SITE CLEANUP ACTION REPORT

Site No. 0700
100 East Wine Country Road
Grandview, Washington
Cleanup Site ID. 6845
VCP No. CE442
Facility Site ID# 91458995

Prepared for

Eagle Canyon Capital, LLC

February 26, 2018

Project No. 123243

Prepared by

ES ENGINEERING SERVICES
1 Park Plaza #1000, Irvine, CA 92614 | t 714.919.6500 | f 949.988.3514

TABLE OF CONTENTS

LIST OF FIGURES, TABLES, AND APPENDICES

FIGURES

TABLES

APPENDICES

1.0 INTRODUCTION

On behalf of Eagle Canyon Capital, LLC (Eagle), ES Engineering Services, LLC (ES) is pleased to provide this *Site Cleanup Action Report* for Site No. 0700 (Site) located at 100 East Wine Country Road in Grandview, Washington (**Figure 1**). This report summarizes all site assessment activities, remedial actions and compliance groundwater monitoring performed at the Site to date and is intended to be the final report prepared for the Site.

1.1 General Site Information

Site Name:	Site No. 0700
Site Address:	100 East Wine Country Road, Grandview, Washington
Responsible Party:	Eagle Canyon Capital, LLC 3130 Crow Canyon Place, Suite 240 San Ramon, CA 94583
Responsible Party Contact:	Mr. Hamed Adib
Project Consultant:	ES Engineering Services, LLC 1 Park Plaza, Suite 1000 Irvine, CA 92614 714-919-6500
ES Engineering Contact:	Ms. Laura Skow
Current Owner/Operator:	Chang K & Pong S Kim

As established in Washington Administrative Code (WAC) 173-340-200, the "Site" is defined by the full lateral and vertical extent of contamination resulting from the operation of a retail fuel station on the Property. Based on the information gathered to date, petroleum-impacted soil was detected in soil samples collected from the vicinity of the dispenser islands, the former underground storage tanks (USTs) and fuel dispensing system. Recent soil sampling (late 2016) indicates that the Site, as defined by petroleum-impacted soil, is limited to the area around Borings CB-3 and CB-4. Petroleum-derived constituents on concern (COCs) have not been detected in groundwater beneath the Property at concentrations exceeding regulatory cleanup levels during eight consecutive quarters of groundwater monitoring.

The Site is also associated with the following identification numbers:

VCP Project #CE442
UST ID - 4106
Leaking UST ID - 5016
Cleanup Site ID – 6845
Cleanup Unit ID - 6378
Facility/Site ID – 91458995

1.2 Site History

The site has operated as a retail fueling station since 1965. In May 1991, the Grandview Fire Department contacted the previous property owner, Time Oil Co., concerning the presence of gasoline vapors in a building adjacent to the site. At that time, the UST system was tested and determined to be tight. A soil vapor survey was conducted to determine if petroleum hydrocarbons were present in subsurface soil. Results of the survey identified elevated levels of total petroleum hydrocarbons (TPH) quantified as gasoline (TPH-Gx), TPH quantified as diesel (TPH-Dx), benzene, toluene, ethylbenzene, and total xylenes (BTEX) in vapor samples collected in the vicinity of the former USTs (eastern area of property), existing USTs (southwestern area of property) and north of the convenience store.

In September 1998, a cathodic protection system was installed as part of site upgrade activities. Additionally, six borings (CP1 through CP6) were advanced to a depth of 15 feet below ground surface (bgs). Analytical results for soil grab samples collected at approximately 12 to 15 feet bgs indicated the presence of petroleum hydrocarbons at levels exceeding pre-2001 Washington State Model Toxics Control Act (MTCA) Method A Cleanup Levels (CULs) in soil immediately north, west and southeast of the active USTs.

In February 2000, a preliminary soil and groundwater survey was performed where 13 direct-push soil borings (B-1 through B-13) were advanced to depths ranging from 17 to 20 feet bgs. Groundwater was encountered at each of the locations and groundwater samples were collected. Analytical results indicated the presence of petroleum hydrocarbons in soil and groundwater on and off the site; however, the hydrocarbon impacts were primarily related to groundwater. The groundwater plume was estimated to be 200-feet long by 80-feet wide, extending southwest from the existing USTs. The highest benzene detection [1,600 micrograms per liter (µg/L)] was observed within 20 feet of the existing USTs. Hydrocarbon levels in soil mimicked the groundwater plume, with benzene detected up to 7.2 milligrams per kilogram (mg/kg). The survey results are documented in Maxim Technologies, Inc.'s (Maxim) report titled *Preliminary Soil and Groundwater Screening Survey*, dated February 17, 2000.

In April 2000, a remedial investigation/feasibility study (RI/FS) was performed. Eleven soil borings were advanced, of which, six were completed as groundwater monitoring wells, four completed as groundwater recovery/vapor extraction wells, and one as an air sparge well. Several pilot tests, consisting of groundwater recovery, soil vapor extraction, and air sparging tests, were also performed to evaluate remedial alternatives. The RI/FS results concluded that hydrocarbon affected soil and groundwater beneath the site could be remediated with a combination of the above-referenced technologies. The results of the study are presented in Maxim's report titled *RI/FS*, dated April 7, 2000.

In June, September and December 2000, groundwater monitoring was conducted and the data used in the design of a remediation system. In March 2002, groundwater pump and treat coupled with air sparging/soil vapor extraction was initiated at the site. From March 2002 through November 2006, operation of the remediation system resulted in decreases in hydrocarbon concentrations across the site. Remediation system operation and maintenance reports document the remedial progress at the site. The remediation system was shut down in November 2006. Boring and well locations are shown on **Figure 2**. Historical soil analytical results are summarized in the tables provided as **Appendix A.**

Groundwater monitoring and sampling was conducted at the site from 2000 through 2007. Historical groundwater monitoring and analytical results are summarized in the table [prepared by Sound Environmental Strategies (SES)] included as **Appendix B.** Groundwater monitoring data through August 2007 indicated a general groundwater direction flow toward the southwest. Historical analytical results through 2007 indicate detectible concentrations of TPH-Gx, BTEX, methyl tert-butyl ether (MTBE), 1,2-dibromoethane (EDB), 1,2-dichloroethane (EDC) and total lead in groundwater. No liquid phase hydrocarbons have been detected in any of the site wells.

Quarterly groundwater monitoring and sampling resumed in January 2016. Eight consecutive events (January 6, 2016 through November 21, 2017) have been completed and contaminants of concern were either non-detected or below CULs in the site wells sampled. Current and historical groundwater monitoring results from first quarter 2016 to fourth quarter 2017 are summarized in **Tables 1** and **2**.

An application was prepared and the Site was re-admitted into Ecology's Voluntary Cleanup Program (VCP) on June 13, 2016. Along with the VCP application, a request for written opinion was also submitted. A formal written opinion letter, dated September 9, 2016 was received by ES (**Appendix C**). The opinion letter indicated that characterization of the Site was not considered complete and that further action was needed to clean up contamination at the Site.

During November and December of 2016, ES conducted additional site assessment activities at the Site in an attempt to address the comments contained within the Opinion Letter, dated September 9, 2016. The field efforts included confirmation soil sampling to evaluate subsurface conditions and to fully delineate soil and groundwater impacts. Ten confirmation soil borings (identified as CB-1 through CB-10) were advanced in the vicinity of the fuel dispenser island, the former UST cavity, the active UST cavity and near previously advanced soil boring locations to evaluate current soil conditions. In addition, a temporary well was installed at location CB-10 and a groundwater sampled collected to evaluate groundwater quality down-gradient of Well MW-07, which historically contained dissolved-phase hydrocarbons. Based on the analytical results of the confirmation sampling, concentrations of COCs in soil were below the MTCA Method A CULs with the exception of TPH-Gx detected in soil borings CB-3, CB-4 and CB-10.

Borings CB-3 and CB-4 were located on the southeast corner of the existing UST complex and the northeast corner of the former UST complex, respectively. Boring CB-10 was located within the alley, west of soil boring CB-8 and south of the former UST complex of the DeBocks Texaco station. Details of the field efforts were presented to Ecology in the *Additional Site Assessment Report,* dated February 13, 2017. Analytical results from the site assessment are summarized in **Tables 5 through 7.**

1.3 Site Use

The Site is currently configured for and used as a retail gasoline station and convenience store and the UST system appears to have operated since approximately 1965. The current USTs are located in the southwest portion of the Property. Former USTs were located in the eastern area of the Property. The current Site configuration is shown on **Figure 2**.

1.4 Future Property Uses

There are no known plans for future re-development of the Property.

1.5 Surrounding Areas

The surrounding area appears to have been steadily developed over the years of record and is zoned by the City of Grandview as "C-2 General Business" (**Appendix D**). Properties immediately adjacent to the Site include the Grandview Herald building and an alley to the south, an automotive repair shop to the east across Division Street, a religious center to the east and multiple small businesses to the north, across East Wine Country Road.

Alternate names associated with the Property include: Convenience Retailers 0700, Foodmart #700, Footmart 0700, Grandview Market 070, Grandview Market Petrosun 1070, Jackpot 070, Petrosun 1070, Time Oil Co Jackpot Foot Mart Grandview and Time Oil Property 070/Jackpot 070.

2.0 COMPLIANCE MONITORING

This section summarizes the results of the quarterly groundwater monitoring event that was conducted at the Site on November 21, 2017. This event represents the eighth consecutive quarterly groundwater monitoring event where dissolved-phase COCs have been below MTCA Method A CULs and is anticipated to be the final monitoring event conducted at the Site.

2.1 Fourth Quarter 2017 Groundwater Monitoring Event

- On November 21, 2017, Blaine Tech Services, Inc., under the supervision of ES, performed groundwater monitoring and sampling of the site wells at the above referenced location in accordance with standard industry practice. Depth to water was measured in six groundwater monitoring wells (MW-02 through MW-07), three vapor extraction wells (VW-01 through VW-03), five recovery wells (RW-01 through RW-05) and seven sparge wells (SW-01 through

SW-07). Note that monitoring well MW-01 was inaccessible on the day of the monitoring event and was not gauged this quarter. Well VW-03 was measured as dry on the day of the monitoring.

- Groundwater samples were collected from three monitoring wells (MW-05, MW-06 and MW-07), four recovery wells (RW-01, RW-03, RW-04 and RW-05) and one vapor extraction well (VW-02). Monitoring well MW-01 was inaccessible and was not sampled this quarter and well VW-03 was dry and not sampled this quarter; the remaining wells were removed from the sampling program based on historical data which shows concentrations are either non-detect or below MTCA Method A CULs.
- Groundwater samples were transported to a State certified environmental laboratory and analyzed for the presence of total petroleum hydrocarbons quantified as gasoline (TPH-Gx) by Method NWTPH-Gx, BTEX , MTBE, n-hexane and 1EDC by Method 8260, EDB by Method 8011, naphthalenes by Method 8270 and total lead using EPA Method 6020. Note that the well sampling and analysis plan was based on recommendations provided in the September 27, 2010 VCP opinion letter from Ecology (**Appendix C**).

A summary of field measured water quality parameters including: dissolved oxygen (DO), oxidation reduction potential (ORP), ferrous iron (Fe^{+2}), temperature, potential hydrogen level (pH), electrical conductivity, and turbidity are included in **Table 1**. Current groundwater analytical results are also presented in **Table 1**. A site plan showing the site configuration and well locations is presented on **Figure 2**. Site background information is included as **Appendix E**.

2.2 Summary Data

Monitoring Details

Monitoring/Remediation Wells:	Onsite: 11	Offsite: 11
	Wells gauged: 21	Wells sampled: 8
Purging Method:	Peristaltic pump	
Sampling Method:	Peristaltic pump with dedicated tubing	
Purge Water Disposal:	Onsite drum, pending disposal (6.5 gallons)	
Current Remediation Method:	None	

Hydrological Parameters

Depth to Groundwater (below TOC):	Range: 16.49 to 19.40 feet
Groundwater Elevation	Range: 74.63 to 76.72 feet amsl
Groundwater Flow Direction:	Southwest
Groundwater Gradient:	0.01 ft/ft
Average Groundwater Level Change:	0.26 foot decrease*

Select Analytical Results (Table 1)

Wells with TPH-Gx: 0	Maximum: ND (<100 µg/L)
Wells with Benzene: 0	Maximum: ND (<1.0 µg/L)
Wells with MTBE: 0	Maximum: ND (<1.0 µg/L)
Wells with Naphthalenes**: 0	Maximum: ND (<0.3 µg/L)

* since prior monitoring event (August 17, 2017)
** including naphthalene, 2-methylnaphthalene and 1-methylnaphthalene

2.3 Fourth Quarter 2017 Groundwater Monitoring Results

Groundwater analytical results and field measurements for the Fourth Quarter 2017 sampling event are presented in **Table 1**. **Figure 3** shows well locations with the corresponding analytical results. Historical groundwater analytical results and groundwater flow direction and gradient data are summarized in **Tables 2** and **3**, respectively. Historical groundwater monitoring parameters are summarized in **Table 4**. Groundwater monitoring results are summarized below:

- The static groundwater level in site monitoring wells decreased an average of 0.26 feet since August 17, 2017 (previous sampling event). Well VW-03 was dry on the day of monitoring. The depth to bottom (DTB) was measured in well VW-03 during the monitoring event. It appears that well VW-03 has a buildup of sediment in the well which may require redevelopment. The DTB measurement on November 21, 2017 was 10.70 feet below top of casing (btoc) and the well was originally reported to be 35 feet below ground surface (bgs). DTB measurements are recorded on the field forms provided as **Appendix G** and well construction information is provided in **Table 1**.
- As shown in **Table 1**, groundwater elevations ranged from 74.63 to 76.72 feet above mean sea level (amsl). The calculated flow direction beneath the site is to the southwest at a gradient of approximately 0.01 feet per foot, which is consistent with historical events. Note, the groundwater flow direction and gradient were calculated using data for wells MW-03, MW-04 and MW-06. The groundwater gradient is shown on **Figure 4**.
- Dissolved-phase TPH-Gx was not detected at or above laboratory reporting limits (RLs) in the eight site wells sampled during this event.
- Benzene, toluene, ethylbenzene and total xylenes were not detected at or above laboratory RLs in the eight wells sampled during this event.
- MTBE, n-hexane, EDB, EDC, naphthalene, 2-methylnaphthalene and 1-methylnaphthalene were not detected at or above RLs in the eight wells sampled this quarter.
- Total lead was only detected in well RW-05 at a concentration of 2.1 micrograms per liter (µg/L). The detection of lead in well RW-05 is below the CUL of 15 µg/L.

Field measurements of ORP levels collected on November 21, 2017 ranged from minus 135.7 millivolts (mV) measured at well RW-04 to minus 44.2 mV at well MW-07. Only well RW-03 contained a measurable concentration of Fe^{+2} [1.1 milligrams per liter (mg/kg)]. DO levels ranged from 0.34 mg/L at well RW-01 to 4.86 mg/L at well MW-06.

A copy of the laboratory analytical report is provided in Appendix H. Groundwater monitoring field forms are provided in Appendix G. ES's Monitoring Well Sampling Protocols are included in **Appendix I**. One partially full drum is stored onsite in the remediation compound for use during future groundwater monitoring events. Arrangements will be made to remove the approximately 6.50 gallons of purge water offsite to an appropriate disposal/recycling facility under manifest.

2.4 Hydrocarbon Trend and Analysis

Groundwater monitoring was conducted at the Site on a quarterly or semi-annual basis from March 2000 through August 2007. During that time period, concentrations of dissolved phase petroleum hydrocarbons fluctuated greatly but generally exceeded CULs in most wells sampled.

In January 2016, groundwater monitoring and sampling resumed based on comments by Ecology in their Opinion Letter, dated September 27, 2010, requesting further sampling to confirm the Site meets MTCA requirements. Analytical results for the January 6, 2016 sampling event indicated that only one well (RW-04) contained detectible levels of TPH-Gx, toluene, ethylbenzene and total xylenes, and the reported concentrations were well below the respective CULs (**Table 2**). Analytical results for the subsequent events (April 2016, August 2016, November 2016, February 2017, May 2017, August 2017 and November 2017) show that total lead was the only COC detected in the groundwater samples. Total lead was detected above its CUL in well MW-06 at a concentration of 30 µg/L (November 15, 2016) and 40 µg/L (February 13, 2017). However, the total lead detection was unusually high and suspected to be related to high turbidity of the samples. Consequently, well MW-06 was resampled twice (November 30, 2016 and March 16, 2017) and neither dissolved nor total lead were detected in either sample. Lead may be present in sediments in the bottom of the well and be naturally occurring in the sediments beneath the Site. During the current groundwater monitoring event (November 21, 2017), lead was not detected at or above the laboratory RL in well MW-06.

Records indicate that approximately 5 feet of sediment has accumulated in the well since installation and because the height of the water column in the well was so low (1.4 feet on February 13, 2017), sediments were being pulled into the pump intake during sampling. This explains the relatively high turbidity measured during previous sampling events.

3.0 CLEANUP AND REMEDIATION

3.1 Cleanup Action and Model Remedies

Based on the history of remedial activity at the Site and the plethora of groundwater monitoring data collected to date, the Site qualifies for a Model Remedy as the official cleanup action at the Site. Specifically, the Site qualifies for the use of **Model Remedy 5**. According to Ecology's document *Model Remedies for Sites with Petroleum Impacts to Groundwater* (Publication No. 16-09-057, Revised December 2017);

> "This model remedy is for situations where, following remediation, sufficient monitoring data are collected to confirm that the Method A groundwater cleanup levels are met throughout the site. Once groundwater quality has been adequately addresses, an empirical demonstration can be pursued using the provisions in WAC 173-340-747 to establish Method B soil cleanup levels that are protective of groundwater."

Active remediation was conducted at the site from March 2002 through November 2006. Groundwater pump and treat coupled with air sparging/soil vapor extraction resulted in decreases in hydrocarbon concentrations across the site. The results of quarterly groundwater monitoring, conducted after operation of the remediation system stopped and continuing through 2007, demonstrate a decrease in contamination beneath the site. Quarterly groundwater monitoring was resumed by ES during the first quarter, 2016 and continued through the fourth quarter 2017. During those eight consecutive quarters of groundwater monitoring, petroleum related COCs were not detected at concentrations exceeding MTCA Method A CULs. Total lead was detected in one well at concentrations exceeding Method A CULs, although ES believes the lead to be naturally occurring. A discussion of the total lead detections is included in Section 3.4.

3.2 Proposed Cleanup Standards

MTCA Method B CULs will be used to evaluate compliance for all soil throughout the site. The generic TPH CUL of 1,500 mg/kg will be used to evaluate compliance with respect to the direct-contact pathway with the standard point of compliance being all soil from the surface to 15 feet bgs. With respect to the leaching pathway from soil to groundwater, ES will show through an empirical demonstration that the current soil concentrations are protective of groundwater as provided for in WAC 173-340-747. Analytical results from the most recent site assessment (2016) are contained within **Table 5** and **6**.

The **MTCA Method A CULs** for unrestricted land use will be used to evaluate compliance for all groundwater throughout the Site. The individual CULs for groundwater are listed in **Table 1** and **Table 2**. The point of compliance for groundwater will be all groundwater contained within the Site.

ES will show that the current soil and groundwater concentrations are protective of soil vapor and that the soil vapor pathway is currently incomplete at the Site based on the minimum depth at which soil contamination occurs (17 feet bgs). Additional details regarding soil vapor are discussed in section 4.7.5 below.

3.3 Site Remediation

In April 2000, Maxim Technologies, Inc. performed a remedial investigation/feasibility study (RI/FS). Eleven soil borings were advanced, of which, six were completed as groundwater monitoring wells, four completed as groundwater recovery/vapor extraction wells, and one as an air sparge well. Several pilot tests, consisting of groundwater recovery, soil vapor extraction, and air sparging tests, were also performed to evaluate remedial alternatives. The RI/FS results concluded that hydrocarbon-affected soil and groundwater beneath the site could be remediated with a combination of the above-referenced technologies. The results of the study are presented in Maxim's report titled *RI/FS*, dated April 7, 2000.

In March 2002, groundwater pump and treat coupled with air sparging/soil vapor extraction was initiated at the site. From March 2002 through November 2006, operation of the remediation system resulted in decreases in hydrocarbon concentrations across the site. Remediation system operation and maintenance reports document the remedial progress at the site. The remediation system was shut down in November 2006.

3.4 Empirical Demonstration

Following active remediation, contaminated soil remains on the Site at concentrations greater than Method A CULs. Specifically, TPH-Gx was detected in four confirmation soil samples at concentrations exceeding the CUL; other COCs were below Methods A CULs for soil. The current concentrations of TPH-Gx are, however, below the generic MTCA Method B CUL of 1,500 mg/kg. It must be shown that the levels on soil contamination are currently protective of groundwater and will be protective of groundwater in the future. It must be empirically demonstrated that the residual soil contamination is not and will not impact groundwater beneath the Site.

According to the Ecology Implementation Memorandum No. 15 *Frequently Asked Questions (FAQ's) Regarding Empirical Demonstrations and Related Issues*, after remedial actions have been performed, "once a sufficient number of sampling rounds are completed to document compliance with the applicable groundwater cleanup levels, the empirical demonstration has been made."

ES has completed eight consecutive quarters of groundwater monitoring at the Site, during which concentrations of petroleum related COCs in groundwater did not exceed Method A CULs. Total lead was detected in Well MW-06 at concentrations exceeding Method A CULs during the fourth quarter 2016 and first quarter 2017, although ES believes the lead to be naturally occurring in

the sediments beneath the Site. Well gauging records indicate that approximately 5 feet of sediment has accumulated in the well since installation and because the water column height in the well is historically low (1.4 feet on February 13, 2017), sediments were being pulled into the pump intake during groundwater sampling. This explains the relatively high turbidity measured during previous sampling events. The lead detections were likely due to sorbed-phase lead in groundwater sediment. Well MW-04 was resampled on both occasions and was non-detect for dissolved and total lead. Additional details regarding current groundwater monitoring results can be found in Section 2.0 of this report.

Groundwater in site wells has been shown to be in compliance with Method A CULs (**Table 2**) thus it has been empirically shown that the current soil concentrations are not adversely impacting groundwater quality and are protective of the leaching pathway from soil to groundwater. The maximum concentration of TPH-Gx detected in soil during the most recent site assessment (2016) was 400 mg/kg in Boring CB-3 (collected from 17 feet bgs). Therefore, 400 mg/kg will be the empirically demonstrated, site-specific Method B CUL for TPH-Gx that is protective of the leaching pathway from soil to groundwater.

4.0 CONCEPTUAL SITE MODEL

This section presents a conceptual understanding of the Site and identifies suspected or potential sources of petroleum contamination, types and concentrations of petroleum contamination, potentially contaminated media and actual and potential exposure pathways and receptors.

4.1 Site Definition

Based on the findings of previous investigations and the 2016 site assessment, the Site is defined by the full vertical and lateral extent of soil contamination. Groundwater monitoring has been conducted for eight consecutive quarters and the groundwater beneath the Site is in compliance with MTCA Method A CULs. Concentrations of petroleum derived COCs had been detected historically in groundwater at concentrations exceeding CULs but since January 2016 concentrations have either been non-detectable or below CULs. Recent soil analytical data indicate that soil contamination is present at the former UST excavation, the southeast corner of the current UST excavation and the area around Boring CB-10 (**Figure 5**). Recent soil analytical data is presented in **Table 5**.

4.2 Confirmed and Suspected Source Areas

Results of previous site investigations suggest that petroleum impacts to soil are the result of a release from the USTs associated with the automotive retail fuel operations located on the Property. The former fuel USTs and fuel distribution system appear to have been the source of contamination found at the Site.

4.3 Media of Concern

Based on current analytical data, soil is the affected medium at the Property. Due to the low concentrations of TPH-Gx in the soil and the depth of impacts, it is unlikely that soil vapor poses an unacceptable vapor intrusion risk. Soil vapor intrusion is discussed further in Section 4.7.5 of this report. Impacted groundwater has been encountered beneath the Site in the past. Current groundwater analytical data (**Table 2**) indicate that previous groundwater impacts have been successfully remediated or have attenuated naturally and that the current soil concentrations (**Table 5**) are protective of the leaching pathway from soil to groundwater.

4.4 Distribution of Contaminants in Soil

Soil analytical data from the most recent site investigation indicate that soil impacts are limited to the areas near the former UST cavity, the southeast corner of the current UST cavity and the alleyway located west of the site across North Division Street. Soil impacts in the alleyway are considered to be related to the former DeBocks Texaco Facility, located at 100 West Main Street.

Adjacent to the subject Site is a Department of Ecology cleanup site (#6910), DeBocks Main Street Texaco (DeBocks Texaco). In March 1995, one 1,000-gallon unleaded gasoline tank, one 5,000-gallon leaded gasoline tank and one 8,000-gallon unleaded gasoline tank were removed during UST Closure site assessment activities. Following the UST closure activities, on February 19, 1998, Olympus Environmental, Inc. (Olympus) advanced four (4) soil borings (GP-1 through GP-4) within Division Street and Wine Country Road (previously West Main Street) and one (1) soil boring (GP-5) south of the DeBocks Texaco Facility building within the previous location of the 5,000-gallon and 8,000-gallon USTs (**see Figure 2**). The borings were advanced to 15 and 20 feet bgs. Soil and groundwater samples were collected at each location.

Soil analytical results for the DeBocks Texaco borings confirmed hydrocarbon contamination in soil boring GP-5 at approximately 15 feet bgs with detections of TPH-Gx at 5,910 mg/kg, ethylbenzene at 14.3 mg/kg and total xylenes at 54.2 mg/kg. Soil sample GP-5-20, collected at 20 feet bgs contained no hydrocarbon detections. The groundwater sample collected at soil boring GP-5 also contained hydrocarbons; specifically, TPH-Gx at 2,930 µg/L, benzene at 7.94 µg/L, toluene at 4.87 µg/L, ethylbenzene at 80.7 µg/L and total xylenes at 113 µg/L. The DeBocks Texaco assessment results are documented in the *Preliminary Site Investigation Report (PSIR)*, by Olympus dated April 13, 1998, and excerpts from the report, including a site plan and

a table presenting the soil and groundwater sample results, are provided as **Appendix I**. Three groundwater wells were proposed to be installed to collect additional soil samples, implement groundwater monitoring and determine hydrogeological conditions. However, no records documenting further site assessment activities on the DeBocks Texaco property following the PSIR were available for review.

Historically, groundwater conditions on the subject Site have been relatively consistent, with a groundwater gradient of approximately 0.01 ft/ft flowing towards the southwest (**Table 3**). The aforementioned data suggests that the TPH-Gx detection in soil sample CB-10-17 (210 mg/kg) may be related to the release at the DeBocks Texaco property. Soil boring GP-5 is located up gradient (north-northeast) of confirmation boring CB-10 and contains hydrocarbon contaminants at 15 feet bgs. The location of CB-10, the location of GP-5 (former UST complex), the soil and groundwater analytical results from GP-5, and the consistent southwest flow of groundwater suggest that the contamination in CB-10 is related to contamination originating from the DeBocks Texaco property and therefore, not related to the subject Site.

4.5 Distribution of Contaminants in Groundwater

Petroleum impacted groundwater has historically been detected throughout the Site. Groundwater monitoring was initiated at the Site in June 2002 and continued intermittently through 2007. Active remediation was conducted at the Site from 2002 to 2006. ES reinstated quarterly groundwater monitoring during the first quarter 2016 and continued it for eight consecutive quarters. Groundwater analytical results show dissolved-phase COCs were effectively remediated or naturally attenuated and concentrations in site wells have remained below CULs for eight consecutive quarters (**Table 2**).

4.6 Contaminant Fate and Transport

The following sections include a discussion of the transport mechanisms and environmental fate of petroleum hydrocarbons in the subsurface.

4.6.1 Transport Mechanisms – Petroleum Hydrocarbons in the Subsurface

The environmental transport mechanisms of petroleum hydrocarbons are related to the separate phases in the subsurface. The four phases of petroleum contamination in the subsurface are vapor (in soil gas), residual contamination (adsorbed contamination on soil particles), aqueous phase (contaminants dissolved in groundwater), and light non-aqueous phase liquids (LNAPL). Each phase is in equilibrium in the subsurface with the other phases and the relative ratio of total subsurface contamination by petroleum hydrocarbons between the four phases is controlled by dissolution, volatilization and sorption.

Petroleum hydrocarbons in groundwater beneath the Site can be transported from source areas and distributed throughout the Site primarily by dispersive transport mechanisms within the saturated zone. As with other chemicals, petroleum hydrocarbons tend to spread out as groundwater flows away from the source area. The extent of the hydrocarbon plume depends on the volume of the release, soil density, particle size and seepage velocity. Volatilization of the contaminant plume can result in mass removal of hydrocarbons by releasing vapor into the vadose zone, where soil hydrocarbon vapor can be biodegraded to an extent not possible in LNAPL or dissolved phases, depending on environmental conditions. Sorption of contaminants onto soil particles or interstitial soil spaces can immobilize contaminants. Contaminants sorbed onto soil particles are not free to transport via aqueous transport or non-aqueous phase liquid advection. Residual contamination, although not necessarily broken down quickly over time, is generally immobile.

4.6.2 Environmental Fate in the Subsurface

The most significant fate process for petroleum hydrocarbons is biodegradation (i.e., natural attenuation). Biological degradation of contaminants in LNAPL, dissolved, residual and vapor phases is possible under a variety of environmental conditions, although it occurs predominately in the aqueous, residual and vapor phases.

Degradation products of gasoline constituents are generally less toxic than their parent species. Petroleum hydrocarbons that are the most mobile (having the least viscosity and the most solubility in water) are also the most easily biodegraded (e.g., aromatics). Because gasoline constituents contain thousands of carbon compounds, there is a vast array of biochemical transformations that occur in situ in the soil and groundwater media.

For example, hydroxylation can alter hydrocarbon compounds to ketone or alcohol products that are less toxic or more biologically available; aromatic reduction can convert aromatic groups to naphthalenes; ring cleavage can destroy aromatic functional group species; and reduction can alter olefin functionality. The alteration and destruction of gasoline constituents occurs both by microbial enzyme catalytic reactions on the contaminant substrate or by direct digestion of contaminants as an electron donor or acceptor. Any number of reactions can occur within the subsurface by microorganisms that change the chemical distribution and concentrations of the contaminants.

The time frames over which these reactions occur vary depending on any number of limiting factors, primarily the availability of oxygen. For example, BTEX constituents are rapidly degraded under aerobic conditions but tend to persist for several years and/or decades under the anoxic conditions typical of most subsurface environments.

4.7 PRELIMINARY EXPOSURE ASSESSMENT

The following is a discussion of the potential migration pathways identified for the Site and potential targets for COCs observed on the Property.

4.7.1 Soil-to-Groundwater and Soil-to-Drinking Water Pathways

Contaminated soil has been identified beneath the site during the most recent site assessment (2016). Specifically, TPH-Gx was detected in several soil samples at concentrations up to 400 mg/kg, which is above the MTCA Method A CUL of 100 mg/kg. However, these low concentrations of TPH-Gx have been empirically shown to be protective of the soil-to-groundwater (leaching) pathway. Details of the empirical demonstration were discussed in Section 3.4 of this report. Therefore, the soil-to-groundwater pathway is considered incomplete at this time.

Numerous well logs for drinking water wells completed in the vicinity of the Site were reviewed on Ecology's State Well Log website (reviewed January 2, 2018). Specifically, ES searched for active municipal drinking water wells that may potentially be affected by subsurface contamination found beneath the Site. Based on Ecology's Well Log website, four wells are present within the vicinity of the Site that may serve as active drinking water sources;

- Well Report ID 143787 – A 10-inch diameter water well drilled to 174 feet bgs in 1925. This well is located approximately 350 feet from the Site to the northwest. A static depth to water of 50 feet is given and a yield of 150 gallons per minute is recorded indicating that a pump test was performed. It is unclear if this well was ever put into production.
- Well Report ID 137961 – A 12-inch diameter water well drilled to 296 feet bgs in 1953. This well is located approximately 2,600 feet from the Site to the south-southeast and is listed as being owned by the City of Grandview. The well log does not indicate that the well was perforated and it is unclear if the well was every put into production.
- Well Report ID 115720 – A 6-inch diameter well drilled to 80 feet bgs in 1989. This well is listed as being owned by Jim Nesmith and is located approximately 2,600 feet from the Site toward the south-southeast. The well log indicates that no screens or perforations were installed in the well but that the well sustained a yield of 30 gallons per minute with 0 feet of drawdown after two hours. It is not clear if a pump was installed and if the well was ever put into production.
- Well Report ID 343325 – A 12-inch diameter water well drilled to 1,150 feet bgs. This well is listed as being owned by the City of Grandview and is located approximately 1,500 from the Site toward the southwest. Few details are discernable from the well log and it is unclear if this well was every put into production.

- Well Report ID 466032 – A 6-inch diameter well drilled to 270 feet bgs. This well is listed as being owned by Juan Tascual and is located approximately 3,300 feet from the Site to the southwest. The well log indicated that the well was completed as a drinking water well but does not indicate that a pump was installed.

Well logs reviewed for this report are contained in **Appendix J**. In general, given the distance from the Site to the documented drinking water wells and that the groundwater beneath the Site does not contain petroleum COCs at concentrations greater than MTCA Method A CULs, the potential for adverse impacts to the wells via the soil-to-drinking water pathway is negligible and therefore considered incomplete.

The gas station building on the Site and the surrounding properties are all served by the City of Grandview municipal water distribution system (**Appendix K).** The source of the City's drinking water is a network of wells located in and around the City and is conveyed through subsurface distribution mains. A water utility map was not available when this report was written, however, water mains are expected to run within East Wine Country Road along the northern side of the Site and Division Street, along the western side of the Site. The water service line was located during the 2016 site assessment and runs from the northeast corner of the Property directly south to the station building. There is no reason to suspect that the water distribution system is currently leaking. Additionally, the system is pressurized such that any leak would result in potable water leaving the system and not contamination being drawn into the system.

There is no reason to suspect that drinking water has been or will be impacted by the limited amount of contaminated soil beneath the site and the soil to drinking water pathway is considered incomplete at this time.

4.7.2 Soil-to-Surface Water Pathway

The soil-to-surface water pathway is incomplete considering the nearest surface water bodies (irrigation canal located to the east-northeast) are approximately ½ mile from the Site. All stormwater falling on the Site is directed to established catch basins and drains and the Site is nearly 100 percent paved with concrete or asphalt. It is highly unlikely that any surface water will come into contact with impacted soil or that any impacted soil will leave the Site and impact surface waters.

4.7.3 Groundwater-to-Drinking Water Pathway and Groundwater-to-Surface Water Pathway

Contaminated groundwater historically has been detected beneath the Site. However, eight consecutive quarters of groundwater monitoring completed at the Site indicate that concentrations of petroleum related COCs are below MTCA Method A CULs. Total lead has been intermittently detected in one well at concentrations above the Method A CUL but the lead is considered to be naturally occurring in sediments beneath the Site and that sediments are

infiltrating that particular well. Given that current concentrations of COCs (non-detect or below CULs), the groundwater-to-drinking water-and-groundwater to surface water pathways are considered incomplete at this time.

4.7.4 Direct-Contact Pathway – Soil and Groundwater

Direct contact with soil exhibiting concentrations of petroleum hydrocarbons in excess of the CULs is limited to human receptors via direct exposure, i.e. dermal absorption or ingestion of excavated soil or groundwater.

The standard point of compliance for soil contamination beneath the Site is 15 feet bgs, which represents a reasonable estimate of the depth that could be accessed during normal site redevelopment activities (WAC 173-340-740[6][d]).

The soil beneath the Site contains residual TPH-Gx at concentrations greater than the MTCA Method A CUL; other COCs were below the respective CULs. A generic MTCA Method B CUL of 1,500 for TPH has been chosen for the Site to assess the direct-contact pathway for soil. Since the currently impacted soil is located below the standard point of compliance (15 feet bgs), the direct contact pathway for soil is considered incomplete at this time.

Since groundwater has been shown to be in compliance with Method A CULs and has not and will not be impacted by the soil leaching pathway, the direct-exposure to groundwater pathway is considered incomplete at this time.

4.7.5 Vapor Pathway

In assessing the potential for vapor intrusion (VI) at the Site, the Ecology Implementation Memorandum No. 14 (Updated Process for Initially Assessing the Potential for Petroleum Vapor Intrusion) and applicable Washington Administrative Codes were reviewed. Based on the most recent analytical data, only soil is currently impacted with petroleum hydrocarbons (below the generic Method B CUL of 1,500 mg/kg). Additionally, multiple samples were analyzed for full-scan VOCs and none were detected at concentrations exceeding Method A CULs (**Table 5** and **Table 6**).

In general, Steps 1 through 7 were followed. The Memorandum describes a general lateral inclusion distance that takes into account the fact there are no extenuating circumstances that would reduce the general lateral inclusion distance for the Site (i.e. plume not stable and receding and limited site characterization information available, presence of utility corridors between the building and contamination).

Extenuating circumstances, however, were evaluated. There have been multiple site assessments performed at the Site to date that have produced a plethora of characterization information. Based on the amount of characterization information, there is no evidence to suggest that the

soil contaminant plume is mobile or unstable. To the contrary, the plume appears to have receded as the result of physical removal by SVE and natural biodegradation processes.

A 30-foot lateral exclusion zone was used and it was determined that the gas station building and Grandview Herald building are located within the exclusion zone, which prompted the need to evaluate a vertical screening distance. Based on Attachment B of the Memorandum, the specific vertical separation distance for soil that is contaminated with TPH at concentrations greater than 250 mg/kg is 15 feet. The shallowest that impacted soil occurs beneath the Site is 17 feet bgs and therefore the gas station and Grandview Herald buildings are not within the vertical exclusion zone and the need for additional VI assessment is not warranted. The soil vapor pathway is considered incomplete at this time.

4.8 Terrestrial Ecological Evaluation

A Terrestrial Ecological Evaluation (TEE) is required by WAC 173-340-7940 at locations where a release of a hazardous substance to soil has occurred. The regulation requires that one of the following actions be taken:

- Documenting a TEE exclusion using the criteria presented in WAC 173-340-7491;
- Conducting a simplified TEE in accordance with WAC 173-340-7492; or,
- Conducting a Site-specific TEE in accordance with WAS 173-340-7493.

An evaluation to perform a TEE was conducted during the preparation of the most recent application to enter the VCP and it was determined that the Site qualifies for a simplified evaluation and that further evaluation was not needed for the following reason;

- No contaminant listed in Table 749-2 is, or will be, present in the upper 15 feet at concentrations that exceed the values listed in Table 749-2.

That shallowest that COCs were detected in soil during the most recent site assessment (2016) was 17 feet bgs. The completed TEE form was sent to Ecology with the VCP application materials and is also included in this report as **Appendix L.**

5.0 SUMMARY, CONSLUSIONS AND RECOMMENDATIONS

5.1 Summary and Conclusions

Four environmental assessments have been performed on the Property to date, all of which have included the laboratory analysis of soil samples and three of which included the laboratory analysis of groundwater samples.

Groundwater pump and treat coupled with air sparging/soil vapor extraction was conducted from March 2002 to November 2006 and was effective at removing hydrocarbons at the Site.

Results of the most recent assessment activities (November and December 2016) demonstrate that soil CULs have been attained across most of the Site. Residual source hydrocarbons were only detected in soil borings CB-3 and CB-4 at depths of approximately 17 feet bgs at concentrations above MTCA Method A CULs, located in the vicinity of the former USTs. COCs previously detected in soil samples appear to have been remediated and/or have degraded over time. There is no indication that COCs present at the Site now are mobile or will become mobile due to the presence of groundwater.

Quarterly groundwater monitoring at the Site was reinstated by ES during the first quarter of 2016. Quarterly groundwater monitoring has continued for eight consecutive quarters and COCs were not detected at concentrations above MTCA Method A CULs in any of the wells sampled.

The groundwater to surface water, groundwater to drinking water, soil to groundwater, soil to surface sediment and soil to drinking water pathways are considered incomplete at this time.

5.2 Recommendations

Along with this Site Cleanup Action Report (SCAR), ES is submitting a formal request for Ecology's review and opinion on this report and the completed Site cleanup activities.

ES believes that the results of this most recent site assessment have shown that COCs are not significantly present at the Site and that the soil contaminant plume is adequately defined. ES has empirically demonstrated that the low remaining hydrocarbon concentrations in soil are protective of the soil-to-groundwater leaching pathway as concentrations of hydrocarbons in groundwater have remained below MTCA Method A CULs for eight consecutive quarters.

The nature and extent of hydrocarbon impacts beneath the Site appears to be adequately defined and additional assessment and remediation does not appear to be warranted. Based on the findings of the most recent site assessment activities and the current and future intended land use for the Property as a commercial gas station, residual fuel concentrations in soil are not considered to pose a significant risk to human health or the environment. Consequently, ES requests that regulatory site closure with a *No Further Action* determination be granted for the site.

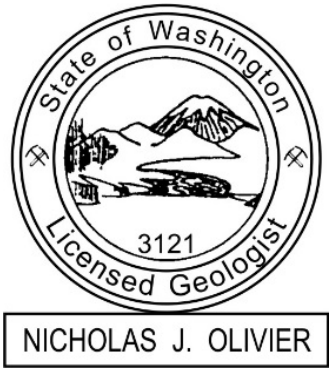
This SCAR summarized all previous work completed at the Site to date and represents the most complete presentation of current site conditions. This SCAR is considered the last report to be completed for the Site.

6.0 CLOSURE

ES is pleased to be of service to Eagle Canyon Capital, LLC. If there are questions regarding this report, please contact the undersigned at (714) 919-6500.

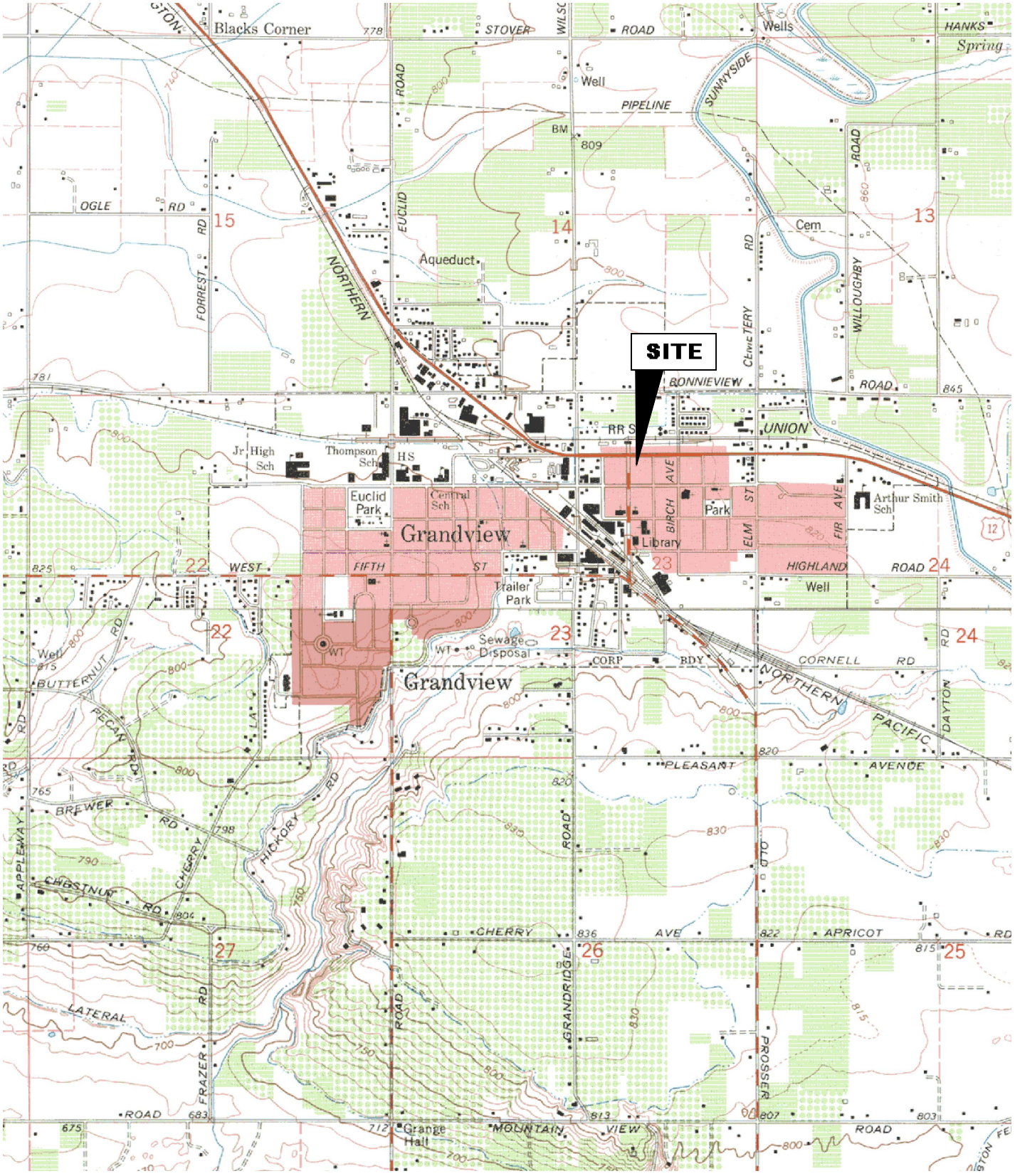
Respectfully submitted,
ES ENGINEERING SERVICES, LLC

Nicholas Olivier, LG
Project Geologist



Laura Skow, LG
Project Manager

FIGURES



Map Information:
Maptech Terrain Navigator–Std. Ed.
Mt. Rainier/Moses Lake/Pasco (WA)
46°15'21"N 119°54'05"W

ES ENGINEERING SERVICES
1 Park Plaza, Suite 1000, Irvine, CA 92614 | t 714.919.6500 | f 949.988.3514

N

0 2000

APPROX. SCALE: 1" = 2000'

FIGURE 1

SITE LOCATION MAP

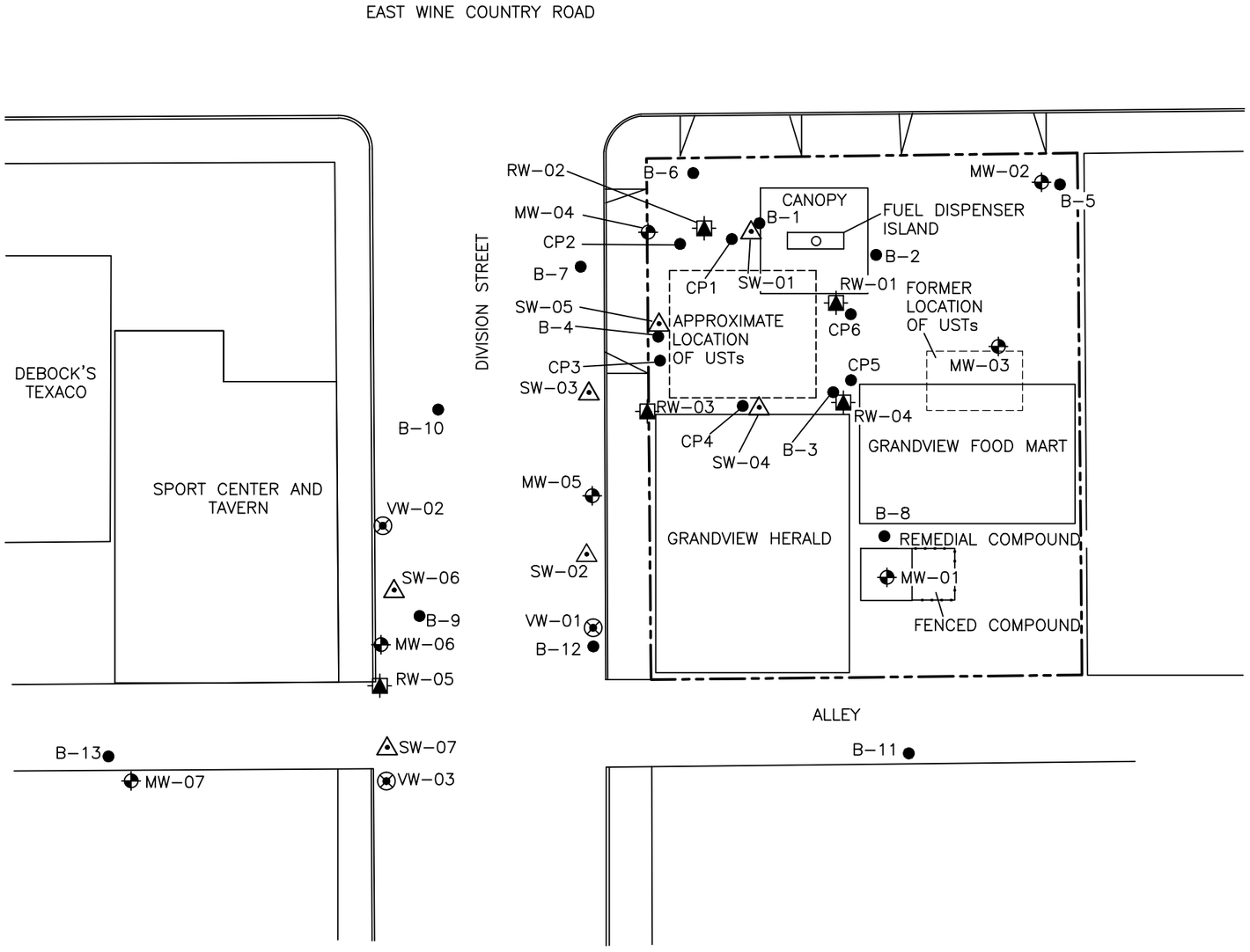
Site #0700
100 E. Wine Country Road
Grandview, Washington

DATE DRAWN
06/19/2017

PROJECT NO.
123243

FILE NO.
123243F1–SLM

W:\03_Site Assessment & Remediation\Eagle Canyon (PC&F)\01–0700 – East Wine Country Rd, Grandview WA (#622)\Topo, Terrain, Maps\CAD\123243F1–SLM.dwg



LEGEND

RW-02	RECOVERY WELL
VW-03	VAPOR WELL
SW-04	SPARGE WELL
MW-01	MONITORING WELL
——— - - ———	PROPERTY BOUNDARY
B-11 CP2	APPROXIMATE GEOPROBE LOCATION

BASE SOURCE: SOUND ENVIRONMENTAL STRATEGIES

ES ENGINEERING SERVICES
1 Park Plaza, Suite 1000, Irvine, CA 92614 | t 714.919.6500 | f 949.988.3514

FIGURE 2

SITE PLAN

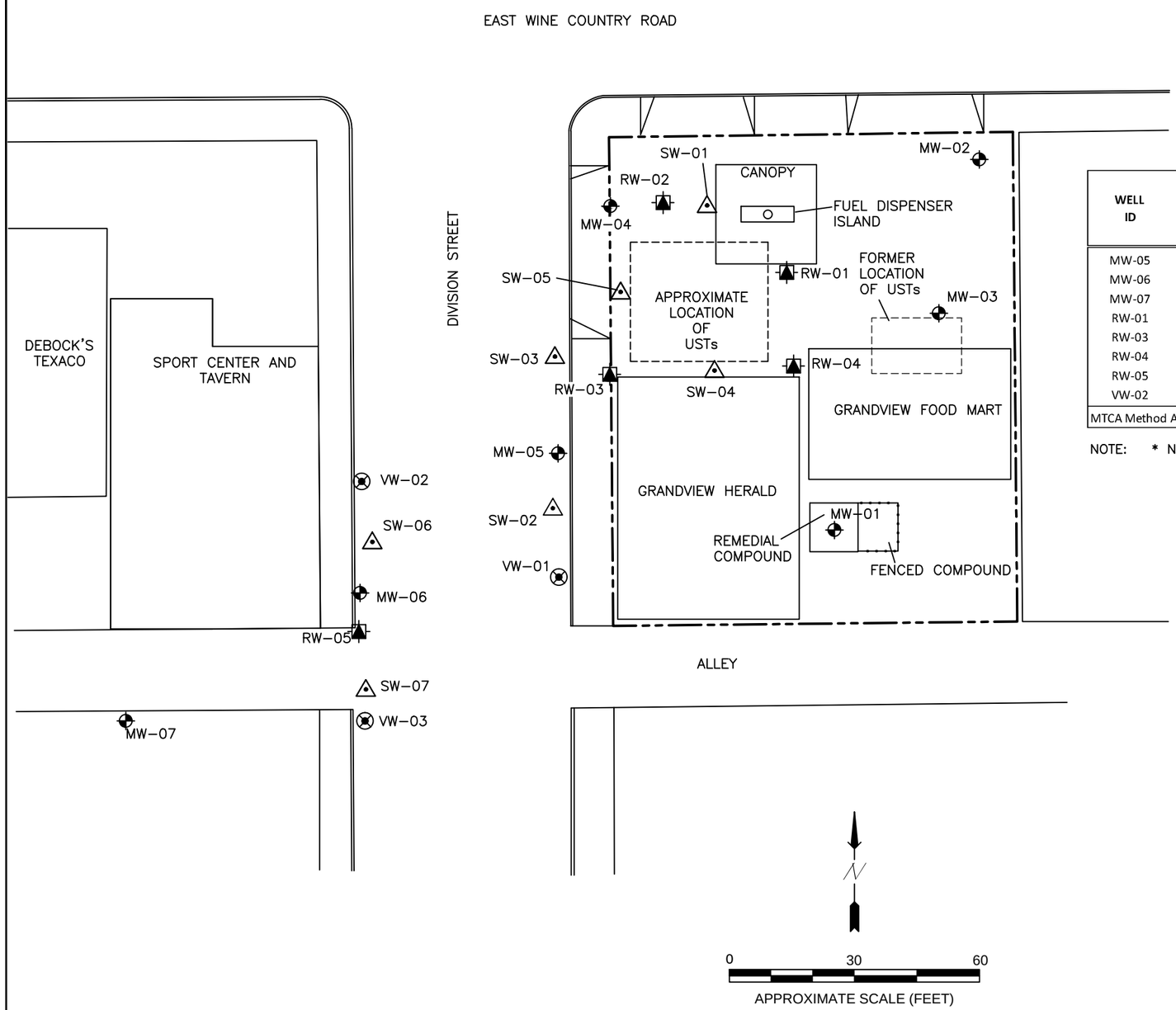
Site No. 0700
100 E. Wine Country Road
Grandview, Washington

DATE DRAWN 01/25/2018

PROJECT NO. 123243

FILE NO. 123243F2-SP

W:\03_Site Assessment & Remediation\Eagle Canyon (PC&F)\01-0700 - East Wine Country Rd, Grandview WA (#622)\Topo, Terrain, Maps\CAD\622 BASE.dwg



WELL ID	SAMPLE DATE	ANALYTICAL PARAMETERS										
		TPH-Gx (µg/L)	Benzene (µg/L)	Toluene (µg/L)	E-benzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	EDC (µg/L)	EDB (µg/L)	n-Hexane (µg/L)	Naphs* (µg/L)	Lead (µg/L)
MW-05	11/21/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.3	<2.0
MW-06	11/21/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.3	<2.0
MW-07	11/21/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.3	<2.0
RW-01	11/21/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.3	<2.0
RW-03	11/21/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.3	<2.0
RW-04	11/21/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.3	<2.0
RW-05	11/21/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.3	2.1
VW-02	11/21/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.3	<2.0
MTCA Method A Cleanup Goals		1,000/800	5	1,000	700	1,000	20	5	0.01	--	160	15

NOTE: * Naphthalene concentration includes naphthalene, 1-methylnaphthalene and 2-methylnaphthalene

LEGEND

RW-02	RECOVERY WELL
VW-03	VAPOR WELL
SW-04	SPARGE WELL
MW-01	MONITORING WELL
——— - - ———	PROPERTY BOUNDARY
ug/L	MICROGRAMS PER LITER
<	NOT DETECTED AT LISTED REPORTING LIMIT
2.1	REPORTED CONCENTRATIONS IN ug/L
EDC	1,2-DICHLOROETHANE
TPH-Gx	GASOLINE-RANGE PETROLEUM HYDROCARBONS
MTBE	METHYL TERTIARY-BUTYL ETHER
MTCA	MODEL TOXICS CONTROL ACT
USTs	UNDERGROUND STORAGE TANKS
EDB	ETHYLENE DIBROMIDE
NAPH	NAPHTHALENES
E-BENZENE	ETHYLBENZENE

SOURCE: SOUND ENVIRONMENTAL STRATEGIES

ES ENGINEERING SERVICES
1 Park Plaza, Suite 1000, Irvine, CA 92614 | t 714.919.6500 | f 949.988.3514

FIGURE 3

GROUNDWATER ANALYTICAL RESULTS
November 21, 2017

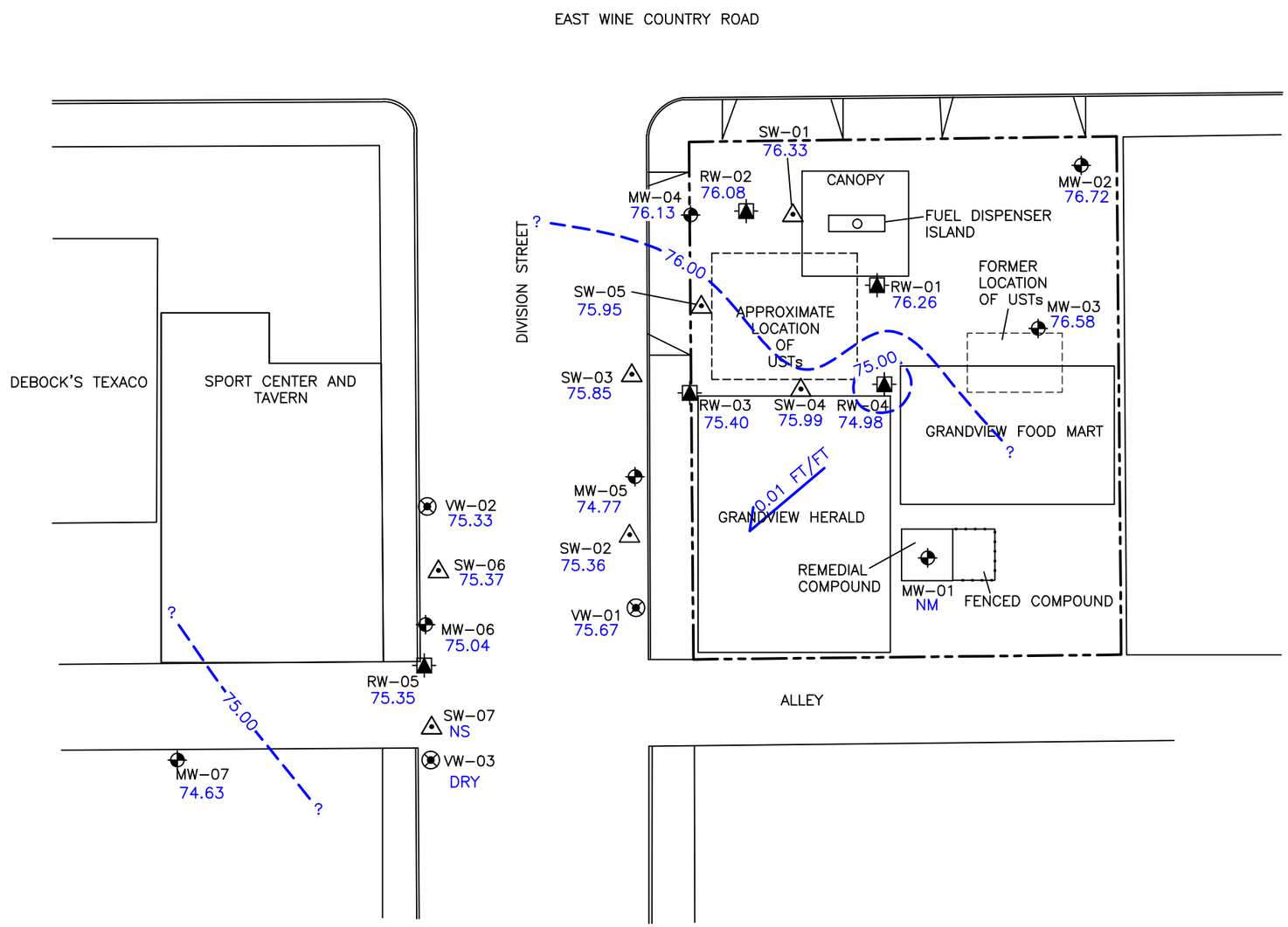
Site No. 0700
100 E. Wine Country Road
Grandview, Washington

DATE DRAWN 01/05/2018

PROJECT NO. 123243

FILE NO. 123243F3-GAR

W:\03_Site Assessment & Remediation\Eagle Canyon (PC&F)\01-0700 - East Wine Country Rd, Grandview WA (#622)\Reports\2018 Site Cleanup Action Report\Figures\123243.dwg



LEGEND

RW-02	RECOVERY WELL
VW-03	VAPOR WELL
SW-04	SPARGE WELL
MW-01	MONITORING WELL
– – –	PROPERTY BOUNDARY
UST	UNDERGROUND STORAGE TANKS
76.72	GROUNDWATER ELEVATION BASED ON A RELATIVE SITE DATUM OF 100.00 FEET
NS	NOT SURVEYED
NM	NOT MEASURED
DRY	WELL DRY, NOT USED IN CONTOURING
	APPROXIMATE GROUNDWATER CONTOUR
0.01 FT/FT	APPROXIMATE DIRECTION OF SHALLOW GROUNDWATER FLOW AND GRADIENT IN FEET PER FOOT; CALCULATED USING WELLS MW-03, MW-04, AND MW-06

SOURCE: SOUND ENVIRONMENTAL STRATEGIES

ES ENGINEERING SERVICES
1 Park Plaza, Suite 1000, Irvine, CA 92614 | t 714.919.6500 | f 949.988.3514

FIGURE 4

GROUNDWATER CONTOUR MAP
November 21, 2017

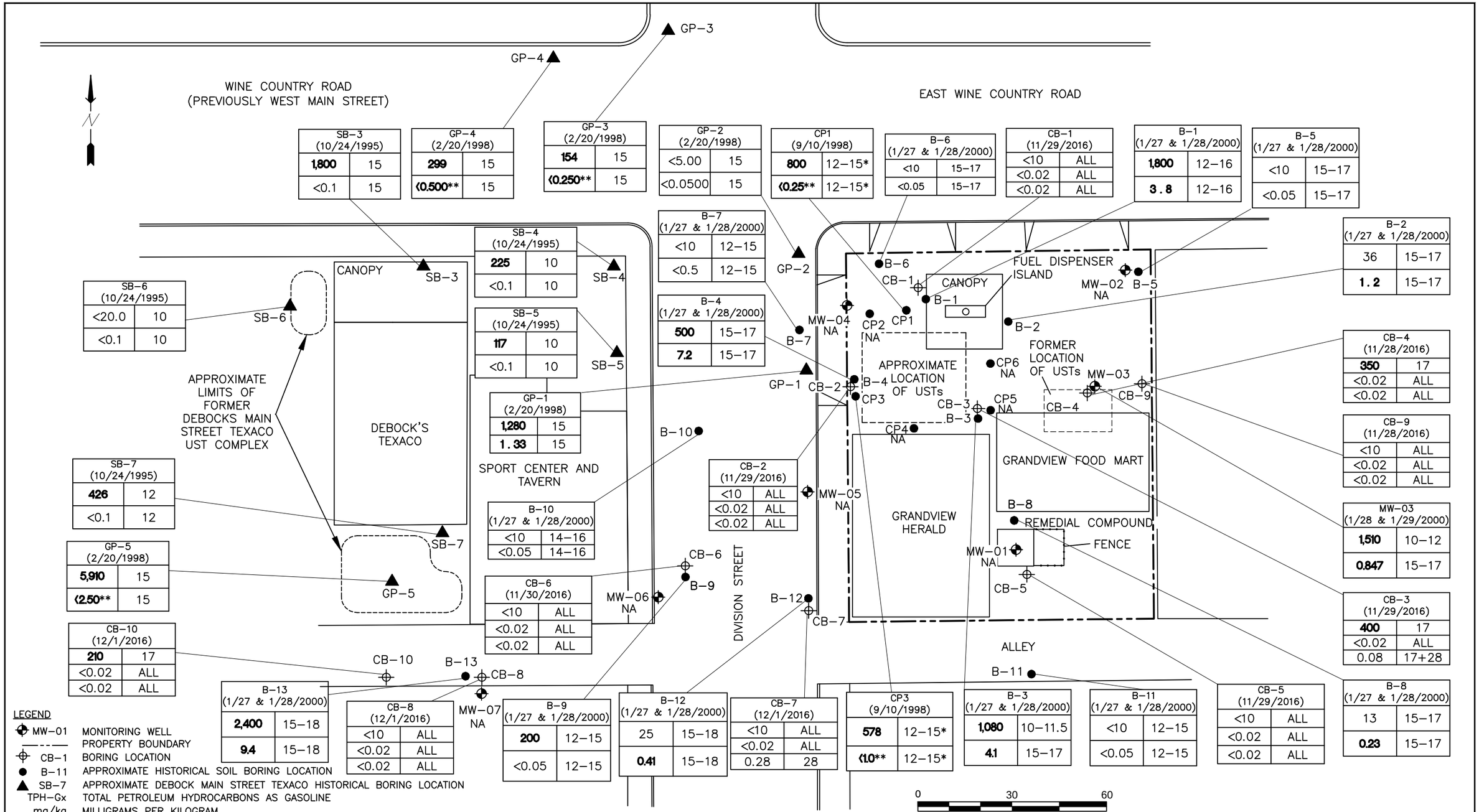
Site No. 0700
100 E. Wine Country Road
Grandview, Washington

DATE DRAWN
01/30/2018

PROJECT NO.
12343

FILE NO.
12343F4-GCM

W:\03_Site Assessment & Remediation\Eagle Canyon (PC&F)\01-0700 - East Wine Country Rd, Grandview WA (#622)\Reports\2018 Site Cleanup Action Report\Figures\123243.dwg



SB-3 (10/24/1995)	
1,800	15
<0.1	15

GP-4 (2/20/1998)	
299	15
(0.500**	15

GP-3 (2/20/1998)	
154	15
(0.250**	15

GP-2 (2/20/1998)	
<5.00	15
<0.0500	15

CP1 (9/10/1998)	
800	12–15*
(0.25**	12–15*

B-6 (1/27 & 1/28/2000)	
<10	15–17
<0.05	15–17

CB-1 (11/29/2016)	
<10	ALL
<0.02	ALL
<0.02	ALL

B-1 (1/27 & 1/28/2000)	
1,800	12–16
3.8	12–16

B-5 (1/27 & 1/28/2000)	
<10	15–17
<0.05	15–17

B-2 (1/27 & 1/28/2000)	
36	15–17
1.2	15–17

SB-4 (10/24/1995)	
225	10
<0.1	10

SB-5 (10/24/1995)	
117	10
<0.1	10

SB-6 (10/24/1995)	
<20.0	10
<0.1	10

B-7 (1/27 & 1/28/2000)	
<10	12–15
<0.5	12–15

B-4 (1/27 & 1/28/2000)	
500	15–17
7.2	15–17

GP-1 (2/20/1998)	
1,280	15
1.33	15

CB-4 (11/28/2016)	
350	17
<0.02	ALL
<0.02	ALL

CB-9 (11/28/2016)	
<10	ALL
<0.02	ALL
<0.02	ALL

MW-03 (1/28 & 1/29/2000)	
1,510	10–12
0.847	15–17

CB-3 (11/29/2016)	
400	17
<0.02	ALL
0.08	17+28

B-8 (1/27 & 1/28/2000)	
13	15–17
0.23	15–17

SB-7 (10/24/1995)	
426	12
<0.1	12

GP-5 (2/20/1998)	
5,910	15
(2.50**	15

CB-10 (12/1/2016)	
210	17
<0.02	ALL
<0.02	ALL

B-10 (1/27 & 1/28/2000)	
<10	14–16
<0.05	14–16

CB-6 (11/30/2016)	
<10	ALL
<0.02	ALL
<0.02	ALL

CB-2 (11/29/2016)	
<10	ALL
<0.02	ALL
<0.02	ALL

B-13 (1/27 & 1/28/2000)	
2,400	15–18
9.4	15–18

CB-8 (12/1/2016)	
<10	ALL
<0.02	ALL
<0.02	ALL

B-9 (1/27 & 1/28/2000)	
200	12–15
<0.05	12–15

B-12 (1/27 & 1/28/2000)	
25	15–18
0.41	15–18

CB-7 (12/1/2016)	
<10	ALL
<0.02	ALL
0.28	28

CP3 (9/10/1998)	
578	12–15*
(1.0**	12–15*

B-3 (1/27 & 1/28/2000)	
1,080	10–11.5
4.1	15–17

B-11 (1/27 & 1/28/2000)	
<10	12–15
<0.05	12–15

CB-5 (11/29/2016)	
<10	ALL
<0.02	ALL
<0.02	ALL

LEGEND

MW-01	MONITORING WELL
———	PROPERTY BOUNDARY
CB-1	BORING LOCATION
B-11	APPROXIMATE HISTORICAL SOIL BORING LOCATION
SB-7	APPROXIMATE DEBOCK MAIN STREET TEXACO HISTORICAL BORING LOCATION
TPH-Gx	TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
mg/kg	MILLIGRAMS PER KILOGRAM
BOLD	CLEANUP LEVEL EXCEEDANCE
BGS	BELOW GROUND SURFACE
ND	NOT DETECTED
ALL	ALL SAMPLE DEPTHS
NA	NOT ANALYZED
<0.05	NOT DETECTED AT INDICATED REPORTING LIMIT
*	COMPOSITE SAMPLE
**	LABORATORY DETECTION LIMITS ARE GREATER THAN THE MTCA METHOD A CUL; THEREFORE, ACTUAL CONCENTRATIONS MAY POTENTIALLY EXCEED THE CUL
CUL	CLEANUP LEVEL

CB-7 (12/1/2016)	
<10	12–15
<0.05	12–15
ALL	0.28

WELL ID & DATE SAMPLED
HIGHEST TPH-Gx CONCENTRATION AT DEPTH IN FEET BGS
HIGHEST BENZENE CONCENTRATION AT DEPTH IN FEET BGS
HIGHEST NAPHTHALENE CONCENTRATION AT DEPTH IN FEET BGS (CB-1 THROUGH CB-10 BORINGS)

NOTES
GP-1 THROUGH GP-5 AND SB-3 THROUGH SB-7 BORINGS ARE A PART OF DEBOCKS MAIN STREET TEXACO (CASE #6910).
CONCENTRATIONS ARE MEASURED IN mg/kg.

ES ENGINEERING SERVICES
1 Park Plaza, Suite 1000, Irvine, CA 92614 | t 714.919.6500 | f 949.988.3514

FIGURE 5

RECENT AND HISTORICAL SOIL ANALYTICAL RESULTS

Site No. 0700
100 E. Wine Country Road
Grandview, Washington

DATE DRAWN 01/05/2018
PROJECT NO. 123243
FILE NO. 123243F5-HSAR

W:\03_Site Assessment & Remediation\Eagle Canyon (PC&F)\01-0700 – East Wine Country Rd, Grandview WA (#622)\Reports\2018 Site Cleanup Action Report\Figures\123243F5-SAR.dwg

TABLES

TABLE 1
Recent Groundwater Monitoring Results
Site No. 0700
Grandview, Washington
1 of 1

WELL ID	WELL STATUS	SAMPLE DATE	ANALYTICAL PARAMETERS													WATER QUALITY PARAMETERS							WELL ELEVATION				WELL	
			TPH-Gx (µg/L)	Benzene (µg/L)	Toluene (µg/L)	E-benzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	EDC (µg/L)	EDB[3] (µg/L)	n-Hexane (µg/L)	Naph (µg/L)	2-Methyl (µg/L)	1- Methyl (µg/L)	Total Lead (µg/L)	DO (mg/L)	ORP (mV)	Cond (µs/cm)	pH	Temp (°C)	Turb (NTU)	Fe^{2+} (mg/L)	Casing (ft amsl)	DTW (ft btoc)	GW[4] (ft amsl)	GW Δ (feet)	DIA (inches)	SCREEN[5] (ft bgs)
			NWTPH-Gx	VOCs by EPA Method 8260								EPA Method 8270			Method 6020													
MW-01*	Active	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.80	--	--	--	2	10-25
MW-02	Active	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	95.21	18.49	76.72	-0.31	2	10-25
MW-03	Active	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	95.59	19.01	76.58	-0.21	2	10-25
MW-04	Active	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.18	18.05	76.13	-0.21	4	10-25
MW-05	Active	11/21/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.1	<0.1	<0.1	<2.0	0.49	-128.2	2,475	7.79	15.0	8	0.0	92.22	17.45	74.77	-0.25	4	10-25
MW-06	Active	11/21/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.1	<0.1	<0.1	<2.0	4.86	-97.5	255	8.05	12.3	39	0.0	92.25	17.21	75.04	-0.29	2	10-25
MW-07	Active	11/21/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.1	<0.1	<0.1	<2.0	1.25	-44.2	1,508	7.82	14.5	12	0.0	94.03	19.40	74.63	-0.29	4	15-30
RW-01	Active	11/21/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.1	<0.1	<0.1	<2.0	0.34	-106.7	2,194	7.68	15.1	5	0.0	95.00	18.74	76.26	-0.28	4	4-34
RW-02	Active	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.68	18.60	76.08	-0.29	4	4-34
RW-03	Active	11/21/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.1	<0.1	<0.1	<2.0	0.57	-104.9	2,133	7.69	15.1	6	1.1	93.61	18.21	75.40	-0.37	4	4-34
RW-04	Active	11/21/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.1	<0.1	<0.1	<2.0	0.42	-135.7	2,558	7.65	14.7	4	0.0	94.19	19.21	74.98	-0.27	4	4-34
RW-05	Active	11/21/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.1	<0.1	<0.1	2.1	0.60	-111.2	1,573	7.77	14.5	9	0.0	92.26	16.91	75.35	-0.27	4	4-34
VW-01	Active	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.61	16.94	75.67	-0.35	4	10-35
VW-02	Active	11/21/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.1	<0.1	<0.1	<2.0	0.59	-123.9	2,167	7.31	15.4	7	0.0	92.53	17.20	75.33	-0.37	4	10-35
VW-03	Active	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.77	DRY	--	--	4	10-35
SW-01	Active	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.91	18.58	76.33	-0.18	2	25-30
SW-02	Active	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	91.99	16.63	75.36	-0.02	2	25-30
SW-03	Active	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.34	16.49	75.85	-0.25	2	25-30
SW-04	Active	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.21	18.22	75.99	-0.27	4	25-30
SW-05	Active	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.86	16.91	75.95	-0.25	2	25-30
SW-06	Active	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.23	16.86	75.37	-0.24	2	25-30
SW-07	Active	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	18.29	--	--	2	25-30
MTCA Method A Cleanup Goals[1]			1,000/800[2]	5	1,000	700	1,000	20	5	0.01	--	--------160--------			15	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:

Results in **BOLD** indicate detections that exceed MTCA Method A cleanup levels for groundwater

(1): MTCA Method A Table 720-1 for groundwater, WAC 173-340-900 Tables
(2): 1,000 µg/L when benzene is absent and 800 µg/L when present
(3): analysis for EDB in Water by EPA Method 8011 to obtain low detection limit
(4): groundwater elevations are relative and referenced to a benchmark with assumed elevation of 100.00 feet
(5): based on available information
1-Methyl: 1-methylnaphthalene
2-Methyl: 2-methylnaphthalene
*: well inaccesible due to locked compound
--: not sampled / not measured / not analyzed/ unknown
<: less than the stated laboratory reporting detection limit
°C: degree Celsius
µg/L: micrograms per Liter
µs/cm: microsiemens per centimeter

Active: groundwater well currently used for monitoring
amsl: above mean sea level
bgs: below ground surface
btoc: below top of casing
Cond: conductivity
DIA: casing diameter
DO: dissolved oxygen
DTP: depth to product
E-benzene: ethylbenzene
EDB: 1,2-dibromoethane
EDC: 1,2-dichloroethane
Fe^{2+}: ferrous iron
ft: feet

GWΔ: change (difference) in groundwater elevation since last measurement
GW: groundwater
mg/L: milligrams per Liter
MTBE: methyl tert-butyl ether
mV: millivolts
MW: monitoring well
Naph: naphthalene
NTU: nephelometric turbidity unit
ORP: oxidation reduction potential
Temp: temperature
TPH-Gx: total gasoline-range petroleum hydrocarbons, analyzed by Northwest Method NWTPH-Gx
Turb: turbidity
VOCs: volatile organic compounds

TABLE 2
Historical Groundwater Monitoring Data
Site No. 0700
Grandview, Washington

WELL ID	WELL STATUS	SAMPLE DATE	ANALYTICAL PARAMETERS														WELL ELEVATION			
			TPH-Gx (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	EDC (µg/L)	EDB[3] (µg/L)	n-Hexane (µg/L)	Naph (µg/L)	2-Methyl (µg/L)	1-Methyl (µg/L)	Total Lead (µg/L)	Dissolved Lead (µg/L)	Casing (ft amsl)	DTW (ft btoc)	GW[4] (ft amsl)	GW Δ (feet)
			NWTPH-Gx	VOCs by EPA Method 8260								EPA Method 8270			Method 6020					
MW-01*	Active	01/06/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.80	--	--	--
	Active	04/27/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.80	--	--	--
	Active	08/15/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.80	--	--	--
	Active	11/15/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.80	--	--	--
	Active	02/13/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.80	--	--	--
	Active	05/16/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.80	--	--	--
	Active	08/17/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.80	--	--	--
	Active	11/21/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.80	--	--	--
MW-02	Active	01/06/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	95.21	20.15	75.06	--
	Active	04/27/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	95.21	Dry	--	--
	Active	08/15/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	95.21	19.11	76.10	--
	Active	11/15/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	95.21	18.74	76.47	0.37
	Active	02/13/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	95.21	19.20	76.01	-0.46
	Active	05/16/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	95.21	18.85	76.36	0.35
	Active	08/17/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	95.21	18.18	77.03	0.67
	Active	11/21/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	95.21	18.49	76.72	-0.31
MW-03	Active	01/06/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	95.59	20.61	74.98	--
	Active	04/27/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	95.59	21.52	74.07	-0.91
	Active	08/15/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	95.59	19.89	75.70	1.63
	Active	11/15/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	95.59	19.49	76.10	0.40
	Active	02/13/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	95.59	19.91	75.68	-0.42
	Active	05/16/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	95.59	19.10	76.49	0.81
	Active	08/17/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	95.59	18.80	76.79	0.30
	Active	11/21/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	95.59	19.01	76.58	-0.21
MW-04	Active	01/06/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.18	19.75	74.43	--
	Active	04/27/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.18	20.78	73.40	-1.03
	Active	08/15/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.18	19.04	75.14	1.74
	Active	11/15/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.18	18.50	75.68	0.54
	Active	02/13/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.18	19.17	75.01	-0.67
	Active	05/16/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.18	18.58	75.60	0.59
	Active	08/17/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.18	17.84	76.34	0.74
	Active	11/21/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.18	18.05	76.13	-0.21
MW-05	Active	01/06/16	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.006	<1.0	<0.1	<0.1	<0.1	<2.0	--	92.22	19.21	73.01	--
	Active	04/28/16	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.006	<1.0	<0.1	<0.1	<0.1	<2.0	--	92.22	19.91	72.31	-0.70
	Active	08/15/16	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.005	<1.0	<0.1	<0.1	<0.1	3.0	--	92.22	18.31	73.91	1.60

TABLE 2
Historical Groundwater Monitoring Data
Site No. 0700
Grandview, Washington
Page 2 of 6

WELL ID	WELL STATUS	SAMPLE DATE	ANALYTICAL PARAMETERS														WELL ELEVATION			
			TPH-Gx (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	EDC (µg/L)	EDB[3] (µg/L)	n-Hexane (µg/L)	Naph (µg/L)	2-Methyl (µg/L)	1-Methyl (µg/L)	Total Lead (µg/L)	Dissolved Lead (µg/L)	Casing (ft amsl)	DTW (ft btoc)	GW[4] (ft amsl)	GW Δ (feet)
			NWTPH-Gx	VOCs by EPA Method 8260								EPA Method 8270			Method 6020					
MW-05	Active	11/15/16	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.005	<1.0	<0.1	<0.1	<0.1	<2.0	--	92.22	17.89	74.33	0.42
Con't	Active	02/13/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.1	<0.1	<0.1	<2.0	--	92.22	19.19	73.03	-1.30
	Active	05/16/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.1	<0.1	<0.1	7.1	--	92.22	17.95	74.27	1.24
	Active	08/17/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.1	<0.1	<0.1	<2.0	--	92.22	17.20	75.02	0.75
	Active	11/21/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.1	<0.1	<0.1	<2.0	--	92.22	17.45	74.77	-0.25
MW-06	Active	01/06/16	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.006	<1.0	<0.1	<0.1	<0.1	<2.0	--	92.25	18.85	73.40	--
	Active	04/28/16	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.006	<1.0	<0.1	<0.1	<0.1	12	--	92.25	19.52	72.73	-0.67
	Active	08/15/16	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.005	<1.0	<0.1	<0.1	<0.1	5.4	--	92.25	18.12	74.13	1.40
	Active	11/15/16	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.005	<1.0	<0.1	<0.1	<0.1	**30**	--	92.25	17.60	74.65	0.52
	Active	11/30/16**	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.005	<1.0	<0.1	<0.1	<0.1	<2.0	<2.0	92.25	17.74	74.51	--
	Active	02/13/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.1	<0.1	<0.1	**40**		92.25	18.90	73.35	-1.30
	Active	03/16/17***	--	--	--	--	--	--	--	--	--	--	--	--	<2.0	<2.0	92.25	18.33	73.92	--
	Active	05/16/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.1	<0.1	<0.1	<2.0	--	92.25	17.71	74.54	1.19
	Active	08/17/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.1	<0.1	<0.1	<2.0	--	92.25	16.92	75.33	0.79
	Active	11/21/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.1	<0.1	<0.1	<2.0	--	92.25	17.21	75.04	-0.29
MW-07	Active	01/06/16	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.006	<1.0	<0.1	<0.1	<0.1	<2.0	--	94.03	21.03	73.00	--
	Active	04/27/16	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.006	<1.0	<0.1	<0.1	<0.1	<2.0	--	94.03	21.41	72.62	-0.38
	Active	08/15/16	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.005	<1.0	<0.1	<0.1	<0.1	<2.0	--	94.03	20.31	73.72	1.10
	Active	11/15/16	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.005	<1.0	<0.1	<0.1	<0.1	<2.0	--	94.03	19.75	74.28	0.56
	Active	02/13/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.1	<0.1	<0.1	3.4	--	94.03	21.15	72.88	-1.40
	Active	05/16/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.1	<0.1	<0.1	2.5	--	94.03	19.89	74.14	1.26
	Active	08/17/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.1	<0.1	<0.1	<2.0	--	94.03	19.11	74.92	0.78
	Active	08/21/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.1	<0.1	<0.1	<2.0	--	94.03	19.40	74.63	-0.29
RW-01	Active	01/06/16	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.006	<1.0	<0.1	<0.1	<0.1	<2.0	--	95.00	20.40	74.60	--
	Active	04/28/16	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.006	<1.0	<0.1	<0.1	<0.1	<2.0	--	95.00	21.27	73.73	-0.87
	Active	08/15/16	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.005	<1.0	<0.1	<0.1	<0.1	<2.0	--	95.00	19.52	75.48	1.75
	Active	11/15/16	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.005	<1.0	<0.1	<0.1	<0.1	<2.0	--	95.00	19.20	75.80	0.32
	Active	02/13/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.1	<0.1	<0.1	<2.0	--	95.00	20.55	74.45	-1.35
	Active	05/16/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.1	<0.1	<0.1	<2.0	--	95.00	19.30	75.70	1.25
	Active	08/17/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.1	<0.1	<0.1	<2.0	--	95.00	18.46	76.54	0.84
	Active	11/21/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.1	<0.1	<0.1	<2.0	--	95.00	18.74	76.26	-0.28
RW-02	Active	01/06/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.68	20.20	74.48	--
	Active	04/27/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.68	21.24	73.44	-1.04
	Active	08/15/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.68	19.48	75.20	1.76
	Active	11/15/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.68	19.01	75.67	0.47

TABLE 2
Historical Groundwater Monitoring Data
Site No. 0700
Grandview, Washington
Page 3 of 6

WELL ID	WELL STATUS	SAMPLE DATE	ANALYTICAL PARAMETERS														WELL ELEVATION			
			TPH-Gx (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	EDC (µg/L)	EDB[3] (µg/L)	n-Hexane (µg/L)	Naph (µg/L)	2-Methyl (µg/L)	1-Methyl (µg/L)	Total Lead (µg/L)	Dissolved Lead (µg/L)	Casing (ft amsl)	DTW (ft btoc)	GW[4] (ft amsl)	GW Δ (feet)
			NWTPH-Gx	VOCs by EPA Method 8260								EPA Method 8270			Method 6020					
RW-02	Active	02/13/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.68	20.35	74.33	-1.34
Con't	Active	05/16/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.68	19.11	75.57	1.24
	Active	08/17/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.68	18.31	76.37	0.80
	Active	11/21/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.68	18.60	76.08	-0.29
RW-03	Active	01/06/16	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.006	<1.0	<0.1	<0.1	<0.1	<2.0	--	93.61	19.90	73.71	--
	Active	04/27/16	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.006	<1.0	<0.1	<0.1	<0.1	<2.0	--	93.61	20.55	73.06	-0.65
	Active	08/15/16	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.005	<1.0	<0.1	<0.1	<0.1	<2.0	--	93.61	19.04	74.57	1.51
	Active	11/15/16	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.005	<1.0	<0.1	<0.1	<0.1	<2.0	--	93.61	18.58	75.03	0.46
	Active	02/13/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.1	<0.1	<0.1	<2.0	--	93.61	19.85	73.76	-1.27
	Active	05/16/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.1	<0.1	<0.1	<2.0	--	93.61	18.71	74.90	1.14
	Active	08/17/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.1	<0.1	<0.1	<2.0	--	93.61	17.84	75.77	0.87
	Active	11/21/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.1	<0.1	<0.1	<2.0	--	93.61	18.21	75.40	-0.37
RW-04	Active	01/06/16	110	<1.0	14	2.4	15	<1.0	<1.0	<0.006	<1.0	<0.1	<0.1	<0.1	<2.0	--	94.19	20.82	73.37	--
	Active	04/27/16	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.006	<1.0	<0.1	<0.1	<0.1	<2.0	--	94.19	21.49	72.70	-0.67
	Active	08/15/16	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.005	<1.0	<0.1	<0.1	<0.1	<2.0	--	94.19	20.06	74.13	1.43
	Active	11/15/16	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.005	<1.0	<0.1	<0.1	<0.1	<2.0	--	94.19	19.62	74.57	0.44
	Active	02/13/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.1	<0.1	<0.1	<2.0	--	94.19	20.92	73.27	-1.30
	Active	05/16/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.1	<0.1	<0.1	<2.0	--	94.19	19.69	74.50	1.23
	Active	08/17/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.1	<0.1	<0.1	<2.0	--	94.19	18.94	75.25	0.75
	Active	11/21/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.1	<0.1	<0.1	<2.0	--	94.19	19.21	74.98	-0.27
RW-05	Active	01/06/16	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.006	<1.0	<0.1	<0.1	<0.1	<2.0	--	92.26	18.63	73.63	--
	Active	04/27/16	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.006	<1.0	<0.1	<0.1	<0.1	3.2	--	92.26	19.29	72.97	-0.66
	Active	08/15/16	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.005	<1.0	<0.1	<0.1	<0.1	2.4	--	92.26	17.88	74.38	1.41
	Active	11/15/16	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.005	<1.0	<0.1	<0.1	<0.1	3.2	--	92.26	17.29	74.97	0.59
	Active	02/13/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.1	<0.1	<0.1	4.3	--	92.26	18.74	73.52	-1.45
	Active	05/16/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.1	<0.1	<0.1	5.4	--	92.26	17.51	74.75	1.23
	Active	08/17/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.1	<0.1	<0.1	2.0	--	92.26	16.64	75.62	0.87
	Active	11/21/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.1	<0.1	<0.1	2.1	--	92.26	16.91	75.35	-0.27
VW-01	Active	01/06/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.61	Dry	--	--
	Active	04/27/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.61	Dry	--	--
	Active	08/15/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.61	Dry	--	--
	Active	11/15/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.61	17.32	75.29	--
	Active	02/13/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.61	17.40	75.21	-0.08
	Active	05/16/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.61	17.45	75.16	-0.05

TABLE 2
Historical Groundwater Monitoring Data
Site No. 0700
Grandview, Washington

WELL ID	WELL STATUS	SAMPLE DATE	ANALYTICAL PARAMETERS														WELL ELEVATION			
			TPH-Gx (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	EDC (µg/L)	EDB[3] (µg/L)	n-Hexane (µg/L)	Naph (µg/L)	2-Methyl (µg/L)	1-Methyl (µg/L)	Total Lead (µg/L)	Dissolved Lead (µg/L)	Casing (ft amsl)	DTW (ft btoc)	GW[4] (ft amsl)	GW Δ (feet)
			NWTPH-Gx	VOCs by EPA Method 8260								EPA Method 8270			Method 6020					
VW-01	Active	08/17/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.61	16.59	76.02	0.86
Con't	Active	11/21/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.61	16.94	75.67	-0.35
VW-02	Active	01/06/16	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.006	<1.0	<0.1	<0.1	<0.1	<2.0	--	92.53	18.81	73.72	--
	Active	04/28/16	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.006	<1.0	<0.1	<0.1	<0.1	<2.0	--	92.53	19.42	73.11	-0.61
	Active	08/15/16	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.005	<1.0	<0.1	<0.1	<0.1	<2.0	--	92.53	18.03	74.50	1.39
	Active	11/15/16	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.005	<1.0	<0.1	<0.1	<0.1	<2.0	--	92.53	17.55	74.98	0.48
	Active	02/13/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.1	<0.1	<0.1	<2.0	--	92.53	18.99	73.54	-1.44
	Active	05/16/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.1	<0.1	<0.1	<2.0	--	92.53	17.65	74.88	1.34
	Active	08/17/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.1	<0.1	<0.1	<2.0	--	92.53	16.83	75.70	0.82
	Active	11/21/17	<100	<1.0	<1.0	<1.0	<3.0	<1.0	<1.0	<0.01	<1.0	<0.1	<0.1	<0.1	<2.0	--	92.53	17.20	75.33	-0.37
VW-03	Active	01/06/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.77	Dry	--	--
	Active	04/27/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.77	Dry	--	--
	Active	08/15/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.77	Dry	--	--
	Active	11/15/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.77	Dry	--	--
	Active	02/13/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.77	Dry	--	--
	Active	05/16/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.77	Dry	--	--
	Active	08/17/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.77	Dry	--	--
	Active	11/21/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.77	Dry	--	--
SW-01	Active	01/06/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.91	20.33	74.58	--
	Active	04/27/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.91	21.21	73.70	-0.88
	Active	08/15/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.91	19.62	75.29	1.59
	Active	11/15/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.91	19.10	75.81	0.52
	Active	02/13/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.91	20.42	74.49	-1.32
	Active	05/16/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.91	13.15	81.76	7.27
	Active	08/17/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.91	18.40	76.51	-5.25
	Active	11/21/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.91	18.58	76.33	-0.18
SW-02	Active	01/06/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	91.99	18.16	73.83	--
	Active	04/27/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	91.99	Dry	--	--
	Active	08/15/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	91.99	17.71	74.28	--
	Active	11/15/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	91.99	17.20	74.79	0.51
	Active	02/13/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	91.99	18.64	73.35	-1.44
	Active	05/16/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	91.99	17.31	74.68	1.33
	Active	08/17/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	91.99	16.61	75.38	0.70
	Active	11/21/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	91.99	16.63	75.36	-0.02
SW-03	Active	01/06/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.34	18.21	74.13	--

TABLE 2
Historical Groundwater Monitoring Data
Site No. 0700
Grandview, Washington
Page 5 of 6

WELL ID	WELL STATUS	SAMPLE DATE	ANALYTICAL PARAMETERS														WELL ELEVATION			
			TPH-Gx (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	EDC (µg/L)	EDB[3] (µg/L)	n-Hexane (µg/L)	Naph (µg/L)	2-Methyl (µg/L)	1-Methyl (µg/L)	Total Lead (µg/L)	Dissolved Lead (µg/L)	Casing (ft amsl)	DTW (ft btoc)	GW[4] (ft amsl)	GW Δ (feet)
			NWTPH-Gx	VOCs by EPA Method 8260								EPA Method 8270			Method 6020					
SW-03 Con't	Active	04/27/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.34	19.31	74.03	-1.10
	Active	08/15/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.34	17.93	74.41	1.38
	Active	11/15/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.34	16.92	75.42	1.01
	Active	02/13/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.34	18.11	74.23	-1.19
	Active	05/16/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.34	16.99	75.35	1.12
	Active	08/17/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.34	16.24	76.10	0.75
	Active	11/21/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.34	16.49	75.85	-0.25
SW-04	Active	01/06/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.21	19.85	74.36	--
	Active	04/27/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.21	20.62	73.59	-0.77
	Active	08/15/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.21	19.06	75.15	1.56
	Active	11/15/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.21	18.79	75.42	0.27
	Active	02/13/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.21	20.01	74.20	-1.22
	Active	05/16/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.21	18.70	75.51	1.31
	Active	08/17/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.21	17.95	76.26	0.75
	Active	11/21/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	94.21	18.22	75.99	-0.27
SW-05	Active	01/06/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.86	18.55	74.31	--
	Active	04/27/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.86	19.24	73.62	-0.69
	Active	08/15/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.86	17.81	75.05	1.43
	Active	11/15/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.86	17.32	75.54	0.49
	Active	02/13/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.86	18.86	74.00	-1.54
	Active	05/16/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.86	17.42	75.44	1.44
	Active	08/17/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.86	16.66	76.20	0.76
	Active	11/21/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.86	16.91	75.95	-0.25
SW-06	Active	01/06/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.23	18.56	73.67	--
	Active	04/27/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.23	19.29	72.94	-0.73
	Active	08/15/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.23	17.85	74.38	1.44
	Active	11/15/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.23	17.28	74.95	0.57
	Active	02/13/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.23	18.61	73.62	-1.33
	Active	05/16/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.23	17.48	74.75	1.13
	Active	08/17/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.23	16.62	75.61	0.86
	Active	11/21/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.23	16.86	75.37	-0.24
SW-07	Active	01/06/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	18.71	--	--
	Active	04/27/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	20.82	--	--
	Active	08/15/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Active	11/15/16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	19.99	--	--

TABLE 2
Historical Groundwater Monitoring Data
Site No. 0700
Grandview, Washington

WELL ID	WELL STATUS	SAMPLE DATE	ANALYTICAL PARAMETERS														WELL ELEVATION			
			TPH-Gx (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	EDC (µg/L)	EDB[3] (µg/L)	n-Hexane (µg/L)	Naph (µg/L)	2-Methyl (µg/L)	1-Methyl (µg/L)	Total Lead (µg/L)	Dissolved Lead (µg/L)	Casing (ft amsl)	DTW (ft btoc)	GW[4] (ft amsl)	GW Δ (feet)
			NWTPH-Gx	VOCs by EPA Method 8260								EPA Method 8270			Method 6020					
SW-07	Active	02/13/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	20.88	--	--
Con't	Active	05/16/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	20.10	--	--
	Active	08/17/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	19.90	--	--
	Active	11/21/17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	18.29	--	--
MTCA Method A Cleanup Goals[1]			1,000/800[2]	5	1,000	700	1,000	20	5	0.01	--	--------160--------			15		--	--	--	--

Notes:

Results in **BOLD** indicate detections that exceed MTCA Method A cleanup levels for groundwater

(1): MTCA Method A Table 720-1 for groundwater, WAC 173-340-900 Tables

(2): 1,000 µg/L when benzene is absent and 800 µg/L when present

(3): analysis for EDB in Water by EPA Method 8011 to obtain low detection limit

(4): Groundwater elevations are realtive and referenced to a benchmark with assumed elevation of 100.00 feet

2-Methyl: 2-methylnaphthalene

1-Methyl: 1-methylnaphthalene

*: well inaccesible due to locked compound

**: resampled due to high turbidity of water sample

***: resample due to high lead detection in 2-13-17 sample

<: less than the stated laboratory reporting detection limit

°C: degree Celsius

µg/L: micrograms per Liter

µs/cm: microsiemens per centimeter

Active: groundwater well currently used for monitoring

amsl: above mean sea level

btoc: below top of casing

Cond: conductivity

DIA: casing diameter

DO: dissolved oxygen

DTP: depth to product

DTP: depth to product

EDB: 1,2-dibromoethane

EDC: 1,2-dichloroethane

Fe2+: ferrous iron

ft: feet

GWΔ: change (difference) in groundwater elevation since last measurement

--: not sampled / not measured / not analyzed/ unknown

GW: groundwater

mg/L: milligrams per Liter

MTBE: methyl tert-butyl ether

mV: millivolts

MW: monitoring well

Naph: naphthalene

NTU: nephelometric turbidity unit

ORP: oxidation reduction potential

Temp: temperature

TPH-Gx: total gasoline-range petroleum hydrocarbons, analyzed by Northwest Method NWTPH-Gx

Turb: turbidity

VOCs: volatile organic compounds

TABLE 3
Groundwater Flow Direction and Gradient Data
Site No. 0700
Grandview, Washington
1 of 1

Date	Groundwater Gradient (ft/ft)	Groundwater Flow Direction															
		N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
01/06/16	0.01	0	0	0	0	0	0	0	0	0	0	**1**	0	0	0	0	0
04/27/16	0.02	0	0	0	0	0	0	0	0	0	0	0	**1**	0	0	0	0
08/15/16	0.01	0	0	0	0	0	0	0	0	0	0	**1**	0	0	0	0	0
11/15/16	0.01	0	0	0	0	0	0	0	0	0	0	**1**	0	0	0	0	0
02/13/17	0.016	0	0	0	0	0	0	0	0	0	0	**1**	0	0	0	0	0
05/16/17	0.013	0	0	0	0	0	0	0	0	0	**1**	0	0	0	0	0	0
08/17/17	0.01	0	0	0	0	0	0	0	0	0	0	**1**	0	0	0	0	0
11/21/17	0.01	0	0	0	0	0	0	0	0	0	0	**1**	0	0	0	0	0
TOTAL		0	0	0	0	0	0	0	0	0	**1**	**6**	**1**	0	0	0	0

Notes:

Groundwater gradient and flow direction based on review of historic groundwater monitoring reports prepared by ES Engineering

ft/ft: feet per foot

TABLE 4
Historical Groundwater Monitoring Parameters
Site No. 0700
Grandview, Washington
1 of 2

WELL ID	DATE	DO (mg/L)	ORP (mV)	Conductivity (µs/cm)	pH	Temp (°C)	Turbidity (NTU)	Fe^{2+} (mg/L)
MW-05	01/06/16	10.37	-197.6	2,713	7.00	12.68	67	0.0
	04/28/16	0.83	126.0	2,133	6.06	15.97	12	0.0
	08/15/16	0.86	-20.6	2,555	6.54	17.69	81	0.0
	11/15/16	0.71	-110.7	1,070	8.07	16.7	62	0.0
	02/13/17	0.59	-239.7	1,292	8.18	15.04	32	0.0
	05/16/17	0.59	-321.9	717	7.34	15.81	19	0.0
	08/17/17	0.58	-140.2	2,430	7.04	22.30	16	0.0
	11/21/17	0.49	-128.2	2,475	7.79	15.0	8	0.0
MW-06	01/06/16	10.32	-181.9	1,791	7.05	12.79	674	0.0
	04/28/16	5.59	198.0	795.0	8.77	16.95	410	0.0
	08/15/16	1.29	-78.8	1,342	6.94	22.65	439	0.0
	11/15/16	0.82	-124.7	1,505	7.97	15.3	288	0.0
	02/13/17	1.63	-212.5	1,548	8.34	15.21	42	0.0
	03/16/17*	3.93	90.8	830	7.23	15.84	31.7	--
	05/16/17	0.40	-290.1	506	7.61	14.54	19	0.0
	08/17/17	1.63	-138.1	1,814	7.09	21.93	19	0.0
	11/21/17	4.86	-97.5	255	8.05	12.3	39	0.0
MW-07	01/06/16	10.28	-192.9	1,822	7.04	12.80	62	0.0
	04/27/16	1.23	-255.1	2,505	10.15	17.21	40	0.0
	08/15/16	0.78	-21.8	1,502	6.72	19.46	31	0.0
	11/15/16	1.28	-92.9	1,359	8.13	17.1	29	0.0
	02/13/17	1.21	-251.1	1,491	8.40	13.39	775	0.0
	05/16/17	0.42	-300.9	495	7.85	14.36	19	0.0
	08/17/17	0.96	-156.0	1,421	7.26	19.61	22	0.0
	11/21/17	1.25	-44.2	1,508	7.82	14.5	12	0.0
RW-01	01/06/16	9.34	-233.9	1,780	6.93	13.99	17	0.0
	04/28/16	0.48	135.1	1,619	4.17	15.74	5	0.0
	08/15/16	0.38	-64.5	1,612	6.72	20.73	9	0.0
	11/15/16	0.50	-103.4	1,433	8.1	16.6	7	0.0
	02/13/17	0.50	-172.9	1,542	8.43	13.32	6	0.0
	05/16/17	2.37	-347.6	588	7.29	16.49	10	0.0
	08/17/17	0.60	-143.0	1,786	6.93	21.47	5	0.0
	11/21/17	0.34	-106.7	2,194	7.68	15.1	5	0.0
RW-03	01/06/16	9.40	-290.0	2,180	6.87	14.12	19	0.0
	04/27/16	1.06	-367.1	3,265	6.85	17.13	4	0.0

TABLE 4
Historical Groundwater Monitoring Parameters
Site No. 0700
Grandview, Washington
2 of 2

WELL ID	DATE	DO (mg/L)	ORP (mV)	Conductivity (µs/cm)	pH	Temp (°C)	Turbidity (NTU)	Fe^{2+} (mg/L)
RW-03	08/15/16	1.01	-74.6	1,979	6.73	20.52	30	0.5
Con't	11/15/16	1.18	-93.5	1,775	8.06	16.6	35	0.5
	02/13/17	0.65	-201.2	1,790	8.15	12.41	6	1.0
	05/16/17	3.20	-331.9	661	7.22	15.63	2	1.1
	08/17/17	1.08	-115.7	1,840	6.84	21.45	6	1.0
	11/21/17	0.57	-104.9	2,133	7.69	15.1	6	1.1
RW-04	01/06/16	10.17	-269.9	2,184	6.65	12.99	37	0.0
	04/27/16	0.89	-440.0	3,405	6.65	17.76	7	0.0
	08/15/16	0.56	-54.4	2,117	6.35	19.45	6	0.0
	11/15/16	0.70	-99.0	2,038	8.05	16.4	6	0.0
	02/13/17	0.82	-196.2	2,013	8.08	12.04	10	0.0
	05/16/17	3.35	-328.8	682	7.17	16.37	2	0.0
	08/17/17	1.05	-147.1	2,262	6.82	20.48	4	0.0
	11/21/17	0.42	-135.7	2,558	7.65	14.7	4	0.0
RW-05	01/06/16	10.10	-189.4	1,481	7.13	13.05	45	0.0
	04/27/16	1.03	-399.1	1,844	7.23	18.13	24	0.0
	08/15/16	0.51	-57.1	1,420	6.98	21.99	11	0.0
	11/15/16	0.47	-133.0	1,459	8.03	17.4	9	0.0
	02/13/17	1.09	-235.7	1,161	8.57	14.84	10	0.0
	05/16/17	0.51	-309.7	517	7.50	14.98	17	0.0
	08/17/17	0.85	-140.1	1,601	7.06	23.90	10	0.0
	11/21/17	0.60	-111.2	1,573	7.77	14.5	9	0.0
VW-02	01/06/16	10.01	-128.7	1,965	6.83	13.10	57	0.5
	04/28/16	0.84	111.3	1,675	6.84	15.76	35	0.6
	08/15/16	1.11	17.8	1,675	6.37	17.76	21	0.0
	11/15/16	0.81	-100.7	1,671	8.08	17.0	59	0.0
	02/13/17	0.95	-249.7	1,102	7.95	13.80	25	0.0
	05/16/17	2.50	-316.2	648	7.27	15.38	10	0.0
	08/17/17	0.75	-137.1	1,961	6.86	20.77	24	0.0
	11/21/17	0.59	-123.9	2,167	7.31	15.4	7	0.0

Notes:

--: not sampled / not measured / not applicable
*: resampled due to high lead concentration
°C: degree Celsius
µg/L: micrograms per Liter
µs/cm: microsiemens per centimeter
DO: dissolved oxygen
Fe^{2+}: ferrous iron
mg/L: milligrams per Liter
mV: millivolts
MW: monitoring well
NTU: nephelometric turbidity unit
ORP: oxidation reduction potential

TABLE 5
Summary of Confirmation Soil Sample Analytical Results
Site No. 0700
Grandview, Washington
Page 1 of 2

	Sample ID	Date Sampled	Depth (ft bgs)	PID Reading (ppmv)	TPH-Dx (mg/kg)	TPH-Ox (mg/kg)	TPH-Gx (mg/kg)	B (mg/kg)	T (mg/kg)	E (mg/kg)	Xylenes (mg/kg)	MTBE (mg/kg)	EDB (mg/kg)	Naph (mg/kg)	2-Methyl (mg/kg)	1-Methyl (mg/kg)	Other VOCs (mg/kg)	Total Pb (mg/kg)
					NWTPH-Dx Ext		Method NWTPH-Gx/8260 & Method 8260C/5035						8260SIM	Method 8270			8260C/5035	6020A/3050B
CB-1	CB-1-10	11/29/16	10	0.0	--	--	<10	<0.02	<0.05	<0.05	<0.15	<0.05	<0.005	<0.02	<0.02	<0.02	(4)	7.1
	CB-1-26	11/29/16	26	0.0	--	--	<10	<0.02	<0.05	<0.05	<0.15	<0.05	<0.005	<0.02	<0.02	<0.02	(3)	11
CB-2	CB-2-10	11/29/16	10	0.0	--	--	<10	<0.02	<0.05	<0.05	<0.15	<0.05	<0.005	<0.02	<0.02	<0.02	(3)	11
	CB-2-28	11/29/16	28	0.0	--	--	<10	<0.02	<0.05	<0.05	<0.15	<0.05	<0.005	<0.02	<0.02	<0.02	(3)	9.4
CB-3	CB-3-16	11/29/16	16	0.4	--	--	<10	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	12
	CB-3-17	11/29/16	17	662.6	--	--	**400**	<0.02	<0.05	0.48	0.69	<0.05	<0.005	0.08	0.06	0.04	(4)	8.3
	CB-3-28	11/29/16	28	0.0	--	--	<10	<0.02	<0.05	<0.05	<0.15	<0.05	<0.005	0.08	0.07	<0.02	(3)	8.6
	CB-3-28 (D)	11/29/16	28	--	--	--	<10	--	--	--	--	--	<0.005	--	--	--	--	--
CB-4	CB-4-15	11/28/16	15	0.0	--	--	<10	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	13
	CB-4-15 (D)	11/28/16	15	--	--	--	<10	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--
	CB-4-17	11/28/16	17	738.4	--	--	**350**	<0.02	<0.05	0.61	2.6	<0.05	<0.005	<0.02	<0.02	<0.02	(4)	7.1
	CB-4-22	11/28/16	22	0.0	--	--	**170**	<0.02	<0.05	0.39	0.53	<0.05	<0.005	<0.02	<0.02	<0.02	(4)	7.5
CB-5	CB-5-10	11/29/16	10	0.0	--	--	<10	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	9.1
	CB-5-20	11/29/16	20	0.0	--	--	<10	<0.02	<0.05	<0.05	<0.15	<0.05	<0.005	<0.02	<0.02	<0.02	(3)	9.1
	CB-5-28	11/29/16	28	0.0	--	--	<10	<0.02	<0.05	<0.05	<0.15	<0.05	<0.005	<0.02	<0.02	<0.02	(3)	9.0
	CB-5-28 (D)	11/29/16	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	8.5
CB-6	CB-6-10	11/30/16	10	0.0	--	--	<10	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	<5.0
	CB-6-10 (D)	11/30/16	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<5.0
	CB-6-20	11/30/16	20	0.0	--	--	<10	<0.02	<0.05	<0.05	<0.15	<0.05	<0.005	<0.02	<0.02	<0.02	(3)	<5.0
	CB-6-27	11/30/16	27	0.0	--	--	<10	<0.02	<0.05	<0.05	<0.15	<0.05	<0.005	<0.02	<0.02	<0.02	(3)	<5.0
CB-7	CB-7-10	12/01/16	10	0.0	--	--	<10	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	<5.0
	CB-7-10 (D)	12/01/16	10	--	--	--	<10	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--
	CB-7-20	12/01/16	20	0.0	--	--	<10	<0.02	<0.05	<0.05	<0.15	<0.05	<0.005	<0.02	<0.02	<0.02	(3)	<5.0
	CB-7-28	12/01/16	28	0.0	--	--	<10	<0.02	<0.05	<0.05	<0.15	<0.05	<0.005	0.28	0.04	0.18	(3)	6.7

TABLE 5
Summary of Confirmation Soil Sample Analytical Results
Site No. 0700
Grandview, Washington
Page 2 of 2

	Sample ID	Date Sampled	Depth (ft bgs)	PID Reading (ppmv)	TPH-Dx (mg/kg)	TPH-Ox (mg/kg)	TPH-Gx (mg/kg)	B (mg/kg)	T (mg/kg)	E (mg/kg)	Xylenes (mg/kg)	MTBE (mg/kg)	EDB (mg/kg)	Naph (mg/kg)	2-Methyl (mg/kg)	1-Methyl (mg/kg)	Other VOCs (mg/kg)	Total Pb (mg/kg)
					NWTPH-Dx Ext		Method NWTPH-Gx/8260 & Method 8260C/5035						8260SIM	Method 8270			8260C/5035	6020A/3050B
CB-8	CB-8-10	12/01/16	10	0.0	--	--	<10	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	<5.0
	CB-8-18	12/01/16	18	0.0	--	--	<10	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	<5.0
	CB-8-20	12/01/16	20	80.6	<50	<100	--	<0.02	<0.05	<0.05	<0.15	<0.05	<0.005	<0.02	<0.02	<0.02	(4)	6.7
	CB-8-20 (D)	12/01/16	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6.6
	CB-8-22	12/01/16	22	0.0	--	--	<10	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	<5.0
	CB-8-27	12/01/16	27	0.0	--	--	<10	<0.02	<0.05	<0.05	<0.15	<0.05	<0.005	<0.02	<0.02	<0.02	(3)	<5.0
CB-9	CB-9-10	11/28/16	10	0.0	--	--	<10	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	13
	CB-9-10 (D)	11/28/16	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	15
	CB-9-20	11/28/16	20	0.0	--	--	<10	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	<5.0
	CB-9-30	11/28/16	30	0.0	--	--	<10	<0.02	<0.05	<0.05	<0.15	<0.05	<0.005	<0.02	<0.02	<0.02	(3)	8.5
CB-10	CB-10-12	12/01/16	12	0.0	--	--	<10	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	<5.0
	CB-10-17	12/01/16	17	850.2	--	--	**210**	<0.02	<0.05	<0.05	<0.15	<0.05	<0.005	<0.02	<0.02	<0.02	(4)	<5.0
	CB-10-24	12/01/16	24	0.0	--	--	<10	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	<5.0
	CB-10-27	12/01/16	27	0.0	--	--	<10	<0.02	<0.05	<0.05	<0.15	<0.05	<0.005	<0.02	<0.02	<0.02	(3)	<5.0
MTCA Method A Cleanup Levels[1]					2,000	2,000	100/30[2]	0.03	7	6	9	0.1	0.005	5[5]			ne	250

Notes:

[1] = MTCA Method A Table 740-1 for unrestricted land use, WAC 173-340-900 Tables
[2] = 100 mg/kg when benzene is absent and 30 mg/kg when benzene is present
[3] = No other VOCs detected
[4] = Other VOCs detected, refer to Table 2 or laboratory analytical report (Appendix J)
[5] = Total value for naphthalene, 2-methylnaphthalene, and 1-methylnaphthalene
< = not detected at or above stated reporting limit (RL)
-- = not analyzed/not applicable
1-Methyl = 1-methyl naphthalene
2-Methyl = 2-methyl naphthalene
BTEX = benzene, toluene, ethylbenzene, total xylenes
CB = confirmation boring
EDB = 1,2 dibromoethane
Ext = extended
ft bgs = feet below ground surface
mg/kg = milligrams per kilogram
MTBE = methyl tert-butyl ether
MTCA = Model Toxics Control Act
MW = monitoring well
Naph = naphthalene
ne = cleanup level not established in Table 740-1 for other VOCs detected in soil
Pb = lead
PID = photoionization detector
ppmv = parts per million by volume
TPH-Dx = total diesel-range petroleum hydrocarbons
TPH-Gx = total gasoline-range petroleum hydrocarbons
TPH-Ox = total oil-range petroleum hydrocarbons
VOCs = volatile organic compounds
(D) = duplicate sample

TABLE 6
Summary of Additional VOCs Detected in Soil
Site No. 0700
Grandview, Washington

Boring ID	Sample ID	Date Sampled	Depth (ft bgs)	PID Reading (ppmv)	IPB (mg/kg)	N-propyl-benzene (mg/kg)	1,3,5-Trimethylbenzene (mg/kg)	1,2,4-Trimethylbenzene (mg/kg)	SBB (mg/kg)	IPT (mg/kg)
					Method 8260C/5035					
CB-1	CB-1-10	11/29/2016	10	0.0	<0.05	<0.05	<0.05	**0.074**	<0.05	<0.05
CB-3	CB-3-17	11/29/2016	17	662.6	**0.26**	**0.68**	**2.4**	**5.0**	<0.05	**0.41**
CB-4	CB-4-17	11/28/2016	17	738.4	**0.30**	**0.99**	**3.0**	**9.1**	<0.05	**0.57**
	CB-4-22	11/28/2016	22	0.0	**0.20**	**0.55**	**1.8**	**4.0**	<0.05	**0.32**
CB-8	CB-8-20	12/1/2016	20	80.6	<0.05	<0.05	<0.05	<0.05	**0.062**	<0.05
CB-10	CB-10-17	12/1/2016	17	850.2	<0.05	<0.05	**0.30**	**0.57**	<0.05	**0.78**

Notes:

Bold indicates concentrations detected over laboratory reporting limits
Cleanup levels not established for listed 'other' VOCs
For the complete list of VOCs analyzed see laboratory analytical report (Appendix J)
<: not detected at or above stated reporting limit
IPB = isopropylbenzene
IPT = isopropyltoluene
ft bgs = feet below ground surface
mg/kg = milligrams per kilogram
PID = photoionization detector
ppmv = parts per million by volume
SBB = sec-butylbenzene

TABLE 7
Temporary Well CB-10W Analytical Results
Site No. 0700
Grandview, Washington
Page 1 of 1

Well/Sample ID	Date Sampled	TPH-Dx (µg/L)	TPH-Ox (µg/L)	TPH-Gx (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	EDB (µg/L)	Naph (µg/L)	2-Methyl (µg/L)	1-Methyl (µg/L)	Dissolved Pb (µg/L)	Total Pb (µg/L)
		NWTPH-Dx Ext		NWTPH-Gx	Method 8260C/5030C					8011	Method 8270			EPA-6020	
CB-10W	12/01/16	--	--	<100	<1.0	<1.0	<1.0	<3.0	1.1	<0.01	<0.1	<0.1	<0.1	<2.0	<2.0
MTCA Method A Cleanup Goals[1]		500	500	1,000/800[2]	5	1,000	700	1,000	20	0.01	160[3]			ne	15

Notes:

(1): MTCA Method A Table 720-1 for groundwater, WAC 173-340-900 Tables

(2): 1,000 µg/L when benzene is absent and 800 µg/L when present

(3): total values for naphthalene, 2-methylnaphthalene, and 1-methylnaphthalene

< = not detected at or above stated reporting limit (RL)

-- = not analyzed/not applicable

TPH-Dx = total diesel-range petroleum hydrocarbons

TPH-Gx = total gasoline-range petroleum hydrocarbons

TPH-Ox = total oil-range petroleum hydrocarbons

BTEX = benzene, toluene, ethylbenzene, total xylenes

EDB = 1,2 dibromoethane

Ext = extended

µg/L = micograms per Liter

MTBE = methyl tert-butyl ether

MTCA = Model Toxics Control Act

MW = monitoring well

Naph = naphthalene

Pb = lead

2-Methyl = 2-Methylnaphthalene

1-Methyl = 1-Methylnaphthalene

APPENDIX A

HISTORIC SOIL DATA TABLES

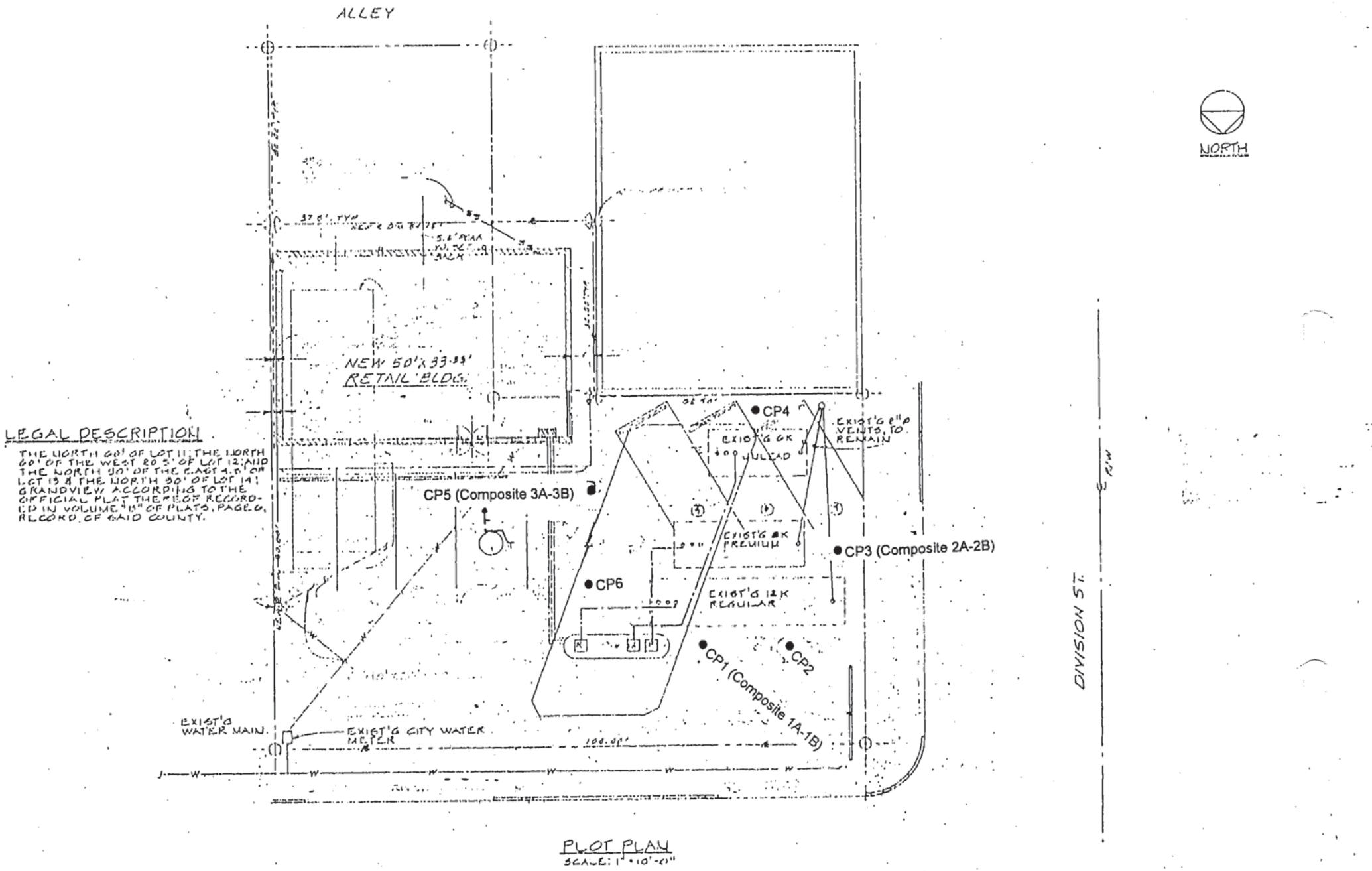
Table 1
Summary of Analytical Results from Soil Samples Collected During Installation of Cathodic Protection at Grandview Market, 100 East Wine Country Road, Grandview, Washington
Time Oil Property No. 01-070

Hydrocarbon Identification by WTPH-HCID

	heavy oil-range	diesel-range	gasoline-range
Composite 1A-1B	ND	detected	detected
Composite 2A-2B	ND	detected	detected
Composite 3A-3B	ND	detected	detected

Soil Samples analyzed by WTPH-d and WTPH-g with BTEX distinction (in ppm)

	TPH-heavy oil	TPH-diesel	TPH-gasoline	benzene	toluene	ethylbenzene	xylenes	total lead
Composite 1A-1B	**222**	58.4	**1,800**	ND	1.36	2.78	**23.2**	22.1
Composite 2A-2B	137	46.6	**748**	ND	1.94	3.9	**25.3**	13.5
Composite 3A-3B	103	60.1	**576**	ND	0.694	2.34	11.8	13.3
MTCA Method A	**200**	**200**	**100**	**0.5**	**20**	**40**	**20**	**250**



● Anode Installation Location (Soil Sample Number)

Figure 1
Location of Cathodic Protection Anode Installation Points
Grandview Market, 100 E. Wine County Rd., Grandview, WA
Time Oil Co. Property No. 01-070

TABLE 1
Preliminary Screening Survey - Soil Sampling Summary
Corrective Action Plan
Time Oil Property 01-070
Grandview, Washington

Sample Number	Depth (feet)	PID (ppm)	Benezene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	TPH-G (mg/kg)	TPH-D (mg/kg)
MGB S1								
S1	0.5-3.0	6.8	---	---	---	---	---	---
S-2	4.0-8.0	6.5	<0.0500	<0.0500	<0.0500	<0.100	<10.0	---
S-3	9.0-12.0	560	<0.0500	<0.0500	<0.0500	<0.100	<10.0	---
S-4	12.0-16.0	1447	3.8	9.5	18	77	1800	<20
S-5	16.0-20.0	1285	---	---	---	---	---	---
MGB S2								
S-1	5.0-7.0	12.1	---	---	---	---	---	---
S-2	10.0-11.5	850	---	---	---	---	---	---
S-3	15.0-17.0	1133	1.2	0.43	1.1	0.5	36	---
MGB S3								
S-1	5.0-7.0	14	---	---	---	---	---	---
S-2	10.0-11.5	1456	<0.100	0.694	4.17	29.4	1080	---
S-3	15.0-17.0	2115	4.1	8.4	4	24	230	<20
S-4	17.0-20.0	1359	---	---	---	---	---	---
MGB S4								
S-1	5.0-7.0	10.7	---	---	---	---	---	---
S-2	10.0-12.0	765	<0.100	<0.100	<0.100	0.207	86.4	---
S-3	15.0-17.0	2133	7.2	12	10	56	500	---
MGB S5								
S-1	5.0-7.0	9.9	---	---	---	---	---	---
S-2	10.-12.0	10.7	---	---	---	---	---	---
S-3	15.-17.0	11	<0.05	<0.05	<0.05	<0.05	<10	---
MGB S6								
S-1	5.0-7.0	1.8	---	---	---	---	---	---
S-2	10.0-12.0	1.5	---	---	---	---	---	---
S-3	15.0-17.0	3.0	<0.05	<0.05	<0.05	0.15	<10	---
MGB S7								
S-1	5.0-7.0	0.9	---	---	---	---	---	---
S-2	10.0-12.0	2.6	---	---	---	---	---	---
S-3	12.0-15.0	6.1	<0.05	<0.05	<0.05	<0.05	<10	---
S-4	15.0-18.0	4.1	---	---	---	---	---	---
MGB S8								
S-1	5.0-7.0	1.5	---	---	---	---	---	---
S-2	10.0-12.0	176	---	---	---	---	---	---
S-3	15.0-17.0	178	0.23	<0.05	0.43	1.2	13	<20
MGB S9								
S-1	5.0-7.0	13.8	---	---	---	---	---	---
S-2	10.0-12.0	10.9	---	---	---	---	---	---
S-3	12.0-15.0	558	<0.05	0.05	1	1.5	200	---
S-4	15.0-18.0	1863	---	---	---	---	---	---
MGB S10								
S1	4.0-7.0	7.1	---	---	---	---	---	---
S-2	10.0-12.0	7.3	---	---	---	---	---	---
S-3	14.0-16.0	90.2	<0.05	<0.05	<0.05	<0.05	<10	---
S-4	16.0-19.0	7.6	---	---	---	---	---	---
MGB S11								
S-1	4.0-6.5	3.2	---	---	---	---	---	---
S-2	10.0-12.0	4.0	---	---	---	---	---	---
S-3	12.0-15.0	7.3	<0.05	<0.05	<0.05	<0.05	<10	---
S-4	15.0-18.0	5.2	---	---	---	---	---	---
MGB S12								
S-1	4.0-7.0	2.4	---	---	---	---	---	---
S-2	10.0-12.0	3.0	---	---	---	---	---	---
S-3	12.0-15.0	8.7	---	---	---	---	---	---
S-4	15.0-18.0	360	0.41	0.39	<0.05	0.85	25	---
MGB S13								
S-1	10.0-12.0	5.8	---	---	---	---	---	---
S-2	12.0-15.0	301	<0.0500	<0.0500	0.0508	0.188	42.0	---
S-3	15.0-18.0	1794	9.4	40	<0.05	105	2400	---
MTCA Method A CCL's:			**0.5**	**40.0**	**20.0**	**20.0**	**100**	**200**

NOTE:
--- Not Tested

TABLE 3
RI/FS - Soil Sampling Summary
Corrective Action Plan
Time Oil Property 01-070
Grandview, Washington

Sample Number	Depth (feet)	Benezene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	Gasoline (mg/kg)
MW-3						
S-2	10.0-12.0	<0.10	0.34	8.9	47.6	1510
S-3	15.0-17.0	0.847	0.789	2.93	10.9	236
MTCA Method A CCL's:		**0.5**	**40.0**	**20.0**	**20.0**	**100**

APPENDIX B

HISTORIC GROUNDWATER DATA TABLES

SOUND ENVIRONMENTAL STRATEGIES
www.soundenvironmental.com

Table 1
Historical Groundwater Data
Time Oil Co. Facility No. 01-070
100 East Wine Country Road
Grandview, Washington

Well ID	Sample Date	Depth to Groundwater[1] (feet)	Groundwater Elevation[2] (feet)	GRPH[3]	Benzene[4]	Toluene[4]	Ethylbenzene[4]	Total Xylenes[4]	MTBE[4]	EDB[4]	EDC[4]	Total Lead[5]
MW-01	03/07/00	17.19	77.61	104	0.72	<0.500	<0.500	--	--	--	--	--
TOC Elevation	03/20/00	17.35	77.45	--	--	--	--	--	--	--	--	--
94.80	06/28/00	15.07	79.73	68.5	1.44	<0.500	<0.500	<1.25	--	--	--	--
	09/27/00	13.53	81.27	83.2	4.62	<0.500	<0.500	2.33	--	--	--	--
	12/19/00	14.63	80.17	108	5.70	<0.670	<0.800	<1.55	--	--	--	--
	04/04/01	15.97	78.83	78.4	1.04	0.678	<0.500	2.06	--	--	--	--
	07/05/01	14.36	80.44	75.6	1.24	0.678	<0.500	2.06	--	--	--	--
	10/24/01	14.01	80.79	220	8.37	<0.500	<0.500	3.29	--	--	--	--
	01/22/02	15.98	78.82	159	2.00	<2.00	<1.00	<1.50	--	--	--	--
	04/19/02	17.05	77.75	88.1	1.06	<0.500	<0.500	<1.00	--	--	--	--
	07/09/02	15.3	79.50	159	1.82	<0.500	<0.500	<1.00	--	--	--	--
	10/16/02	14.07	80.73	135	5.67	<0.500	<0.500	<1.00	--	--	--	--
	01/24/03	16.44	78.36	51.2	0.841	<0.500	<0.500	<1.00	--	--	--	--
	04/21/03	16.63	78.17	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	07/10/03	14.94	79.86	101	0.591	<0.500	<0.500	<1.00	--	--	--	--
	10/22/03	13.97	80.83	64.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	01/14/04	15.79	79.01	92.3	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	04/04/04	15.64	79.16	78.5	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	07/13/04	14.36	80.44	136	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	10/15/04	13.71	81.09	106	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	07/21/05	15.03	79.77	62.9	<0.500	<0.500	<0.500	<1.00	<5.00	<0.500	<0.500	<1.00
	10/26/05	14.79	80.01	<50.0	<0.500	<0.500	<0.500	<3.00	<1.00	<0.500	<0.500	<1.00
	02/07/06	16.00	78.80	<50.0	<0.500	<0.500	<0.500	<3.00	<5.00	<0.500	<0.500	<1.00
	05/11/06	16.04	78.76	<50.0	<0.500	<0.500	<0.500	<3.00	<5.00	<0.500	<0.500	<1.00
	08/04/06	14.28	80.52	<50.0	<0.500	<0.500	<0.500	<3.00	<5.00	<0.500	<0.500	<1.00
	11/15/06	14.43	80.37	<50	<1	<1	<1	<3	<1	<1	<1	<1
	02/20/07	16.26	78.54	<100	<1	<1	<1	<3	<1	<1	<1	<1
	05/03/07	16.27	78.53	<100	<1	<1	<1	<3	<1	<1	<1	<1
	08/20/07	--	--	--	--	--	--	--	--	--	--	--
MW-02	03/07/00	16.95	78.26	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
TOC Elevation	03/20/00	17.13	78.08	--	--	--	--	--	--	--	--	--
95.21	06/28/00	14.56	80.65	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	09/27/00	13.04	82.17	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	12/19/00	14.31	80.90	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	04/04/01	15.64	79.57	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	07/05/01	13.88	81.33	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	10/24/01	13.56	81.65	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	01/22/02	15.72	79.49	<100	<0.500	<2.000	<1.000	<1.50	--	--	--	--
	04/19/02	16.57	78.64	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	07/09/02	14.81	80.40	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	10/16/02	13.54	81.67	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	01/24/03	16.16	79.05	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	04/21/03	16.25	78.96	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	07/10/03	14.45	80.76	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	10/22/03	13.45	81.76	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	01/14/04	15.50	79.71	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	04/04/04	15.21	80.00	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	07/13/04	13.90	81.31	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	10/15/04	13.21	82.00	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	07/21/05	14.55	80.66	<50.0	<0.500	<0.500	<0.500	<1.00	<5.00	<0.500	<0.500	<1.00
	10/26/05	13.81	81.40	<50.0	<0.500	<0.500	<0.500	<3.00	<1.00	<0.500	<0.500	<1.00
	02/07/06	15.71	79.50	<50.0	<0.500	<0.500	<0.500	<3.00	<5.00	<0.500	<0.500	1.08
	05/11/06	15.55	79.66	--	--	--	--	--	--	--	--	--
	08/04/06	14.33	80.88	--	--	--	--	--	--	--	--	--
	11/15/06	14.04	81.17	--	--	--	--	--	--	--	--	--
	02/20/07	16.07	79.14	--	--	--	--	--	--	--	--	--
	05/02/07	15.81	79.40	<100	<1	<1	<1	<3	<1	<1	<1	<1
	08/20/07	13.88	81.33	--	--	--	--	--	--	--	--	--

SOUND ENVIRONMENTAL STRATEGIES
www.soundenvironmental.com

Table 1
Historical Groundwater Data
Time Oil Co. Facility No. 01-070
100 East Wine Country Road
Grandview, Washington

Well ID	Sample Date	Depth to Groundwater[1] (feet)	Groundwater Elevation[2] (feet)	GRPH[3]	Benzene[4]	Toluene[4]	Ethylbenzene[4]	Total Xylenes[4]	MTBE[4]	EDB[4]	EDC[4]	Total Lead[5]
MW-03	03/07/00	17.62	77.97	2,430	8.26	21.4	37.2	651	--	--	--	--
TOC Elevation	03/20/00	17.78	77.81	--	--	--	--	--	--	--	--	--
95.59	06/28/00	15.29	80.30	754	4.43	1.74	3.12	165	--	--	--	--
	09/27/00	13.78	81.81	303	2.28	0.737	0.844	68.8	--	--	--	--
	12/19/00	15.00	80.59	52.6	2.80	<0.500	2.13	13.1	--	--	--	--
	04/04/01	16.30	79.29	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	07/05/01	14.61	80.98	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	10/24/01	14.29	81.30	51.9	1.38	<0.500	1.25	11.1	--	--	--	--
	01/22/02	16.39	79.20	<100	<0.500	<2.000	<1.000	<1.50	--	--	--	--
	04/19/02	17.32	78.27	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	07/09/02	15.52	80.07	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	10/16/02	14.27	81.32	<50.0	<0.500	<0.500	<0.500	1.30	--	--	--	--
	01/24/03	16.84	78.75	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	04/21/03	16.95	78.64	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	07/10/03	15.19	80.40	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	10/22/03	14.22	81.37	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	01/14/04	16.20	79.39	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	04/04/04	15.95	79.64	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	07/13/04	14.65	80.94	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	10/15/04	13.95	81.64	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	07/21/05	15.28	80.31	<50.0	<0.500	<0.500	<0.500	<1.00	<5.00	<0.500	<0.500	<1.00
	10/26/05	14.55	81.04	<50.0	<0.500	<0.500	<0.500	<3.00	<1.00	<0.500	<0.500	<1.00
	02/07/06	16.40	79.19	<50.0	<0.500	<0.500	<0.500	<3.00	<5.00	<0.500	<0.500	<1.00
	05/11/06	15.32	80.27	--	--	--	--	--	--	--	--	--
	08/04/06	14.14	81.45	--	--	--	--	--	--	--	--	--
	11/15/06	14.74	80.85	--	--	--	--	--	--	--	--	--
	02/20/07	16.73	78.86	--	--	--	--	--	--	--	--	--
	05/02/07	16.57	79.02	<100	<1	<1	<1	<3	<1	<1	<1	<1
	08/20/07	14.61	80.98	--	--	--	--	--	--	--	--	--
MW-04	03/07/00	16.65	77.53	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
TOC Elevation	03/20/00	16.82	77.36	--	--	--	--	--	--	--	--	--
94.18	06/28/00	14.28	79.90	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	09/27/00	12.73	81.45	<50.0	<0.500	<0.500	<0.500	1.11	--	--	--	--
	12/19/00	13.98	80.20	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	04/04/01	15.29	78.89	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	07/05/01	13.55	80.63	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	10/24/01	13.26	80.92	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	04/19/02	16.35	77.83	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	07/09/02	14.51	79.67	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	10/16/02	13.29	80.89	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	01/24/03	15.90	78.28	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	04/21/03	16.02	78.16	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	07/10/03	14.26	79.92	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	10/22/03	13.31	80.87	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	01/14/04	15.32	78.86	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	04/04/04	15.01	79.17	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	07/13/04	13.71	80.47	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	10/15/04	13.03	81.15	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	07/21/05	14.25	79.93	<50.0	<0.500	<0.500	<0.500	<1.00	<5.00	<0.500	<0.500	<1.00
	10/26/05	13.52	80.66	<50.0	<0.500	<0.500	<0.500	<3.00	<1.00	<0.500	<0.500	<1.00
	02/07/06	15.49	78.69	<50.0	<0.500	<0.500	<0.500	<3.00	<5.00	<0.500	<0.500	<1.00
	05/11/06	15.36	78.82	--	--	--	--	--	--	--	--	--
	08/04/06	14.21	79.97	--	--	--	--	--	--	--	--	--
	11/15/06	13.74	80.44	--	--	--	--	--	--	--	--	--
	02/20/07	15.76	78.42	--	--	--	--	--	--	--	--	--
	05/03/07	15.54	78.64	<100	<1	<1	<1	<3	<1	<1	<1	<1
	08/20/07	13.61	80.57	--	--	--	--	--	--	--	--	--

SOUND ENVIRONMENTAL STRATEGIES
www.soundenvironmental.com

Table 1
Historical Groundwater Data
Time Oil Co. Facility No. 01-070
100 East Wine Country Road
Grandview, Washington

Well ID	Sample Date	Depth to Groundwater[1] (feet)	Groundwater Elevation[2] (feet)	GRPH[3]	Benzene[4]	Toluene[4]	Ethylbenzene[4]	Total Xylenes[4]	MTBE[4]	EDB[4]	EDC[4]	Total Lead[5]
MW-05	03/07/00	16.47	75.75	22,700	4,540	1,610	823	3,580	--	--	--	--
TOC Elevation	03/20/00	16.63	75.59	--	--	--	--	--	--	--	--	--
92.22	06/28/00	14.28	77.94	3,890	1,290	137	132	827	--	--	--	--
	08/08/00	13.33	78.89	1,740	338	48.0	41.9	310	--	--	--	--
	09/27/00	12.74	79.48	3,740	750	144	109	564	--	--	--	--
	12/19/00	13.83	78.39	13,100	2,840	927	576	1,420	--	--	--	--
	04/04/01	15.17	77.05	3,740	1,720	218	196	542	--	--	--	--
	07/05/01	13.55	78.67	5,000	1,420	196	190	490	--	--	--	--
	10/24/01	13.22	79.00	7,250	1,760	222	273	568	--	--	--	--
	01/22/02	15.26	76.96	12,600	1,930	238	204	331	--	--	--	--
	04/19/02	12.50	79.72	8,950	1,870	114	220	593	--	--	--	--
	07/09/02	--	--	2,090	443	32.4	92.2	195	--	--	--	--
	10/16/02	--	--	6,790	1,620	139	163	1,410	--	--	--	--
	01/24/03	15.27	76.95	521	112	<2.50	5.21	39	--	--	--	--
	04/21/03	11.00	81.22	71.3	13.0	<0.500	<0.500	<1.00	--	--	--	--
	07/10/03	10.45	81.77	1,890	763	19.9	56.8	259	--	--	--	--
	10/22/03	12.85	79.37	<50.0	1.85	<0.500	<0.500	<1.00	--	--	--	--
	01/14/04	13.82	78.40	355	93.4	1.00	6.85	42.8	--	--	--	--
	04/04/04	14.70	77.52	52.0	18.1	<0.500	<0.500	<1.00	--	--	--	--
	07/13/04	13.35	78.87	<50.0	5.31	<0.500	<0.500	<1.00	--	--	--	--
	10/15/04	12.76	79.46	2,280	165	4.63	128	255	--	--	--	--
	07/21/05	13.90	78.32	<50.0	0.585	<0.500	<0.500	<1.00	<5.00	<5.00	0.81	<1.00
	10/26/05	13.19	79.03	94.3	3.88	0.570	4.86	22.7	<1.00	<0.500	3.46	1.88
	02/07/06	15.10	77.12	3,730	37.6	<2.00	76.0	405	<20.0	<2.00	9.62	1.24
	05/11/06	15.03	77.19	78.0	0.830	<0.500	<0.500	<3.00	<5.00	<0.500	3.73	1.30
	08/16/06	--	--	--	--	--	--	--	--	--	--	--
	11/15/06	13.39	78.83	100	25	<1	<1	<3.1	<1	<1	3.0	<1
	02/20/07	15.25	76.97	2,900	52	<1	210	41.9	<1	<1	4.8	<1
	05/03/07	15.15	77.07	<100	<1	<1	2.9	<3	<1	<1	1.4	<1
	08/20/07	13.26	78.96	<100	<1	<1	<1	<3	<1	<1	<1	<1
MW-06	03/07/00	17.06	75.19	22,600	4,390	175	1,190	3,520	--	--	--	--
TOC Elevation	03/20/00	17.21	75.04	--	--	--	--	--	--	--	--	--
92.25	06/28/00	14.91	77.34	7,140	2,050	71.8	370	1,600	--	--	--	--
	08/08/00	13.97	78.28	6,210	1,410	41.5	347	1,230	--	--	--	--
	09/27/00	13.35	78.90	7,810	1,740	47.5	332	1,300	--	--	--	--
	12/19/00	14.42	77.83	9,250	1,590	36.7	407	1,100	--	--	--	--
	04/04/01	15.74	76.51	7,840	2,570	45.8	568	1,260	--	--	--	--
	07/05/01	14.16	78.09	9,260	1,980	44.2	508	1,550	--	--	--	--
	10/24/01	13.85	78.40	10,300	1,820	36.6	465	1,180	--	--	--	--
	01/22/02	15.87	76.38	19,000	2,850	45.1	580	1,200	--	--	--	--
	04/29/02	--	--	496	79.0	0.76	19.9	27.5	--	--	--	--
	07/09/02	--	--	6,070	1,100	3.52	390	684	--	--	--	--
	10/16/02	--	--	7,170	994	<10.0	267	1,140	--	--	--	--
	01/24/03	15.17	77.08	66.0	3.70	<0.500	<0.500	2.27	--	--	--	--
	04/21/03	11.05	81.20	659	4.55	<0.500	16.3	24.0	--	--	--	--
	07/10/03	14.00	78.25	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	10/22/03	13.26	78.99	1,180	1.23	<0.500	14.7	7.01	--	--	--	--
	01/14/04	13.98	78.27	59.2	<0.500	<0.500	0.601	<1.00	--	--	--	--
	04/04/04	17.94	74.31	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	10/15/04	12.94	79.31	68.3	1.10	<0.500	<0.500	<1.00	--	--	--	--
	07/21/05	14.28	77.97	<50.0	<0.500	<0.500	<0.500	<1.00	12.6	<0.500	43.6	<1.00
	10/26/05	13.51	78.74	<50.0	0.820	<0.500	<0.500	<3.00	1.08	<0.500	5.74	7.93
	02/07/06	15.31	76.94	<50.0	<0.500	<0.500	<0.500	<3.00	<5.00	<0.500	4.60	<1.00
	05/11/06	15.32	76.93	<50.0	<0.500	<0.500	<0.500	<3.00	<5.00	<0.500	2.67	1.01
	08/04/06	14.23	78.02	<50.0	<0.500	<0.500	<0.500	<3.00	<5.00	<0.500	3.21	2.57
	11/15/06	13.35	78.90	<50	<1	<1	<1	<3	1.5	<1	7.0	<1
	02/20/07	15.58	76.67	<100	<1	<1	<1	<3	14	<1	31.0	<1
	05/03/07	15.53	76.72	<100	<1	<1	<1	<3	19	<1	39	<1
	08/20/07	13.67	78.58	120	<1	<1	<1	<3	26	<1	58	<1

SOUND ENVIRONMENTAL STRATEGIES
www.soundenvironmental.com

Table 1
Historical Groundwater Data
Time Oil Co. Facility No. 01-070
100 East Wine Country Road
Grandview, Washington

Well ID	Sample Date	Depth to Groundwater[1] (feet)	Groundwater Elevation[2] (feet)	GRPH[3]	Benzene[4]	Toluene[4]	Ethylbenzene[4]	Total Xylenes[4]	MTBE[4]	EDB[4]	EDC[4]	Total Lead[5]
MW-07	10/24/01	15.13	78.90	1,400	81.2	2.44	1.62	6.93	--	--	--	--
TOC Elevation	01/22/02	17.08	76.95	252	18.1	<2.00	<1.00	<1.50	--	--	--	--
94.03	04/19/02	18.14	75.89	<50.0	3.13	<0.500	<0.500	<1.00	--	--	--	--
	07/09/02	16.41	77.62	148	6.38	<0.500	<0.500	<1.00	--	--	--	--
	10/16/02	15.24	78.79	398	23.0	0.519	0.653	1.67	--	--	--	--
	01/24/03	17.65	76.38	<50.0	0.916	<0.500	<0.500	<1.00	--	--	--	--
	04/21/03	17.73	76.30	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	07/10/03	16.05	77.98	223	12.5	<0.500	<0.500	<1.00	--	--	--	--
	10/22/03	15.11	78.92	275	3.84	0.530	0.507	1.36	--	--	--	--
	01/14/04	16.91	77.12	59.5	1.41	<0.500	<0.500	<1.00	--	--	--	--
	04/04/04	15.74	78.29	<50.0	0.92	<0.500	<0.500	<1.00	--	--	--	--
	07/13/04	15.49	78.54	222	2.74	<0.500	<0.500	<1.00	--	--	--	--
	10/15/04	14.75	79.28	654	5.57	0.727	0.744	2.63	--	--	--	--
	07/21/05	16.13	77.90	230	2.31	<0.500	<0.500	<1.00	<5.00	<0.500	43.7	<1.00
	10/26/05	15.33	78.70	427	3.09	<0.500	<0.500	<3.00	3.12	<0.500	50.8	<1.00
	02/07/06	17.03	77.00	1,020	6.11	<0.500	0.780	<3.00	<5.00	<0.500	71.6	<1.00
	05/11/06	17.03	77.00	85.7	1.04	<0.500	<0.500	<3.00	<5.00	<0.500	22.2	<1.00
	08/04/06	15.35	78.68	144	1.09	<0.500	<0.500	<3.00	<5.00	<0.500	17.5	<1.00
	11/15/06	15.45	78.58	490	2.2	<1	<1	<3	2.0	<1	27	<1
	02/20/07	17.35	76.68	620	4.3	<1	<1	<3	2.2	<1	37	<1
	05/03/07	17.35	76.68	<100	<1	<1	<1	<3	1.2	<1	21	<1
	08/20/07	15.49	78.54	170	1.1	<1	<1	<3	1.3	<1	11	<1
RW-01	03/07/00	17.38	77.62	2,100	18.7	15.7	54.6	328	--	--	--	--
TOC Elevation	03/20/00	17.57	77.43	--	--	--	--	--	--	--	--	--
95.00	06/28/00	14.98	80.02	1,010	17.4	12.0	28.0	193	--	--	--	--
	09/27/00	13.50	81.50	1,950	48.3	6.15	57.1	232	--	--	--	--
	12/19/00	14.75	80.25	1,100	29.2	4.09	26.0	84.7	--	--	--	--
	04/04/01	16.02	78.98	86.2	8.19	<0.500	3.47	8.00	--	--	--	--
	07/05/01	14.29	80.71	326	13.8	1.45	12.3	65.2	--	--	--	--
	10/24/01	14.05	80.95	7,360	115	51.9	695	1,290	--	--	--	--
	01/22/02	--	--	--	--	--	--	--	--	--	--	--
	04/19/02	17.25	77.75	--	--	--	--	--	--	--	--	--
	07/09/02	15.20	79.80	--	--	--	--	--	--	--	--	--
	04/21/03	16.66	78.34	--	--	--	--	--	--	--	--	--
	07/10/03	14.97	80.03	--	--	--	--	--	--	--	--	--
	10/22/03	14.06	80.94	--	--	--	--	--	--	--	--	--
	01/14/04	16.06	78.94	--	--	--	--	--	--	--	--	--
	04/04/04	15.75	79.25	--	--	--	--	--	--	--	--	--
	10/15/04	13.78	81.22	--	--	--	--	--	--	--	--	--
	05/03/07	16.27	78.73	<100	<1	<1	<1	<3	<1	<1	<1	<1
	08/20/07	14.31	80.69	--	--	--	--	--	--	--	--	--
RW-02	03/07/00	17.17	77.51	519	<0.900	<0.500	<1.10	<60.0	--	--	--	--
TOC Elevation	03/20/00	17.35	77.33	--	--	--	--	--	--	--	--	--
94.68	06/28/00	14.72	79.96	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	09/27/00	13.22	81.46	451	0.615	<0.910	<2.72	5.87	--	--	--	--
	12/19/00	14.49	80.19	66.4	0.923	<0.500	1.09	3.14	--	--	--	--
	04/04/01	15.75	78.93	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	07/05/01	14.02	80.66	108	<0.500	<0.500	0.525	1.21	--	--	--	--
	10/24/01	13.77	80.91	309	0.931	<0.500	4.23	8.66	--	--	--	--
	01/22/02	--	--	--	--	--	--	--	--	--	--	--
	04/19/02	16.85	77.83	--	--	--	--	--	--	--	--	--
	07/09/02	14.98	79.70	--	--	--	--	--	--	--	--	--
	05/03/07	16.01	78.67	<100	<1	<1	<1	<3	<1	<1	<1	<1
	08/20/07	14.02	80.66	--	--	--	--	--	--	--	--	--

SOUND ENVIRONMENTAL STRATEGIES
www.soundenvironmental.com

Table 1
Historical Groundwater Data
Time Oil Co. Facility No. 01-070
100 East Wine Country Road
Grandview, Washington

Well ID	Sample Date	Depth to Groundwater[1] (feet)	Groundwater Elevation[2] (feet)	GRPH[3]	Benzene[4]	Toluene[4]	Ethylbenzene[4]	Total Xylenes[4]	MTBE[4]	EDB[4]	EDC[4]	Total Lead[5]
RW-03	03/07/00	17.59	76.02	4,070	609	125	166	567	--	--	--	--
TOC Elevation	03/20/00	17.76	75.85	--	--	--	--	--	--	--	--	--
93.61	06/28/00	15.25	78.36	16,200	512	739	357	2,850	--	--	--	--
	08/08/00	14.24	79.37	10,000	169	253	158	1,810	--	--	--	--
	09/27/00	13.72	79.89	5,640	58.2	36.9	25.7	578	--	--	--	--
	12/19/00	14.91	78.70	1,850	345	22.7	14.2	203	--	--	--	--
	04/04/01	16.20	77.41	1,560	455	17.9	10.3	175	--	--	--	--
	07/05/01	14.51	79.10	535	47.5	5.37	4.11	58.3	--	--	--	--
	10/24/01	14.27	79.34	1,990	596	11.6	31.3	161	--	--	--	--
	01/22/02	16.36	77.25	5,470	685	51.3	74.0	345	--	--	--	--
	04/19/02	--	--	1,610	292	85.7	10.7	259	--	--	--	--
	07/09/02	14.24	79.37	3,390	506	13.5	164	286	--	--	--	--
	10/16/02	14.24	79.37	468	23.6	4.29	4.44	79.6	--	--	--	--
	01/24/03	14.10	79.51	21,600	1,300	1,360	396	4,600	--	--	--	--
	04/21/03	13.55	80.06	3,180	7.85	20.7	11.1	960	--	--	--	--
	07/10/03	15.80	77.81	820	8.83	2.96	7.57	207	--	--	--	--
	10/22/03	16.50	77.11	4,150	57.0	10.9	58.9	795	--	--	--	--
	01/14/04	--	--	120	--	0.845	3.01	31.2	--	--	--	--
	04/04/04	17.80	75.81	<50.0	1.07	<0.500	<0.500	5.69	--	--	--	--
	07/13/04	17.03	76.58	2,220	30.0	1.82	44.0	215	--	--	--	--
	10/15/04	17.78	75.83	67.2	0.722	<0.500	1.19	5.67	--	--	--	--
	07/21/05	14.51	79.10	<50.0	<0.500	<0.500	<0.500	<1.00	<5.00	<0.500	<0.500	20.5
	10/26/05	13.85	79.76	<50.0	<0.500	<0.500	<0.500	<3.00	<1.00	<0.500	<0.500	1.54
	02/07/06	15.81	77.80	<50.0	<0.500	<0.500	<0.500	<3.00	<5.00	<0.500	<0.500	7.73
	05/11/06	15.57	78.04	<50.0	<0.500	<0.500	<0.500	<3.00	<5.00	<0.500	<0.500	24.3
	08/04/06	14.65	78.96	<50.0	<0.500	<0.500	<0.500	<3.00	<5.00	<0.500	<0.500	35.7
	11/15/06	14.07	79.54	<50	<1	<1	<1	<3	<1	<1	<1	6.91
	02/20/07	16.03	77.58	<100	<1	<1	<1	<3	<1	<1	<1	1.83
	05/03/07	15.81	77.80	<100	<1	<1	<1	<3	<1	<1	<1	2.05
	08/20/07	13.85	79.76	<100	<1	<1	<1	<3	<1	<1	<1	<1
RW-04	03/07/00	17.66	76.53	4,080	309	273	155	608	--	--	--	--
TOC Elevation	03/20/00	17.54	76.65	--	--	--	--	--	--	--	--	--
94.19	06/28/00	15.32	78.87	1,930	122	158	47.6	427	--	--	--	--
	09/27/00	13.82	80.37	4,690	228	139	90.6	666	--	--	--	--
	12/19/00	15.04	79.15	3,470	327	163	74.4	419	--	--	--	--
	04/04/01	16.32	77.87	818	199	25.0	35.5	172	--	--	--	--
	07/05/01	14.51	79.68	535	47.5	5.37	4.11	58.3	--	--	--	--
	10/24/01	14.37	79.82	2,060	333	58.2	89.5	391	--	--	--	--
	01/22/02	--	--	--	--	--	--	--	--	--	--	--
	07/09/02	14.52	79.67	--	--	--	--	--	--	--	--	--
	05/03/07	16.73	77.46	<100	<1	<1	<1	<3	<1	<1	<1	<1
	08/20/07	14.82	79.37	--	--	--	--	--	--	--	--	--

SOUND ENVIRONMENTAL STRATEGIES
www.soundenvironmental.com

Table 1
Historical Groundwater Data
Time Oil Co. Facility No. 01-070
100 East Wine Country Road
Grandview, Washington

Well ID	Sample Date	Depth to Groundwater[1] (feet)	Groundwater Elevation[2] (feet)	GRPH[3]	Benzene[4]	Toluene[4]	Ethylbenzene[4]	Total Xylenes[4]	MTBE[4]	EDB[4]	EDC[4]	Total Lead[5]
RW-05	10/24/01	13.78	78.48	11,200	2,890	<5.00	857	298	--	--	--	--
TOC Elevation	01/22/02	15.78	76.48	4,490	1,080	<2.00	65.8	82.1	--	--	--	--
92.26	04/19/02	--	--	322	51.6	0.776	14.1	47.1	--	--	--	--
	07/09/02	13.85	78.41	1,140	438	<5.00	14.3	10.8	--	--	--	--
	10/16/02	13.85	78.41	<50.0	3.39	<0.500	0.672	2.36	--	--	--	--
	01/24/03	16.75	75.51	3,360	369	2.01	211	403	--	--	--	--
	04/21/03	14.03	78.23	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	07/10/03	13.40	78.86	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	10/22/03	13.45	78.81	117	12.4	<0.500	2.27	5.17	--	--	--	--
	01/14/04	17.55	74.71	<50.0	7.06	<0.500	<0.500	<1.00	--	--	--	--
	04/04/04	17.44	74.82	73.9	0.592	<0.500	2.46	<1.00	--	--	--	--
	07/13/04	14.92	77.34	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	10/15/04	12.37	79.89	<50.0	<0.500	<0.500	<0.500	<1.00	--	--	--	--
	07/21/05	13.52	78.74	<50.0	<0.500	<0.500	<0.500	<1.00	<5.00	<0.500	<0.500	3.05
	10/26/05	12.80	79.46	<50.0	<0.500	<0.500	<0.500	<3.00	<1.00	<0.500	<0.500	2.72
	02/07/06	14.58	77.68	<50.0	<0.500	<0.500	<0.500	<3.00	<5.00	<0.500	1.77	1.85
	05/11/06	14.55	77.71	<50.0	<0.500	<0.500	<0.500	<3.00	<5.00	<0.500	<0.500	32.9
	08/04/06	13.21	79.05	<50.0	<0.500	<0.500	<0.500	<3.00	<5.00	<0.500	<0.500	7.81
	11/15/06	12.94	79.32	<50	<1	<1	<1	<3	<1	<1	<1	3.23
	02/20/07	14.88	77.38	<100	<1	<1	<1	<3	<1	<1	2.4	3.88
	05/03/07	14.82	77.44	<100	<1	<1	<1	<3	<1	<1	<1	2.22
	08/20/07	12.94	79.32	<100	<1	<1	<1	<3	<1	<1	<1	<10
VW-01	10/24/01	13.25	79.36	101	1.52	<0.500	<0.500	<1.00	--	--	--	--
TOC Elevation	05/07/07	14.64	77.97	<100	<1	<1	<1	<3	<1	<1	<1	<1
92.61	08/20/07	12.67	79.94	--	--	--	--	--	--	--	--	--
VW-02	10/24/01	13.20	79.33	10,200	53.3	<5.00	833	841	--	--	--	--
TOC Elevation	05/07/07	14.73	77.80	840	<1	<1	<1	<3	<1	<1	<1	<1
92.53	08/20/07	12.94	79.59	<100	<1	<1	<1	<3	<1	<1	<1	1.59
VW-03	10/24/01	13.80	78.97	<50.0	1.81	0.614	0.639	2.50	--	--	--	--
TOC Elevation	05/07/07	--	--	--	--	--	--	--	--	--	--	--
92.77	08/20/07	12.67	80.10	--	--	--	--	--	--	--	--	--
SW-01	05/02/07	16.14	78.77	<100	<1	<1	<1	<3	<1	<1	<1	<1
TOC Elevation	08/20/07	12.19	82.72	--	--	--	--	--	--	--	--	--
94.91												
SW-02	05/07/07	14.49	77.50	<100	<1	<1	<1	<3	<1	<1	<1	9.86
TOC Elevation	08/20/07	13.85	78.14	--	--	--	--	--	--	--	--	--
91.99												
SW-03	05/07/07	14.01	78.33	<100	<1	<1	<1	<3	<1	<1	<1	8.24
TOC Elevation	08/20/07	12.40	79.94	--	--	--	--	--	--	--	--	--
92.34												
SW-04	05/03/07	15.78	78.43	<100	<1	<1	<1	<3	<1	<1	<1	1.76
TOC Elevation	08/20/07	12.73	81.48	--	--	--	--	--	--	--	--	--
94.21												
SW-05	05/07/07	14.36	78.50	<100	<1	<1	<1	<3	<1	<1	<1	11.2
TOC Elevation	08/20/07	12.40	80.46	--	--	--	--	--	--	--	--	--
92.86												
SW-06	05/07/07	14.53	77.70	<100	<1	<1	<1	<3	<1	<1	<1	8.42
TOC Elevation	08/20/07	12.73	79.50	--	--	--	--	--	--	--	--	--
92.23												
SW-07	05/07/07	15.08	--	<100	<1	<1	<1	<3	<1	<1	<1	11.9
TOC Elevation	08/20/07	13.31	--	--	--	--	--	--	--	--	--	--
Not Surveyed												
MTCA Method A Cleanup Levels for Groundwater[6]				1,000/800[9]	5	1,000	700	1,000	20	0.01	5	15

NOTES:

Results measured in µg/L.
Red indicates concentrations exceeding the MTCA Method A Cleanup Level.
Data collected prior to July 2005 as reported in GeoEngineers Groundwater Monitoring Reports.
Analyzed by Friedman & Bruya, Inc. of Seattle, Washington.
[1]Depth to water as measured from a fixed spot on the well casing rim.
[2]Elevations are relative and referenced to a benchmark with an assumed elevation of 100.00 feet.
[3]Analyzed by Northwest Method NWTPH-Gx.
[4]Analyzed by EPA Method 8260B.
[5]Analyzed by EPA Method 6020 or 200.8.
[6]MTCA Method A Cleanup Levels, Table 720-1 of the WAC 173-340-900.
[9]1,000 µg/L when benzene is not present and 800 µg/L when benzene is present.

-- = not measured / not analyzed
< = not detected at a concentration exceeding the laboratory reporting limit
µg/L = micrograms per liter
EDB = ethylene dibromide (1,2-Dibromoethane)
EDC = ethylene dichloride (1,2-Dichloroethane)
EPA = United States Environmental Protection Agency
GRPH = gasoline-range petroleum hydrocarbons
MTBE = methyl tertiary-butyl ether
MTCA = Model Toxics Control Act
TOC = top of casing elevation (feet)
WAC = Washington Administrative Code

APPENDIX C

VCP OPINION LETTER DATED SEPTEMBER 9, 2016

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
1250 W Alder St • Union Gap, WA 98903-0009 • (509) 575-2490

September 9, 2016

Laura Skow
ES Engineering Services, LLC.
1036 W. Taft Avenue
Orange, CA 92865

Re: Further Action at the following Site:

Site Name:	Grandview Market Petrosun 1070
Site Address:	100 E. Wine Country Road, Grandview
Facility/Site ID No.:	91458995
Cleanup Site ID No.:	6845
VCP Project No.:	CE0442

Dear Ms. Skow:

The Washington State Department of Ecology (Ecology) received your request for an opinion on your independent cleanup of the Grandview Market Petrosun 1070 facility (Site). This letter provides our opinion. We are providing this opinion under the authority of the Model Toxics Control Act (MTCA), Chapter 70.105D RCW.

Issue Presented and Opinion

Is further remedial action necessary to clean up contamination at the Site?

YES. Ecology has determined that further remedial action is necessary to clean up contamination at the Site.

This opinion is based on an analysis of whether the remedial action meets the substantive requirements of MTCA, Chapter 70.105D RCW, and its implementing regulations, Chapter 173-340 WAC (collectively "substantive requirements of MTCA"). The analysis is provided below.

Description of the Site

This opinion applies only to the Site described below. The Site is defined by the nature and extent of contamination associated with the following release:

- Gasoline range organics (GRO), benzene, ethyl benzene, toluene, total xylene, methyl tertiary-butyl ether (MTBE), 1, 2 dichloroethane (EDC), and lead into the soil and groundwater.

Please note a parcel of real property can be affected by multiple sites. At this time, we have no information that the parcel(s) associated with this Site are affected by other sites.

Basis for the Opinion

This opinion is based on the information contained in the following documents:

- Time Oil Co. *Soil Sampling Results/Confirmation of Release at Grandview Market 100 East Wine Country Road Grandview, Washington (Property No. 01-070).* October 6, 1998.
- Maxim Technologies, Inc. *Preliminary Soil and Groundwater Screening Time Oil Property 01-070 100 East Wine Country Road Grandview, Washington.* February 17, 2000.
- Maxim Technologies, Inc. *Remedial Investigation/Feasibility Study Time Oil Property 01-070 100 East Wine Country Road Grandview, Washington.* April 7, 2000
- Brown and Caldwell. *Groundwater Monitoring.* June 2005 through 2002.
- Brown and Caldwell. *Corrective Action Report Time Oil Property 01-070 Grandview, Washington.* August 2001
- GeoEngineers, Inc. *Groundwater Monitoring/Operation & Maintenance Report.* 2003 through 2nd Quarter 2005.
- Sound Environmental Strategies. *Groundwater Monitoring Reports and Operation and Maintenance.* 2006 through 2007.
- Environ Strategy Consultants, Inc. *Transmittal: Voluntary Cleanup Program Application Site 01-070 100 East Wine Country Road Grandview, Washington.* June 15, 2010.
- Environ Strategy Consultants, Inc. *Voluntary Cleanup Program Terrestrial Ecological Evaluation Form.* Received by Ecology June 21, 2010.
- Grandview Market Petrosun 1070 Correspondence File, Ecology's Central Regional Office.

These documents are kept at the Central Regional Office (CRO) for review by appointment only. You can make an appointment by calling the CRO at 509-454-7658.

This opinion is void if any of the information contained in this document is materially false or misleading.

Analysis of the Cleanup

Ecology has concluded that **further remedial action** is necessary to clean up contamination at the Site. That conclusion is based on the following analysis:

1. Characterization of the Site.

Ecology has determined your characterization of the Site is not sufficient to establish cleanup standards and select a cleanup action.

Additional monitoring wells have been suggested to adequately characterize the contamination at the Site.

2. Establishment of cleanup standards.

Ecology has determined the use of MTCA Method A Cleanup Levels for soil and groundwater, WAC 173-340-704, is appropriate for this Site.

3. Selection of cleanup action.

Ecology has determined the cleanup action you selected for the Site does not meet the substantive requirements of MTCA.

This is the third occurrence of this Site entering the Voluntary Cleanup Program. The release has never been fully delineated, despite a previous opinion from Ecology for additional wells, dated September 27, 2010.

4. Cleanup.

Ecology has determined the cleanup you performed does not meet any cleanup standards at the Site.

Limitations of the Opinion

1. Opinion does not settle liability with the state.

Liable persons are strictly liable, jointly and severally, for all remedial action costs and for all natural resource damages resulting from the release or releases of hazardous substances at the Site. This opinion **does not**:

- Resolve or alter a person's liability to the state.
- Protect liable persons from contribution claims by third parties.

To settle liability with the state and obtain protection from contribution claims, a person must enter into a consent decree with Ecology under RCW 70.105D.040(4).

2. Opinion does not constitute a determination of substantial equivalence.

To recover remedial action costs from other liable persons under MTCA, one must demonstrate that the action is the substantial equivalent of an Ecology-conducted or Ecology-supervised action. This opinion does not determine whether the action you performed is substantially equivalent. Courts make that determination. *See* RCW 70.105D.080 and WAC 173-340-545.

3. State is immune from liability.

The state, Ecology, and its officers and employees are immune from all liability, and no cause of action of any nature may arise from any act or omission in providing this opinion. *See* RCW 70.105D.030(1)(i).

Contact Information

Thank you for choosing to clean up the Site under the Voluntary Cleanup Program (VCP). After you have addressed our concerns, you may request another review of your cleanup. Please do not hesitate to request additional services as your cleanup progresses. We look forward to working with you.

For more information about the VCP and the cleanup process, please visit our web site: www. ecy.wa.gov/programs/tcp/vcp/vcpmain.htm. If you have any questions about this opinion, please contact me by phone at (509) 454-7835 or e-mail at stephen.thomas@ecy.wa.gov.

Sincerely,

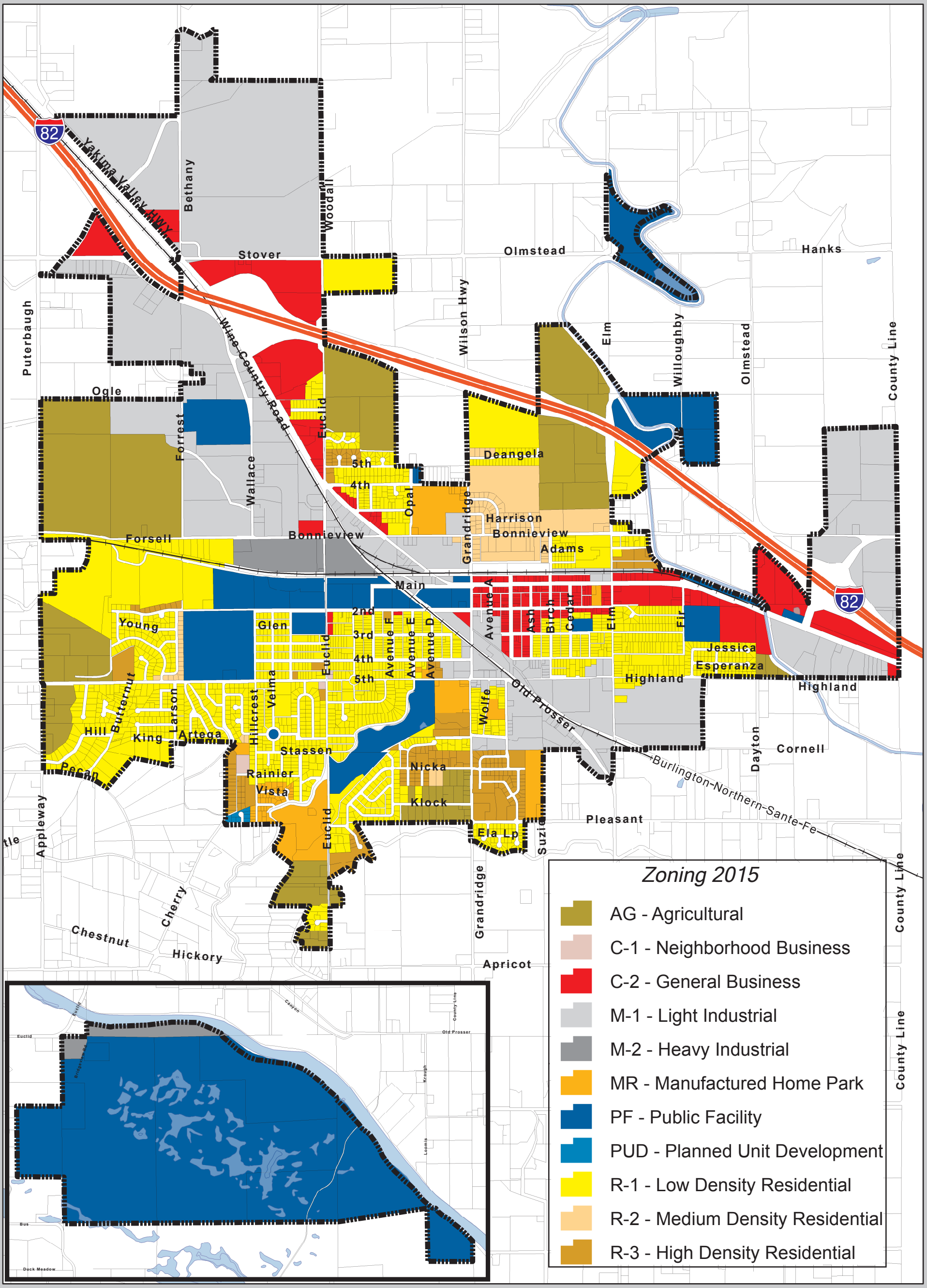
Stephen P. Thomas
Cleanup Project Manager
Toxics Cleanup Program/CRO

cc: Hamed Adib, Eagle Canyon Capital, LLC.
Cus Arteage, City of Grandview

APPENDIX D

CITY OF GRANDVIEW, WA ZONING 2015

City of Grandview, WA
Zoning 2015



YVCOG

Yakima Valley Conference of Governments
311 North 4th Street, Suite 204
Yakima, Washington 98901
Phone: (509) 574-1550

June 2015

N
W
E
S

APPENDIX E

VCP OPINION LETTER DATED SEPTEMBER 7, 2010

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
15 W Yakima Ave, Ste 200 • Yakima, WA 98902-3452 • (509) 575-2490

September 27, 2010

Walter Sprague
Director of Retail Services
Pacific Convenience and Fuels, LLC
603 Camino Ramon, Suite 350
San Ramon, CA 94583

Re: Further Action at the following Site:

- **Site Name:** PetroSun 01-070
- **Site Address:** 100 East Wine Country Road, Grandview, WA 98930
- **Facility/Site No.:** 91458995
- **VCP Project No.:** CE0330

Dear Mr. Sprague:

The Washington State Department of Ecology (Ecology) received your request for an opinion on your independent cleanup of the PetroSun 01-070 facility (Site). This letter provides our opinion. We are providing this opinion under the authority of the Model Toxics Control Act (MTCA), Chapter 70.105D RCW.

Issue Presented and Opinion

Is further remedial action necessary to clean up contamination at the Site?

YES. Ecology has determined that further remedial action is necessary to clean up contamination at the Site.

This opinion is based on an analysis of whether the remedial action meets the substantive requirements of MTCA, Chapter 70.105D RCW, and its implementing regulations, Chapter 173-340 WAC (collectively "substantive requirements of MTCA"). The analysis is provided below.

Description of the Site

This opinion applies only to the Site described below. The Site is defined by the nature and extent of contamination associated with the following release:

- Gasoline range organics (GRO), benzene, ethyl benzene, toluene, total xylene, methyl tertiary-butyl ether (MTBE), 1,2 dichloroethane (EDC), and lead into the soil and groundwater.

Please note a parcel of real property can be affected by multiple sites. At this time, we have no information that the parcel(s) associated with this Site are affected by other sites.

Basis for the Opinion

This opinion is based on the information contained in the documents listed in **Enclosure B**. Those documents are kept in the Central Regional Office of Ecology for review by appointment only. You can make an appointment by calling Roger Johnson at 509-454-7658.

This opinion is void if any of the information contained in those documents is materially false or misleading.

Analysis of the Cleanup

Ecology has concluded that **further remedial action** is necessary to clean up contamination at the Site. That conclusion is based on the following analysis:

1. Characterization of the Site

Ecology has determined your characterization of the Site is not sufficient to select a cleanup action.

In 1998 Time Oil, Inc. discovered a release had occurred at 100 East Wine Country Road, Grandview, Washington. At that time, soil samples were collected while installing cathodic protection for an existing system. However, the extent of soil contamination was not investigated.

Six monitoring wells (MW-05 through MW-07), two recovery wells (RW-03 through RW-05), two vapor extraction wells (VW-01 and VW02), and seven air sparging wells (SW-01 through SW-07) have been installed at the Site for purposes of characterization and remediation of groundwater.

Monitoring well MW-02 is an up-gradient well that has had non-detect results for all contaminants of concerns (COCs) analyzed. MW-07 is the most down-gradient well. Groundwater sampling during the most recent monitoring event, August 20, 2007, detected EDC at concentrations above MTCA Method A Cleanup Levels in MW-07.

Wells MW-05 and MW-06, had concentrations of GRO/benzene and MTBE/EDC, respectively, above MTCA Method A Cleanup Levels during the most recent monitoring event, August 20, 2007. Recovery wells RW-01 and RW-04 had concentration of GRO and benzene above MTCA Method A Cleanup Level during the last sampling event, October 24, 2001.

The Site has not been screened for n-hexane and naphthalenes. Future monitoring events must include these parameters.

The exceedances of Method A Cleanup Levels for Groundwater in MW-07 indicate the extent of contamination at the Site has not been adequately characterized. A sentinel well, and possibly additional monitoring wells, are required to determine the down-gradient extent of contamination at the Site.

2. Establishment of cleanup standards

Ecology has determined the use of MTCA Method A Cleanup Levels for soil and groundwater, WAC 173-340-704, is appropriate for this site.

Contaminant of Concern	CAS #	Ground Water, Method A, Table Value (µg/L)	Soil, Method A, Unrestricted Land Use, Table Value (mg/kg)
benzene	71-43-2	5	0.03
dichloroethane;1,2-	107-06-2	5	–
ethylbenzene	100-41-4	700	6
ethylene dibromide (EDB)	106-93-4	0.01	5.00E-03
hexane;n-	110-54-3	–	–
lead	7439-92-1	15	250
methyl naphthalene;2-	91-57-6	–	–
methyl tert-butyl ether	1634-04-4	20	0.1
toluene	108-88-3	1000	7
tph: gasoline range organics, benzene present*		800	30
xylenes	1330-20-7	1000	9

3. Cleanup

Ecology has determined the cleanup actions performed to date do not meet any cleanup standards at the Site.

Time Oil, Inc operated a remediation system (pump and treat, air sparging, and soil vapor extraction) to treat contamination at the Site. The remediation system was no longer in operation after 2006.

Subsequent monitoring of the Site revealed the remediation strategy was insufficient to treat groundwater contamination. Concentrations of GRO, benzene, MTBE, and EDC remain above MTCA Method A Cleanup Level for Groundwater. In addition, benzene and EDC exceed Groundwater Quality Standards, WAC 173-200, for protection of drinking water.

Pacific Convenience and Fuels, LLC must implement a remediation strategy to treat contaminants present at the Site. For example, the existing remediation system installed by Time Oil, Inc could be brought back online with updates to the system and obtaining the proper air and water quality permits.

More information is needed to:

- Delineate the extent of any remaining soil contamination in the source areas;
- Delineate the vertical and lateral extent of groundwater contamination;
- Identify the vertical groundwater flow direction; and
- Characterize general groundwater geochemistry.

In order to demonstrate groundwater has been remediated to MTCA Method A Cleanup Levels a minimum of four (4) consecutive quarters of monitoring results below cleanup levels are required.

4. Terrestrial Ecological Evaluation (TEE)

The Site does not qualify for exclusion based on condition WAC 173-340-7491(1)(b), Barriers to Exposure. This condition requires the recording of an environmental restrictive covenant for the Site. A Simplified TEE may need to be performed for this Site.

5. Environmental Information Management System (EIM)

In accordance with WAC 173-340-840(5) and Ecology Toxics Cleanup Program Policy 840 (Data Submittal Requirements), data generated for Independent Remedial Actions shall be submitted simultaneously in both a written and electronic format. For additional information regarding electronic format requirements, see the website http://www.ecy.wa.gov/eim.

Data must be submitted to Ecology in this format for Ecology to issue a No Further Action determination.

Please submit the data collected from 2000 to present, as well as any future data in this format. Be advised that Ecology requires up to two weeks to process the data once it is received.

Limitations of the Opinion

1. Opinion does not settle liability with the state.

Liable persons are strictly liable, jointly and severally, for all remedial action costs and for all natural resource damages resulting from the release or releases of hazardous substances at the Site. This opinion **does not**:

- Resolve or alter a person's liability to the state.
- Protect liable persons from contribution claims by third parties.

To settle liability with the state and obtain protection from contribution claims, a person must enter into a consent decree with Ecology under RCW 70.105D.040(4).

2. Opinion does not constitute a determination of substantial equivalence.

To recover remedial action costs from other liable persons under MTCA, one must demonstrate that the action is the substantial equivalent of an Ecology-conducted or Ecology-supervised action. This opinion does not determine whether the action you performed is substantially equivalent. Courts make that determination. *See* RCW 70.105D.080 and WAC 173-340-545.

3. State is immune from liability.

The state, Ecology, and its officers and employees are immune from all liability, and no cause of action of any nature may arise from any act or omission in providing this opinion. *See* RCW 70.105D.030(1)(i).

Contact Information

Thank you for choosing to clean up the Site under the Voluntary Cleanup Program (VCP). After you have addressed our concerns, you may request another review of your cleanup. Please do not hesitate to request additional services as your cleanup progresses. We look forward to working with you.

For more information about the VCP and the cleanup process, please visit our web site: www.ecy.wa.gov/programs/tcp/vcp/vcpmain.htm. If you have any questions about this opinion, please contact me by phone at (509) 454-7834 or e-mail at jason.shira@ecy.wa.gov.

Sincerely,

Jason Shira
Toxics Cleanup Program
Central Regional Office

Enclosures (1): B – Basis for the Opinion: List of Documents

cc: Chang and Pong Kim, Property Owners
Cus Arteaga, City of Grandview
Laura Skow, Environ Strategy Consultants, Inc
Dolores Mitchell, Ecology (without enclosures)

Enclosure B

Basis for the Opinion: List of Documents

1. Time Oil Co. *Soil Sampling Results/Confirmation of Release at Grandview Market 100 East Wine Country Road Grandview, Washington (Property No. 01-070)*. October 6, 1998.

2. Maxim Technologies, Inc. *Preliminary Soil and Groundwater Screening Time Oil Property 01-070 100 East Wine Country Road Grandview, Washington*. February 17, 2000.

3. Maxim Technologies, Inc. *Remedial Investigation/Feasibility Study Time Oil Property 01-070 100 East Wine Country Road Grandview, Washington*. April 7, 2000.

4. Brown and Caldwell. *Groundwater Monitoring*. June 2005 through 2002. In file.

5. Brown and Caldwell. *Corrective Action Report Time Oil Property 01-070 Grandview, Washington*. August 2001.

6. GeoEngineers, Inc. *Groundwater Monitoring/Operation & Maintenance Report*. 2003 through 2nd Quarter 2005. In file.

7. Sound Environmental Strategies. *Groundwater Monitoring Reports and Operation and Maintenance*. 2006 through 2007. In file.

8. Environ Strategy Consultants, Inc. *Transmittal: Voluntary Cleanup Program Application Site 01-070 100 East Wine Country Road Grandview, Washington*. June 15, 2010.

9. Environ Strategy Consultants, Inc. *Voluntary Cleanup Program Terrestrial Ecological Evaluation Form*. Received by Ecology June 21, 2010.

APPENDIX F

SITE BACKGROUND

Site No. 0700
100 East Wine Country Road
Grandview, Washington

The Site has operated as a retail service station since 1965. In May 1991, the Grandview Fire Department contacted the previous property owner, Time Oil Co., concerning the presence of gasoline vapors in a building adjacent to the Site. At that time, the underground storage tank (UST) system was tested and determined to be tight. A soil vapor survey was conducted to determine if petroleum hydrocarbons were present in subsurface soil. Results of the survey identified elevated levels of total petroleum hydrocarbons quantified as gasoline (TPH-Gx), TPH quantified as diesel (TPH-Dx), benzene, toluene, ethylbenzene, and total xylenes (BTEX) in vapor samples collected in the vicinity of the former USTs (eastern area of property), existing USTs (southwestern area of property) and north of the convenience store. The existing UST system consists of one 6,000-gallon UST, one 8,000-gallon UST and one 12,000-gallon UST, all used to store gasoline.

In September 1998, a cathodic protection system was installed as part of site upgrade activities. Additionally, six borings were advanced to a depth of 15 feet below ground surface (bgs). Analytical results for soil grab samples collected at approximately 12 to 15 feet bgs indicated the presence of petroleum hydrocarbons at levels exceeding Washington State Model Toxics Control Act (MTCA) Model A cleanup levels (CULs) in soil immediately north, west and south of the existing USTs.

In February 2000, a preliminary soil and groundwater survey was performed where 13 geoprobe borings (B-1 through B-13) were advanced to depths ranging from 17 to 20 feet bgs. Groundwater was encountered at each of the locations and groundwater samples were collected. Analytical results indicated the presence of petroleum hydrocarbons in soil and groundwater on and off the Site; however, the hydrocarbon impacts were primarily related to groundwater. The groundwater plume was estimated to be 200-feet long by 80-feet wide, extending southwest from the existing USTs. The highest benzene detection [1,600 micrograms per liter (mg/L)] was observed within 20 feet of the existing USTs. Hydrocarbon levels in soil mimicked the groundwater plume, with benzene detected up to 7.2 milligrams per kilogram (mg/kg). The survey results are documented in Maxim Technologies, Inc.'s (Maxim) report titled *Preliminary Soil and Groundwater Screening Survey*, dated February 17, 2000.

In April 2000, a remedial investigation/feasibility study (RI/FS) was performed. Eleven soil borings were advanced, of which, six were completed as groundwater monitoring wells, four completed as groundwater recovery/vapor extraction wells, and one as an air sparge well. Several pilot tests, consisting of groundwater recovery, soil vapor extraction, and air sparging tests, were also performed to evaluate remedial alternatives. The RI/FS results concluded that hydrocarbon-affected soil and groundwater beneath the Site could be remediated with a combination of the above-referenced technologies. The results of the study are presented in Maxim's report titled *RI/FS*, dated April 7, 2000.

In June, September and December 2000, groundwater monitoring was conducted and the data used in the design of a remediation system. In March 2002, groundwater pump and treat coupled with air sparging/soil vapor extraction was initiated at the Site. From March 2002 through November 2006, operation of the remediation system resulted in decreases in hydrocarbon concentrations across the Site. Remediation system operation and maintenance reports document the remedial progress at the Site. The system was shut down in November 2006.

Quarterly groundwater monitoring and sampling was conducted at the Site. Historical groundwater monitoring and sample analytical results are summarized in the table [prepared by Sound Environmental Strategies (SES)] included as Appendix F. Groundwater monitoring conducted through August 2007 indicated that groundwater flow is directed to the southwest. As shown in the table (Appendix F), onsite groundwater monitoring wells MW-1 through MW-4 do not contain dissolved-phase hydrocarbons above the CULs, based on the most current sampling event for the respective well. Additionally, on August 20, 2007 groundwater samples were collected from three monitoring wells (Wells MW-05 through MW-07), two recovery wells (RW-03 and RW-05) and one vapor extraction well (VW-02), all of which are located southwest of the existing USTs. Note that Well MW-01 was inaccessible on August 20, 2007 and was not sampled. The remaining wells had been removed from the sampling program due to the historical absence of dissolved-phase contamination.

Analytical results for the August 20, 2007 event indicated that Wells MW-05, RW-03, and RW-05 did not contain detectable levels of TPH-Gx, BTEX, methyl tert-butyl ether (MTBE), ethylene dibromide (EDB), ethylene dichloride (EDC) or total lead. The analytes were not detected in the groundwater sample collected from Well VE-02, with the exception of total lead (1.08 mg/L). EDC was detected at concentrations exceeding CULs in Wells MW-06 and MW-07. MTBE was also detected at a concentration exceeding the CUL in Well MW-06. MTBE and benzene were detected at levels below their respective CULs in Well MW-07 and TPH-Gx was detected at concentrations below the CUL in Wells MW-06 and MW-07. Additional details regarding the groundwater monitoring activities are provided in SES's report titled *Groundwater Monitoring Report, Third Quarter 2007*, dated October 2, 2007.

Groundwater monitoring and sampling resumed in January 2016. Groundwater monitoring results for January 6, 2016 indicate that only one well (RW-04) contained detectible concentrations of dissolved-phase fuel constituents. The detected contaminants of concern (COCs; TPH-Gx, toluene ethylbenzene and total xylenes) in Well RW-04 are well below their respective CULs. RW-04 is located onsite and downgradient of the former UST cavity.

Analytical results for the subsequent events (April 2016, August 2016, November 2016, February 2017 and May 2017) show that total lead was the only COC detected in the groundwater samples and was detected above its CUL in well MW-06 at a concentration of 30 µg/L (November 15, 2016) and 40 µg/L (February 13, 2017). However, the total lead detection was unusually high and suspected to be related to high turbidity of the samples. Consequently, well MW-06 was resampled

twice (November 30, 2016 and March 16, 2017) and neither dissolved nor total lead were detected in either sample. Lead may be present in sediments in the bottom of the well. During the subsequent groundwater monitoring event (August 17, 2017, 7th consecutive event), lead was not detected at or above the laboratory RL in well MW-06.

APPENDIX G

GROUNDWATER MONITORING FIELD FORMS

WELL GAUGING DATA

Project # 171121-CP1 Date 11/21/17 Client ES Engineering

Site 100 E. Wine Country Rd Grandview WA

Well ID	Time	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or TOC	Notes
MW-01	—	Unable to Access					—			
MW-02	1040	2					18.49	21.87		
MW-03	1035	2					19.01	22.72		
MW-04	1049	2					18.05	22.80		
MW-05	1136	4					17.45	24.60		
MW-06	1117	4					17.21	20.50		
MW-07	1142	2					19.40	23.54		
RW-01	1030	4					18.74	32.64		
RW-02	1045	4					18.60	33.40		
RW-03	1056	4					18.21	33.50		
RW-04	1105	4					19.21	34.50		
RW-05	1120	4					16.91	28.57		
VW-01	1132	4					16.94	17.67		
VW-02	1109	4					17.20	23.20		
VW-03	1128	4					Dry	10.70		
SW-01	1043	2					18.58	28.84		
SW-02	1134	2					16.63	19.21		

WELL GAUGING DATA

Project # 171121-CP1 Date 11/21/17 Client ES Engineering

Site 100 E. Wine Country Rd. Grandview WA

Well ID	Time	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or TOC	Notes
SW-03	1137	2					16.49	21.90		
SW-04	1100	2					18.22	23.24		
SW-05	1051	2					16.91	19.99		
SW-06	1113	2					16.86	21.15		
SW-07	1124	2					18.29	27.42		

LOW FLOW WELL MONITORING DATA SHEET

Project #: 171121-CP1	Client: CS Engineering
Sampler: CP	Gauging Date: 11/21/17
Well I.D.: MW-05	Well Diameter (in.): 2 3 (4) 6 8 ____
Total Well Depth (ft.): 24.60	Depth to Water (ft.): 17.45
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	Flow Cell Type: YSI Pro

Purge Method: 2" Grundfos Pump (Peristaltic Pump) Bladder Pump
Sampling Method: Dedicated Tubing New Tubing Other CP

Start Purge Time: 1326 Flow Rate: 200 ml/min Pump Depth: ~~24~~ 19.5

Time	Temp. (°C or °F)	pH	Cond. (mS/cm or µS/cm)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Depth to Water (ft.)
1329	15.2	7.65	2437	16	0.61	-118.6	600	17.49
1332	15.5	7.70	2495	15	0.47	-128.2	1200	17.53
1335	15.0	7.71	2457	12	0.44	-133.1	1800	17.57
1338	14.9	7.76	24.66	9	0.47	-131.5	2400	17.59
1341	15.0	7.79	2475	8	0.49	-128.2	3000	17.61
							FE2++= 0.0 mg/L	

Did well dewater? Yes (No) Amount actually evacuated: 3.0L

Sampling Time: 1342 Sampling Date: 11/21/17

Sample I.D.: MW-05 Laboratory: ESN

Analyzed for: (TPH-G) (BTEX) MTBE TPH-D Other: See COC

Equipment Blank I.D.: @ Time Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 171121-cp1	Client: ES Engineering
Sampler: CP	Gauging Date: 11/21/17
Well I.D.: MW-06	Well Diameter (in.): 2 3 (4) 6 8 ____
Total Well Depth (ft.): 20.50	Depth to Water (ft.): 17.21
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	Flow Cell Type: YSI PVO

Purge Method: 2" Grundfos Pump (Peristaltic Pump) Bladder Pump
Sampling Method: Dedicated (Tubing) New Tubing Other ____

Start Purge Time: 1235 Flow Rate: 200 ml/min Pump Depth: 19'

Time	Temp. (°C or °F)	pH	Cond. (mS/cm or µS/cm)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Depth to Water (ft.)
1238	11.8	8.11	294	94	4.85	-92.9	600	17.26
1241	12.3	8.14	261	89	4.82	-94.5	1200	17.29
1244	12.2	8.17	256	68	4.83	-95.9	1800	17.31
1247	12.4	8.12	256	47	4.87	-96.8	2400	17.33
1250	12.4	8.09	255	42	4.84	-97.2	3000	17.35
1253	12.3	8.05	255	39	4.86	-97.5	3600	17.39
							FE2++= 0.0 mg/L	

Did well dewater? Yes (No) Amount actually evacuated: 3.6L

Sampling Time: 1254 Sampling Date: 11/21/17

Sample I.D.: MW-06 Laboratory: ESN

Analyzed for: (TPH-G) (BTEX) MTBE TPH-D Other: See COC

Equipment Blank I.D.: @ Time Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 171121-C91	Client: ES Engineering
Sampler: CP	Gauging Date: 11/21/17
Well I.D.: MW-07	Well Diameter (in.): (2) 3 4 6 8 ____
Total Well Depth (ft.): 23.59	Depth to Water (ft.): 19.40
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	Flow Cell Type: YSI Pro

Purge Method: 2" Grundfos Pump (Peristaltic Pump) Bladder Pump
Sampling Method: Dedicated Tubing (New Tubing) Other ____

Start Purge Time: 1147 Flow Rate: 200 mL/min Pump Depth: 21.5'

Time	Temp. (°C or °F)	pH	Cond. (mS/cm or µS/cm)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Depth to Water (ft.)
1150	14.7	7.72	1397	377	1.71	-56.9	600	19.45
1153	14.7	7.81	1481	33	1.46	-53.2	1200	19.51
1156	14.7	7.76	1466	19	1.31	-45.0	1800	19.55
1159	14.6	7.79	1501	15	1.29	-44.8	2400	19.59
1202	14.5	7.82	1508	12	1.28	-44.2	3000	19.62
							FE2++= 0.0 mg/L	

Did well dewater? Yes (No) Amount actually evacuated: 3.0L

Sampling Time: 1203 Sampling Date: 11/21/17

Sample I.D.: MW-07 Laboratory: ESN

Analyzed for: (TPH-G) (BTEX) MTBE TPH-D Other: See COC

Equipment Blank I.D.: @ Time Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 171121-QP1	Client: ES Engineering
Sampler: QP	Gauging Date: 11/21/17
Well I.D.: RW-01	Well Diameter (in.): 2 3 (4) 6 8 ____
Total Well Depth (ft.): 32.64	Depth to Water (ft.): 18.74
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	Flow Cell Type: YSI Pro

Purge Method: 2" Grundfos Pump (Peristaltic Pump) Bladder Pump
Sampling Method: Dedicated Tubing (New Tubing) Other ____

Start Purge Time: 1501 Flow Rate: 200 mL/min Pump Depth: 29.5'

Time	Temp. (°C or °F)	pH	Cond. (mS/cm or µS/cm)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Depth to Water (ft.)
1504	15.0	7.78	2207	18	0.40	-107.1	600	18.81
1507	15.2	7.77	2203	10	0.37	-109.7	1200	18.81
1510	15.1	7.75	2198	7	0.34	-109.9	1800	18.83
1513	15.2	7.72	2200	5	0.34	-108.0	2400	18.83
1516	15.1	7.68	2194	5	0.34	-106.7	3000	18.85
							FE2++= 0.0 mg/L	

Did well dewater? Yes (No) Amount actually evacuated: 3.0L

Sampling Time: 1518 Sampling Date: 11/21/17

Sample I.D.: RW-01 Laboratory: ESN

Analyzed for: (TPH-G) (BTEX) MTBE TPH-D Other: See COC

Equipment Blank I.D.: @ Time Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 171121-CP1	Client: ES Engineering
Sampler: AP	Gauging Date: 11/21/17
Well I.D.: RW-03	Well Diameter (in.): 2 3 (4) 6 8 ____
Total Well Depth (ft.): 33.50	Depth to Water (ft.): 18.21
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	Flow Cell Type: YSI Pro

Purge Method: 2" Grundfos Pump (Peristaltic Pump) Bladder Pump
Sampling Method: Dedicated Tubing New Tubing Other ____

Start Purge Time: 1410 Flow Rate: 200 mL/min Pump Depth: 27'

Time	Temp. (°C or °F)	pH	Cond. (mS/cm or µS/cm)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Depth to Water (ft.)
1413	15.1	7.98	2115	11	0.71	-100.0	600	18.24
1416	15.2	7.79	2135	9	0.62	-102.6	1200	18.27
1419	15.2	7.74	2135	7	0.60	-103.2	1800	18.30
1422	15.0	7.72	2139	7	0.59	-104.3	2400	18.32
1425	15.1	7.69	2133	6	0.57	-104.9	3000	18.35
							FE2++= 1.1 mg/L	

Did well dewater? Yes (No) Amount actually evacuated: 3.0L

Sampling Time: 1426 Sampling Date: 11/21/17

Sample I.D.: RW-03 Laboratory: ESN

Analyzed for: (TPH-G) (BTEX) MTBE TPH-D Other: See COC

Equipment Blank I.D.: @ Time Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 171121-CP1	Client: ES Engineering
Sampler: AP	Gauging Date: 11/21/17
Well I.D.: RW-04	Well Diameter (in.): 2 3 (4) 6 8 ___
Total Well Depth (ft.): 34.50	Depth to Water (ft.): 19.21
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	Flow Cell Type: YSI Pro

Purge Method: 2" Grundfos Pump (Peristaltic Pump) Bladder Pump
Sampling Method: Dedicated Tubing (New Tubing) Other ___

Start Purge Time: 1435 Flow Rate: 200 mL/min Pump Depth: 29'

Time	Temp. (°C or °F)	pH	Cond. (mS/cm or µS/cm)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Depth to Water (ft.)
1438	14.5	7.70	2528	7	0.53	-125.1	600	19.25
1441	14.6	7.67	2541	6	0.47	-127.2	1200	19.25
1444	14.7	7.66	2554	5	0.44	-131.1	1800	19.25
1447	14.6	7.64	2555	4	0.43	-132.9	2400	19.25
1450	14.7	7.65	2558	4	0.42	-135.7	3000	19.25
							FE2++= 0.0 mg/L	

Did well dewater? Yes (No) Amount actually evacuated: 3.0L

Sampling Time: 1452 Sampling Date: 11/21/17

Sample I.D.: RW-04 Laboratory: ESN

Analyzed for: (TPH-G) (BTEX) MTBE TPH-D Other: See COC

Equipment Blank I.D.: @ Time Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 171121-CP1	Client: ES Engineering
Sampler: AP	Gauging Date: 11/21/17
Well I.D.: RW-05	Well Diameter (in.): 2 3 (4) 6 8 ____
Total Well Depth (ft.): 28.57	Depth to Water (ft.): 16.91
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	Flow Cell Type: YSI Pro

Purge Method: 2" Grundfos Pump (Peristaltic Pump) Bladder Pump
Sampling Method: Dedicated Tubing (New Tubing) Other ____

Start Purge Time: 1210 Flow Rate: 200 mL/min Pump Depth: 23.5'

Time	Temp. (°C or °F)	pH	Cond. (mS/cm or µS/cm)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Depth to Water (ft.)
1213	14.0	7.84	1555	26	0.75	-105.5	600	16.91
1216	14.1	7.83	1568	19	0.70	-109.6	1200	16.91
1219	14.4	7.81	1575	15	0.63	-111.3	1800	16.91
1222	14.5	7.79	1578	12	0.61	-111.6	2400	16.91
1225	14.5	7.77	1573	9	0.60	-111.2	3000	16.91
							FE2++= 0.0 mg/L	

Did well dewater? Yes (No) Amount actually evacuated: 3.0L

Sampling Time: 1227 Sampling Date: 11/21/17

Sample I.D.: RW-05 Laboratory: ESN

Analyzed for: (TPH-G) (BTEX) MTBE TPH-D Other: See COC

Equipment Blank I.D.: @ Time Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 171121-CP1	Client: ES Engineering
Sampler: CP	Gauging Date: 11/21/17
Well I.D.: VW-02	Well Diameter (in.): 2 3 (4) 6 8 ____
Total Well Depth (ft.): 23.20	Depth to Water (ft.): 17.20
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	Flow Cell Type: YSI Pro

Purge Method: 2" Grundfos Pump (Peristaltic Pump) Bladder Pump
Sampling Method: Dedicated (Tubing) New Tubing Other ____

Start Purge Time: 1301 Flow Rate: 200 mL/min Pump Depth: 20'

Time	Temp. (°C or °F)	pH	Cond. (mS/cm or µS/cm)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or (mL))	Depth to Water (ft.)
1304	14.9	7.15	2057	10	0.78	-117.7	600	17.30
1307	14.8	7.24	2116	10	0.69	-120.5	1200	17.30
1310	15.0	7.24	2160	9	0.61	-121.9	1800	17.30
1313	15.1	7.29	2165	7	0.59	-123.6	2400	17.30
1316	15.1	7.31	2167	7	0.59	-123.9	3000	17.30
							FE2++= 0.0 mg/L	

Did well dewater? Yes (No) Amount actually evacuated: 3.0L

Sampling Time: 1318 Sampling Date: 11/21/17

Sample I.D.: VW-02 Laboratory: ESN

Analyzed for: (TPH-G) (BTEX) MTBE TPH-D Other: See COC

Equipment Blank I.D.: @ Time Duplicate I.D.:

ESN NORTHWEST CHAIN-OF-CUSTODY RECORD

CLIENT: ES Engineering Services, LLC

ADDRESS: 1 Park Plaza, Suite 1000 Irvine, CA 92614

PHONE:_____ EMAIL: lskow@es-online.com

EMAIL:_____

CLIENT PROJECT #:_____123243_____ Project Manager: Laura Skow

TAT (circle one): 24-hr. 48-hr. 5-day or Other:_____

DATE: 11/21/17 PAGE 1 OF 1

ESN PROJECT #: PO#1012479

LOCATION/PROJECT NAME: Site No. 0700 100 East Wine Country Road, Grandview Washington

COLLECTOR: Craig Peters

	Sample ID#	Date Sampled	Time	Depth	Sample Type	Container Type	NWTPH-Gx	BTEX, Oxys, N-hexane (8260)	EDB (8011) Low detection limit	Naphthalenes (8270)	Total Lead	Comments	# of Containers
1	MW-05	11/21/17	1342	-	G	mixed	x	x	x	x	x		5
2	MW-06		1254	-	G		x	x	x	x	x		5
3	MW-07		1203	-	G		x	x	x	x	x		5
4	RW-01		1518	-	G		x	x	x	x	x		5
5	RW-03		1426	-	G		x	x	x	x	x		5
6	RW-04		1452	-	G		x	x	x	x	x		5
7	RW-05		1227	-	G		x	x	x	x	x		5
8	VW-02		1318	-	G		x	x	x	x	x		5
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

RELINQUISHED BY:(Signature) DATE/TIME 11/22/17 1050

RELINQUISHED BY:(Signature) DATE/TIME

RECIEVED BY (Signature) DATE/TIME 11/22/17 1050

RECIEVED BY (Signature) DATE/TIME

SAMPLE RECEIPT:

TOTAL # OF CONTAINERS_____

COC SEALS Y / N / NA

SEALS INTACT Y / N / NA

RECEIVED TEMP:_____

LABORATORY NOTES:

WELLHEAD INSPECTION FORM

Client: ES Engineering Site: 160 E Wine Country Rd Grandview WA Date: 11/21/17

Job #: 171121-CP1 Technician: C Peters Page 1 of 2

Well ID	Well Inspected - No Corrective Action Required	Check indicates deficiency: Cap non-functional	Lock non-functional	Lock missing	Bolts missing (list qty)	Tabs stripped (list qty)	Tabs broken (list qty)	Annular seal incomplete	Apron damaged	Rim / Lid broken	Trip Hazard	Below Grade	Other (explain in notes)	Well Not Inspected (explain in notes)	Notes (list if cap or lick replaced, if there are access issues associated with repairs, if traffic control is required, if stand pipe damaged, or any specific details not covered by checklist)
MW-01		Unable to Access —													
MW-02				X	3/3	3/3									
MW-03				X	3/3	3/3									
MW-04				X	3/3	3/3									
MW-05				X											
MW-06				X											
MW-07				X	3/3	3/3									
RW-01				X	3/3	3/3									
RW-02				X	3/3	3/3									
RW-03				X											Vault
RW-04				X											Vault
RW-05				X											
VW-01	X														
VW-02				X											
VW-03				X											
SW-01					3/3	3/3									
SW-02				X											

NOTES:

WELLHEAD INSPECTION FORM

Client: ES Engineering Site: 100 E Wine Country Rd Grandview WA Date: 11/21/17

Job #: 171121-CP1 Technician: C Peters Page 2 of 2

Well ID	Well Inspected - No Corrective Action Required	Check indicates deficiency: Cap non-functional	Lock non-functional	Lock missing	Bolts missing (list qty)	Tabs stripped (list qty)	Tabs broken (list qty)	Annular seal incomplete	Apron damaged	Rim / Lid broken	Trip Hazard	Below Grade	Other (explain in notes)	Well Not Inspected (explain in notes)	Notes (list if cap or lick replaced, if there are access issues associated with repairs, if traffic control is required, if stand pipe damaged, or any specific details not covered by checklist)
SW-03				X											
SW-04				X											Vault
SW-05				X											
SW-06				X											
SW-07				X											

NOTES:

TEST EQUIPMENT CALIBRATION LOG

PROJECT NAME ES Engineering @ Grandview WA				PROJECT NUMBER 171121-01			
EQUIPMENT NAME	EQUIPMENT NUMBER	DATE/TIME OF TEST	STANDARDS USED	EQUIPMENT READING	CALIBRATED TO: OR WITHIN 10%:	TEMP.	INITIALS
YSI PVO	14C100 740	11/21/17 1020	PH 4.0 7.0 10.0	4.01 7.09 10.04	= = =	14.7	QP
			Conduct 3900	3887	–	14.9	QP
			ORP 244.0	245.1	–	14.9	QP
			D.O. 100%	99.2	–	15.0	QP

SPH or Purge Water Drum Log

Client: ES Engineering

Site Address: 100 E. Wine Country Rd. Grandview WA

STATUS OF DRUM(S) UPON ARRIVAL						
Date	8/17/17	11/21/17				
Number of drum(s) empty:	0	0				
Number of drum(s) 1/4 full:	0	0				
Number of drum(s) 1/2 full:	1	1				
Number of drum(s) 3/4 full:	0	0				
Number of drum(s) full:	0	0				
Total drum(s) on site:	1	1				
Are the drum(s) properly labeled?	yes	yes				
Drum ID & Contents:	BTS #1 Purge H2O	BTS #1 Purge H2O				
If any drum(s) are partially or totally filled, what is the first use date:	11/15/16	11/15/16				

- If you add any SPH to an empty or partially filled drum, drum must have at least 20 gals. of Purgewater or DI Water.

-If drum contains SPH, the drum MUST be steel AND labeled with the appropriate label.

-All BTS drums MUST be labeled appropriately.

STATUS OF DRUM(S) UPON DEPARTURE						
Date	8/17/17	11/21/17				
Number of drums empty:	0	0				
Number of drum(s) 1/4 full:	0	0				
Number of drum(s) 1/2 full:	1	1				
Number of drum(s) 3/4 full:	0	0				
Number of drum(s) full:	0	0				
Total drum(s) on site:	1	1				
Are the drum(s) properly labeled?	yes	yes				
Drum ID & Contents:	BTS #1 Purge H2O	BTS #1 Purge H2O				

LOCATION OF DRUM(S)	
Describe location of drum(s):	Fenced compound Behind Station Lock Combination 0700

FINAL STATUS						
Number of new drum(s) left on site this event	0	0				
Date of inspection:	8/17/17	11/21/17				
Drum(s) labelled properly:	yes	yes				
Logged by BTS Field Tech:	AP	AP				
Office reviewed by:						

APPENDIX H

GROUNDWATER MONITORING LABORATORY ANALYTICAL RESULTS

ESN NORTHWEST
Environmental
Services Network

December 6, 2017

Laura Skow
ES Engineering
1036 West Taft Avenue
Orange, CA 92865

Dear Ms. Skow:

Please find enclosed the analytical data report for the Site #0700 Project in Grandview, Washington. Water samples were analyzed for Gasoline by NWTPH-Gx, VOC's by Method 8260, Pb by Method 6020, EDB by Method 8011, and Naphthalene's by Method 8270 on November 22 – December 2, 2017.

The results of the analyses are summarized in the attached tables. Applicable detection limits and QA/QC data are included. An invoice for this analytical work is also enclosed.

ESN Northwest appreciates the opportunity to have provided analytical services to ES Engineering for this project. If you have any further questions about the data report, please give me a call. It was a pleasure working with you on this project, and we are looking forward to the next opportunity to work together.

Sincerely,

Michael A Korosec

Michael A. Korosec
President

1210 Eastside Street SE, Suite 200 ■ Olympia, Washington 98501 ■ 360.459.4670 ■ FAX 360.459.3432
Web Site: *www.esnnw.com* E-Mail: *info@esnnw.com*

ESN NORTHWEST CHEMISTRY LABORATORY

ES Engineering
PROJECT SITE NO 0700
PROJECT #123243
Grandview, Washington

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analysis of Gasoline Range Organics & BTEX in Water by Method NWTPH-Gx/8260

Analytical Results

Date analyzed	RL (ug/L)	MB 11/29/17	LCS 11/29/17	LCSD 11/29/17	MW-05 11/29/17	MW-06 11/29/17	MW-07 11/29/17	RW-01 11/29/17	RW-03 11/29/17	RW-04 11/29/17	RW-05 11/29/17	VW-02 11/29/17
Gasoline Range Organics	100	nd	86%	--	nd	nd	nd	nd	nd	nd	nd	nd
Methyl-t-butyl ether (MTBE)	1.0	nd	97%	86%	nd	nd	nd	nd	nd	nd	nd	nd
1,2-Dichloroethane (EDC)	1.0	nd	77%	132%	nd	nd	nd	nd	nd	nd	nd	nd
Benzene	1.0	nd	67%	139%	nd	nd	nd	nd	nd	nd	nd	nd
Toluene	1.0	nd	82%	128%	nd	nd	nd	nd	nd	nd	nd	nd
Ethylbenzene	1.0	nd	84%	128%	nd	nd	nd	nd	nd	nd	nd	nd
Xylenes	3.0	nd	79%	118%	nd	nd	nd	nd	nd	nd	nd	nd
n-Hexane	1.0	nd	65%	68%	nd	nd	nd	nd	nd	nd	nd	nd
Surrogate recoveries												
Dibromofluoromethane		93%	96%	113%	105%	116%	106%	110%	103%	145%	105%	96%
Toluene-d8		91%	96%	97%	89%	93%	94%	90%	95%	98%	92%	94%
4-Bromofluorobenzene		99%	96%	96%	96%	100%	104%	71%	99%	103%	94%	100%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

ESN NORTHWEST CHEMISTRY LABORATORY

ES Engineering
PROJECT SITE NO 0700
PROJECT #123243
Grandview, Washington

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Total Lead in Water by EPA-6020 Method

Sample Number	Date Analyzed	Lead (Pb) (ug/L)
Method Blank	11/28/2017	nd
MW-05	11/28/2017	nd
MW-06	11/28/2017	nd
MW-07	11/28/2017	nd
RW-01	11/28/2017	nd
RW-03	11/28/2017	nd
RW-04	11/28/2017	nd
RW-05	11/28/2017	**2.1**
VW-02	11/28/2017	nd
Reporting Limits		2.0

"nd" Indicates not detected at listed detection limits.

QA/QC Data - Total Metals EPA-6020

	Laboratory Control Sample			Laboratory Control Sample Duplicate			RPD
	Spiked Conc. (ug/L)	Measured Conc. (ug/L)	Spike Recovery (%)	Spiked Conc. (ug/L)	Measured Conc. (ug/L)	Spike Recovery (%)	(%)
Lead	20.0	22.4	112	20.0	21.3	107	5.0

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 80%-120%
ACCEPTABLE RPD IS 35%

ESN NORTHWEST CHEMISTRY LABORATORY

ES Engineering
PROJECT SITE NO 0700
PROJECT #123243
Grandview, Washington

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analysis of Polynuclear Aromatic Hydrocarbons in Water by Method 8270

Analytical Results

	Reporting	MB	LCS	MW-05	MW-06	MW-07	RW-01	RW-03	RW-04	RW-05	VW-02
Date extracted	Limits	11/22/17	11/22/17	11/22/17	11/22/17	11/22/17	11/22/17	11/22/17	11/22/17	11/22/17	11/22/17
Date analyzed	(ug/L)	11/22/17	11/22/17	11/22/17	11/22/17	11/22/17	11/22/17	11/22/17	11/22/17	11/22/17	11/22/17
Naphthalene	0.1	nd	99%	nd	nd	nd	nd	nd	nd	nd	nd
2-Methylnaphthalene	0.1	nd	90%	nd	nd	nd	nd	nd	nd	nd	nd
1-Methylnaphthalene	0.1	nd	--	nd	nd	nd	nd	nd	nd	nd	nd
Surrogate recoveries:											
2-Fluorobiphenyl		92%	110%	103%	118%	112%	99%	112%	105%	106%	123%
p-Terphenyl-d14		107%	116%	129%	137%	146%	126%	134%	128%	138%	147%

Data Qualifiers and Analytical Comments

* - Carcinogenic Analyte
nd - not detected at listed reporting limits
ns - not spiked
Acceptable Recovery limits: 50% TO 150%
Acceptable RPD limit: 35%

ACCU LABORATORY

12524 130th Lane NE
Kirkland WA 98034

Tel: (425) 214-5858
(425) 214-5868
Email: lisa@accu-lab.com
Website: www.accu-lab.com

Analytical Report

Client	**ESN NW, Inc**	**Acculab WO#**	**17-AL1128-6**
	1210 Eastside Street SE, Suite #200		
	Olympia, WA 98501	Date Sampled	11/21/2017
Project Manager	Steve Loague	Date Received	11/28/2017
Project Name	**Site No. 0700**	Date Reported	12/4/2017
Project#	**123243**		

1,2-Dibromoethane (EDB) in Water by EPA 8011

Accu Lab Analytical Batch# AL120217-2

Client sample ID					**DUP**	**RPD**	**MW-05**	**MW-06**
Lab ID	**MRL**	**Unit**	**MTH BLK**	**LCS**	**LCS**	**LCS**	17-AL1128-6-1	17-AL1128-6-2
Matrix			Water	Water	Water	Water	Water	Water
Date Extracted			12/2/2017	12/2/2017	12/2/2017	12/2/2017	12/2/2017	12/2/2017
Date Analyzed			12/2/2017	12/2/2017	12/2/2017	12/2/2017	12/2/2017	12/2/2017
1,2-Dibromoethane (EDB)	0.01	ug/L	nd	105%	99%	7%	nd	nd

Acceptable Recovery Limits:
LCS/ MS/MSD 60-140%
Acceptable RPD limit: 30%

ACCU LABORATORY

12524 130th Lane NE
Kirkland WA 98034

Tel: (425) 214-5858
(425) 214-5868
Email: lisa@accu-lab.com
Website: www.accu-lab.com

Analytical Report

Client	**ESN NW, Inc**	**Acculab WO#**	**17-AL1128-6**
	1210 Eastside Street SE, Suite #200		
	Olympia, WA 98501	Date Sampled	1/0/1900
Project Manager	Steve Loague	Date Received	11/28/2017
Project Name	**Site No. 0700**	Date Reported	12/4/2017
Project#	**123243**		

1,2-Dibromoethane (EDB) in Water by EPA 8011

Accu Lab Analytical Batch# AL120217-2

Client sample ID			**MW-07**	**RW-01**	**RW-03**	**RW-04**	**RW-05**	**VW-02**
Lab ID	**MRL**	**Unit**	17-AL1128-6-3	17-AL1128-6-4	17-AL1128-6-5	17-AL1128-6-6	17-AL1128-6-7	17-AL1128-6-8
Matrix			Water	Water	Water	Water	Water	Water
Date Extracted			12/2/2017	12/2/2017	12/2/2017	12/2/2017	12/2/2017	12/2/2017
Date Analyzed			12/2/2017	12/2/2017	12/2/2017	12/2/2017	12/2/2017	12/2/2017
1,2-Dibromoethane (EDB)	0.01	ug/L	nd	nd	nd	nd	nd	nd

Acceptable Recovery Limits:
LCS/ MS/MSD 60-140%
Acceptable RPD limit: 30%

ACCU LABORATORY

12524 130th Lane NE
Kirkland WA 98034

Tel: (425) 214-5858
(425) 214-5868
Email: lisa@accu-lab.com
Website: www.accu-lab.com

Analytical Report

Client	**ESN NW, Inc**	**Acculab WO#**	**17-AL1128-6**
	1210 Eastside Street SE, Suite #200		
	Olympia, WA 98501	Date Sampled	11/21/2017
Project Manager	Steve Loague	Date Received	11/28/2017
Project Name	**Site No. 0700**	Date Reported	12/4/2017
Project#	**123243**		

Data Qualifiers and Comments:

MRL- Method Reporting Limit
nd- Indicates the analyte is not detected at the listing reporting limit.
C- Coelution with other compounds.
M- % Recovery of surrogate, MS/MSD is out of the acceptable limit due to matrix effect.
B- Indicates the analyte is detected in the method blank associated with the sample.
J- The analyte is detected at below the reporting limit.
E- The result reported exceeds the calibration range, and is an estimate.
D- Sample required dilution due to matrix. Method Reporting Limits were elevated due to dilutions.
H- Sample was received or analyzed past holding time
Q- Sample was received with head space, improper preserved or above recommended temperature.

ESN NORTHWEST CHAIN-OF-CUSTODY RECORD

CLIENT: ES Engineering Services, LLC

ADDRESS: 1 Park Plaza, Suite 1000 Irvine, CA 92614

PHONE:_____ EMAIL: lskow@es-online.com

EMAIL:_____

CLIENT PROJECT #: 123243 Project Manager: Laura Skow

TAT (circle one): 24-hr. 48-hr. 5-day or Other:_____

DATE: 11/21/17 PAGE 1 OF 1

ESN PROJECT #: PO#1012479

LOCATION/PROJECT NAME: Site No. 0700 100 East Wine Country Road, Grandview Washington

COLLECTOR: Craig Peters

	Sample ID#	Date Sampled	Time	Depth	Sample Type	Container Type	NWTPH-Gx	BTEX, Oxys, N-hexane (8260)	EDB (8011) Low detection limit	Naphthalenes (8270)	Total Lead	Comments	# of Containers
1	MW-05	11/21/17	1342	-	G	mixed	x	x	x	x	x		5
2	MW-06		1254	-	G		x	x	x	x	x		5
3	MW-07		1203	-	G		x	x	x	x	x		5
4	RW-01		1518	-	G		x	x	x	x	x		5
5	RW-03		1426	-	G		x	x	x	x	x		5
6	RW-04		1452	-	G		x	x	x	x	x		5
7	RW-05		1227	-	G		x	x	x	x	x		5
8	VW-02		1318	-	G		x	x	x	x	x		5
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

RELINQUISHED BY:(Signature)	DATE/TIME	RECIEVED BY (Signature)	DATE/TIME
	11/22/17 1050		11/22/17 1050
RELINQUISHED BY:(Signature)	DATE/TIME	RECIEVED BY (Signature)	DATE/TIME

SAMPLE RECEIPT:

TOTAL # OF CONTAINERS_____

COC SEALS Y / N / NA

SEALS INTACT Y / N / NA

RECEIVED TEMP:_____

LABORATORY NOTES:

APPENDIX I

SELECT PAGES FROM DEBOCK's PSIR

OLYMPUS
ENVIRONMENTAL, INC.

April 13, 1998

Site 956
DeBodis

Mr. Robert M. Saville
ECS Claims Administrators, Inc.
P.O. Box 688
Exton, Pennsylvania 19341

Re: **Preliminary Site Investigation Report**
R.E. Powell Distributing, Inc.
100 West Main Street
Grandview, Washington
Olympus Work Order # 7545

Dear Mr. Saville:

Olympus Environmental, Inc. (Olympus) prepared this Preliminary Site Investigation Report for ECS Claims Administrators (ECS). ECS contracted Olympus, on behalf of Homestead Insurance Company, to perform a site investigation at the R.E. Powell property located in Benton County, Washington at 100 West Main Street in Grandview. This Preliminary Site Investigation Report includes soil and ground water sampling and analyses data collected during the advancement of GeoProbe borings.

WORK SCOPE AND BACKGROUND INFORMATION

During removal of an underground storage tank system in March 1995, petroleum hydrocarbon impacted soil was found beneath the fuel dispenser island at the R.E. Powell property (Facility). During a limited site investigation conducted in October 1995 by Sage Earth Sciences, Inc., soil and ground water samples were collected from hand-augered soil borings in areas adjacent to the dispenser island (Figure 1). Laboratory analysis of the soil samples did not detect benzene, toluene, ethylbenzene, or xylenes (BTEX) at concentrations exceeding Washington Department of Ecology (DOE) Model Toxics Control Act Method A Compliance Cleanup Levels for soil. Analyses of four samples detected total petroleum hydrocarbons as gasoline (TPH-G) at concentrations exceeding DOE Model Toxics Control Act Method A Compliance Cleanup Levels for soil. Ground water sampling and analyses collected during the 1995 investigation documented petroleum hydrocarbon impact to ground water.

ECS contracted with Olympus to perform site assessment activity to determine the nature and extent of petroleum hydrocarbons in soil and ground water at and adjacent to the Facility. Olympus' assessment includes the following completed and scheduled tasks:

- advancement of five GeoProbe soil borings to the east, north, and south of the dispenser island and collection of soil and ground water samples from each GeoProbe boring;

- installation of three monitoring wells on Facility property, with soil sample collection from well borings and ground water sample collection from each developed well;
- laboratory analysis of soil and ground water samples for BTEX and TPH-G;
- gauging of ground water elevations in the monitoring wells and determination of ground water flow direction and gradient; and
- submittal of a report presenting site data, with recommendations for future assessment or remedial actions.

GEOPROBE SOIL AND GROUND WATER SAMPLING

On February 19, 1998, Olympus mobilized to the Facility in preparation for GeoProbe sampling activities. Our field hydrogeologist met with representatives of the City of Grandview and Cascade Natural Gas to locate underground water, sewer, and natural gas lines. Underground electrical lines of Pacific Power and Light had been previously marked. All other notified parties reported that their respective utility lines were overhead or not present in the work area.

Olympus' subcontractor, Cascade Drilling, Inc. (Cascade) of Woodinville, Washington, mobilized to the Facility on February 20, 1998. Cascade, under the direction of Olympus, advanced four GeoProbe borings (GP-1, GP-2, GP-3, and GP-4) in Division and Main Streets and one boring (GP-5) to the south of the Facility building (Figure 1). The borings were advanced 15 to 20 feet below ground surface (BGS). Soil and ground water samples were collected at each boring location.

Two-foot soil cores were collected at five-foot intervals at each boring using a one-inch diameter hollow probe rod lined with a polyethylene sleeve. Each soil core was logged, and soil texture described according to procedures established in American Society for Testing and Materials (ASTM) Standard D 2488-84. Representative soil samples from the soil cores were field screened for volatile hydrocarbons using a Photovac TIP II photoionization detector (PID) calibrated to an isobutylene standard. Criteria for selection of soil samples for laboratory analyses included PID readings and degree of petroleum staining and/or odor. Based on these criteria, soil samples from 15 feet BGS at GP-1, GP-2, GP-3, GP-4, and GP-5 were submitted for laboratory analysis. To determine hydrocarbon impact below 15 feet a soil sample from 20 feet BGS at GP-5 was also submitted.

Soil texture at all boring locations and depths was a low plasticity silt with little to some fine sand (ML), with some one to six inch thick, well-graded, fine to medium-grained sand layers (SW). GeoProbe Boring Logs, including sample depths, recovery, and description, PID readings, and observations, are included in Attachment B.

Ground water in all GeoProbe borings was found at approximately 15 to 16 feet BGS. A ground water sample from each boring was submitted to the laboratory for analysis. Samples were collected by installing a two foot screened-steel GeoProbe ground water sampling point at 16 feet BGS, and using a peristaltic pump with dedicated polyethylene tubing to collect water through the sampling point. The screened sampling point was decontaminated between uses with a non-phosphate soap and water wash, a tap water rinse, and a final de-ionized water rinse.

SOIL AND GROUND WATER ANALYSES RESULTS

Soil and ground water samples collected for laboratory analysis were shipped, using chain of custody procedure, by overnight courier to North Creek Analytical Laboratory in Bothell, Washington. Samples were analyzed for TPH-G and BTEX using procedures established in SW-846 Method 8015M (modified) and SW-846 Method 8021B, respectively.

A summary of the GeoProbe soil sample analyses follows:

- Analysis of sample GP-1-15 (GeoProbe boring GP-1 at a depth of 15 feet BGS) detected concentrations of benzene at 1.33 milligrams per kilogram (mg/kg), toluene at 1.03 mg/kg, ethylbenzene at 8.66 mg/kg, xylenes at 40.2 mg/kg, and total petroleum hydrocarbons-gasoline (TPH-G) at 1,280 mg/kg.

- Analysis of sample GP-3-15 was non-detect for benzene and toluene at laboratory reporting limits (RL) of 0.250 mg/kg, and detected concentrations of ethylbenzene at 0.584 mg/kg, xylenes at 0.803 mg/kg, and TPH-G at 154 mg/kg.

- Analysis of sample GP-4-15 was non-detect for benzene and toluene (RL=0.500 mg/kg), and detected concentrations of ethylbenzene at 0.973 mg/kg, xylenes at 1.13 mg/kg, and TPH-G at 299 mg/kg.

- Analysis of sample GP-5-15 was non-detect for benzene and toluene (RL=2.50 mg/kg), and detected concentrations of ethylbenzene at 14.3 mg/kg, xylenes at 54.2 mg/kg, and TPH-G at 5,910 mg/kg.

- Analyses of samples GP-2-15 and GP-5-20 were non-detect for benzene, toluene, and ethylbenzene (RL=0.0500 mg/kg), xylenes (RL=0.100 mg/kg), and TPH-G (RL=5.00 mg/kg).

A summary of the GeoProbe ground water sample analyses follows:

- Analysis of sample GP-1-15W (GeoProbe boring GP-1 at a depth of approximately 15 feet BGS) detected concentrations of benzene at 1910 micrograms per liter (µg/l), ethylbenzene at 527 µg/l, xylenes at 40.2 µg/l, and TPH-G at 8,400 µg/l. Toluene was non-detect (RL=12.5 µg/l).

- Analysis of sample GP-2-15W detected concentrations of benzene at 5.26 µg/l, toluene at 2.49 µg/l, ethylbenzene at 1.76 µg/l, xylenes at 6.63 µg/l, and TPH-G at 77.7 µg/l.

- Analysis of sample GP-3-15W detected concentrations of benzene at 22.1 µg/l, toluene at 1.57 µg/l, ethylbenzene at 16.6 µg/l, xylenes at 22.3 µg/l, and TPH-G at 594 µg/l.

- Analysis of sample GP-4-15W detected concentrations of benzene at 92.0 µg/l, toluene at 3.88 µg/l, ethylbenzene at 72.0 µg/l, xylenes at 13.7 µg/l, and TPH-G at 1,220 µg/l.

- Analysis of sample GP-5-15W detected concentrations of benzene at 7.94 µg/l, toluene at 4.87 µg/l, ethylbenzene at 80.7 µg/l, xylenes at 113 µg/l, and TPH-G at 2,930 µg/l.

Table 1 presents the results of the soil and ground water sample analyses and Washington Department of Ecology Model Toxics Control Act Method A Compliance Cleanup Levels for soil and groundwater. Laboratory analytical reports, Olympus QA/QC Data Validation Reports, Chain of Custody Records, and Olympus Soil and Ground Water Sampling Information Forms are included in Attachment A.

DISCUSSION

The results of the GeoProbe investigation determined that subsurface soil and ground water surrounding the Facility have been impacted by petroleum hydrocarbons. Laboratory analyses of soil samples shows petroleum impacted soil extends to the east, north, and south of the Facility. Gasoline range hydrocarbons detected in the samples from GP-1, GP-3, GP-4, and GP-5 are at concentrations greater than DOE Model Toxics Control Act Method A Compliance Cleanup Levels (MTCA-CCL) for soil. MTCA-CCL for soil was exceeded for benzene at GP-1 and for xylenes at GP-1 and GP-5.

BTEX compounds and gasoline range hydrocarbons were detected in all ground water samples. Petroleum hydrocarbon impacted ground water extends to the east, north, and south of the Facility. Analysis of ground water samples collected from borings GP-1, GP-4, and GP-5 detected gasoline range hydrocarbons in concentrations greater than MTCA-CCL for ground water. MTCA-CCL for benzene was exceeded at all borings, for ethylbenzene in GP-1, GP-4, and GP-5, and for xylenes in GP-1, GP-3, and GP-5.

FUTURE SITE ACTIVITY

Scheduled assessment activity includes the advancement of three soil borings with monitoring well completions. Soil and ground water samples will be collected at each boring and well, respectively. Ground water elevation gauging will be used to determine ground water flow direction and gradient. The data from the soil boring and the monitoring well completions will be used to determine petroleum hydrocarbon concentrations in soil and ground water at the Facility and to identify possible source areas of petroleum hydrocarbons.

LIMITATIONS

Olympus performed the services documented in this report in a manner consistent with generally accepted principles and practices for the nature of the work completed in the same or similar localities, at the time the work was performed. No other warranty, express or implied, is made. Opinions contained in this report apply to conditions existing when the services were performed. All conclusions and recommendations are based on readily available and reasonably ascertainable information on site conditions at the time of the work and for the laws in effect at that time. We are not responsible for any changes in environmental standards, practices, or regulations subsequent to performance of services. This report is not meant to represent a legal opinion. We do not warrant the accuracy of information supplied by others, nor the use of segregated portions of this report.

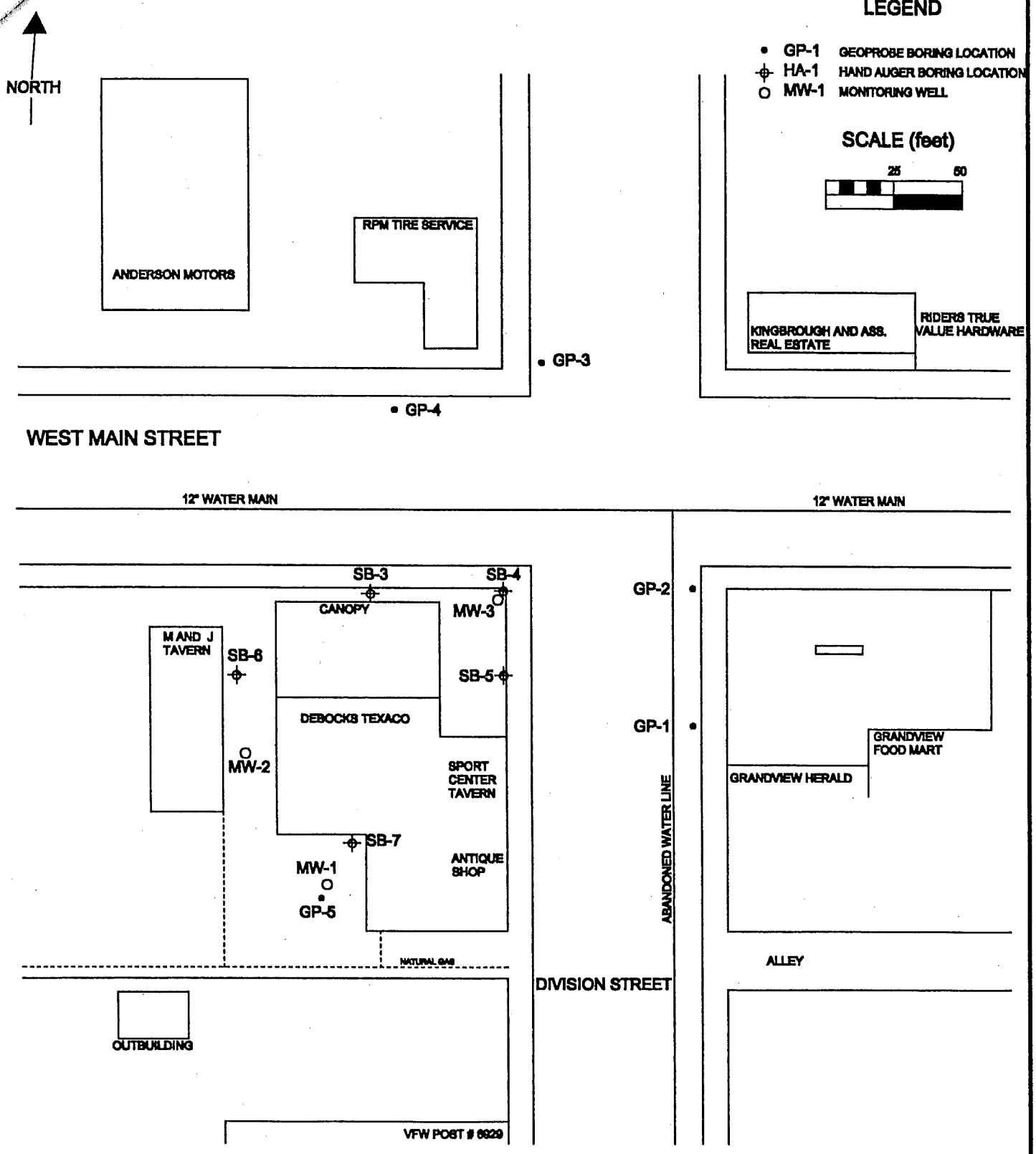
Thank you for allowing Olympus the opportunity to work with the ECS Claims Administrators on this project. Please feel free to contact me at (208) 376-5006, fax (208) 376-5091, at fedolyboi@rmci.net, or the above address should you have any questions or comments.

Sincerely,

Fritz Durham
Staff Hydrogeologist

Attachment

cc: Gary Christensen, R.E. Powell Distributing
file



OLYMPUS ENVIRONMENTAL, INC.	FACILITY SITE MAP R.E. POWELL DEBOCKS TEXACO 100 WEST MAIN GRANDVIEW, WASHINGTON	Design:	Drawn: FED		FIGURE 1
		Checked:	Date: 3/24/98		
		Approved:	Revision	By	Date
		Job No: 7545			
		CAD File: FED			
		Scale:			

TABLE 1 - GROUNDWATER AND SOIL SAMPLE ANALYSES
R.E. Powell Distributing, Inc.
Grandview, Washington

Field Information			Aromatic Volatile Organics: BTEX (SW-846 Method 8021B) and TPH-G (8015M)					
Sample Identification	Depth (feet)	Date	Benzene (µg/l)	Toluene (µg/l)	Ethylbenzene (µg/l)	Xylenes (µg/l)	TPH-G (Total Gasoline Range Hydrocarbons) (µg/l)	Comments
Geoprobe Ground Water Analyses								
GP-1-15W	15	20-Feb-98	**1,910**	ND<12.5	**527**	**1,160**	**8,400**	
GP-2-15W	15	20-Feb-98	**5.26**	**2.49**	**1.76**	**6.63**	**77.7**	
GP-3-15W	15	20-Feb-98	**22.1**	**1.57**	**16.6**	**22.3**	**594**	
GP-4-15W	15	20-Feb-98	**92.0**	**3.88**	**72.0**	**13.7**	**1,220**	
GP-5-15W	15	20-Feb-98	**7.94**	**4.87**	**80.7**	**113**	**2,930**	
TB	-	20-Feb-98	ND<0.500	ND<0.500	ND<0.500	ND<1.00	ND<50.0	
Department of Ecology Model Toxics Control Act : Method A Compliance Cleanup Levels								
Ground Water Cleanup Levels (µg/l)			5	30	40	20	1,000	

Sample Identification	Depth (feet)	Date	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	WTPH-G (Gasoline Range Hydrocarbons) (mg/kg)	Comments
Geoprobe Soil Analyses								
GP-1-15	15	20-Feb-98	**1.33**	**1.03**	**8.66**	**40.2**	**1,280**	
GP-2-15	15	20-Feb-98	ND<0.0500	ND<0.0500	ND<0.0500	ND<0.100	ND<5.00	
GP-3-15	15	20-Feb-98	ND<.250	ND<.250	**0.584**	**0.803**	**154**	
GP-4-15	15	20-Feb-98	ND<0.500	ND<0.500	**0.973**	**1.13**	**299**	
GP-5-15	15	20-Feb-98	ND<2.50	ND<2.50	**14.3**	**54.2**	**5,910**	
GP-5-20	20	20-Feb-98	ND<0.0500	ND<0.0500	ND<0.0500	ND<0.100	ND<5.00	
Sage Earth Sciences Hand Auger Soil Analyses								
(SB3) 0395-S3	10	24-Oct-95	ND<0.1	ND<0.1	ND<0.3	ND<0.1	ND<20.0	
(SB3) 0395-S4	15	24-Oct-95	ND<0.1	ND<0.1	**1.7**	**4.1**	**1800**	
(SB4) 0395-S7	10	24-Oct-95	ND<0.1	ND<0.1	ND<0.3	ND<0.1	**255**	
(SB5) 0395-S10	10	24-Oct-95	ND<0.1	ND<0.1	ND<0.3	ND<0.1	**117**	
(SB6) 0395-S13	10	24-Oct-95	ND<0.1	ND<0.1	ND<0.3	ND<0.1	ND<20.0	
(SB7) 0395-S16	10	24-Oct-95	ND<0.1	ND<0.1	ND<0.3	ND<0.1	ND<20.0	
(SB7) 0395-S17	12	24-Oct-95	ND<0.1	ND<0.1	ND<0.3	ND<0.1	**426**	
Department of Ecology Model Toxics Control Act : Method A Compliance Cleanup Levels								
Soil Cleanup Levels (mg/kg)			0.5	20.0	40.0	20.0	100	

Notes:
µg/l = micrograms per liter
mg/kg = milligrams per kilogram
ND = Not Detected at laboratory reporting limits
- = not analyzed or reported
Underlined values exceed DOE Method A Compliance Cleanup Levels

ATTACHMENT 1

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES NORTHWEST, INC.

7110 38th Drive SE
Lacey, Washington 98503

Mobile Environmental Laboratories
Environmental Sampling Services

Telephone: 360-459-4670
Fax: 360-459-3432

May 3, 1996

Justin Bolles
GN Northern, Inc.
722 North 16th Ave., Ste. 31
Yakima, WA 98902

Dear Mr. Bolles:

Please find enclosed the data report for analyses conducted off-site May 2, 1996, for soil samples from the City of Grandview Project, Project No. 196-236-1, in Grandview, Washington. The soils were analyzed for Heavy Petroleum Hydrocarbons by WTPH-418.1.

The results of these analyses are summarized in the attached table. All soil values are reported on a dry weight basis. Applicable detection limits and QA/QC data are included. An invoice for this analytical work is also enclosed.

TEG Northwest appreciates the opportunity to have provided analytical services to GN Northern for this project. If you have any further questions about the data report, please give me a call. It was a pleasure working with you on this project, and we are looking forward to the next opportunity to work together.

Sincerely,

Michael A Korosec

Michael A. Korosec
President

QA/QC FOR ANALYTICAL METHODS

GENERAL

The TEG Northwest Laboratory quality assurance and quality control (QA/QC) procedures are conducted following the guidelines and objectives which meet or exceed certification/-accreditation requirements of California DOHS, Washington DOE, and Oregon DEQ. The Quality Control Program is a consistent set of procedures which assures data quality through the use of appropriate blanks, replicate analyses, surrogate spikes, and matrix spikes, and with the use of reference standards that meet or exceed EPA standards.

When analyses are taking place on-site with the mobile lab, the need for Field Blanks or Travel/Trip Blanks is eliminated. If there is going to be a delay before sample preparation for analysis, the sample is stored at 4° C.

ANALYTICAL METHODS

TEG Northwest Labs use analytical methodologies which are in conformity with U. S. Environmental Protection Agency (EPA), Washington DOE, and Oregon DEQ methodologies. When necessary and appropriate due to the nature or composition of the sample, TEG may use variations of the methods which are consistent with recognized standards or variations used by the industry and government laboratories.

TPH-Heavy Fuel Hydrocarbons (EPA 418.1, WTPH-418.1)

Calibration plot values must produce a best fit line, with known values deviating from the plot by less than 10%. Prior to sample run, a blank, a calibration standard, and a method blank are run. One method blank per 10 samples is prepared. A sample duplicate is prepared for each 10 samples to be run per day.

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES NORTHWEST INC.

CITY OF GRANDVIEW
Grandview, Washington
GN Northern, Inc.
Project No.: 196-236-1

Heavy Petroleum Hydrocarbons in soil by WTPH-418.1

Sample Number	Date	TPH mg/kg
Meth. Blank	05/02/96	nd
05196 SP4	05/02/96	223
05196 SP5	05/02/96	363
05196 SP6	05/02/96	274
05196 SP6 Dup	05/02/96	320
Method Detection Limit		10

"nd" Indicates not detected at the listed detection limit.

teg TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES

CHAIN-OF-CUSTODY RECORD

CLIENT: GN - NORTHERN

ADDRESS: 722 N. 16TH Ave., Ste. 31 YAKIMA, WA 98902

PHONE (509) 248-9798 FAX: (509) 248-4220

CLIENT PROJECT #: 196-236-1 PROJECT MANAGER: Bolles

DATE: 5-1-96 PAGE 1 OF 1

PROJECT NAME: City of Grandview

LOCATION: Grandview, WA

COLLECTOR: Bolles DATE OF COLLECTION 5-1-96

Sample Number	Depth	Time	Sample Type	Container Type	ANALYSES: VOA 601/8010	VOA 602/8020	VOA 624/8240	Semi Vol 625/8270	TPH 418.1	TPH 8015 (gasoline)	TPH (8015 (diesel)	TPH 8015 (g & d)	PAH 610/8100	PEST/PCBs 8080	HEX CHROME	ORGANIC LEAD	TOTAL LEAD	pH	ASBESTOS	WTPH 418.1	FIELD NOTES	Total Number of Containers	Laboratory Note Number
05196 SP4	—	8:35A	S	JAR															X			1	
05196 SP5	—	8:40A	S	JAR															X			1	
05196 SP6	—	8:50A	S	JAR															X			1	

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
	5-1-96/5:00P	PONY EXPRESS	
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
			1260 5-2-96

SAMPLE DISPOSAL INSTRUCTIONS

☐ TEG DISPOSAL ● $2.00 each ☐ Return ☐ Pickup

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:

PLEASE FAX RESULTS

APPENDIX J

WELL LOGS

STATE OF WASHINGTON
DEPARTMENT OF CONSERVATION
AND DEVELOPMENT

WELL LOG

No. Decla. #357
Cert. #340 -D

Date 1912, 19__
Record by L. A. Collins
Source G. W. Decla. Chim

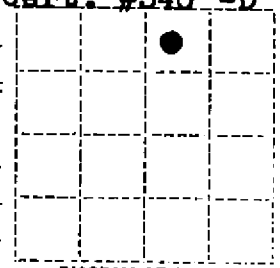


DIAGRAM OF SECTION

Location: State of WASHINGTON
County Yakima
Area
Map
NW ¼ NE ¼ sec. 23 T. 9 N., R. 23 E. W.

Drilling Co.
Address
Method of Drilling drilled Date 1925 19__
Owner Oregon Wash. R. R. & Nav. Co.
Address Portland, Wash.
Land surface, datum ft. above / below

CORRELATION	MATERIAL	THICKNESS (feet)	DEPTH (feet)
	no record		
Pump	Test:		
	Dim: 174' x 10"		
	SWL: 50'		
	Dd: 80'		
	Yield: 150 g.p.m.		
	Casing: 10" dia. from unknown depth		
	Pump: not given		

(Transcribe driller's terminology literally but paraphrase as necessary, in parentheses. If material water-bearing, so state and record static level if reported. Give depths in feet below land-surface datum unless otherwise indicated. Correlate with stratigraphic column, if feasible. Following log of materials, list all casings, perforations, screens, etc.)

Turn up

Sheet ____ of ____ sheets

STATE OF WASHINGTON
DEPARTMENT OF CONSERVATION
AND DEVELOPMENT

WELL LOG

No. Appli. #2702
Permit #2770

Date May 29, 19 53

Record by Don E. Gray

Source well driller's record

Location: State of WASHINGTON

County Yakima

Area

Map

NE ¼ SE ¼ sec 23 T. 9 N., R. 23 E.

Diagram of Section

Drilling Co.

Address

Method of Drilling drilled Date March 15, 19 53

Owner City of Grandview

Address Grandview, Washington

Land surface, datum ft above / below

Correlation	Material	Thickness (feet)	Depth (feet)
	(Transcribe driller's terminology literally but paraphrase as necessary, in parentheses. If material water-bearing, so state and record static level if reported. Give depths in feet below land-surface datum unless otherwise indicated. Correlate with stratigraphic column, if feasible. Following log of materials, list all casings, perforations, screens, etc.)		
	Surface soil, yellow, soft	22	22
	Sandy soil, yellow, soft	11	33
	Gravel, black, med.	4	37
	Basalt, broken, blk., med.	2	39
	Basalt, black, hard	38.5	77.5
	Burnt basalt, red, soft	7.5	85
	Basalt, black, hard	2	87
	Basalt, sharp, blk., med	8	95
	Basalt, black, hard	16	111
	Basalt, black med	12	123
	Fine gravel & clay, soft	7	130
	Clay, yellow, soft	90	220
	Sand, yellow, soft	8	228
	Basalt, black med.	7	235
	Basalt, black, hard	34	269
	Basalt, gray, hard	3	272

Turn up

Sheet ... of ... sheets

9N/23E-23J

City of Grandview

WELL LOG.—Continued No...../.....-.....

CORRELATION	MATERIAL	THICKNESS (feet)	DEPTH (feet)
	Depth forward		
	Basalt, black, med.	13	285
	Crevice	3	288
	Basalt, black, med.	8	296
	Pump Test:		
	Dim: 296' x 12"		
	Casing: 16" standard casing from 0 to 39.7		
	12" standard casing from 0 to 257'		
	Recovery data: Complete recovery in 5 minutes		
	Perfpr: none		

S. F. No. 7[illegible]—12-54—3M. [illegible]08.

RETURN TO:
DIV. OF WATER RESOURCES
406 TRANSPORTATION BLDG., OLYMPIA

B. F. No. 7359—1-53—SM. 33599.

RECORD BY WELL DRILLER OR OTHER CONSTRUCTOR OF WORKS FOR WITHDRAWAL OF GROUND WATER

Under Permit No. G. W. 2279

("The well driller or other constructor of works for the withdrawal of public ground waters shall be obligated to furnish the permittee a certified record of the factual information necessary to show compliance with the provisions of this section." Sec. 8, Chap. 263, Laws of 1945.)

1. CITY OF GRANDVIEW
(Name and address of owner of well or other works for withdrawal of water)
2. Type; name or number of works where water is taken Well #6
(Well, tunnel or infiltration trench)
3. Date on which work on well or other structure was started Sept. 15, 1952
4. Date on which work was completed May 29, 1953
5. If work on well or other structure was abandoned, give date
and reason for abandonment
6. DESCRIPTION OF WORKS:
(a) WELL: Depth 296 ft. Diameter 12 in. or ft. Dug or drilled drilled
Flowing or pump well
IF PUMP WELL: Type and size of pump is
Type and size of motor or engine is
Depth from ground surface to water level before pumping feet
After continuous operation for (At least four) hours, the measured discharge of the pump is
g.p.m., and the drawdown of water level is feet
Bail test only - 86 GPM - 25' drawdown
Recovery data (taken after pump has been shut off) (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level
Complete Recovery in 5 minutes			

Date of test March 15, 1953
IF FLOWING WELL: Measured discharge g.p.m. on (Date)
Shut-in pressure at ground surface lbs. per sq. in. on (Date)
Water is controlled by (Cap, valve, etc.)

CASING: (Give diameter, commercial specifications and depth below ground surface of each casing size.)

16 in. diameter Standard Casing from 0 to 39.7 ft.
12 in. diameter Standard Casing from 0 to 257 ft.
in. diameter from to ft.
in. diameter from to ft.

Describe and show depth of shoe, plug, adapter, liner or other details:

Perforated casing or screens: NONE

(Number per foot and size of perforations, or describe screen)	from	to	ft.
	from	to	ft.
	from	to	ft.
	from	to	ft.
	from	to	ft.

LOG OF WELL OR TUNNEL: (Describe each stratum or formation clearly, indicate if water bearing, and give thickness and depth as indicated.)

MATERIAL	Thickness (Feet)	Depth to bottom (Feet)
See Attached Map		

(b) INFILTRATION TRENCH OR TUNNEL: Type

Dimensions: (Tunnel—length, course, and cross-sectional size) (Trench—minimum and maximum depths)

Bottom width .... ft. Discharge .... g.p.m. Date of test ....

Position of water bearing stratum with reference to portal of tunnel ....

Don E Gray
(Signature of well driller or other constructor)
CONSULTING ENGINEER
Larsen Bldg, Yakima, Wash
(Address)

STATE OF WASHINGTON,
County of Yakima } ss.

I, DON E GRAY, *being first duly sworn, do hereby certify that I am the driller or constructor of the aforesaid well or tunnel or trench who furnished the foregoing statement of facts; that I have read said statement and each and all of the items therein contained are true to the best of my knowledge and belief.*

Don E Gray
(Signature)

Subscribed and sworn to before me this 24 *day of* July 1953

Charles B Walters
Notary Public

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

WATER WELL REPORT

STATE OF WASHINGTON

Application No.
Permit No.

(1) OWNER: Name City of Grandview Address 116 Ave. "A" Grandview, Wash.

(2) LOCATION OF WELL: County Yakima SE 1/4 NE 1/4 Sec 23 T 9 N R 23 W.M.

Bearing and distance from section or subdivision corner

(3) PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☒ Irrigation ☐ Test Well ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one) 3
New well ☐ Method: Dug ☐ Bored ☒
Deepened ☐ Cable ☐ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well inches
Drilled ft. Depth of completed well ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 12 " Diam. from 0 ft. to 243 ft.
Threaded ☐ 10 " Diam. from 245 ft. to 1150 ft.
Welded ☐ " Diam. from ft. to ft.

Perforations: Yes ☐ No ☒
Type of perforator used
SIZE of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: Yes ☐ No ☒
Manufacturer's Name
Type Model No.
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes ☐ No ☒ Size of gravel
Gravel placed from ft. to ft.

Surface seal: Yes ☐ No ☐ To what depth? ft.
Material used in seal
Did any strata contain unusable water? Yes ☐ No ☐
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name Peerless
Type H.P. 100

(8) WATER LEVELS: Land-surface elevation above mean sea level 890 ft.
Static level 200 ft. below top of well Date 2/6/74
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☒ No ☐ If yes, by whom? Grant
Yield: gal./min. with 70 ft. drawdown after 10 hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test
Bailer test gal./min. with ft. drawdown after hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes ☐ No ☐

(10) WELL LOG:
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

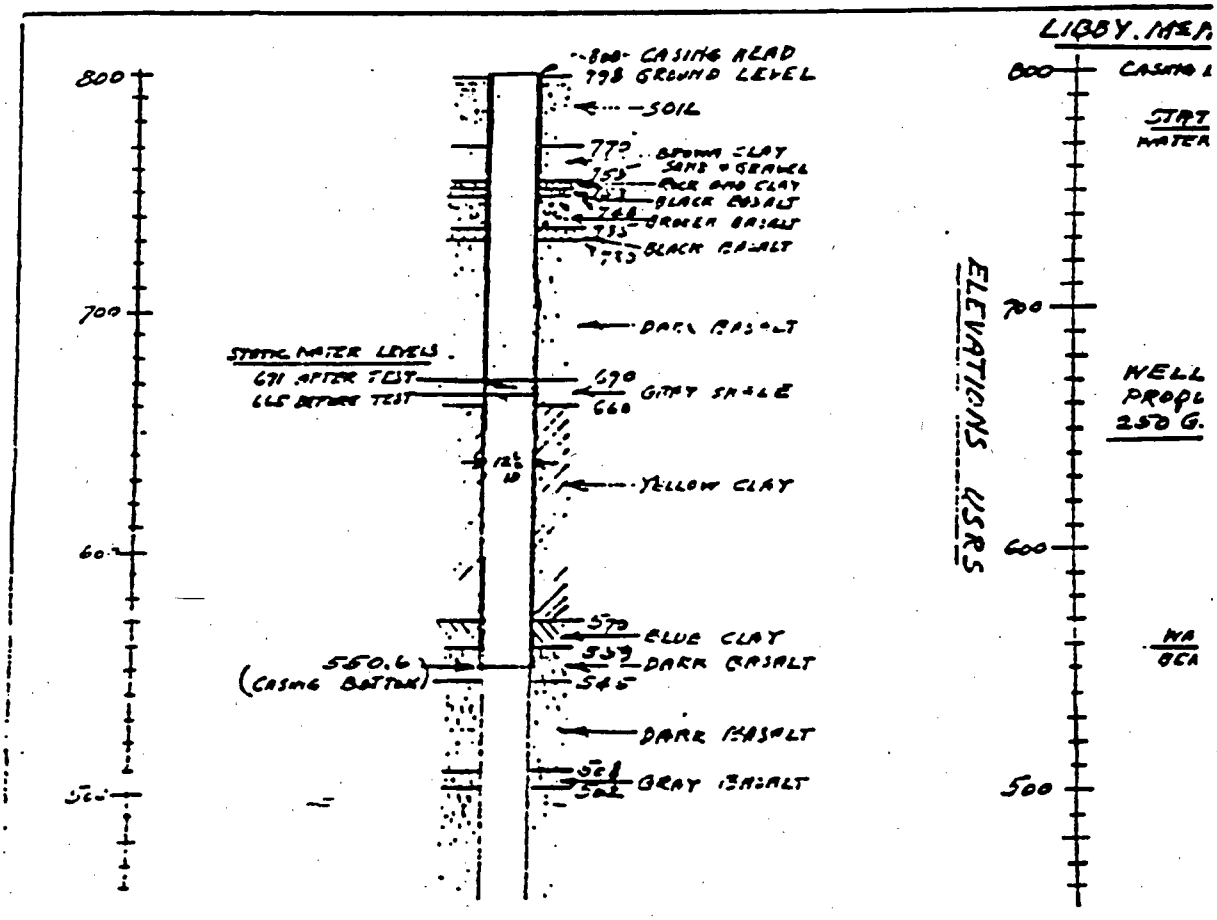
MATERIAL	FROM	TO

Work started 19 Completed 19

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME (Person, firm, or corporation) (Type or print)
Address
[Signed] (Well Driller)
License No. Date 19

ck/WRB



1630

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

WATER WELL REPORT

STATE OF WASHINGTON

Application No.

Permit No.

(1) OWNER: Name Jim NESMITH Address MIDVALE & HOLIDAY RD. MABTON

(2) LOCATION OF WELL: County YAKIMA – NE¼ SE¼ Sec 23 T. 9 N., R. 23 W.M.

Bearing and distance from section or subdivision corner

(3) PROPOSED USE: Domestic [X] Industrial [ ] Municipal [ ] Irrigation [ ] Test Well [ ] Other [ ]

(4) TYPE OF WORK: Owner's number of well (if more than one)

New well [X] Method: Dug [ ] Bored [ ]
Deepened [ ] Cable [ ] Driven [ ]
Reconditioned [ ] Rotary [X] Jetted [ ]

(5) DIMENSIONS: Diameter of well 8 inches.
Drilled 80 ft. Depth of completed well 80 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 6" Diam. from +4 ft. to 76 ft.
Threaded [ ] ." Diam. from ft. to ft.
Welded [ ] ." Diam. from ft. to ft.

Perforations: Yes [ ] No [X]
Type of perforator used
SIZE of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: Yes [ ] No [X]
Manufacturer's Name
Type Model No.
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes [ ] No [X] Size of gravel:
Gravel placed from ft. to ft.

Surface seal: Yes [X] No [ ] To what depth? 25 ft.
Material used in seal BENTONITE
Did any strata contain unusable water? Yes [ ] No [ ]
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name
Type: H.P.

(8) WATER LEVELS: Land-surface elevation above mean sea level ft.
Static level 0 ft. below top of well Date 4-21-89
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes [ ] No [ ] If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test
Bailer test 30+ gal./min. with 0 ft. drawdown after 2 hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes [ ] No [ ]

(10) WELL LOG: J

Formation: *Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.*

MATERIAL	FROM	TO
S.Lt	0	2
Sandy Loam	2	5
Hard Pan	5	7
Sand + Clay	7	20
Heavy Dark Sand	20	70
Sand + Gravel Water	70	80

RECEIVED
APR 24 1989

Work started 4-20, 19 89 Completed 4-21, 19 89

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME BACH DRILLING CO. (Person, firm, or corporation) (Type or print)

Address Rt 5 - Box 1010 E. Burg

[Signed] (Well Driller)

License No. 0836 Date 4-21, 19 89

(USE ADDITIONAL SHEETS IF NECESSARY)

ECY 050-1-20

WATER WELL REPORT

Original & 1st copy – Ecology, 2nd copy – owner, 3rd copy – driller

Construction/Decommission *("x" in circle)*

Ø Construction

O Decommission *ORIGINAL INSTALLATION Notice of Intent Number* 21363

CURRENT

Notice of Intent No. W209187

Unique Ecology Well ID Tag No. APK 146

Water Right Permit No. _____

Property Owner Name JUAN TASCUAL M

Well Street Address off Cherry lane

City Grandview County Yakima

Location NW 1/4-1/4 SW 1/4 Sec 23 Twn 9 R 23 EWM or WWM (circle one)

Lat/Long (s, t, r Still **REQUIRED**) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____

Tax Parcel No. _____

PROPOSED USE: ☑ Domestic ☐ Industrial ☐ Municipal ☐ DeWater ☐ Irrigation ☐ Test Well ☐ Other _____

TYPE OF WORK: Owner's number of well (if more than one) _____

☑ New well ☐ Reconditioned *Method:* ☐ Dug ☐ Bored ☐ Driven ☐ Deepened ☐ Cable ☑ Rotary ☐ Jetted

DIMENSIONS: Diameter of well 6 inches, drilled 270 ft. Depth of completed well 260 ft.

CONSTRUCTION DETAILS

Casing Installed: ☑ Welded 6" Diam. from +2 ft. to 78 ft.

☑ Liner installed 4" Diam. from -5 ft. to 260 ft.

☐ Threaded _____" Diam. from _____ ft. to _____ ft.

Perforations: ☑ Yes ☐ No

Type of perforator used Saw CUT

SIZE of perfs ¼ in. by 1 in. and no. of perfs 60 from 220 ft. to 260

Screens: ☐ Yes ☑ No ☐ K-Pac Location _____

Manufacturer's Name _____

Type _____ Model No. _____

Diam. _____ Slot size _____ from _____ ft. to _____ ft.

Diam. _____ Slot size _____ from _____ ft. to _____ ft.

Gravel/Filter packed: ☐ Yes ☑ No ☐ Size of gravel/sand _____

Materials placed from _____ ft. to _____ ft.

Surface Seal: ☑ Yes ☐ No To what depth? 20 ft.

Material used in seal Bentonite

Did any strata contain unusable water? ☐ Yes ☑ No

Type of water? _____ Depth of strata _____

Method of sealing strata off _____

PUMP: Manufacturer's Name _____

Type: _____ H.P. _____

WATER LEVELS: Land-surface elevation above mean sea level _____ ft.

Static level 87 ft. below top of well Date 11-1-06

Artesian pressure _____ lbs. per square inch Date _____

Artesian water is controlled by _____ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? ☐ Yes ☑ No If yes, by whom? _____

Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.

Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.

Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test _____

Bailer test _____ gal./min. with _____ ft. drawdown after _____ hrs.

Airtest 25 gal./min. with stem set at 260 ft. for 1 hrs.

Artesian flow _____ g.p.m. Date _____

Temperature of water _____ Was a chemical analysis made? ☐ Yes ☑ No

CONSTRUCTION OR DECOMMISSION PROCEDURE

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

MATERIAL	FROM	TO
Soil Gravel	0	18
Gravel	18	23
Clay	23	63
Black Basalt	63	88
Brown Basalt	88	102
Black Basalt	102	150
Tan Clay	150	193
Blue Clay	193	230
Sandstone water	230	245
Tan Clay	245	255
Sandstone water	255	270

DEPT OF ECOLOGY Received NOV 28 2006 CENTRAL REGIONAL OFFICE

Start Date 10-30-06 Completed Date 11-1-06

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☑ Driller ☐ Engineer ☐ Trainee Name (Print) David COX

Driller/Engineer/Trainee Signature David Cox

Driller or trainee License No. 2351

Drilling Company R.W. COX Drilling

Address P.O. BOX 5324

City, State, Zip Benton City Wash 99320

Contractor's Registration No. RWCOXDD225C Date 11-1-06

If TRAINEE,

Driller's Licensed No. _____

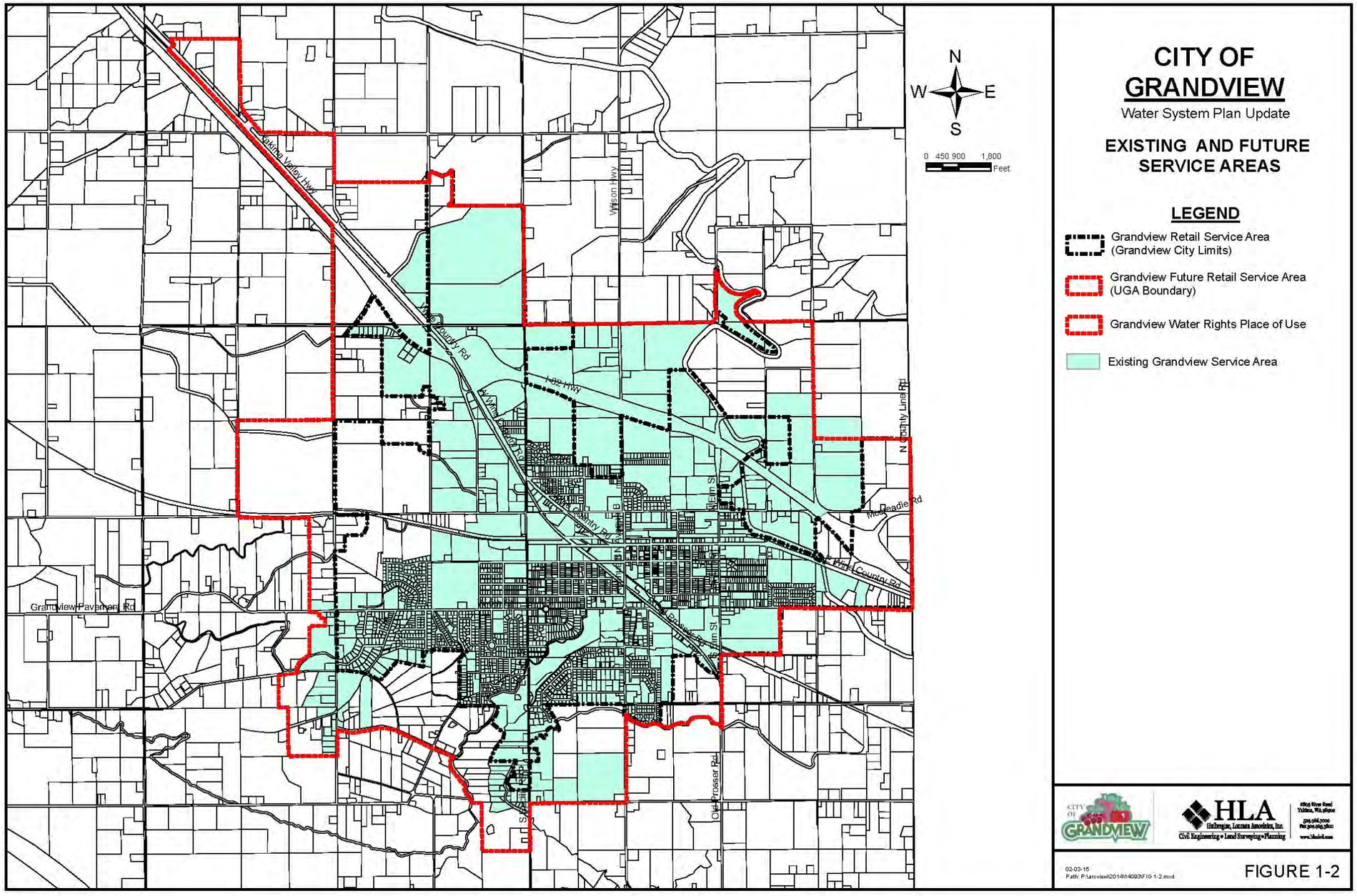
Driller's Signature _____

Ecology is an Equal Opportunity Employer.

APPENDIX K

GRANDVIEW WATER SERVICE AREA

Figure 3-1. City of Grandview Water System Retail Service Areas



Source: Huibregtse, Louman Associates, Inc., City of Grandview Water Plan, 2015.

APPENDIX L

AND TERRESTRIAL ECOLOGICAL EVALUATION

DEPARTMENT OF ECOLOGY
State of Washington

Voluntary Cleanup Program

Washington State Department of Ecology
Toxics Cleanup Program

TERRESTRIAL ECOLOGICAL EVALUATION FORM

Under the Model Toxics Control Act (MTCA), a terrestrial ecological evaluation is necessary if hazardous substances are released into the soils at a Site. In the event of such a release, you must take one of the following three actions as part of your investigation and cleanup of the Site:

1. Document an exclusion from further evaluation using the criteria in WAC 173-340-7491.
2. Conduct a simplified evaluation as set forth in WAC 173-340-7492.
3. Conduct a site-specific evaluation as set forth in WAC 173-340-7493.

When requesting a written opinion under the Voluntary Cleanup Program (VCP), you must complete this form and submit it to the Department of Ecology (Ecology). The form documents the type and results of your evaluation.

Completion of this form is not sufficient to document your evaluation. You still need to document your analysis and the basis for your conclusion in your cleanup plan or report.

If you have questions about how to conduct a terrestrial ecological evaluation, please contact the Ecology site manager assigned to your Site. For additional guidance, please refer to www.ecy.wa.gov/programs/tcp/policies/terrestrial/TEEHome.htm.

Step 1: IDENTIFY HAZARDOUS WASTE SITE

Please identify below the hazardous waste site for which you are documenting an evaluation.	
Facility/Site Name: Site No. 0700	
Facility/Site Address: 100 East Wine Country Road, Grandview, WA	
Facility/Site No: 91454995	VCP Project No.:

Step 2: IDENTIFY EVALUATOR

Please identify below the person who conducted the evaluation and their contact information.		
Name: Laura Skow		Title: Project Manager
Organization: ES Engineering Services, LLC		
Mailing address: 1036 W. Taft Avenue		
City: Orange	State: CA	Zip code: 92865
Phone: 714-919-6533	Fax: 714-919-6501	E-mail: Lskow@es-online.com

Step 3: DOCUMENT EVALUATION TYPE AND RESULTS

A. Exclusion from further evaluation.

1. Does the Site qualify for an exclusion from further evaluation?

☐ Yes *If you answered **"YES,"** then answer **Question 2.***

☒ No or Unknown *If you answered **"NO" or "UKNOWN,"** then skip to **Step 3B** of this form.*

2. What is the basis for the exclusion? *Check all that apply. Then skip to **Step 4** of this form.*

Point of Compliance: WAC 173-340-7491(1)(a)

☐ All soil contamination is, or will be,* at least 15 feet below the surface.

☐ All soil contamination is, or will be,* at least 6 feet below the surface (or alternative depth if approved by Ecology), and institutional controls are used to manage remaining contamination.

Barriers to Exposure: WAC 173-340-7491(1)(b)

☐ All contaminated soil, is or will be,* covered by physical barriers (such as buildings or paved roads) that prevent exposure to plants and wildlife, and institutional controls are used to manage remaining contamination.

Undeveloped Land: WAC 173-340-7491(1)(c)

☐ There is less than 0.25 acres of contiguous# undeveloped± land on or within 500 feet of any area of the Site and any of the following chemicals is present: chlorinated dioxins or furans, PCB mixtures, DDT, DDE, DDD, aldrin, chlordane, dieldrin, endosulfan, endrin, heptachlor, heptachlor epoxide, benzene hexachloride, toxaphene, hexachlorobenzene, pentachlorophenol, or pentachlorobenzene.

☐ For sites not containing any of the chemicals mentioned above, there is less than 1.5 acres of contiguous# undeveloped± land on or within 500 feet of any area of the Site.

Background Concentrations: WAC 173-340-7491(1)(d)

☐ Concentrations of hazardous substances in soil do not exceed natural background levels as described in WAC 173-340-200 and 173-340-709.

* An exclusion based on future land use must have a completion date for future development that is acceptable to Ecology.

± "Undeveloped land" is land that is not covered by building, roads, paved areas, or other barriers that would prevent wildlife from feeding on plants, earthworms, insects, or other food in or on the soil.

"Contiguous" undeveloped land is an area of undeveloped land that is not divided into smaller areas of highways, extensive paving, or similar structures that are likely to reduce the potential use of the overall area by wildlife.

B. Simplified evaluation.

1. Does the Site qualify for a simplified evaluation?

☒ Yes — *If you answered **"YES,"** then answer **Question 2** below.*

☐ No or Unknown — *If you answered **"NO"** or **"UNKNOWN,"** then skip to **Step 3C** of this form.*

2. Did you conduct a simplified evaluation?

☒ Yes — *If you answered **"YES,"** then answer **Question 3** below.*

☐ No — *If you answered **"NO,"** then skip to **Step 3C** of this form.*

3. Was further evaluation necessary?

☐ Yes — *If you answered **"YES,"** then answer **Question 4** below.*

☒ No — *If you answered **"NO,"** then answer **Question 5** below.*

4. If further evaluation was necessary, what did you do?

☐ Used the concentrations listed in Table 749-2 as cleanup levels. *If so, then skip to **Step 4** of this form.*

☐ Conducted a site-specific evaluation. *If so, then skip to **Step 3C** of this form.*

5. If no further evaluation was necessary, what was the reason? *Check all that apply. Then skip to **Step 4** of this form.*

Exposure Analysis: WAC 173-340-7492(2)(a)

☐ Area of soil contamination at the Site is not more than 350 square feet.

☐ Current or planned land use makes wildlife exposure unlikely. Used Table 749-1.

Pathway Analysis: WAC 173-340-7492(2)(b)

☐ No potential exposure pathways from soil contamination to ecological receptors.

Contaminant Analysis: WAC 173-340-7492(2)(c)

☒ No contaminant listed in Table 749-2 is, or will be, present in the upper 15 feet at concentrations that exceed the values listed in Table 749-2.

☐ No contaminant listed in Table 749-2 is, or will be, present in the upper 6 feet (or alternative depth if approved by Ecology) at concentrations that exceed the values listed in Table 749-2, and institutional controls are used to manage remaining contamination.

☐ No contaminant listed in Table 749-2 is, or will be, present in the upper 15 feet at concentrations likely to be toxic or have the potential to bioaccumulate as determined using Ecology-approved bioassays.

☐ No contaminant listed in Table 749-2 is, or will be, present in the upper 6 feet (or alternative depth if approved by Ecology) at concentrations likely to be toxic or have the potential to bioaccumulate as determined using Ecology-approved bioassays, and institutional controls are used to manage remaining contamination.

C. Site-specific evaluation. A site-specific evaluation process consists of two parts: (1) formulating the problem, and (2) selecting the methods for addressing the identified problem. Both steps require consultation with and approval by Ecology. *See* WAC 173-340-7493(1)(c).

1. Was there a problem? *See* WAC 173-340-7493(2).

☐ Yes *If you answered **"YES,"** then answer **Question 2** below.*

☐ No *If you answered **"NO,"** then identify the reason here and then skip to **Question 5** below:*

- ☐ No issues were identified during the problem formulation step.
- ☐ While issues were identified, those issues were addressed by the cleanup actions for protecting human health.

2. What did you do to resolve the problem? *See* WAC 173-340-7493(3).

- ☐ Used the concentrations listed in Table 749-3 as cleanup levels. *If so, then skip to **Question 5** below.*
- ☐ Used one or more of the methods listed in WAC 173-340-7493(3) to evaluate and address the identified problem. *If so, then answer **Questions 3 and 4** below.*

3. If you conducted further site-specific evaluations, what methods did you use? *Check all that apply. See* WAC 173-340-7493(3).

- ☐ Literature surveys.
- ☐ Soil bioassays.
- ☐ Wildlife exposure model.
- ☐ Biomarkers.
- ☐ Site-specific field studies.
- ☐ Weight of evidence.
- ☐ Other methods approved by Ecology. If so, please specify:

4. What was the result of those evaluations?

- ☐ Confirmed there was no problem.
- ☐ Confirmed there was a problem and established site-specific cleanup levels.

5. Have you already obtained Ecology's approval of both your problem formulation and problem resolution steps?

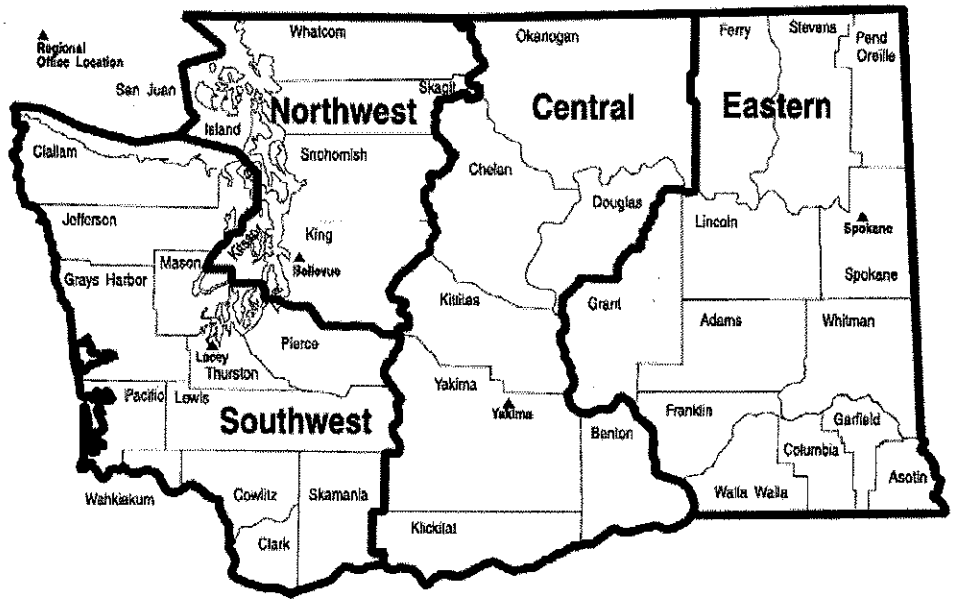
☐ Yes If so, please identify the Ecology staff who approved those steps:

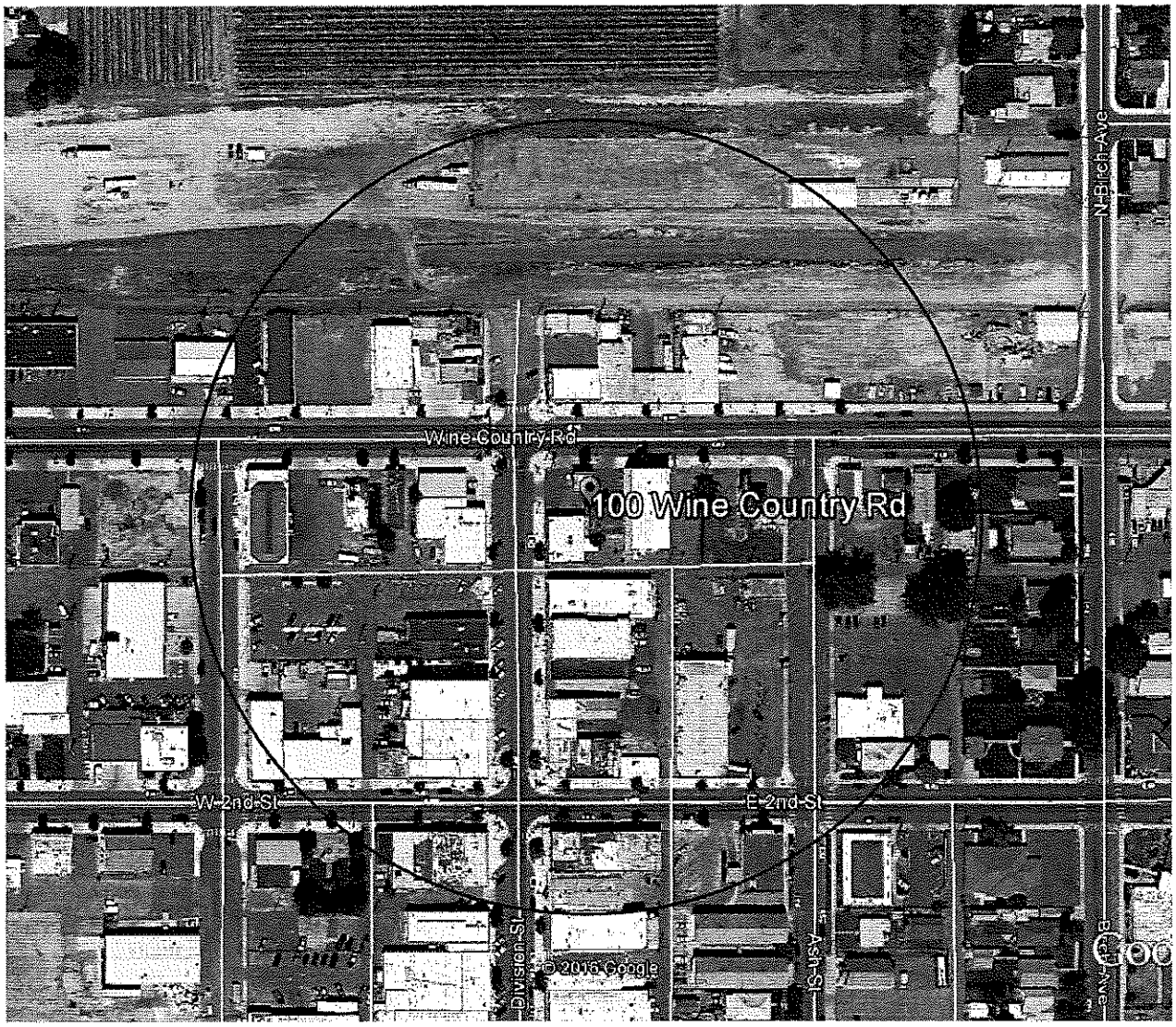
☐ No

Step 4: SUBMITTAL

Please mail your completed form to the Ecology site manager assigned to your Site. If a site manager has not yet been assigned, please mail your completed form to the Ecology regional office for the County in which your Site is located.

Northwest Region: Attn: VCP Coordinator 3190 160th Ave. SE Bellevue, WA 98008-5452	**Central Region:** Attn: VCP Coordinator 1250 West Alder St. Union Gap, WA 98903-0009
Southwest Region: Attn: VCP Coordinator P.O. Box 47775 Olympia, WA 98504-7775	**Eastern Region:** Attn: VCP Coordinator N. 4601 Monroe Spokane WA 99205-1295





feet 900

meters 200

N

LEGEND

APPROXIMATE 500 FOOT RADIUS

SOURCE: GOOGLE EARTH

environmental services
ES Engineering Services, LLC
1038 W. Taft Avenue • Orange, CA 92865 • (714) 919-6500

FIGURE

RADIUS MAP

Site No. 0700
100 E. Wine Country Road
Grandview, Washington

DATE DRAWN
05/26/2016

PROJECT NO.
730

FILE NO.
622F-RM

Terrestrial Ecological Evaluation Process- Simplified or Site-Specific Evaluation?

Documentation Form

	Terrestrial Concern	Response (Circle One)
*1	Is the site is located on or directly adjacent to an area where management or land use plans will maintain or restore native or semi-native vegetation?	Yes / (No)
*2a	Is the site used by a threatened or endangered species?	Yes / (No)
*2b	Is the site used by a wildlife species classified by the state department of fish and wildlife as a "priority species" or "species of concern" under Title 77 RCW?	Yes / (No)
*2c	Is the site used by a plant species classified by the Washington state department of Natural Resources natural heritage program as "endangered," "threatened," or "sensitive" under Title 79 RCW.	Yes / (No)
*3	Is the site (area where the contamination is located) located on a property that contains at least ten acres of native vegetation within 500 feet of the area where the contamination is located?	Yes / (No)
4	Has the department determined that the site may present a risk to significant wildlife populations?	Yes / (No)

*1 This includes for example, green-belts, protected wetlands, forestlands, locally designated environmentally sensitive areas, open space areas managed for wildlife, and some parks or outdoor recreation areas. This does not include park areas used for intensive sport activities such as baseball or football.

*2a What are the threatened or endangered species in Washington state?

*2b Which plant species are classified as threatened, endangered, or sensitive? Where can I find out more information about this topic?

*2c For plants, "used" means that a plant species grows at the site or has been found growing at the site. For animals, "used" means that individuals of a species have been observed to live, feed or breed at the site.

*3 For this analysis, do not include native vegetation beyond the property boundary.

The following sources shall be used in making this determination: Natural Vegetation of Oregon and Washington, J.F. Franklin and C.T. Dyrness, Oregon State University Press, 1988, and L.C. Hitchcock, C.L. Hitchcock, J.W. Thompson and A. Cronquist, 1955-1969, Vascular Plants of the Pacific Northwest(5 volumes). Areas planted with native species for ornamental or landscaping purposes shall not be considered to be native vegetation. [WAC 173-340-7491(2)(c)(i)]

(Here's a link to the Seattle Public Library and the Washington State Library to borrow a copy of Natural Vegetation of Oregon and Washington, J.F. Franklin and C.T. Dyrness, Oregon State University Press, 1988, or you may purchase it through your favorite bookseller. Here's an additional link to a useful online Field Guide to Selected Rare Plants of Washington developed by the Washington State Department of Natural Resources' Natural Heritage Program (WNHP) and the Spokane District of the U.S.D.I. Bureau of Land Management (BLM) which contains fact sheets for 139 vascular plant species and one lichen species. Here is an aid to calculating area and an aerial photo depicting a site, its 500 foot boundary and several labeled circles identifying various areas for reference in judging the area of native vegetation within the 500 foot radius.

[Exclusions Main] [TEE Definitions] [Simplified or Site-Specific?] [Simplified Ecological Evaluation] [Site-Specific Ecological Evaluation] [WAC 173-340-7493] [Index of Tables]

[TEE Home]

Washington State Department of Ecology
Toxics Cleanup Program

Table 749-2
[PDF Version]

Priority contaminants of ecological concern for sites that qualify for the simplified terrestrial ecological evaluation[a]

Soil Concentration (mg/kg)		
Priority Contaminant	Unrestricted Land Use[b]	Industrial or Commercial Site
METALS[c]		
Antimony	See Note [d]	See Note [d]
Arsenic III	20 mg/kg	20 mg/kg
Arsenic IV	95 mg/kg	260 mg/kg
Barium	1,250 mg/kg	1,320mg/kg
Beryllium	25 mg/kg	See Note [d]
Cadmium	25 mg/kg	36 mg/kg
Chromium (total)	42 mg/kg	135 mg/kg
Cobalt	See Note [d]	See Note [d]
Copper	100 mg/kg	550 mg/kg
Lead	220 mg/kg	220 mg/kg
Magnesium	See Note [d]	See Note [d]
Manganese	See Note [d]	23,500 mg/kg
Mercury, inorganic	9 mg/kg	9 mg/kg
Mercury, organic	0.7 mg/kg	0.7 mg/kg
Molybdenum	See Note [d]	71 mg/kg
Nickel	100 mg/kg	1,850 mg/kg
Selenium	0.8 mg/kg	0.8 mg/kg
Silver	See Note [d]	See Note [d]
Tin	275 mg/kg	See Note [d]
Vanadium	26 mg/kg	See Note [d]
Zinc	270 mg/kg	570 mg/kg

PESTICIDES		
Aldicarb/aldicarb sulfone (total)	See Note [d]	See Note [d]
Aldrin	0.17 mg/kg	0.17 mg/kg
Benzene hexachloride (including lindane)	10 mg/kg	10 mg/kg
Carbofuran	See Note [d]	See Note [d]
Chlordane	1 mg/kg	7 mg/kg
Chlorpyrifos/chlorpyrifos-methal (total)	See Note [d]	See Note [d]
DDT/DDD/DDE	1 mg/kg	1 mg/kg
Dieldrin	0.17 mg/kg	0.17 mg/kg
Endosulfan	See Note [d]	See Note [d]
Endrin	0.4 mg/kg	0.4 mg/kg
Heptachlor/heptachlor epoxide (total)	0.6 mg/kg	0.6 mg/kg
Hexachlorobenzene	31 mg/kg	31 mg/kg
Parathion/methyl parathion (total)	See Note [d]	See Note [d]
Pentachlorophenol	11 mg/kg	11 mg/kg
Toxaphene	See Note [d]	See Note [d]
OTHER CHLORINATED ORGANICS		
Chlorinated dibenzofurans (total)	3E-06 mg/kg	3E-06 mg/kg
Dioxins	5E-06 mg/kg	5E-06 mg/kg
Hexchlorophene	See Note [d]	See Note [d]
PCB mixtures (total)	2 mg/kg	2 mg/kg
Pentachlorobenzene	168 mg/kg	See Note [d]
OTHER NONCHLORINATED ORGANICS		
Acenaphthene	See Note [d]	See Note [d]
Benzo(a)pyrene	30 mg/kg	300 mg/kg
Bis (2-ethylhexyl) phthalate	See Note [d]	See Note [d]
Di-n-butyl phthalate	200 mg/kg	See Note [d]
PETROLEUM		
Gasoline Range Organics	200 mg/kg	12,000 mg/kg

		except that the concentration shall not exceed residual saturation at the soil surface.
Diesel Range Organics Common examples of diesel range organics include: Diesel #2, Fuel Oil #2, and light oil including some bunker oils. Refer to Table 830-1	460 mg/kg	15,000 mg/kg except that the concentration shall not exceed residual saturation at the soil surface.

Table 749-2 Notes

[a] Caution on misusing these chemical concentration numbers. These values have been developed for use at sites where a site-specific terrestrial ecological evaluation is not required. They are not intended to be protective of terrestrial ecological receptors at every site. Exceedances of the values in this table do not necessarily trigger requirements for cleanup action under this chapter. The table is not intended for purposes such as evaluating sludges or wastes.

This list does not imply that sampling must be conducted for each of these chemicals at every site. Sampling should be conducted for those chemicals that might be present based on available information, such as current and past uses of chemicals at the site.

[b] Applies to any site that does not meet the definition of industrial or commercial.

[c] For arsenic, use the valence state most likely to be appropriate for site conditions, unless laboratory information is available. Where soil conditions alternate between saturated, anaerobic and unsaturated, aerobic states, resulting in the alternating presence of arsenic III and arsenic V, the arsenic III concentrations shall apply.

[d] Safe concentration has not yet been established.

[Area Calculation Aid] [Aerial Photo with Area Designations] [TEE Table 749-1] [TEE Table 749-2] [TEE Table 749-3] [TEE Table 749-4] [TEE Table 749-5] [TEE Table 830-1]

[Exclusions Main] [TEE Definitions] [Simplified or Site-Specific?] [Simplified Ecological Evaluation] [Site-Specific Ecological Evaluation] [WAC 173-340-7493]

[TEE Home]