



THE RILEY GROUP INC.

December 27, 2005

Mr. Romeo Gonyea
17600 147th Street SE
PMB 22
Monroe, Washington 98272

**RE: Well Installation and Groundwater Sampling Event – Fourth Quarter 2005
Hers Industrial Park
4403 Russell Road
Mukilteo, Washington 98275
Riley Project #2005-087c**

Dear Mr. Gonyea:

This letter report documents The Riley Group Inc.'s (Riley's) field protocols and findings associated with the installation and sampling of eight (8) groundwater monitoring wells located at the Hers Industrial Park located at 4403 Russell Road, Mukilteo, Washington (referred to herein as the Site); Figure 1.

Mr. Romeo Gonyea (property owner) authorized Riley to prepare and implement the scope of work outlined in this report.

SITE LOCATION & DESCRIPTION

The Hers Industrial Park is a 10.7-acre, irregular-shaped lot that contains six (6) one-story light industrial buildings. The addresses for the Site buildings are: 4403, 4433 and 4463 Russell Road and 4440, 4470 and 4480 Chennault Beach Road.

The Site's storm drain system is an infiltration-type system with leachfields and/or dry wells. Catch basin and drain line locations are shown on the attached Figure 2 and 3.

PROJECT BACKGROUND

Phase I ESA & Phase II Investigations, 1994 to 1996

Between 1994 and 1996, ATC Environmental Consultants (ATC, 1994) and James P. Hurley Company (JPHC) conducted a Phase I Environmental Site Assessment (ESA), Phase II subsurface investigations, and/or cleanup on the subject Site.

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ATC Phase I ESA, 1994

ATC's 1994 Phase I ESA report concluded the following environmental issues regarding the Site: (1) an abandoned 550-gallon heating oil underground storage tank (UST) on the south side of the 4493 Warehouse; (2) a "truck-wash/grease trap" located southwest of the 4403 Warehouse; (3) Site stormwater catchbasins conveyed and discharged untreated surface water run-off directly to subsurface soils; (4) the 4403 Warehouse was occupied by Intermec Corporation from 1979 to 1990, an electronics manufacturer and RCRA Large-Quantity Generator (LQG). Wastes generated by Intermec included spent halogenated (chlorinated) solvents; and (5) former tenant Absolute Cleaning Services stored several 5-gallon containers of tetrachloroethylene (PCE) within the 4433 Warehouse and washed their used PCE/kerosene cleaning rags in a large "commercial" laundry located in the 4403 Warehouse. The wash water from this laundry operation discharged to the Site's sanitary sewer.

JPHC Phase II and Cleanup, 1995 to 1996

In 1995 and 1996, JPHC performed several subsurface investigations including the removal of the heating oil UST located south of Warehouse 4493. The investigations included excavating several test pits and advancing over 20 test probes to maximum depths of 12 feet below ground surface (bgs) in the vicinity of Site catchbasins and selected interior floor drains.

Limited petroleum hydrocarbon impacted soils were detected in the vicinity of the heating oil UST, several catch basins, and interior floor drains, which JPHC reportedly *cleaned-up* via remedial excavation.

Between August 1996 and October 1996, filter inserts were installed in the stormwater catchbasins. The filters were designed to remove pollutants commonly associated with untreated surface water run-off (sediment, petroleum hydrocarbons).

Most of JPHC's soil sampling and laboratory analysis focused on identifying and quantifying petroleum hydrocarbons. In addition, JPHC reported that shallow groundwater was not encountered during their subsurface investigations, which reached maximum depths of 12 feet bgs. Based on their findings, no further investigation or cleanup was recommended by JPHC.

Riley Phase I ESA, May 2005

In May 2005, Riley was contracted by Sterling Savings Bank to perform a Phase I ESA for the subject Site. Our findings, conclusions, and recommendations were presented in our *Phase I Environmental Site Assessment Report*, dated June 20, 2005.

Based on our Phase I ESA findings, the former Site tenants known, or suspected, to have either used, stored, or handled chlorinated solvents on-Site included, but not necessarily limited to, Intermec Corporation, King Machine, Our Gang Motorcycle, and Absolute Cleaning Services. Intermec Corporation was a RCRA Large-Quantity Generator.

Previous environmental investigations performed on-Site by other environmental consultants addressed the potential presence, and cleanup, of petroleum hydrocarbon affected soils, but not chlorinated solvents. In addition, previous subsurface investigations performed by others also reported that shallow groundwater was not present beneath the Site. However, based on our Phase I ESA research, Riley anticipated that shallow groundwater (i.e., < 10 feet) was present beneath the Site.

Riley concluded that the former use, storage, handling of chlorinated solvents on-Site posed a threat to Site soil and/or groundwater quality and recommended further Phase II investigation.

Riley Group Supplemental Phase II Subsurface Investigation, June 2005

In June 2005, Riley was contracted by Sterling Savings Bank to perform a Supplemental Phase II Subsurface Investigation (Phase II) to determine whether Site soil and/or shallow groundwater (if any) quality had been adversely affected with chlorinated solvents and other contaminants of concern. Based on surface topography, Riley inferred an approximate groundwater flow direction to the west to southwest.

The June 2005 subsurface investigation consisted of 10 test probes advanced across the Site to a maximum depth of 12 feet bgs. Test probe locations are shown in Figure 2. Our Supplemental Phase II findings, conclusions, and recommendations were presented in our report dated June 22, 2005, and are summarized below.

Groundwater was encountered during our test probing at all 10 probe locations and sampled, at depths ranging from 4 feet to 7 feet bgs. All groundwater grab samples had either non-detectable concentrations of gasoline, diesel and oil total petroleum hydrocarbons (TPH) and BTEX (benzene, toluene, ethylbenzene, and total xylenes), or trace TPH/BTEX concentrations below the applicable cleanup levels. Concentrations of PCE (tetrachloroethylene), TCE (trichloroethene), and other chlorinated solvents were detected in groundwater intercepted by 3 of the 10 test probes. The highest PCE and TCE in groundwater concentrations (300 ug/L and 42,000 ug/L, respectively) were intercepted by test probe SP10. Test probe SP10 was located adjacent to a stormwater catch basin located east of Warehouse 4403.

Riley Group Engineers Cleanup Estimate, June 2005

On June 23, 2005, Riley prepared an engineers estimate for soil and groundwater remediation based on our June 2005 Supplemental Phase II investigation findings. Riley proposed that *in-situ chemical oxidation* (ISCO) was the preferred technology to remediate PCE/TCE affected shallow soils and shallow water-bearing zone.

WELL INSTALLATION & SAMPLING

On September 1, 2005, Mr. Romeo Gonyea contracted Riley to install and sample a total of eight groundwater monitoring wells to better define the nature and extent of PCE/TCE affected shallow groundwater. The scope of work performed for this project was in general accordance with our *Well Installation Proposal*, dated September 1, 2005.

In September and October 2005, Riley installed a total of eight (8) groundwater monitoring wells (designated MW1 through MW8) at the Site (Figures 2 and 3). Wells were installed in accordance with Chapter 173-360 WAC, *Minimum Standards for Construction and Maintenance of Wells*.

Preliminary water level elevation data obtained following the installation of a few wells determined that the groundwater flow direction was actually towards the north (and not west as previously inferred). Based on the known groundwater flow direction, several wells were re-located in the field. Therefore, wells MW3, MW4, and MW5 were installed as *upgradient* wells. Wells MW6 and MW7 were installed adjacent to the stormwater catch basins east of Warehouse 4403 (known from our June 2005 Phase II to have had the highest PCE and TCE in groundwater concentrations). Wells MW1, MW2, and MW8 were completed as *downgradient* wells.

Site Conditions

Subsurface soil consisted of silty SAND with trace gravel (SM) to a depth of 15 feet bgs (the maximum extent of our investigation). Grain size analyses results, performed by our in-house soils laboratory, are included in Appendix A. Grain size analysis were performed on soil samples collected during drilling and installation of monitoring wells MW2, MW3, and MW5 at the 5-foot and 10-foot sampling depth intervals.

Shallow groundwater was encountered during the drilling of all monitoring wells at depths of approximately 4 feet to 7 feet bgs.

Monitoring Well Installation & Surveying

A total of eight (8) 15-foot groundwater-monitoring wells were installed on the subject Site. Wells MW6, MW7, and MW8 were installed in the anticipated chemical treatment area (i.e., hot spot areas) and were constructed of 2-inch SCH 5 304 stainless steel well screen (0.020" slot) and casing. All other wells consisted of 1.5-inch by 2.5-inch pre-packed monitoring wells manufactured by Geoprobe System, Inc. All wells were installed using a hollow stem auger drill attached to an AMS PowerProbe/Ford 550 pickup. All wells were completed at the surface with flush mount traffic rated monuments and locked well plug.

The annular space around the screened interval was filled with silica sand pack. The sand extended two feet above the top of the well screen. Hydrated bentonite chips were placed above the sand pack to a depth of approximately one-foot bgs. Ready mix concrete was placed on top of the bentonite seal. Wells were completed with traffic-grade flush mount monuments. Groundwater monitoring well construction details are shown in logs included in Appendix B.

Using a stadia rod and transit, Riley surveyed the elevation of each well. Measurements were taken from the top of the well casing (TOC). An arbitrary reference datum of 100 feet above mean sea level (asl) was selected.

Per client's instruction, soil cuttings were stockpiled inside warehouse 4403 on, and covered with, plastic sheeting pending characterization and disposal.

Static Water Levels, Groundwater Flow Direction, and Aquifer Properties

On October 6, 2005, Riley measured depth to water in the eight groundwater-monitoring wells. Water level elevations recorded at each well location are summarized in Table 1 and Figure 3, and are summarized below.

Depth to groundwater ranged from 4.16 feet to 6.81 feet below well TOC. Depth to water measurements were recorded using an electronic water level meter. Corresponding groundwater elevations, based on the Site reference datum of 100 feet, ranged from 93.78 feet to 99.71 feet. Based on water level measurements, the groundwater flow direction is to the north with a gradient of approximately 0.025 feet per foot. However, it should be noted that groundwater flow direction and gradient may vary spatially or seasonally.

In October 2005, Riley conducted slug tests in Site monitoring well MW7 in order to estimate soil hydraulic conductivity and transmissivity. Based on slug test results, the shallow water-bearing zone has an hydraulic conductivity of 1.66e-004 cm/sec and a transmissivity of 0.4868. Soil hydrologic conductivity test methods and results are included in Appendix C.

Groundwater Well Development and Sample Collection

Riley developed and sampled the wells on September 13, 2005 (wells MW1 through MW5) and October 6, 2005 (wells MW6 through MW8). Well development and sampling protocols for this project are discussed below.

Prior to purging and sampling wells, the headspace of each well was screened for volatile organic compounds (VOCs) using a portable gas analyzer equipped with a photoionization detector (PID). The highest well headspace VOC concentration was detected in well MW7. Well monitoring activities were performed in order, from least VOC concentration in well headspace result to greatest VOC concentration, to reduce the potential for cross-contamination.

Riley used a clear disposable bailer to examine water in each well for the potential presence of LNAPL (light non-aqueous phase liquids - petroleum products floating on top of the water surface) and DNAPL (dense non-aqueous phase liquids-chlorinated solvents ponded at the bottom of the screened portion of the well). Riley's examinations did not detect a film, sheen, discoloration (due to contaminants), LNAPL or DNAPL, sludge, or emulsion.

Monitoring wells were developed using a Grundfos Real-EZ submersible pump and/or disposable hand bailer. The pump/bailer was raised and lowered through the length of the screened interval to help clear fines from the filter pack and surrounding formation.

Each well was developed until water was relatively free of suspended silts and solids. Approximately 5 to 10 gallons of water (at least three well casing volumes) were removed from each well. Development water was contained in labeled 55-gallon drums and left on-Site pending profiling and off-Site disposal. Groundwater recovery, startup time, and duration of the purging operations were recorded on field data sheets. These field documents are maintained in a permanent project file.

Following purging activities, each well was left to recharge to at least 80% of its original water level prior to sampling. All wells were sampled using an electric peristaltic pump with downwell disposable polyvinyl tubing under low flow conditions.

Groundwater samples were collected in laboratory-supplied 40 ml vials with Teflon caps (no headspace). Sample containers were placed in a cooler at approximately 4 degrees Celsius and transported to the analytical laboratory for analysis under proper chain-of-custody documentation.

Laboratory Analysis & Findings

Analytical results are given in Table 1 and are summarized below. In addition, Table 1 includes for reference the Ecology MTCA Groundwater Cleanup Levels (WAC 173-340-720). A copy of the laboratory report and sample chain of custody is attached to this letter report (Appendix D).

Groundwater samples were submitted to OnSite Environmental, Inc. of Redmond, Washington. Samples were analyzed for the following:

- Halogenated Volatiles (HVOCs) using EPA Test Method 8260B.

Groundwater samples collected from seven of the 8 wells (MW1 to MW6 and MW8) had either non-detectable HVOC concentrations, or HVOC concentrations below the applicable MTCA Method A or B Groundwater Cleanup Level for Unrestricted Land Use.

Groundwater monitoring well MW7, located adjacent to the catch basin located east of Warehouse 4403, had a PCE and TCE concentration of 460 ug/L and 7,000 ug/L, respectively. The MTCA Method A Groundwater Cleanup Level for both PCE and TCE is 5 ug/L. In addition, cis-1,2 Dichloroethene (cis-1,2 DCE) was detected in the well MW7 at 140 ug/L, which is above the MTCA Method B Groundwater Cleanup Level of 80 ug/L.

Seven of the eight wells also had detectable concentrations of cis-1,2 DCE, ranging from 0.25 ug/L to 140 ug/L.

Vinyl chloride was not detected in any of the eight groundwater monitoring wells.

Conclusions

Seven of the 8 monitoring wells intercepted shallow groundwater with either non-detectable HVOC concentrations or HVOC concentrations below the MTCA Groundwater Cleanup Levels. The remaining well (MW7), located adjacent to a stormwater catch basin east of Warehouse 4403 (northernmost catch basin) had elevated PCE and TCE concentrations.

The groundwater sampling analytical results suggest that chlorinated solvent waste (HVOCs) were disposed of in the stormwater catch basin located next to monitoring well MW7. Since the catch basin/drainlines act as an infiltration system for stormwater run-off, the contaminants readily migrated into the subsurface environment.

Groundwater PCE and TCE concentrations detected at well MW7 were 460 ug/L and 7,000 ug/L, respectively. The MTCA Method A Groundwater Cleanup Level for both PCE and TCE is 5 ug/L. There is evidence that a DNAPL source does not exist at the catch basin. As a "rule of thumb" finding dissolved concentrations that exceed 1% of the effective solubility might indicate the presence of DNAPL (Pankow & Cherry, 1996). The solubility of PCE and TCE is 200,000 ug/L and 1,100,000 ug/L, respectively. One percent of the PCE and TCE solubility is 2,000 ug/L and 11,000 ug/L, respectively. Since PCE and TCE concentrations in groundwater of 460 ug/L and 7,000 ug/L were detected at well MW7, the likelihood of DNAPL beneath the Site is low.

The PCE/TCE groundwater contaminant plume appears centered around this catch basin located east of Warehouse 4403. The estimated size of the PCE/TCE shallow water-bearing zone contaminant plume is approximately 140 foot by 180 foot (in plan view), and is smaller than previously thought based on data obtained from our June 2005 preliminary Phase II investigation. The downgradient limit of the PCE/TCE groundwater contaminant plume is defined by downgradient wells MW1, MW2, and MW8.

Seven of the eight wells had detectable concentrations of cis 1,2-DCE ranging from 0.25 ug/L to 0.96 ug/L, below the MTCA Groundwater Cleanup Level. Cis 1,2 DCE is a daughter product from the chemical weathering of PCE and TCE. The origin of cis 1,2-DCE in the other Site wells may be associated with the stormwater infiltration system.

Vinyl chloride, a late daughter product from the chemical weathering of PCE/TCE was not detected in any of the eight groundwater monitoring wells.

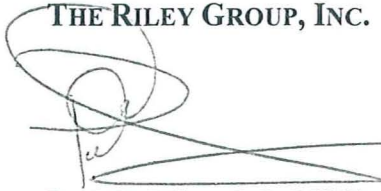
PROJECT LIMITATIONS

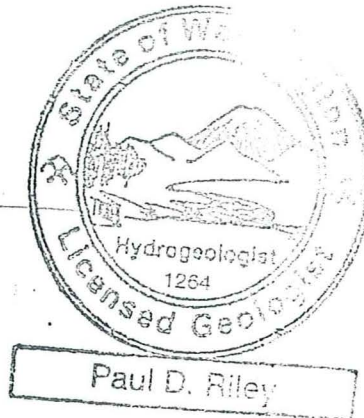
Work for this project was performed, and this report prepared, in accordance with generally accepted professional practices for the nature and conditions of work completed in same or similar locations at the present time. Riley's results and findings from the select area do not necessarily reflect soil or groundwater conditions underlying other areas of the Site not investigated. Riley reserves the right to modify its conclusions and/or recommendations as new data and information is made available. No legal or other warranty, expressed or implied, is made.

Any questions regarding our work or this report, the presentation of information, or interpretation of data are welcome and should be referred to the undersigned.

Sincerely yours,

THE RILEY GROUP, INC.


Paul D. Riley, LG, LHG
Principal

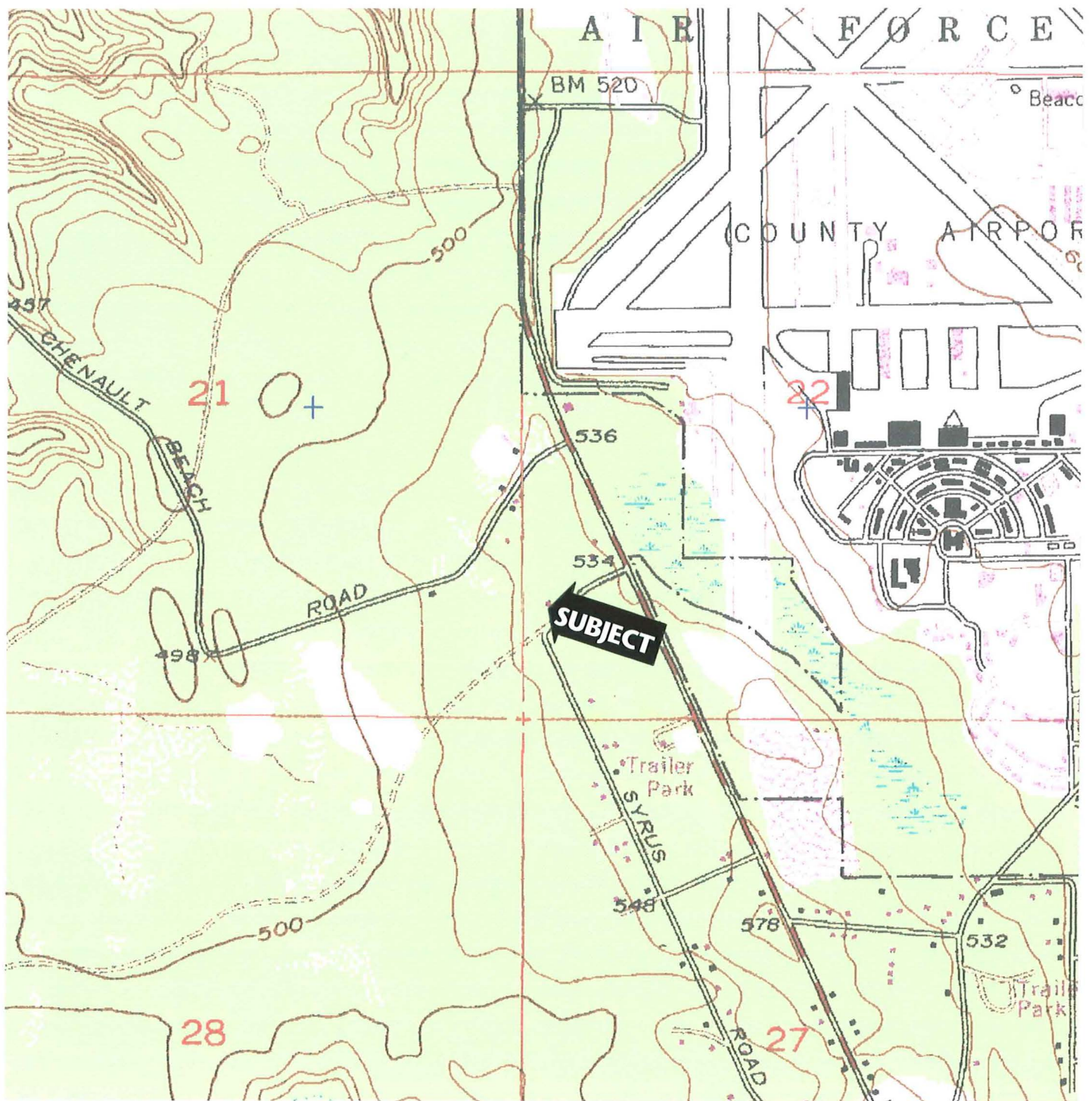


*Attachments: Figures 1 through 3
Table 1
Appendices A to D*

Report Distribution

Romeo Gonyea – Site Owner (two copies)

Robert Varnum @ Sterling Savings Bank (one copy)



USGS, 1991, Mukilteo, Washington,
7.5x15-Minute Quadrangle

Scale = 1:14,400



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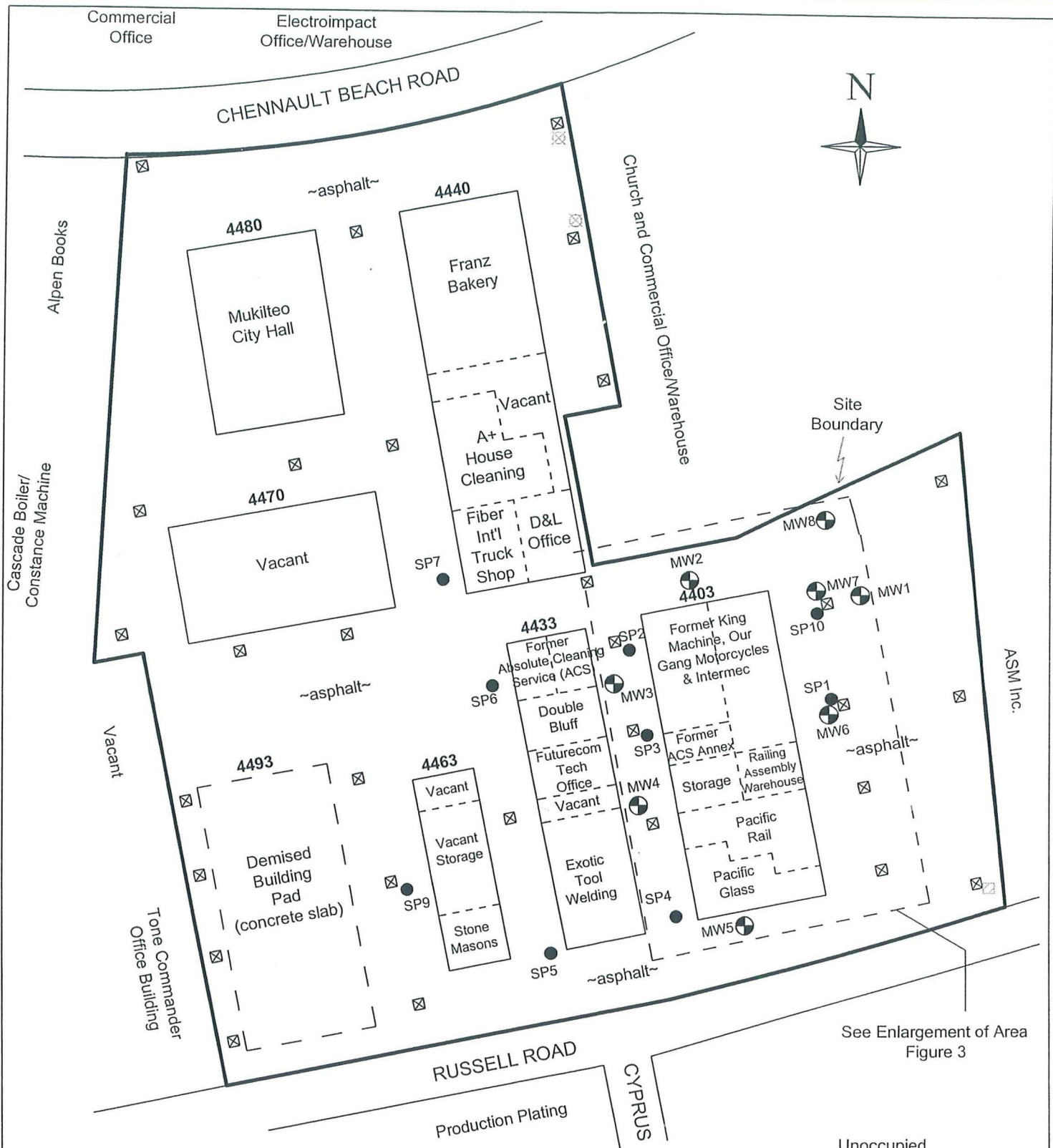
Hers Industrial Park

Project #2005-087c

Site Vicinity Map

Figure 1

Site Address: 4403 Russell Road, Mukilteo, Washington



- ⊕ Groundwater Monitoring Well Location Installed By Riley (September and October 2005).
- AMS PowerProbe location advanced by Riley (June, 2005)
- ⊠ Location of Stormwater Catchbasin

Note: Other Test Probe Or Excavation Locations By Others Not Shown On This Figure.

See Enlargement of Area
Figure 3

Unoccupied
Commercial Office Building

Drawing is not to Scale



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17522 BOTHELL WAY NE, SUITE A
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Hers Industrial Park

Figure 2

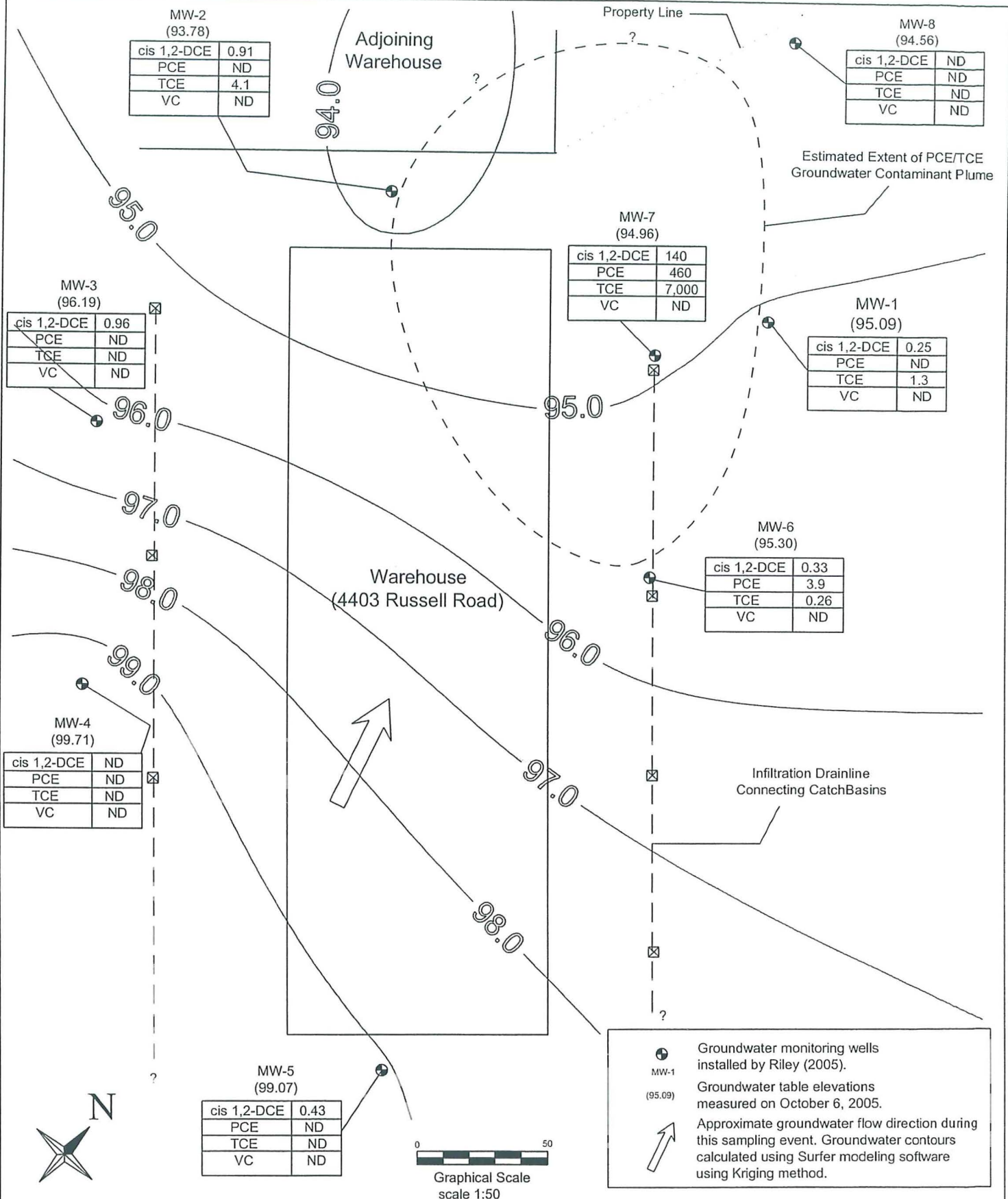
Project # 2005-087c

Site Plan

Date Drawn: 12/12/2005

Drawn By: PDR

Site Address: 4403 Russell Road, Mukilteo, Washington



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Hers Industrial Park

Project # 2005-087c

Site Plan

Date Drawn: 12/12/2005

Site Address: 4403 Russell Road, Mukilteo, Washington

Figure 3

Table 1 - Summary of Groundwater Monitoring Well Sampling & Analytical Results - 4th Quarter 2005.

Hers Industrial Park, 4403 Russell Road, Mukilteo, Washington.

The Riley Group, Inc. Project #2005-087C.

Sample ID	TOC Elevation	Depth to Water (ft)	Water Elevation	HVOCs				
				cis-1,2 DCE	1,1-DCA	1,1,1-TCA	PCE	TCE
MW1-H2O	100	4.91	95.09	0.25	ND < 0.2	ND < 0.2	ND < 0.2	1.3
MW2-H2O	100.59	6.81	93.78	0.91	ND < 0.2	0.36	ND < 0.2	4.1
MW3-H2O	102.56	6.37	96.19	0.96	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2
MW4-H2O	105.33	5.62	99.71	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2
MW5-H2O	103.69	4.62	99.07	0.43	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2
MW6-H2O	99.46	4.16	95.3	0.33	0.36	ND < 0.2	3.9	0.26
MW7-H2O	99.76	4.8	94.96	140	ND < 50	ND < 50	460	7,000
MW8-H2O	99.97	5.41	94.56	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2	ND < 0.2
MTCA Groundwater Cleanup Level				80¹	800¹	200	5	5

Notes:

TOC, top of casing elevation based on arbitrary reference datum of 100 feet above mean sea level. all wells (top of casings) surveyed on September 26, 2005 and October 6, 2005.

Depth to water, measured in feet from TOC to static water table using electronic water level meter.

Groundwater samples for monitoring wells MW-1 through MW-5 were collected by Riley on September 13, 2005.

Groundwater samples for monitoring wells MW-6 through MW-8 were collected by Riley on October 6, 2005.

HVOCs: Halogenated Volatile Organic Compounds determined using EPA Test Method 8260. Only detected compounds are shown in table.

(cis) 1,2 DCE; (cis) 1,2-Dichloroethene.

1,1-DCA ; 1,1-Dichloroethane.

PCE; Tetrachloroethene.

1,1,1-TCA ; 1,1,1-Trichloroethane.

TCE; Trichloroethene.

Unless noted otherwise all results and detection limits given in ppb, parts per billion (ug/L)

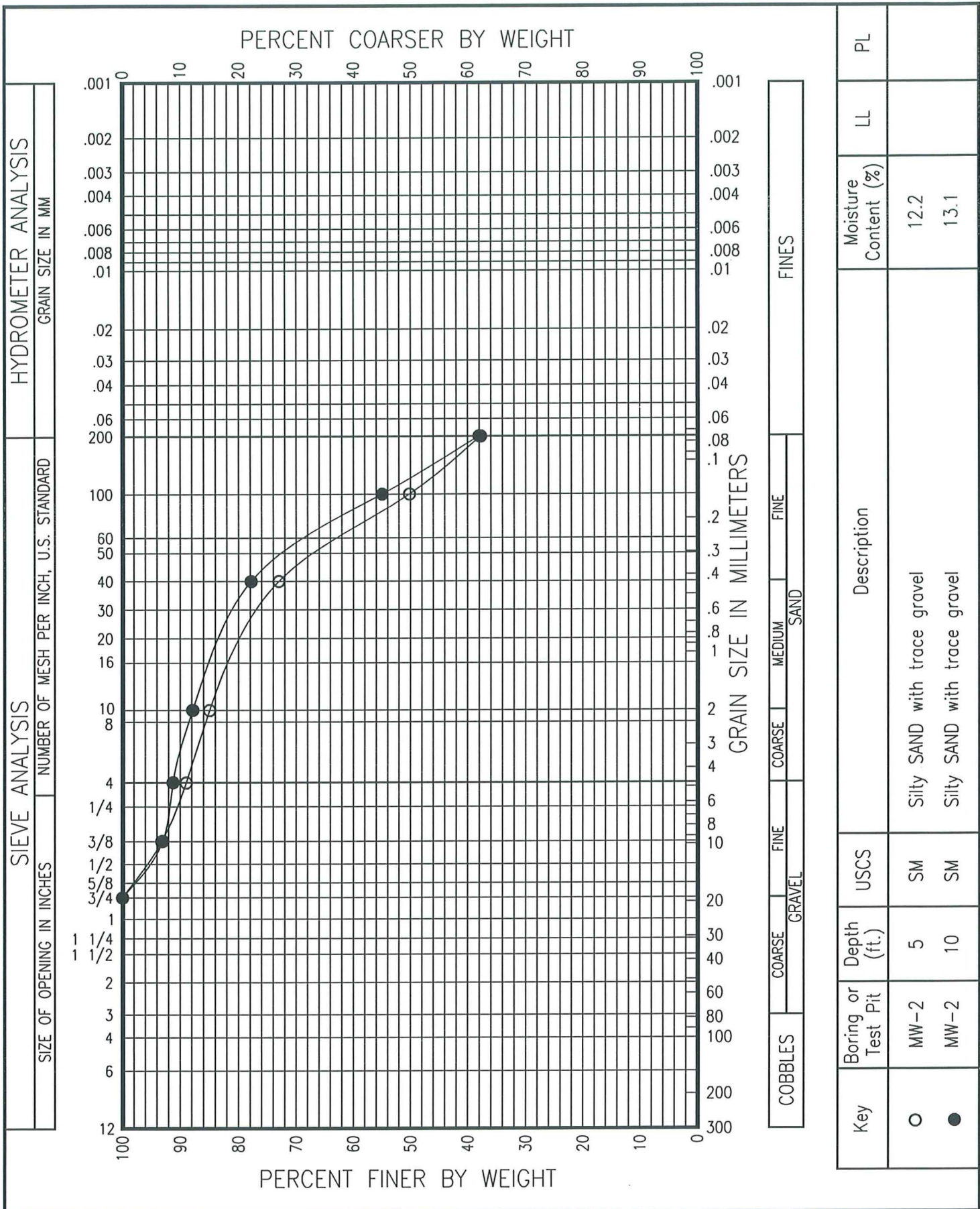
ND, contaminant not detected at noted analytical detection limit.

Bold concentrations, if any, are at or above the applicable MTCA Groundwater Cleanup Level.

MTCA, Washington State Department of Ecology Model Toxic Control Act (WAC 173-340).

Unless otherwise stated, analytical results are compared to MTCA Method A Groundwater Cleanup Levels (WAC 173-340-900, Table 720-1).

¹ Standard MTCA Method B Value for Potable Groundwater obtained from Cleanup Levels and Risk Calculations (CLARC) version 3.1.



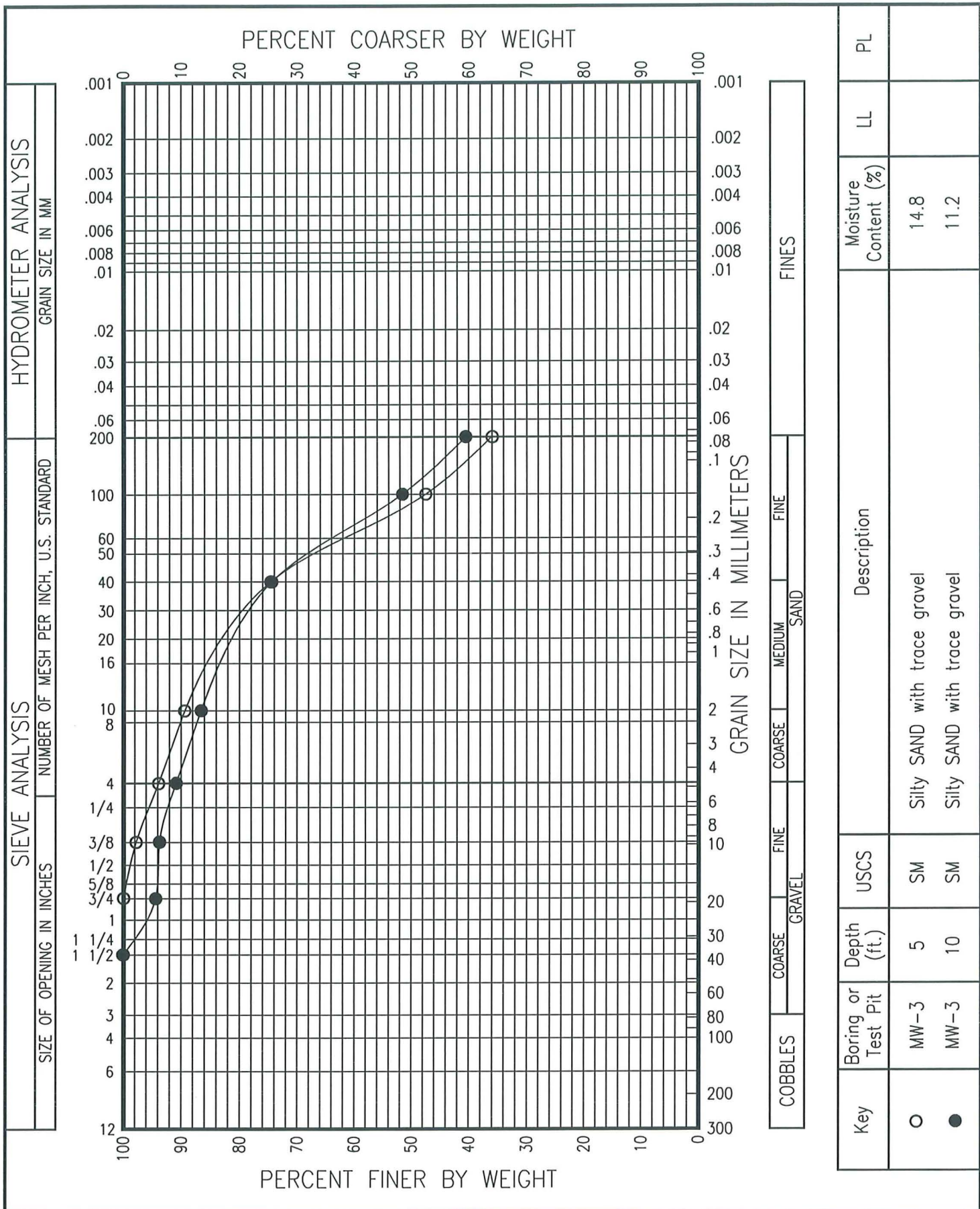
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Hers Industrial Park

Grain Size Analysis

Figure 1

Site Address: 4403 Russell Road, Mukilteo, Washington



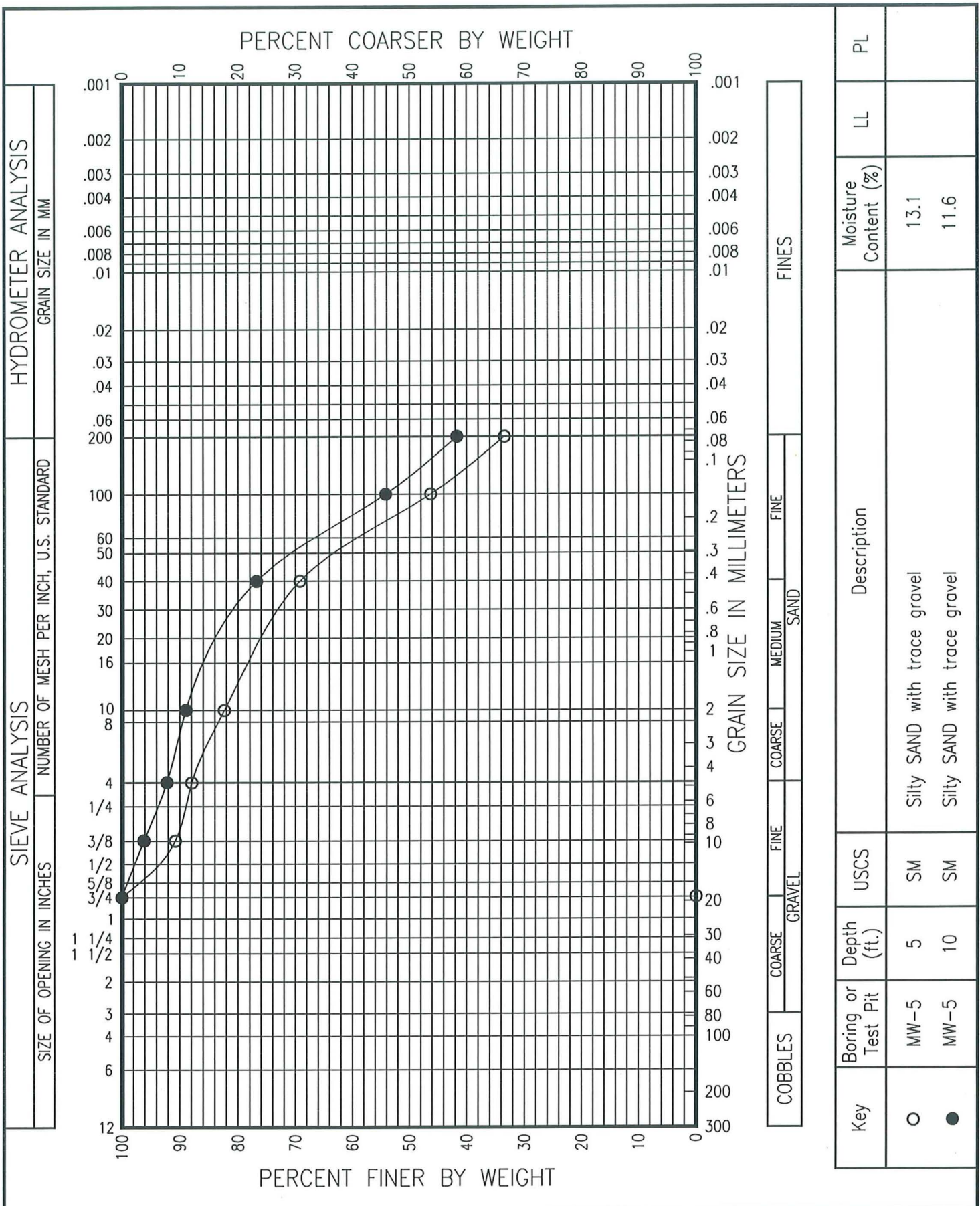
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Hers Industrial Park

Grain Size Analysis

Figure 2

Site Address: 4403 Russell Road, Mukilteo, Washington



Site Address: 4403 Russell Road, Mukilteo, Washington

BORING/WELL NO. MW-2	TOP OF CASING (TOC) ELEVATION: 100
LOCATION : north of 4403 Warehouse	START DATE: 9/11/05 START TIME: 10:30 AM
DRILLING SUBCONTRACTOR: Northwest Probe, Inc.	WEATHER: Partly cloudy

DRILLING METHOD/EQPMT: Truck mounted hollow stem auger	logged by: TN
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Sample #	Graphic Log	Construction of Well Detail	SPT	PID (ppm)	Soil Description & Other Notes
	5 10 15 20 25 30 35	1-inch PVC blank pre-packed well screen (0.020 slot) bottom of casing	n/a	n/a	silty SAND with gravel KEY ◁ groundwater encountered during drilling ◀ groundwater encountered during sampling □ silica sand pack ▒ bentonite plug ▤ 2-inch PVC well screen (20 slot)

 The Riley Group, Inc. 17522 BOTHELL WAY NE BOTHELL, WASHINGTON 98011	<i>Groundwater Monitoring Well Log</i>	
		Lithologic Contact (where shown)
	Site Address: 4403 Russell Road, Mukilteo, Washington	

BORING/WELL NO. MW-3		TOP OF CASING (TOC) ELEVATION: 102.56	
LOCATION : west of 4403 Warehouse		START DATE: 9/11/05 START TIME: 12:30 PM	
DRILLING SUBCONTRACTOR: Northwest Probe, Inc.		WEATHER: Partly cloudy	
DRILLING METHOD/EQPMT: Truck mounted hollow stem auger			logged by: TN

Sample #	Graphic Log	Construction of Well Detail	SPT	PID (ppm)	Soil Description & Other Notes
	5 10 15 20 25 30 35	1-inch PVC blank pre-packed well screen (0.020 slot) bottom of casing	n/a	n/a	silty SAND with gravel KEY ◁ groundwater encountered during drilling ◀ groundwater encountered during sampling □ silica sand pack ▒ bentonite plug ▤ 2-inch PVC well screen (20 slot)

BORING/WELL NO. MW-5			TOP OF CASING (TOC) ELEVATION: 103.69		
LOCATION : south of 4403 Warehouse			START DATE: 9/11/05 START TIME: 4:30 PM		
DRILLING SUBCONTRACTOR: Northwest Probe, Inc.			WEATHER: Partly cloudy		
DRILLING METHOD/EQPMT: Truck mounted hollow stem auger				logged by: TN	
Sample #	Graphic Log	Construction of Well Detail	SPT	PID (ppm)	Soil Description & Other Notes
			n/a	n/a	silty SAND with gravel KEY - groundwater encountered during drilling - groundwater encountered during sampling - silica sand pack - bentonite plug 2-inch PVC well screen (20 slot)

Site Address: 4403 Russell Road, Mukilteo, Washington

BORING/WELL NO. MW-6	TOP OF CASING (TOC) ELEVATION: 99.46
LOCATION : east of 4403 Warehouse	START DATE: 10/4/05 START TIME: 8:30 AM
DRILLING SUBCONTRACTOR: Northwest Probe, Inc.	WEATHER: Partly cloudy

DRILLING METHOD/EQPMT: Truck mounted hollow stem auger	logged by: TN
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Sample #	Graphic Log	Construction of Well Detail	SPT	PID (ppm)	Soil Description & Other Notes
	5 10 15 20 25 30 35	SCH 5 304 SS blank SCH 5 304 SS well screen (0.020 slot) 2-inch SCH 5 304 SS well screen (20 slot) bottom of casing	n/a	n/a	silty SAND with gravel KEY ◁ groundwater encountered during drilling ◀ groundwater encountered during sampling □ silica sand pack ▤ bentonite plug ▨ 2-inch PVC well screen (20 slot)



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Groundwater Monitoring Well Log

Lithologic Contact (where shown)

Site Address: 4403 Russell Road, Mukilteo, Washington

BORING/WELL NO. MW-7	TOP OF CASING (TOC) ELEVATION: 99.76
LOCATION : east of 4403 Warehouse	START DATE: 10/4/05 START TIME: 11:30 AM
DRILLING SUBCONTRACTOR: Northwest Probe, Inc.	WEATHER: Partly cloudy

DRILLING METHOD/EQPMT: Truck mounted hollow stem auger	logged by: TN
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Sample #	Graphic Log	Construction of Well Detail	SPT	PID (ppm)	Soil Description & Other Notes
	5 10 15 20 25 30 35	SCH 5 304 SS blank 2-inch SCH 5 304 SS well screen (0.020 slot) bottom of casing	n/a	n/a	silty SAND with gravel KEY ◁ groundwater encountered during drilling ◼ groundwater encountered during sampling ◻ silica sand pack ▨ bentonite plug ▤ 2-inch PVC well screen (20 slot)



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BOTHELL, WASHINGTON 98011

Groundwater Monitoring Well Log

Lithologic Contact (where shown)

Site Address: 4403 Russell Road, Mukilteo, Washington

BORING/WELL NO. MW-8	TOP OF CASING (TOC) ELEVATION: 99.97
LOCATION : northeast of 4403 Warehouse	START DATE: 10/4/05 START TIME: 2:30 PM
DRILLING SUBCONTRACTOR: Northwest Probe, Inc.	WEATHER: Partly cloudy

DRILLING METHOD/EQPMT: Truck mounted hollow stem auger	logged by: TN
--	---------------

Sample #	Graphic Log	Construction of Well Detail	SPT	PID (ppm)	Soil Description & Other Notes
	5 10 15 20 25 30 35	SCH 5 304 SS blank 2-inch SCH 5 304 SS well screen (0.020 slot) bottom of casing	n/a	n/a	silty SAND with gravel KEY ◁ groundwater encountered during drilling ◀ groundwater encountered during sampling □ silica sand pack ▒ bentonite plug ▤ 2-inch PVC well screen (20 slot)

 The Riley Group, Inc. 17522 BOTHELL WAY NE BOTHELL, WASHINGTON 98011	<i>Groundwater Monitoring Well Log</i>	
		Lithologic Contact (where shown)
	Site Address: 4403 Russell Road, Mukilteo, Washington	

Attachment C

Soil Hydraulic Conductivity Testing Results

Slug Testing Test Methods

The Riley Group, Inc. (Riley) conducted rising head slug tests on one Site monitoring well (MW7)) to obtain information on the hydraulic parameters of the shallow unconfined water-bearing zone underlying the Site. The slug tests were conducted on October 12, 2005. The locations of the monitoring wells are provided in Figure 1.

All slug tests were performed with slug bar. For this, a 3-foot-long by 1-inch diameter rod was lowered below the water level in the well. After allowing the initial displacement to reach equilibrium, the bar was quickly removed from the well, and the water level recovery was monitored with the transducer-datalogger system.

Aquifer Response and Slug Test Analyses

Results of the rising head pneumatic slug test are shown on attached semi-log time-displacement plots. Several tests were performed at each well. Most tests were complete with a period of 30 to 40 minutes. The curves generally showed similar aquifer responses at differing initial displacements. Rising head slug test results were analyzed using the Bouwer and Rice (1976) method.

The time-displacement plots generally conformed to the straightforward aquifer response envisioned for the original Bouwer and Rice (1976) method with the exception that greater displacement was observed in the early part of the tests than expected based on the position of the line fitted to the straight line (later) portion of the tests used for parameter estimation. The excess displacement at the start of these tests may be a result of well bore storage or well efficiency effects. The parameters, coefficients, and the results of the analysis are tabulated in Table A-1.

Results and Conclusions

The slug tests measured the hydraulic conductivity (K) within an estimated radius of approximately 10 feet of the wells. The range estimated K values between 1.48×10^{-4} and 1.68×10^{-4} centimeter/second (cm/s). No horizontal trend in K was apparent across the area.

References

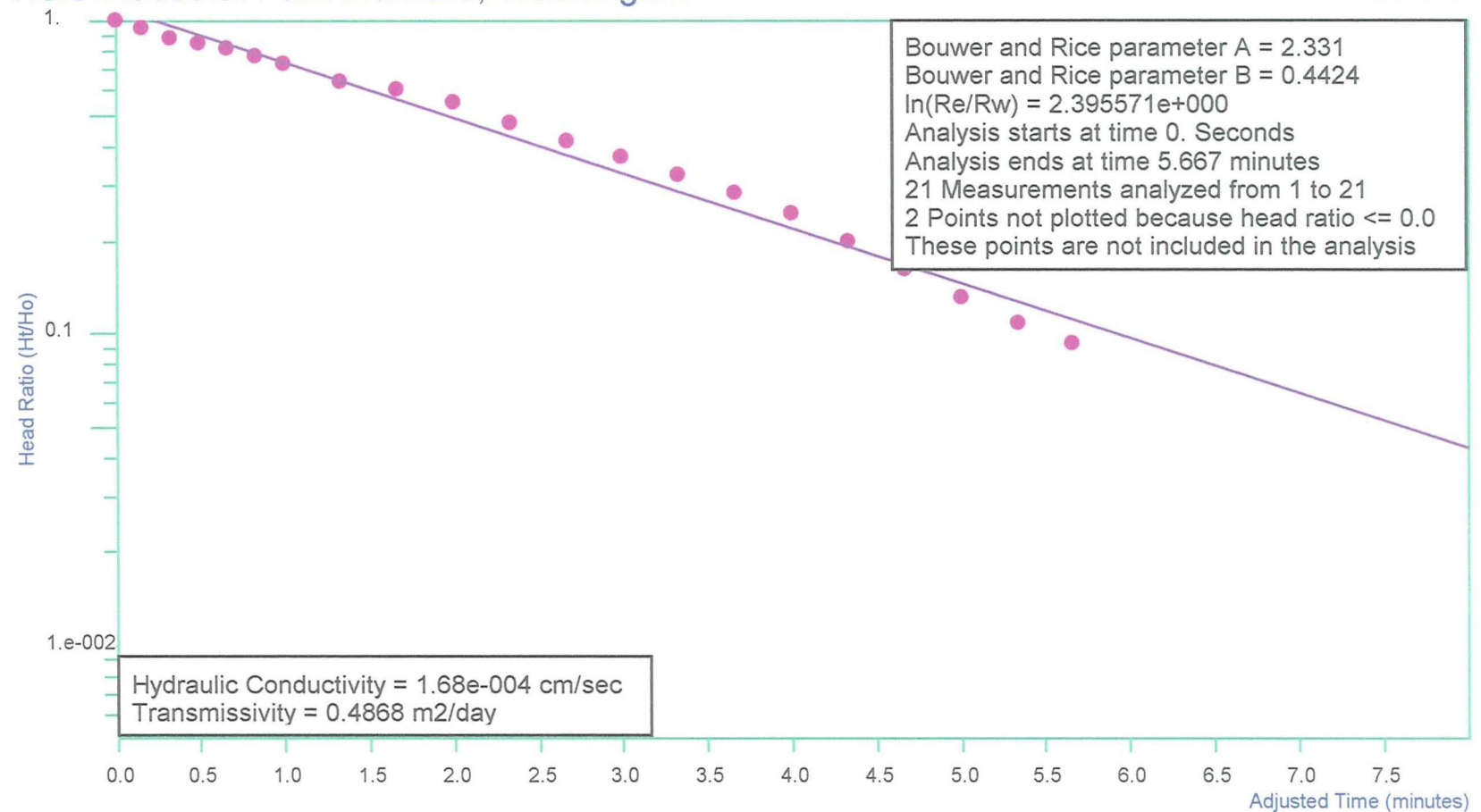
Bouwer, H. and R.C. Rice, 1976, A Slug Test for Determining Hydraulic Conductivity Of Unconfined Aquifers With Completely Or Partially Penetrating Wells, Water Resources Research, Vol.12, pg. 423-428.

Slug Test #1

Hers Industrial Park Mukilteo, Washington

Bouwer and Rice Graph

MW-7



Project Number: 2005-087c for Romeo Gonyea
Analysis by Starpoint Software

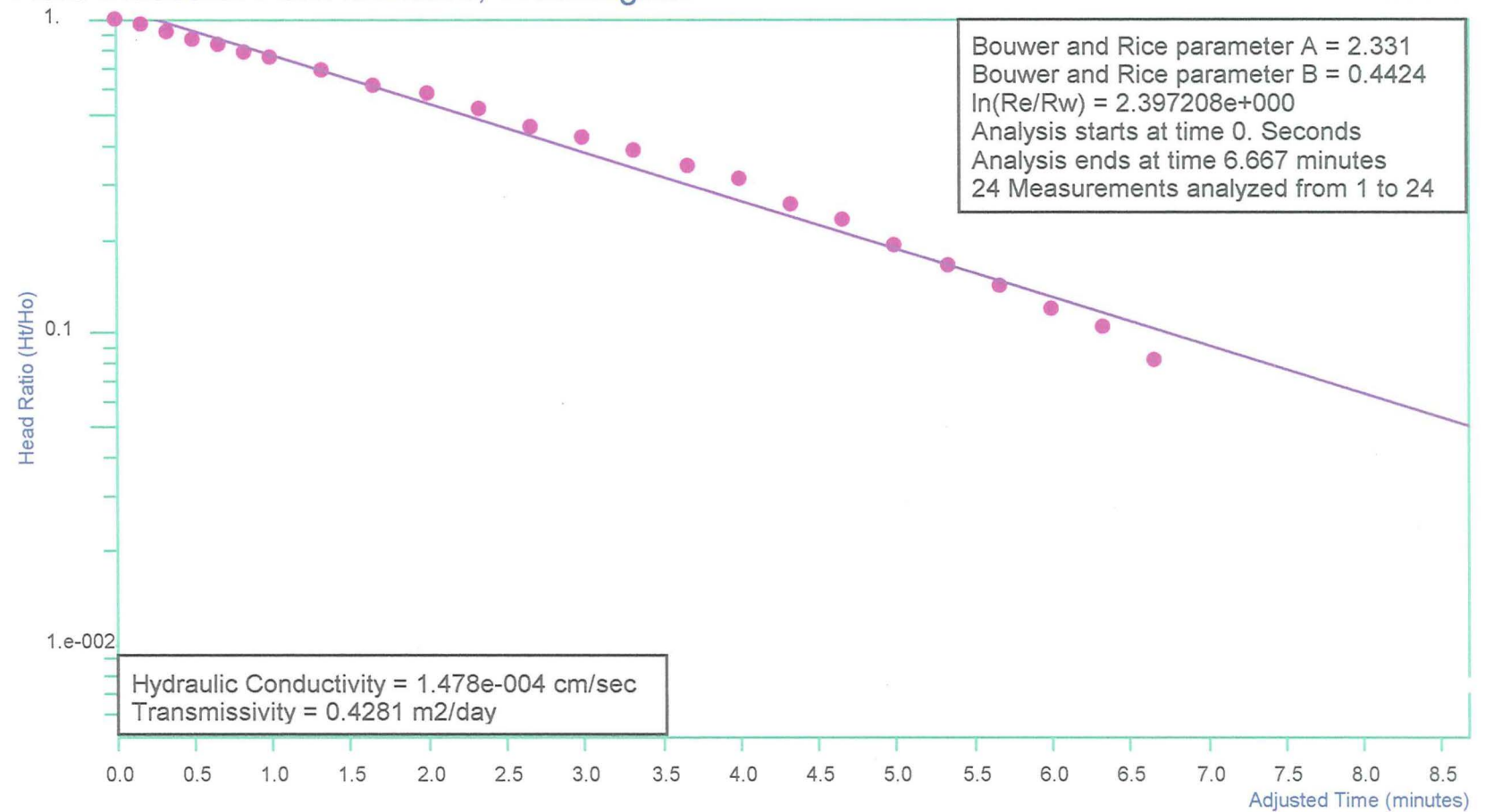
H_o is 1.3 feet at 0. Seconds

Slug Test #2

Hers Industrial Park Mukilteo, Washington

Bouwer and Rice Graph

MW-7



Project Number: 2005-087c for Romeo Gonyea
Analysis by Starpoint Software

H_o is 1.35 feet at 0. Seconds



RECEIVED

SEP 26 2005

September 16, 2005

Paul Riley
The Riley Group, Inc.
17522 Bothell Way NE, Suite A
Bothell, WA 98011

Re: Analytical Data for Project 2005-087c
Laboratory Reference No. 0509-097

Dear Paul:

Enclosed are the analytical results and associated quality control data for samples submitted on September 13, 2005.

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,



David Baumeister
Project Manager

Enclosures

Date of Report: September 16, 2005
Samples Submitted: September 13, 2005
Laboratory Reference: 0509-097
Project: 2005-087c

Case Narrative

Samples were collected on September 13, 2005 and received by the laboratory on September 13, 2005. They were maintained at the laboratory at a temperature of 2°C to 6°C except as 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: September 16, 2005
 Samples Submitted: September 13, 2005
 Laboratory Reference: 0509-097
 Project: 2005-087c

HALOGENATED VOLATILES by EPA 8260B

Page 1 of 2

Date Extracted: 9-16-05

Date Analyzed: 9-16-05

Matrix: Water

Units: ug/L (ppb)

Lab ID: 09-097-01

Client ID: MW1-H2O

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		0.20
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		0.20
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Iodomethane	ND		1.0
Methylene Chloride	ND		1.0
(trans) 1,2-Dichloroethene	ND		0.20
1,1-Dichloroethane	ND		0.20
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	0.25		0.20
Bromochloromethane	ND		0.20
Chloroform	ND		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	1.3		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
(trans) 1,3-Dichloropropene	ND		0.20

Date of Report: September 16, 2005
 Samples Submitted: September 13, 2005
 Laboratory Reference: 0509-097
 Project: 2005-087c

HALOGENATED VOLATILES by EPA 8260B

Page 2 of 2

Lab ID: 09-097-01
 Client ID: MW1-H2O

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	ND		0.20
1,3-Dichloropropane	ND		0.20
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Bromoform	ND		1.0
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	97	70-123
Toluene, d8	100	70-119
4-Bromofluorobenzene	87	70-119

Date of Report: September 16, 2005
 Samples Submitted: September 13, 2005
 Laboratory Reference: 0509-097
 Project: 2005-087c

HALOGENATED VOLATILES by EPA 8260B

Page 1 of 2

Date Extracted: 9-16-05

Date Analyzed: 9-16-05

Matrix: Water

Units: ug/L (ppb)

Lab ID: 09-097-02

Client ID: MW2-H2O

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		0.20
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		0.20
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Iodomethane	ND		1.0
Methylene Chloride	ND		1.0
(trans) 1,2-Dichloroethene	ND		0.20
1,1-Dichloroethane	ND		0.20
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	0.91		0.20
Bromochloromethane	ND		0.20
Chloroform	ND		0.20
1,1,1-Trichloroethane	0.36		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	4.1		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
(trans) 1,3-Dichloropropene	ND		0.20

Date of Report: September 16, 2005
 Samples Submitted: September 13, 2005
 Laboratory Reference: 0509-097
 Project: 2005-087c

HALOGENATED VOLATILES by EPA 8260B

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Lab ID: 09-097-02
 Client ID: MW2-H2O

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	ND		0.20
1,3-Dichloropropane	ND		0.20
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Bromoform	ND		1.0
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	99	70-123
Toluene, d8	102	70-119
4-Bromofluorobenzene	89	70-119

Date of Report: September 16, 2005
 Samples Submitted: September 13, 2005
 Laboratory Reference: 0509-097
 Project: 2005-087c

HALOGENATED VOLATILES by EPA 8260B

Page 1 of 2

Date Extracted: 9-16-05

Date Analyzed: 9-16-05

Matrix: Water

Units: ug/L (ppb)

Lab ID: 09-097-03

Client ID: MW3-H2O

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		0.20
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		0.20
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Iodomethane	ND		1.0
Methylene Chloride	ND		1.0
(trans) 1,2-Dichloroethene	ND		0.20
1,1-Dichloroethane	ND		0.20
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	0.96		0.20
Bromochloromethane	ND		0.20
Chloroform	ND		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	ND		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
(trans) 1,3-Dichloropropene	ND		0.20

Date of Report: September 16, 2005
 Samples Submitted: September 13, 2005
 Laboratory Reference: 0509-097
 Project: 2005-087c

HALOGENATED VOLATILES by EPA 8260B

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Lab ID: 09-097-03
 Client ID: MW3-H2O

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	ND		0.20
1,3-Dichloropropane	ND		0.20
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Bromoform	ND		1.0
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	98	70-123
Toluene, d8	101	70-119
4-Bromofluorobenzene	88	70-119

Date of Report: September 16, 2005
 Samples Submitted: September 13, 2005
 Laboratory Reference: 0509-097
 Project: 2005-087c

HALOGENATED VOLATILES by EPA 8260B

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Date Extracted: 9-16-05

Date Analyzed: 9-16-05

Matrix: Water

Units: ug/L (ppb)

Lab ID: 09-097-04

Client ID: MW4-H2O

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		0.20
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		0.20
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Iodomethane	ND		1.0
Methylene Chloride	ND		1.0
(trans) 1,2-Dichloroethene	ND		0.20
1,1-Dichloroethane	ND		0.20
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	ND		0.20
Bromochloromethane	ND		0.20
Chloroform	ND		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	ND		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
(trans) 1,3-Dichloropropene	ND		0.20

Date of Report: September 16, 2005
 Samples Submitted: September 13, 2005
 Laboratory Reference: 0509-097
 Project: 2005-087c

HALOGENATED VOLATILES by EPA 8260B

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Lab ID: 09-097-04
 Client ID: MW4-H2O

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	ND		0.20
1,3-Dichloropropane	ND		0.20
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Bromoform	ND		1.0
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	95	70-123
Toluene, d8	99	70-119
4-Bromofluorobenzene	87	70-119

Date of Report: September 16, 2005
 Samples Submitted: September 13, 2005
 Laboratory Reference: 0509-097
 Project: 2005-087c

HALOGENATED VOLATILES by EPA 8260B

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Date Extracted: 9-16-05

Date Analyzed: 9-16-05

Matrix: Water

Units: ug/L (ppb)

Lab ID: 09-097-05

Client ID: MW5-H2O

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		0.20
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		0.20
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Iodomethane	ND		1.0
Methylene Chloride	ND		1.0
(trans) 1,2-Dichloroethene	ND		0.20
1,1-Dichloroethane	ND		0.20
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	0.43		0.20
Bromochloromethane	ND		0.20
Chloroform	ND		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	ND		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
(trans) 1,3-Dichloropropene	ND		0.20

Date of Report: September 16, 2005
 Samples Submitted: September 13, 2005
 Laboratory Reference: 0509-097
 Project: 2005-087c

HALOGENATED VOLATILES by EPA 8260B

Page 2 of 2

Lab ID: 09-097-05
 Client ID: MW5-H2O

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	ND		0.20
1,3-Dichloropropane	ND		0.20
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Bromoform	ND		1.0
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	95	70-123
Toluene, d8	100	70-119
4-Bromofluorobenzene	88	70-119

Date of Report: September 16, 2005
 Samples Submitted: September 13, 2005
 Laboratory Reference: 0509-097
 Project: 2005-087c

**HALOGENATED VOLATILES by EPA 8260B
 METHOD BLANK QUALITY CONTROL**

Page 1 of 2

Date Extracted: 9-16-05
 Date Analyzed: 9-16-05

 Matrix: Water
 Units: ug/L (ppb)

 Lab ID: MB0916W1

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		0.20
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		0.20
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Iodomethane	ND		1.0
Methylene Chloride	ND		1.0
(trans) 1,2-Dichloroethene	ND		0.20
1,1-Dichloroethane	ND		0.20
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	ND		0.20
Bromochloromethane	ND		0.20
Chloroform	ND		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	ND		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
(trans) 1,3-Dichloropropene	ND		0.20

Date of Report: September 16, 2005
 Samples Submitted: September 13, 2005
 Laboratory Reference: 0509-097
 Project: 2005-087c

**HALOGENATED VOLATILES by EPA 8260B
 METHOD BLANK QUALITY CONTROL**

Page 2 of 2

Lab ID: MB0916W1

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	ND		0.20
1,3-Dichloropropane	ND		0.20
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Bromoform	ND		1.0
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	99	70-123
Toluene, d8	102	70-119
4-Bromofluorobenzene	83	70-119

Date of Report: September 16, 2005
 Samples Submitted: September 13, 2005
 Laboratory Reference: 0509-097
 Project: 2005-087c

**HALOGENATED VOLATILES by EPA 8260B
 SB/SBD QUALITY CONTROL**

Date Extracted: 9-16-05

Date Analyzed: 9-16-05

Matrix: Water

Units: ug/L (ppb)

Lab ID: SB0916W1

Compound	Spike Amount	SB	Percent Recovery	SBD	Percent Recovery	Recovery Limits	Flags
1,1-Dichloroethene	10.0	9.61	96	10.9	109	70-130	
Benzene	10.0	10.8	108	11.8	118	70-130	
Trichloroethene	10.0	9.21	92	9.76	98	70-130	
Toluene	10.0	10.4	104	11.2	112	70-130	
Chlorobenzene	10.0	10.1	101	10.9	109	70-130	

	RPD	RPD Limit	Flags
1,1-Dichloroethene	12	17	
Benzene	9	13	
Trichloroethene	6	12	
Toluene	7	14	
Chlorobenzene	7	9	



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.
- G - Insufficient sample quantity for duplicate analysis.
- 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 (toluene-napthalene) are present in the sample.
- O - Hydrocarbons indicative of diesel fuel 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.
- 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 silica gel cleanup procedure.
- Y - Sample extract treated with an acid/silica gel cleanup procedure.
- Z -
- ND - Not Detected at PQL
- PQL - Practical Quantitation Limit
- RPD - Relative Percent Difference

Chain of Custody

Company: THE HILEY GROUP
Project Number: 2005-087C
Project Name:
Project Manager: PAUL HILEY
Sampled by: TOM MURPHY

Turnaround Request (in working days)

(Check One)

☐ Same Day ☐ 1 Day
☐ 2 Day ☐ 3 Day
☒ Standard (7 working days)
☐ _____ (other)

Laboratory Number: 09-097

Phone: (425) 883-3881 • Fax: (425) 885-4603																										
Company: THE HILEY GROUP			(Check One) ☐ Same Day ☐ 1 Day ☐ 2 Day ☐ 3 Day ☒ Standard (7 working days) ☐ _____ (other)																							
Project Number: 2005-087c																										
Project Name:																										
Project Manager: PAUL HILEY																										
Sampled by: Tom Nance																										
Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	VPH	EPH						% Moisture
1	MW1-H ₂ O	9/13/05		H ₂ O	2					X																
2	MW2-H ₂ O	↓		↓	2					X																
3	MW3-H ₂ O	↓		↓	2					X																
4	MW4-H ₂ O	↓		↓	2					X																
5	MW5-H ₂ O	↓		↓	2					X																

Signature	Company	Date	Time	Comments/Special Instructions:
	Hiley Group	9/13/05	13:15	
	FF	9/13/05	2:00	
	OnSite Env. Inc.	9/13/05	14:00	
Reviewed by/Date	Reviewed by/Date	Chromatograms with final report ☐		



RECEIVED

OCT 14 2005

October 12, 2006

Paul Riley
The Riley Group, Inc.
17522 Bothell Way NE, Suite A
Bothell, WA 98011

Re: Analytical Data for Project 2005-087c
Laboratory Reference No. 0510-052

Dear Paul:

Enclosed are the analytical results and associated quality control data for samples submitted on October 7, 2005.

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,



David Baumeister
Project Manager

Enclosures

Date of Report: October 12, 2006
Samples Submitted: October 7, 2005
Laboratory Reference: 0510-052
Project: 2005-087c

Case Narrative

Samples were collected on October 6, 2005 and received by the laboratory on October 7, 2005. They were maintained at the laboratory at a temperature of 2°C to 6°C except as 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: October 12, 2006
 Samples Submitted: October 7, 2005
 Laboratory Reference: 0510-052
 Project: 2005-087c

HALOGENATED VOLATILES by EPA 8260B

Page 1 of 2

Date Extracted: 10-10-05
 Date Analyzed: 10-10-05

Matrix: Water
 Units: ug/L (ppb)

Lab ID: 10-052-01
 Client ID: MW6-H2O

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		0.20
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		0.20
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Iodomethane	ND		1.0
Methylene Chloride	ND		1.0
(trans) 1,2-Dichloroethene	ND		0.20
1,1-Dichloroethane	0.36		0.20
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	0.33		0.20
Bromochloromethane	ND		0.20
Chloroform	ND		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	0.26		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
(trans) 1,3-Dichloropropene	ND		0.20

Date of Report: October 12, 2006
 Samples Submitted: October 7, 2005
 Laboratory Reference: 0510-052
 Project: 2005-087c

HALOGENATED VOLATILES by EPA 8260B

Page 2 of 2

Lab ID: 10-052-01
 Client ID: MW6-H2O

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	3.9		0.20
1,3-Dichloropropane	ND		0.20
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Bromoform	ND		1.0
Bromobenzene	ND		0.20
1,1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	92	70-123
Toluene, d8	93	70-119
4-Bromofluorobenzene	88	70-119

Date of Report: October 12, 2006
 Samples Submitted: October 7, 2005
 Laboratory Reference: 0510-052
 Project: 2005-087c

HALOGENATED VOLATILES by EPA 8260B

Page 1 of 2

Date Extracted: 10-10-05
 Date Analyzed: 10-10-05

Matrix: Water
 Units: ug/L (ppb)

Lab ID: 10-052-02
 Client ID: MW7-H2O

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		50
Chloromethane	ND		50
Vinyl Chloride	ND		50
Bromomethane	ND		50
Chloroethane	ND		50
Trichlorofluoromethane	ND		50
1,1-Dichloroethene	ND		50
Iodomethane	ND		250
Methylene Chloride	ND		250
(trans) 1,2-Dichloroethene	ND		50
1,1-Dichloroethane	ND		50
2,2-Dichloropropane	ND		50
(cis) 1,2-Dichloroethene	140		50
Bromochloromethane	ND		50
Chloroform	ND		50
1,1,1-Trichloroethane	ND		50
Carbon Tetrachloride	ND		50
1,1-Dichloropropene	ND		50
1,2-Dichloroethane	ND		50
Trichloroethene	7000		50
1,2-Dichloropropane	ND		50
Dibromomethane	ND		50
Bromodichloromethane	ND		50
2-Chloroethyl Vinyl Ether	ND		250
(cis) 1,3-Dichloropropene	ND		50
(trans) 1,3-Dichloropropene	ND		50

Date of Report: October 12, 2006
 Samples Submitted: October 7, 2005
 Laboratory Reference: 0510-052
 Project: 2005-087c

HALOGENATED VOLATILES by EPA 8260B

Page 2 of 2

Lab ID: 10-052-02
 Client ID: MW7-H2O

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		50
Tetrachloroethene	460		50
1,3-Dichloropropane	ND		50
Dibromochloromethane	ND		50
1,2-Dibromoethane	ND		50
Chlorobenzene	ND		50
1,1,1,2-Tetrachloroethane	ND		50
Bromoform	ND		250
Bromobenzene	ND		50
1,1,2,2-Tetrachloroethane	ND		50
1,2,3-Trichloropropane	ND		50
2-Chlorotoluene	ND		50
4-Chlorotoluene	ND		50
1,3-Dichlorobenzene	ND		50
1,4-Dichlorobenzene	ND		50
1,2-Dichlorobenzene	ND		50
1,2-Dibromo-3-chloropropane	ND		250
1,2,4-Trichlorobenzene	ND		50
Hexachlorobutadiene	ND		50
1,2,3-Trichlorobenzene	ND		50

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	85	70-123
Toluene, d8	91	70-119
4-Bromofluorobenzene	89	70-119

Date of Report: October 12, 2006
 Samples Submitted: October 7, 2005
 Laboratory Reference: 0510-052
 Project: 2005-087c

HALOGENATED VOLATILES by EPA 8260B

Page 1 of 2

Date Extracted: 10-10-05
 Date Analyzed: 10-10-05

Matrix: Water
 Units: ug/L (ppb)

Lab ID: 10-052-03
 Client ID: MW8-H2O

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		0.20
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		0.20
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Iodomethane	ND		1.0
Methylene Chloride	ND		1.0
(trans) 1,2-Dichloroethene	ND		0.20
1,1-Dichloroethane	ND		0.20
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	ND		0.20
Bromochloromethane	ND		0.20
Chloroform	ND		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	ND		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
(trans) 1,3-Dichloropropene	ND		0.20

Date of Report: October 12, 2006
 Samples Submitted: October 7, 2005
 Laboratory Reference: 0510-052
 Project: 2005-087c

HALOGENATED VOLATILES by EPA 8260B

Page 2 of 2

Lab ID: 10-052-03
 Client ID: MW8-H2O

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	ND		0.20
1,3-Dichloropropane	ND		0.20
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Bromoform	ND		1.0
Bromobenzene	ND		0.20
1,1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	94	70-123
Toluene, d8	94	70-119
4-Bromofluorobenzene	97	70-119

Date of Report: October 12, 2006
 Samples Submitted: October 7, 2005
 Laboratory Reference: 0510-052
 Project: 2005-087c

**HALOGENATED VOLATILES by EPA 8260B
 METHOD BLANK QUALITY CONTROL**

Page 1 of 2

Date Extracted: 10-10-05
 Date Analyzed: 10-10-05

 Matrix: Water
 Units: ug/L (ppb)

 Lab ID: MB1010W1

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		0.20
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		0.20
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Iodomethane	ND		1.0
Methylene Chloride	ND		1.0
(trans) 1,2-Dichloroethene	ND		0.20
1,1-Dichloroethane	ND		0.20
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	ND		0.20
Bromochloromethane	ND		0.20
Chloroform	ND		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	ND		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
(trans) 1,3-Dichloropropene	ND		0.20

Date of Report: October 12, 2006
 Samples Submitted: October 7, 2005
 Laboratory Reference: 0510-052
 Project: 2005-087c

**HALOGENATED VOLATILES by EPA 8260B
 METHOD BLANK QUALITY CONTROL**

Page 2 of 2

Lab ID: MB1010W1

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	ND		0.20
1,3-Dichloropropane	ND		0.20
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Bromoform	ND		1.0
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	91	70-123
Toluene, d8	93	70-119
4-Bromofluorobenzene	87	70-119

Date of Report: October 12, 2006
 Samples Submitted: October 7, 2005
 Laboratory Reference: 0510-052
 Project: 2005-087c

**HALOGENATED VOLATILES by EPA 8260B
 SB/SBD QUALITY CONTROL**

Date Extracted: 10-10-05
 Date Analyzed: 10-10-05

Matrix: Water
 Units: ug/L (ppb)

Lab ID: SB1010W1

Compound	Spike Amount	SB	Percent Recovery	SBD	Percent Recovery	Recovery Limits	Flags
1,1-Dichloroethene	10.0	12.3	123	12.0	120	70-130	
Benzene	10.0	11.3	113	10.9	109	70-130	
Trichloroethene	10.0	10.2	102	9.75	97	70-130	
Toluene	10.0	11.2	112	10.9	109	70-130	
Chlorobenzene	10.0	10.2	102	9.89	99	70-130	

	RPD	RPD Limit	Flags
1,1-Dichloroethene	3	17	
Benzene	4	13	
Trichloroethene	4	12	
Toluene	3	14	
Chlorobenzene	3	9	



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.
- G - Insufficient sample quantity for duplicate analysis.
- 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 (toluene-naphthalene) are present in the sample.
- O - Hydrocarbons indicative of diesel fuel 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.
- 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 silica gel cleanup procedure.
- Y - Sample extract treated with an acid/silica gel cleanup procedure.
- Z -
- ND - Not Detected at PQL
- PQL - Practical Quantitation Limit
- RPD - Relative Percent Difference



OnSite Environmental Inc.

14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • Fax: (425) 885-4603

Chain of Custody

Page 1 of 1

Company: THE HILEY GROUP

Project Number: 2005-087c

Project Name:

Project Manager: PAUL HILEY

Sampled by: TON NAWAKZ

Turnaround Request
(in working days)

(Check One)

☐ Same Day ☐ 1 Day

☐ 2 Day ☐ 3 Day

☒ Standard (7 working days)

☐ _____ (other)

Laboratory Number: **10-052**

						Requested Analysis																		
Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	VPH	EPH				% Moisture
1	MWP-H ₂ O	10/4/05	13:00	H ₂ O	2					X														
2	MWT-H ₂ O	↓	13:45	↓	2					X														
3	MWB-H ₂ O	↓	14:30	↓	2					X														

	Signature	Company	Date	Time	Comments/Special Instructions:
Relinquished by	<u>Tom Nawakz</u>	<u>Hiley Group</u>	<u>10/7/05</u>	<u>10:45</u>	
Received by	<u>Paul Hiley</u>	<u>SPERRY</u>	<u>10-7-05</u>	<u>130</u>	
Relinquished by	<u>Paul Hiley</u>	<u>SPERRY</u>	<u>10-7-05</u>	<u>144</u>	
Received by	<u>M Van</u>	<u>OST</u>	<u>10/7/05</u>	<u>144</u>	
Relinquished by					
Received by					
Reviewed by/Date	Reviewed by/Date		Chromatograms with final report ☐		

