Environmental Summary Report

Handy Mart – 1410 Ocean Beach Highway, Longview, Washington
HydroCon Project Number 2015-007.01
Ecology Cleanup No. 11294

Prepared for:

Wilcox & Flegel
98 Panel Way
Longview, Washington 98632

December 1, 2017

Prepared by:

HydroCon, LLC
510 Allen Street, Suite B Kelso, Washington 98626
p: (360) 703-6079 f: (360) 703-6086
www.hydroconllc.net

Table of Contents

FIGURES

TABLES

APPENDICES

1.0 INTRODUCTION

HydroCon Environmental, LLC (HydroCon) is pleased to present this summary of cleanup and assessment activities performed at the Handy Mart located in Longview Washington. The site location is shown on Figure 1. This report is intended to summarize past cleanup activities, site assessments and groundwater monitoring results for the purpose of requesting a no further action (NFA) determination for the site.

2.0 SITE BACKGROUND

2.1 Site Description

The subject property is located at 1410 Ocean Beach Highway in Longview, Washington. The Cowlitz County Assessor's Office identifies the subject site as Parcel 1029901 within Section 28 of Township 8 North and Range 2 West of the Willamette Meridian (Figure 1). The Columbia River is located approximately 2.8 mile southwest of the site. The Cowlitz River is approximately 0.8 miles east of the site.

The site is located in a mixed residential and commercial area. Residential properties are located west and southwest of the site. Commercial properties are located to the north, east and south of the site. The property located to the east and adjacent to the subject site is a former Time Oil leaking underground storage tank (LUST) cleanup site (Cleanup Site ID 10877). This site received a NFA from Ecology in August 2012.

The current site layout includes a convenience store building, carwash and underground storage tank (UST) system. The site only dispensed gasoline until 2005. In June 2005 the mid grade gasoline UST was converted to diesel fuel. The convenience store building is located in the northern portion of the site, the UST system is located on the central portion of the site and the carwash is located on the east portion of the site (Figure 2).

According to the Ecology UST Site/Tank Data Summary data base, the USTs at the site were installed in 1969 and continue to operate to date. The data base reports that the USTs are single wall steel tanks with interior linings. The current product piping is double wall, corrosion resistant flexible piping.

2.1.1 Site Geology

The soils underline the site is of Quaternary age alluvial sediments. Based on a review of the site boring logs, the soils beneath the site consist of silts and silty sand to a depth of 15 feet below ground surface (bgs). Based on the current groundwater monitoring at the site, the depth to groundwater varies seasonally between 5 and 10 feet bgs.

2.2 1991 Release

In July of 1991, soil and groundwater impacted with gasoline was discovered in borings advanced south of the USTs for an environmental site assessment conducted by Sweet Edwards/Emcon Inc. (EMCON). The EMCON soil and groundwater report was not available for review. The site assessment was conducted to facilitate the sale of the property from John Szkodyn to Wilson Oil. The source of the release was determined to be two loose bolts on the leak detector located in the unleaded turbine sump. This allowed for small releases of gasoline to occur when under pressure. The leak detector was repaired and additional soil borings were advanced to determine the extent of the release south of the USTs.

On October 18, 1991, Environmental Inspection Services (EIS) supervised the excavation of approximately 140 cubic yards of soil from the southern end of the USTs. Four soil samples and one water sample collected from the excavation were analyzed for gasoline range petroleum hydrocarbons (GRPH) and for benzene, toluene, ethylbenzene and xylenes (BTEX). The detected concentrations of GRPH in soil were all below the Model Toxics Control Act (MTCA) Method A Cleanup Level and benzene was not detected in the samples submitted. One soil sample was from the north wall of the excavation and analyzed for lead. Lead was not detected above the Method Reporting Limit (MRL) of 3 mg/kg. The water sample collected from the excavation pit had detections of GRPH and benzene with the resulting concentrations of 12,800 µg/L and 22 µg/L, respectively. Sample locations and analytical results are presented in a copy of the EIS report[1] in Appendix A.

While the water sample collected from excavation pit had concentrations that exceeded the MTCA Method A Cleanup Levels for GRPH and benzene, the soil had been successfully remediated and Ecology issued a NFA determination for the site on March 19, 1992.

2.3 2005 Phase I and Phase 2

A Phase I and Limited Phase 2 Environmental Site Assessment (ESA)[2] was conducted by 3 Kings Environmental, Inc (3 Kings) in February 2005 to facilitate a potential property sale. Sample locations and analytical results are presented in a copy of the Phase 2 ESA report in Appendix A. Ten soil borings (B1 through B10) were advance at the site to assess soil and groundwater quality in the vicinity of the site UST system and assess the potential of offsite impacts from the former Time Oil cleanup site located east of the site. The results of the ESA indicated that heavy oil was detected in borings (B2, B4 and B5) located on the west side of the site, at concentrations below the MTCA Method A cleanup levels for unrestricted land use. The subsurface soils reportedly appeared to have a relatively high organic content, and the heavy oils could possibly be related to the organic material. GRPH was detected at the soil

[1] Analytical Test Results, November 6, 1991, Environmental Inspection Services
[2] Phase I-II Environmental Site Assessment Report July 26, 2005, 3 Kings Environmental Inc.

water interface in a boring (B5) located adjacent to the south side of the USTs. The GRPH concentration in soil was 90 mg/kg, and benzene was not detected. The concentration of GRPH was below the MTCA Method A cleanup level for unrestricted land use. A groundwater sample was collected from boring B5 and contained 4,410 µg/L of GRPH, however no benzene was detected. The concentration of GRPH exceeds the MTCA Method A cleanup level for groundwater. This concentration of GRPH in the B5 sample was significantly less than the sample collected from the pit water inside the remedial excavation in 1991 (12,800 µg/L).

Ecology was provided the results of the February 2005 ESA and the site was reopened as a new release.

In May 2005, 3 Kings installed three 1-inch diameter groundwater monitoring wells (MW1, MW2 and MW3) in the vicinity of the USTs. Soil samples were collected from soil/water interface in borings MW2 and MW3 located south of the UST basin. The soil sample collected from the soil boring for MW3 had a detection of GRPH at 90 mg/kg. It was reported that BTEX analysis was not conducted since benzene was not detected during the February 2005 Phase II. The monitoring wells were purged, sampled and analyzed for GRPH and BTEX, 1,2-dibromoethane (EDB), 1,2-dichloroethane (EDC), isopropylbenzene, methyl-tertbutylether (MTBE), naphthalene, n-propylbenzene, 1,2,4-Trimethylbenzene, and 1,3,5-Trimethylbenzene. Petroleum hydrocarbons were not detected in the groundwater samples collected from MW1 and MW2. GRPH was detected in MW3 but was below the MTCA Method A cleanup level for unrestricted land use. Benzene was detected in MW3 at a concentration of 14 µg/L, n-propylbenzene at 2 µg/L, toluene at 3 µg/L and total xylenes at 8 µg/L. Only benzene exceeded the MTCA Method A cleanup level for groundwater of 5 µg/L.

Based on the groundwater monitoring results it was concluded that the detections in the soil and groundwater were from the 1991 documented release. In addition, the contaminants of concern (COC) at the site were determined to be GRPH and BTEX.

3.0 GROUNDWATER MONITORING

Groundwater monitoring was conducted by 3 Kings on a bi-annual basis, beginning in December 2010 and ending in March 2012. HydroCon subsequently began quarterly groundwater sampling since September 2015 through June 2017. The sections below describe the sampling methods from the last five quarters of sampling by HydroCon and groundwater gradients and flow direction during the last five quarters of monitoring.

3.1 Groundwater Sampling

Prior to sample collection, the well cap on each well was removed and the water level was allowed to equilibrate prior to measuring the depth to water. The depth to water in each well was measured using a clean electronic water level indicator. Water levels were measured at the scribed reference mark (north end of the top of the PVC casing) at each well. The wells

were purged with a low flow peristaltic pump equipped with new length of LDPE tubing attached to a new length of silicone tubing. Field parameters (pH, temperature, ORP, and specific conductivity) were measured and recorded on a Groundwater Sample Collection field form along with the depth to water measurements. Purging was completed when the field parameters had stabilized. Groundwater levels and groundwater parameters were not able to be measured simultaneously, due to the well size (1" diameter).

Samples were collected immediately after purging and placed in labeled laboratory-prepared sample bottles. The samples were shipped in an iced cooler along with chain-of-custody documentation to Apex Laboratory in Tigard Oregon for analysis.

The groundwater samples were collected for laboratory analysis. Each sample was analyzed for the following set of parameters:

- GRPH by Northwest Method NWTPH-Gx; and
- BTEX by EPA Method 8021B.

3.2 Groundwater Conditions and Groundwater Flow Direction

The water produced from the wells during the last five groundwater sampling events was clear with no noticeable odor or sheen.

Static water levels in the three wells seasonally range from 5.13 to 10.67 feet below the top of the PVC well casing. The elevation of the groundwater in the wells was calculated using the elevation of the top of the casing (at the scribed reference mark) and subtracting the depth to water measurement (Table 1). HydroCon prepared a groundwater elevation contour from each data set to illustrate the direction of groundwater flow at the site on Figures 4.1 through Figure 4.5. Groundwater flowed in a northeast direction during the Aprill 2016, August 2016 and March 2017 sampling events. During the November 2016 sampling event the groundwater flowed to the east and to the west during the June 2017 sampling event. The gradient at the site ranged from 0.004 foot per foot during the November 2016 event to 0.01 foot per foot during the June 2017 sampling event.

3.3 Groundwater Analytical Results

The groundwater analytical results are reported as micrograms per liter (µg/L) and are summarized on Table 2 and shown on Figure 3. The analytical results are summarized below.

GRPH has been historically detected in all wells but has never exceeded the MTCA Method A Cleanup Level of 800 µg/L. The highest GRPH concentration was detected in MW3 at 499 µg/L in 2005. GRPH has not been detected above the laboratory Method Reporting Limits (MRLs) in monitoring wells MW-1 and MW-2 for the past five quarters and below the MRLs for

the past two quarters at MW-3.

The maximum concentration of benzene detected during the past five quarterly events was 3.7 µg/L in MW-1 during the April 2016 groundwater monitoring event. All detections of benzene during the last five quarterly monitoring events have been below the MTCA Method A Cleanup Level of 5 µg/L.

4.0 SUMMARY AND CONCLUSIONS

HydroCon was contracted to review the historical documents for the site, complete quarterly groundwater monitoring, and to request site closure. A review of the historical documents revealed that the site had a documented release during station upgrades in 1991. Based on the report submitted to Ecology, the file was closed in 1992; however during a Phase II ESA completed in 2005, concentrations of benzene detected in the groundwater exceeded the MTCA Method A Cleanup Level of 5 µg/L. The results of the investigation were reported to Ecology and the site was re-opened.

Since March 2015, HydroCon has completed five groundwater sampling events of the three site monitoring wells. The results of the monitoring indicated a predominately north-northeastern groundwater flow direction. Benzene has not been detected above the MTCA Method A cleanup level for the past five quarterly events.

Based on the results of the past quarterly groundwater sampling events, it appears that the remedial soil excavation efforts in 1991 and natural attenuation of dissolved petroleum in the groundwater have successfully remediated the site below the MTCA Method A Cleanup levels for the COCs at the site (GRPH and BTEX).

5.0 QUALIFICATIONS

Our professional services have been performed, our findings obtained, and our recommendations prepared in accordance with customary principles and practices in the fields of environmental science and engineering. This statement is in lieu of other statements either expressed or implied. Hydrocon is not responsible for the independent conclusions, opinions or recommendations made by others based on the records review, site observations, field exploration, or laboratory test data presented in this report.

Environmental assessments and evaluations are inherently limited in that conclusions are drawn and recommendations developed from information obtained from limited research and site evaluation. For these types of evaluations, it is often necessary to use information prepared by others and Hydrocon cannot be responsible for the accuracy of such information. Additionally, the passage of time may result in a change in the environmental characteristics at this and any other site and surrounding properties. This report does not warrant against future

operations or conditions, nor does this report warrant against operations or conditions present of a type or at a location not investigated. This report is not a regulatory compliance audit and is not intended to satisfy the requirements of any local, state, or federal real estate transfer laws.

This report is intended for the sole use of **Wilcox & Flegel**. This report may not be used or relied upon by any other party without the written consent of Hydrocon. The scope of services performed in execution of this evaluation may not be appropriate to satisfy the needs of other users, and use or re-use of this document or the findings, conclusions, or recommendations is at the risk of said user.

The conclusions presented in this report are, in part, based upon subsurface sampling performed at selected locations and depths. There may be conditions between borings or samples that differ significantly from those presented in this report and which cannot be predicted by this study.

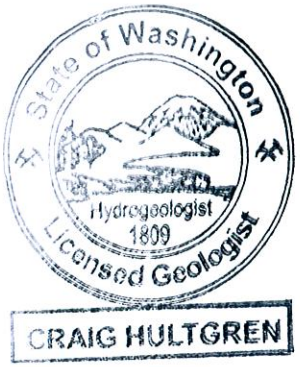
Signature:

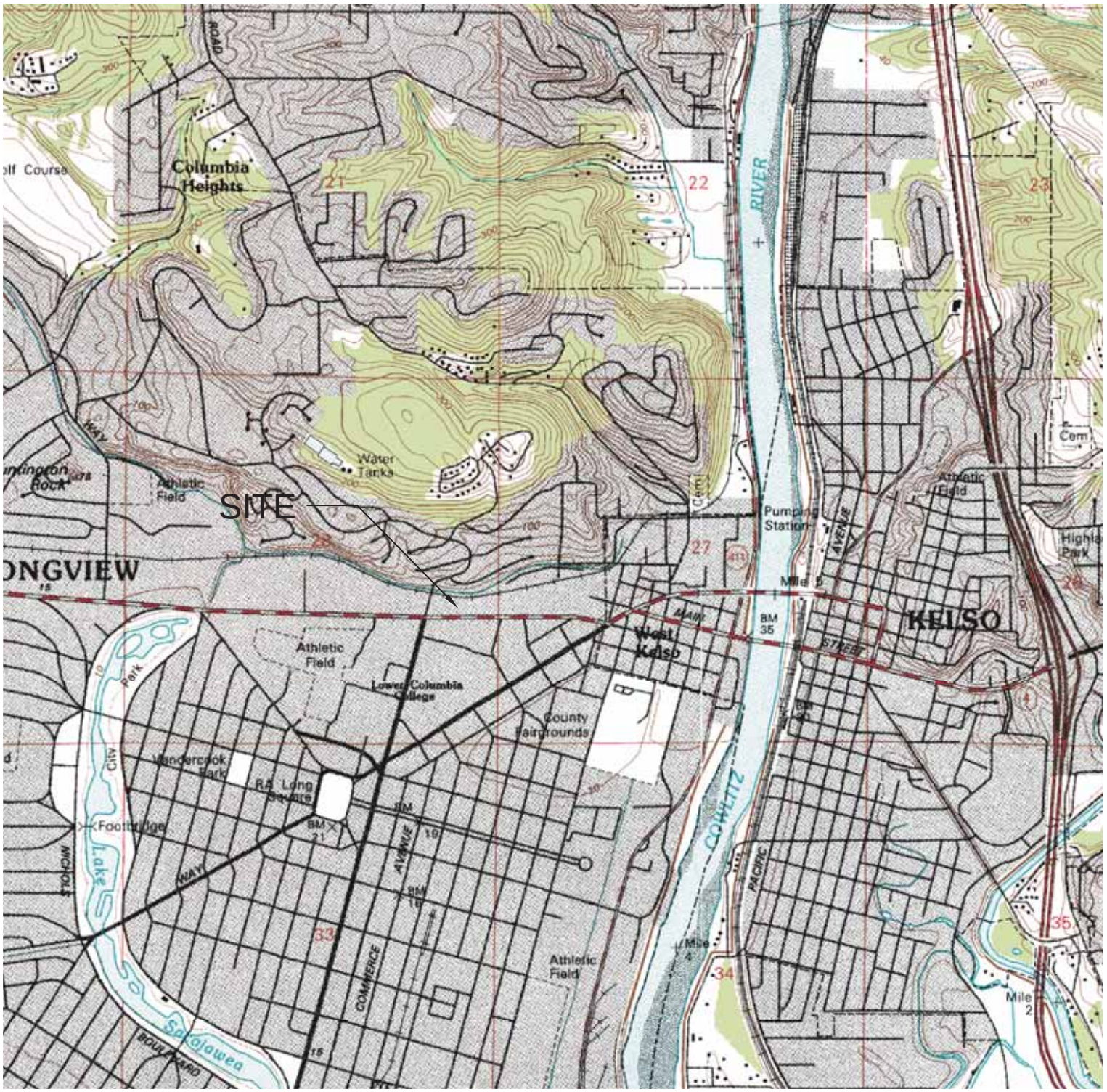
Report Prepared By:

Brian J Pletcher
Project Manager

Report Reviewed By:

Craig Hultgren, LHG
Principal Geologist





NOTE(S):

1. USGS, KELSO QUADRANGLE
   WASHINGTON
   7.5 MINUTE SERIES (TOPOGRAPHIC)

N
W E
S

0 2000 4000
SCALE IN FEET
1" = 2000'

HydroCon
501 Allen St Suite B, Kelso WA Ph: (360) 706-6079

DATE: 03-20-17
DWN: JH
CHK: JH
APPROVED:
PRJ. MGR: DB
PROJECT NO: 2015-007-01

FIGURE 1
SITE LOCATION
HANDY MART
WILCOX & FLEGEL
1410 OCEAN BEACH HWY
LONGVIEW, WA

CONVENIENCE STORE

CAR WASH

MW-1

DISPENSER ISLAND

MW-3

MW-2

LEGEND

- PROPERTY BOUNDARY
- BUILDING
- MW-01 MONITORING WELL
- 1991 REMEDIAL EXCAVATION
- APPROXIMATE EXTENT
- Water
- Storm Sewer
- Sanitary Sewer

N W E S

0 30 60

SCALE IN FEET
1" = 30'

Hydro Con
510 Allen St. Suite B Kelso, WA 98626, Ph (360) 703-6079

DATE: 07-12-17
DWN: JH
CHK: CD
APPROVED:
PRJ. MGR: DB
PROJECT NO: 2015-007-01

FIGURE 2
SITE FEATURES
HANDY MART
WILCOX & FLEGEL
1410 OCEAN BEACH HWY
LONGVIEW, WA

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Parameter		GRPH [1]	Benzene [2]	Toluene [2]	Ethylbenzene [2]	Total Xylenes [2]
Cleanup Level*		800	5	1,000	700	1,000
Monitoring Well ID	Date Sampled					
MW-1	3/16/15	<100	1.6	<1	<1	<3
	9/24/15	<100	6.1	<1	<1	<3
	2/2/16	<100	6.6	<1	<1	<3
	4/14/16	<100	3.7	<1	<0.5	<1.5
	8/10/16	<100	2.2	<1	<0.5	<1.5
	11/17/16	<100	0.314	<1	<0.5	<1.5
	3/15/17	<100	<0.2	<1	<0.5	<1.5
	6/30/17	<100	<0.2	<1	<0.5	<1.5
MW-2	3/16/15	<100	15	1.3	<1	<3
	9/24/15	460	<1	4.4	<1	3.5
	2/2/16	<100	2.7	<1	<1	<3
	4/14/16	<100	1.41	<1	<0.5	<1.5
	8/10/16	<100	<0.2	<1	<0.5	<1.5
	11/17/16	<100	<0.2	<1	<0.5	<1.5
	3/15/17	<100	<0.2	<1	<0.5	<1.5
	6/30/17	<100	<0.2	<1	<0.5	<1.5
MW-3	3/16/15	310	7.0	3.5	3.3	25
	9/24/15	<100	<1	<1	<1	<3
	2/2/16	210	<1	3.7	<1	<3
	4/14/16	310	<0.2	<1	<0.5	<1.5
	8/10/16	326	<0.2	<1	<0.5	<1.5
	11/17/16	329	<0.2	<1	<0.5	<1.5
	3/15/17	<100	<0.2	<1	<0.5	<1.5
	6/30/17	<100	<0.2	<1	<0.5	<1.5

LEGEND

- PROPERTY BOUNDARY
- BUILDING MONITORING
- MW-01 WELL
- 1991 Remedial Excavation
- Approximate Extent

N W E S

0 30 60

SCALE IN FEET
1" = 30'

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510 Allen St. Suite B Kelso, WA 98626, Ph (360) 703-6079

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PROJECT NO: 2015-007-01

FIGURE 3
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
JUNE 2017
WILCOX & FLEGEL - HANDY MART
1410 OCEAN BEACH HWY
LONGVIEW, WA

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CONVENIENCE STORE

CAR WASH

MW-1
(13.09)

13.15

13.10

DISPENSER ISLAND

MW-3
(13.22)

MW-2
(13.19)

13.2

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LEGEND

- PROPERTY BOUNDARY
- BUILDING
- MW-01 (XX.XX) — MONITORING WELL (GROUNDWATER ELEV.)
- APPROXIMATE DIRECTION OF GROUNDWATER FLOW
- GROUNDWATER ELEVATION CONTOUR

N W E S

0 30 60

SCALE IN FEET
1" = 30'

HydroCon
510 Allen St. Suite B Kelso, WA 98626, Ph(360) 703-6079

DATE: 05-21-17
DWN: JH
CHK: CD
APPROVED: BP
PRJ. MGR: DB
PROJECT NO: 2015-007-01

FIGURE 4.1
GROUNDWATER ELEVATION & CONTOUR MAP (APRIL 2016)
HANDY MART
WILCOX & FLEGEL
1410 OCEAN BEACH HWY
LONGVIEW, WA

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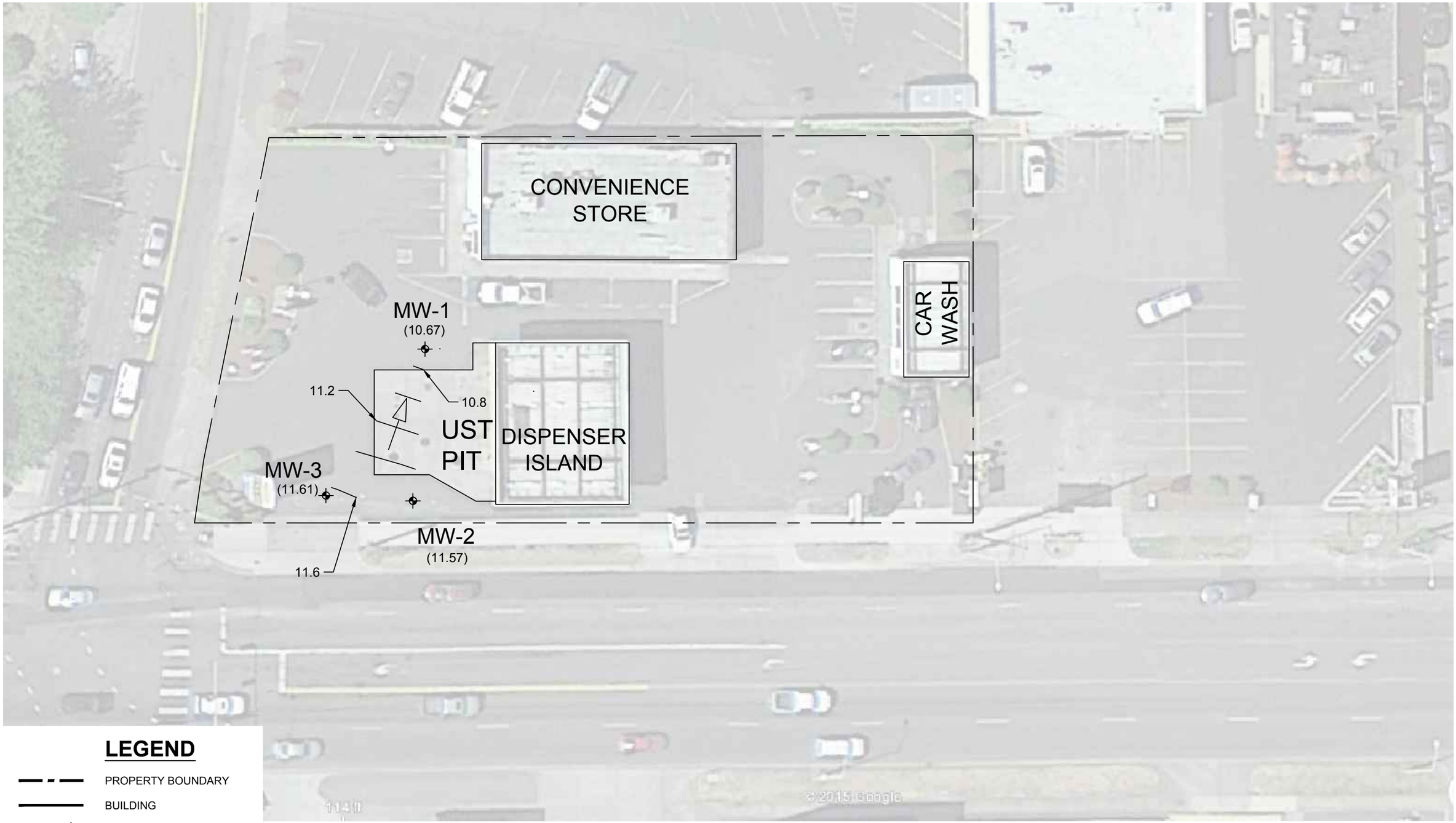

LEGEND

- PROPERTY BOUNDARY
- BUILDING
- MW-01 (XX.XX) — MONITORING WELL (GROUNDWATER ELEV.)
- APPROXIMATE DIRECTION OF GROUNDWATER FLOW
- GROUNDWATER ELEVATION CONTOUR

N W E S

0 30 60

SCALE IN FEET
1" = 30'

HydroCon
510 Allen St. Suite B Kelso, WA 98626, Ph(360) 703-6079

DATE: 05-21-17
DWN: JH
CHK: CD
APPROVED: BP
PRJ. MGR: DB
PROJECT NO: 2015-007-01

FIGURE 4.2
GROUNDWATER ELEVATION & CONTOUR MAP (AUGUST 2016)
HANDY MART
WILCOX & FLEGEL
1410 OCEAN BEACH HWY
LONGVIEW, WA

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LEGEND

- PROPERTY BOUNDARY
- BUILDING
- MW-01 (XX.XX) — MONITORING WELL (GROUNDWATER ELEV.)
- APPROXIMATE DIRECTION OF GROUNDWATER FLOW
- GROUNDWATER ELEVATION CONTOUR

N W E S

0 30 60

SCALE IN FEET
1" = 30'

Hydro Con
510 Allen St. Suite B Kelso, WA 98626, Ph(360) 703-6079

DATE: 05-21-17
DWN: JH
CHK: CD
APPROVED: BP
PRJ. MGR: DB
PROJECT NO: 2015-007-01

FIGURE 4.3
GROUNDWATER ELEVATION & CONTOUR MAP
NOVEMBER 2016
WILCOX & FLEGEL - HANDY MART
1410 OCEAN BEACH HWY
LONGVIEW, WA

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CONVENIENCE STORE

CAR WASH

MW-1
(14.34)

14.40

14.35

DISPENSER ISLAND

MW-3
(14.50)

MW-2
(14.40)

14.45

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LEGEND

- PROPERTY BOUNDARY
- BUILDING
- MW-01 (XX.XX) — MONITORING WELL (GROUNDWATER ELEV.)
- APPROXIMATE DIRECTION OF GROUNDWATER FLOW
- GROUNDWATER ELEVATION CONTOUR

N
W E
S

0 30 60
SCALE IN FEET
1" = 30'

Hydro Con
510 Allen St. Suite B Kelso, WA 98626, Ph(360) 703-6079

DATE: 05-21-17
DWN: JH
CHK: CD
APPROVED: BP
PRJ. MGR: DB
PROJECT NO: 2015-007-01

FIGURE 4.4
GROUNDWATER ELEVATION & CONTOUR MAP (MARCH 2017)
HANDY MART
WILCOX & FLEGEL
1410 OCEAN BEACH HWY
LONGVIEW, WA

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LEGEND

- PROPERTY BOUNDARY
- BUILDING
- MW-01 (xx.xx) — MONITORING WELL (GROUNDWATER ELEVATION)
- GROUNDWATER FLOW DIRECTION
- GROUNDWATER CONTOUR ELEVATION

N W E S

0 30 60

SCALE IN FEET
1" = 30'

HydroCon
510 Allen St. Suite B Kelso, WA 98626, Ph (360) 703-6079

DATE: 07-12-17
DWN: JH
CHK: CD
APPROVED: BP
PRJ. MGR: DB
PROJECT NO: 2015-007-01

FIGURE 4.5
GROUNDWATER ELEVATIONS AND CONTOUR MAP
JUNE 2017
WILCOX & FLEGEL - HANDY MART
1410 OCEAN BEACH HWY
LONGVIEW, WA

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Table 1
Summary of Historical Groundwater Elevations
Handy Mart
Longview, Washington
HydroCon Project Number 2015-007.1

Monitoring Well ID	Date	TOC Elevation	Depth to Water	Groundwater Elevation
MW-1	4/14/16	21.12	8.03	13.09
	8/10/16		10.45	10.67
	11/17/16		7.93	13.19
	3/15/17		6.78	14.34
	6/30/17		8.01	13.11
MW-2	4/14/16	19.98	6.79	13.19
	8/10/16		8.41	11.57
	11/17/16		6.83	13.15
	3/15/17		5.58	14.40
	6/30/17		6.77	13.21
MW-3	4/14/16	19.63	6.41	13.22
	8/10/16		8.02	11.61
	11/17/16		6.37	13.26
	3/15/17		5.13	14.50
	6/30/17		6.73	12.90

Notes:
TOC = Top of well casing

Table 2
Summary of Groundwater Analytical Results
Handy Mart, Longview, Washington
HydroCon Project Number 2014-007.01

Parameter		GRPH [1]	Benzene [2]	Toluene [2]	Ethylbenzene [2]	Total Xylenes [2]
Cleanup Level*		**800**	**5**	**1,000**	**700**	**1,000**
Monitoring Well ID	Date Sampled					
MW-1	5/6/05	<250	<0.5	<2	<2	<2
	12/10/10	<50	<5.0	<5.0	<5.0	<10.0
	3/25/11	<50	<5.0	<5.0	<5.0	<10.0
	9/22/11	92.8	<5.0	<5.0	<5.0	16.8
	3/9/12	104	<5.0	<5.0	<5.0	<10.0
	9/24/15	<100	6.1	<1	<1	<3
	2/2/16	<100	6.6	<1	<1	<3
	4/14/16	<100	3.7	<1	<0.5	<1.5
	8/10/16	<100	2.2	<1	<0.5	<1.5
	11/17/16	<100	0.314	<1	<0.5	<1.5
	3/15/17	<100	<0.2	<1	<0.5	<1.5
	6/30/17	<100	<0.2	<1	<0.5	<1.5
MW-2	5/6/05	<250	<0.5	<2	<2	<2
	12/10/10	<50	<5.0	<5.0	<5.0	<10.0
	3/25/11	73	<5.0	<5.0	<5.0	<10.0
	9/22/11	76.5	<5.0	5.7	<5.0	<10.0
	3/9/12	513	15.5	26.0	5.13	7.6
	9/24/15	460	<1	4.4	<1	3.5
	2/2/16	<100	2.7	<1	<1	<3
	4/14/16	<100	1.41	<1	<0.5	<1.5
	8/10/16	<100	<0.2	<1	<0.5	<1.5
	11/17/16	<100	<0.2	<1	<0.5	<1.5
	3/15/17	<100	<0.2	<1	<0.5	<1.5
	6/30/17	<100	<0.2	<1	<0.5	<1.5
MW-3	5/6/05	499	14	3.0	<2	8
	12/10/10	230	<5.0	<5.0	<5.0	<10.0
	3/25/11	180	<5.0	<5.0	<5.0	<10.0
	9/22/11	242	<5.0	<5.0	<5.0	<10.0
	3/9/12	95.8	<5.0	<5.0	<5.0	<10.0
	9/24/15	<100	<1	<1	<1	<3
	2/2/16	210	<1	3.7	<1	<3
	4/14/16	310	<0.2	<1	<0.5	<1.5
	8/10/16	326	<0.2	<1	<0.5	<1.5
	11/17/16	329	<0.2	<1	<0.5	<1.5
	3/15/17	<100	<0.2	<1	<0.5	<1.5
	6/30/17	<100	<0.2	<1	<0.5	<1.5

Notes:
* = Washington State Model Toxics Control Act (MTCA) Method A Cleanup Level for Groundwater (rev. October 12, 2007)
[1] = Gasoline Range Petroleum Hydrocarbons (GRPH) by Northwest Method NWTPH-Gx
[2] = Volatile Organic Compounds (VOCs) by EPA Methods 8021B or 8260B
< = Indicates compound not detected above the laboratory Method Reporting Limit (MRL) shown.
All values shown are in micrograms per liter (µg/L) (parts per billion).
Highlighted cell indicates compound detected above cited MTCA Method A Cleanup Level.

ATTACHMENT A
HISTORIC REPORTS

Environmental Inspection Services

November 6, 1991

Steve Wilcox, President
Wilcox & Flegel Oil Company
110 Panel Way
Longview, WA 98632

Reference: Analytical test results from samples taken from an excavation at the site of "Johns Shell Service Station located at 1410 Ocean Beach Highway in Longview, Washington

Dear Steve,

A field representative from Environmental Inspection Services, Charles Spear, supervised limited excavation activities performed by Jay Brookhart Excavating. The representative also collected four representative soil samples and one water sample (sample No.s 1 thru 5) from the excavation at the aforementioned property on Friday, October 18, 1991. The four soil samples were collected from representative cavity areas as depicted on the Generalized Site Plan Plate P-1. The soil samples were collected in a manner consistent with proper sampling procedures, presentation, and chain of custody documentation as stated in a prepared sampling plan.

The sampling plan was developed to ensure that sample collection, sample location, sample handling, and data analysis were sufficient to evaluate the effectiveness of limited excavations performed on-site. The four soil samples and one water sample were subsequently analyzed by Columbia Analytical Services, Inc. a Longview based certified laboratory, in a manner consistent with the analytical procedures outlined in the EPA test methods document SW-846. Each of the soil samples and the water sample were analyzed for the presence of Total Petroleum Hydrocarbons (TPH) and benzene, toluene, ethylbenzene, and xylene (BTEX) in manner consistent with Test Methods 5030/8020 and Modified 8015.

Based on the analytical test results from samples taken at representative locations in the subject excavation, the excavation episode was successful with regards to removing contaminated petroleum-contaminated soils within the subject excavation.

4200 SW 107th #2501 • Beaverton, OR 97005 • Bus. (503) 644-8526 • (503) 646-5744

LIMITED PHASE II ENVIRONMENTAL SITE ASSESSMENT and GROUNDWATER INVESTIGATION REPORT

For:
76 Gasoline Station
1410 Ocean Beach Highway
Longview, Washington 98632

July 26, 2005

Prepared for:

Wilson Oil Company
Attn: Gary Mellema
PO Box 69
Longview, Washington 98632

Prepared By:

William R. CullochDasson
Environmental Specialist

3 Kings Environmental, Inc.
1311 SE Grace Avenue
Battleground, Washington 98604
(360) 666-5464

On February 11, 2005, ten (10) soil borings were established by push probe on the site (see Figure 1). The borings were advanced to a depth of 15 feet below ground surface (bgs). Soil was inspected continuously in each boring for evidence of petroleum contamination and groundwater. Apparent groundwater was detected in each boring at 9.5 to 10 feet bgs, and soil samples were collected at the apparent soil/water interface.

No petroleum odor was detected in soil or water in the borings with the exception of Boring 5, which was apparently located in the former contaminated soil excavation on the south side of the UST nest. Petroleum odor was detected in this boring at the apparent soil/water interface, at 10 feet bgs.

All soil samples were placed into 4-ounce glass jars with tight-fitting Teflon-lined lids and stored in a cooler with ice for transport to Wy'East Environmental Services, Inc. (Wy'East) of Portland for analysis. Soil samples were analyzed for Total Petroleum Hydrocarbon Identification (TPH-HCID). Results indicated that heavy oil and gasoline were detected as summarized in Table 6.3.1.

Table 1
Soil Sample Results

Sample	Location	Depth (ft bgs)	NWTPH-HCID; NWTPH-GX; NWTPH-Dx (ppm)		
			Gasoline	Diesel	Heavy Oil
B1-10'	NW Area	10	ND	ND	ND
B2-9.5'	NW Area	9.5	ND	ND	**143**
B3-9.5'	N Side USTs	9.5	ND	ND	ND
B4-10'	W Side USTs	10	ND	ND	**367**
B5-10'	S Side USTs	10	**90**	ND	**145**
B6-10'	SW Dispenser	10	ND	ND	ND
B7-10'	SE Dispenser	10	ND	ND	ND
B8-10'	NE Dispenser	10	ND	ND	ND
B9-10'	NW Dispenser	10	ND	ND	ND
B10-10'	East Side	10	ND	ND	ND

NWTPH-HCID = Northwest Total Petroleum Hydrocarbon – Hydrocarbon Identification
NWTPH-Gx = Quantification Method for Gasoline Range TPH
NWTPH-Dx = Quantification Method for Diesel Range TPH
bgs = below ground surface
ND = Below Method Reporting Limit

As indicated in the table, gasoline was detected at the apparent soil/water interface in Boring 5. Heavy oil was detected in Boring 2, Boring 4, and Boring 5 at the apparent soil/water interface. Although a waste oil tank was reported to have been removed from the site in the past, the location of heavy oil detected in the borings is in the southwestern portion of the site, not in the area suspected of containing the former tank. Samples from other borings on the site did not contain heavy oil. The laboratory report indicates that the oil resembles weathered (old) motor oil.

The soil sample collected from Boring 5 was also analyzed for BTEX by Method 8021B. No benzene was detected in the sample. Thus, the gasoline cleanup level under the Model Toxics Cleanup Act (MTCA) Method A for unrestricted land use is 100 ppm. Since the sample also contained heavy oil, the analytical results also indicate a heavy oil cleanup level of 2,000 ppm. The concentrations of gasoline and heavy oil detected on the site are below the MTCA Method A cleanup levels for unrestricted land use.

Groundwater samples were collected from Boring 5 and Boring 10 on the subject site. Water was collected from the probe casing in each boring with a peristaltic pump. The water was pumped out until it ran relatively clear of fines, then a sample was collected in appropriate containers, placed in a cooler with ice and transported to Wy'East for analysis by Method NWTPH-HCID for hydrocarbon identification. No petroleum hydrocarbons were detected in Boring 10, on the east side of the site. Gasoline was detected in Boring B5, and the sample was analyzed for gasoline quantification by Method NWTPH-Gx, and BTEX

by EPA Method 8021B. No heavy oil was detected in the sample. Gasoline was detected at a concentration of 4,410 parts per billion (ppb), and benzene was not detected.

The concentration of gasoline in the groundwater sample is above the MTCA Method A cleanup level for unrestricted land use of 1,000 ppb.

On May 6, 2005, three monitoring wells were installed on the subject site (see Figure 2). MW 1 was installed in the suspected upgradient direction from the location of contaminated groundwater identified during the Phase II ESA. MW2 was installed in the approximate location of Boring 5, south of the tank nest and area of contaminated groundwater. MW3 was installed southwest of the tank nest. Soil samples were collected from the soil/water interface in MW2 and MW3. A soil sample was not collected from the MW1 boring since it was located adjacent to Boring 3. The soil samples were analyzed by Method NWTPH-Gx. Since no benzene was detected in earlier soil samples collected for the Phase II ESA on the site, these samples were not analyzed for BTEX. Analytical results are summarized in Table 2 and shown on Figure 2.

Table 2
Soil Sample Results

Sample	Location	Depth (ft bgs)	TPH (ppm)		
			Gasoline	Diesel	Heavy Oil
MW2-10.5'	MW2	10.5	ND	NA	NA
MW3-10.5'	MW3	10.5	**90**	NA	NA

bgs = below ground surface
ND = Below Method Reporting Limit

As indicated in Table 1, gasoline contamination was not detected in soil collected from the boring for MW2. Gasoline contamination was detected in soil collected at the apparent soil/water interface in the boring for MW3. The concentration of gasoline in the sample is below the MTCA Method A cleanup level for unrestricted land use for soil without detected benzene.

Pre-packed 1-inch monitoring wells were installed in the borings to a depth of 20 feet bgs. The wells were constructed of 15 feet of 0.010 screen and 5 feet of blank with locking caps. The wells were developed and allowed to recharge. Casing elevations were determined with a laser level. Groundwater elevations were determined and the gradient was calculated by the EPA "On-Line Tools for Site Assessment Calculation: Gradient and Direction from Three Points." The gradient was calculated to be 0.003 with a direction of flow S2.7W (177.3 degrees from north).

Each well was purged with a peristaltic sampling pump of approximately 2.5 gallons, or over 10 volumes of water in each well. Water samples were collected with disposable tubing by the peristaltic pump and placed into 40 ml glass vials with no headspace. The samples were transported to Wy'East for analysis by Method NWTPH-Gx and EPA Method 8021B for BTEX. Analytical results are summarized in Table 3 and shown on Figure 2.

Table 3

Sample	Gasoline	Benzene	Toluene	Ethylbenzene	Xylenes
MW1-0505.1	ND	ND	ND	ND	ND
MW2-0505.2	ND	ND	ND	ND	ND
MW3-0505.3	**499**	**14**	**3**	ND	**8**

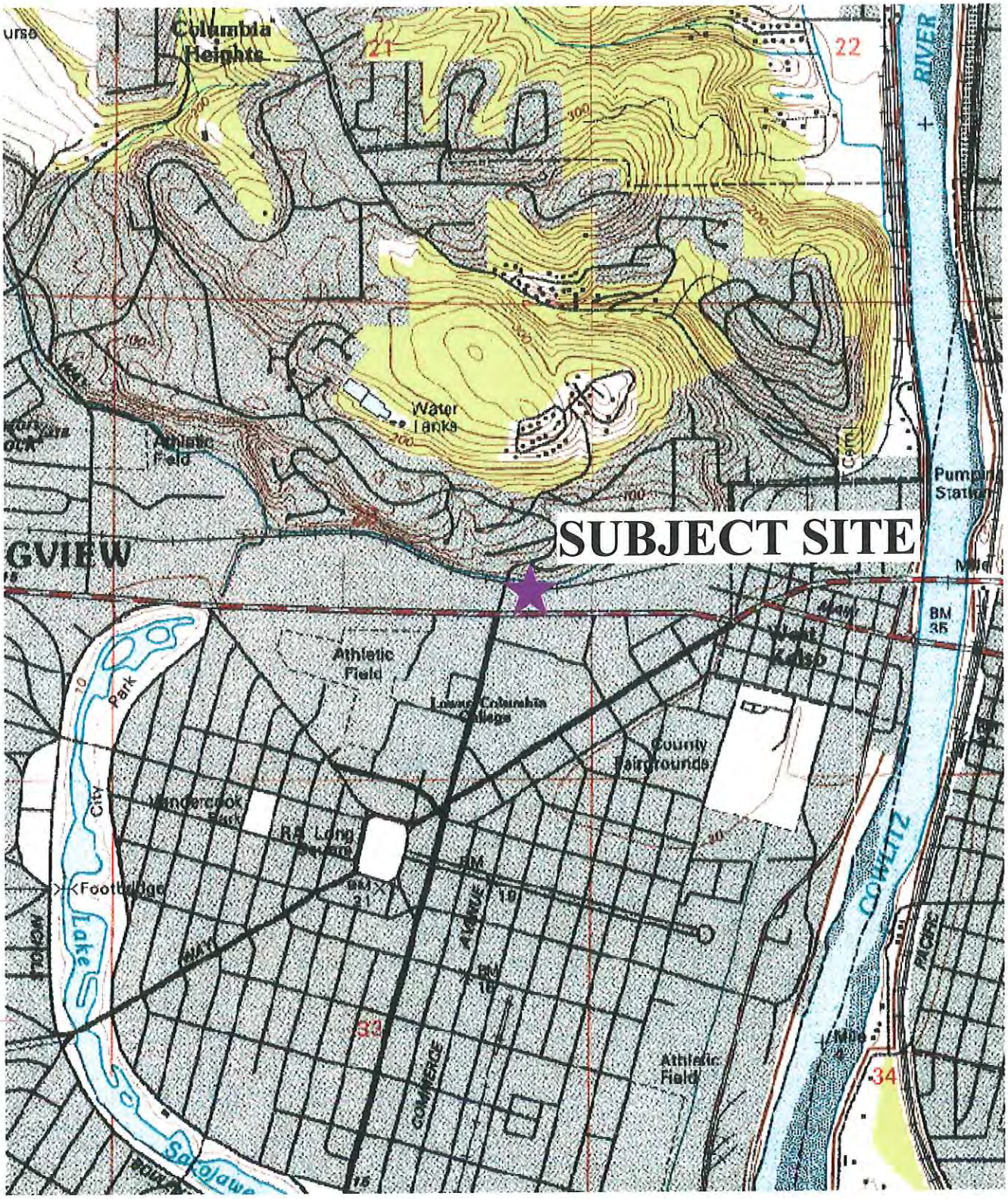
As indicated in Table 3, gasoline and volatile organic compounds were detected in groundwater in Monitoring Well MW3, but not in MW1 or MW2. The concentration of gasoline in the well is below the MTCA Method A cleanup concentration for unrestricted land use. However, benzene is above the Method A cleanup concentration of 8 ppb.

If you have any questions, please call me at 360-666-5464.

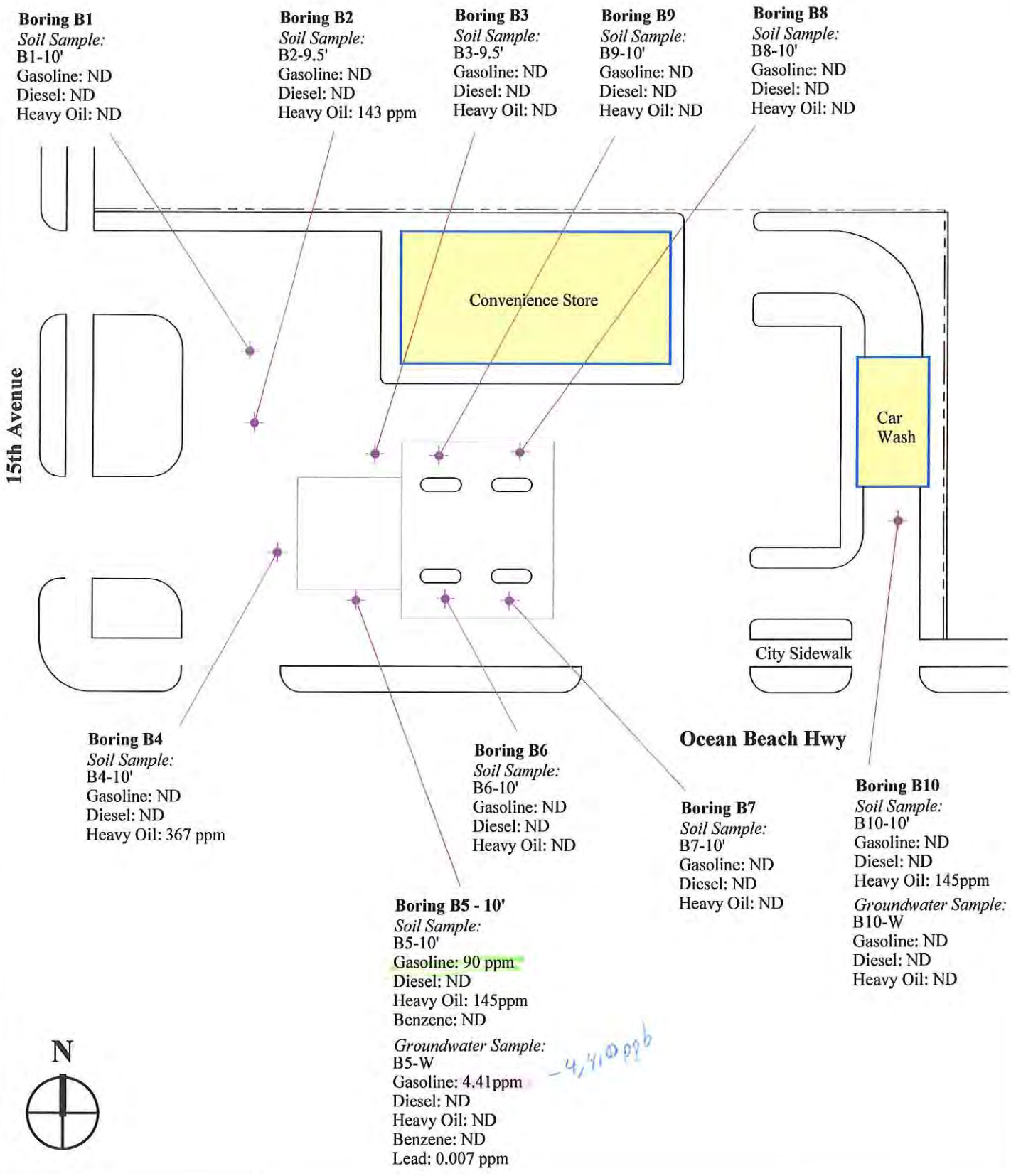
Sincerely,
3 KINGS ENVIRONMENTAL, INC

William R. CullochDasson

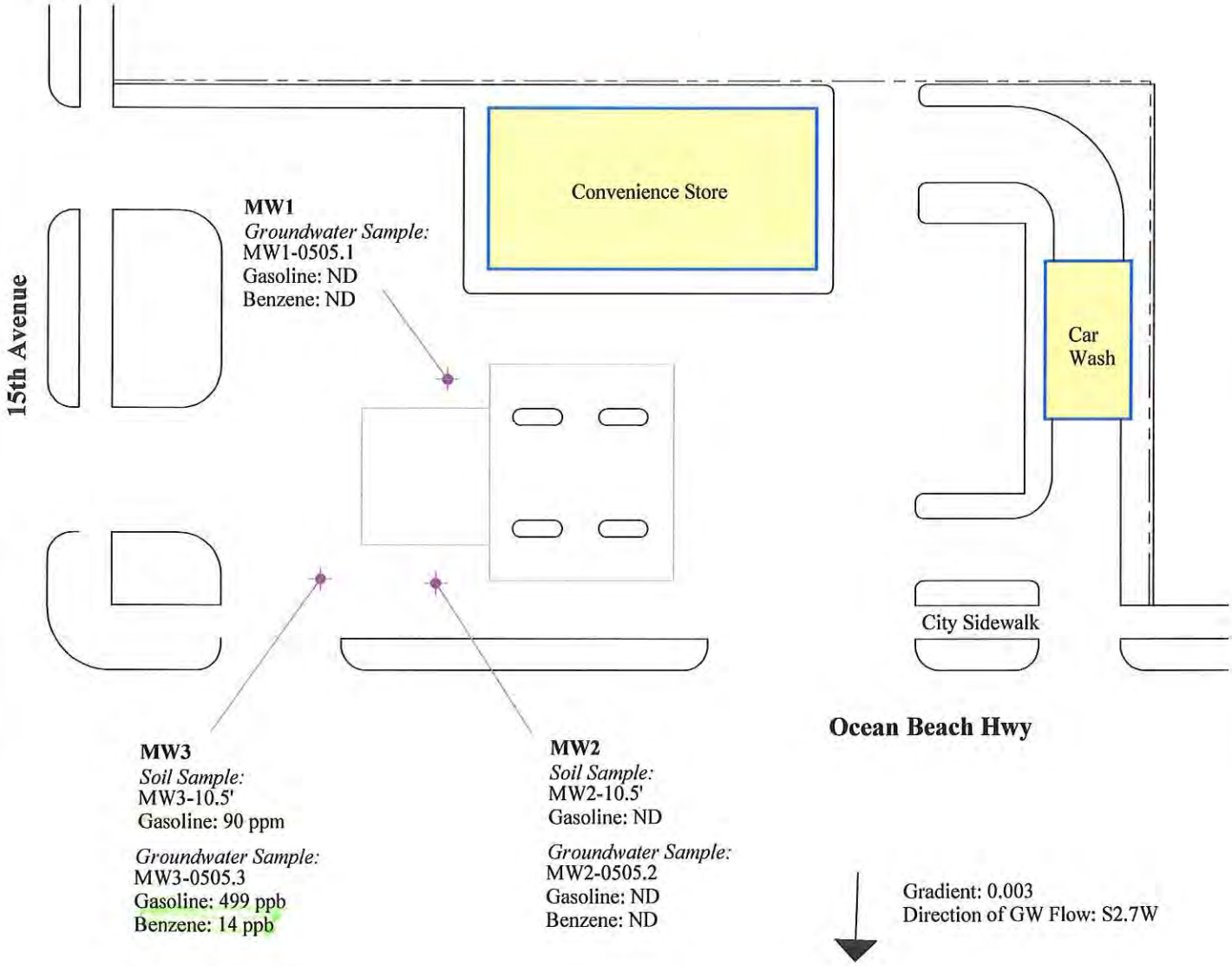
William R. CullochDasson, RG
Environmental Specialist



3 Kings Environmental, Inc. P.O. Box 280 Battle Ground, Washington 98604	**Site Location Map** 1410 Ocean Beach Highway Longview, Washington	Project: 25032 Date: 4/28/05 | Drawn by: wrc



3 Kings Environmental, Inc. P.O. Box 280 Battle Ground, Washington 98604	**FIGURE 1** **Boring Location Plan** Wilson Oil Property 1410 Ocean Beach Highway Longview, Washington 98632	Project: 25032 Date: 4/4/05 | Drawn by: wrc Scale: 1" = 40'



3 Kings Environmental, Inc. P.O. Box 280 Battle Ground, Washington 98604	**FIGURE 2** **Monitoring Well Location Plan** Wilson Oil Property 1410 Ocean Beach Highway Longview, Washington 98632	Project: 25032 Date: 7/26/05 | Drawn by: wrc Scale: 1" = 40'

LABORATORY REPORT

FEB 2 4 2005

3 Kings Environmental
Attn: Bill CullochDasson
P.O. Box 280
Battle Ground, WA 98604

PROJECT NAME/SITE:	1410 Ocean Beach Hwy	**REPORT NUMBER:**	54813
PROJECT NUMBER:	25032	**REPORT DATE:**	2-18-05
EXTRACTION DATE:	2-11-05 to 2-14-05	**PAGE:**	1 of 2

NW TPH-HCID

Analyte: Petroleum Hydrocarbon Identification (Gasoline, Petroleum, Heavy Oil) for soil (dry weight basis)

Field ID	Lab ID	Identification			Surrogate Recovery (%)
		Gasoline	Diesel	Heavy Oil	
B1-10'	N1107	**ND**	**ND**	**ND**	97
B2-9.5'	N1108	**ND**	**ND**	**Detected ‡**	106
B3-9.5'	N1109	**ND**	**ND**	**ND**	96
B4-10'	N1110	**ND**	**ND**	**Detected ‡**	106
B5-10'	N1111	**Detected †**	**ND**	**Detected ‡**	110
B6-10'	N1112	**ND**	**ND**	**ND**	90
B7-10'	N1113	**ND**	**ND**	**ND**	94
B8-10'	N1114	**ND**	**ND**	**ND**	95
B9-10'	N1115	**ND**	**ND**	**ND**	92
B10-10'	N1116	**ND**	**ND**	**ND**	95
BLANK	-	ND	ND	ND	-
Reporting Limits (mg/Kg)	-	20	50	100	-

Surrogate is Chlorooctane

ND = Not Detected (below reporting limit or detection limit)

‡ Weathered motor oil

† Weathered gas or mineral spirits

NW TPH-HCID

Analyte: Petroleum Hydrocarbon Identification (Gasoline, Petroleum, Heavy Oil) for water

Field ID	Lab ID	Identification			Surrogate Recovery (%)
		Gasoline	Diesel	Heavy Oil	
B5-W	N1117	**Detected ****	**ND**	**ND**	*
B10-W	N1118	**ND**	**ND**	**ND**	*
BLANK	-	ND	ND	ND	-
Reporting Limits (mg/L)	-	0.25	0.63	0.63	-

Surrogate is Chlorooctane

ND = Not Detected (below reporting limit or detection limit)

* Surrogate peak is not discernible on chromatogram from analyte peak.

** Weathered gas

LABORATORY REPORT

FEB 2 4 2005

3 Kings Environmental
Attn: Bill CullochDasson
P.O. Box 280
Battle Ground, WA 98604

PROJECT NAME/SITE:	1410 Ocean Beach Hwy	**REPORT NUMBER:**	54813
PROJECT NUMBER:	25032	**REPORT DATE:**	2-18-05
EXTRACTION DATE:	2-11-05 to 2-14-05	**PAGE:**	2 of 2

NWTPH-Dx
Analyte: Total Petroleum Hydrocarbon Quantification for soil (dry weight basis)

Field ID	Lab ID	Diesel mg/Kg (ppm)	Heavy Oil mg/Kg (ppm)	Surrogate Recovery (%)
B2-9.5'	N1108	**ND**	**143**	106
B4-10'	N1110	**ND**	**367**	119
B5-10'	N1111	**ND**	**145**	118
BLANK	-	ND	ND	-
Reporting Limit	-	25	100	-

Surrogate is o-Terphenyl
ND = Not Detected (below reporting limit or detection limit)

NWTPH-Gx
Analyte: Total Petroleum Hydrocarbon Quantification for soil (dry weight basis)

Field ID	Lab ID	Matrix	mg/Kg (ppm)	Surrogate Recovery (%)
B5-10'	N1111	SOIL	**90**	79
BLANK	-	-	ND	-
Reporting Limit	-	-	20	-

Surrogate is p-Bromofluorobenzene
ND = Not Detected (below reporting limit or detection limit)

NWTPH-Gx
Analyte: Total Petroleum Hydrocarbon Quantification for water

Field ID	Lab ID	µg/L (ppb)	Surrogate Recovery (%)
B5-W	N1117	**4,410**	119
BLANK	-	ND	-
Reporting Limit	-	250	-

Surrogate is p-Bromofluorobenzene
ND = Not Detected (below reporting limit or detection limit)

Wy'East Environmental Sciences, Inc.

LABORATORY REPORT

3 Kings Environmental
Attn: Bill CullochDasson
P.O. Box 280
Battle Ground, WA 98604

PROJECT NAME/SITE:	1410 Ocean Beach Hwy	**REPORT NUMBER:**	54813A
PROJECT NUMBER:	25032	**REPORT DATE:**	2-24-05
EXTRACTION DATE:	2-14-05 to 2-24-05	**PAGE:**	1 of 1

EPA 8021B

Analyte: BTEX for soil (Benzene, Toluene, Ethylbenzene, Xylenes)

Field ID	Lab ID	Identification & Quantification mg/Kg (ppm)				Surrogate Recovery (%)
		Benzene	Toluene	Ethyl-Benzene	Xylenes	
B5-10'	N1111	**ND**	**ND**	**0.10**	**0.48**	79
BLANK	-	ND	ND	ND	ND	-
Quantitation Limits	-	0.04	0.04	0.04	0.04	-

Surrogate is p-Bromofluorobenzene
ND = Not Detected (below reporting limit or detection limit)

EPA 8021B

Analyte: BTEX for water (Benzene, Toluene, Ethylbenzene, Xylenes)

Field ID	Lab ID	Identification & Quantification µg/L (ppb)				Surrogate Recovery (%)
		Benzene	Toluene	Ethyl-Benzene	Xylenes	
B5-W	N1117	**ND**	**ND**	**23**	**ND**	119
BLANK	-	ND	ND	ND	ND	-
Quantitation Limits	-	1	1	1	1	-

Surrogate is p-Bromofluorobenzene
ND = Not Detected (below reporting limit or detection limit)

EPA 3020/7421

Analyte: Total Lead (Pb) in water Quantification

Field ID	Lab ID	Quantification µg/L (ppb)
B5-W	N1117	**7**
BLANK	-	ND
Detection Limit	-	5

ND = Not Detected (below reporting limit or detection limit)

FEB 2 4 2005

Report Number: L-54813

WyEast
Environmental Sciences, Inc.

Research & Laboratory Services

CHAIN OF CUSTODY

2415 SE 11th Ave. • Portland, Oregon 97214 • (503) 231-9320 • FAX (503) 231-9344

PROJECT #	PROJECT NAME / SITE	STATE	PURCHASE ORDER #
25032	1410 Ocean Beach Hwy	WA	3881
COMPANY	**REPORT ATTENTION**	**PHONE NUMBER**	**FAX NUMBER**
3 Kings	Bill CullockDasson		
SAMPLES COLLECTED BY	**DATE(S) COLLECTED**	**TIME(S) COLLECTED**	**SAMPLES CHILLED TO 4° C?**
CullockDasson	2/11/05	9:30 - 1:45	Yes
PRESERVATIVE USED? (HCl, etc.)			Regular ☒ 3-5 Days ☐
None in Soil; HCl in 40ml Water Vials			

FIELD ID	MEDIA	CONTAINER	VOLUME ETC	ANALYSIS REQUIRED	LAB ID
B1-10'	Soil	JAR	4oz	NWTPH-HCID+	N1107
B2-9.5'	↓	↓	↓	↓	N1108
B3-9.5'	↓	↓	↓	↓	N1109
B4-10'	↓	↓	↓	↓	N1110
B5-10'	↓	↓	↓	↓	N1111
B6-10'	↓	↓	↓	↓	N1112
B7-10'	↓	↓	↓	↓	N1113
B8-10'	↓	↓	↓	↓	N1114
B9-10'	↓	↓	↓	↓	N1115
B10-10'	↓	↓	↓	↓	N1116
B5-W	Water	Bottles	(1) 1L; (2) 40ml	NWTPH-HCID+	N1117
B10-W	↓	↓	↓	↓	N1118

RELINQUISHED BY	DATE / TIME	RECEIVED BY	DATE / TIME
William R. CullockDasson	2/11/05 4:00		
RELINQUISHED BY	**DATE / TIME**	**RECEIVED BY LAB**	**DATE / TIME**
			2/11/5

Submission of samples with testing requirements to WyEast Environmental Sciences will be understood to be an agreement for services in accordance with the conditions listed on the back of the client copy

Wilson Oil

LABORATORY REPORT

3 Kings Environmental
Attn: Bill CullochDasson
P.O. Box 280
Battle Ground, WA 98604

PROJECT NAME/SITE:	Wilson Oil	**REPORT NUMBER:**	56026
PROJECT NUMBER:	25032	**REPORT DATE:**	5-12-05
EXTRACTION DATE:	5-9-05	**PAGE:**	1 of 1

NWTPH-Gx
Analyte: Total Petroleum Hydrocarbon Quantification for soil (dry weight basis)

Field ID	Lab ID	Matrix	mg/Kg (ppm)	Surrogate Recovery (%)
MW2-10.5'	N4588	SOIL	**ND**	104
MW3-10.5'	N4589	SOIL	**90**	90
BLANK	-	-	ND	-
Reporting Limit	-	-	20	-

Surrogate is p-Bromofluorobenzene
ND = Not Detected (below reporting limit or detection limit)

NWTPH-Gx
Analyte: Total Petroleum Hydrocarbon Quantification for water

Field ID	Lab ID	µg/L (ppb)	Surrogate Recovery (%)
MW1-0505.1	N4585	**ND**	99
MW2-0505.2	N4586	**ND**	97
MW3-0505.3	N4587	**499**	85
BLANK	-	ND	-
Reporting Limit	-	250	-

Surrogate is p-Bromofluorobenzene
ND = Not Detected (below reporting limit or detection limit)

Wy'East Environmental Sciences, Inc.

EPA Method 8260
Analyte: Volatile Organics in water

Field ID:	**MW1-0505.1**	Site Name:	**Wilson Oil**
Lab ID:	N4585.D	Site Number:	25032
Analysis date:	5-9-05	Report Number:	56026

CAS#	Compound	Sample (µg/L)	Blank (µg/L)	Quantitation Limit
71-43-2	Benzene	ND	ND	0.50
106-93-4	1,2-Dibromoethane	ND	ND	2
107-06-2	1,2-Dichloroethane	ND	ND	2
100-41-4	Ethylbenzene	ND	ND	2
98-82-8	Isopropylbenzene	ND	ND	2
1634-04-4	Methyl-tertbutylether (MTBE)	ND	ND	5
91-20-3	Naphthalene	ND	ND	2
103-65-1	n-Propylbenzene	ND	ND	2
108-88-3	Toluene	ND	ND	2
95-63-6	1,2,4-Trimethylbenzene	ND	ND	2
108-67-8	1,3,5-Trimethylbenzene	ND	ND	2
1330-20-7	Total Xylenes	ND	ND	2

	Surrogates:	Percent Recovery:
460-00-4	4-Bromofluorobenzene	98
107-06-2	1,2-Dichloroethane-d4	93
108-88-3	Toluene-d8	97

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Wy'East Environmental Sciences, Inc.

EPA Method 8260
Analyte: Volatile Organics in water

Field ID:	**MW2-0505.2**	Site Name:	**Wilson Oil**
Lab ID:	N4586.D	Site Number:	25032
Analysis date:	5-9-05	Report Number:	56026

CAS#	Compound	Sample (µg/L)	Blank (µg/L)	Quantitation Limit
71-43-2	Benzene	ND	ND	0.50
106-93-4	1,2-Dibromoethane	ND	ND	2
107-06-2	1,2-Dichloroethane	ND	ND	2
100-41-4	Ethylbenzene	ND	ND	2
98-82-8	Isopropylbenzene	ND	ND	2
1634-04-4	Methyl-tertbutylether (MTBE)	ND	ND	5
91-20-3	Naphthalene	ND	ND	2
103-65-1	n-Propylbenzene	ND	ND	2
108-88-3	Toluene	ND	ND	2
95-63-6	1,2,4-Trimethylbenzene	ND	ND	2
108-67-8	1,3,5-Trimethylbenzene	ND	ND	2
1330-20-7	Total Xylenes	ND	ND	2

	Surrogates:	Percent Recovery:
460-00-4	4-Bromofluorobenzene	98
107-06-2	1,2-Dichloroethane-d4	92
108-88-3	Toluene-d8	99

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Wy'East Environmental Sciences, Inc.

EPA Method 8260
Analyte: Volatile Organics in water

Field ID:	**MW3-0505.3**	Site Name:	**Wilson Oil**
Lab ID:	N4587.D	Site Number:	25032
Analysis date:	5-9-05	Report Number:	56026

CAS#	Compound	Sample (µg/L)	Blank (µg/L)	Quantitation Limit
71-43-2	Benzene	14	ND	0.50
106-93-4	1,2-Dibromoethane	ND	ND	2
107-06-2	1,2-Dichloroethane	ND	ND	2
100-41-4	Ethylbenzene	ND	ND	2
98-82-8	Isopropylbenzene	ND	ND	2
1634-04-4	Methyl-tertbutylether (MTBE)	ND	ND	5
91-20-3	Naphthalene	ND	ND	2
103-65-1	n-Propylbenzene	2	ND	2
108-88-3	Toluene	3	ND	2
95-63-6	1,2,4-Trimethylbenzene	ND	ND	2
108-67-8	1,3,5-Trimethylbenzene	ND	ND	2
1330-20-7	Total Xylenes	8	ND	2

	Surrogates:	Percent Recovery:
460-00-4	4-Bromofluorobenzene	96
107-06-2	1,2-Dichloroethane-d4	87
108-88-3	Toluene-d8	101

2415 SE 11th Ave., Portland, Oregon 97214 Phone (503) 231-9320 Fax (503) 231-9344

Report Number: 56028

WyEast
Environmental Sciences, Inc.

Research & Laboratory Services

CHAIN OF CUSTODY

2415 SE 11th Ave. • Portland, Oregon 97214 • (503) 231-9320 • FAX (503) 231-9344

PROJECT # 25032	PROJECT NAME / SITE Wilson Oil	STATE WA	PURCHASE ORDER # 4130
COMPANY 3 Kings	REPORT ATTENTION Bill CullochDasson	PHONE NUMBER	FAX NUMBER
SAMPLES COLLECTED BY CullochDasson	DATE(S) COLLECTED 5/6/05 & 5/9/05	TIME(S) COLLECTED 5/9/05 5/6/05 : 11:35/12:37; 10:45-11:30	SAMPLES CHILLED TO 4° C? Yes
PRESERVATIVE USED? (HCl, etc.) None for Soil; HCl for water			Regular ☒ 3-5 Days ☐

FIELD ID	MEDIA	CONTAINER	VOLUME ETC	ANALYSIS REQUIRED	LAB ID
MW1-0505.1	Water	Vials	(3) 40ml	NWTPH-Gx; EPA 8260 for BTEX, EDC, EDB & MTBE	NH585
MW2-0505.2	↓	↓	↓	↓ ↓	NH586
MW3-0505.3	↓	↓	↓	↓ ↓	NH587
MW2-10.5'	Soil	JAR	4oz	NWTPH-Gx	NH588
MW3-10.5'	↓	↓	↓	↓	NH589

RECEIVED
MAY 17 2005

RELINQUISHED BY William R. CullochDasson	DATE / TIME 5/3/05 3:05	RECEIVED BY	DATE / TIME
RELINQUISHED BY	DATE / TIME	RECEIVED BY LAB	DATE / TIME 5/9/5

Submission of samples with testing requirements to WyEast Environmental Sciences will be understood to be an agreement for services in accordance with the conditions listed on the back of the client copy

Boring #: 1	**BORING LOG**	Date: 2/11/05
MW #:		Start: 0915 Finish: 0936

Project: 76 Station 1410 Ocean Beach Hwy Longview, Washington	Boring Location: Northwest Portion
Project #: 25032 / Client: Wilson Oil	Logged By: William R.CullochDasson
Driller: GeoTech Explorations	Sect: 28 | T: 8N | R: 2W | Q: NE/SE
	Boring Dia: 1.5 | Depth: 15 ft
Drilling Method: Push Probe	Surface Elev: Approx: 20 ft amsl
	TOC Elev:
Sampling Method: Macro Sampler	Start Card #:
	SWL: 10 ft bgs Date: 2/11/05

Sample	B.C.	Depth	Sample Interval	GW Level	Strata	Lithology
						Asphalt surface with 4" gravel base Dark greenish brown silty to sandy clay with organic odor, grades to dark gray silty to sandy clay at 7 ft, becomes moist at 7.5 ft, grades to dark gray clayey silt at 10ft, wet at 10 ft, soil/water interface. Dark gray clayey silt to 15 ft.
		5'				
B1-10'		10'		▽ GW		Organic odor throughout. No petroleum detected by odor or sheen testing.
		15'			Bottom	

NOTES:

Boring #: 2 MW #:	**BORING LOG**	Date: 2/11/05 Start: 0941 Finish: 0950
Project: 76 Station 1410 Ocean Beach Hwy Longview, Washington		Boring Location: Northwest Portion
Project #: 25032	Client: Wilson Oil	Logged By: William R.CullochDasson
Driller: GeoTech Explorations		Sect: 28 | T: 8N | R: 2W | Q: NE/SE Boring Dia: 1.5 | Depth: 15 ft
Drilling Method: Push Probe		Surface Elev: Approx: 20 ft amsl TOC Elev:
Sampling Method: Macro Sampler		Start Card #: SWL: 9.5 ft bgs Date: 2/11/05

Sample	B.C.	Depth	Sample Interval	GW Level	Strata	Lithology
						Asphalt surface with 4" gravel base Dark greenish brown silty to sandy clay with some organic odor, grades to dark gray to grayish brown clayey silt at 6 ft, becomes moist at 7.5 ft, wet at 9.5 ft, soil/water interface. Dark gray clayey silt to 15 ft. Some organic odor throughout. No petroleum detected by odor or sheen testing.
		5'				
B2-9.5'		10'		GW		
		15'			Bottom	

NOTES:

Boring #: 3	**BORING LOG**	Date: 2/11/05
MW #:		Start: 1000 Finish: 1012

Project: 76 Station 1410 Ocean Beach Hwy Longview, Washington	Boring Location: North side of Tank Nest
Project #: 25032 / Client: Wilson Oil	Logged By: William R.CullochDasson
Driller: GeoTech Explorations	Sect: 28 | T: 8N | R: 2W | Q: NE/SE
	Boring Dia: 1.5 | Depth: 15 ft
Drilling Method: Push Probe	Surface Elev: Approx: 20 ft amsl
	TOC Elev:
Sampling Method: Macro Sampler	Start Card #:
	SWL: 9.5 ft bgs Date: 2/11/05

Sample	B.C.	Depth	Sample Interval	GW Level	Strata	Lithology
						Asphalt surface with 4" gravel base Brown sand, with some pebbles to 7ft; piece of wood at 7ft;
		5'				Dark gray clayey silt with some organic odor at 7ft to 11ft, wet at 9.5 ft, soil/water interface.
B3-9.5'		10'		GW	No Recovery	Some organic odor 7ft to 11ft. No petroleum detected by odor or sheen testing.
		15'			Bottom	

NOTES:

Boring #: 4 MW #:	**BORING LOG**	Date: 2/11/05 Start: 1015 Finish: 1030
Project: 76 Station 1410 Ocean Beach Hwy Longview, Washington		Boring Location: West side of Tank Nest
Project #: 25032	Client: Wilson Oil	Logged By: William R.CullochDasson
Driller: GeoTech Explorations		Sect: 28 | T: 8N | R: 2W | Q: NE/SE Boring Dia: 1.5 | Depth: 15 ft
Drilling Method: Push Probe		Surface Elev: Approx: 20 ft amsl TOC Elev:
Sampling Method: Macro Sampler		Start Card #: SWL: 10 ft bgs Date: 2/11/05

Sample	B.C.	Depth	Sample Interval	GW Level	Strata	Lithology
						Asphalt surface with 4" gravel base Brown sand, with some pebbles to 4ft; Dark greenish gray clayey sand grading to clay at 5 ft Brownish gray clayey silt, grades to gray clayey silt with some organic odor at 7.5 ft, moist at 8'; wet at 10 ft, soil/water interface. Some organic odor 7.5 ft to 12ft. No petroleum detected by odor or sheen testing.
		5'				
B4-10'		10'				
		15'			Bottom	

NOTES:

Boring #: 5 MW #:	**BORING LOG**	Date: 2/11/05 Start: 1035 Finish: 1105
Project: 76 Station 1410 Ocean Beach Hwy Longview, Washington		Boring Location: South side of Tank Nest
Project #: 25032	Client: Wilson Oil	Logged By: William R.CullochDasson
Driller: GeoTech Explorations		Sect: 28 | T: 8N | R: 2W | Q: NE/SE Boring Dia: 1.5 | Depth: 15 ft
Drilling Method: Push Probe		Surface Elev: Approx: 20 ft amsl TOC Elev:
Sampling Method: Macro Sampler		Start Card #: SWL: 10 ft bgs Date: 2/11/05

Sample	B.C.	Depth	Sample Interval	GW Level	Strata	Lithology
						Asphalt surface with 4" gravel base Brown sand, with some pebbles to 4ft;
						Brown silty clay 4 ft to 9.5 ft
		5'				
B5-10'		10'		GW		Gray clayey silt at 9.5 with some organic odor at 7.5 ft, moist; wet at 10 ft, soil/water interface, with organic odor and minor petroleum odor. Some sheen observed on water.
		15'			Bottom	Groundwater sample collected from probe casing.

NOTES:

Boring #: 6	**BORING LOG**	Date: 2/11/05
MW #:		Start: 1110 Finish: 1130

Project: 76 Station 1410 Ocean Beach Hwy Longview, Washington	Boring Location: SW Dispenser
Project #: 25032 / Client: Wilson Oil	Logged By: William R.CullochDasson
Driller: GeoTech Explorations	Sect: 28 | T: 8N | R: 2W | Q: NE/SE Boring Dia: 1.5 | Depth: 15 ft
Drilling Method: Push Probe	Surface Elev: Approx: 20 ft amsl TOC Elev:
Sampling Method: Macro Sampler	Start Card #: SWL: 10 ft bgs Date: 2/11/05

Sample	B.C.	Depth	Sample Interval	GW Level	Strata	Lithology
						Concrete surface with 4" gravel base Dark greenish brown to gray clay to 4.5ft
		5'				Brown to gray clayey silt at 4.5 ft, becomes moist at 8 ft,
B6-10'		10'		▽ GW		Gray clayey silt at 10'; wet at 10 ft, soil/water interface. Gray clayey silt to 15 ft.
		15'			Bottom	Some organic odor throughout. No petroleum detected by odor or sheen testing.

NOTES:

Boring #: 7	**BORING LOG**	Date: 2/11/05
MW #:		Start: 1135 Finish: 1150

Project: 76 Station 1410 Ocean Beach Hwy Longview, Washington	Boring Location: SE Dispenser
Project #: 25032 / Client: Wilson Oil	Logged By: William R.CullochDasson
Driller: GeoTech Explorations	Sect: 28 | T: 8N | R: 2W | Q: NE/SE
	Boring Dia: 1.5 | Depth: 15 ft
Drilling Method: Push Probe	Surface Elev: Approx: 20 ft amsl
	TOC Elev:
Sampling Method: Macro Sampler	Start Card #:
	SWL: 10 ft bgs Date: 2/11/05

Sample	B.C.	Depth	Sample Interval	GW Level	Strata	Lithology
						Concrete surface with 4" gravel base Dark greenish brown to gray clay to 4 ft, with gray layer at 3 ft Brown clayey silt to 5 ft
		5'				Brown to gray clayey silt at 5 ft
						Gray clayey silt at 8', moist; wet at 10 ft, soil/water interface. Gray clayey silt to 15 ft.
B7-10'		10'		▽ @ 10		Minor organic odor throughout. No petroleum detected by odor or sheen testing.
		15'			Bottom	

NOTES:

Boring #: 8	**BORING LOG**	Date: 2/11/05
MW #:		Start: 1245 Finish: 1255

Project: 76 Station 1410 Ocean Beach Hwy Longview, Washington	Boring Location: NE Dispenser
Project #: 25032 / Client: Wilson Oil	Logged By: William R.CullochDasson
Driller: GeoTech Explorations	Sect: 28 | T: 8N | R: 2W | Q: NE/SE
	Boring Dia: 1.5 | Depth: 15 ft
Drilling Method: Push Probe	Surface Elev: Approx: 20 ft amsl
	TOC Elev:
Sampling Method: Macro Sampler	Start Card #:
	SWL: 10 ft bgs Date: 2/11/05

Sample	B.C.	Depth	Sample Interval	GW Level	Strata	Lithology
						Concrete surface with 4" gravel base Brown to gray silty sand to 5 ft,
		5'				Brown silty sand to 8.5 ft
B8-10'		10'				Gray medium coarse sand layer at 8.5 to 9 ft, becomes moist at 9 ft Brownish gray to gray clayey silt, wet at 10 ft, soil/water interface. Gray clayey silt to 15 ft.
		15'			Bottom	Minor organic odor throughout. No petroleum detected by odor or sheen testing.

NOTES:

Boring #: 9 MW #:	**BORING LOG**	Date: 2/11/05 Start: 1300 Finish: 1315
Project: 76 Station 1410 Ocean Beach Hwy Longview, Washington		Boring Location: NW Dispenser
Project #: 25032	Client: Wilson Oil	Logged By: William R.CullochDasson
Driller: GeoTech Explorations		Sect: 28 | T: 8N | R: 2W | Q: NE/SE Boring Dia: 1.5 | Depth: 15 ft
Drilling Method: Push Probe		Surface Elev: Approx: 20 ft amsl TOC Elev:
Sampling Method: Macro Sampler		Start Card #: SWL: 10 ft bgs Date: 2/11/05

Sample	B.C.	Depth	Sample Interval	GW Level	Strata	Lithology
						Concrete surface with 4" gravel base
						Brown fine sand with some clay, grades to brown silty sand to 5 ft,
		5'				
						Brown to gray silty sand to 7.5 ft,
						Gray clayey silt, moist at 7.5 ft, wet at 10 ft, soil/water interface. Gray clayey silt to 15 ft.
B9-10'		10'		▽ GW		
						Minor organic odor throughout. No petroleum detected by odor or sheen testing.
		15'			Bottom	

NOTES:

Boring #: 10 MW #:	**BORING LOG**	Date: 2/11/05 Start: 1320 Finish: 1410

Project: 76 Station 1410 Ocean Beach Hwy Longview, Washington	Boring Location: East side of site
Project #: 25032 / Client: Wilson Oil	Logged By: William R.CullochDasson
Driller: GeoTech Explorations	Sect: 28 | T: 8N | R: 2W | Q: NE/SE
	Boring Dia: 1.5 | Depth: 15 ft
Drilling Method: Push Probe	Surface Elev: Approx: 20 ft amsl
	TOC Elev:
Sampling Method: Macro Sampler	Start Card #:
	SWL: 10 ft bgs Date: 2/11/05

Sample	B.C.	Depth	Sample Interval	GW Level	Strata	Lithology
						Concrete surface with 4" gravel base Brown silty sand to 5 ft,
		5'				Brown clayey silt to 9 ft,
B10-10'		10'		GW ▽		Gray clayey silt, moist at 9 ft, wet at 10 ft, soil/water interface. Gray clayey silt to 15 ft.
		15'			No Sample ↓ Bottom	Minor organic odor throughout. No petroleum detected by odor or sheen testing. Groundwater sample collected. Required boring to 20 feet to collect sample.

NOTES:

The excavation project was briefly described as follows:

Soil was excavated from the 9 foot wide by 28 foot long by 15 foot deep excavation by an excavation contractor and it was loaded and transported to an off-site Wilcox & Flegel location for either thermal treatment or temporary storage. Representative and confirmation soil samples were subsequently collected from locations at the bottom and sides of the excavation. Four soil samples and one water sample were collected by Charles A. Spear by taking representative soil samples from the backhoe bucket. The soil samples were immediately transferred to a clean 8-ounce glass sample jar by using a clean sampling trowel, packed into the sample container until no headspace was present, and a teflon-lined lid was applied to the sample container. The container was labeled and placed into a plastic vapor-tight bag and preserved on ice until the soil and water samples were analyzed by the laboratory.

The soil sample test results for volatile gasoline constituents (BTEX) and total petroleum hydrocarbons, sample No.s 1 thru 4, were reported in parts per million (ppm). The results are outlined below:

SAMPLE #	SAMPLE LOCATION	BTEX	GAS TPH
1.0	Riser-1 Bottom	ND	10 ppm
2.0	Riser-2 Bottom	Benzene - ND Toluene - ND Ethylbenzene - 0.3 Total xylenes- 0.1	14 ppm
3.0	Riser -2 northwall	BTEX - ND	22 ppm
4.0	Riser - 2 southwall	BTEX - ND	43 ppm
5.0	Water	Benzene - .022 Toluene - ND Ethylbenzene - .211 Total xylenes - .108	12.8 ppm

A single soil sample, sample No. 3, was also analyzed for the presence of total lead and the analytical test result was negative for lead. This soil sample was taken from an area of soil where leaded gasoline may have been present. Since the total lead contaminant level was determined to be less than 100 parts per million it was not necessary to analyze the soil sample for extractable lead by Total Characteristic Leaching procedure (TCLP).

Based on the analytical test results the analytical findings indicate that the most-contaminated soil has been removed from the subject excavation. Soil samples collected from the bottom and sides of the subject excavation indicate that both the vertical and horizontal extents of the contamination have been delineated according to established acceptable clean-up levels for TPH.

The elevated TPH test results from water collected in the bottom of the excavation indicated a collection of contaminants that have leached from adjoining soils into the water that was present in small quantities at the bottom of the excavation. This water sample, sample No. 5, was not a representative sample of groundwater in the excavation.

In our opinion, based on the analytical test results, the limited excavation episode was effective and soils contaminated with TPH or BTEX in levels exceeding clean-up levels were removed from the excavation. If there are any questions feel free to call me at 1-503-644-8526.

Respectfully,

Charles Arthur Spear

Charles Arthur Spear
Director of Professional Services

Environmental Inspection Services

Columbia Analytical Services inc.

1317 South 13th Ave. • Kelso, WA 98626 • (206) 577-7222, FAX (206) 636-1068

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

DATE 10/21/91 PAGE _____ OF _____

PROJECT NAME Crown Way SW #

PROJECT MNGR. Charles Speer

COMPANY/ADDRESS WILCOX & FLEEL

c/o. Environmental Inspection Services

C. Speer

PHONE 503 644-8526

SAMPLERS SIGNATURE Charles C. Speer

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	Base/Neu/Acid Organics GCMS 625/8270	Volatile Organics GCMS 624/8240	Halogenated or Aromatic Volatiles 601/8010 ☐	Pesticides/PCBs 608/8080 ☐	Total Petroleum Hydrocarbons EPA 418.1 ☐	TPH/Gas/BTEX 5030/8015/8020 Oregon 418.1 ☐	TPH/8015 Modified Gas ☑ BTEX ☐	Diesel ☐	TPH - HCID Hydrocarbon Scan ☐	TCLP Metals ☐	Semi Pest/ VOA ☐ VOA ☐ Herb ☐ Metals (total or dissolved) List Below	Cyanide	pH, Cond, Cl, SO4, PO4, F, Br NO2, NO3 (circle)	NH3-N, COD, Total-P, TKN, TOC (circle)	Total Organic Halides (TOX) 9020	TCLP Lead	REMARKS
#1 - Riser 1 Bottom	10/18	1000		Soil	1						✓											
#2 - Riser 2 Bottom	10/18	2130		Soil	1						✓											
#3 - North wall Riser 2	10/18	3:00		Soil	1						✓									✓		
#4 - South wall Riser 2	10/18	5:00		Soil	1						✓											
#5 - Groundwater	10/18	5:00		Water	1						✓											

RELINQUISHED BY:

Signature: Charles C. Speer

Printed Name: Charles A. Speer

Firm: Environmental Inspection Services

Date/Time: 10/21/91 – 11:30 am

RECEIVED BY:

Signature

Printed Name

Firm

Date/Time

RELINQUISHED BY:

Signature: Colin Elliott

Printed Name: Colin Elliott

Firm: CAS

Date/Time: 10/21/91 11:45 am

RECEIVED BY:

Signature

Printed Name

Firm

Date/Time

TURNAROUND REQUIREMENTS:

___ 24 hr ___ 48 hr ___ 5 day

✓ Standard (~ 10-15 working days)

✓ Provide Verbal Preliminary Results

___ Provide FAX Preliminary Results

Requested Report Date _____

REPORT REQUIREMENTS

___ I. Routine Report

___ II. Report (includes DUP, MS, MSD, as required, may be charged as samples)

___ III. Data Validation Report (includes All Raw Data)

___ IV. CLP Deliverable Report

INVOICE INFORMATION:

P.O. # _____

Bill to: _____

SAMPLE RECEIPT:

Shipping VIA: _____

Shipping #: _____

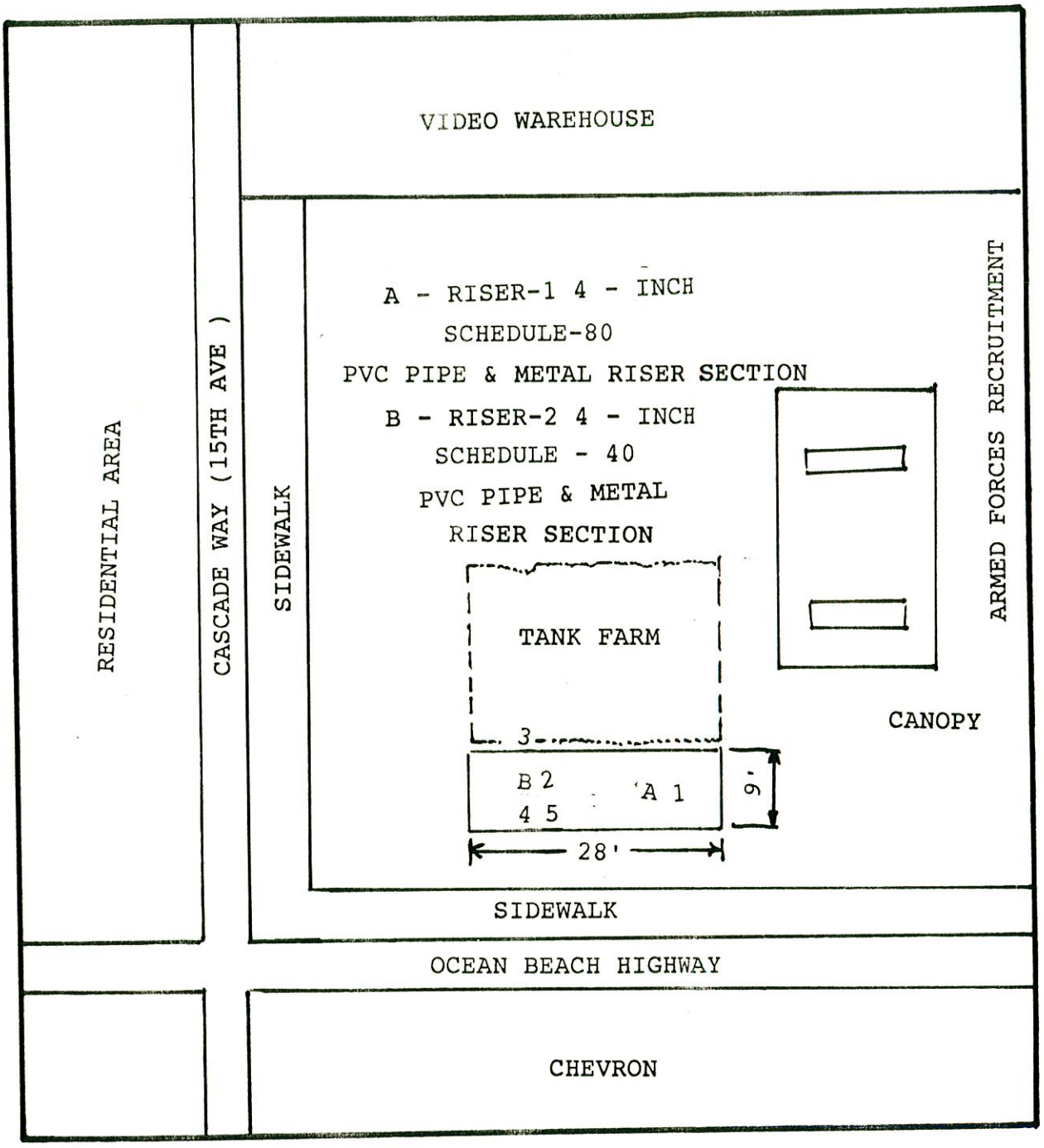
Condition: _____

Lab No.: _____

SPECIAL INSTRUCTIONS/COMMENTS:

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator

400-05



SITE

NOT TO SCALE

EXCAVATION - 15 FEET DEEP

ENVIRONMENTAL INSPECTION SERVICES	GENERALIZED SITE PLAN 1410 OCEAN BEACH HIGHWAY LONGVIEW, WASHINGTON	**PLATE** P-1
PROJECT NO. 91016		

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: _____ Date Received: _____

Project: _____ Date Analyzed: 10/25/91

Sample Matrix: SOIL Work Order #: 916104

TOTAL LEAD
(Method Title)

EPA METHOD 7420
(Method No.)

mg/kg
(Units)

DRY wt Basis

Sample Name	Lab Code	MRL	Result
#3 RISER 2 NORTH WALL	6104-3	3	ND
METHOD BLANK	MD	3	ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by _____ Date 10/25/91 Filename: GEN1.B/05-10-91

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Alaska:
Use VPH
Others:
Use TPH

Client:

Project:

Sample Matrix: Soil

Date Received:

Date Extracted: 10/22/91

Work Order #: K91-6104

PRELIMINARY
These results have not gone through final QA review.

BTEX and TPH/VPH as Gasoline
EPA Methods 5030/8020/Modified 8015
mg/Kg (ppm)

Dry Wt. Basis

Sample Name:	#1-Riser 1 Bottom	#2-Riser 2 Bottom	#3 Riser 2 Northwall
Lab Code:	K6104-1	→2	→3
Date Analyzed:	10-23-91	10-23-91	10-23-91

Analyte	MRL			
Benzene	0.05	ND	ND	ND
Toluene	0.05	ND	ND	ND
Ethylbenzene	0.05	ND	ND 0.3	ND
Total Xylenes	0.05	ND	ND 0.1	ND
TPH/VPH as Gasoline	1	ND 10	ND 14	ND 2

TPH Total Petroleum Hydrocarbons
VPH Volatile Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by _____ Date _____ Filename: 8020A.S/08-16-91

Alaska:
Use VPH
Others:
Use TPH

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:

Project:

Sample Matrix: Soil

Date Received: / /

Date Extracted: 10/22/91

Work Order #: K91-6104

PRELIMINARY
These results have not gone through final QA review.

BTEX and TPH/VPH as Gasoline
EPA Methods 5030/8020/~~Modified 8015~~ M-K
mg/Kg (ppm)
Dry Wt Basis

Sample Name:	#4 Riser 2 Southwest	Method Blank	
Lab Code:	K6104-4	→MB	
Date Analyzed:	10-23-91	10-22-91	

Analyte	MRL			
Benzene	0.05	ND	ND	ND
Toluene	0.05	ND	ND	ND
Ethylbenzene	0.05	ND	ND	ND
Total Xylenes	0.05	ND	ND	ND
TPH/VPH as Gasoline	1	ND 43	ND	ND

TPH Total Petroleum Hydrocarbons
VPH Volatile Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by _____ Date _____ Filename: 8020A.S/08-16-91

JLS

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Alaska: Use VPH
Others: Use TPH

Client:

Project:

Date Received:

Work Order #: K91-6104

Sample Matrix: Water

PRELIMINARY

These results have not gone through final QA review.

BTEX and TPH/~~VPH~~ as Gasoline
EPA Methods 5030/8020/Modified 8015/~~California OHS UST Method~~
µg/L (ppb)

Sample Name:		#5 Groundwater	Method Blank	
Lab Code:		K6104-5	MB	
Date Analyzed:		10-23-91	10-23-91	
Analyte	MRL			
Benzene	0.5	~~ND~~ 2.2	ND	ND
Toluene	1	ND	ND	ND
Ethylbenzene	1	~~ND~~ 2.1	ND	ND
Total Xylenes	1	~~ND~~ 10.6	ND	ND
TPH/~~VPH~~ as Gasoline	50	~~ND~~ 12,800	ND	ND

TPH Total Petroleum Hydrocarbons
~~VPH Volatile Petroleum Hydrocarbons~~
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by_____ Date_____ Filename: 8020D.W/08-16-91

MS