



ENVIRONMENTAL CONSULTING, INC.

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Technical Memorandum

To: John Rapp, Washington Dept. of Ecology, SW Region VCP
Copy: Mark McCuddy, MC Marine, LLC
From: Paul Ecker, LHG and Chris Rhea, LG
Date: November 4, 2015

Subject: Request for Written Opinion Letter
R.J. Frank Site
5 Mill Street
Ridgefield, Washington
Ecology VCP File SW1331
EES Project 2001-01

As we recently discussed, MC Marine (MCM) requests a written Opinion from the Washington Department of Ecology (Ecology) regarding the status of environmental investigation and cleanup efforts conducted by MCM at its property located at 5 Mill Street in Ridgefield, Washington (Property, Figure 1).

The purpose of this memorandum is to provide sufficient information and background information to support Ecology's development of an Opinion Letter regarding site status and future data needs as necessary to work towards a No Further Action Determination.

BACKGROUND

On behalf of MCM, since 2012 EES Environmental Consulting, Inc. (EES) has coordinated with Ecology to review available file information and to conduct appropriate environmental characterization, groundwater monitoring, and interim action cleanup tasks at the subject site. In September 2015, EES issued a status report to document investigation and cleanup findings, and to recommend next steps intended to enable an Ecology No Further Action determination for the Site. Figures 2 through 4 illustrate the Property layout and soil characterization/removal areas.

Numerous environmental assessment, investigation, and cleanup activities have been conducted at the subject Property since the early 1990s, and are detailed under separate cover (EES 2014). Supplemental investigation work conducted by EES in 2014-2015 found localized and relatively low concentrations of diesel- and oil-range hydrocarbons in soil and/or groundwater (EES 2015a, 2015b). Where identified at two portions of the Site, these impacts appear to be near or below standard cleanup levels established

under Washington's Model Toxics Control Act (MTCA). For reference, groundwater monitoring results are summarized on Figures 5 and 6.

The identified impacts are not indicative of an obvious Property-related source or other specific contaminant release, although investigation findings support a Conceptual Site Model attributing identified hydrocarbon impacts generally to historical Property operations, naturally-occurring organic matter common to overbank deposits, and possible river pilings or related historical fill and debris typical for the Site setting.

REQUEST FOR ECOLOGY OPINION

MCM requests Ecology's Opinion regarding the following investigation study areas and cleanup action.

SOIL REMOVAL INTERIM ACTION AND SOIL COMPLIANCE

Shallow soil removal and restoration activities were conducted in June 2015 to mitigate previously identified oil and PAH impacts limited to a portion of the subject Property surrounding boring EES-14A (EES 2015a). Approximately 70 tons of contaminated soil was removed from the former oil-storage area and disposed under permit at the Cowiltz County Landfill. Confirmation soil testing results collected from the excavation margins demonstrate that contaminants of interest (hydrocarbons and PAHs) were successfully removed and the soil point of compliance has been adequately demonstrated for this Site.

Based on these findings and as supported by prior characterization data, we believe no further investigation or cleanup action is necessary with regard to Site soils. We request Ecology provide an Opinion on this matter.

GROUNDWATER COMPLIANCE AT FORMER OIL STORAGE AREA

Between 2013 and 2015 (including quarterly monitoring during the past year at wells MW-1, MW-3, and MW-6), numerous groundwater samples have been collected from the former bulk petroleum storage area and evaluated for contaminants of interest (fuel and oil hydrocarbons and PAHs). Oil-range hydrocarbons are uniformly not detected among the groundwater samples. Although low-concentration diesel-range detections ranging between approximately 500 and 1,000 micrograms per liter (ug/L) by NWTPH-Dx are periodically reported for wells MW-1 and MW-6, these results are flagged by the laboratory as not representative of typical diesel fuel, as supported by supplemental analyses summarized below.

Anticipating these groundwater conditions based on prior Site data, MCM and EES agreed on an analytical approach with Ecology in 2014 to implement a quarterly monitoring program consisting of diesel-range analysis using the standard NWTPH-Dx method, along with silica-gel cleanup and PAH testing (see 10/17/2014 communication with Ecology, attached as Attachment A). Based on this approach and as regularly documented and communicated with Ecology since October 2014, EES believes the groundwater point of compliance has been met for this portion of the Property, and no further investigation or cleanup action in this area appears warranted. The following lines of evidence support this determination:

- Where detected at two (MW-1 and MW-6) of the Site's five well locations, diesel-range detections in groundwater are not representative of typical hydrocarbon contaminants, and are not accompanied by PAH compounds which would otherwise be expected for a fuel or oil source.
- Where diesel-range hydrocarbons have been detected using Method NWTPH-Dx, groundwater samples collected in this area were additionally analyzed using silica-gel cleanup methodology as discussed with and agreed upon with Ecology during work plan development in October 2014. Silica gel results and examination of laboratory chromatograms consistently indicate the diesel-range detections are unlike diesel fuel standards.
- The diesel-range (Dx) detections and chromatographic patterns for groundwater samples collected at MW-1 and MW-6 are unlike diesel fuel standards but are consistent with degraded wood debris and organic-rich overbank fill deposits, which are known to be present in the Site's shallow subsurface and along Lake River. Site boring logs which document observed subsurface conditions are attached for reference as requested by Ecology (Attachment B).

As discussed with Ecology on October 17, 2015, MCM and EES have agreed to collect confirmatory groundwater samples at the MW-1 and MW-6 locations during a planned November 2015 monitoring event. Analysis of these two samples will be limited to diesel-range hydrocarbons by NWTPH-Dx and (if detected) silica-gel cleanup as described below.

Assuming the November 2015 results at MW-1 and MW-6 are consistent with prior findings, EES will conclude that the groundwater point of compliance in this area of the Property has been achieved and no further investigation or cleanup action is necessary with regard to Site groundwater at this location. We request Ecology provide an Opinion on this matter.

GROUNDWATER CHARACTERIZATION AT NORTH LOT/FORMER POND AREA

Low PAH concentrations are consistently identified at well MW-4 and occasionally well MW-5, both located in the unpaved north parking lot area near Lake River. Although PAH concentrations observed at well MW-4 (and sometimes at MW-5) slightly exceeded published MTCA groundwater cleanup levels, no fuel or oil-range hydrocarbons have been identified at either well location during the monitoring period to date. This area may have been used historically as a pond or for dredged materials dewatering, but no specific contaminant source other than random fill and possible buried river piling debris has been identified in this area.

During the most recent (August 2015) monitoring event, PAHs decreased to trace concentrations and did not exceed published MTCA groundwater cleanup levels at either well. Continued groundwater monitoring is necessary to evaluate long-term PAH trends at wells MW-4 and MW-5.

PLANNED FUTURE TASKS

As discussed with Ecology on October 17, 2015, planned next steps for the Site investigation include several elements as summarized below. EES will conduct a quarterly monitoring event at the Site in November 2015, with a continued monitoring schedule to follow based on the November results.

EES will continue to provide written documentation and status reports to keep Ecology informed of the investigation progress.

We request confirmation from Ecology that this plan adequately addresses known investigation data gaps as previously discussed.

FORMER OIL STORAGE AREA

A confirmatory monitoring event in November 2015 is planned for wells MW-1 and MW-6.

- Measure depth to water and determine water table elevations across the Site's six-well network.
- Conduct groundwater sampling and confirmatory testing for contaminants of interest at wells MW-1 and MW-6, focusing on diesel-range hydrocarbons (NWTPH-Dx). If Dx detections are observed, supplemental evaluation by silica-gel cleanup will be conducted. Laboratory chromatograms will be provided for evaluation.
 - PAHs have been eliminated from future consideration in this area based on monitoring to date, and will no longer be evaluated as contaminants of interest for this portion of the Site.
 - No further sampling at well MW-3 is necessary based on monitoring to date.

Provided that Dx trends remain consistent with prior findings for this area as outlined above, the groundwater point of compliance will have been adequately demonstrated and no future monitoring or other sampling will be necessary for this portion of the Site.

NORTH LOT/FORMER POND AREA

In August 2015, PAH concentrations at wells MW-4 and MW-5 were below MTCA Method B groundwater cleanup levels. EES will conduct continued quarterly compliance monitoring for PAHs at these two monitoring wells in November 2015, and February and May 2016. If during any of the three remaining compliance monitoring events PAHs are identified at concentrations exceeding Method B cleanup levels, then a semi-annual monitoring schedule will be triggered until PAH concentrations decrease to below the MTCA cleanup levels, at which time a quarterly compliance monitoring schedule will be re-initiated. MCM understands that the groundwater point of compliance for this portion of the Site will require four consecutive quarterly events demonstrating PAH concentrations remaining below Method B cleanup levels at both wells MW-4 and MW-5.

Note that diesel-range hydrocarbons have been eliminated from future consideration in this area based on monitoring to date, and will no longer be evaluated as contaminants of interest for this portion of the Site.

ATTACHMENTS

Figures	Figure 1: Site Vicinity Map
	Figure 2: Site Features
	Figure 3: Petroleum Hydrocarbon Concentrations in Soil (2014)
	Figure 4: Soil Removal Area (2015)
	Figure 5: Diesel and Oil Concentrations in Groundwater (8/26/15)
	Figure 6: PAH Concentrations in Groundwater (8/26/15)
Attachments	Attachment A: Email Correspondence with Ecology (10/17/14)
	Attachment B: Site Boring Logs

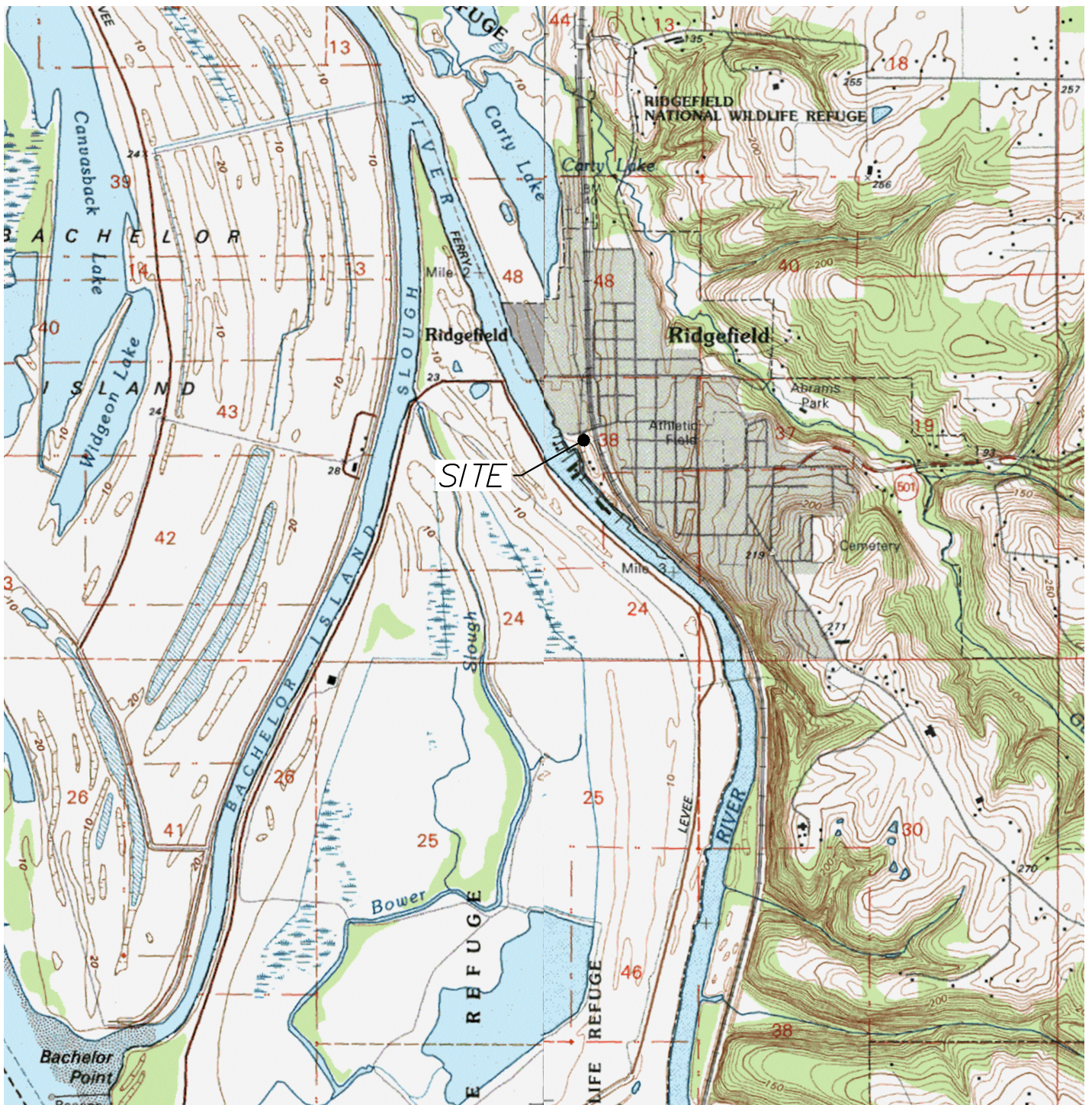
REFERENCES

EES Environmental Consulting, Inc. 2014. *Site Investigation Report - RJ Frank Site*. August 25, 2014.

EES Environmental Consulting, Inc. 2015a. *Completion Report – Limited Soil Removal*. July 22, 2015.

EES Environmental Consulting, Inc. 2015b. *Quarterly Groundwater Monitoring Results (August 2015)*. September 29, 2015.

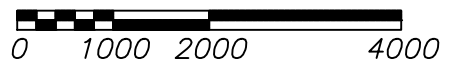
Figures



SOURCE:
 USGS, RIDGEFIELD QUADRANGLE
 WASHINGTON-OREGON
 7.5 MINUTE SERIES (TOPOGRAPHIC)



APPROXIMATE SCALE IN FEET



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




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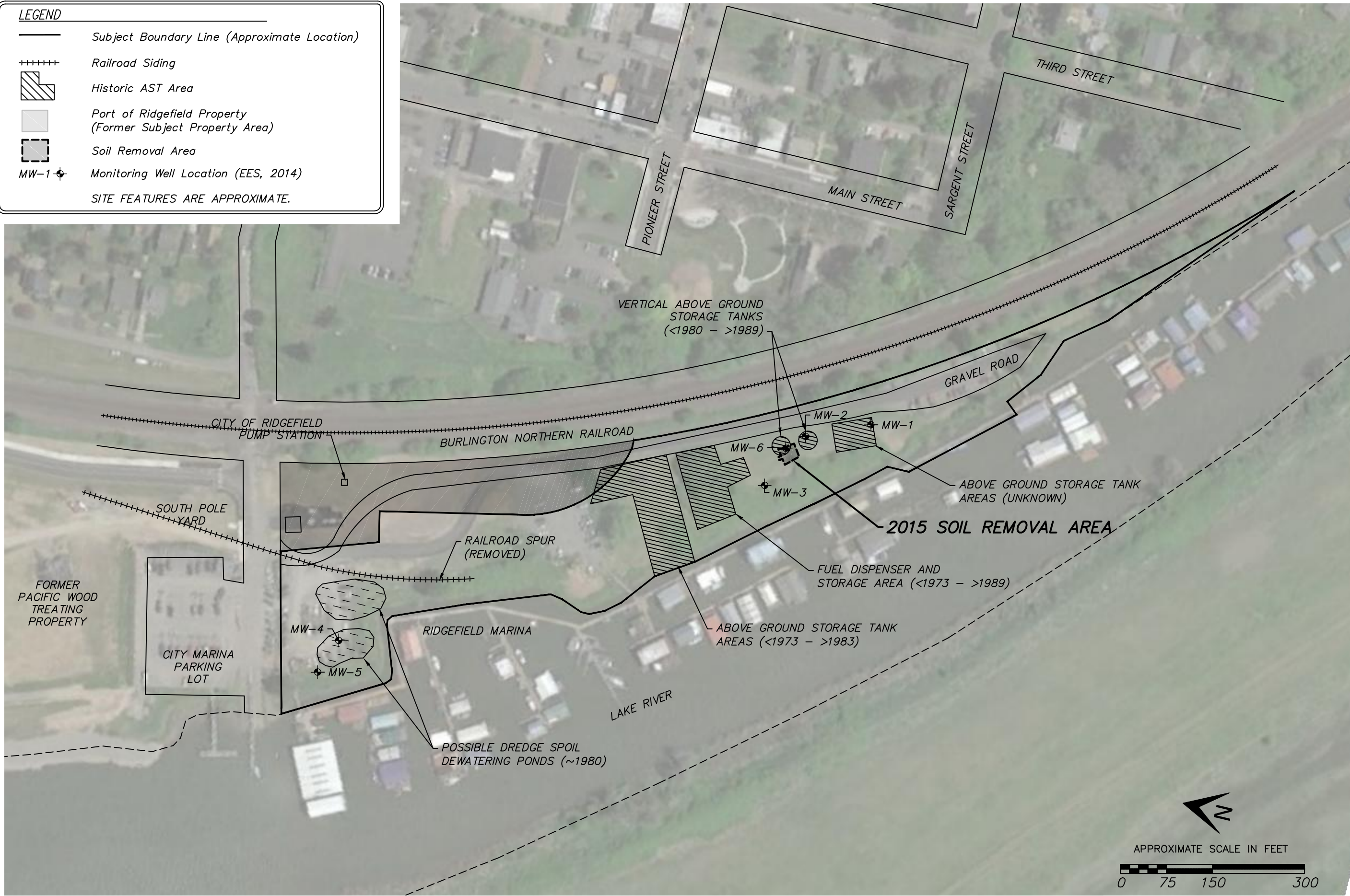
SITE VICINITY MAP

RJ FRANK SITE
 5 MILL STREET
 RIDGEFIELD, WA.

DATE:	1-27-14	PROJECT NO.	2001-01
FILE:	2001-01	FIGURE NO.	1
DRAWN:	JJT		
APPROVED:	CR		

LEGEND

-  Subject Boundary Line (Approximate Location)
 -  Railroad Siding
 -  Historic AST Area
 -  Port of Ridgefield Property (Former Subject Property Area)
 -  Soil Removal Area
 -  MW-1 Monitoring Well Location (EES, 2014)
- SITE FEATURES ARE APPROXIMATE.








DATE:	7-17-15	PROJECT NO.	2001-01
FILE:	2001-01	DRAWN:	JJT
		APPROVED:	CR
		FIGURE NO.	2

SITE FEATURES

RJ FRANK SITE
5 MILL STREET
RIDGEFIELD, WA.

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LEGEND

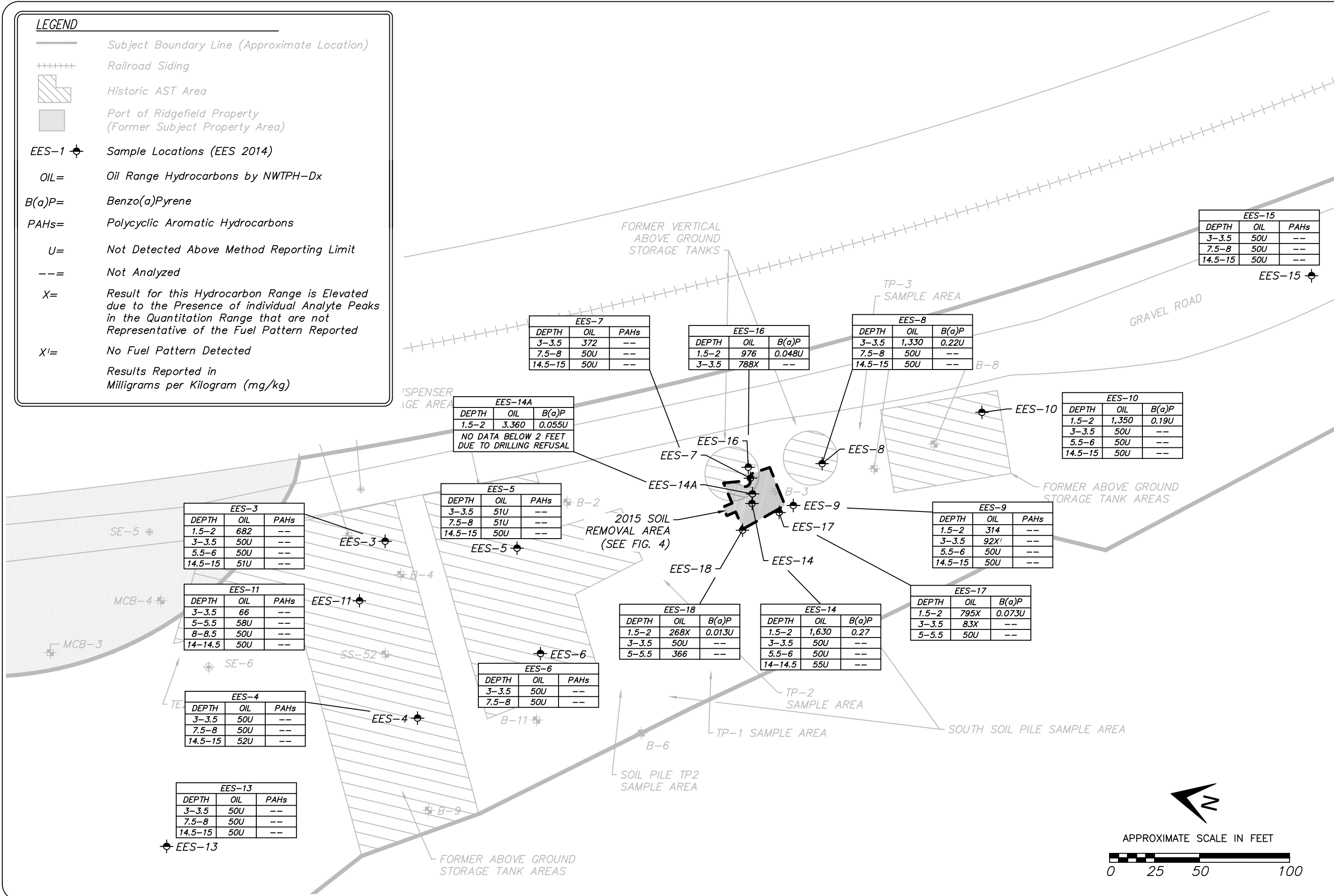
-  Subject Boundary Line (Approximate Location)
 -  Railroad Siding
 -  Historic AST Area
 -  Port of Ridgefield Property (Former Subject Property Area)
 -  EES-1 Sample Locations (EES 2014)
 - OIL=** Oil Range Hydrocarbons by NWTPH-Dx
 - B(a)P=** Benzo(a)Pyrene
 - PAHs=** Polycyclic Aromatic Hydrocarbons
 - U=** Not Detected Above Method Reporting Limit
 - =** Not Analyzed
 - X=** Result for this Hydrocarbon Range is Elevated due to the Presence of individual Analyte Peaks in the Quantitation Range that are not Representative of the Fuel Pattern Reported
 - X' =** No Fuel Pattern Detected
- Results Reported in Milligrams per Kilogram (mg/kg)

PROJECT NO.	10-30-15
FILE:	2001-01
DRAWN:	JJT
APPROVED:	CR
FIGURE NO.	3

PETROLEUM HYDROCARBON CONCENTRATIONS IN FORMER TANK FARM AREA SOIL (APRIL-JUNE 2014)








RJ FRANK SITE
5 MILL STREET
RIDGEFIELD, WA.

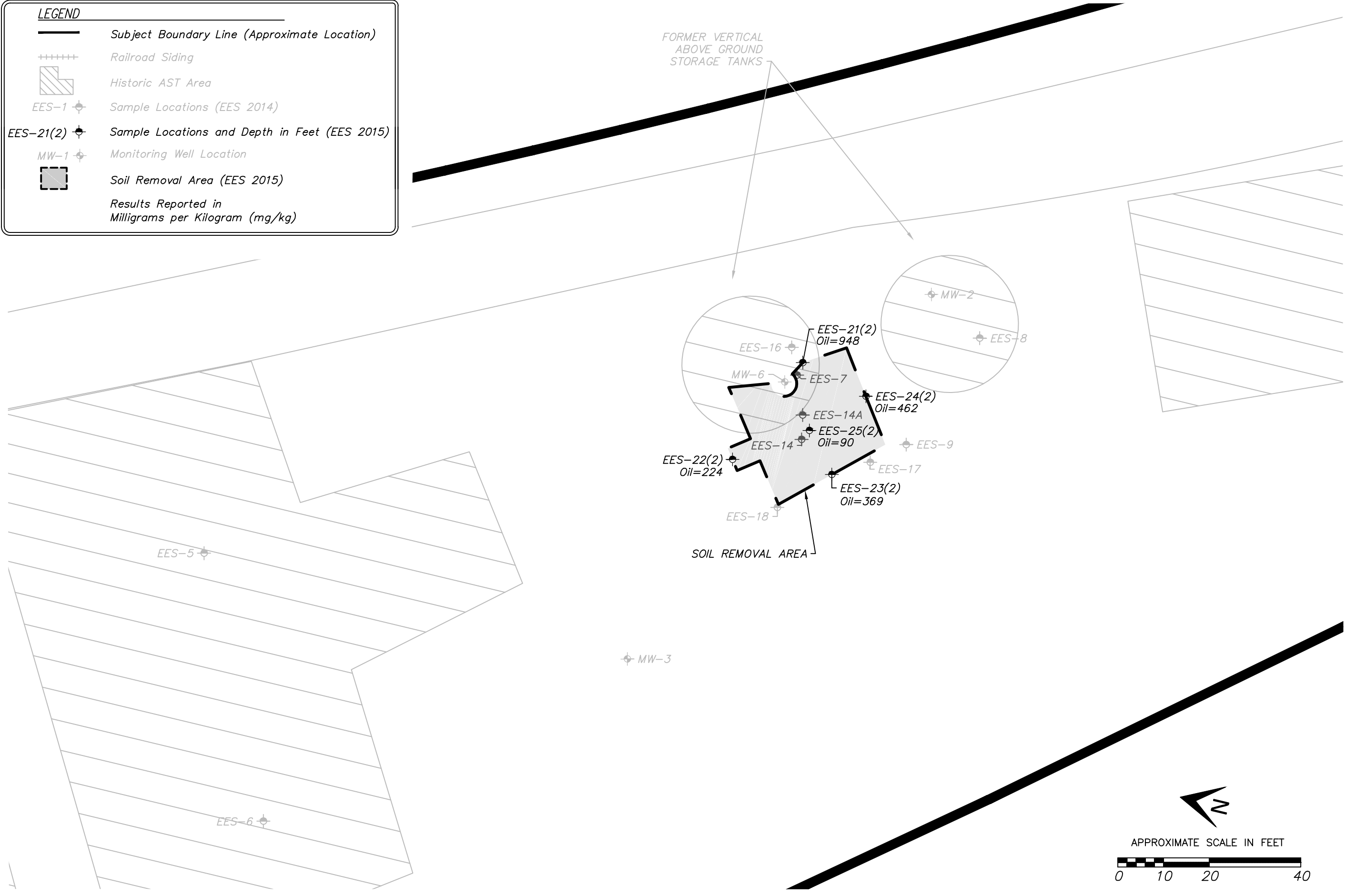
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LEGEND

-  Subject Boundary Line (Approximate Location)
 -  Railroad Siding
 -  Historic AST Area
 -  Sample Locations (EES 2014)
 -  Sample Locations and Depth in Feet (EES 2015)
 -  Monitoring Well Location
 -  Soil Removal Area (EES 2015)
- Results Reported in
Milligrams per Kilogram (mg/kg)



DATE: 10-30-15	PROJECT NO.
FILE: 2001-01	2001-01
DRAWN: JJT	FIGURE NO.
APPROVED: CR	4






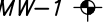

SOIL REMOVAL AREA
AND CONFIRMATORY SOIL RESULTS
(JUNE 2015)

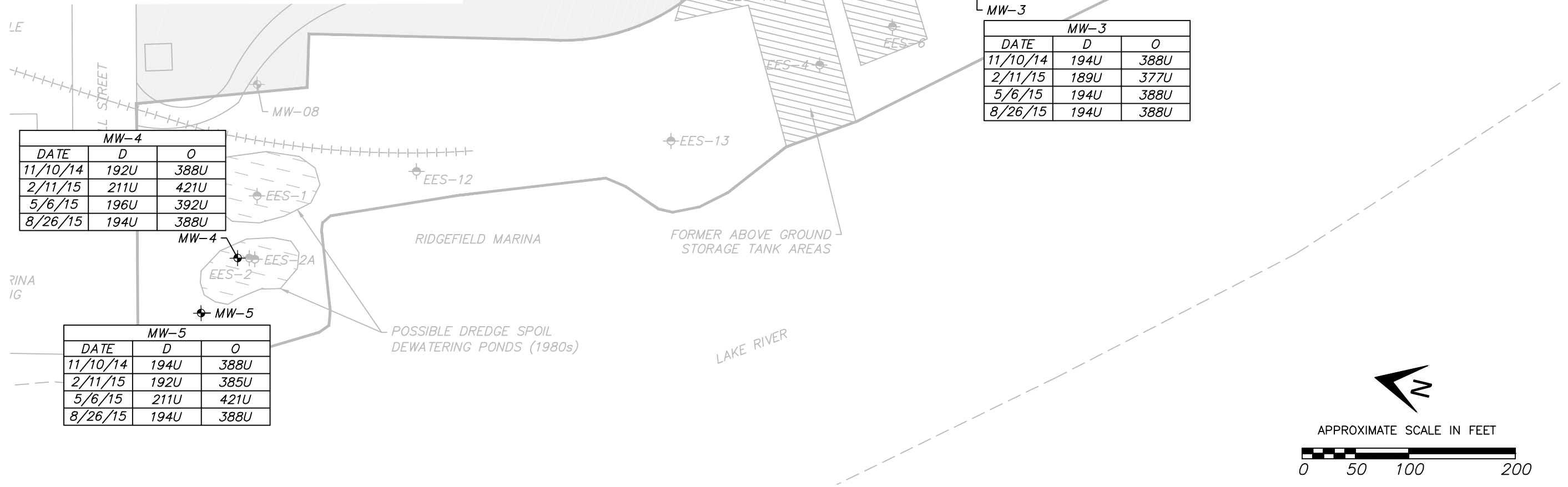
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LEGEND

-  Subject Boundary Line (Approximate Location)
 -  Railroad Siding
 -  Historic AST Area
 -  Port of Ridgefield Property (Former Subject Property Area)
 -  Sample Locations (EES 2014)
 -  Monitoring Well Locations (EES 2014)
 -  Approximate Groundwater Flow Direction
 - D=** Diesel Range Hydrocarbons
 - O=** Oil Range Hydrocarbons
 - U=** Not Detected Above Method Reporting Limit
 - *=** Results Without/With Silica-Gel Cleanup Reported
 - X=** The Hydrocarbon Pattern Indicates Possible Weathered Diesel, or a Contribution from a related Component
 - =** Not Analyzed
- Results in Micrograms per Liter (ug/L)
- SITE FEATURES ARE APPROXIMATE.



MW-6		
DATE	D	O
*11/10/14	1,050X/238U	1,900U/476U
2/11/15	190U	381U
*5/6/15	497X/238U	381U/476U
8/26/15	196U	392U

MW-1		
DATE	D	O
*11/10/14	733X/258U	412U/515U
2/11/15	194U	388U
*5/6/15	352X/250U	400U/500U
*8/26/15	575X/238U	381U/476U

MW-3		
DATE	D	O
11/10/14	194U	388U
2/11/15	189U	377U
5/6/15	194U	388U
8/26/15	194U	388U

MW-4		
DATE	D	O
11/10/14	192U	388U
2/11/15	211U	421U
5/6/15	196U	392U
8/26/15	194U	388U

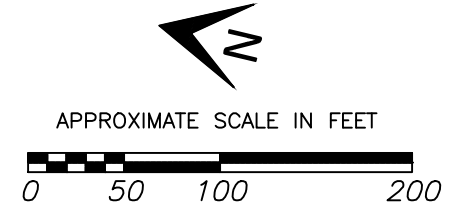
MW-5		
DATE	D	O
11/10/14	194U	388U
2/11/15	192U	385U
5/6/15	211U	421U
8/26/15	194U	388U

DATE: 10-29-15	PROJECT NO. 2001-01
FILE: 2001-01	FIGURE NO. 5
DRAWN: JJT	APPROVED: AG

DIESEL AND OIL CONCENTRATIONS
IN GROUNDWATER
(8/26/2015)






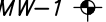

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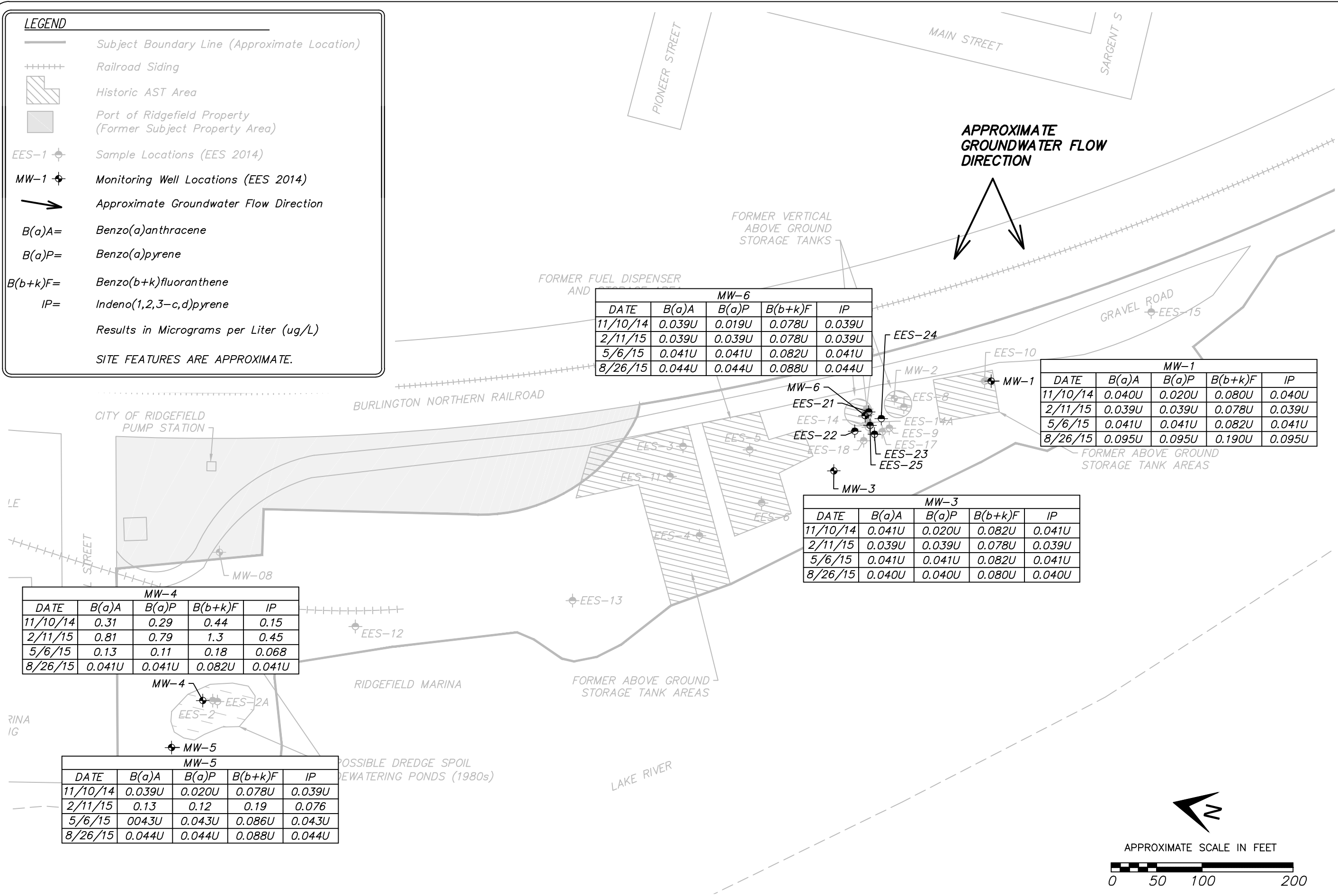
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LEGEND

-  Subject Boundary Line (Approximate Location)
 -  Railroad Siding
 -  Historic AST Area
 -  Port of Ridgefield Property (Former Subject Property Area)
 -  EES-1 Sample Locations (EES 2014)
 -  MW-1 Monitoring Well Locations (EES 2014)
 -  Approximate Groundwater Flow Direction
 - B(a)A=** Benzo(a)anthracene
 - B(a)P=** Benzo(a)pyrene
 - B(b+k)F=** Benzo(b+k)fluoranthene
 - IP=** Indeno(1,2,3-c,d)pyrene
- Results in Micrograms per Liter (ug/L)
- SITE FEATURES ARE APPROXIMATE.



MW-6				
DATE	B(a)A	B(a)P	B(b+k)F	IP
11/10/14	0.039U	0.019U	0.078U	0.039U
2/11/15	0.039U	0.039U	0.078U	0.039U
5/6/15	0.041U	0.041U	0.082U	0.041U
8/26/15	0.044U	0.044U	0.088U	0.044U

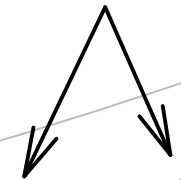
MW-1				
DATE	B(a)A	B(a)P	B(b+k)F	IP
11/10/14	0.040U	0.020U	0.080U	0.040U
2/11/15	0.039U	0.039U	0.078U	0.039U
5/6/15	0.041U	0.041U	0.082U	0.041U
8/26/15	0.095U	0.095U	0.190U	0.095U

MW-3				
DATE	B(a)A	B(a)P	B(b+k)F	IP
11/10/14	0.041U	0.020U	0.082U	0.041U
2/11/15	0.039U	0.039U	0.078U	0.039U
5/6/15	0.041U	0.041U	0.082U	0.041U
8/26/15	0.040U	0.040U	0.080U	0.040U

MW-4				
DATE	B(a)A	B(a)P	B(b+k)F	IP
11/10/14	0.31	0.29	0.44	0.15
2/11/15	0.81	0.79	1.3	0.45
5/6/15	0.13	0.11	0.18	0.068
8/26/15	0.041U	0.041U	0.082U	0.041U

MW-5				
DATE	B(a)A	B(a)P	B(b+k)F	IP
11/10/14	0.039U	0.020U	0.078U	0.039U
2/11/15	0.13	0.12	0.19	0.076
5/6/15	0.043U	0.043U	0.086U	0.043U
8/26/15	0.044U	0.044U	0.088U	0.044U

APPROXIMATE GROUNDWATER FLOW DIRECTION

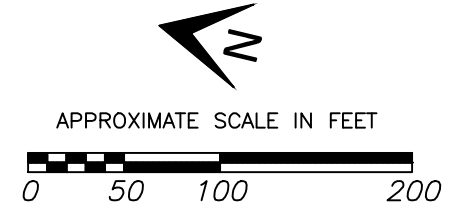


PROJECT NO.	2001-01	FIGURE NO.	6
DATE:	10-29-15	DRAWN:	JJT
FILE:	2001-01	APPROVED:	AG

PAH CONCENTRATIONS
IN GROUNDWATER
(8/26/2015)

RJ FRANK SITE
5 MILL STREET
RIDGEFIELD, WA.

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Attachment A

Paul Ecker

From: Qiu, Hans (ECY) <HQIU461@ecy.wa.gov>
Sent: Friday, October 17, 2014 11:03 AM
To: Paul Ecker; Rose, Scott (ECY)
Cc: markmccuddy@gmail.com
Subject: RE: VCP #SW1331: MCM/Former RJ Frank Property, Ridgefield - RI/IRAM next steps

Paul,

Ecology concurs with your summary of our meeting discussion and looks forward to further working with you on this Site.

Thank you,

Hans

From: Paul Ecker [mailto:paul@ees-environmental.com]
Sent: Wednesday, October 15, 2014 12:21 PM
To: Qiu, Hans (ECY); Rose, Scott (ECY)
Cc: markmccuddy@gmail.com
Subject: VCP #SW1331: MCM/Former RJ Frank Property, Ridgefield - RI/IRAM next steps

Hans and Scott, thanks very much for your time on the phone yesterday regarding RI status at the RJ Frank site. The purpose of this email is to summarize our understanding of key issues and action items as discussed, and to request confirmation that this summary is consistent with your review comments.

Discussion focused on the EES Site Investigation Report dated 8/25/2014. Subject to your approval, we plan to initiate planned work activities beginning next week.

- Groundwater monitoring is necessary to evaluate apparent non-gasoline hydrocarbon impacts at two areas of concern (the former bulk oil storage area represented by borings EES-7 and EES-10, and the former pond area represented by borings EES-1 and EES-2). Contaminants of interest include non-gasoline hydrocarbons (NWTPH-Dx) and PAHs. A total of five monitoring wells are planned to address this issue as detailed in the investigation report. We agreed with Ecology on the following monitoring approach:
 - At a minimum, monitoring events will be conducted at seasonal low- and high-water periods. If analytical testing results indicate COIs are uniformly below analytical method reporting limits during both events, we would conclude that the groundwater point of compliance has been adequately addressed. We intend to install and develop the well array next week if possible, and conduct the initial seasonal low-water monitoring event in late October 2014, followed by a high-water event in April 2015.
 - If COIs are detected, quarterly groundwater monitoring would be triggered for a minimum of four consecutive events. The groundwater point of compliance would be adequately addressed if monitoring demonstrates COI concentrations remain below applicable MTCA cleanup levels for four consecutive quarterly monitoring events.
- For the limited soil excavation area, we propose a removal depth of two feet minimum, to be followed by confirmatory sampling/testing before backfilling (COIs are NWTPH-Dx and PAHs). The excavation area will remain open and unfilled until we have confirmatory data from the lab. Provided the confirmation data achieve applicable MTCA soil cleanup levels, we would conclude that the soil point of compliance has been adequately addressed.
- All soil and groundwater samples will be analyzed for non-gasoline fraction hydrocarbons using method NWTPH-Dx (as well as PAHs). Acknowledging that naturally-occurring organics are likely to be present in the site

subsurface environment, we may also consider supplemental analysis using silica-gel cleanup. If silica-gel cleanup is used, EES will provide Ecology with laboratory chromatograms for samples and method standards.

- We understand certain EES report maps indicate boring EES-11 appears to be 20-30 feet away from old sample location B-4 where PCBs were historically detected. In reality, we believe that EES-11 was drilled and sampled within approximately five to ten feet of the B-4 location, but it is important to acknowledge the uncertainties shown on the old site sampling maps (where available) from the early 1990s. We believe that reasonable lines of evidence have been presented in this assessment to demonstrate adequate characterization of PCBs, and we request that Ecology support our conclusion that PCBs should be eliminated as a COI.

Please let us know if you have questions or need additional information.

Subject to Ecology's approval, we plan to get this work scheduled and initiated beginning as soon as next week for well installation. Soil excavation will be planned around weather conditions as feasible, but we hope to complete the focused removal action before the end of October.

Thanks again for your assistance and good discussion.

-Paul

Paul Ecker, RG, LHG
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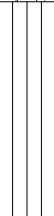
Attachment B

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
<p>COARSE GRAINED SOILS</p> <p>MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE</p>	<p>GRAVEL AND GRAVELLY SOILS</p>	<p>CLEAN GRAVELS</p> <p>(LITTLE OR NO FINES)</p>		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		<p>GRAVELS WITH FINES</p> <p>(APPRECIABLE AMOUNT OF FINES)</p>		GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		<p>GRAVELS WITH FINES</p> <p>(APPRECIABLE AMOUNT OF FINES)</p>		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
	<p>SAND AND SANDY SOILS</p>	<p>CLEAN SANDS</p> <p>(LITTLE OR NO FINES)</p>		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		<p>SANDS WITH FINES</p> <p>(APPRECIABLE AMOUNT OF FINES)</p>		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	<p>FINE GRAINED SOILS</p> <p>MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE</p>	<p>SILTS AND CLAYS</p> <p>LIQUID LIMIT LESS THAN 50</p>		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	
<p>SILTS AND CLAYS</p> <p>LIQUID LIMIT GREATER THAN 50</p>			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS	
			CH	INORGANIC CLAYS OF HIGH PLASTICITY	
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS	
<p>HIGHLY ORGANIC SOILS</p>				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

START CARD **EE05031** WELL ID --
 COORDINATES
 SURFACE ELEVATION -- DATUM --

SAMPLE INFORMATION						STRATA	DESCRIPTION	CONSTRUCTION DETAIL/ COMMENTS	ELEVATION FEET
DEPTH FEET	LAB SAMPLE ID	SAMPLE TYPE	PID (ppmV)	SHEEN	RECOVERY %				
5	EES-1 (3-3.5)	Grab	3.8	NS	100		Medium dense, gray silty GRAVEL (GP); moist.	New schedule 40 0.75-inch diameter PVC riser 0-5 feet.	
			0.3	NS			Dense, dark gray silty fine SAND (SM); moist.		
10	EES-1 (7.5-8)	Grab	4.1	NS	100		Dense, dark gray silty fine SAND (SM) with subrounded gravel and trace organics; moist.		
			3.5	NS			Soft to stiff, brown SILT (ML) with wood debris; moist.		
15	EES-1 (14.5-15)	Grab	5.3	NS	100		Dense gray silty fine SAND (SM) with occasional organics; moist to wet.	New schedule 40 0.75-inch diameter, 0.02-inch slot, temporary PVC well screen 5-20 feet.	
			6.0	NS			No groundwater encountered while drilling to 15 feet, therefore completed boring at 20 feet.		
20							Boring complete at 20 feet bgs using 3.5-inch dual-tube macro-core with steel conductor casing. Set temporary well as indicated (retracted steel conductor casing to 10 feet bgs prior to well purge). Backfilled borehole with granular bentonite after completion of sample activities.		




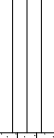


EES LOG WITH WELL & SHEEN - LOG A EWMN03.GDT - 8/4/14 11:31 - C:\USERS\PUBLIC\DOCUMENTS\BENTLEY\GINT\PROJECTS\2001-01 MCCUDDYS 042114.GPJ

DRILLING CONTRACTOR **Pacific Soil and Water, Inc.**
 DRILLING METHOD **Direct-Push Macro/Dual**
 DRILLING EQUIPMENT **GeoProbe 9500VTR**
 DRILLING STARTED **4/16/14** ENDED **4/16/14**

REMARKS **No sheen observed on purge water. Collected groundwater sample EES-1(W) from temporary PVC well screen placed from 5-20 feet bgs.**

See key sheet for symbols and abbreviations used above.

START CARD **EE05031** WELL ID --
 COORDINATES
 SURFACE ELEVATION -- DATUM --

SAMPLE INFORMATION						STRATA	DESCRIPTION	CONSTRUCTION DETAIL/ COMMENTS	ELEVATION FEET
DEPTH FEET	LAB SAMPLE ID	SAMPLE TYPE	PID (ppmV)	SHEEN	RECOVERY %				
5	EES-2 (3-3.5)	Grab	6.2	NS	100		Medium dense, gray silty GRAVEL (GP); moist.	New schedule 40 0.75-inch diameter PVC riser 0-10 feet.	
							Loose, dark brown fine sandy wood debris (FILL); moist.		
	EES-2 (7.5-8)	Grab	7.7	NS	100		Dense, dark gray silty fine SAND (SM); moist.	New schedule 40 0.75-inch diameter, 0.02-inch slot, temporary PVC well screen 10-15 feet.	
							With black wood debris between 7 and 9 feet.		
10			10.5	NS			Stiff, dark brown sandy SILT (ML) with roots and organic debris; moist. Possibly a former overbank/riparian native surface.		
			7.9	MS	100		Gray silty fine SAND (SM); wet. Becomes wet at 12 feet. Organic sheen with mild odor observed between 12 and 12.5 feet. Becomes brown, silt decreasing with depth.		
15	EES-2 (14.5-15)	Grab	7.4	NS			Boring complete at 15 feet bgs using 3.5-inch dual-tube macro-core with steel conductor casing. Set temporary well as indicated (retracted steel conductor casing to 10 feet bgs prior to well purge). Backfilled borehole with granular bentonite after completion of sample activities.		

EES LOG WITH WELL & SHEEN - LOG A EWMN03.GDT - 8/4/14 11:31 - C:\USERS\PUBLIC\DOCUMENTS\BENTLEY\GINT\PROJECTS\2001-01 MCCUDDYS 042114.GPJ

DRILLING CONTRACTOR **Pacific Soil and Water, Inc.**
 DRILLING METHOD **Direct-Push Macro/Dual**
 DRILLING EQUIPMENT **GeoProbe 9500VTR**
 DRILLING STARTED **4/16/14** ENDED **4/16/14**

REMARKS **Slight sheen observed on purge water. Collected groundwater sample EES-2(W) from temporary well screen placed from 10-15 feet bgs.**

 See key sheet for symbols and abbreviations used above.

START CARD **EE05031** WELL ID --
 COORDINATES
 SURFACE ELEVATION -- DATUM --

SAMPLE INFORMATION						STRATA	DESCRIPTION	CONSTRUCTION DETAIL/ COMMENTS	ELEVATION FEET
DEPTH FEET	LAB SAMPLE ID	SAMPLE TYPE	PID (ppmV)	SHEEN	RECOVERY %				
					0		No recovery from 0-5 feet.		
5					0		No recovery from 5-10 feet due to debris destroying liner.	▼	
10	EES-2A (10-10.5)	Grab	0.0	NS			Stiff, dark brown fine SANDY SILT (ML); some organics and wood debris; moist.		
	EES-2A (12-12.5)	Grab	0.9	NS	100		Medium gray silty fine SAND (SM); wet.		
15			0.0	NS			Becomes brown at 13.5 feet.		

EES LOG WITH WELL & SHEEN - LOG A EWMN03.GDT - 8/4/14 11:31 - C:\USERS\PUBLIC\DOCUMENTS\BENTLEY\GINT\PROJECTS\2001-01 MCCUDDYS 042114.GPJ

DRILLING CONTRACTOR **Pacific Soil and Water, Inc.**
 DRILLING METHOD **Direct-Push Macro/Dual**
 DRILLING EQUIPMENT **GeoProbe 9500VTR**
 DRILLING STARTED **4/18/14** ENDED **4/18/14**

REMARKS

See key sheet for symbols and abbreviations used above.

START CARD **EE05031** WELL ID --
 COORDINATES
 SURFACE ELEVATION -- DATUM --

SAMPLE INFORMATION						STRATA	DESCRIPTION	CONSTRUCTION DETAIL/ COMMENTS	ELEVATION FEET
DEPTH FEET	LAB SAMPLE ID	SAMPLE TYPE	PID (ppmV)	SHEEN	RECOVERY %				
			11.6	NS		Topsoil.			
	EES-3 (1.5-2)	Grab			100	Stiff, dark brown very fine sandy SILT (ML) with gravel; moist.			
	EES-3 (3-3.5)	Grab	9.6	NS		Becomes very stiff, brown with orange mottles, and moist to wet.			
5	EES-3 (5.5-6)	Grab	10.9	NS			New schedule 40 0.75-inch diameter PVC riser 0-10 feet.		
			8.7	NS	100				
10			8.2	NS		Becomes brownish gray.			
					100			New schedule 40 0.75-inch diameter, 0.02-inch slot, temporary PVC well screen 10-15 feet.	
15	EES-3 (14.5-15)	Grab	10.5	NS		Boring complete at 15 feet bgs using 3.5-inch dual-tube macro-core with steel conductor casing. Set temporary well as indicated (retracted steel conductor casing to 10 feet bgs prior to well purge). Backfilled borehole with granular bentonite after completion of sample activities.			

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DRILLING CONTRACTOR **Pacific Soil and Water, Inc.**
 DRILLING METHOD **Direct-Push Macro/Dual**
 DRILLING EQUIPMENT **GeoProbe 9500VTR**
 DRILLING STARTED **4/16/14** ENDED **4/16/14**

REMARKS **No sheen observed on purge water. Collected groundwater sample EES-3(W) from temporary well screen placed from 10-15 feet bgs.**

See key sheet for symbols and abbreviations used above.

START CARD **EE05031** WELL ID --
 COORDINATES
 SURFACE ELEVATION -- DATUM --

SAMPLE INFORMATION						STRATA	DESCRIPTION	CONSTRUCTION DETAIL/ COMMENTS	ELEVATION FEET
DEPTH FEET	LAB SAMPLE ID	SAMPLE TYPE	PID (ppmV)	SHEEN	RECOVERY %				
							Topsoil.		
5	EES-4 (3-3.5)	Grab	10.2	NS	100		Stiff, dark brown very fine sandy SILT (ML) with gravel; moist. Becomes very stiff and brown.	New schedule 40 0.75-inch diameter PVC riser 0-10 feet.	
10	EES-4 (7.5-8)	Grab	13.8	NS	100		Becomes wet.		
15	EES-4 (14.5-15)	Grab	11.9	NS	100		Boring complete at 15 feet bgs using 3.5-inch dual-tube macro-core with steel conductor casing. Set temporary well as indicated (retracted steel conductor casing to 10 feet bgs prior to well purge). Backfilled borehole with granular bentonite after completion of sample activities.	New schedule 40 0.75-inch diameter, 0.02-inch slot, temporary PVC well screen 10-15 feet.	

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DRILLING CONTRACTOR **Pacific Soil and Water, Inc.**
 DRILLING METHOD **Direct-Push Macro/Dual**
 DRILLING EQUIPMENT **GeoProbe 9500VTR**
 DRILLING STARTED **4/16/14** ENDED **4/16/14**

REMARKS **No sheen observed on purge water. Collected groundwater sample EES-4(W) from temporary well screen placed from 10-15 feet bgs.**

See key sheet for symbols and abbreviations used above.

START CARD **EE05031** WELL ID --
 COORDINATES
 SURFACE ELEVATION -- DATUM --

SAMPLE INFORMATION						STRATA	DESCRIPTION	CONSTRUCTION DETAIL/ COMMENTS	ELEVATION FEET
DEPTH FEET	LAB SAMPLE ID	SAMPLE TYPE	PID (ppmV)	SHEEN	RECOVERY %				
						Topsoil.			
5	EES-5 (3-3.5)	Grab	0.0	NS	100	Stiff, dark brown very fine sandy SILT (ML) with gravel; moist. Becomes very stiff, brown, and moist to wet.	New schedule 40 0.75-inch diameter PVC riser 0-10 feet.		
	EES-5 (7.5-8)	Grab	0.7	NS	100				
10			0.3	NS					
15	EES-5 (14.5-15)	Grab	1.6	NS	100		New schedule 40 0.75-inch diameter, 0.02-inch slot, temporary PVC well screen 10-15 feet.		
						Boring complete at 15 feet bgs using 3.5-inch dual-tube macro-core with steel conductor casing. Set temporary well as indicated (retracted steel conductor casing to 10 feet bgs prior to well purge). Backfilled borehole with granular bentonite after completion of sample activities.			

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DRILLING CONTRACTOR **Pacific Soil and Water, Inc.**
 DRILLING METHOD **Direct-Push Macro/Dual**
 DRILLING EQUIPMENT **GeoProbe 9500VTR**
 DRILLING STARTED **4/17/14** ENDED **4/17/14**

REMARKS **No sheen observed on purge water. Collected groundwater sample EES-5(W) from temporary well screen placed from 10-15 feet bgs.**

See key sheet for symbols and abbreviations used above.



EES Environmental Consulting Inc.
 240 N. Broadway #203
 Portland, OR 97227
 Telephone: 503.847.2740

BORING NO. **EES-6**
 PROJECT **RJ Frank Site**
 LOCATION **Ridgefield, WA**
 PROJECT NO. **2001-01**
 LOGGED BY **RR**

START CARD **EE05031** WELL ID --
 COORDINATES
 SURFACE ELEVATION -- DATUM --

SAMPLE INFORMATION						STRATA	DESCRIPTION	CONSTRUCTION DETAIL/ COMMENTS	ELEVATION FEET
DEPTH FEET	LAB SAMPLE ID	SAMPLE TYPE	PID (ppmV)	SHEEN	RECOVERY %				
5	EES-6 (3-3.5)	Grab	0.1	NS	100		Dense, brown very fine sandy SILT (ML) with trace gravel and organic material; moist.		
			0.3	NS			Becomes soft, wet, and with orange mottles.		
	EES-6 (7.5-8)	Grab	0.2	NS			Becomes without orange mottles.		
							Boring complete at 8 feet bgs.		

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DRILLING CONTRACTOR **Pacific Soil and Water, Inc.**
 DRILLING METHOD **Direct-Push Macro/Dual**
 DRILLING EQUIPMENT **GeoProbe 9500VTR**
 DRILLING STARTED **4/18/14** ENDED **4/18/14**

REMARKS **Due to limited access boring advanced by hand auger. Boring located in low-lying area where rain water was collecting; difficulty collecting intact and representative soil samples below 8 feet. No groundwater encountered.**
 See key sheet for symbols and abbreviations used above.

START CARD **EE05031** WELL ID --
 COORDINATES --
 SURFACE ELEVATION -- DATUM --

SAMPLE INFORMATION						STRATA	DESCRIPTION	CONSTRUCTION DETAIL/ COMMENTS	ELEVATION FEET
DEPTH FEET	LAB SAMPLE ID	SAMPLE TYPE	PID (ppmV)	SHEEN	RECOVERY %				
5	EES-7 (3.5-4)	Grab	0.1	NS	100		Topsoil.	New schedule 40 0.75-inch diameter PVC riser 0-10 feet.	
							Stiff, brown sandy SILT (ML) with gravel; moist.		
10	EES-7 (7.5-8)	Grab	0.2	NS	100		Wood debris.		
							Stiff, gray very fine sandy SILT (ML); moist.		
15	EES-7 (14.5-15)	Grab	0.0	NS	100		Becomes brown.	New schedule 40 0.75-inch diameter, 0.02-inch slot, temporary PVC well screen 10-15 feet.	
							No free water observed while drilling.		
Boring complete at 15 feet bgs using 3.5-inch dual-tube macro-core with steel conductor casing. Groundwater slow to enter borehole. Temporary well set and allowed to stabilize overnight (sampled 4/18), as indicated (retracted steel conductor casing to 10 feet bgs prior to well purge). Backfilled borehole with granular bentonite after completion of sample activities.									

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DRILLING CONTRACTOR **Pacific Soil and Water, Inc.**
 DRILLING METHOD **Direct-Push Macro/Dual**
 DRILLING EQUIPMENT **GeoProbe 9500VTR**
 DRILLING STARTED **4/17/14** ENDED **4/18/14**

REMARKS **No sheen observed on purge water. Collected groundwater sample EES-7(W) from temporary well screen placed from 10-15 feet bgs.**

See key sheet for symbols and abbreviations used above.



EES Environmental Consulting Inc.
 240 N. Broadway #203
 Portland, OR 97227
 Telephone: 503.847.2740

BORING NO. **EES-8**
 PROJECT **RJ Frank Site**
 LOCATION **Ridgefield, WA**
 PROJECT NO. **2001-01**
 LOGGED BY **RR**

START CARD **EE05031** WELL ID --
 COORDINATES
 SURFACE ELEVATION -- DATUM --

SAMPLE INFORMATION						STRATA	DESCRIPTION	CONSTRUCTION DETAIL/ COMMENTS	ELEVATION FEET
DEPTH FEET	LAB SAMPLE ID	SAMPLE TYPE	PID (ppmV)	SHEEN	RECOVERY %				
							Topsoil.		
5	EES-8 (3-3.5)	Grab	0.5	NS	100		Stiff, dark brown very fine sandy SILT (ML) with gravel; moist. Becomes without gravel. Thin layer of black organic material encountered at 4 feet. Becomes gray below 4 feet.	New schedule 40 0.75-inch diameter PVC riser 0-10 feet.	
10	EES-8 (7.5-8)	Grab	0.1	NS	100				
15	EES-8 (14.5-15)	Grab	0.9	NS	100		No free water observed while drilling.	New schedule 40 0.75-inch diameter, 0.02-inch slot, temporary PVC well screen 10-15 feet.	
							Boring complete at 15 feet bgs using 3.5-inch dual-tube macro-core with steel conductor casing. Groundwater slow to enter borehole. Temporary well set and allowed to stabilize overnight (sampled 4/18), as indicated (retracted steel conductor casing to 10 feet bgs prior to well purge). Backfilled borehole with granular bentonite after completion of sample activities.		

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DRILLING CONTRACTOR **Pacific Soil and Water, Inc.**
 DRILLING METHOD **Direct-Push Macro/Dual**
 DRILLING EQUIPMENT **GeoProbe 9500VTR**
 DRILLING STARTED **4/17/14** ENDED **4/18/14**

REMARKS **No sheen observed on purge water. Collected groundwater sample EES-8(W) from temporary well screen placed from 10-15 feet bgs.**

See key sheet for symbols and abbreviations used above.

START CARD **EE05031** WELL ID --
 COORDINATES --
 SURFACE ELEVATION -- DATUM --

SAMPLE INFORMATION						STRATA	DESCRIPTION	CONSTRUCTION DETAIL/ COMMENTS	ELEVATION FEET
DEPTH FEET	LAB SAMPLE ID	SAMPLE TYPE	PID (ppmV)	SHEEN	RECOVERY %				
							Topsoil.		
	EES-9 (1.5-2)	Grab	0.2	NS	100		Stiff, brown sandy SILT (ML) with gravel; moist.	New schedule 40 0.75-inch diameter PVC riser 0-10 feet.	
	EES-9 (3-3.5)	Grab	0.4	NS			Wood debris with some plastic sheet debris.		
5	EES-9 (5.5-6)	Grab	1.1	NS	100		Stiff, gray very fine sandy SILT (ML); moist.		
10			0.1	NS	100		Becomes brown.	New schedule 40 0.75-inch diameter, 0.02-inch slot, temporary PVC well screen 10-15 feet.	
15	EES-9 (14.5-15)	Grab	0.0	NS			Boring complete at 15 feet bgs using 3.5-inch dual-tube macro-core with steel conductor casing. Set temporary well as indicated (retracted steel conductor casing to 10 feet bgs prior to well purge). Backfilled borehole with granular bentonite after completion of sample activities.		


EES LOG WITH WELL & SHEEN - LOG A EWMN03.GDT - 8/4/14 11:31 - C:\USERS\PUBLIC\DOCUMENTS\BENTLEY\GINT\PROJECTS\2001-01 MCCUDDYS 042114.GPJ

DRILLING CONTRACTOR **Pacific Soil and Water, Inc.**
 DRILLING METHOD **Direct-Push Macro/Dual**
 DRILLING EQUIPMENT **GeoProbe 9500VTR**
 DRILLING STARTED **4/17/14** ENDED **4/17/14**

REMARKS **No sheen observed on purge water. Collected groundwater sample EES-9(W) from temporary well screen placed from 10-15 feet bgs.**

See key sheet for symbols and abbreviations used above.

START CARD **EE05031** WELL ID --
 COORDINATES
 SURFACE ELEVATION -- DATUM --

SAMPLE INFORMATION						STRATA	DESCRIPTION	CONSTRUCTION DETAIL/ COMMENTS	ELEVATION FEET
DEPTH FEET	LAB SAMPLE ID	SAMPLE TYPE	PID (ppmV)	SHEEN	RECOVERY %				
							Topsoil.		
	EES-10 (1.5-2)	Grab	0.0	NS	100		Stiff, brown with some orange mottling very fine sandy SILT (ML) with gravel; moist.	New schedule 40 0.75-inch diameter PVC riser 0-10 feet.	
	EES-10 (3-3.5)	Grab	0.1	NS					
5	EES-10 (5.5-6)	Grab	0.5	NS	100		Below 4 feet becomes gray, little or no gravel.	New schedule 40 0.75-inch diameter, 0.02-inch slot, temporary PVC well screen 10-15 feet.	
10			0.1	NS	100				
15	EES-10 (14.5-15)	Grab	0.1	NS			Boring complete at 15 feet bgs using 3.5-inch dual-tube macro-core with steel conductor casing. Set temporary well as indicated (retracted steel conductor casing to 10 feet bgs prior to well purge). Backfilled borehole with granular bentonite after completion of sample activities.		

EES LOG WITH WELL & SHEEN - LOG A EWMN03.GDT - 8/4/14 11:31 - C:\USERS\PUBLIC\DOCUMENTS\BENTLEY\GINT\PROJECTS\2001-01 MCCUDDYS 042114.GPJ

DRILLING CONTRACTOR **Pacific Soil and Water, Inc.**
 DRILLING METHOD **Direct-Push Macro/Dual**
 DRILLING EQUIPMENT **GeoProbe 9500VTR**
 DRILLING STARTED **4/17/14** ENDED **4/17/14**

REMARKS **No sheen observed on purge water. Collected groundwater sample EES-10(W) from temporary well screen placed from 10-15 feet bgs.**

See key sheet for symbols and abbreviations used above.



EES Environmental Consulting Inc.
240 N. Broadway #203
Portland, OR 97227
Telephone: 503.847.2740

BORING NO. **EES-11**
PROJECT **RJ Frank Site**
LOCATION **Ridgefield, WA**
PROJECT NO. **2001-01**
LOGGED BY **RR**

START CARD **EE05031** WELL ID --
COORDINATES
SURFACE ELEVATION -- DATUM --

SAMPLE INFORMATION						STRATA	DESCRIPTION	CONSTRUCTION DETAIL/ COMMENTS	ELEVATION FEET
DEPTH FEET	LAB SAMPLE ID	SAMPLE TYPE	PID (ppmV)	SHEEN	RECOVERY %				
						Topsoil.			
5	EES-11 (3-3.5)	Grab	6.9	NS	100	Stiff, dark brown very fine sandy SILT (ML) with gravel; moist.	<p>New schedule 40 0.75-inch diameter PVC riser 0-10 feet.</p> <p>New schedule 40 0.75-inch diameter, 0.02-inch slot, temporary PVC well screen 10-15 feet.</p>		
	EES-11 (5-5.5)	Grab	8.0	NS		Becomes very stiff and gray.			
10	EES-11 (8-8.5)	Grab	7.7	NS	100	Becomes wet.			
	EES-11 (14-14.5)	Grab	8.0	NS	100	Becomes brown.			
15						Boring complete at 15 feet bgs using 3.5-inch dual-tube macro-core with steel conductor casing. Set temporary well as indicated (retracted steel conductor casing to 10 feet bgs prior to well purge). Backfilled borehole with granular bentonite after completion of sample activities.			

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DRILLING CONTRACTOR **Pacific Soil and Water, Inc.**
DRILLING METHOD **Direct-Push Macro/Dual**
DRILLING EQUIPMENT **GeoProbe 9500VTR**
DRILLING STARTED **4/16/14** ENDED **4/16/14**

REMARKS **No sheen observed on purge water. Collected groundwater sample EES-11(W) from temporary well screen placed from 10-15 feet bgs.**

See key sheet for symbols and abbreviations used above.

START CARD **EE05031** WELL ID --
 COORDINATES
 SURFACE ELEVATION -- DATUM --

SAMPLE INFORMATION						STRATA	DESCRIPTION	CONSTRUCTION DETAIL/ COMMENTS	ELEVATION FEET
DEPTH FEET	LAB SAMPLE ID	SAMPLE TYPE	PID (ppmV)	SHEEN	RECOVERY %				
							Topsoil.		
	EES-12 (3-3.5)	Grab	7.2	NS	100		Stiff, dark brown sandy SILT (ML) with gravel; moist.		
5			6.8	NS			Brown wood chip debris.	New schedule 40 0.75-inch diameter PVC riser 0-10 feet.	
	EES-12 (7.5-8)	Grab	8.6	NS	100		Very stiff, gray very fine sandy SILT (ML); moist to wet.		
10			10.7	NS					
			7.2	NS	100			New schedule 40 0.75-inch diameter, 0.02-inch slot, temporary PVC well screen 10-15 feet.	
15	EES-12 (14.5-15)	Grab	7.7	NS					
							Boring complete at 15 feet bgs using 3.5-inch dual-tube macro-core with steel conductor casing. Set temporary well as indicated (retracted steel conductor casing to 10 feet bgs prior to well purge). Backfilled borehole with granular bentonite after completion of sample activities.		

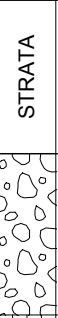

EES LOG WITH WELL & SHEEN - LOG A EWMN03.GDT - 8/4/14 11:31 - C:\USERS\PUBLIC\DOCUMENTS\BENTLEY\GINT\PROJECTS\2001-01 MCCUDDYS 042114.GPJ

DRILLING CONTRACTOR **Pacific Soil and Water, Inc.**
 DRILLING METHOD **Direct-Push Macro/Dual**
 DRILLING EQUIPMENT **GeoProbe 9500VTR**
 DRILLING STARTED **4/16/14** ENDED **4/16/14**

REMARKS **No sheen observed on purge water. Collected groundwater sample EES-12(W) from temporary well screen placed from 10-15 feet bgs.**

See key sheet for symbols and abbreviations used above.

START CARD **EE05031** WELL ID --
 COORDINATES
 SURFACE ELEVATION -- DATUM --

SAMPLE INFORMATION						STRATA	DESCRIPTION	CONSTRUCTION DETAIL/ COMMENTS	ELEVATION FEET
DEPTH FEET	LAB SAMPLE ID	SAMPLE TYPE	PID (ppmV)	SHEEN	RECOVERY %				
5	EES-13 (3-3.5)	Grab	2.5	NS	100		Dense brown to gray sandy GRAVEL (GP) with silt; moist.	New schedule 40 0.75-inch diameter PVC riser 0-10 feet.	
			4.0	NS			Stiff, gray to dark gray very fine sandy SILT (ML); moist.		
10	EES-13 (7.5-8)	Grab	9.0	NS	100		Some black wood chips encountered between 6 and 7 feet bgs.	New schedule 40 0.75-inch diameter, 0.02-inch slot, temporary PVC well screen 10-15 feet.	
			46.2	NS					
15	EES-13 (14.5-15)	Grab	10.4	NS					
Boring complete at 15 feet bgs using 3.5-inch dual-tube macro-core with steel conductor casing. Set temporary well as indicated (retracted steel conductor casing to 10 feet bgs prior to well purge). Backfilled borehole with granular bentonite after completion of sample activities.									

EES LOG WITH WELL & SHEEN - LOG A EWMN03.GDT - 8/4/14 11:31 - C:\USERS\PUBLIC\DOCUMENTS\BENTLEY\GINT\PROJECTS\2001-01 MCCUDDYS 042114.GPJ

DRILLING CONTRACTOR **Pacific Soil and Water, Inc.**
 DRILLING METHOD **Direct-Push Macro/Dual**
 DRILLING EQUIPMENT **GeoProbe 9500VTR**
 DRILLING STARTED **4/16/14** ENDED **4/16/14**

REMARKS **No sheen observed on purge water. Collected groundwater sample EES-13(W) from temporary well screen placed from 10-15 feet bgs.**

See key sheet for symbols and abbreviations used above.

START CARD **EE05031** WELL ID --
 COORDINATES
 SURFACE ELEVATION -- DATUM --

SAMPLE INFORMATION						STRATA	DESCRIPTION	CONSTRUCTION DETAIL/ COMMENTS	ELEVATION FEET
DEPTH FEET	LAB SAMPLE ID	SAMPLE TYPE	PID (ppmV)	SHEEN	RECOVERY %				
						Topsoil.			
	EES-14 (1.5-2)	Grab	0.1	NS	100	Stiff, dark gray to black very fine sandy SILT (ML) with gravel; moist.			
	EES-14 (3-3.5)	Grab				Becomes very stiff and gray.			
5	EES-14 (5.5-6)	Grab	0.2	NS				New schedule 40 0.75-inch diameter PVC riser 0-10 feet.	
			0.6	NS	100				
10			0.8	NS		Becomes stiff and gray to brown.			
					100			New schedule 40 0.75-inch diameter, 0.02-inch slot, temporary PVC well screen 10-15 feet.	
15	EES-14 (14-14.5)	Grab	0.1	NS					
						Boring complete at 15 feet bgs using 3.5-inch dual-tube macro-core with steel conductor casing. Set temporary well as indicated (retracted steel conductor casing to 10 feet bgs prior to well purge). Backfilled borehole with granular bentonite after completion of sample activities.			

EES LOG WITH WELL & SHEEN - LOG A EWMN03.GDT - 8/4/14 11:31 - C:\USERS\PUBLIC\DOCUMENTS\BENTLEY\GINT\PROJECTS\2001-01 MCCUDDYS 042114.GPJ

DRILLING CONTRACTOR **Pacific Soil and Water, Inc.**
 DRILLING METHOD **Direct-Push Macro/Dual**
 DRILLING EQUIPMENT **GeoProbe 9500VTR**
 DRILLING STARTED **4/16/14** ENDED **4/16/14**

REMARKS **No sheen observed on purge water. Collected groundwater sample EES-14(W) from temporary well screen placed from 10-15 feet bgs.**

See key sheet for symbols and abbreviations used above.

START CARD **NA** WELL ID --
 COORDINATES
 SURFACE ELEVATION -- DATUM --

SAMPLE INFORMATION						STRATA	DESCRIPTION	CONSTRUCTION DETAIL/ COMMENTS	ELEVATION FEET
DEPTH FEET	LAB SAMPLE ID	SAMPLE TYPE	PID (ppmV)	SHEEN	RECOVERY %				
	EES-14A (1.5-2)	Grab	0.5	NS	100		<p>Brown sandy SILT (ML) with gravel; moist. Gravel is subrounded and coarse-grained. Becomes with some gravel. Becomes with black woody debris.</p> <p>Boring complete at 2 feet due to subsurface obstruction. Groundwater not encountered. Backfilled borehole with soil cuttings after completion of sample activities.</p>		

EES LOG WITH WELL & SHEEN - LOG A EWMN03.GDT - 8/4/14 11:31 - C:\USERS\PUBLIC\DOCUMENTS\BENTLEY\GINT\PROJECTS\2001-01 MCCUDDYS 042114.GPJ

DRILLING CONTRACTOR **EES**
 DRILLING METHOD **Hand Auger**
 DRILLING EQUIPMENT **2.75-inch AMS Sampler**
 DRILLING STARTED **6/19/14** ENDED **6/19/14**

REMARKS

 See key sheet for symbols and abbreviations used above.

START CARD **EE05031** WELL ID --
 COORDINATES
 SURFACE ELEVATION -- DATUM --

SAMPLE INFORMATION						STRATA	DESCRIPTION	CONSTRUCTION DETAIL/ COMMENTS	ELEVATION FEET
DEPTH FEET	LAB SAMPLE ID	SAMPLE TYPE	PID (ppmV)	SHEEN	RECOVERY %				
5	EES-15 (3-3.5)	Grab	0.1	NS	100	Medium dense, gray silty GRAVEL (GP); moist.	New schedule 40 0.75-inch diameter PVC riser 0-10 feet.		
						Brown medium SAND (SP); moist.			
						Dense, gray silty very fine SAND (SM); moist.			
10	EES-15 (7.5-8)	Grab	0.2	NS	100	Stiff, brown with orange mottles very fine sandy SILT (ML); moist.	New schedule 40 0.75-inch diameter, 0.02-inch slot, temporary PVC well screen 10-15 feet.		
			0.0	NS					
15	EES-15 (14.5-15)	Grab	0.0	NS					
							Boring complete at 15 feet bgs using 3.5-inch dual-tube macro-core with steel conductor casing. Groundwater slow to enter borehole. Temporary well set and allowed to stabilize overnight (sampled 4/18), as indicated (retracted steel conductor casing to 10 feet bgs prior to well purge). Backfilled borehole with granular bentonite after completion of sample activities.		

EES LOG WITH WELL & SHEEN - LOG A EWMN03.GDT - 8/4/14 11:31 - C:\USERS\PUBLIC\DOCUMENTS\BENTLEY\GINT\PROJECTS\2001-01 MCCUDDYS 042114.GPJ

DRILLING CONTRACTOR **Pacific Soil and Water, Inc.**
 DRILLING METHOD **Direct-Push Macro/Dual**
 DRILLING EQUIPMENT **GeoProbe 9500VTR**
 DRILLING STARTED **4/17/14** ENDED **4/18/14**

REMARKS **No sheen observed on purge water. Collected groundwater sample EES-15(W) from temporary well screen placed from 10-15 feet bgs.**

See key sheet for symbols and abbreviations used above.

START CARD **NA** WELL ID --
 COORDINATES
 SURFACE ELEVATION -- DATUM --

SAMPLE INFORMATION						STRATA	DESCRIPTION	CONSTRUCTION DETAIL/ COMMENTS	ELEVATION FEET
DEPTH FEET	LAB SAMPLE ID	SAMPLE TYPE	PID (ppmV)	SHEEN	RECOVERY %				
	EES-16 (1.5-2)	Grab	0.2	NS	100		Brown GRAVEL (GP) with silty sand; moist. Gravel is rounded and coarse-grained.		
	EES-16 (3-3.5)	Grab	0.4	NS			Brown to black silty SAND (SM), some woody debris; moist.		
							Boring complete at 3.5 feet due to subsurface obstruction. Groundwater not encountered. Backfilled borehole with soil cuttings after completion of sample activities.		

EES LOG WITH WELL & SHEEN - LOG A EWMN03.GDT - 8/4/14 11:31 - C:\USERS\PUBLIC\DOCUMENTS\BENTLEY\GINT\PROJECTS\2001-01 MCCUDDYS 042114.GPJ

DRILLING CONTRACTOR **EES**
 DRILLING METHOD **Hand Auger**
 DRILLING EQUIPMENT **2.75-inch AMS Sampler**
 DRILLING STARTED **6/19/14** ENDED **6/19/14**

REMARKS

 See key sheet for symbols and abbreviations used above.



EES Environmental Consulting Inc.
 240 N. Broadway #203
 Portland, OR 97227
 Telephone: 503.847.2740

BORING NO. **EES-17**
 PROJECT **RJ Frank Site**
 LOCATION **Ridgefield, WA**
 PROJECT NO. **2001-01**
 LOGGED BY **RR**

START CARD **NA** WELL ID --
 COORDINATES
 SURFACE ELEVATION -- DATUM --

SAMPLE INFORMATION						STRATA	DESCRIPTION	CONSTRUCTION DETAIL/ COMMENTS	ELEVATION FEET
DEPTH FEET	LAB SAMPLE ID	SAMPLE TYPE	PID (ppmV)	SHEEN	RECOVERY %				
5	EES-17 (1.5-2)	Grab	0.1	NS	100		Brown GRAVEL (GP) with silty sand; moist. Gravel is rounded and coarse-grained. Black plastic encountered.		
	EES-17 (3-3.5)	Grab	0.0	NS			Brownish gray silty SAND (SM), with orange mottling; moist.		
	EES-17 (5-5.5)	Grab	0.0	NS			Becomes gray with few orange mottles.		
							Boring complete at 5.5 feet. Groundwater not encountered. Backfilled borehole with soil cuttings after completion of sample activities.		

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DRILLING CONTRACTOR **EES**
 DRILLING METHOD **Hand Auger**
 DRILLING EQUIPMENT **2.75-inch AMS Sampler**
 DRILLING STARTED **6/19/14** ENDED **6/19/14**

REMARKS

 See key sheet for symbols and abbreviations used above.



EES Environmental Consulting Inc.
 240 N. Broadway #203
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 Telephone: 503.847.2740

BORING NO. **EES-18**
 PROJECT **RJ Frank Site**
 LOCATION **Ridgefield, WA**
 PROJECT NO. **2001-01**
 LOGGED BY **RR**

START CARD **NA** WELL ID --
 COORDINATES
 SURFACE ELEVATION -- DATUM --

SAMPLE INFORMATION						STRATA	DESCRIPTION	CONSTRUCTION DETAIL/ COMMENTS	ELEVATION FEET
DEPTH FEET	LAB SAMPLE ID	SAMPLE TYPE	PID (ppmV)	SHEEN	RECOVERY %				
	EES-18 (1.5-2)	Grab	0.1	NS	100		Brown GRAVEL (GP) with silty sand; moist. Gravel is rounded and coarse-grained.		
	EES-18 (3-3.5)	Grab	0.0	NS			Brownish gray silty SAND (SM), with orange mottling; moist.		
5	EES-18 (5-5.5)	Grab	0.0	NS			Becomes gray with few orange mottles.		
							Boring complete at 5.5 feet. Groundwater not encountered. Backfilled borehole with soil cuttings after completion of sample activities.		

EES LOG WITH WELL & SHEEN - LOG A EWMN03.GDT - 8/4/14 11:31 - C:\USERS\PUBLIC\DOCUMENTS\BENTLEY\GINT\PROJECTS\2001-01 MCCUDDYS 042114.GPJ

DRILLING CONTRACTOR **EES**
 DRILLING METHOD **Hand Auger**
 DRILLING EQUIPMENT **2.75-inch AMS Sampler**
 DRILLING STARTED **6/19/14** ENDED **6/19/14**

REMARKS

 See key sheet for symbols and abbreviations used above.