ARCADIS Design & Consultancy for natural and built assets

Ron Timm
Toxics Cleanup Program
Washington State Department of Ecology
Northwest Regional Office
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Bellevue, WA 98008-5452

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Subject:

Limited Soil Sampling Investigation Summary

Environnent

Date:
October 26, 2018

Contact:
Samuel Miles

Phone:
206.853.7428

Email:
Samuel.Miles@arcadis.com

Our ref:
B0045362.0012

Dear Mr. Timm:

Arcadis U.S., Inc. (Arcadis), on behalf of Chevron Environmental Management Company (Chevron), conducted a limited soil sampling event at the Lower Yard of the Former Unocal Edmonds Terminal located at 11720 Union Oil Company Road in Edmonds, Washington (Figure 1) on September 5th and September 6th, 2018.

This event was conducted in accordance with the Limited Soil Sampling Work Plan submitted to Ecology on July 31, 2018. During this event, three soil borings were advanced using a hang auger (Figure 2):

- DPE-SB-01 was advanced to a depth of 6.5 feet below ground surface (bgs) near STRM-6FLOOR. Soil boring DPE-SB-01 hit refusal at 6.5 feet bgs. No samples were collected as no native soil was encountered and the photoionization detector (PID) readings were below 1 part per million (ppm).
- DPE-SB-02 was advanced to a depth of 7 feet bgs near MW-525. Two soil samples were collected, DPE-SB-02-5-5.5 where the highest PID reading was observed (848.8 ppm), and DPE-SB-02-6-6.5 at the depth of the historical soil samples collected in the area (SB-65-6.5, MW-525-6 and MW-532-7).
- DPE-SB-03 was advanced to a depth of 6.5 feet bgs near EX-B20-M-17-SSW-6. One soil sample was collected, DPE-SB-03-5.5-6 at the depth of the historical soil sample collected in the area (EX-B20-M-17-SSW-6).

Soil samples were submitted to an Ecology-approved laboratory under a chain-of-custody and analyzed in accordance with following methods:

- DPE-SB-02-6-6.5 and DPE-SB-03-5.5-6 were analyzed for volatile petroleum hydrocarbon (VPH) and extractable petroleum hydrocarbon (EPH).

- DPE-SB-02-5-5.5 was analyzed for:
  - Benzene by United States Environmental Protection Agency (USEPA) Method 8021B
  - Diesel range organics (DRO) and heavy oil range organics (HO) by Washington State Department of Ecology (Ecology) Method NWTPH-Dx (after silica gel cleanup)
  - Gasoline range organics (GRO) by Ecology Method NWTPH-Gx
  - Seven carcinogenic polycyclic aromatic hydrocarbons (cPAHs) by USEPA Method 8270 SIM.

Soil analytical data are presented in Table 1 and Table 2. Laboratory analytical reports and chain-of-custody documents are provided in Attachment 1. Total petroleum hydrocarbons (TPH) concentrations were calculated using the MTCATPH11.1 Calculation Worksheets presented in Attachment 2.

Soil concentration observed in the three soil samples collected are either below the Site-specific cleanup standards (DPE-SB-02-6-6.5 and DPE-SB-03-5.5-6) or less than twice the Site-specific cleanup standards (DPE-SB-02-5-5.5 for TPH). Particularly, cPAHs and benzene concentrations are in compliance with the Site-specific cleanup standards in the three samples collected. Additionally, a comparison with the historical soil analytical data shows a decrease in site constituents of concern concentrations (Table 3).

The results of the limited soil sampling event showing good remedial progress, Arcadis proposes to implement the Washington State Department of Transportation Stormwater Line soil sampling as described in the Compliance Monitoring Plan[1] (CMP) to further assess the performance of the DPE system.

If you have any questions or would like to discuss this matter further, please feel free to contact Samuel Miles of Arcadis at 206.853.7428.

Sincerely,

Arcadis U.S., Inc.

Samuel Miles
AFS Project Manager

Copies:
Kim Jolitz – Chevron EMC
Kevin Bartoy – WSDOT
Scott Zorn – Haley and Aldrich

[1] Arcadis. 2017. Compliance Monitoring Plan. Former Unocal Edmonds Bulk Fuel Terminal. July 31.

Enclosures:

Figures

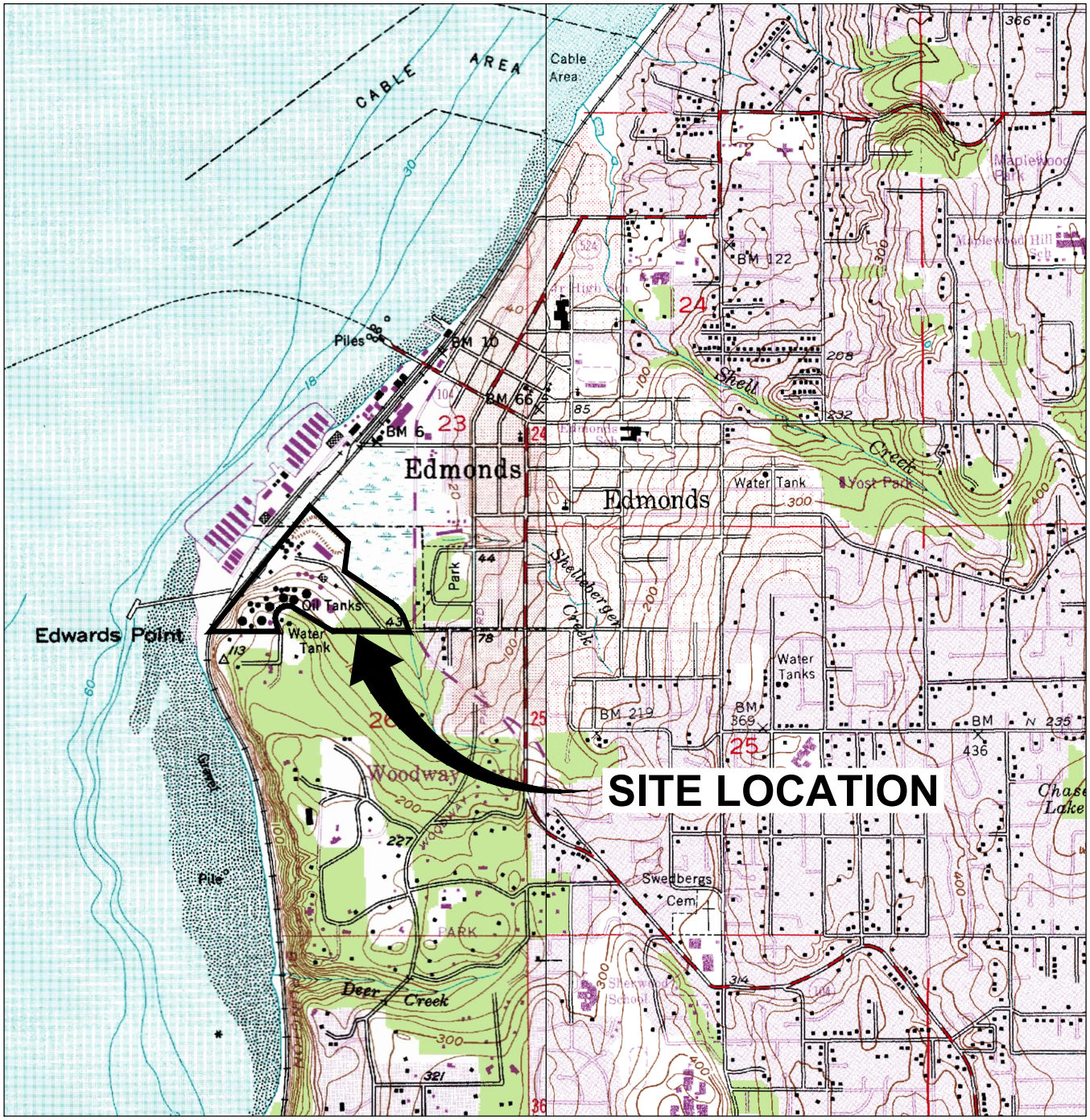
1 Former Unocal Bulk Fuel Terminal Location Map
2 Soil Sampling Locations

Tables

1 Soil Analytical Data – Washington State Department of Transportation Stormwater Line Area
2 Soil Analytical Data Extractable Petroleum Hydrocarbons and Volatile Petroleum Hydrocarbons – Washington State Department of Transportation Stormwater Line Area
3 Soil Analytical Data Comparison – Washington State Department of Transportation Stormwater Line Area

Attachment

1 Laboratory Analytical Reports and Chain-of-Custody Documents
2 MTCATPH11.1 Calculation Worksheets



REFERENCE: BASE MAP USGS QUADS., 7.5 MIN. SERIES (TOPOGRAPHIC) - EDMONDS EAST, WASH. AND EDMONDS WEST, WASH.

0 2000' 4000'

GRAPHIC SCALE

WASHINGTON

CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
FORMER UNOCAL BULK FUEL TERMINAL
EDMONDS, WASHINGTON

LIMITED SOIL INVESTIGATION SUMMARY

FORMER UNOCAL BULK FUEL TERMINAL LOCATION MAP

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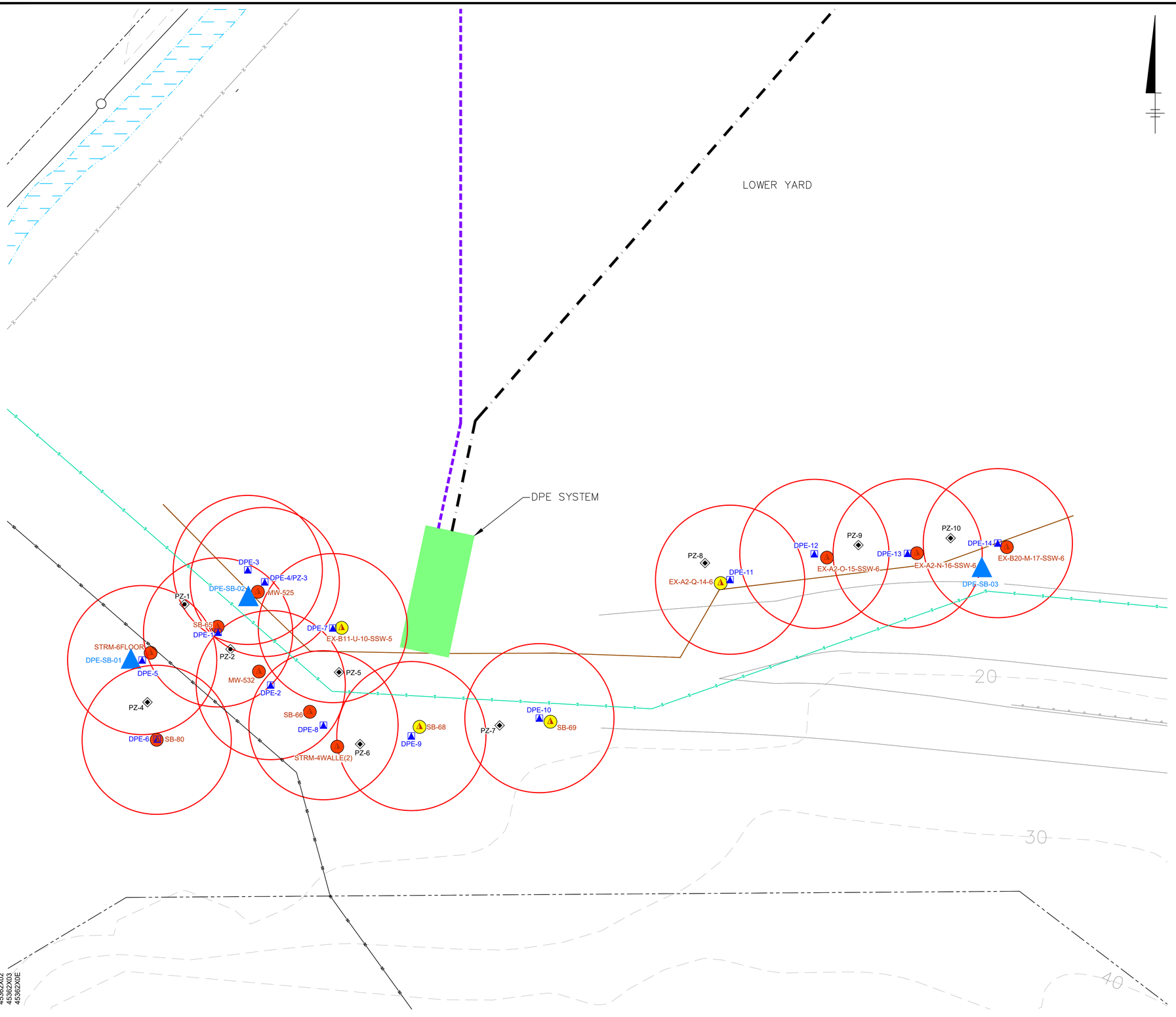
FIGURE 1

CITY: MINNEAPOLIS, MN DIV/GROUP: ENV/CAD DB: R. OBERLANDER LD: R. OBERLANDER PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\Minneapolis-MNVACT\B0045362\0007\00001\BGESWP\DWG\45362D01.dwg LAYOUT: 1 SAVED: 6/6/2017 1:22 PM ACADVER: 19.1S (LMS TECH) PAGESETUP: --- PLOTSTYLETABLE: --- PLOTTED: 6/6/2017 1:23 PM BY: OBERLANDER, ROSEANNE
XREFS: IMAGES: PROJECTNAME: ---
45362X0A Edmond-E.tif
Edmond-W.tif



LEGEND:

- FORMER UNOCAL BULK FUEL TERMINAL PROPERTY BOUNDARY
- SD — POINT EDWARDS STORM DRAIN LINE
- S — WASHINGTON STATE DEPARTMENT OF TRANSPORTATION (WSDOT) STORMWATER LINE
- 20-MIL POLYETHYLENE SHEETING
- DPE-14 — DUAL PHASE EXTRACTION (DPE) WELL LOCATION
- CUL — CLEANUP LEVEL
- REL — REMEDIATION LEVEL
- DPE MONITORING PIEZOMETERS
- SOIL SAMPLE LOCATION WITH ANALYTE CONCENTRATIONS EXCEEDING SITE CULs OR RELs
- SOIL SAMPLE LOCATION WITH ANALYTE CONCENTRATIONS EXCEEDING TWICE THE CUL
- SOIL SAMPLE LOCATIONS(APPROXIMATE LOCATION)
- ELECTRICAL CONDUIT TRENCHING (APPROXIMATE LOCATION)
- TREATED GROUNDWATER DISCHARGE LINE (APPROXIMATE LOCATION)
- ESTIMATED DPE RADIUS OF INFLUENCE (ROI) – 30 FOOT ROI

NOTES:

1. 20-MIL POLYETHYLENE SHEETING INSTALLED UPON COMPLETION OF PHASE I EXCAVATION. SHEETING REACHES TO APPROXIMATELY 7.5 FEET ABOVE MEAN SEA LEVEL.
2. HORIZONTAL DATUM: WASHINGTON STATE COORDINATE SYSTEM NORTH ZONE (NAD 83/98).
   VERTICAL DATUM: N.A.V.D. 88
   UNITS: U.S. SURVEY FEET
   HORIZONTAL AND VERTICAL CONTROL ESTABLISHED BY GPS VIA VERTICAL REFERENCE STATION NETWORK (VRSN).
3. SOUTHEAST PORTION OF WSDOT STORMWATER LINE HAS NOT BEEN SURVEYED.

0 20' 40'

GRAPHIC SCALE

CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
FORMER UNOCAL BULK FUEL TERMINAL
EDMONDS, WASHINGTON
LIMITED SOIL INVESTIGATION SUMMARY

SOIL SAMPLING LOCATIONS

ARCADIS Design & Consultancy for natural and built assets

FIGURE
2

Table 1
Soil Analytical Data – Washington State Department of Transportation Stormwater Line Area
Former Unocal Terminal
11720 Unoco Road
Edmonds, Washington

Sample Date	Sample Name	Sample Depth (feet bgs)	Benzene (mg/kg)		GRO (mg/kg)		DRO (mg/kg)		HO (mg/kg)		TPH (mg/kg)		Total cPAHs Adjusted for Toxicity (mg/kg)		Comment
	Remediation Level (REL) / Cleanup Levels (CULs)		18 mg/kg		-						2,775 mg/kg		0.14 mg/kg		
			Result	Lab Q	Result	Lab Q	Result	Lab Q	Result	Lab Q	Sum	Lab Q	Sum	Lab Q	
9/6/2018	DPE-SB-02-5-5.5	5-5.5	8.3		1,500	H	2800		990		**5,290**		0.0477	--	
9/6/2018	DPE-SB-02-6-6.5	6-6.5	6.8	U	--		--		--		2,540		0.0259	--	
9/6/2018	DPE-SB-03-5.5-6	5.5-6	0.5	U	--		--		--		158		0.0004	--	
Quality Assurance Samples															
Duplicate Sample															
9/6/2018	Dup-1	6-6.5	5.0	U	--		--		--		1,962		0.0321		Parent sample: DPE-SB-02-6-6.5

Notes
mg/kg = milligrams per kilogram.
Sample depth in feet below ground surface (bgs).
GRO = Gasoline by Washington State Department of Ecology (Ecology) Method NWTPH-Gx
DRO = diesel range organics by Ecology Method NWTPH-Dx (after silica gel cleanup)
HO = heavy oil range organics by Ecology Method NWTPH-Dx (after silica gel cleanup)
Total petroleum hydrocarbons (TPH) concentration calculated by summing the concentrations of GRO, DRO and HO for DPE-SB-02-5-5.5 . For results which do not exceed laboratory reporting limit (RL), half of the laboratory RL is added to determine TPH concentration.
For DPE-SB-02-6-6.5, DPE-SB-03-5.5-6 and Dup-1, TPH concentration calculated according to the MTCATPH11.1 Excel workbook provided in Attachment 1 and using Method WA Extractable Petroleum Hydrocarbons (EPH) and Volatile Petroleum Hydrocarbons (VPH) results shown on Table 2. The higher value for the fraction where there is an overlap between EPH and VPH was used for the calculation. For results which do not exceed laboratory RL, half of the laboratory RL is added to determine TPH concentration.
Benzene by Method United States Environmental Protection Agency (USEPA) 8260C for DPE-SB-02-5-5.5 and by Method WA VPH for DPE-SB-02-6-6.5, DPE-SB-03-5.5-6 and Dup-1.

Carcinogenic Polycyclic Aromatic Hydrocarbons (cPAHs) analyzed by USEPA 8270D SIM when either DRO or HO concentrations were observed at or above the laboratory RL. Total cPAHs calculated by summing the concentrations of benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene and adjusted for toxicity using toxic equivalency factors to represent a total benzo(a)pyrene concentration (WAC 173-340-900). For results which do not exceed laboratory RL, half of the laboratory RL is added to determine cPAHs concentration.

--: cPAHs not analyzed. No DRO/HO concentrations at or above the laboratory RL.
Lab Q: qualifier attributed by the laboratory
U: Not detected at the laboratory reporting limit (RL). Values shown are the laboratory RLs.
BOLD Exceeds site-specific REL.

Table 2
Soil Analytical Data Extractable Petroleum Hydrocarbons and Volatile Petroleum Hydrocarbons – Washington State Department of Transportation Stormwater Line Area
Former Unocal Terminal
11720 Unoco Road
Edmonds, Washington

Sample Name		DPE-SB-02-6-6.5		Dup-1		DPE-SB-03-5.5-6	
Sample Depth (feet bgs)		6-6.5		6-6.5		5.5-6	
Sample Date		9/6/2018		9/6/2018		9/6/2018	
Analytes	Units	Results	Lab Q.	Results	Lab Q.	Results	Lab Q.
C5-C6 Aliphatics	ug/kg	68,200	U	49,800	U	5,130	U
C6-C8 Aliphatics	ug/kg	68,200	U	74,900	D	5,130	U
C8-C10 Aliphatics	ug/kg	68,200	U	49,800	U	5,130	U
C10-C12 Aliphatics	ug/kg	89,500	D	80,900	D	5,130	U
C8-C10 Aliphatics	ug/kg	15,300		5,200		2,130	U
C10-C12 Aliphatics	ug/kg	101,000		62,900		2,130	U
C12-C16 Aliphatics	ug/kg	633,000		471,000		24,500	
C16-C21 Aliphatics	ug/kg	756,000		535,000		63,900	
C21-C34 Aliphatics	ug/kg	198,000		146,000		8,330	
C8-C10 Aromatics	ug/kg	68,200	U	56,500	D	5,130	U
C10-C12 Aromatics	ug/kg	203,000	D	109,000	D	8,000	
C12-C13 Aromatics	ug/kg	127,000	D	69,100	D	9,500	
C8-C10 Aromatics	ug/kg	4,260		2,190	U	2,130	U
C10-C12 Aromatics	ug/kg	28,100		19,400		2,130	U
C12-C16 Aromatics	ug/kg	99,000		81,700		2,620	
C16-C21 Aromatics	ug/kg	293,000		238,000		30,900	
C21-C34 Aromatics	ug/kg	92,300		89,200		5,170	
Benzene	ug/kg	6,820	U	4,980	U	513	U
Toluene	ug/kg	6,820	U	4,980	U	513	U
Ethylbenzene	ug/kg	6,820	U	4,980	U	513	U
m,p-Xylene	ug/kg	13,600	U	9,950	U	1,030	U
o-Xylene	ug/kg	6,820	U	4,980	U	513	U
Naphthalene	ug/kg	6,820	U	6,670	D	513	U
1-Methylnaphthalene	ug/kg	6,820	U	6,070	D	513	U
n-Hexane	ug/kg	3.80	U	2.80	U	2.90	U

Notes

ug/kg = micrograms per kilogram.

Sample depth in feet below ground surface (bgs).

Parent Sample of Dup-1 is DPE-SB-02-6-6.5.

Analytes per Washington State Department of Ecology (Ecology) Method WA Extractable Petroleum Hydrocarbons (EPH) and Volatile Petroleum Hydrocarbons (VPH).

Lab Q. = Qualifier attributed by the laboratory

U: Not detected at the laboratory reporting limit (RL). Values shown are the laboratory RLs.

D: The reported value is from a dilution

Table 3
Soil Analytical Data Comparison – Washington State Department of Transportation Stormwater Line Area
Former Unocal Terminal
11720 Unoco Road
Edmonds, Washington

Historical Soil Sample	Historical Cleanup Action/ Investigation	Concentration[1] (mg/kg) Exceeded Site			2018 Soil Sample	Concentration[1] (mg/kg)		
		REL for TPH (2,775 mg/kg)	CUL for cPAHs TEQ (0.14 mg/kg)	CUL for benzene (18 mg/kg)		REL for TPH (2,775 mg/kg)	CUL for cPAHs TEQ (0.14 mg/kg)	CUL for benzene (18 mg/kg)
STRM-6FLOOR-7	2003 Point Edwards Storm Drain Line Excavation	**17,439**	-	**54.9**				
STRM-4WALLE(2)-3		**15,388**	**0.56**	-				
EX-B11-U-10-SSW-5	2007 - Phase I excavation activities	-	**0.159**	-				
EX-A2-Q-14-6		**3,060**	-	-				
EX-A2-O-15-SSW-6		**7,540**	-	-				
EX-A2-N-16-SSW-6		**7,550**	-	-				
EX-B20-M-17-SSW-6		**15,700**	**0.166**	-	DPE-SB-03-5.5-6	158	0.0004	0.5 U
SB-65-6.5	2008	**16,900**	**1.01**	**35.8**	DPE-SB-02-5-5.5	**5,290**	0.0477	8.3
SB-66-6.0		**11,900**	**0.209**	-				
SB-68-4.0		**5,470**	**0.165**	-				
SB-69-6.0		**3,720**	**0.236**	-				
SB-80-7.5		**4,660**	**0.693**	-				
MW-525-6	2012	**17,850**	**0.29**	**34**	DPE-SB-02-5-5.5	**5,290**	0.0477	8.3
MW-532-7		**10,540**	-	-	DPE-SB-02-5-5.5	**5,290**	0.0477	8.3

Notes:

[1] Maximum concentrations are displayed per boring location.

cPAH = carcinogenic polycyclic aromatic hydrocarbon

CUL = cleanup level

DPE = dual-phase extraction

mg/kg = milligrams per kilogram

Point Edwards = Point Edwards condominium complex

REL = remediation level

TEQ = total cPAHs adjusted for toxicity

TPH = total petroleum hydrocarbons

- = concentration below appropriate CULs/RELs

U = Not detected at the laboratory reporting limit (RL). Values shown are the laboratory RLs.

Shaded cell = maximum concentration observed

Bolded cell = concentration exceeded Site REL or CUL

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

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

TestAmerica Job ID: 580-80178-1
Client Project/Site: Chevron Edmonds Terminal

For:
ARCADIS U.S. Inc
1100 Olive Way
Suite 800
Seattle, Washington 98101

Attn: Samuel Miles

M. Elaine Walker

Authorized for release by:
10/16/2018 5:13:57 PM

Elaine Walker, Project Manager II
(253)248-4972
elaine.walker@testamericainc.com

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Case Narrative

Client: ARCADIS U.S. Inc
Project/Site: Chevron Edmonds Terminal

TestAmerica Job ID: 580-80178-1

Job ID: 580-80178-1

Laboratory: TestAmerica Seattle

Narrative

Job Narrative
580-80178-1

Receipt
Five samples were received on 9/7/2018 1:00 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 6.4° C.

GC/MS VOA
Method(s) 8260C: Surrogate recovery for the following samples were outside control limits: DPE-SB-02-5-5.5 (580-80178-2) and Trip Blank (580-80178-5). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method(s) NWTPH-Gx: Reanalysis of the following sample was performed outside of the analytical holding time due to failure of quality control parameters in the initial analysis. DPE-SB-02-5-5.5 (580-80178-2). No charge will be applied to this analysis.

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

GC/MS Semi VOA
Method(s) 8270D SIM: The following samples were diluted due to the nature of the sample matrix: DPE-SB-02-6-6.5 (580-80178-1), DPE-SB-02-5-5.5 (580-80178-2), DPE-SB-02-5-5.5 MS (580-80178-2 MS), DPE-SB-02-5-5.5 MSD (580-80178-2 MSD), Dup-1 (580-80178-4), Dup-1 MS (580-80178-4 MS) and Dup-1 MSD (580-80178-4 MSD). Elevated reporting limits (RLs) are provided.

Method(s) 8270D SIM: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 580-284446 and analytical batch 580-284969 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) 8270D SIM: The matrix spike / matrix spike duplicate (MS/MSD) precision for preparation batch 580-286141 and analytical batch 580-286289 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) 8270D SIM: The following sample was prepared outside of preparation holding time due to laboratory capacity: DPE-SB-02-5-5.5 (580-80178-2). No charge will be applied for this analysis.

Method(s) 8270D SIM: The following analyte recovered outside upper control limits by 3% for the LCS associated with preparation batch 580-286141 and analytical batch 580-286289: Benzo[k]fluoranthene. These analytes were outside the Marginal Exceedance Limits. However, since the MS/MSD met acceptance criteria and the sample was ND at the reporting limit the data is qualified and reported.

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

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

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

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
X	Surrogate is outside control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

GC/MS Semi VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
H	Sample was prepped or analyzed beyond the specified holding time
*	LCS or LCSD is outside acceptance limits.
F2	MS/MSD RPD exceeds control limits
F1	MS and/or MSD Recovery is outside acceptance limits.

GC VOA

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time

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 ID: DPE-SB-02-6-6.5
Date Collected: 09/06/18 10:30
Date Received: 09/07/18 13:00

Lab Sample ID: 580-80178-1
Matrix: Solid
Percent Solids: 83.8

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	800		27	2.5	ug/Kg	☼	09/20/18 11:40	09/27/18 14:55	5
Benzo[a]anthracene	39		27	4.2	ug/Kg	☼	09/20/18 11:40	09/27/18 14:55	5
Benzo[a]pyrene	16	J	27	2.2	ug/Kg	☼	09/20/18 11:40	09/27/18 14:55	5
Benzo[b]fluoranthene	26	J	27	3.2	ug/Kg	☼	09/20/18 11:40	09/27/18 14:55	5
Benzo[k]fluoranthene	6.0	J	27	3.3	ug/Kg	☼	09/20/18 11:40	09/27/18 14:55	5
Chrysene	84		27	8.2	ug/Kg	☼	09/20/18 11:40	09/27/18 14:55	5
Dibenz(a,h)anthracene	7.1	J	27	4.0	ug/Kg	☼	09/20/18 11:40	09/27/18 14:55	5
Indeno[1,2,3-cd]pyrene	12	J	27	3.3	ug/Kg	☼	09/20/18 11:40	09/27/18 14:55	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Terphenyl-d14	*91*		*57 - 120*	*09/20/18 11:40*	*09/27/18 14:55*	*5*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	83.8		0.1	0.1	%			09/14/18 15:48	1
Percent Moisture	16.2		0.1	0.1	%			09/14/18 15:48	1

Client Sample ID: DPE-SB-02-5-5.5

Date Collected: 09/06/18 10:35
Date Received: 09/07/18 13:00

Lab Sample ID: 580-80178-2

Matrix: Solid
Percent Solids: 83.8

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**8300**		78	20	ug/Kg	☼	09/14/18 16:13	09/14/18 22:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*96*		*80 - 120*	*09/14/18 16:13*	*09/14/18 22:18*	*1*
Trifluorotoluene (Surr)	*20*	*X*	*80 - 120*	*09/14/18 16:13*	*09/14/18 22:18*	*1*
4-Bromofluorobenzene (Surr)	*134*	*X*	*80 - 120*	*09/14/18 16:13*	*09/14/18 22:18*	*1*
Dibromofluoromethane (Surr)	*96*		*80 - 120*	*09/14/18 16:13*	*09/14/18 22:18*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*80 - 121*	*09/14/18 16:13*	*09/14/18 22:18*	*1*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[a]anthracene	**87**	**H**	30	4.5	ug/Kg	☼	10/10/18 15:08	10/12/18 00:55	5
Benzo[a]pyrene	**30**	**H**	30	2.4	ug/Kg	☼	10/10/18 15:08	10/12/18 00:55	5
Benzo[b]fluoranthene	**34**	**H**	30	3.5	ug/Kg	☼	10/10/18 15:08	10/12/18 00:55	5
Benzo[k]fluoranthene	**17**	**J H ***	30	3.6	ug/Kg	☼	10/10/18 15:08	10/12/18 00:55	5
Chrysene	**350**	**H**	30	8.9	ug/Kg	☼	10/10/18 15:08	10/12/18 00:55	5
Dibenz(a,h)anthracene	ND	H F2	30	4.3	ug/Kg	☼	10/10/18 15:08	10/12/18 00:55	5
Indeno[1,2,3-cd]pyrene	ND	H	30	3.6	ug/Kg	☼	10/10/18 15:08	10/12/18 00:55	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Terphenyl-d14	*80*		*57 - 120*	*10/10/18 15:08*	*10/12/18 00:55*	*5*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	**1500**	**H**	31	14	mg/Kg	☼	09/24/18 15:39	09/25/18 12:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*133*		*50 - 150*	*09/24/18 15:39*	*09/25/18 12:40*	*1*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	**2800**		59	14	mg/Kg	☼	09/18/18 12:11	09/24/18 12:24	1
Motor Oil (>C24-C36)	**990**		59	21	mg/Kg	☼	09/18/18 12:11	09/24/18 12:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*144*		*50 - 150*	*09/18/18 12:11*	*09/24/18 12:24*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**83.8**		0.1	0.1	%			09/14/18 15:48	1
Percent Moisture	**16.2**		0.1	0.1	%			09/14/18 15:48	1

Client: ARCADIS U.S. Inc
Project/Site: Chevron Edmonds Terminal

TestAmerica Job ID: 580-80178-1

Client Sample ID: DPE-SB-03-5.5-6
Date Collected: 09/06/18 12:30
Date Received: 09/07/18 13:00

Lab Sample ID: 580-80178-3
Matrix: Solid
Percent Solids: 92.7

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	7.3		5.3	0.47	ug/Kg	☼	09/20/18 11:40	09/27/18 15:18	1
Benzo[a]anthracene	0.88	J	5.3	0.80	ug/Kg	☼	09/20/18 11:40	09/27/18 15:18	1
Benzo[a]pyrene	ND		5.3	0.42	ug/Kg	☼	09/20/18 11:40	09/27/18 15:18	1
Benzo[b]fluoranthene	ND		5.3	0.62	ug/Kg	☼	09/20/18 11:40	09/27/18 15:18	1
Benzo[k]fluoranthene	ND		5.3	0.63	ug/Kg	☼	09/20/18 11:40	09/27/18 15:18	1
Chrysene	ND		5.3	1.6	ug/Kg	☼	09/20/18 11:40	09/27/18 15:18	1
Dibenz(a,h)anthracene	ND		5.3	0.76	ug/Kg	☼	09/20/18 11:40	09/27/18 15:18	1
Indeno[1,2,3-cd]pyrene	ND		5.3	0.63	ug/Kg	☼	09/20/18 11:40	09/27/18 15:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Terphenyl-d14	*88*		*57 - 120*	*09/20/18 11:40*	*09/27/18 15:18*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	92.7		0.1	0.1	%			09/14/18 15:48	1
Percent Moisture	7.3		0.1	0.1	%			09/14/18 15:48	1

Client: ARCADIS U.S. Inc
Project/Site: Chevron Edmonds Terminal

TestAmerica Job ID: 580-80178-1

Client Sample ID: Dup-1
Date Collected: 09/06/18 00:00
Date Received: 09/07/18 13:00

Lab Sample ID: 580-80178-4
Matrix: Solid
Percent Solids: 90.8

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	1700	F1	27	2.4	ug/Kg	☼	09/20/18 11:40	09/27/18 16:04	5
Benzo[a]anthracene	57		27	4.1	ug/Kg	☼	09/20/18 11:40	09/27/18 16:04	5
Benzo[a]pyrene	19	J	27	2.1	ug/Kg	☼	09/20/18 11:40	09/27/18 16:04	5
Benzo[b]fluoranthene	33		27	3.2	ug/Kg	☼	09/20/18 11:40	09/27/18 16:04	5
Benzo[k]fluoranthene	9.1	J	27	3.2	ug/Kg	☼	09/20/18 11:40	09/27/18 16:04	5
Chrysene	110		27	8.1	ug/Kg	☼	09/20/18 11:40	09/27/18 16:04	5
Dibenz(a,h)anthracene	11	J	27	3.9	ug/Kg	☼	09/20/18 11:40	09/27/18 16:04	5
Indeno[1,2,3-cd]pyrene	10	J	27	3.2	ug/Kg	☼	09/20/18 11:40	09/27/18 16:04	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Terphenyl-d14	*87*		*57 - 120*	*09/20/18 11:40*	*09/27/18 16:04*	*5*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	90.8		0.1	0.1	%			09/14/18 15:48	1
Percent Moisture	9.2		0.1	0.1	%			09/14/18 15:48	1

Client Sample ID: Trip Blank
Date Collected: 09/06/18 00:00
Date Received: 09/07/18 13:00

Lab Sample ID: 580-80178-5
Matrix: Solid

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	18	J	71	18	ug/Kg		09/14/18 16:13	09/14/18 22:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*102*		*80 - 120*	*09/14/18 16:13*	*09/14/18 22:44*	*1*
Trifluorotoluene (Surr)	*14*	*X*	*80 - 120*	*09/14/18 16:13*	*09/14/18 22:44*	*1*
4-Bromofluorobenzene (Surr)	*96*		*80 - 120*	*09/14/18 16:13*	*09/14/18 22:44*	*1*
Dibromofluoromethane (Surr)	*99*		*80 - 120*	*09/14/18 16:13*	*09/14/18 22:44*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*80 - 121*	*09/14/18 16:13*	*09/14/18 22:44*	*1*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	11		4.7	2.2	mg/Kg		09/18/18 17:52	09/18/18 20:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*92*		*50 - 150*	*09/18/18 17:52*	*09/18/18 20:12*	*1*

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-284013/1-A
Matrix: Solid
Analysis Batch: 284030

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 284013

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		30	7.6	ug/Kg		09/14/18 15:30	09/14/18 17:54	1
Benzene	ND		30	7.6	ug/Kg		09/14/18 15:30	09/14/18 17:54	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*105*		*80 - 120*	*09/14/18 15:30*	*09/14/18 17:54*	*1*
Toluene-d8 (Surr)	*105*		*80 - 120*	*09/14/18 15:30*	*09/14/18 17:54*	*1*
Trifluorotoluene (Surr)	*95*		*80 - 120*	*09/14/18 15:30*	*09/14/18 17:54*	*1*
Trifluorotoluene (Surr)	*95*		*80 - 120*	*09/14/18 15:30*	*09/14/18 17:54*	*1*
4-Bromofluorobenzene (Surr)	*94*		*80 - 120*	*09/14/18 15:30*	*09/14/18 17:54*	*1*
4-Bromofluorobenzene (Surr)	*94*		*80 - 120*	*09/14/18 15:30*	*09/14/18 17:54*	*1*
Dibromofluoromethane (Surr)	*98*		*80 - 120*	*09/14/18 15:30*	*09/14/18 17:54*	*1*
Dibromofluoromethane (Surr)	*98*		*80 - 120*	*09/14/18 15:30*	*09/14/18 17:54*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*80 - 121*	*09/14/18 15:30*	*09/14/18 17:54*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*80 - 121*	*09/14/18 15:30*	*09/14/18 17:54*	*1*

Lab Sample ID: LCS 580-284013/2-A
Matrix: Solid
Analysis Batch: 284030

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 284013

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Benzene			800	852		ug/Kg		106	79 - 135		
Benzene			800	852		ug/Kg		106	79 - 135		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*99*		*80 - 120*
Toluene-d8 (Surr)	*99*		*80 - 120*
Trifluorotoluene (Surr)	*99*		*80 - 120*
Trifluorotoluene (Surr)	*99*		*80 - 120*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*
Dibromofluoromethane (Surr)	*101*		*80 - 120*
Dibromofluoromethane (Surr)	*101*		*80 - 120*
1,2-Dichloroethane-d4 (Surr)	*102*		*80 - 121*
1,2-Dichloroethane-d4 (Surr)	*102*		*80 - 121*

Lab Sample ID: LCSD 580-284013/3-A
Matrix: Solid
Analysis Batch: 284030

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 284013

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene			800	909		ug/Kg		114	79 - 135	7	15
Benzene			800	909		ug/Kg		114	79 - 135	7	15

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*99*		*80 - 120*
Toluene-d8 (Surr)	*99*		*80 - 120*
Trifluorotoluene (Surr)	*99*		*80 - 120*

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-284013/3-A
Matrix: Solid
Analysis Batch: 284031

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 284013

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Trifluorotoluene (Surr)	*99*		*80 - 120*
4-Bromofluorobenzene (Surr)	*94*		*80 - 120*
4-Bromofluorobenzene (Surr)	*94*		*80 - 120*
Dibromofluoromethane (Surr)	*103*		*80 - 120*
Dibromofluoromethane (Surr)	*103*		*80 - 120*
1,2-Dichloroethane-d4 (Surr)	*104*		*80 - 121*
1,2-Dichloroethane-d4 (Surr)	*104*		*80 - 121*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Lab Sample ID: MB 580-284446/1-A
Matrix: Solid
Analysis Batch: 284969

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 284446

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	ND		5.0	0.45	ug/Kg		09/20/18 11:40	09/27/18 13:48	1
Benzo[a]anthracene	ND		5.0	0.76	ug/Kg		09/20/18 11:40	09/27/18 13:48	1
Benzo[a]pyrene	ND		5.0	0.40	ug/Kg		09/20/18 11:40	09/27/18 13:48	1
Benzo[b]fluoranthene	ND		5.0	0.59	ug/Kg		09/20/18 11:40	09/27/18 13:48	1
Benzo[k]fluoranthene	ND		5.0	0.60	ug/Kg		09/20/18 11:40	09/27/18 13:48	1
Chrysene	ND		5.0	1.5	ug/Kg		09/20/18 11:40	09/27/18 13:48	1
Dibenz(a,h)anthracene	ND		5.0	0.72	ug/Kg		09/20/18 11:40	09/27/18 13:48	1
Indeno[1,2,3-cd]pyrene	ND		5.0	0.60	ug/Kg		09/20/18 11:40	09/27/18 13:48	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Terphenyl-d14	*107*		*57 - 120*	*09/20/18 11:40*	*09/27/18 13:48*	*1*

Lab Sample ID: LCS 580-284446/2-A
Matrix: Solid
Analysis Batch: 284969

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 284446

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Methylnaphthalene	1000	899		ug/Kg		90	68 - 120
Benzo[a]anthracene	1000	826		ug/Kg		83	66 - 120
Benzo[a]pyrene	1000	991		ug/Kg		99	72 - 124
Benzo[b]fluoranthene	1000	996		ug/Kg		100	63 - 121
Benzo[k]fluoranthene	1000	1030		ug/Kg		103	63 - 123
Chrysene	1000	963		ug/Kg		96	69 - 120
Dibenz(a,h)anthracene	1000	1040		ug/Kg		104	70 - 125
Indeno[1,2,3-cd]pyrene	1000	1050		ug/Kg		105	65 - 121

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Terphenyl-d14	*96*		*57 - 120*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: 580-80178-4 MS
Matrix: Solid
Analysis Batch: 284969

Client Sample ID: Dup-1
Prep Type: Total/NA
Prep Batch: 284446

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Methylnaphthalene	1700	F1	1040	3160	F1	ug/Kg	☼	137	68 - 120
Benzo[a]anthracene	57		1040	905		ug/Kg	☼	82	66 - 120
Benzo[a]pyrene	19	J	1040	895		ug/Kg	☼	84	72 - 124
Benzo[b]fluoranthene	33		1040	898		ug/Kg	☼	83	63 - 121
Benzo[k]fluoranthene	9.1	J	1040	868		ug/Kg	☼	83	63 - 123
Chrysene	110		1040	1120		ug/Kg	☼	97	69 - 120
Dibenz(a,h)anthracene	11	J	1040	863		ug/Kg	☼	82	70 - 125
Indeno[1,2,3-cd]pyrene	10	J	1040	1010		ug/Kg	☼	96	65 - 121

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Terphenyl-d14	*82*		*57 - 120*

Lab Sample ID: 580-80178-4 MSD
Matrix: Solid
Analysis Batch: 284969

Client Sample ID: Dup-1
Prep Type: Total/NA
Prep Batch: 284446

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2-Methylnaphthalene	1700	F1	1030	2900		ug/Kg	☼	113	68 - 120	9	12
Benzo[a]anthracene	57		1030	939		ug/Kg	☼	86	66 - 120	4	14
Benzo[a]pyrene	19	J	1030	942		ug/Kg	☼	90	72 - 124	5	12
Benzo[b]fluoranthene	33		1030	964		ug/Kg	☼	91	63 - 121	7	10
Benzo[k]fluoranthene	9.1	J	1030	886		ug/Kg	☼	85	63 - 123	2	15
Chrysene	110		1030	1080		ug/Kg	☼	94	69 - 120	4	10
Dibenz(a,h)anthracene	11	J	1030	906		ug/Kg	☼	87	70 - 125	5	13
Indeno[1,2,3-cd]pyrene	10	J	1030	1010		ug/Kg	☼	97	65 - 121	0	15

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Terphenyl-d14	*89*		*57 - 120*

Lab Sample ID: MB 580-286141/1-A
Matrix: Solid
Analysis Batch: 286289

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 286141

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[a]anthracene	ND		5.0	0.76	ug/Kg		10/10/18 15:08	10/11/18 17:52	1
Benzo[a]pyrene	ND		5.0	0.40	ug/Kg		10/10/18 15:08	10/11/18 17:52	1
Benzo[b]fluoranthene	ND		5.0	0.59	ug/Kg		10/10/18 15:08	10/11/18 17:52	1
Benzo[k]fluoranthene	ND		5.0	0.60	ug/Kg		10/10/18 15:08	10/11/18 17:52	1
Chrysene	ND		5.0	1.5	ug/Kg		10/10/18 15:08	10/11/18 17:52	1
Dibenz(a,h)anthracene	ND		5.0	0.72	ug/Kg		10/10/18 15:08	10/11/18 17:52	1
Indeno[1,2,3-cd]pyrene	ND		5.0	0.60	ug/Kg		10/10/18 15:08	10/11/18 17:52	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Terphenyl-d14	*82*		*57 - 120*	*10/10/18 15:08*	*10/11/18 17:52*	*1*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: LCS 580-286141/2-A
Matrix: Solid
Analysis Batch: 286289

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 286141

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzo[a]anthracene	1000	875		ug/Kg		88	66 - 120
Benzo[a]pyrene	1000	1090		ug/Kg		109	72 - 124
Benzo[b]fluoranthene	1000	789		ug/Kg		79	63 - 121
Benzo[k]fluoranthene	1000	1260	*	ug/Kg		126	63 - 123
Chrysene	1000	1040		ug/Kg		104	69 - 120
Dibenz(a,h)anthracene	1000	1070		ug/Kg		107	70 - 125
Indeno[1,2,3-cd]pyrene	1000	887		ug/Kg		89	65 - 121

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Terphenyl-d14	*86*		*57 - 120*

Lab Sample ID: 580-80178-2 MS
Matrix: Solid
Analysis Batch: 286289

Client Sample ID: DPE-SB-02-5-5.5
Prep Type: Total/NA
Prep Batch: 286141

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzo[a]anthracene	87	H	1130	1110		ug/Kg	☼	90	66 - 120
Benzo[a]pyrene	30	H	1130	1100		ug/Kg	☼	95	72 - 124
Benzo[b]fluoranthene	34	H	1130	833		ug/Kg	☼	71	63 - 121
Benzo[k]fluoranthene	17	J H *	1130	1140		ug/Kg	☼	99	63 - 123
Chrysene	350	H	1130	1440		ug/Kg	☼	96	69 - 120
Dibenz(a,h)anthracene	ND	H F2	1130	943		ug/Kg	☼	83	70 - 125
Indeno[1,2,3-cd]pyrene	ND	H	1130	952		ug/Kg	☼	84	65 - 121

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Terphenyl-d14	*81*		*57 - 120*

Lab Sample ID: 580-80178-2 MSD
Matrix: Solid
Analysis Batch: 286289

Client Sample ID: DPE-SB-02-5-5.5
Prep Type: Total/NA
Prep Batch: 286141

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzo[a]anthracene	87	H	1150	1050		ug/Kg	☼	83	66 - 120	6	14
Benzo[a]pyrene	30	H	1150	1140		ug/Kg	☼	96	72 - 124	4	12
Benzo[b]fluoranthene	34	H	1150	920		ug/Kg	☼	77	63 - 121	10	10
Benzo[k]fluoranthene	17	J H *	1150	1190		ug/Kg	☼	102	63 - 123	4	15
Chrysene	350	H	1150	1390		ug/Kg	☼	90	69 - 120	3	10
Dibenz(a,h)anthracene	ND	H F2	1150	1150	F2	ug/Kg	☼	99	70 - 125	19	13
Indeno[1,2,3-cd]pyrene	ND	H	1150	1090		ug/Kg	☼	94	65 - 121	13	15

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Terphenyl-d14	*76*		*57 - 120*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Lab Sample ID: MB 580-284285/1-A
Matrix: Solid
Analysis Batch: 284287

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 284285

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		5.0	2.3	mg/Kg		09/18/18 17:52	09/18/18 18:27	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*91*		*50 - 150*	*09/18/18 17:52*	*09/18/18 18:27*	*1*

Lab Sample ID: LCS 580-284285/2-A
Matrix: Solid
Analysis Batch: 284287

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 284285

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Gasoline			40.0	40.6		mg/Kg		102	80 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*91*		*50 - 150*

Lab Sample ID: LCSD 580-284285/3-A
Matrix: Solid
Analysis Batch: 284287

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 284285

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Gasoline			40.0	44.4		mg/Kg		111	80 - 120	9	10

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*97*		*50 - 150*

Lab Sample ID: MB 580-284790/9-A
Matrix: Solid
Analysis Batch: 284795

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 284790

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		5.0	2.3	mg/Kg		09/24/18 15:39	09/25/18 11:18	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*90*		*50 - 150*	*09/24/18 15:39*	*09/25/18 11:18*	*1*

Lab Sample ID: LCS 580-284790/10-A
Matrix: Solid
Analysis Batch: 284795

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 284790

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Gasoline			40.0	39.8		mg/Kg		100	80 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*97*		*50 - 150*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC) (Continued)

Lab Sample ID: LCSD 580-284790/11-A
Matrix: Solid
Analysis Batch: 284795

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 284790

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Gasoline			40.0	39.6		mg/Kg		99	80 - 120	1	10

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*93*		*50 - 150*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Lab Sample ID: MB 580-284226/1-B
Matrix: Solid
Analysis Batch: 284738

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 284226

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		50	12	mg/Kg		09/18/18 12:11	09/24/18 11:23	1
Motor Oil (>C24-C36)	ND		50	18	mg/Kg		09/18/18 12:11	09/24/18 11:23	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*117*		*50 - 150*	*09/18/18 12:11*	*09/24/18 11:23*	*1*

Lab Sample ID: LCS 580-284226/2-B
Matrix: Solid
Analysis Batch: 284738

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 284226

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
#2 Diesel (C10-C24)			500	456		mg/Kg		91	64 - 127
Motor Oil (>C24-C36)			500	471		mg/Kg		94	70 - 125

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
o-Terphenyl	*90*		*50 - 150*

Lab Sample ID: LCSD 580-284226/3-B
Matrix: Solid
Analysis Batch: 284738

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 284226

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
#2 Diesel (C10-C24)			500	458		mg/Kg		92	64 - 127	1	16
Motor Oil (>C24-C36)			500	489		mg/Kg		98	70 - 125	4	17

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
o-Terphenyl	*95*		*50 - 150*

Lab Sample ID: 580-80178-2 DU
Matrix: Solid
Analysis Batch: 284738

Client Sample ID: DPE-SB-02-5-5.5
Prep Type: Total/NA
Prep Batch: 284226

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
#2 Diesel (C10-C24)	2800			2400		mg/Kg	☼			14	35
Motor Oil (>C24-C36)	990			701		mg/Kg	☼			34	35

Surrogate	DU %Recovery	DU Qualifier	Limits
o-Terphenyl	107		50 - 150

Lab Chronicle

Client: ARCADIS U.S. Inc
Project/Site: Chevron Edmonds Terminal

TestAmerica Job ID: 580-80178-1

Client Sample ID: DPE-SB-02-6-6.5
Lab Sample ID: 580-80178-1
Date Collected: 09/06/18 10:30
Matrix: Solid
Date Received: 09/07/18 13:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	284007	09/14/18 15:48	KMS	TAL SEA

Client Sample ID: DPE-SB-02-6-6.5
Lab Sample ID: 580-80178-1
Date Collected: 09/06/18 10:30
Matrix: Solid
Date Received: 09/07/18 13:00
Percent Solids: 83.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			284446	09/20/18 11:40	KMS	TAL SEA
Total/NA	Analysis	8270D SIM		5	284969	09/27/18 14:55	ADB	TAL SEA

Client Sample ID: DPE-SB-02-5-5.5
Lab Sample ID: 580-80178-2
Date Collected: 09/06/18 10:35
Matrix: Solid
Date Received: 09/07/18 13:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	284007	09/14/18 15:48	KMS	TAL SEA

Client Sample ID: DPE-SB-02-5-5.5
Lab Sample ID: 580-80178-2
Date Collected: 09/06/18 10:35
Matrix: Solid
Date Received: 09/07/18 13:00
Percent Solids: 83.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			284013	09/14/18 16:13	ASJ	TAL SEA
Total/NA	Analysis	8260C		1	284031	09/14/18 22:18	T1W	TAL SEA
Total/NA	Prep	3546			286141	10/10/18 15:08	KMS	TAL SEA
Total/NA	Analysis	8270D SIM		5	286289	10/12/18 00:55	TL1	TAL SEA
Total/NA	Prep	5035			284790	09/24/18 15:39	Z1R	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	284795	09/25/18 12:40	CJ	TAL SEA
Total/NA	Prep	3546			284226	09/18/18 12:11	BAH	TAL SEA
Total/NA	Cleanup	3630C			284681	09/22/18 17:04	BAH	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	284738	09/24/18 12:24	CJ	TAL SEA

Client Sample ID: DPE-SB-03-5.5-6
Lab Sample ID: 580-80178-3
Date Collected: 09/06/18 12:30
Matrix: Solid
Date Received: 09/07/18 13:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	284007	09/14/18 15:48	KMS	TAL SEA

Lab Chronicle

Client: ARCADIS U.S. Inc
Project/Site: Chevron Edmonds Terminal

TestAmerica Job ID: 580-80178-1

Client Sample ID: DPE-SB-03-5.5-6

Lab Sample ID: 580-80178-3
Date Collected: 09/06/18 12:30
Matrix: Solid
Date Received: 09/07/18 13:00
Percent Solids: 92.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			284446	09/20/18 11:40	KMS	TAL SEA
Total/NA	Analysis	8270D SIM		1	284969	09/27/18 15:18	ADB	TAL SEA

Client Sample ID: Dup-1

Lab Sample ID: 580-80178-4
Date Collected: 09/06/18 00:00
Matrix: Solid
Date Received: 09/07/18 13:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	284007	09/14/18 15:48	KMS	TAL SEA

Client Sample ID: Dup-1

Lab Sample ID: 580-80178-4
Date Collected: 09/06/18 00:00
Matrix: Solid
Date Received: 09/07/18 13:00
Percent Solids: 90.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			284446	09/20/18 11:40	KMS	TAL SEA
Total/NA	Analysis	8270D SIM		5	284969	09/27/18 16:04	ADB	TAL SEA

Client Sample ID: Trip Blank

Lab Sample ID: 580-80178-5
Date Collected: 09/06/18 00:00
Matrix: Solid
Date Received: 09/07/18 13:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			284013	09/14/18 16:13	ASJ	TAL SEA
Total/NA	Analysis	8260C		1	284031	09/14/18 22:44	T1W	TAL SEA
Total/NA	Prep	5035			284285	09/18/18 17:52	ALB	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	284287	09/18/18 20:12	JSM	TAL SEA

Laboratory References:

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

Accreditation/Certification Summary

Client: ARCADIS U.S. Inc
Project/Site: Chevron Edmonds Terminal

TestAmerica Job ID: 580-80178-1

Laboratory: 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	01-19-19
ANAB	DoD ELAP		L2236	01-19-19
ANAB	ISO/IEC 17025		L2236	01-19-19
California	State Program	9	2901	11-05-18
Montana (UST)	State Program	8	N/A	04-30-20
Nevada	State Program	9	WA000502019-1	07-31-19
Oregon	NELAP	10	WA100007	11-05-18
US Fish & Wildlife	Federal		LE058448-0	07-31-19
USDA	Federal		P330-14-00126	02-10-20
Washington	State Program	10	C553	02-17-19

Sample Summary

Client: ARCADIS U.S. Inc
Project/Site: Chevron Edmonds Terminal

TestAmerica Job ID: 580-80178-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-80178-1	DPE-SB-02-6-6.5	Solid	09/06/18 10:30	09/07/18 13:00
580-80178-2	DPE-SB-02-5-5.5	Solid	09/06/18 10:35	09/07/18 13:00
580-80178-3	DPE-SB-03-5.5-6	Solid	09/06/18 12:30	09/07/18 13:00
580-80178-4	Dup-1	Solid	09/06/18 00:00	09/07/18 13:00
580-80178-5	Trip Blank	Solid	09/06/18 00:00	09/07/18 13:00

Analytical Resources, Incorporated
Analytical Chemists and Consultants

24 September 2018

Elaine Walker
Test America
5755 8th Street East
Tacoma, WA 98424

RE: Chevron Edmonds Terminal

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)	Associated SDG ID(s)
18I0126	N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, Inc.

ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006

PJLA Testing
Accreditation # 66169

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TestAmerica Seattle
5755 8th Street East
Tacoma, WA 98424
Phone (253) 922-2310 Fax (253) 922-5047

18I0126

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Walker, Elaine M	Carrier Tracking No(s):	COC No: 580-59135.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: elaine.walker@testamericainc.com	State of Origin: Washington	Page: Page 1 of 1
Company: Analytical Resources, Inc		Accreditations Required (See note):		Job #: 580-80178-1
Address: 4611 South 134th Place, Suite 100, ,	Due Date Requested: 9/19/2018			
City: Tukwila	TAT Requested (days):			
State, Zip: WA, 98168				
Phone: 206-695-6200(Tel)	PO #:			
Email:	WO #:			
Project Name: Chevron Edmonds Terminal	Project #: 58011413			
Site: Chevron Edmonds Terminal	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (NWTPH-VPH (Aliphatics/Aromatics+BTEX, Naphthalene, 1-Methlynaphthalene, n-Hexane)/	SUB (NWTPH-EPH (Aliphatics/Aromatics))/ NWTPH-EPH (Aliphatics/Aromatics)	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
DPE-SB-02-6-6.5	9/6/18	10:30 Pacific		Solid			X	X	2	
DPE-SB-03-5.5-6	9/6/18	12:30 Pacific		Solid			X	X	2	
Dup-1	9/6/18	Pacific		Solid			X	X	2	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	9/11/18 1638	TASEH	Stephanie Fisher	9-11-18 1640	ARI
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes (Δ No)	Custody Seal No.: N/a	Cooler Temperature(s) °C and Other Remarks: 7.8 w/ gel packs

Ver: 09/20/2016

Analytical Report

Test America	Project: Chevron Edmonds Terminal	
5755 8th Street East	Project Number: 58011413	**Reported:**
Tacoma WA, 98424	Project Manager: Elaine Walker	24-Sep-2018 12:26

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
DPE-SB-02-6-6.5	18I0126-01	Solid	06-Sep-2018 10:30	11-Sep-2018 16:40
DPE-SB-03-5.5-6	18I0126-02	Solid	06-Sep-2018 12:30	11-Sep-2018 16:40
Dup-1	18I0126-03	Solid	06-Sep-2018 00:00	11-Sep-2018 16:40

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Test America	Project: Chevron Edmonds Terminal	
5755 8th Street East	Project Number: 58011413	**Reported:**
Tacoma WA, 98424	Project Manager: Elaine Walker	24-Sep-2018 12:26

Case Narrative

Sample receipt

Samples as listed on the preceding page were received September 11, 2018 under ARI work order 18I0126. For details regarding sample receipt, please refer to the Cooler Receipt Form.

Extractable Organic Hydrocarbons - WA-Ecology

The samples were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The surrogate percent recoveries were within control limits.

The method blanks were clean at the reporting limits.

The LCS percent recoveries were within control limits.

Volatile Petroleum Hydrocarbons - WA-Ecology VPH

The samples were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements, with the exception of 1-Methylnaphthalene, Aromatic range C12-C13 and the Aliphatic range C5-C6 which were outside of control limits low. No corrective action was taken.

The surrogate percent recoveries were within control limits.

The method blank was clean at the reporting limits.

The LCS/LCSD percent recoveries and RPD were within control limits.

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Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Test America | Project Name: Chevron Edmonds

COC No(s): _____ NA | Delivered by: Fed-Ex UPS Courier Hand-Delivered Other:_____

Assigned ARI Job No: 18I0126 | Tracking No: _____ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	NO
Were custody papers included with the cooler?	YES	NO
Were custody papers properly filled out (ink, signed, etc.)	YES	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) 7.8

Time: 1640

If cooler temperature is out of compliance fill out form 00070F | Temp Gun ID#: D00256

Cooler Accepted by: Set Date: 9-11-18 Time: 1640

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	NO
What kind of packing material was used? … Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other:_____			
Was sufficient ice used (if appropriate)?	NA	YES	NO
Were all bottles sealed in individual plastic bags?		YES	NO
Did all bottles arrive in good condition (unbroken)?		YES	NO
Were all bottle labels complete and legible?		YES	NO
Did the number of containers listed on COC match with the number of containers received?		YES	NO
Did all bottle labels and tags agree with custody papers?		YES	NO
Were all bottles used correct for the requested analyses?		YES	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)...	NA	YES	NO
Were all VOC vials free of air bubbles?	NA	YES	NO
Was sufficient amount of sample sent in each bottle?		YES	NO
Date VOC Trip Blank was made at ARI	NA		

Was Sample Split by ARI : NA YES Date/Time:_____ Equipment:_____ Split by:_____

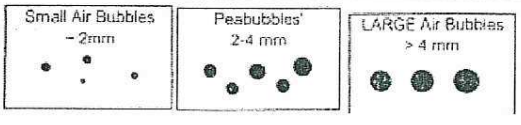
Samples Logged by: Set Date: 9-11-18 Time: 1706

*** Notify Project Manager of discrepancies or concerns ***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date:



Small → "sm" (< 2 mm)
Peabubbles → "pb" (2 to < 4 mm)
Large → "lg" (4 to < 6 mm)
Headspace → "hs" (> 6 mm)

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Temperature Compliance Form

ARI Work Order: 18I0126

Cooler#: 1 **Temperature(°C):** 7.8

Sample ID	Bottle Count	Bottle Type
Samples received above 6°		

Cooler#: _____ **Temperature(°C):** _____

Sample ID	Bottle Count	Bottle Type

Cooler#: _____ **Temperature(°C):** _____

Sample ID	Bottle Count	Bottle Type

Cooler#: _____ **Temperature(°C):** _____

Sample ID	Bottle Count	Bottle Type

Completed by: SCF Date: 9-11-18 Time: 1040

00070F Cooler Temperature Compliance Form Version 000 3/3/09

Test America	Project: Chevron Edmonds Terminal	
5755 8th Street East	Project Number: 58011413	**Reported:**
Tacoma WA, 98424	Project Manager: Elaine Walker	24-Sep-2018 12:26

DPE-SB-02-6-6.5

18I0126-01 (Solid)

Washington Department of Ecology Methods

Method: WA EPH — Sampled: 09/06/2018 10:30
Instrument: FID8 Analyst: JGR — Analyzed: 15-Sep-2018 00:35

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BGI0284	Sample Size: 10.03 g (wet)	Dry Weight:8.19 g
	Prepared: 13-Sep-2018	Final Volume: 1 mL	% Solids: 81.61
Sample Cleanup:	Cleanup Method: Silica Gel		
	Cleanup Batch: CGI0113	Initial Volume: 1 mL	
	Cleaned: 14-Sep-2018	Final Volume: 1 mL	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
C8-C10 Aliphatics		1	2440	**15300**	ug/kg	
C10-C12 Aliphatics		1	2440	**101000**	ug/kg	
C12-C16 Aliphatics		1	2440	**633000**	ug/kg	
C16-C21 Aliphatics		1	2440	**756000**	ug/kg	
C21-C34 Aliphatics		1	2440	**198000**	ug/kg	
Surrogate: 1-Chloro-octadecane			*30-160 %*	*55.4*	*%*	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
C8-C10 Aromatics		1	2440	**4260**	ug/kg	
C10-C12 Aromatics		1	2440	**28100**	ug/kg	
C12-C16 Aromatics		1	2440	**99000**	ug/kg	
C16-C21 Aromatics		1	2440	**293000**	ug/kg	
C21-C34 Aromatics		1	2440	**92300**	ug/kg	
Surrogate: o-Terphenyl			*30-160 %*	*60.8*	*%*	

Test America	Project: Chevron Edmonds Terminal	
5755 8th Street East	Project Number: 58011413	**Reported:**
Tacoma WA, 98424	Project Manager: Elaine Walker	24-Sep-2018 12:26

DPE-SB-02-6-6.5

18I0126-01 (Solid)

Washington Department of Ecology Methods

Method: WA VPH — Sampled: 09/06/2018 10:30

Instrument: PID1 Analyst: PB — Analyzed: 17-Sep-2018 15:41

Sample Preparation: Preparation Method: EPA 5035 (Methanol Extraction)

Preparation Batch: BGI0418 — Sample Size: 11.51 g (wet) — Dry Weight:9.39 g

Prepared: 17-Sep-2018 — Final Volume: 5 mL — % Solids: 81.61

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
C5-C6 Aliphatics		1800	68200	ND	ug/kg	U
C6-C8 Aliphatics		1800	68200	ND	ug/kg	U
C8-C10 Aliphatics		1800	68200	ND	ug/kg	U
C10-C12 Aliphatics		1800	68200	**89500**	ug/kg	D
C8-C10 Aromatics		1800	68200	ND	ug/kg	U
C10-C12 Aromatics		1800	68200	**203000**	ug/kg	D
C12-C13 Aromatics		1800	68200	**127000**	ug/kg	D
Benzene	71-43-2	1800	6820	ND	ug/kg	U
Toluene	108-88-3	1800	6820	ND	ug/kg	U
Ethylbenzene	100-41-4	1800	6820	ND	ug/kg	U
m,p-Xylene	179601-23-1	1800	13600	ND	ug/kg	U
o-Xylene	95-47-6	1800	6820	ND	ug/kg	U
Naphthalene	91-20-3	1800	6820	ND	ug/kg	U
1-Methylnaphthalene	90-12-0	1800	6820	ND	ug/kg	U
n-Hexane	110-54-3	1	3.8	ND	ug/kg	U
Surrogate: PID: 2,5-Dibromotoluene			*60-140 %*	*114*	*%*	
Surrogate: FID: 2,5-Dibromotoluene			*60-140 %*	*120*	*%*	

Test America	Project: Chevron Edmonds Terminal	
5755 8th Street East	Project Number: 58011413	**Reported:**
Tacoma WA, 98424	Project Manager: Elaine Walker	24-Sep-2018 12:26

DPE-SB-03-5.5-6

18I0126-02 (Solid)

Washington Department of Ecology Methods

Method: WA EPH — Sampled: 09/06/2018 12:30

Instrument: FID8 Analyst: JGR — Analyzed: 14-Sep-2018 21:15

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BGI0284	Sample Size: 10.12 g (wet)	Dry Weight:9.37 g
	Prepared: 13-Sep-2018	Final Volume: 1 mL	% Solids: 92.57
Sample Cleanup:	Cleanup Method: Silica Gel		
	Cleanup Batch: CGI0113	Initial Volume: 1 mL	
	Cleaned: 14-Sep-2018	Final Volume: 1 mL	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
C8-C10 Aliphatics		1	2130	ND	ug/kg	U
C10-C12 Aliphatics		1	2130	ND	ug/kg	U
C12-C16 Aliphatics		1	2130	**24500**	ug/kg	
C16-C21 Aliphatics		1	2130	**63900**	ug/kg	
C21-C34 Aliphatics		1	2130	**8330**	ug/kg	
Surrogate: 1-Chloro-octadecane			*30-160 %*	*46.4*	*%*	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
C8-C10 Aromatics		1	2130	ND	ug/kg	U
C10-C12 Aromatics		1	2130	ND	ug/kg	U
C12-C16 Aromatics		1	2130	**2620**	ug/kg	
C16-C21 Aromatics		1	2130	**30900**	ug/kg	
C21-C34 Aromatics		1	2130	**5170**	ug/kg	
Surrogate: o-Terphenyl			*30-160 %*	*65.5*	*%*	

Test America	Project: Chevron Edmonds Terminal	
5755 8th Street East	Project Number: 58011413	**Reported:**
Tacoma WA, 98424	Project Manager: Elaine Walker	24-Sep-2018 12:26

DPE-SB-03-5.5-6

18I0126-02 (Solid)

Washington Department of Ecology Methods

Method: WA VPH — Sampled: 09/06/2018 12:30

Instrument: PID1 Analyst: PB — Analyzed: 17-Sep-2018 16:12

Sample Preparation: Preparation Method: EPA 5035 (Methanol Extraction)

Preparation Batch: BGI0418 — Sample Size: 11.02 g (wet) — Dry Weight:10.20 g

Prepared: 17-Sep-2018 — Final Volume: 5 mL — % Solids: 92.57

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
C5-C6 Aliphatics		180	5130	ND	ug/kg	U
C6-C8 Aliphatics		180	5130	ND	ug/kg	U
C8-C10 Aliphatics		180	5130	ND	ug/kg	U
C10-C12 Aliphatics		180	5130	ND	ug/kg	U
C8-C10 Aromatics		180	5130	ND	ug/kg	U
C10-C12 Aromatics		180	5130	**8000**	ug/kg	
C12-C13 Aromatics		180	5130	**9500**	ug/kg	
Benzene	71-43-2	180	513	ND	ug/kg	U
Toluene	108-88-3	180	513	ND	ug/kg	U
Ethylbenzene	100-41-4	180	513	ND	ug/kg	U
m,p-Xylene	179601-23-1	180	1030	ND	ug/kg	U
o-Xylene	95-47-6	180	513	ND	ug/kg	U
Naphthalene	91-20-3	180	513	ND	ug/kg	U
1-Methylnaphthalene	90-12-0	180	513	ND	ug/kg	U
n-Hexane	110-54-3	1	2.9	ND	ug/kg	U
Surrogate: PID: 2,5-Dibromotoluene			*60-140 %*	*107*	*%*	
Surrogate: FID: 2,5-Dibromotoluene			*60-140 %*	*99.7*	*%*	

Test America	Project: Chevron Edmonds Terminal	
5755 8th Street East	Project Number: 58011413	**Reported:**
Tacoma WA, 98424	Project Manager: Elaine Walker	24-Sep-2018 12:26

Dup-1

18I0126-03 (Solid)

Washington Department of Ecology Methods

Method: WA EPH — Sampled: 09/06/2018 00:00
Instrument: FID8 Analyst: JGR — Analyzed: 15-Sep-2018 00:57

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BGI0284	Sample Size: 10.09 g (wet)	Dry Weight:9.12 g
	Prepared: 13-Sep-2018	Final Volume: 1 mL	% Solids: 90.38
Sample Cleanup:	Cleanup Method: Silica Gel		
	Cleanup Batch: CGI0113	Initial Volume: 1 mL	
	Cleaned: 14-Sep-2018	Final Volume: 1 mL	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
C8-C10 Aliphatics		1	2190	**5200**	ug/kg	
C10-C12 Aliphatics		1	2190	**62900**	ug/kg	
C12-C16 Aliphatics		1	2190	**471000**	ug/kg	
C16-C21 Aliphatics		1	2190	**535000**	ug/kg	
C21-C34 Aliphatics		1	2190	**146000**	ug/kg	
Surrogate: 1-Chloro-octadecane			*30-160 %*	*54.8*	*%*	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
C8-C10 Aromatics		1	2190	ND	ug/kg	U
C10-C12 Aromatics		1	2190	**19400**	ug/kg	
C12-C16 Aromatics		1	2190	**81700**	ug/kg	
C16-C21 Aromatics		1	2190	**238000**	ug/kg	
C21-C34 Aromatics		1	2190	**89200**	ug/kg	
Surrogate: o-Terphenyl			*30-160 %*	*61.4*	*%*	

Test America	Project: Chevron Edmonds Terminal	
5755 8th Street East	Project Number: 58011413	**Reported:**
Tacoma WA, 98424	Project Manager: Elaine Walker	24-Sep-2018 12:26

Dup-1

18I0126-03 (Solid)

Washington Department of Ecology Methods

Method: WA VPH — Sampled: 09/06/2018 00:00
Instrument: PID1 Analyst: PB — Analyzed: 17-Sep-2018 16:42

Sample Preparation: Preparation Method: EPA 5035 (Methanol Extraction)
Preparation Batch: BGI0418 — Sample Size: 12.39 g (wet) — Dry Weight:11.20 g
Prepared: 17-Sep-2018 — Final Volume: 5 mL — % Solids: 90.38

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
C5-C6 Aliphatics		1800	49800	ND	ug/kg	U
C6-C8 Aliphatics		1800	49800	**74900**	ug/kg	D
C8-C10 Aliphatics		1800	49800	ND	ug/kg	U
C10-C12 Aliphatics		1800	49800	**80900**	ug/kg	D
C8-C10 Aromatics		1800	49800	**56500**	ug/kg	D
C10-C12 Aromatics		1800	49800	**109000**	ug/kg	D
C12-C13 Aromatics		1800	49800	**69100**	ug/kg	D
Benzene	71-43-2	1800	4980	ND	ug/kg	U
Toluene	108-88-3	1800	4980	ND	ug/kg	U
Ethylbenzene	100-41-4	1800	4980	ND	ug/kg	U
m,p-Xylene	179601-23-1	1800	9950	ND	ug/kg	U
o-Xylene	95-47-6	1800	4980	ND	ug/kg	U
Naphthalene	91-20-3	1800	4980	**6670**	ug/kg	D
1-Methylnaphthalene	90-12-0	1800	4980	**6070**	ug/kg	D
n-Hexane	110-54-3	1	2.8	ND	ug/kg	U
Surrogate: PID: 2,5-Dibromotoluene			*60-140 %*	*103*	*%*	
Surrogate: FID: 2,5-Dibromotoluene			*60-140 %*	*101*	*%*	

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Test America	Project: Chevron Edmonds Terminal	
5755 8th Street East	Project Number: 58011413	**Reported:**
Tacoma WA, 98424	Project Manager: Elaine Walker	24-Sep-2018 12:26

Washington Department of Ecology Methods - Quality Control

Batch BGI0284 - EPA 3546 (Microwave)

Instrument: FID8 Analyst: JGR

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BGI0284-BLK1)			Prepared: 13-Sep-2018 Analyzed: 14-Sep-2018 20:08							
C8-C10 Aliphatics	ND	2000	ug/kg							U
C10-C12 Aliphatics	ND	2000	ug/kg							U
C12-C16 Aliphatics	ND	2000	ug/kg							U
C16-C21 Aliphatics	ND	2000	ug/kg							U
C21-C34 Aliphatics	ND	2000	ug/kg							U
Surrogate: 1-Chloro-octadecane	8240		ug/kg	*15000*		*54.9*	*30-160*			
Blank (BGI0284-BLK2)			Prepared: 13-Sep-2018 Analyzed: 14-Sep-2018 22:00							
C8-C10 Aromatics	ND	2000	ug/kg							U
C10-C12 Aromatics	ND	2000	ug/kg							U
C12-C16 Aromatics	ND	2000	ug/kg							U
C16-C21 Aromatics	ND	2000	ug/kg							U
C21-C34 Aromatics	ND	2000	ug/kg							U
Surrogate: o-Terphenyl	10100		ug/kg	*15000*		*67.1*	*30-160*			
LCS (BGI0284-BS1)			Prepared: 13-Sep-2018 Analyzed: 14-Sep-2018 20:31							
C8-C10 Aliphatics	3300	2000	ug/kg	7500		44.0	30-160			
C10-C12 Aliphatics	3380	2000	ug/kg	7500		45.1	30-160			
C12-C16 Aliphatics	4060	2000	ug/kg	7500		54.1	30-160			
C16-C21 Aliphatics	4790	2000	ug/kg	7500		63.9	30-160			
C21-C34 Aliphatics	4530	2000	ug/kg	7500		60.4	30-160			
Surrogate: 1-Chloro-octadecane	7890		ug/kg	*15000*		*52.6*	*30-160*			
LCS (BGI0284-BS2)			Prepared: 13-Sep-2018 Analyzed: 14-Sep-2018 22:22							
C10-C12 Aromatics	3980	2000	ug/kg	7500		53.1	30-160			
C12-C16 Aromatics	4080	2000	ug/kg	7500		54.4	30-160			
C16-C21 Aromatics	9640	2000	ug/kg	15000		64.3	30-160			
C21-C34 Aromatics	4990	2000	ug/kg	7500		66.5	30-160			
Surrogate: o-Terphenyl	9660		ug/kg	*15000*		*64.4*	*30-160*			

Test America	Project: Chevron Edmonds Terminal	
5755 8th Street East	Project Number: 58011413	**Reported:**
Tacoma WA, 98424	Project Manager: Elaine Walker	24-Sep-2018 12:26

Washington Department of Ecology Methods - Quality Control

Batch BGI0418 - EPA 5035 (Methanol Extraction)

Instrument: PID1 Analyst: PB

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BGI0418-BLK1)			Prepared: 17-Sep-2018 Analyzed: 17-Sep-2018 14:54							
C5-C6 Aliphatics	ND	9000	ug/kg							U
C6-C8 Aliphatics	ND	9000	ug/kg							U
C8-C10 Aliphatics	ND	9000	ug/kg							U
C10-C12 Aliphatics	ND	9000	ug/kg							U
C8-C10 Aromatics	ND	9000	ug/kg							U
C10-C12 Aromatics	ND	9000	ug/kg							U
C12-C13 Aromatics	ND	9000	ug/kg							U
Benzene	ND	900	ug/kg							U
Toluene	ND	900	ug/kg							U
Ethylbenzene	ND	900	ug/kg							U
m,p-Xylene	ND	1800	ug/kg							U
o-Xylene	ND	900	ug/kg							U
Naphthalene	ND	900	ug/kg							U
1-Methylnaphthalene	ND	900	ug/kg							U
n-Hexane	ND	900	ug/kg							U
Surrogate: PID: 2,5-Dibromotoluene	25.3		ug/kg	*30.0*		*84.3*	*60-140*			
Surrogate: FID: 2,5-Dibromotoluene	27.3		ug/kg	*30.0*		*91.0*	*60-140*			
LCS (BGI0418-BS1)			Prepared: 17-Sep-2018 Analyzed: 17-Sep-2018 13:24							
Benzene	4730	900	ug/kg	5400		87.7	70-130			
Toluene	4730	900	ug/kg	5400		87.7	70-130			
Ethylbenzene	4700	900	ug/kg	5400		87.0	70-130			
m,p-Xylene	9340	1800	ug/kg	10800		86.5	70-130			
o-Xylene	4720	900	ug/kg	5400		87.3	70-130			
Naphthalene	4910	900	ug/kg	5400		91.0	70-130			
1-Methylnaphthalene	4210	900	ug/kg	5400		78.0	70-130			
n-Hexane	5380	900	ug/kg	5400		99.7	70-130			
Surrogate: PID: 2,5-Dibromotoluene	26.6		ug/kg	*30.0*		*88.7*	*60-140*			
Surrogate: FID: 2,5-Dibromotoluene	26.5		ug/kg	*30.0*		*88.3*	*60-140*			
LCS Dup (BGI0418-BSD1)			Prepared: 17-Sep-2018 Analyzed: 17-Sep-2018 14:24							
Benzene	4790	900	ug/kg	5400		88.7	70-130	1.13	30	
Toluene	4820	900	ug/kg	5400		89.3	70-130	1.88	30	
Ethylbenzene	4840	900	ug/kg	5400		89.7	70-130	3.02	30	
m,p-Xylene	9650	1800	ug/kg	10800		89.3	70-130	3.22	30	

Test America	Project: Chevron Edmonds Terminal	
5755 8th Street East	Project Number: 58011413	**Reported:**
Tacoma WA, 98424	Project Manager: Elaine Walker	24-Sep-2018 12:26

Washington Department of Ecology Methods - Quality Control

Batch BGI0418 - EPA 5035 (Methanol Extraction)

Instrument: PID1 Analyst: PB

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BGI0418-BSD1)			Prepared: 17-Sep-2018 Analyzed: 17-Sep-2018 14:24							
o-Xylene	4880	900	ug/kg	5400		90.3	70-130	3.38	30	
Naphthalene	5170	900	ug/kg	5400		95.7	70-130	5.00	30	
1-Methylnaphthalene	4430	900	ug/kg	5400		82.0	70-130	5.00	30	
n-Hexane	5260	900	ug/kg	5400		97.3	70-130	2.37	30	
Surrogate: PID: 2,5-Dibromotoluene	27.9		ug/kg	*30.0*		*93.0*	*60-140*			
Surrogate: FID: 2,5-Dibromotoluene	28.4		ug/kg	*30.0*		*94.7*	*60-140*			

Test America	Project: Chevron Edmonds Terminal	
5755 8th Street East	Project Number: 58011413	**Reported:**
Tacoma WA, 98424	Project Manager: Elaine Walker	24-Sep-2018 12:26

Certified Analyses included in this Report

Analyte	Certifications
WA EPH in Solid	
C8-C10 Aliphatics	WADOE,DoD-ELAP,NELAP
C10-C12 Aliphatics	WADOE,DoD-ELAP,NELAP
C12-C16 Aliphatics	WADOE,DoD-ELAP,NELAP
C16-C21 Aliphatics	WADOE,DoD-ELAP,NELAP
C21-C34 Aliphatics	WADOE,DoD-ELAP,NELAP
C8-C10 Aromatics	DoD-ELAP,NELAP,WADOE
C10-C12 Aromatics	DoD-ELAP,NELAP,WADOE
C12-C16 Aromatics	DoD-ELAP,NELAP,WADOE
C16-C21 Aromatics	DoD-ELAP,NELAP,WADOE
C21-C34 Aromatics	DoD-ELAP,NELAP,WADOE
WA VPH in Solid	
C5-C6 Aliphatics	DoD-ELAP,WADOE
C6-C8 Aliphatics	DoD-ELAP,WADOE
C8-C10 Aliphatics	DoD-ELAP,WADOE
C10-C12 Aliphatics	DoD-ELAP,WADOE
C8-C10 Aromatics	DoD-ELAP,WADOE
C10-C12 Aromatics	DoD-ELAP,WADOE
C12-C13 Aromatics	DoD-ELAP,WADOE
Methyl tert-butyl Ether	DoD-ELAP,WADOE
Benzene	DoD-ELAP,WADOE
Toluene	DoD-ELAP,WADOE
Ethylbenzene	DoD-ELAP,WADOE
m,p-Xylene	DoD-ELAP,WADOE
o-Xylene	DoD-ELAP,WADOE
1,2,3-Trimethylbenzene	DoD-ELAP,WADOE
Naphthalene	DoD-ELAP,WADOE
1-Methylnaphthalene	DoD-ELAP,WADOE
PID: 2,5-Dibromotoluene	DoD-ELAP,WADOE

Test America	Project: Chevron Edmonds Terminal	
5755 8th Street East	Project Number: 58011413	**Reported:**
Tacoma WA, 98424	Project Manager: Elaine Walker	24-Sep-2018 12:26

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	02/07/2019
CALAP	California Department of Public Health CAELAP	2748	06/30/2019
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	02/07/2019
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-011	05/12/2019
WADOE	WA Dept of Ecology	C558	06/30/2019
WA-DW	Ecology - Drinking Water	C558	06/30/2019

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Test America	Project: Chevron Edmonds Terminal	
5755 8th Street East	Project Number: 58011413	**Reported:**
Tacoma WA, 98424	Project Manager: Elaine Walker	24-Sep-2018 12:26

Notes and Definitions

*	Flagged value is not within established control limits.
D	The reported value is from a dilution
U	This analyte is not detected above the applicable reporting or detection limit.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
[2C]	Indicates this result was quantified on the second column on a dual column analysis.

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Tacoma, WA 98424
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Fax 253-922-5047
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☐ Rush
☐ Short Hold

Chain of Custody Record

Client	Client Contact	Date	Chain of Custody Number
Arcadis	Scott Zorn	9/6/18	36990
Address: 11720 Unocal Rd,	Telephone Number (Area Code)/Fax Number	Lab Number	Page 1 of 1
City: Edmonds / State: WA / Zip Code:	Sampler: Eric Krueger	Lab Contact: Elaine Walker	Analysis (Attach list if more space is needed)
Project Name and Location (State): Edmonds Terminal	Billing Contact		Loc: 580 80178
Contract/Purchase Order/Quote No.			

Sample I.D. and Location/Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Methanol	EPH	VPH	Benzene using SW846 8021B	NWTPH-Gx	NWTPH-Dx w/ SGC	CPAH 8270 SIM	
DPE-SB-02-6-6.5	9/6/18	1030				X	1						2	X	X					use standard SGC
DPE-SB-02-5-5.5	9/6/18	1035				X	1						2			X	X	X	X	DPE-SB-02-5-5.5 is
DPE-SB-03-5.5-6	9/6/18	1230				X	1						2	X	X					submited on HOLD
DUP-1	9/6/18	—				X	1						2	X	X					ONLY run CPAH if
Trip Blank	—	—		X												X	X			DRO/HO concentration
																				* EPH/VPH must include:
																				aliphatic, aromatic, BTEX,
																				total naphthalenes, n-hexane,
																				seven CPAHs
																				* NO MTBE, EDB or
																				EDC

580-80178 Chain of Custody

Therm. ID: #2 Cor: 6.4 ° Unc: 6.3 °
Cooler Dsc: Lg Blue
Packing: Bubble
Cust. Seal: Yes ____ No Y
Wet/Packs/Dry Ice/None
FedEx: ____
UPS: ____
Lab Cour: Y
Other: ____

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: Eric Krueger	9/7/18	1300	1. Received By Sign/Print: Francisco Luna, Jr	9/7/18	1300
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: ARCADIS U.S. Inc

Job Number: 580-80178-1

Login Number: 80178
List Number: 1
Creator: Hobbs, Kenneth F

List Source: TestAmerica Seattle

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

A1 Soil Cleanup Levels: Worksheet for Soil Data Entry: Refer to WAC 173-340-720, 740,745, 747, 750

1. Enter Site Information

Date: 09/06/18
Site Name: Former Unocal Edmonds Terminal
Sample Name: DPE-SB-03-5.5-6

2. Enter Soil Concentration Measured

Notes for Data Entry | Set Default Hydrogeology
Clear All Soil Concentration Data Entry Cells
Restore All Soil Concentration Data cleared previously

Chemical of Concern or Equivalent Carbon Group	Measured Soil Conc dry basis mg/kg	Composition Ratio %
Petroleum EC Fraction		
AL_EC >5-6	2.565	1.62%
AL_EC >6-8	2.565	1.62%
AL_EC >8-10	2.565	1.62%
AL_EC >10-12	2.565	1.62%
AL_EC >12-16	24.5	15.48%
AL_EC >16-21	63.9	40.36%
AL_EC >21-34	8.33	5.26%
AR_EC >8-10	2.565	1.62%
AR_EC >10-12	8	5.05%
AR_EC >12-16	2.62	1.65%
AR_EC >16-21	30.9	19.52%
AR_EC >21-34	5.17	3.27%
Benzene	0.2565	0.16%
Toluene	0.2565	0.16%
Ethylbenzene	0.2565	0.16%
Total Xylenes	0.7715	0.49%
Naphthalene	0.2565	0.16%
1-Methyl Naphthalene	0.2565	0.16%
2-Methyl Naphthalene	0.0073	0.00%
n-Hexane	0.00145	0.00%
MTBE	0	0.00%
Ethylene Dibromide (EDB)	0	0.00%
1,2 Dichloroethane (EDC)	0	0.00%
Benzo(a)anthracene	0.00088	0.00%
Benzo(b)fluoranthene	0.00031	0.00%
Benzo(k)fluoranthene	0.000315	0.00%
Benzo(a)pyrene	0.00021	0.00%
Chrysene	0.0008	0.00%
Dibenz(a,h)anthracene	0.00038	0.00%
Indeno(1,2,3-cd)pyrene	0.000315	0.00%
Sum	158.31096	100.00%

REMARK:
Enter site-specific information here……..

3. Enter Site-Specific Hydrogeological Data

Total soil porosity:	0.43	Unitless
Volumetric water content:	0.3	Unitless
Volumetric air content:	0.13	Unitless
Soil bulk density measured:	1.5	kg/L
Fraction Organic Carbon:	0.001	Unitless
Dilution Factor:	20	Unitless

4. Target TPH Ground Water Concentation (if adjusted)

If you adjusted the target TPH ground water concentration, enter adjusted value here: 500 ug/L

A1 Soil Cleanup Levels: Worksheet for Soil Data Entry: Refer to WAC 173-340-720, 740,745, 747, 750

1. Enter Site Information

Date: 09/06/18
Site Name: Former Unocal Edmonds Terminal
Sample Name: DPE-SB-02-6-6.5

2. Enter Soil Concentration Measured

Chemical of Concern or Equivalent Carbon Group	Measured Soil Conc dry basis	Composition Ratio
	mg/kg	%
Petroleum EC Fraction		
AL_EC >5-6	34.1	1.34%
AL_EC >6-8	34.1	1.34%
AL_EC >8-10	34.1	1.34%
AL_EC >10-12	101	3.98%
AL_EC >12-16	633	24.92%
AL_EC >16-21	756	29.76%
AL_EC >21-34	198	7.80%
AR_EC >8-10	34.1	1.34%
AR_EC >10-12	203	7.99%
AR_EC >12-16	99	3.90%
AR_EC >16-21	293	11.54%
AR_EC >21-34	92.3	3.63%
Benzene	3.41	0.13%
Toluene	3.41	0.13%
Ethylbenzene	3.41	0.13%
Total Xylenes	10.21	0.40%
Naphthalene	3.41	0.13%
1-Methyl Naphthalene	3.41	0.13%
2-Methyl Naphthalene	0.8	0.03%
n-Hexane	0.0019	0.00%
MTBE	0	0.00%
Ethylene Dibromide (EDB)	0	0.00%
1,2 Dichloroethane (EDC)	0	0.00%
Benzo(a)anthracene	0.039	0.00%
Benzo(b)fluoranthene	0.026	0.00%
Benzo(k)fluoranthene	0.006	0.00%
Benzo(a)pyrene	0.016	0.00%
Chrysene	0.084	0.00%
Dibenz(a,h)anthracene	0.0071	0.00%
Indeno(1,2,3-cd)pyrene	0.012	0.00%
Sum	2539.952	100.00%

Notes for Data Entry | Set Default Hydrogeology

Clear All Soil Concentration Data Entry Cells

Restore All Soil Concentration Data cleared previously

REMARK:
Enter site-specific information here……..

3. Enter Site-Specific Hydrogeological Data

Total soil porosity:	0.43	Unitless
Volumetric water content:	0.3	Unitless
Volumetric air content:	0.13	Unitless
Soil bulk density measured:	1.5	kg/L
Fraction Organic Carbon:	0.001	Unitless
Dilution Factor:	20	Unitless

4. Target TPH Ground Water Concentation (if adjusted)

If you adjusted the target TPH ground water concentration, enter adjusted value here:	500	ug/L

A1 Soil Cleanup Levels: Worksheet for Soil Data Entry: Refer to WAC 173-340-720, 740,745, 747, 750

1. Enter Site Information

Date: 09/06/18
Site Name: Former Unocal Edmonds Terminal
Sample Name: DUP-1

2. Enter Soil Concentration Measured

Chemical of Concern or Equivalent Carbon Group	Measured Soil Conc dry basis mg/kg	Composition Ratio %
Petroleum EC Fraction		
AL_EC >5-6	24.9	1.27%
AL_EC >6-8	74.9	3.82%
AL_EC >8-10	24.9	1.27%
AL_EC >10-12	80.9	4.12%
AL_EC >12-16	471	24.01%
AL_EC >16-21	535	27.27%
AL_EC >21-34	146	7.44%
AR_EC >8-10	56.5	2.88%
AR_EC >10-12	109	5.56%
AR_EC >12-16	81.7	4.16%
AR_EC >16-21	238	12.13%
AR_EC >21-34	89.2	4.55%
Benzene	2.49	0.13%
Toluene	2.49	0.13%
Ethylbenzene	2.49	0.13%
Total Xylenes	7.465	0.38%
Naphthalene	6.67	0.34%
1-Methyl Naphthalene	6.07	0.31%
2-Methyl Naphthalene	1.7	0.09%
n-Hexane	0.0014	0.00%
MTBE	0	0.00%
Ethylene Dibromide (EDB)	0	0.00%
1,2 Dichloroethane (EDC)	0	0.00%
Benzo(a)anthracene	0.057	0.00%
Benzo(b)fluoranthene	0.033	0.00%
Benzo(k)fluoranthene	0.0091	0.00%
Benzo(a)pyrene	0.019	0.00%
Chrysene	0.11	0.01%
Dibenz(a,h)anthracene	0.011	0.00%
Indeno(1,2,3-cd)pyrene	0.01	0.00%
Sum	1961.6255	100.00%

Notes for Data Entry | Set Default Hydrogeology

Clear All Soil Concentration Data Entry Cells

Restore All Soil Concentration Data cleared previously

REMARK:
Parent Sample of Dup-1 is DPE-SB-02-6-6.5.

3. Enter Site-Specific Hydrogeological Data

Total soil porosity:	0.43	Unitless
Volumetric water content:	0.3	Unitless
Volumetric air content:	0.13	Unitless
Soil bulk density measured:	1.5	kg/L
Fraction Organic Carbon:	0.001	Unitless
Dilution Factor:	20	Unitless

4. Target TPH Ground Water Concentation (if adjusted)

If you adjusted the target TPH ground water concentration, enter adjusted value here:	500	ug/L