



April 23, 1997

Ms. Kathy Bahnick
Port of Seattle, Environmental Engineering
P.O. Box 1209
Seattle, WA

Re: April 4, 1997 Groundwater Sampling Data
Port of Seattle Terminal 115, Seattle, Washington

Dear Ms. Bahnick,

This letter transmits the field data and laboratory results for the April 4, 1997 (first quarter) groundwater sampling event performed by GeoScience Management, Inc. at the Port of Seattle's Foley Cardlock Facility, Terminal 115 (T-115) located at 6730 West Marginal Way, Seattle, Washington (Figure 1). The work was performed under Professional Services Agreement Number P-950137 and subsequent amendments. At your request, I have not included a groundwater flow map or data tables with this transmittal. A report will be submitted at the end of 1997 documenting the results of all 1997 groundwater sampling. The attached map shows the approximate locations of all site wells. Also attached are the field data sampling sheets recording field measurements collected April 4, 1997, and the laboratory reports from North Creek Analytical, Inc. Groundwater sample designations are as follows:

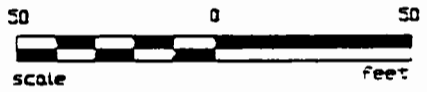
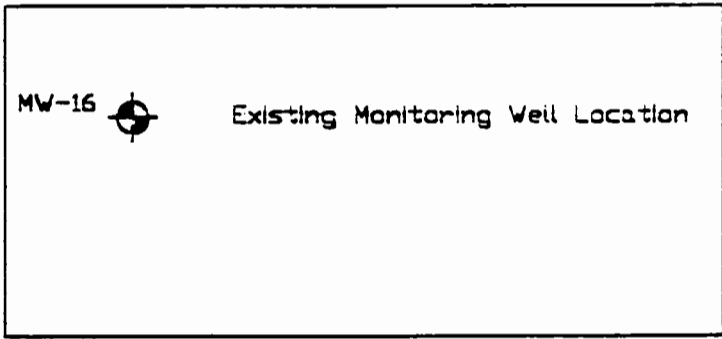
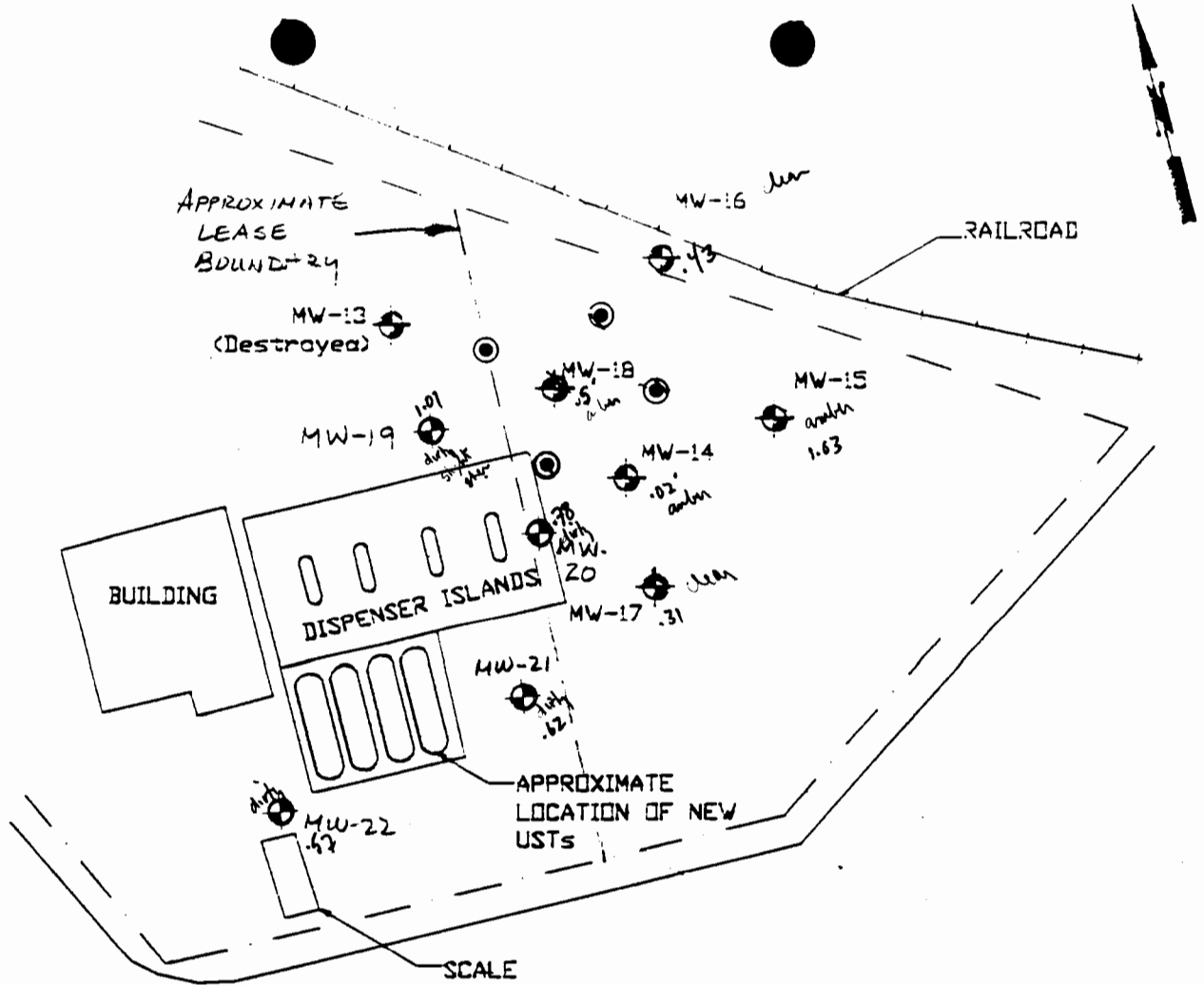
Monitoring Well Number	Sample Designation
MW-13	Destroyed in 1995 by Lee Morse during station construction in 1996
MW-14	Not sampled due to presence of product
MW-15	97-0404-02
MW-16	97-0404-01
MW-17	97-0404-03
MW-18	Not sampled due to presence of product
MW-19	97-0404-06
MW-20	97-0404-04
MW-21	97-0404-07
MW-22	97-0404-08

All samples were analyzed for total petroleum hydrocarbons in the diesel- and oil-ranges by method WTPH-D, extended. Diesel-range hydrocarbon concentrations ranged from a low of 0.429 mg/L in well MW-16 to a high of 1.03 mg/L. No oil-range hydrocarbons were reported in any of the samples at concentrations at or above the analytical method reporting limits of 0.750 mg/L. Please refer to the attached laboratory reports for specific analytical results. If you have questions or would like to discuss any of the information presented here, please contact me at your earliest convenience.

Sincerely,
GeoScience Management, Inc.

Howard W. Small, R.G., C.P.G.
Project Manager

Attachments: Field Sampling Data Sheets
Laboratory Report Number B704109, North Creek Analytical, Inc., dated April 14, 1997



GeoScience Management, Inc.
Environmental Consulting Services
 18608 89th Avenue NE
 Bothell, Washington 98011

DESIGNED BY:	HS
DRAWN BY:	JB
DATE:	December 1998
JOB No.:	1002.01

**PORT OF SEATTLE - TERMINAL 115
 PROPOSED FOLEY CARDLOCK FACILITY**
 WELL LOCATIONS

WELL ID: MW-14

Project Name: Port of Seattle - Terminal 115

Project #: 1002.01

Client: Port of Seattle

Client Project ID: N/A

Date: 4/4/1997

Time: PM

Personnel: Howard W. Small

Location: 6730 West Marginal Way, Seattle, WA

Weather: Clear Overcast Hot Warm Cold
 Raining Snowing Other: _____

SAMPLING DATA

<u>6.52</u>	<u>Feet</u>	Below	<u>Top of PVC Casing, North Side</u>
Depth to water	Units		Measuring point
<u>6.5</u>	<u>Feet</u>	Below	<u>Top of PVC Casing, North Side</u> = 0.02 feet product
Depth to product	Units		Measuring point
<u>14</u>	<u>Feet</u>	Below	<u>Top of PVC Casing, North Side</u>
Well depth	Units		Measuring point

Based on: Field Measurements Well Log

Well Diameter: 2-inch (0.17 gal./ft.) 6-inch (1.5 gal./ft.) Other: _____

4-inch (0.66 gal./ft.) 8-inch (2.6 gal./ft.)

Casing Volume: N/A feet of water X 0.17 gallons per foot = N/A gallons

Volume Purged: 4 gallons

Purge Method: Bailer Pump Other/Material: _____

Well Condition: Satisfactory Other: _____

Purge Volume Number	Total Volume Discharged (gallons)	pH	Specific Conductance (MicroSiemens/cm)	Temperature F°	Comments
<u>1</u>	<u>4</u>	<u>Not Measured</u>	<u>Not Measured</u>	<u>Not Measured</u>	
<u>2</u>					
<u>3</u>					

NOTES:

Purge water is amber, fairly sediment free.

Strong hydrocarbon-like odor.

Sampler Decontamination.

Soap/water Hexane Methanol Distilled Water Other

Analyses: None.

Sample ID: Not Sampled

Signature: Howard W. Small



WELL ID: MW-15

Project Name: Port of Seattle - Terminal 115

Project #: 1002.01

Client: Port of Seattle

Client Project ID: N/A

Date: 4/4/1997

Time: PM

Personnel: Howard W. Small

Location: 6730 West Marginal Way, Seattle, WA

Weather: Clear Overcast Hot Warm Cold
Raining Snowing Other: _____

SAMPLING DATA

5.11 Feet Below Top of PVC Casing, North Side
Depth to water Units Measuring point
None Below Top of PVC Casing, North Side
Depth to product Units Measuring point
14 Feet Below Top of PVC Casing, North Side
Well depth Units Measuring point

Based on: Field Measurements Well Log

Well Diameter: 2-inch (0.17 gal./ft.) 6-inch (1.5 gal./ft.) Other: _____
 4-inch (0.66 gal./ft.) 8-inch (2.6 gal./ft.)

Casing Volume: 8.89 feet of water X 0.17 gallons per foot = 1.51 gallons

Volume Purged: 5 gallons

Purge Method: Bailer Pump Other/Material: _____

Well Condition: Satisfactory Other: _____

Purge Volume Number	Total Volume Discharged (gallons)	pH	Specific Conductance (MicroSiemens/cm)	Temperature F °	Comments
<u>1</u>	<u>1</u>	<u>7.8</u>	<u>2780</u>	<u>57</u>	
<u>2</u>	<u>3</u>	<u>7.9</u>	<u>2830</u>	<u>57</u>	
<u>3</u>	<u>5</u>	<u>8.0</u>	<u>2790</u>	<u>57</u>	

NOTES:

Purge water is amber-colored, slight undefinable odor, froth/bubbles.

Not much suspended sediment.

Sampler Decontamination.

Soap/water Hexane Methanol Distilled Water Other Disposable bailer

Analyses:

TPH-D, Extended

Sample ID: 97-0404-02

Signature: Howard W. Small

WELL ID: MW-16

Project Name: Port of Seattle - Terminal 115

Project #: 1002.01

Client: Port of Seattle

Client Project ID: N/A

Date: 4/4/1997

Time: PM

Personnel: Howard W. Small

Location: 6730 West Marginal Way, Seattle, WA

Weather: Clear Overcast Hot Warm Cold
 Raining Snowing Other:

SAMPLING DATA

<u>6.17</u>	<u>Feet</u>	Below	<u>Top of PVC Casing, North Side</u>
Depth to water	Units		Measuring point
<u>None</u>		Below	<u>Top of PVC Casing, North Side</u>
Depth to product	Units		Measuring point
<u>14</u>	<u>Feet</u>	Below	<u>Top of PVC Casing, North Side</u>
Well depth	Units		Measuring point

Based on: Field Measurements Well Log

Well Diameter: 2-inch (0.17 gal./ft.) 6-inch (1.5 gal./ft.) Other: _____
 4-inch (0.66 gal./ft.) 8-inch (2.6 gal./ft.)

Casing Volume: 7.83 feet of water X 0.17 gallons per foot = 1.33 gallons

Volume Purged: 5 gallons

Purge Method: Bailer Pump Other/Material: _____

Well Condition: Satisfactory Other: _____

Purge Volume Number	Total Volume Discharged (gallons)	pH	Specific Conductance (MicroSiemens/cm)	Temperature F°	Comments
1	1	7.3	665	54	
2	3	7.2	685	54	
3	5	7.3	690	54	

NOTES:

Purge water is clear, very little suspended sediment, no odor.

Sampler Decontamination.

Soap/water Hexane Methanol Distilled Water Other *Disposable bailer*

Analyses:

TPH-D, Extended

Sample ID: 97-0404-01

Signature: 

WELL ID: MW-17

Project Name: Port of Seattle - Terminal 115

Project #: 1002.01

Client: Port of Seattle

Client Project ID: N/A

Date: 4/4/1997

Time: PM

Personnel: Howard W. Small

Location: 6730 West Marginal Way, Seattle, WA

Weather: Clear Overcast Hot Warm Cold
 Raining Snowing Other: _____

SAMPLING DATA

<u>6.26</u>	<u>Feet</u>	Below	<u>Top of PVC Casing, North Side</u>
Depth to water	Units		Measuring point
<u>None</u>		Below	<u>Top of PVC Casing, North Side</u>
Depth to product	Units		Measuring point
<u>14</u>	<u>Feet</u>	Below	<u>Top of PVC Casing, North Side</u>
Well depth	Units		Measuring point

Based on: Field Measurements Well Log

Well Diameter: 2-inch (0.17 gal./ft.) 6-inch (1.5 gal./ft.) Other: _____
 4-inch (0.66 gal./ft.) 8-inch (2.6 gal./ft.)

Casing Volume: 7.74 feet of water X 0.17 gallons per foot = 1.32 gallons
Volume Purged: 5 gallons

Purge Method: Bailer Pump Other/Material: _____

Well Condition: Satisfactory Other: Wellhead badly damaged. Monument top is gone.

Purge Volume Number	Total Volume Discharged (gallons)	pH	Specific Conductance (MicroSiemens/cm)	Temperature F°	Comments
1	1	6.9	750	57	
2	3	6.8	730	57	
3	5	6.9	730	58	

NOTES:

Purge water is clear without much suspended sediment.
No odor.

Sampler Decontamination.

Soap/water Hexane Methanol Distilled Water Other Disposable bailer

Analyses:

TPH-D, Extended

Sample ID: 97-0404-03

Signature: Howard W. Small



WELL ID: MW-18

Project Name: Port of Seattle - Terminal 115

Project #: 1002.01

Client: Port of Seattle

Client Project ID: N/A

Date: 4/4/1997

Time: PM

Personnel: Howard W. Small

Location: 6730 West Marginal Way, Seattle, WA

Weather: Clear Overcast Hot Warm Cold
Raining Snowing Other:

SAMPLING DATA

Not Measured Feet Below Top of PVC Casing, North Side
Depth to water Units Measuring point
Not Measured Feet Below Top of PVC Casing, North Side
Depth to product Units Measuring point
14 Feet Below Top of PVC Casing, North Side
Well depth Units Measuring point

Based on: Field Measurements Well Log

Well Diameter: 2-inch (0.17 gal./ft.) 6-inch (1.5 gal./ft.) Other: _____
 4-inch (0.66 gal./ft.) 8-inch (2.6 gal./ft.)

Casing Volume: N/A feet of water X _____ gallons per foot = _____ gallons
Volume Purged: 2 gallons

Purge Method: Bailer Pump Other/Material: _____

Well Condition: Satisfactory Other: All three bolts for lid are broken.

Purge Volume Number	Total Volume Discharged (gallons)	pH	Specific Conductance (MicroSiemens/cm)	Temperature F°	Comments
1	2	Not Measured	Not Measured	Not Measured	
2					
3					

NOTES:

Purge water is amber-colored, and fairly sediment free.
Removed Skimmer which was full. Drained skimmer. Used bailer to measure approximately 5 inches of product in well.
Bailed approximately 1 additional gallon of product (total of about 1 1/2 gallons product removed), and 1 gallon water.
Reset skimmer.

Sampler Decontamination.

Soap/water Hexane Methanol Distilled Water Other

Analyses: None.

Sample ID: Not Sampled

Signature: Howard W. Small



WELL ID: MW-19

Project Name: Port of Seattle - Terminal 115

Project #: 1002.01

Client: Port of Seattle

Client Project ID: N/A

Date: 4/4/1997

Time: PM

Personnel: Howard W. Small

Location: 6730 West Marginal Way, Seattle, WA

Weather: Clear [x] Overcast [] Hot [] Warm [x] Cold []
Raining [] Snowing [] Other: []

SAMPLING DATA

8.86 Feet Below Top of PVC Casing, North Side
Depth to water Units Measuring point
None Units
Depth to product Units Measuring point
15 Feet Measuring point
Well depth Units Measuring point

Based on: [] Field Measurements [x] Well Log

Well Diameter: [x] 2-inch (0.17 gal./ft.) [] 6-inch (1.5 gal./ft.) [] Other:
[] 4-inch (0.66 gal./ft.) [] 8-inch (2.6 gal./ft.)

Casing Volume: 6.14 feet of water X 0.17 gallons per foot = 1.04 gallons
Volume Purged: 4 gallons

Purge Method: [x] Bailer [] Pump [] Other/Material:

Well Condition: [x] Satisfactory [] Other:

Table with 6 columns: Purge Volume Number, Total Volume Discharged (gallons), pH, Specific Conductance (MicroSiemens/cm), Temperature (F °), Comments. Rows 1-3.

NOTES:

Purge water is dirty with much suspended sediment (silt and fine sand).
Slight hydrocarbon-like odor, slight sheen in bucket.

Sampler Decontamination.

[] Soap/water [] Hexane [] Methanol [] Distilled Water [x] Other Disposable bailer

Analyses:

TPH-D, Extended

Sample ID: 97-0404-06

Signature: [Handwritten Signature]



WELL ID: MW-20

Project Name: Port of Seattle - Terminal 115

Project #: 1002.01

Client: Port of Seattle

Client Project ID: N/A

Date: 4/4/1997

Time: PM

Personnel: Howard W. Small

Location: 6730 West Marginal Way, Seattle, WA

Weather: Clear Overcast Hot Warm Cold
Raining Snowing Other:

SAMPLING DATA

6.78 Feet Below Top of PVC Casing, North Side
Depth to water Units Measuring point
None Below Top of PVC Casing, North Side
Depth to product Units Measuring point
15 Feet Below Top of PVC Casing, North Side
Well depth Units Measuring point

Based on: Field Measurements Well Log

Well Diameter: 2-inch (0.17 gal./ft.) 6-inch (1.5 gal./ft.) Other: _____
 4-inch (0.66 gal./ft.) 8-inch (2.6 gal./ft.)

Casing Volume: 8.22 feet of water X 0.17 gallons per foot = 1.40 gallons
Volume Purged: 4 gallons

Purge Method: Bailer Pump Other/Material: _____

Well Condition: Satisfactory Other: _____

Purge Volume Number	Total Volume Discharged (gallons)	pH	Specific Conductance (MicroSiemens/cm)	Temperature F°	Comments
1	1	7.0	740	56	
2	2	7.1	760	55	
3	4	7.1	760	56	

NOTES:

Purge water is dirty with much suspended sediment (silt and fine sand).

No odor.

Sampler Decontamination.

Soap/water Hexane Methanol Distilled Water Other Disposable bailer

Analyses:

TPH-D, Extended

Sample ID: 97-0404-04

Signature: Howard W. Small

WELL ID: MW-21

Project Name: Port of Seattle - Terminal 115

Project #: 1002.01

Client: Port of Seattle

Client Project ID: N/A

Date: 4/4/1997

Time: PM

Personnel: Howard W. Small

Location: 6730 West Marginal Way, Seattle, WA

Weather: Clear Overcast Hot Warm Cold
 Raining Snowing Other: _____

SAMPLING DATA

<u>7.23</u>	<u>Feet</u>	Below	<u>Top of PVC Casing, North Side</u>
Depth to water	Units		Measuring point
<u>None</u>		Below	<u>Top of PVC Casing, North Side</u>
Depth to product	Units		Measuring point
<u>15</u>	<u>Feet</u>	Below	<u>Top of PVC Casing, North Side</u>
Well depth	Units		Measuring point

Based on: Field Measurements Well Log

Well Diameter: 2-inch (0.17 gal./ft.) 6-inch (1.5 gal./ft.) Other: _____
 4-inch (0.66 gal./ft.) 8-inch (2.6 gal./ft.)

Casing Volume: 7.77 feet of water X 0.17 gallons per foot = 1.32 gallons
Volume Purged: 5 gallons

Purge Method: Bailer Pump Other/Material: _____

Well Condition: Satisfactory Other: _____

Purge Volume Number	Total Volume Discharged (gallons)	pH	Specific Conductance (MicroSiemens/cm)	Temperature F°	Comments
<u>1</u>	<u>1</u>	<u>6.8</u>	<u>780</u>	<u>55</u>	
<u>2</u>	<u>2</u>	<u>6.8</u>	<u>740</u>	<u>55</u>	
<u>3</u>	<u>5</u>	<u>6.9</u>	<u>730</u>	<u>55</u>	

NOTES:

Purge water is dirty with much suspended sediment (silt and fine sand).
No odor.

Sampler Decontamination.

Soap/water Hexane Methanol Distilled Water Other Disposable bailer

Analyses:

TPH-D, Extended

Sample ID: 97-0404-07

Signature: Howard W. Small

WELL ID: MW-22

Project Name: Port of Seattle - Terminal 115

Project #: 1002.01

Client: Port of Seattle

Client Project ID: N/A

Date: 4/4/1997

Time: PM

Personnel: Howard W. Small

Location: 6730 West Marginal Way, Seattle, WA

Weather: Clear Overcast Hot Warm Cold
 Raining Snowing Other: _____

SAMPLING DATA

<u>6.78</u>	<u>Feet</u>	Below	<u>Top of PVC Casing, North Side</u>
Depth to water	Units		Measuring point
<u>None</u>		Below	<u>Top of PVC Casing, North Side</u>
Depth to product	Units		Measuring point
<u>15</u>	<u>Feet</u>	Below	<u>Top of PVC Casing, North Side</u>
Well depth	Units		Measuring point

Based on: Field Measurements Well Log

Well Diameter: 2-inch (0.17 gal./ft.) 6-inch (1.5 gal./ft.) Other: _____
 4-inch (0.66 gal./ft.) 8-inch (2.6 gal./ft.)

Casing Volume: 8.22 feet of water X 0.17 gallons per foot = 1.40 gallons
Volume Purged: 5 gallons

Purge Method: Bailer Pump Other/Material: _____

Well Condition: Satisfactory Other: _____

Purge Volume Number	Total Volume Discharged (gallons)	pH	Specific Conductance (MicroSiemens/cm)	Temperature F °	Comments
1	1	6.9	770	57	
2	2	6.8	750	57	
3	5	6.9	770	56	

NOTES:

Purge water is dirty with much suspended sediment (silt and fine sand).

No odor.

Sampler Decontamination.

Soap/water Hexane Methanol Distilled Water Other Disposable bailer

Analyses:

TPH-D, Extended

Sample ID: 97-0404-08

Signature: 



Geo Science Management, Inc. 18608 89th Avenue NE Bothell, WA 98011	Project: Port of Seattle Project Number: 1002.02 Project Manager: Howard Small	Sampled: 4/1/97 Received: 4/7/97 Reported: 4/14/97 08:13
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Summary Report*

(Please refer to the Analytical Report for a thorough review of the complete data set.)

Method	Analyte	Units	97-0404-01 Water 16 4/1/97 B704109-01	97-0404-02 Water 15 4/1/97 B704109-02	97-0404-03 Water 13 4/1/97 B704109-03	97-0404-04 Water 20 4/1/97 B704109-04	97-0404-06 Water 19 4/1/97 B704109-05
WTPH-Dext	Diesel Range Hydrocarbons	mg/l	0.429	1.03	0.308	0.779	1.01
"	Heavy Oil Range Hydrocarbons	"	<0.750	<0.750	<0.750	<0.750	<0.750
Method	Analyte	Units	97-0404-07 Water 21 4/1/97 B704109-06	97-0404-08 Water 22 4/1/97 B704109-07			
WTPH-Dext	Diesel Range Hydrocarbons	mg/l	0.616	0.570			
"	Heavy Oil Range Hydrocarbons	"	<0.750	<0.750			



NORTH CREEK ANALYTICAL

Environmental Laboratory Services

BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
 SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
 PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

Geo Science Management, Inc. 18608 89th Avenue NE Bothell, WA 98011	Project: Port of Seattle Project Number: 1002.02 Project Manager: Howard Small	Sampled: 4/1/97 Received: 4/7/97 Reported: 4/14/97 08:11
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ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
97-0404-01	B704109-01	Water	4/1/97
97-0404-02	B704109-02	Water	4/1/97
97-0404-03	B704109-03	Water	4/1/97
97-0404-04	B704109-04	Water	4/1/97
97-0404-06	B704109-05	Water	4/1/97
97-0404-07	B704109-06	Water	4/1/97
97-0404-08	B704109-07	Water	4/1/97

North Creek Analytical, Inc.

*The results in this report apply to the samples analyzed in accordance with the chain of custody document.
 This analytical report must be reproduced in its entirety.*


 Matthew Essig, Project Manager

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508
 East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
 9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132




Geo Science Management, Inc. 18608 89th Avenue NE Bothell, WA 98011	Project: Port of Seattle Project Number: 1002.02 Project Manager: Howard Small	Sampled: 4/1/97 Received: 4/7/97 Reported: 4/14/97 08:11
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**Diesel Hydrocarbons (C12-C24) and Heavy Oil (C24-C40) by WTPH-D (extended)
North Creek Analytical - Bothell**

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
97-0404-01				<u>B704109-01</u>		<u>Water</u>		
Diesel Range Hydrocarbons	0470204	4/8/97	4/9/97		0.250	0.429	mg/l	
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		81.2	%	
97-0404-02				<u>B704109-02</u>		<u>Water</u>		
Diesel Range Hydrocarbons	0470204	4/8/97	4/10/97		0.250	1.03	mg/l	
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		80.6	%	
97-0404-03				<u>B704109-03</u>		<u>Water</u>		
Diesel Range Hydrocarbons	0470204	4/8/97	4/10/97		0.250	0.308	mg/l	
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		88.5	%	
97-0404-04				<u>B704109-04</u>		<u>Water</u>		
Diesel Range Hydrocarbons	0470204	4/8/97	4/10/97		0.250	0.779	mg/l	1
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		94.3	%	
97-0404-06				<u>B704109-05</u>		<u>Water</u>		
Diesel Range Hydrocarbons	0470204	4/8/97	4/10/97		0.250	1.01	mg/l	1
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		86.7	%	
97-0404-07				<u>B704109-06</u>		<u>Water</u>		
Diesel Range Hydrocarbons	0470204	4/8/97	4/10/97		0.250	0.616	mg/l	
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		88.9	%	
97-0404-08				<u>B704109-07</u>		<u>Water</u>		
Diesel Range Hydrocarbons	0470246	4/9/97	4/11/97		0.250	0.570	mg/l	1,2
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		75.5	%	

North Creek Analytical, Inc.

*Refer to end of report for text of notes and definitions.


Matthew Essig, Project Manager

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508
East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132



NORTH CREEK ANALYTICAL

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Geo Science Management, Inc. 18608 89th Avenue NE Bothell, WA 98011	Project: Port of Seattle Project Number: 1002.02 Project Manager: Howard Small	Sampled: 4/1/97 Received: 4/7/97 Reported: 4/14/97 08:11
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Diesel Hydrocarbons (C12-C24) and Heavy Oil (C24-C40) by WTPH-D (extended)/Quality Control North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0470204			Date Prepared: 4/8/97			Extraction Method: EPA 3520/600 Series				
Blank			0470204-BLK1							
Diesel Range Hydrocarbons	4/9/97			ND	mg/l	0.250				
Heavy Oil Range Hydrocarbons	"			ND	"	0.750				
Surrogate: 2-FBP	"	0.350		0.305	"	50.0-150	87.1			
LCS			0470204-BS1							
Diesel Range Hydrocarbons	4/9/97	2.04		2.07	mg/l	52.0-131	101			
Surrogate: 2-FBP	"	0.350		0.324	"	50.0-150	92.6			
Duplicate			0470204-DUP1 B704109-01							
Diesel Range Hydrocarbons	4/10/97		0.429	0.483	mg/l			44.0	11.8	3
Surrogate: 2-FBP	"	0.660		0.572	"	50.0-150	86.7			
Batch: 0470246			Date Prepared: 4/9/97			Extraction Method: EPA 3520/600 Series				
Blank			0470246-BLK1							
Diesel Range Hydrocarbons	4/10/97			ND	mg/l	0.250				
Heavy Oil Range Hydrocarbons	"			ND	"	0.750				
Surrogate: 2-FBP	"	0.350		0.278	"	50.0-150	79.4			
LCS			0470246-BS1							
Diesel Range Hydrocarbons	4/10/97	2.04		1.85	mg/l	52.0-131	90.7			
Surrogate: 2-FBP	"	0.350		0.294	"	50.0-150	84.0			
Duplicate			0470246-DUP1 B704073-26							
Diesel Range Hydrocarbons	4/11/97		ND	ND	mg/l			44.0		
Surrogate: 2-FBP	"	0.700		0.533	"	50.0-150	76.1			

North Creek Analytical, Inc.

*Refer to end of report for text of notes and definitions.


 Matthew Essig, Project Manager

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508
 East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
 9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132




Geo Science Management, Inc. 18608 89th Avenue NE Bothell, WA 98011	Project: Port of Seattle Project Number: 1002.02 Project Manager: Howard Small	Sampled: 4/1/97 Received: 4/7/97 Reported: 4/14/97 08:11
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Notes and Definitions

#	Note
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- 1 The hydrocarbon concentration result in this sample is partially due to one or more individual peaks eluting in the diesel/heavy oil range. Quantitation by EPA method 8270 is recommended.
- 2 The sample chromatographic pattern does not resemble the fuel standard used for quantitation.
- 3 Analyses are not controlled on RPD values from sample concentrations less than 10 times the reporting limit.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- Recov. Recovery
- RPD Relative Percent Difference

North Creek Analytical, Inc.


Matthew Essig, Project Manager

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NORTH CREEK ANALYTICAL
Environmental Laboratory Services

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9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

Work Order # **704109**

REPORT TO: *Geo Science Management, Inc*

ATTENTION: *Howard W. Small*

ADDRESS: *18005 89th Ave NE*

Bothell WA 98011

PHONE: *206 206 481-4538* FAX: *206 402-1358*

PROJECT NAME: *Port of Seattle Terminal 115*

PROJECT NUMBER: *1002.01*

SAMPLED BY: *HW Small*

INVOICE TO: *CSM*

ATTENTION: *HW Small*

ADDRESS: *Same*

P.O. NUMBER:

NCA QUOTE #:

Analysis Request:

570-HAL

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses
 10 Standard 7 5 4 3 2 1 Same Day

Fuels & Hydrocarbon Analyses
 5 Standard 3-4 2 1 Same Day

OTHER Specify: *Standard*

* Turnaround Requests less than standard may incur Rush Charges.

MATRIX (W.S.A.O)	# OF CONTAINERS	COMMENTS
		<i>704109-01</i>
		<i>109-02</i>
		<i>109-03</i>
		<i>109-04</i>
		<i>109-05</i>
		<i>109-06</i>
		<i>109-07</i>
		<i>109-08</i>

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	NCA SAMPLE ID (Laboratory Use Only)
<i>97-0404-01</i>	<i>4/4/97</i>	
<i>97-0404-02</i>		
<i>97-0404-03</i>		
<i>97-0404-04</i>		
<i>97-0404-05</i>		<i>No Sample</i>
<i>97-0404-06</i>		
<i>97-0404-07</i>		
<i>97-0404-08</i>		

RELINQUISHED BY (Signature): *HW Small* DATE: *4/7/97* RECEIVED BY (Signature): *HW Small* DATE: *4/7/97*

INT NAME: *HW Small* FIRM: *AWAY WEIGHT* PRINT NAME: *AWAY WEIGHT* TIME: *1:10 PM*

RELINQUISHED BY (Signature): _____ DATE: _____ RECEIVED BY (Signature): _____ DATE: _____

INT NAME: _____ FIRM: _____ PRINT NAME: _____ TIME: _____

ADDITIONAL REMARKS:

PAGE _____ OF _____