel and/or heavy weight oils), if any.

3.0 Subsurface Investigation Methodology

3.1 Soil Sampling

Borings will produce continuous cores in 4 – 5 foot sections, and each section of each core will be inspected by cutting open core section plastic liners. If any indication of petroleum staining or odors are detected, a representative soil sample will be collected from that core section. One soil sample at the least will be collected from D-1, D-3, G-1 and G-2, a depth of 7 – 9 BGS. Soil samples will be taken via direct-push techniques as described in ASTM D 6282-98 "Standard Guide for Direct-Push Soil Sampling for Environmental Site Characterizations" and ASTM D 2488-93 "Practice for Description and identification of Soils (Visual-Manual Procedure)".

Bore hole samples will be collected by a closed piston discreet sampling system in which a steel sample collection tube, equipped with a cutting shoe and supported piston tip, which will be advanced into the formation (soils) to the beginning of the sample interval. The rod supporting the probe tip will be removed and the sample tube advanced into the formation, pushing the piston into the collection tube and collecting the soil within a thin-wall polyvinyl chloride (PVC) liner. The cores will then be retrieved in PVC liners, having dimensions of approximately two (2) inches in diameter by four or five (4 or 5) feet long, from the inner part of the sampling tube after the tube is retrieved.

A continuous core will be constructed and so collected from the surface to where it makes sense to stop, based on refusal, depth to groundwater, the presence and interval of any contaminated soils, etc. If no contamination is encountered in any of these borings, borings will be nevertheless advanced up to four feet into groundwater and a soil sample collected near the soil/water interface.

Wherever significant field indications of soil impact are encountered, additional borings to delineate outward from the discovered impact would be conducted. Soil samples are then to be collected into four (4) ounce glass jars with Teflon-lined lids for diesel-related analyses, and, for gasoline, since COCs include VOCs or gasoline petroleum fractions, methanol filled sealed plugs & plunger collection methodology will be used.

Sample jars will be placed in a cooler and refrigerated until delivered to the laboratory. Sample location, depth of collection, date and time are to be recorded on a chain-of-custody record and submitted to the laboratory with a list of requested analysis. Soil field screening, when useful, will be accomplished via PID or catalytic combustion meter measuring outgassing of heated plastic bags of soil sample (see Section 3.3). Any such field screening as described in Section 3.3 will be recorded and reported with the other analytical results.

3.2 Groundwater Sampling

Groundwater samples are to be collected after each of the six holes is constructed within the steel casing. The well is allowed to stand idle for a short time to settle turbidity and establish groundwater level equilibrium. Static water level is then measured with a clean (decontaminated) water level indicator. The well is purged with a peristaltic pump (or a baler) prior to sample collection.

Groundwater samples are also collected with a peristaltic pump (or a baler). If soils are physically stable with no cave-ins after boring, a pre-packed stainless steel filter, attached to a PVC riser, will be installed. If not, temporary casings will be installed. Samples are to be collected into the designated containers from a clean polyethylene tube extending from the pump (or else collected directly from a baler). Polyethylene tubing, stainless steel pre-packed filters, attached risers and protective nitrile gloves are disposed between boreholes (gloves are to disposed more frequently if soiled to the point that a reasonable chance of cross-contamination exists).

Sample equipment is decontaminated by washing in a dilute non-phosphate soap solution, three (3) rinses in tap water, and a final rinse in distilled/deionized water prior to inserting the disposable PVC liner. Field personnel wear disposable nitrile gloves during sample collection and decontamination procedures.

3.3 Field Screening

If soils are encountered during continuous coring and inspection that are suspected to be contaminated by COCs, and on-site interferences (ambient odors, soil color not typical of site soils) reduce the sampler's and the engineer's confidence in physical and visual observations, field screening via the methodology described below will be done.

A photoionization detector (PID), in addition to physical and visual inspection as described in this Section, would be used for field screening. The PID, with a 10.2 eV (+/-) lamp source, oxide semiconductor total hydrocarbon detector is recommended for this project. EMC performs PID calibration within 48 hours of use on site and at least daily to yield "total organic vapors" in volume parts per million (ppm) of a hexane equivalent. We would use a self-sealing quart-size polyethylene freezer bag for each soil sample.

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Half-filling the bag with sample (the volume ratio of soil to air will be equal), we would then immediately seal it. Then we would manually break up the soil clumps within the bag. We collect the soil samples into the bags immediately after opening the split spoon sampler or soil sample liner, and transfer soil to these field screening bags. Measurement is accomplished as follows:

1) Allow headspace development for at least ten minutes at approximate room temperature.
2) Vigorously shake bags for 15 seconds at the beginning and end of the headspace development period.
3) Record the ambient temperature during headspace screening.
4) After headspace development, introduce the instrument sampling probe through a small opening in the bag to a point about one-half of the headspace depth. Keep the probe free of water droplets and soil particles.
5) Read the highest meter response.
6) Note any erratic headspace data in the sampling form. Do not collect analytical samples from the polyethylene bag.

Notes: Headspace development decreases with temperature. When temperatures are below the operating range of the instrument, perform headspace development and analysis in a heated vehicle or building. Complete headspace analysis within approximately 20 minutes of sample collection. Maximum response usually occurs within about two seconds. Erratic meter response may occur if high organic vapor concentrations or moisture is present.

3.4 Sampling Locations, GW Elevations, Diesel (red circles) and Gasoline (dark blue circles)
Six geotechic holes would be constructed and monitored as shown on the next pages. A Site sketch with plan and elevation views is on Page 8, and proposed COCs are in Table C, Page 9. Groundwater samples will be collected as described Section 3.2 from all geotechnic holes. Soils samples will be collected and analyzed according as indicated in in Table C and described in Section 3.1.

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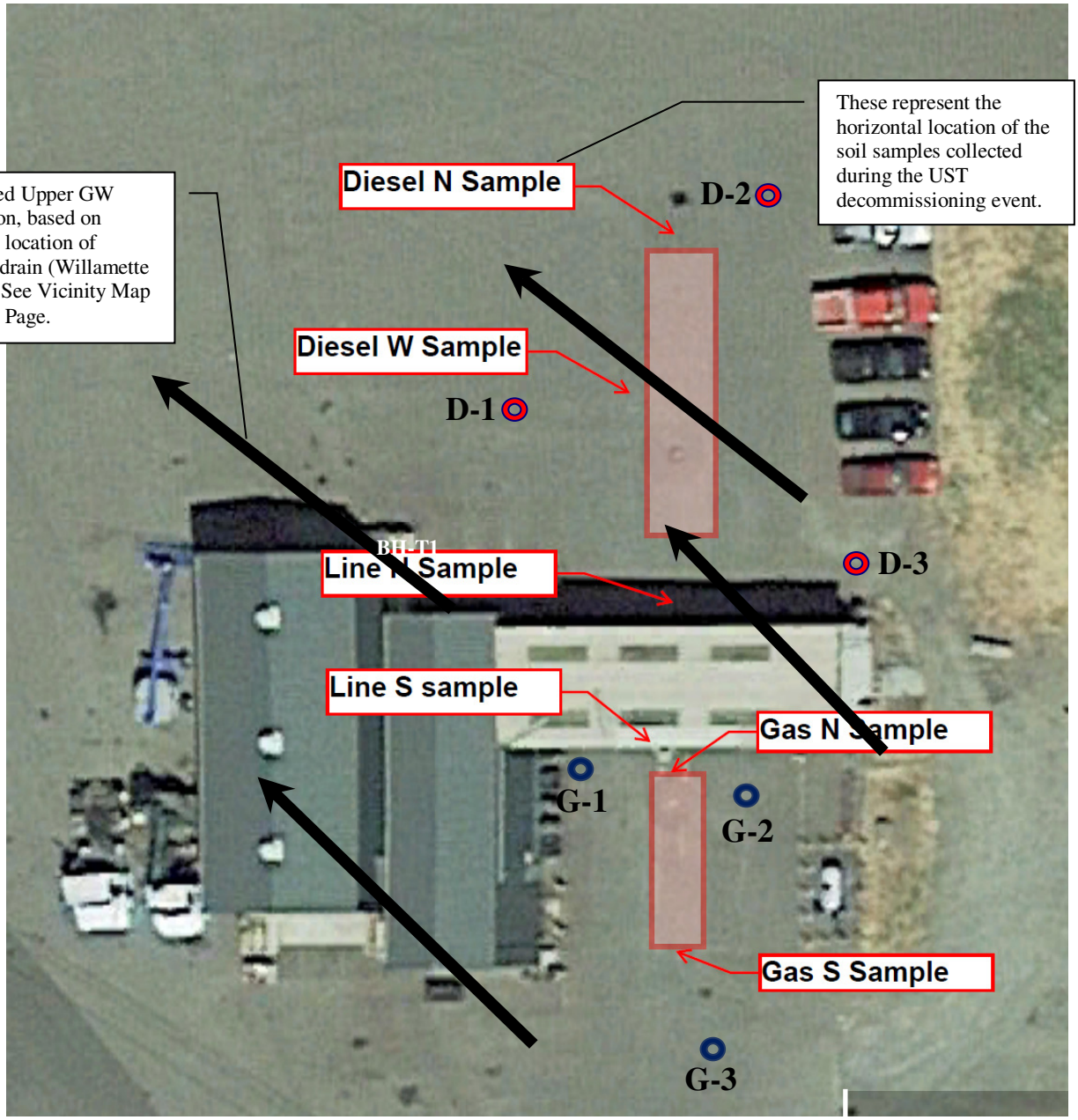
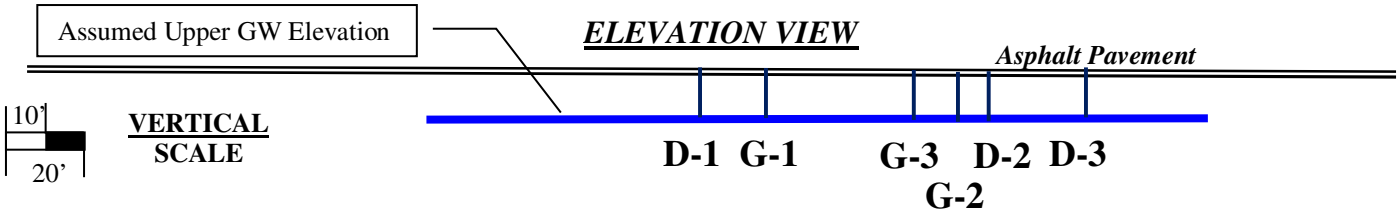
PLAN VIEW



ELEVATION VIEW



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Vicinity Map

Table C

Sample No.	D-1[7]	D-2	D-3	G-1	G-2	G-3
ODEQ TPH-ID[1]	**X**		**X**	**X**	**X**	
ODEQ TPH-D_X[2]	**X**		**X**	**X**	**X**	
ODEQ TPH-G_X[3]	**X**		**X**	**X**	**X**	
VOCs (8260-SIM)[4]	X		X	**X**	**X**	
PAHs (8270C)[5]	**X**		**X**	**X**	**X**	
Pb (8270C)[6]	**X**		**X**	**X**	**X**	

1. *All soil samples will be screened via TPH-ID Method*
2. *Soil sample analyzed if indicated present via TPH-ID*
3. *Soil sample analyzed if indicated present via TPH-ID*
4. *Soil sample analyzed if detected via* TPH-G_X
5. *Soil sample analyzed if detected via* TPH-D_X
6. *Soil sample analyzed if detected via* TPH-G_X

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3.5 Pathways and Contaminants of Concern (COCs)

The sources considered (gasoline and diesel UST systems) infer that diesel, heavy weight oils, gasoline and their fractions (COCs, PAHs, Tetrahedral Lead) are the COCs that warrant further investigation. Exposure pathways to listed receptors may include indoor/outdoor vapor intrusion from soils &/or groundwater, ingestion, dermal contact or inhalation from soils &/or groundwater, or leaching to groundwater.

Sampling locations presented on Page 8 of this Workplan are placed so as to gather data to help determine the nature, horizontal and vertical extent of COCs in soils and groundwater that may have been released from these sources. Soils extracted from all six cores, if COCs in soils are encountered, will be collected and tested for COCs as shown in Table C.

3.6 Some Additional Notes RE QC

Standard good practice quality control methodology, in addition to that described in Section 3.0 above, will be assured during this event, and include 1. At least one equipment duplicate will be collected between any two geotechnic hole constructions. 2. The sample will be collected from the shoe-end of the plastic tube liner. 3. This duplicate will be analyzed for COCs per Table C.

4.0 Reporting

The following will be included in the report submitted as a result of the proposed sampling event:

1. The analytical data will be presented in tables and
2. Field screening data, when used to help guide on-site actions before and during events, will be included.

Regards,

Jack Akin, MS, PE, AI, IC, HMS

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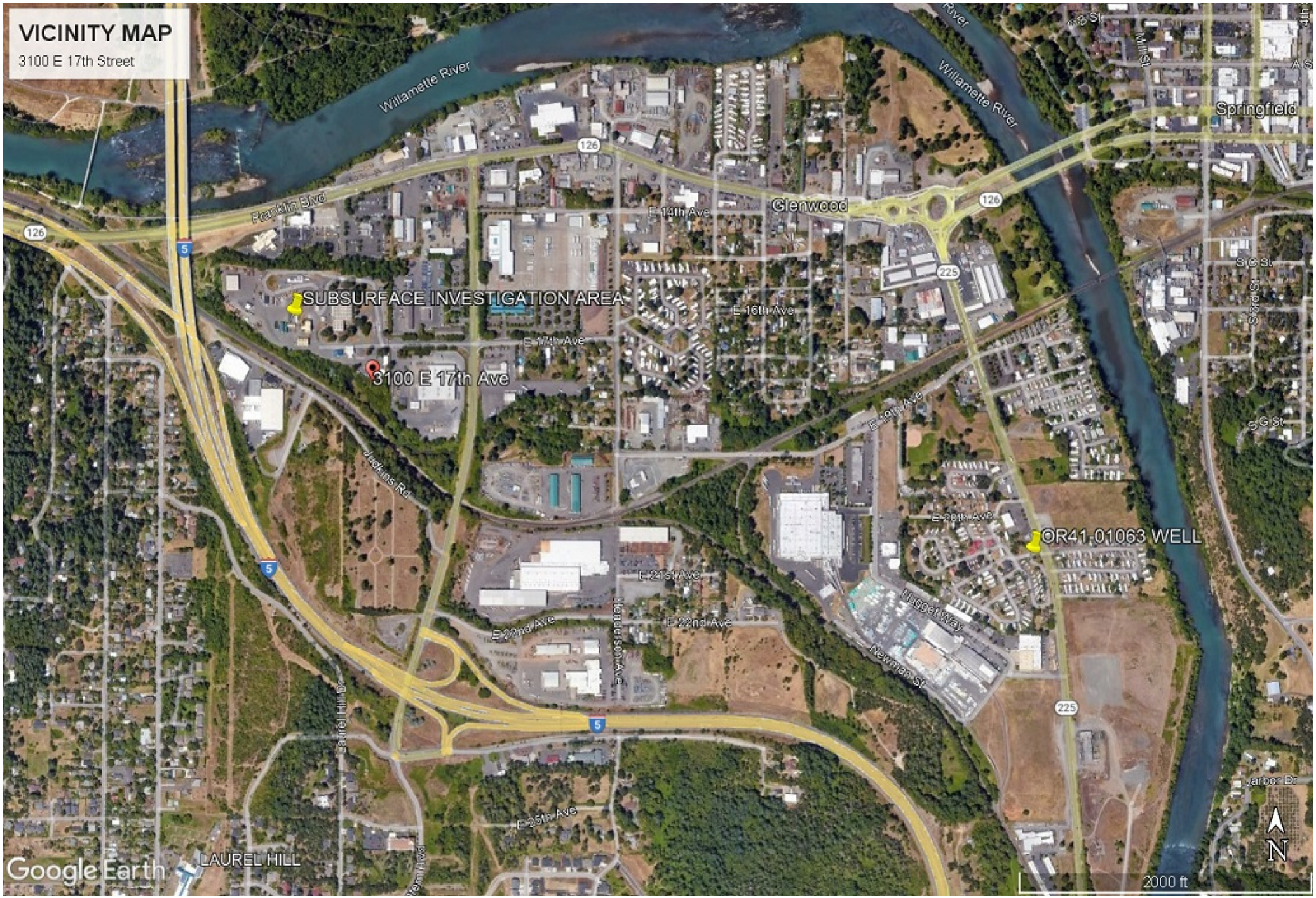
EXHIBIT E

VICINITY MAP


VICINITY MAP
3100 E 17th Street
Willamette River
Willamette River
Springfield
Franklin Blvd
126
5
225
E 14th Ave
Glenwood
SUBSURFACE INVESTIGATION AREA
E 16th Ave
E 17th Ave
3100 E 17th Ave
Jasper Rd
E 19th Ave
E 20th Ave
OR41-01063 WELL
E 21st Ave
E 22nd Ave
Henderson Ave
Laurel Hill Dr
Nexman St
E 25th Ave
LAUREL HILL
Google Earth
2000 ft
N