



August 7, 2015
Project No. 0228.23.02

Mr. Selim Abounader
Cardlock Manager
PetroCard, Inc.
730 Central Avenue South
Kent, Washington 98032

Re: 2nd Quarter June 2015 Groundwater Monitoring Report
PetroCard Old Monroe Cardlock, Monroe, Washington

Dear Mr. Abounader:

Maul Foster & Alongi, Inc. (MFA) has prepared this summary of results from site monitoring activities conducted during the second quarter of 2015 at the PetroCard, Inc. (PetroCard) Old Monroe Cardlock Facility (the Site). The Site is located on the property at 19401 State Route (SR) 203 in Monroe, (the Property). On behalf of PetroCard, MFA installed five monitoring wells at the Site in order to further characterize environmental impacts associated with a release that was discovered during underground storage tank (UST) decommissioning activities (MFA, 2015a).

SITE DESCRIPTION

The Site is in a rural area of the City of Monroe, in section 13, township 27 north, range 6 east of the Willamette Meridian (Figure 1). It is located on the western portion of the parent parcel (Snohomish County Property Number 27061300401300), which is owned by Red-E Trucking. PetroCard leased a portion of the parent parcel to operate a cardlock. The former USTs, the piping, and the fuel-dispensing island used by PetroCard were installed in 1978. PetroCard began operations at the cardlock on November 28, 2001. PetroCard terminated its lease on November 30, 2014, and removed all their cardlock-associated equipment and USTs.

The Site is located in the floodplain of the Skykomish River. The topography of the Site and vicinity is relatively level. An unlined ditch is directly adjacent to the west of the Site, with a grass field occupying the area between SR 203 and the ditch. Riley Slough and Foye Creek are located within approximately 800 feet west and east of the Site, respectively. At its closest point, the Skykomish River is located approximately 1 mile west-southwest of the Site (Figure 1). Flooding of the vicinity area is common because of its floodplain location and proximity to Riley Slough.

BACKGROUND

After Associated Environmental Group, LLC (AEG) had completed the primary UST decommissioning and removal on October 13, 2014, MFA completed a partial UST site assessment to ensure that adequate soil samples had been collected for assessment of the current extent of petroleum fuel contamination and evaluate whether sufficient over-excavation of petroleum-contaminated soil (PCS), which was initiated by AEG, was adequate and complete. MFA provided oversight to CCS, a division of PNE, and conducted the UST site assessment tasks between October 15 and 17, 2014. MFA also completed a UST site characterization on November 25, 2014, to conduct a preliminary assessment of areas east, west, and southwest of the former USTs (within the property boundary) to evaluate whether these areas have potentially been impacted by the fuel contamination associated with the former USTs. Figure 2 presents the site features and layout of the former cardlock and UST area.

Based on the data gaps surrounding the former USTs at the site, MFA completed a supplemental site characterization on March 5, 2015. This assessment was conducted east, west, and southwest of the former USTs (within the property boundary) to further evaluate areas that had been adversely impacted by fuel contamination associated with the former USTs and to assess subsurface (soil and groundwater) condition since completion of soil remediation activities in October 2014. MFA conducted soil sampling on March 3, 2015 and also installed five permanent monitoring wells. Groundwater was sampled from these wells on March 24, 2015 (MFA, 2015b). Soil and groundwater laboratory analytical results indicated significant reduction in residual PCS and dissolved-phase petroleum hydrocarbons in groundwater at the Site. Benzene was the only contaminant of interest (COI) detected in groundwater above the cleanup level (CUL).

FIELD METHODS

Groundwater samples from the second quarter 2015 event were collected on June 24, 2015 using a peristaltic pump with dedicated polyethylene tubing. Water quality parameters and water levels were measured before sample collection (see Attachment A), with two exceptions. PCMW-3 and PCMW-4 had very little available water, with water columns of 3.09 and 2.34 feet, respectively. Both wells ran out of water and had trouble recharging, and thus were sampled without the collection of water quality parameters. Please see the "General Sampling Comments" on the forms in Attachment A for more information.

ANALYTICAL METHODS

Groundwater samples were labeled, preserved, and delivered for analysis to OnSite Environmental Inc. (OnSite) in Redmond, Washington, under standard chain-of-custody procedures. Samples were analyzed for diesel-range petroleum hydrocarbons by method

NWTPH-Dx and for gasoline-range petroleum hydrocarbons and BTEX (benzene, toluene, ethylbenzene, and xylenes) by method NWTPH-Gx/8021. Laboratory analytical reports are provided as Attachment B.

Analytical data and OnSite's internal quality assurance and quality control data were reviewed to assess whether they met data quality objectives, consistent with U.S. Environmental Protection Agency procedures for evaluating laboratory analytical data (USEPA, 1986, 2008, 2010). A memorandum summarizing data validation procedures, data usability, and deviations from specific field and/or laboratory methods is presented as Attachment C.

WATER LEVELS

The site geology generally consists of sand/gravel fill underlain by silty clay and sand. On June 24, 2015, groundwater elevation was between 37.30 and 43.48 feet (North American Vertical Datum of 1988 [NAVD88]), with a general gradient to the west-northwest (see Table 1 and Figure 3).

Water level elevations during the June sampling event were lower than those measured during previous monitoring events (see Table 1). This likely is because the sampling event was conducted during one of the driest months of the year, when the water table is lowest. For comparison, water level elevations ranged from 42.73 to 46.68 feet (NAVD88) during the first quarter (March) sampling event.

GROUNDWATER SAMPLING RESULTS

Five groundwater samples were submitted for analysis. The analytical data were validated and are considered acceptable for their intended use, with the appropriate data qualifiers assigned (Attachment C). Groundwater analytical results are summarized in Table 2.

Groundwater analytical results were compared to MTCA Method A CULs.

Benzene was the only analyte detected in any of the groundwater samples, and was detected in PCMW-2 directly at the MTCA Method A CUL of 5 ug/L. During the previous sampling event in March 2015, benzene was detected within the same well at 9.5 ug/L. Neither gasoline- nor diesel-range hydrocarbons have been detected at any of the wells during the June or March 2015 sampling events.

The reduction in concentration of benzene in PCMW-2 is potentially a result of lower water level elevations during the third quarter sampling event; however, additional seasonal monitoring data are needed to confirm this trend.

CONCLUSIONS

Data indicate a continued and significant reduction in residual PCS and dissolved-phase petroleum hydrocarbons in groundwater at the Site. Residual PCS is exhibited by the presence of only benzene at PCMW-2, which is south of the former USTs. During the two consecutive quarters of monitoring, the concentration of benzene in PCMW-2 has decreased and no longer exceeds the MTCA Method A CUL.

Continued reduction of benzene and associated COIs in the subsurface is expected primarily because of the bulk source removal of contamination at the Site, but also because of ongoing, naturally occurring biodegradation of contaminants.

MFA plans to continue quarterly groundwater monitoring in September 2015 to further evaluate contaminant and seasonal trends.

Sincerely,

Maul Foster & Alongi, Inc.



Merideth D'Andrea, LG
Senior Geologist

Roxanne Degens
Staff Environmental Scientist

Attachments: Limitations
References
Tables
Figures
A—Groundwater Field Sampling Data Sheets
B—Laboratory Analytical Reports
C—Data Validation Memorandum

LIMITATIONS

The services undertaken in completing this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, or the use of segregated portions of this report.

The purpose of an environmental assessment is to reasonably evaluate the potential for or actual impact of past practices on a given site area. In performing an environmental assessment, it is understood that a balance must be struck between a reasonable inquiry into the environmental issues and an exhaustive analysis of each conceivable issue of potential concern. The following paragraphs discuss the assumptions and parameters under which such an opinion is rendered.

No investigation is thorough enough to exclude the presence of hazardous materials at a given site. If hazardous conditions have not been identified during the assessment, such a finding should not, therefore, be construed as a guarantee of the absence of such materials on the site.

Environmental conditions that cannot be identified by visual observation may exist at the site. Where subsurface work was performed, our professional opinions are based in part on interpretation of data from discrete sampling locations that may not represent actual conditions at unsampled locations.

Except where there is express concern of our client, or where specific environmental contaminants have been previously reported by others, naturally occurring toxic substances, potential environmental contaminants inside buildings, or contaminant concentrations that are not of current environmental concern may not be reflected in this document.

REFERENCES

MFA. 2015. Site assessment & preliminary site characterization—PetroCard Old Monroe cardlock, Monroe, Washington. Maul Foster & Alongi, Inc., Seattle, Washington. January 15.

MFA. 2015. Supplemental site characterization report—PetroCard Old Monroe cardlock, Monroe, Washington. Maul Foster & Alongi, Inc., Seattle, Washington. June 2015.

USEPA. 1986. Test methods for evaluating solid waste: physical/chemical methods. EPA-530/SW-846. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. September (revision 6, February 2007).

USEPA. 2008. USEPA contract laboratory program, national functional guidelines for organics data review. EPA 540/R-08/01. U.S. Environmental Protection Agency, Office of Emergency and Remedial Response. June.

USEPA. 2010. USEPA contract laboratory program national functional guidelines for inorganic superfund data review. EPA 540/R-10/011. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation. January.

TABLES



Table 1
Groundwater Elevations
PetroCard, Inc.
Former PetroCard Monroe
Monroe, Washington

Location	Date	Depth to Groundwater (feet below top of PVC)	Top of Well Casing Rim Elevation (feet NAVD88)	Groundwater Elevation (feet NAVD88)
PCMW-1	03/24/2015	2.68	49.32	46.64
	06/24/2015	5.84		43.48
PCMW-2	03/24/2015	3.15	49.35	46.2
	06/24/2015	6.34		43.01
PCMW-3	03/24/2015	4.61	49.45	44.84
	06/24/2015	12.15		37.3
PCMW-4	03/24/2015	6.39	49.12	42.73
	06/24/2015	10.9		38.22
PCMW-5	03/24/2015	2.82	49.5	46.68
	06/24/2015	6.11		43.39
<p>NOTES:</p> <p>Horizontal Datum: Washington State Plane, North Zone, NAD83(2011)</p> <p>Vertical Datum: NAVD88, North American Vertical Datum of 1988.</p> <p>PVC = polyvinyl chloride.</p>				

Table 2
Summary of Groundwater Analytical Results - Supplemental Site Characterization
Former PetroCard Old Monroe Cardlock
Monroe, Washington

Sample Name	PCMW1-W-9.5		PCMW2-W-9.0		PCMW3-W-9.0		PCMW4-W-9.5		PCMW5-W-9.5		TRIP BLANK	
Sample Date	3/24/2015	6/24/2015	3/24/2015	6/24/2015	3/24/2015	6/24/2015	3/24/2015	6/24/2015	3/24/2015	6/24/2015	3/24/2015	
MTCA Screening Level ^a												
Total Metals (ug/L)												
Lead	15	1.1 U	--	--	--	--	--	1.1 U	--	--	--	--
Manganese	NV	24	--	--	--	--	--	1200	--	--	--	--
Ferrous Iron	NV	447	--	--	--	--	--	7990	--	--	--	--
Anions (mg/L)												
Nitrate	NV	1	--	--	--	--	--	0.52	--	--	--	--
Sulfate	NV	8.2	--	--	--	--	--	5 U	--	--	--	--
Volatile Organic Compounds (ug/L)												
Benzene	5	1 U	1 U	9.5	5.0	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	700	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
m,p-Xylene	NV	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
o-Xylene	NV	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	1000	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Total Petroleum Hydrocarbons (ug/L)												
Diesel Range	500	260 U	260 U	260 U	260 U	260 U	260 U	260 U	260 U	260 U	260 U	260 U
Lube Oil Range Hydrocarbons	500 ^a	410 U	410 U	410 U	410 U	410 U	410 U	410 U	410 U	410 U	410 U	410 U
Gasoline	800 ^b	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U
Dissolved Gases (ug/L)												
Methane	NV	25	--	--	--	--	--	65	65	--	--	--

NOTES:

-- = Not analyzed.

Result values in **bold** font indicate exceedance of MTCA Method A cleanup level. Non-detect results are not evaluated against MTCA cleanup levels.

Analytes and sample names with exceedances are also in **bold** font.

ug/l = micrograms per liter.

MTCA A CULs = Model Toxics Control Act, Method A cleanup levels.

NV = No value.

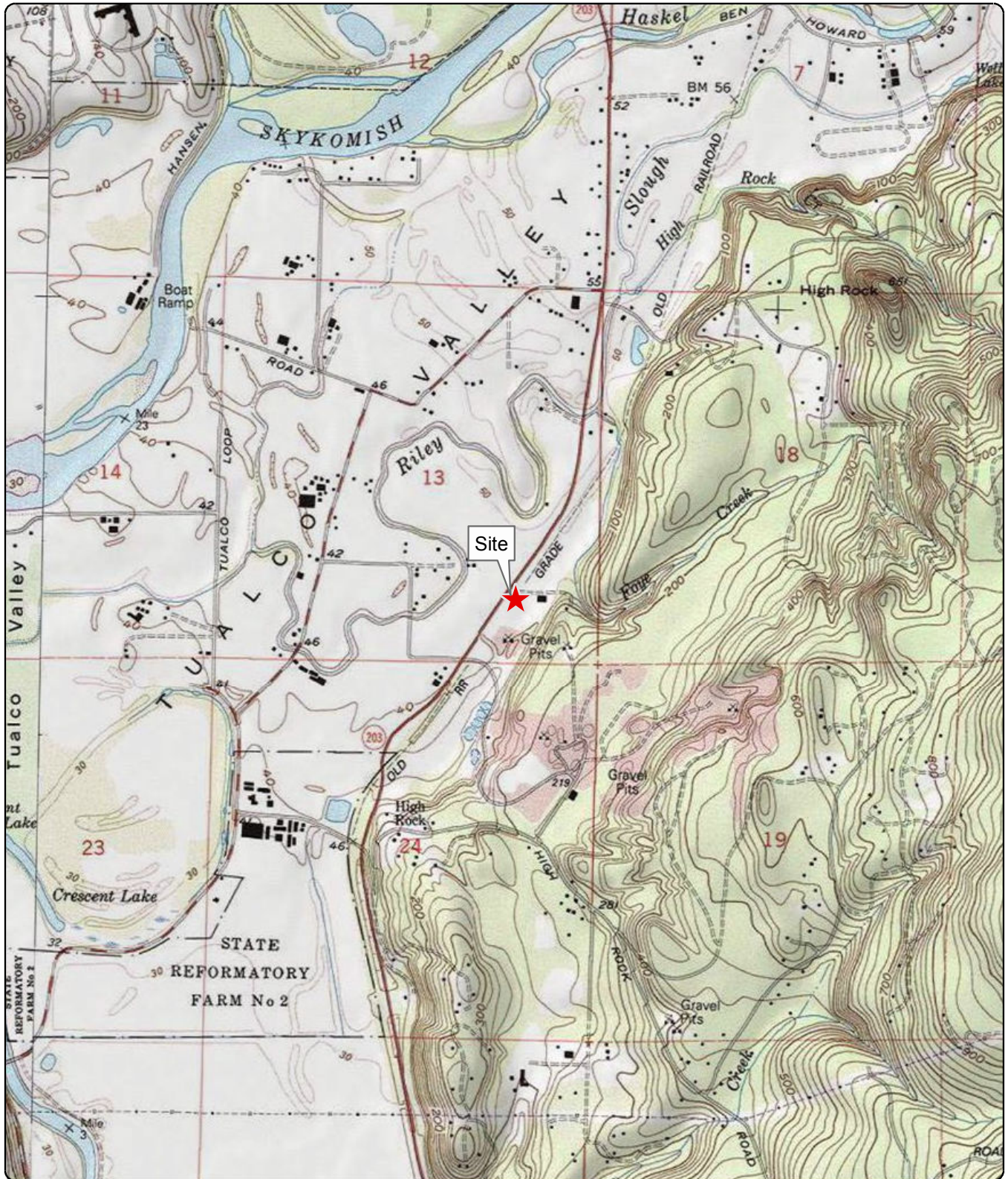
U = not detected at or above method reporting limit.

^aMTCA A CUL for heavy oil, which includes lube oil and diesel.

^bMTCA A CUL for gasoline range organics with presence of benzene.

FIGURES





Site Address: 19401 State Route 203, Monroe, Washington 98272
 Source: US Geological Survey (1990) 7.5-minute topographic quadrangle: Monroe
 Section 13, Township 27 North, Range 6 East

Figure 1
Site Location



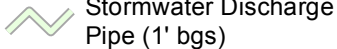



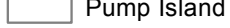
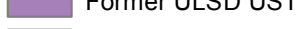
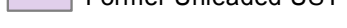

PetroCard, Inc.
 19401 State Route 203
 Monroe, Washington

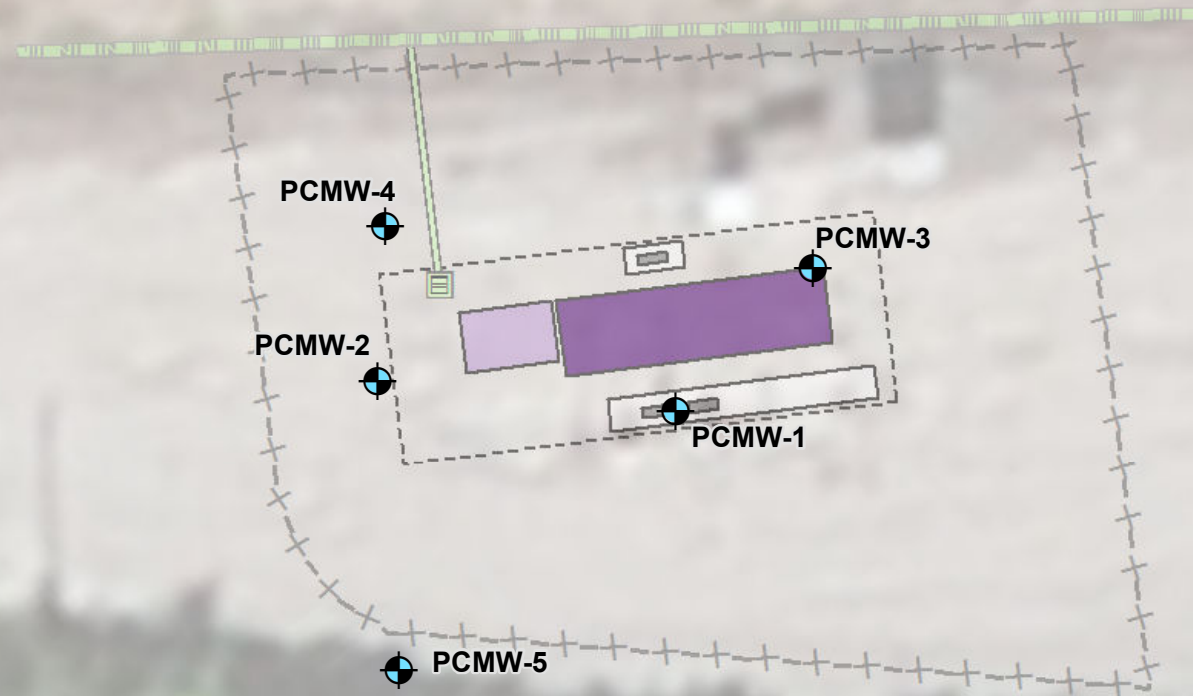


Figure 2 Site Features

PetroCard, Inc.
19401 State Route 203
Monroe, Washington

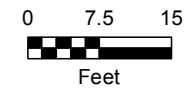
Legend

-  Monitoring Well (with Well ID)
-  Stormwater Catch Basin
-  Stormwater Discharge Pipe (1' bgs)
-  Ditch
-  Chain Link Fence
-  Pump
-  Pump Island
-  Former ULSD UST
-  Former Unleaded UST
-  Approximate Excavation Extent



Notes:

1. bgs = below ground surface.
2. UST = underground storage tank.
3. ULSD = ultra-low-sulfur diesel.
4. All site features are approximate.















Source: Aerial photograph (August 1, 2011) obtained from Esri ArcGIS Online/Microsoft; monitoring well locations from a survey obtained from Pacific Geomatic Services, Inc. on 3/17/2015.

Figure 3 Groundwater Potentiometric Map June 2015

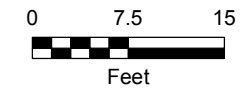
PetroCard, Inc.
 19401 State Route 203
 Monroe, Washington

Legend

-  Monitoring Well (with Well ID and Groundwater Elevation in Feet)
-  Groundwater Elevation Contour (with Elevation in Feet)
-  Stormwater Catch Basin
-  Stormwater Discharge Pipe (1' bgs)
-  Ditch
-  Chain Link Fence
-  Former Pump
-  Former Pump Island
-  Former ULSD UST
-  Former Unleaded UST
-  Approximate Excavation Extent
-  Groundwater Flow Direction

Notes:

1. bgs = below ground surface.
2. UST = underground storage tank.
3. ULSD = ultra-low-sulfur diesel.
4. All site features are approximate.



Source: Aerial photograph (August 1, 2011) obtained from Esri ArcGIS Online/Microsoft; monitoring well locations from a survey conducted by Pacific Geomatic Services, Inc. on 3/17/2015.



This product is for informational purposes and may not have been prepared for, or be suitable for, legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.



ATTACHMENT A

GROUNDWATER FIELD SAMPLING DATA
SHEETS



Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

Water Field Sampling Data Sheet

Client Name	PetroCard	Sample Location	PCMW-1		
Project #	0228.23.02	Sampler	RD		
Project Name	PetroCard Monroe	Sampling Date	6/24/2015		
Sampling Event	June 2015	Sample Name	PCMW1-W-9.5		
Sub Area		Sample Depth	9.5		
FSDS QA:	CRW 8/6/2015	Easting		Northing	
		TOC			

Hydrology/Level Measurements

Date	Time	DT-Bottom	DT-Product	DT-Water	(Product Thickness)	(Water Column)	(Gallons/ft x Water Column)
					DTP-DTW	DTB-DTW	Pore Volume
6/24/2015	9:50	14.83		5.84		8.99	1.47

(0.75" = 0.023 gal/ft) (1" = 0.041 gal/ft) (1.5" = 0.092 gal/ft) (2" = 0.163 gal/ft) (3" = 0.367 gal/ft) (4" = 0.653 gal/ft) (6" = 1.469 gal/ft) (8" = 2.611 gal/ft)

Water Quality Data

Purge Method	Time	Purge Vol (gal)	Flowrate l/min	pH	Temp (C)	E Cond (uS/cm)	DO (mg/L)	ORP	Turbidity
(2) Peristaltic Pump	11:13:00 AM	0.32	0.2	8.74	10.08	516	0.67	-20.2	6.6
	11:18:00 AM	0.48	0.2	8.76	10.1	520	0.54	-23.4	5.9
	11:23:00 AM	0.64	0.2	8.75	10.11	522	0.5	-26.1	5.6
Final Field Parameters	11:28:00 AM	0.8	0.2	8.72	10.11	523	0.47	-26.6	5.6

Methods: (1) Submersible Pump (2) Peristaltic Pump (3) Disposable Bailer (4) Vacuum Pump (5) Dedicated Bailer (6) Inertia Pump (7) Other (specify)

Water Quality Observations:

Clear.

Sample Information

Sampling Method	Sample Type	Sampling Time	Container Code/Preservative	#	Filtered
(2) Peristaltic Pump	Groundwater	11:31:00 AM	VOA-Glass	3	No
			Amber Glass	2	No
			White Poly		
			Yellow Poly		
			Green Poly		
			Red Total Poly		
			Red Dissolved Poly		
			Total Bottles	5	

General Sampling Comments

Began purge at 11:03.

Signature _____

Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

Water Field Sampling Data Sheet

Client Name	PetroCard	Sample Location	PCMW-2		
Project #	0228.23.02	Sampler	RD		
Project Name	PetroCard Monroe	Sampling Date	6/24/2015		
Sampling Event	June 2015	Sample Name	PCMW2-W-9.5		
Sub Area		Sample Depth	9.5		
FSDS QA:	CRW 8/6/2015	Easting		Northing	
				TOC	

Hydrology/Level Measurements

Date	Time	DT-Bottom	DT-Product	DT-Water	(Product Thickness)	(Water Column)	(Gallons/ft x Water Column)
					DTP-DTW	DTB-DTW	Pore Volume
6/24/2015	9:38	14.78		6.34		8.44	1.38

(0.75" = 0.023 gal/ft) (1" = 0.041 gal/ft) (1.5" = 0.092 gal/ft) (2" = 0.163 gal/ft) (3" = 0.367 gal/ft) (4" = 0.653 gal/ft) (6" = 1.469 gal/ft) (8" = 2.611 gal/ft)

Water Quality Data

Purge Method	Time	Purge Vol (gal)	Flowrate l/min	pH	Temp (C)	E Cond (uS/cm)	DO (mg/L)	ORP	Turbidity
(2) Peristaltic Pump	10:33:00 AM	0.8	0.3	6.55	10.99	374	0.48	-29.3	7.7
	10:38:00 AM	1.2	0.3	6.53	11.01	372	0.46	-28.6	6.9
Final Field Parameters	10:43:00 AM	1.6	0.3	6.52	11.03	373	0.46	-28.9	6.3

Methods: (1) Submersible Pump (2) Peristaltic Pump (3) Disposable Bailer (4) Vacuum Pump (5) Dedicated Bailer (6) Inertia Pump (7) Other (specify)

Water Quality Observations:

Clear. No iron staining.

Sample Information

Sampling Method	Sample Type	Sampling Time	Container Code/Preservative	#	Filtered
(2) Peristaltic Pump	Groundwater	10:48:00 AM	VOA-Glass	3	No
			Amber Glass	2	No
			White Poly		
			Yellow Poly		
			Green Poly		
			Red Total Poly		
			Red Dissolved Poly		
			Total Bottles	5	

General Sampling Comments

Began purge at 10:23.

Signature _____

Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

Water Field Sampling Data Sheet

Client Name	PetroCard	Sample Location	PCMW-3		
Project #	0228.23.02	Sampler	RD		
Project Name	PetroCard Monroe	Sampling Date	6/24/2015		
Sampling Event	June 2015	Sample Name	PCMW3-W-12.5		
Sub Area		Sample Depth	12.5		
FSDS QA:	CRW 8/6/2015	Eastings		Northing	
				TOC	

Hydrology/Level Measurements

Date	Time	DT-Bottom	DT-Product	DT-Water	(Product Thickness)	(Water Column)	(Gallons/ft x Water Column)
					DTP-DTW	DTB-DTW	Pore Volume
6/24/2015	9:27	13.99		10.9		3.09	0.583

(0.75" = 0.023 gal/ft) (1" = 0.041 gal/ft) (1.5" = 0.092 gal/ft) (2" = 0.163 gal/ft) (3" = 0.367 gal/ft) (4" = 0.653 gal/ft) (6" = 1.469 gal/ft) (8" = 2.611 gal/ft)

Water Quality Data

Purge Method	Time	Purge Vol (gal)	Flowrate l/min	pH	Temp (C)	E Cond (uS/cm)	DO (mg/L)	ORP	Turbidity
(2) Peristaltic Pump									
Final Field Parameters									

Methods: (1) Submersible Pump (2) Peristaltic Pump (3) Disposable Bailer (4) Vacuum Pump (5) Dedicated Bailer (6) Inertia Pump (7) Other (specify)

Water Quality Observations:

Sample Information

Sampling Method	Sample Type	Sampling Time	Container Code/Preservative	#	Filtered
(2) Peristaltic Pump	Groundwater	12:20:00 PM	VOA-Glass	3	No
			Amber Glass	2	No
			White Poly		
			Yellow Poly		
			Green Poly		
			Red Total Poly		
			Red Dissolved Poly		
			Total Bottles	5	

General Sampling Comments

Began purge at 9:54. Well ran dry. Very cloudy with iron-stained sediment. Abandoned at 10:10 and left to recharge. Began 2nd purge at 12:10. Did not collect parameters as well was having trouble recharging.

Signature _____

Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

Water Field Sampling Data Sheet

Client Name	PetroCard	Sample Location	PCMW-4		
Project #	0228.23.02	Sampler	RD		
Project Name	PetroCard Monroe	Sampling Date	6/24/2015		
Sampling Event	June 2015	Sample Name	PCMW34-W-13.5		
Sub Area		Sample Depth	13.5		
FSDS QA:	CRW 8/6/2015	Eastings		Northing	
				TOC	

Hydrology/Level Measurements

Date	Time	DT-Bottom	DT-Product	DT-Water	(Product Thickness)	(Water Column)	(Gallons/ft x Water Column)
					DTP-DTW	DTB-DTW	Pore Volume
6/24/2015	9:32	14.49		12.15		2.34	0.38

(0.75" = 0.023 gal/ft) (1" = 0.041 gal/ft) (1.5" = 0.092 gal/ft) (2" = 0.163 gal/ft) (3" = 0.367 gal/ft) (4" = 0.653 gal/ft) (6" = 1.469 gal/ft) (8" = 2.611 gal/ft)

Water Quality Data

Purge Method	Time	Purge Vol (gal)	Flowrate l/min	pH	Temp (C)	E Cond (uS/cm)	DO (mg/L)	ORP	Turbidity
(2) Peristaltic Pump									
Final Field Parameters									

Methods: (1) Submersible Pump (2) Peristaltic Pump (3) Disposable Bailer (4) Vacuum Pump (5) Dedicated Bailer (6) Inertia Pump (7) Other (specify)

Water Quality Observations:

Sample Information

Sampling Method	Sample Type	Sampling Time	Container Code/Preservative	#	Filtered
(2) Peristaltic Pump	Groundwater	12:05:00 PM	VOA-Glass	3	No
			Amber Glass	2	No
			White Poly		
			Yellow Poly		
			Green Poly		
			Red Total Poly		
			Red Dissolved Poly		
			Total Bottles	5	

General Sampling Comments

Began purge at 10:20. Well ran dry. Very cloudy with iron-stained sediment. Abandoned at 10:28 and left to recharge. Began 2nd purge at 11:57. Did not collect parameters as well was having trouble recharging.

Signature _____

Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

Water Field Sampling Data Sheet

Client Name	PetroCard	Sample Location	PCMW-5		
Project #	0228.23.02	Sampler	RD		
Project Name	PetroCard Monroe	Sampling Date	6/24/2015		
Sampling Event	June 2015	Sample Name	PCMW5-W-9.5		
Sub Area		Sample Depth	9.5		
FSDS QA:	CRW 8/6/2015	Eastings		Northing	
				TOC	

Hydrology/Level Measurements

Date	Time	DT-Bottom	DT-Product	DT-Water	(Product Thickness)	(Water Column)	(Gallons/ft x Water Column)
					DTP-DTW	DTB-DTW	Pore Volume
6/24/2015	9:44	14.74		6.11		8.63	1.41

(0.75" = 0.023 gal/ft) (1" = 0.041 gal/ft) (1.5" = 0.092 gal/ft) (2" = 0.163 gal/ft) (3" = 0.367 gal/ft) (4" = 0.653 gal/ft) (6" = 1.469 gal/ft) (8" = 2.611 gal/ft)

Water Quality Data

Purge Method	Time	Purge Vol (gal)	Flowrate l/min	pH	Temp (C)	E Cond (uS/cm)	DO (mg/L)	ORP	Turbidity
(2) Peristaltic Pump	11:40:00 AM	0.4	0.2	6.1	12	586	2.31	7.6	9.6
	11:45:00 AM	0.56	0.2	6.11	12.01	590	2.04	-2.3	8.7
Final Field Parameters									
	11:50:00 AM	0.72	0.2	6.11	12.03	591	1.95	-4.5	6.3

Methods: (1) Submersible Pump (2) Peristaltic Pump (3) Disposable Bailer (4) Vacuum Pump (5) Dedicated Bailer (6) Inertia Pump (7) Other (specify)

Water Quality Observations:

Clear.

Sample Information

Sampling Method	Sample Type	Sampling Time	Container Code/Preservative	#	Filtered
(2) Peristaltic Pump	Groundwater	11:53:00 AM	VOA-Glass	3	No
			Amber Glass	2	No
			White Poly		
			Yellow Poly		
			Green Poly		
			Red Total Poly		
			Red Dissolved Poly		
			Total Bottles	5	

General Sampling Comments

Began purge at 11:38.

Signature _____

ATTACHMENT B

LABORATORY ANALYTICAL REPORTS





14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

July 1, 2015

Merideth D'Andrea
Maul Foster & Alongi, Inc.
411 First Avenue S., Suite 610
Seattle, WA 98104

Re: Analytical Data for Project 0228.23.02
Laboratory Reference No. 1506-254

Dear Merideth:

Enclosed are the analytical results and associated quality control data for samples submitted on June 24, 2015.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

A handwritten signature in black ink, appearing to read 'DB', with a long horizontal line extending to the right.

David Baumeister
Project Manager

Enclosures

Date of Report: July 1, 2015
Samples Submitted: June 24, 2015
Laboratory Reference: 1506-254
Project: 0228.23.02

Case Narrative

Samples were collected on June 24, 2015 and received by the laboratory on June 24, 2015. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: July 1, 2015
 Samples Submitted: June 24, 2015
 Laboratory Reference: 1506-254
 Project: 0228.23.02

NWTPH-Gx/BTEX

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	PCMW1-W-9.5					
Laboratory ID:	06-254-01					
Benzene	ND	1.0	EPA 8021B	6-29-15	6-29-15	
Toluene	ND	1.0	EPA 8021B	6-29-15	6-29-15	
Ethyl Benzene	ND	1.0	EPA 8021B	6-29-15	6-29-15	
m,p-Xylene	ND	1.0	EPA 8021B	6-29-15	6-29-15	
o-Xylene	ND	1.0	EPA 8021B	6-29-15	6-29-15	
Gasoline	ND	100	NWTPH-Gx	6-29-15	6-29-15	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	83	71-113				
Client ID:	PCMW2-W-9.5					
Laboratory ID:	06-254-02					
Benzene	5.0	1.0	EPA 8021B	6-29-15	6-29-15	
Toluene	ND	1.0	EPA 8021B	6-29-15	6-29-15	
Ethyl Benzene	ND	1.0	EPA 8021B	6-29-15	6-29-15	
m,p-Xylene	ND	1.0	EPA 8021B	6-29-15	6-29-15	
o-Xylene	ND	1.0	EPA 8021B	6-29-15	6-29-15	
Gasoline	ND	100	NWTPH-Gx	6-29-15	6-29-15	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	83	71-113				
Client ID:	PCMW3-W-12.5					
Laboratory ID:	06-254-03					
Benzene	ND	1.0	EPA 8021B	6-29-15	6-29-15	
Toluene	ND	1.0	EPA 8021B	6-29-15	6-29-15	
Ethyl Benzene	ND	1.0	EPA 8021B	6-29-15	6-29-15	
m,p-Xylene	ND	1.0	EPA 8021B	6-29-15	6-29-15	
o-Xylene	ND	1.0	EPA 8021B	6-29-15	6-29-15	
Gasoline	ND	100	NWTPH-Gx	6-29-15	6-29-15	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	82	71-113				

Date of Report: July 1, 2015
 Samples Submitted: June 24, 2015
 Laboratory Reference: 1506-254
 Project: 0228.23.02

NWTPH-Gx/BTEX

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	PCMW4-W-13.5					
Laboratory ID:	06-254-04					
Benzene	ND	1.0	EPA 8021B	6-29-15	6-29-15	
Toluene	ND	1.0	EPA 8021B	6-29-15	6-29-15	
Ethyl Benzene	ND	1.0	EPA 8021B	6-29-15	6-29-15	
m,p-Xylene	ND	1.0	EPA 8021B	6-29-15	6-29-15	
o-Xylene	ND	1.0	EPA 8021B	6-29-15	6-29-15	
Gasoline	ND	100	NWTPH-Gx	6-29-15	6-29-15	

Surrogate: *Percent Recovery* *Control Limits*
Fluorobenzene 82 71-113

Client ID:	PCMW5-W-9.5					
Laboratory ID:	06-254-05					
Benzene	ND	1.0	EPA 8021B	6-29-15	6-29-15	
Toluene	ND	1.0	EPA 8021B	6-29-15	6-29-15	
Ethyl Benzene	ND	1.0	EPA 8021B	6-29-15	6-29-15	
m,p-Xylene	ND	1.0	EPA 8021B	6-29-15	6-29-15	
o-Xylene	ND	1.0	EPA 8021B	6-29-15	6-29-15	
Gasoline	ND	100	NWTPH-Gx	6-29-15	6-29-15	

Surrogate: *Percent Recovery* *Control Limits*
Fluorobenzene 83 71-113

Date of Report: July 1, 2015
 Samples Submitted: June 24, 2015
 Laboratory Reference: 1506-254
 Project: 0228.23.02

**NWTPH-Gx/BTEX
 QUALITY CONTROL**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0629W1					
Benzene	ND	1.0	EPA 8021B	6-29-15	6-29-15	
Toluene	ND	1.0	EPA 8021B	6-29-15	6-29-15	
Ethyl Benzene	ND	1.0	EPA 8021B	6-29-15	6-29-15	
m,p-Xylene	ND	1.0	EPA 8021B	6-29-15	6-29-15	
o-Xylene	ND	1.0	EPA 8021B	6-29-15	6-29-15	
Gasoline	ND	100	NWTPH-Gx	6-29-15	6-29-15	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	84	71-113				

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	06-268-05							
	ORIG	DUP						
Benzene	ND	ND	NA	NA	NA	NA	NA	30
Toluene	ND	ND	NA	NA	NA	NA	NA	30
Ethyl Benzene	ND	ND	NA	NA	NA	NA	NA	30
m,p-Xylene	ND	ND	NA	NA	NA	NA	NA	30
o-Xylene	ND	ND	NA	NA	NA	NA	NA	30
Gasoline	ND	ND	NA	NA	NA	NA	NA	30
<i>Surrogate:</i>								
<i>Fluorobenzene</i>				78	78	71-113		

MATRIX SPIKES

Laboratory ID:	06-268-05									
	MS	MSD	MS	MSD	MS	MSD				
Benzene	45.9	46.3	50.0	50.0	ND	92	93	82-120	1	14
Toluene	46.1	46.4	50.0	50.0	ND	92	93	83-120	1	14
Ethyl Benzene	45.5	46.5	50.0	50.0	ND	91	93	83-120	2	15
m,p-Xylene	45.1	45.9	50.0	50.0	ND	90	92	81-123	2	15
o-Xylene	45.1	45.3	50.0	50.0	ND	90	91	80-120	0	16
<i>Surrogate:</i>										
<i>Fluorobenzene</i>						95	98	71-113		

Date of Report: July 1, 2015
 Samples Submitted: June 24, 2015
 Laboratory Reference: 1506-254
 Project: 0228.23.02

**NWTPH-Gx/BTEX
 SPIKE BLANK CONTROL**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANK								
Laboratory ID:	SB0629W1							
	SB	SB		SB				
Benzene	43.3	50.0	NA	87	80-118	NA	NA	
Toluene	43.7	50.0	NA	87	81-119	NA	NA	
Ethyl Benzene	44.0	50.0	NA	88	80-121	NA	NA	
m,p-Xylene	44.2	50.0	NA	88	81-121	NA	NA	
o-Xylene	44.1	50.0	NA	88	81-119	NA	NA	
<i>Surrogate:</i>								
<i>Fluorobenzene</i>				<i>93</i>	<i>71-113</i>			

Date of Report: July 1, 2015
Samples Submitted: June 24, 2015
Laboratory Reference: 1506-254
Project: 0228.23.02

NWTPH-Gx
CONTINUING CALIBRATION SUMMARY

Lab ID	True Value (ppm)	Calc. Value	Percent Difference	Control Limits
CCVH0629G-1	5.00	4.91	2	+/- 20%
CCVH0629G-2	5.00	4.53	9	+/- 20%
CCVD0629G-1	5.00	4.44	11	+/- 20%
CCVD0629G-2	5.00	4.69	6	+/- 20%

Date of Report: July 1, 2015
 Samples Submitted: June 24, 2015
 Laboratory Reference: 1506-254
 Project: 0228.23.02

**BTEX by
 EPA 8021B
 CONTINUING CALIBRATION SUMMARY**

Analyte	Lab ID	True Value (ppm)	Calc. Value	Percent Difference	Control Limits
Benzene	CCVH0629B-1	50.0	47.4	5	+/- 15%
Toluene	CCVH0629B-1	50.0	50.8	-2	+/- 15%
Ethyl Benzene	CCVH0629B-1	50.0	47.5	5	+/- 15%
m,p-Xylene	CCVH0629B-1	50.0	48.9	2	+/- 15%
o-Xylene	CCVH0629B-1	50.0	48.3	3	+/- 15%
Benzene	CCVH0629B-2	50.0	45.3	9	+/- 15%
Toluene	CCVH0629B-2	50.0	44.7	11	+/- 15%
Ethyl Benzene	CCVH0629B-2	50.0	43.4	13	+/- 15%
m,p-Xylene	CCVH0629B-2	50.0	43.4	13	+/- 15%
o-Xylene	CCVH0629B-2	50.0	44.6	11	+/- 15%
Benzene	CCVD0629B-1	50.0	47.6	5	+/- 15%
Toluene	CCVD0629B-1	50.0	48.9	2	+/- 15%
Ethyl Benzene	CCVD0629B-1	50.0	49.3	1	+/- 15%
m,p-Xylene	CCVD0629B-1	50.0	50.2	0	+/- 15%
o-Xylene	CCVD0629B-1	50.0	49.3	1	+/- 15%
Benzene	CCVD0629B-2	50.0	43.6	13	+/- 15%
Toluene	CCVD0629B-2	50.0	44.3	11	+/- 15%
Ethyl Benzene	CCVD0629B-2	50.0	44.4	11	+/- 15%
m,p-Xylene	CCVD0629B-2	50.0	44.5	11	+/- 15%
o-Xylene	CCVD0629B-2	50.0	44.2	12	+/- 15%

Date of Report: July 1, 2015
 Samples Submitted: June 24, 2015
 Laboratory Reference: 1506-254
 Project: 0228.23.02

NWTPH-Dx

Matrix: Water
 Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	PCMW1-W-9.5					
Laboratory ID:	06-254-01					
Diesel Range Organics	ND	0.26	NWTPH-Dx	6-26-15	6-26-15	
Lube Oil Range Organics	ND	0.41	NWTPH-Dx	6-26-15	6-26-15	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	84	50-150				
Client ID:	PCMW2-W-9.5					
Laboratory ID:	06-254-02					
Diesel Range Organics	ND	0.26	NWTPH-Dx	6-26-15	6-26-15	
Lube Oil Range Organics	ND	0.41	NWTPH-Dx	6-26-15	6-26-15	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	70	50-150				
Client ID:	PCMW3-W-12.5					
Laboratory ID:	06-254-03					
Diesel Range Organics	ND	0.26	NWTPH-Dx	6-26-15	6-26-15	
Lube Oil Range Organics	ND	0.41	NWTPH-Dx	6-26-15	6-26-15	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	80	50-150				
Client ID:	PCMW4-W-13.5					
Laboratory ID:	06-254-04					
Diesel Range Organics	ND	0.26	NWTPH-Dx	6-26-15	6-26-15	
Lube Oil Range Organics	ND	0.41	NWTPH-Dx	6-26-15	6-26-15	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	79	50-150				
Client ID:	PCMW5-W-9.5					
Laboratory ID:	06-254-05					
Diesel Range Organics	ND	0.26	NWTPH-Dx	6-26-15	6-26-15	
Lube Oil Range Organics	ND	0.41	NWTPH-Dx	6-26-15	6-26-15	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	78	50-150				

Date of Report: July 1, 2015
 Samples Submitted: June 24, 2015
 Laboratory Reference: 1506-254
 Project: 0228.23.02

**NWTPH-Dx
 QUALITY CONTROL**

Matrix: Water
 Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0626W1					
Diesel Range Organics	ND	0.25	NWTPH-Dx	6-26-15	6-26-15	
Lube Oil Range Organics	ND	0.40	NWTPH-Dx	6-26-15	6-26-15	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	74	50-150				

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	06-244-02							
	ORIG	DUP						
Diesel Range	ND	ND	NA	NA	NA	NA	NA	NA
Lube Oil Range	ND	ND	NA	NA	NA	NA	NA	NA
<i>Surrogate:</i>								
<i>o-Terphenyl</i>				75	74	50-150		

SPIKE BLANK								
Laboratory ID:	SB0626W1							
Diesel Fuel #2	0.859	1.00	NA	86	56-118	NA	NA	
<i>Surrogate:</i>								
<i>o-Terphenyl</i>				79	50-150			

Date of Report: July 1, 2015
Samples Submitted: June 24, 2015
Laboratory Reference: 1506-254
Project: 0228.23.02

**NWTPH-Dx
CONTINUING CALIBRATION SUMMARY**

Lab ID	True Value (ppm)	Calc. Value	Percent Difference	Control Limits
CCV0626F-V1	100	103	-3.0	+/-15%
CCV0626F-V2	100	103	-3.0	+/-15%
CCV0626R-T1	100	101	-1.0	+/-15%
CCV0626R-T2	100	105	-5.0	+/-15%
CCV0626R-T3	100	104	-4.0	+/-15%
CCV0626R-T4	100	110	-10	+/-15%



Data Qualifiers and Abbreviations

- A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.
 - B - The analyte indicated was also found in the blank sample.
 - C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.
 - E - The value reported exceeds the quantitation range and is an estimate.
 - F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.
 - H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.
 - I - Compound recovery is outside of the control limits.
 - J - The value reported was below the practical quantitation limit. The value is an estimate.
 - K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.
 - L - The RPD is outside of the control limits.
 - M - Hydrocarbons in the gasoline range are impacting the diesel range result.
 - M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.
 - N - Hydrocarbons in the lube oil range are impacting the diesel range result.
 - N1 - Hydrocarbons in diesel range are impacting lube oil range results.
 - O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.
 - P - The RPD of the detected concentrations between the two columns is greater than 40.
 - Q - Surrogate recovery is outside of the control limits.
 - S - Surrogate recovery data is not available due to the necessary dilution of the sample.
 - T - The sample chromatogram is not similar to a typical _____.
 - U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
 - U1 - The practical quantitation limit is elevated due to interferences present in the sample.
 - V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.
 - W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.
 - X - Sample extract treated with a mercury cleanup procedure.
 - X1 - Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.
 - Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.
 - Z -
- ND - Not Detected at PQL
 PQL - Practical Quantitation Limit
 RPD - Relative Percent Difference

ATTACHMENT C

DATA VALIDATION MEMORANDUM



DATA QUALITY ASSURANCE/QUALITY CONTROL REVIEW

PROJECT NO. 0228.23.02 | JULY 8, 2015 | PETROCARD, INC.

This report reviews the analytical results for groundwater samples collected by the Maul Foster & Alongi, Inc. (MFA) project team at the PetroCard, Inc. Old Monroe site at 19401 SR 203 in Monroe, Washington. The samples were collected on June 24th, 2015.

Onsite Environmental, Inc. (OES) performed the analyses. OES report number 1506-254 was reviewed. The analyses performed are listed below. Some analyses may not have been performed on all samples.

Analysis	Reference
Diesel- and Lube Oil- Range Organics	NWTPH-Dx
Gasoline Range Organics	NWTPH-Gx
BTEX Compounds	USEPA 8021B

BTEX = Benzene, Toluene, Ethylbenzene, Xylenes.
NWTPH = Northwest Total Petroleum Hydrocarbons.
USEPA = United States Environmental Protection Agency.

Samples Analyzed
Report 1506-254
PCMW1-W-9.5
PCMW2-W-9.5
PCMW3-W-12.5
PCMW4-W-13.5
PCMW5-W-9.5
Trip Blank

DATA QUALIFICATIONS

Analytical results were evaluated according to applicable sections of USEPA procedures (USEPA, 2014) and appropriate laboratory and method-specific guidelines (OES, 2012; USEPA, 1986).

Data validation procedures were modified, as appropriate, to accommodate quality-control requirements for methods not specifically addressed by the functional guidelines (i.e., NWTPH analyses).

The data are considered acceptable for their intended use.

HOLDING TIMES, PRESERVATION, AND SAMPLE STORAGE

Holding Times

Extractions and analyses were performed within the recommended holding time criteria.

Preservation and Sample Storage

The samples were preserved and stored appropriately. Laboratory documented acceptable temperatures upon receipt (between 2-6 degrees Celsius).

BLANKS

Method Blanks

Laboratory method blank analyses were performed at the required frequencies. For purposes of data qualification, the method blanks were associated with all samples prepared in the analytical batch. All laboratory method blanks were non-detect.

Trip Blanks

A trip blank was collected for this sampling event; however, no analyses were requested. All samples were non-detect for BTEX compounds except benzene in sample PCMW2-W-9.5 at 5.0 ug/L; thus, no qualification is necessary.

Equipment Rinsate Blanks

Equipment rinsate blanks were not collected for this June 2015 sampling event.

SURROGATE RECOVERY RESULTS

When appropriate, individual samples were spiked with surrogate compounds to evaluate laboratory performance. All surrogate recoveries were within acceptance limits.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS

Matrix spike/matrix spike duplicate (MS/MSD) results are used to evaluate laboratory precision and accuracy. All reported MS/MSD results were within acceptance criteria. MS/MSD results were not reported for NWTPH-Dx; MS/MSD results are not required by the NWTPH-Dx method.

LABORATORY DUPLICATE RESULTS

Duplicate results are used to evaluate laboratory precision. All duplicate samples were extracted and analyzed at the required frequency. All relative percent differences (RPDs) were within acceptance limits.

LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RESULTS

A laboratory control sample/laboratory control sample duplicate (LCS/LCSD) is spiked with target analytes to provide information on laboratory precision and accuracy. The LCS (Spike Blank) results were within acceptance criteria for USEPA Method 8021B and NWTPH-Dx compounds. An LCS gasoline result was not reported for NWTPH-Gx gasoline; LCS samples are not required by the NWTPH-Gx gasoline method.

CONTINUING CALIBRATION VERIFICATION AND INITIAL CALIBRATION VERIFICATION RESULTS

Continuing calibration verification (CCV) and initial calibration verification (ICV) results are used to demonstrate instrument precision and accuracy through the end of the sample batch. All CCVs and ICVs were within acceptance limits for percent recovery.

REPORTING LIMITS

OES used routine reporting limits.

DATA PACKAGE

The data packages were reviewed for transcription errors, omissions, and anomalies. None were found.

REFERENCES

- OES. 2012. Quality Assurance Manual. OnSite Environmental Inc. Redmond, Washington.
- USEPA. 1986. Test methods for evaluating solid waste: physical/chemical methods. EPA-530/SW-846. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. September (revision 6, February 2007).
- USEPA. 2014. USEPA contract laboratory program, national functional guidelines for Superfund organic methods data review. EPA 540/R-014/002. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation. August.