associated
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incorporated

Cleanup Action Report

WINGER PROPERTY/GOLDEN HOMES

Poulsbo, Washington

Prepared For:

WINGER FAMILY LIMTED AND
THE WASHINGTON STATE DEPARTMENT OF ECOLOGY

Project No. KV160495A
December 20, 2016

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December 20, 2016
Project No. KV1604955A

Department of Ecology
Northwest Regional Office
3190 160th Avenue SE
Bellevue, Washington 98008

Attention: Louis Bardy, VCP Coordinator

Subject: Cleanup Action Report
Winger Land/Golden Homes
Facility Site ID #5181107
Cleanup Site ID #7621
19647 Viking Way NW
Poulsbo, Washington

Dear Mr. Bardy,

This letter accompanies the Cleanup Action Report (CAR) for the above-referenced property prepared by Associated Earth Sciences, Inc. (AESI). The findings and conclusions in this report are based on our interpretation of information currently available and are subject to the limitations in the attached report.

We appreciate the opportunity to work with you on this project. If you have questions regarding the scope of our study or our conclusions, please do not hesitate to contact us at (425) 827-7701.

Sincerely,
ASSOCIATED EARTH SCIENCES, INC.
Kirkland, Washington

Jon N. Sondergaard, L.G., L.E.G.
Senior Principal Engineering Geologist

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CLEANUP ACTION REPORT
WINGER LAND/GOLDEN HOMES

Poulsbo, Washington

Prepared for:
Department of Ecology
Northwest Regional Office
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Bellevue, Washington 98008

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TABLE OF CONTENTS

Page

EXECUTIVE SUMMARY iv
INTRODUCTION 1
Purpose 1
Previous Studies 1
Site History 2
SITE CHARACTERIZATION 2
Geology and Hydrogeology 2
Regional Hydrogeologic Setting 2
Local Hydrogeologic Setting 3
Conceptual Site Model 4
Contamination Characterization 5
Soil Samples 5
Ground Water Samples 7
TERRESTRIAL ECOLOGICAL EVALUATION 10
REMEDIAL ACTION 10
Cleanup Action Overview 10
Regulatory Framework 10
Human Health and Environmental Concerns 11
Cleanup Standards 11
Contaminants of Concern 11
Cleanup Levels 11
Cleanup Action Alternatives 11
Initial Screening of Alternatives 12
Model Remedy 1 Adherence to MTCA 12
DESCRIPTION OF SELECTED REMEDY 13
Site Description 13
Description of the Cleanup Action 13
Cleanup Standards and Point of Compliance 14
Applicable, Relevant and Appropriate Requirements (ARARs) 14
Restoration Timeframe 15
Compliance Monitoring 15
Soil Sampling 15
Ground Water Sampling 16
Schedule for Implementation 19
Institutional/Engineering Controls 19
CONCLUSION 19
REFERENCES 21

TABLE OF CONTENTS - CONTINUED

Page

LIST OF TABLES

Table 1. Ground Water Elevations (feet) 4
Table 2. Site Assessment Analytical Results (Soil) NWTPH-Dx 5
Table 3. Site Assessment Analytical Results (Soil) NWTPH-GX/BTEX 6
Table 4. Site Assessment Analytical Results (Soil) 6
Table 5. Geoprobe Soil Sample Analytical Results Method NWTPH-Gx/BTEX* 7
Table 6. Ground Water Analytical Results Method NWTPH-Gx/BTEX* and Total Lead 8
Table 7. Ground Water Analytical Results Volatile Organic Compounds (VOCs) 8
Table 8. Terrestrial Ecological Exposure Evaluation 10
Table 9. MTCA Method A Site Cleanup Levels 11
Table 10. Evaluation of Remedial Action 13
Table 11. Soil Cleanup Confirmation Sample Analytical Results Method NWTPH-Gx/BTEX* 16
Table 12. Ground Water Confirmation Samples Analytical Results 17
Table 13. Ground Water Analytical Results Volatile Organic Compounds (VOCs) 18

LIST OF FIGURES

Figure 1. Vicinity Map
Figure 2. Site and Surrounding Area
Figure 3. Conceptual Site Model Geologic Cross Section A-A'
Figure 4. Ground Water Flow Map
Figure 5. Site Schematic with Characterization Samples
Figure 6. Air Sparging System
Figure 7. Soil Confirmation Samples

LIST OF APPENDICES

Appendix A. Well Logs
Appendix B. Laboratory Test Certificates

LIST OF ACRONYMS AND ABBREVIATIONS

ARAR	Applicable or Relevant and Appropriate Requirements
AESI	Associated Earth Sciences, Incorporated
bgs	below ground surface
CAR	Cleanup Action Plan
CERCLA	Comprehension Environmental Response, Compensation and Liability Act
COC	Contaminant/Chemical of Concern
CSID	Cleanup Site Identification number
CSM	Conceptual Site Model
CUL	clean-up levels
Ecology	Washington State Department of Ecology
EPA	Environmental Protection Agency
ESA	Environmental Site Assessment
FOC	Fraction of Organic Carbon
FSID	Facility Site identification number
MTCA	Model Toxics Control Act
ORPH	Oil Range Petroleum Hydrocarbons
PID	Photoionization detector
PSD	particle size distribution
QAPP	Quality Assurance Project Plan
RCRA	Resource Conservation and Recovery Act
RCW	Revised Code of Washington
REC	Recognized Environmental Condition
SAP	Sampling and Analysis Plan
SEPA	State Environmental Policy Act
TEE	Terrestrial Ecological Evaluation
TPH	total petroleum hydrocarbon
VCP	Voluntary Cleanup Program
VI	Vapor Intrusion
VOC	Volatile Organic Compound
WAC	Washington State Administrative Code

EXECUTIVE SUMMARY

This document presents the Cleanup Action Report (CAR) for the Winger Property/Golden Homes site in Poulsbo, Washington (Figure 1). The site and surrounding area are shown on Figure 2. This CAR was prepared by Associated Earth Sciences, Inc. (AESI) in collaboration with the Washington State Department of Ecology (Ecology). This CAR has been prepared to meet the requirements of the Model Toxics Control Cleanup Act (MTCA) administered by Ecology under Chapter 173-340 of the *Washington Administrative Code* (WAC). This CAR describes AESI's and Ecology's cleanup action for this site and presents the information necessary to document that the Site has been cleaned up in accordance with MTCA.

Two previously unreported underground storage tanks (USTs) were reported at the site in 2003. The USTs were reportedly installed at the site in the 1970's by a previous property owner. The current property owners purchased the property in the 1980's but reportedly did not use the USTs. The USTs consisted of one 1,000-gallon gasoline UST and one 500-gallon diesel UST. Site characterization activities performed in 2003 encountered soil with concentrations of gasoline and benzene above their respective MTCA Method A cleanup levels around the gasoline UST. Ground water contamination was not encountered during site characterization or remediation activities. The USTs were removed from the property and contaminated soil was excavated from around the gasoline UST in March 2003. Confirmation sampling at the time indicated benzene concentrations in soil samples collected from the southwest and northeast portion of the excavation contained benzene concentrations slightly above the MTCA Method A cleanup levels. An air sparging system was installed within the remedial excavation after removal of the contaminated soil and operated until the cessation of ground water monitoring. Three ground water monitoring wells were installed at the Site in May 2003 and ground water monitoring was completed for four consecutive quarters from May 2003 to May 2004. Ground water monitoring indicated no detectable concentrations of petroleum hydrocarbons, benzene, toluene, ethylbenzene, and xylenes (BTEX) over four consecutive quarters. Soil and ground water confirmation samples were collected at the locations of previously identified soil contamination at the southwest and northeast portion of the remedial excavation in October 2016. Petroleum hydrocarbons and BETX concentrations in soil or ground water were not detected at concentrations exceeding the laboratory reporting limits. Remediation and post-remediation monitoring activities at the site have been successfully completed.

INTRODUCTION

Purpose

This document is the Cleanup Action Report (CAR) for the Winger Property/Golden Homes property (Site) located in Poulsbo, Washington. The general location of the Site is shown on Figure 1. A CAR is required as part of the site cleanup process under Chapter 173-340 *Washington Administrative Code* (WAC), Model Toxics Control Act (MTCA) Regulations. The purpose of the CAR is to summarize and document the results of the remedial action and confirmatory sampling and analyses, including long term monitoring. More specifically, this report:

- Describes and characterizes the Site;
- Summarizes current site conditions;
- Summarizes the cleanup action alternatives considered in the remedy selection process;
- Describes the selected cleanup action for the Site and the rational for selecting this alternative;
- Identifies site-specific cleanup levels and points of compliance for each hazardous substance and medium of concern for the proposed cleanup action;
- Identifies applicable state and federal laws for the proposed cleanup action;
- Discusses compliance monitoring requirements; and
- Presents the results of the remedial action and site monitoring.

This CAR is being submitted to Ecology as part of an application package for entry into the Voluntary Cleanup Program (VCP) with the desire to obtain a No Further Action (NFA) determination for the Site. The site characterization, remedial actions, and compliance monitoring at the Site were completed as an independent action by the property owner and mostly occurred between March 2003 and June 2004. Final soil and water confirmation sampling and analyses occurred in October 2016.

Previous Studies

To our knowledge, the following studies have been previously completed at the Site. Detailed listings of these documents are provided in the References section of the CAR and copies of the reports are included in the VCP application submittal to Ecology.

1. "Underground Storage Tank Site Assessment Report, Winger Property," AESI, May 2003.
2. "Independent Cleanup and Ground Water Characterization Report, Winger Land Property," AESI, June 2003.
3. "Ground Water Monitoring Report, Third Quarter, 2003," AESI, December 2003.
4. "Ground Water Monitoring Report, Winter Quarter, 2003-2004," AESI, June 2004
5. "Ground Water Monitoring Report, Spring Quarter, 2004," AESI, June 2004.
6. "Site Hazard Assessment: Facility Site ID #:5181107," Kitsap Public Health District, August, 2015

Site History

The site has historically been commercial and utilized underground storage tanks (USTs) for the on-site use of petroleum products. There were no records on file at Ecology indicating that registered tanks were present at this site. According to anecdotal reports from the individuals familiar with the site, the tanks contained diesel and gasoline and were used for fueling purposes. The tanks were reportedly installed sometime in the 1970s. The current property owners acquired the property in the 1980s, but reportedly did not use the tanks. During a request for refinancing of the property, the abandoned tanks were disclosed to the lender, who required soil testing and tank removal prior to funding the loan.

SITE CHARACTERIZATION

Geology and Hydrogeology

Regional Hydrogeologic Setting

Surficial geologic conditions within the Puget Lowland and the subject Site are primarily the result of multiple periods of continental glaciation, during which a vast ice sheet advanced south from the mountains of British Columbia as a broad ice tongue called the "Puget lobe" and covered much of the Puget Lowland of western Washington during the last 2.4 million years. During each glacial advance and retreat, rivers emanating from the ice sheet deposited thick sequences of coarse-grained material (glacial outwash) and glacial till (an unsorted mixture of sand, silt, clay, and gravel). The ice sheets disrupted drainage systems and caused rivers to back up and form large lakes. These lake (lacustrine) sediments consist of fine sands and silts. During the time period between glaciations, the Puget Lowland was likely much like today, with primarily low-energy deposition occurring within floodplains, sedimentation in lakes, wetlands, bogs and streams, weathering of existing soils, and occasional large lahars or other volcanic events.

The most recent glacial episode, the Vashon Stade of the Fraser Glaciation, is largely responsible for the present topography throughout the Puget Lowland. Elongated hills and swales on uplands parallel the flow direction of the Vashon ice sheet that occupied the Puget

Lowland about 15,000 years ago. The upland areas are bordered by lower-elevation valleys formed by meltwater streams emanating from the retreating ice sheet. These valleys are filled with recessional outwash deposits.

Poulsbo, Washington is located on a till-mantled upland that is truncated to the west by Liberty Bay, a marine embayment connected to Puget Sound. The upland is cored with a complex series of older unconsolidated sediments that can extend several hundred feet below the ground surface and are capped with Vashon lodgement till. Regional studies indicate that the Vashon lodgement till is underlain by Vashon advance outwash and older fine- and coarse-grained units.

Following the retreat of the Vashon-age ice sheet in the study area, streams incised through Vashon-age outwash sediments. Mass-wasting deposits of landslides and colluvium (small incoherent deposits from upper slopes) are common along the margins of the incised drainages. Post-glacial streams, such as Duncan Creek and Beaver Creek, created relatively steep slopes that expose pre-Vashon-age sediments in the valley walls. Narrow bands of alluvium have been deposited within the stream channel, and are composed mainly of sand and gravel. Wetlands occur throughout the study area, particularly in closed depressions in the till-mantled surface.

Ground water in the study area is contained within unconsolidated sediments of glacial and nonglacial origin. The uppermost water-bearing units include recent alluvium (Qal), Vashon recessional outwash (Qvr), Vashon ice-contact deposits (Qgic), and the weathered soils above Vashon lodgement till. Units Qal, Qvr, Qgic, and the weathered till soils typically provide fairly limited quantities of water to wells, but shallow water contained within these units may provide substantial baseflow to wetlands and small streams. Other aquifer units are contained primarily within deeper glacial units such as the Vashon advance outwash (Qva) and the pre-Vashon outwash sand (Qpos). It is important to recognize that all the geologic units are discontinuous in nature due to the complex erosional and depositional history of the area. Although the aquifer and aquitards are described as regionally extensive units, in actuality, textural variability within the units may result in a more complex assemblage of interfingered aquifers and aquitards.

Local Hydrogeologic Setting

As depicted on the *Geologic Map of the Seabeck and Poulsbo 7.5-minute Quadrangles* (Washington Division of Geology and Earth Resources [WDGER], 2013), the Site is directly underlain by Vashon ice-contact deposits that typically consist of cobble and pebble gravel, sand, ablation till, flow till, lodgement till, and lacustrine silt. The ice-contact deposits are underlain by Vashon lodgement till that typically consists of a diamicton of clay, silt, sand, and gravel with isolated boulders.

The Site is located approximately 9,000 feet west of Liberty Bay with elevations ranging from about 50 to 80 feet above sea level. While the property generally slopes down to the east, most of the site is relatively flat with elevations beginning to rise on the west side, west of the shop, where the property slopes steeply up for a height of approximately 15 feet to the west property line. Regional shallow ground water flow is interpreted to flow towards the east to Liberty Bay.

Explorations completed at the Site (MW-1 through MW-3,MW-102, and MW-103 [Appendix A]) indicate the Site is underlain by a thin veneer of fill overlying 7 to 9 feet of medium dense, moist to wet, silty fine sand with gravel interpreted to be Vashon ice-contact deposits. The ice contact deposits are underlain by dense to very dense silty sand interpreted to be Vashon lodgement till to the full depths explored of approximately 12 feet (Figure 3).

As measured in December 2016, shallow ground water at the Site occurs at depths of approximately 2 to 4 feet below the existing site grade and is perched within the ice-contact deposits above the glacial till. At the time of drilling (ATD) wells MW-1 through MW-3 in 2003, ground water occurred at a depth of 8 to 9 feet. Measured ground water elevations are shown in Table 1. The original monitoring wells MW-2 and MW-3 were buried by fill during the most recent site grading activities that leveled the parking lot in that area. Original well MW-1 still remains. A search for the original wells using a metal detector and ground penetrating radar (GPR) failed to locate the original wells. In order to provide complete site characterization, new wells (MW-102 and MW-103) were installed in the vicinity of the original wells in December 2016.

Table 1
Ground Water Elevations (feet)

Well Number	Date	Depth to Water (feet)	Local TOC Elev. (feet)	Local TOC Elev. Difference (feet)	EIM Map-derived NAVD88 Elev. (feet)	Converted NAVD88 TOC Elev. (feet)	Ground Water NAVD88 Elev. (feet)
Baseline	12/7/16	NA	99.90	0	64.00	NA	NA
MW-1	12/7/16	2.53	99.40	0.4	NA	63.60	61.07
MW-102	12/7/16	3.22	91.92	7.98	NA	56.02	52.80
MW-103	12/7/16	4.15	93.09	6.81	NA	57.19	53.04

TOC – Top of Casing
EIM – Environmental Information Management (Ecology)

Conceptual Site Model

The Site is located on the east flank of a glaciated till upland just east of the Puget Sound embayment of Liberty Bay. The Site topography slopes moderately to gently down to the east and is mantled by a thin veneer of fill that overlies Vashon ice-contact deposits over Vashon lodgement till. The shallow ground water recharge is via precipitation that infiltrates into the ice-contact deposits. In the past, the Site was unpaved and allowed the direct infiltration of

precipitation on the property. Currently most of the site is paved so that recharge to the shallow ground water comes primarily from the till upland to the west which is also mantled with ice-contact deposits. Shallow ground water beneath the Site occurs at a depth of about 2 to 4 feet below the ground surface and is perched on top of the glacial till (Figure 3). Shallow ground water flow beneath the Site mimics the topography and flows toward the east to Liberty Bay (Figure 4).

Contamination Characterization

Saybr Contractors, Inc., contracted with the property owners to perform tank decommissioning activities in 2003. A site assessment titled "Underground Storage Tank Site Assessment Report, Winger Property" (AESI, 2003a) was performed by AESI on March 28, 2003 after the removal of two abandoned tanks located east of the existing shop. One tank was a 500-gallon diesel tank (UST-1) and the other tank was a 1,000-gallon gasoline tank (UST-2). The two tanks were situated end to end with the gasoline tank located north of the diesel tank.

Soil Samples

A registered site assessor from AESI collected site assessment soil samples (Figure 4) and documented site activities and conditions. A release of gasoline range petroleum hydrocarbons above MTCA Method A cleanup levels (CL) to the soil was confirmed under the former gasoline tank. Diesel range petroleum hydrocarbons and lead in soil were below cleanup levels beneath the diesel tank (Tables 2, 3, and 4).

Based upon field observations and initial analytical results, removal of petroleum hydrocarbon-impacted soil and the installation of ground water monitoring wells and an air sparging bioremediation system were accomplished.

Table 2
Site Assessment Analytical Results (Soil) NWTPH-Dx
Total Petroleum Hydrocarbons as
Diesel Extended to Include Motor Oil

Sample Number	Date Collected	Depth fbg	Diesel	Motor Oil
WP-UST1-B-7	3/28/03	7	88	<50
WP-UST1-SSW-7	3/28/03	7	13	<50
MTCA Method A Cleanup Level			***2,000***	***2,000***

Sample results in **bold** are above Model Toxics Control Act (MTCA) Method A cleanup level.
Sample results are in parts per million (ppm)
fbg – feet below grade

Table 3
Site Assessment Analytical Results (Soil) NWTPH-GX/BTEX
Total Petroleum Hydrocarbons as Gasoline with BTEX Distinction

Sample Number	Date Collected	Depth fbg	Benzene	Toluene	Ethylbenzene	Xylenes[1]	Gasoline
WP-CE-8	3/28/03	8	**0.03**	<0.02	0.06	0.33	2
WP-P-1	3/28/03	1	<0.02	<0.02	0.5	3.5	24
WP-UST2-NSW-8	3/28/03	8	**1.1**	6.0	**14.0**	**81.0**	**1,200**
WP-UST2-B-9	3/28/03	9	0.02	0.02	0.25	1.5	15
WP-SS1	3/28/03	Stockpile	**0.07**	0.19	0.70	3.8	**170**
MTCA Method A Cleanup Level			*0.03*	*7.0*	*6.0*	*9.0*	*30/100[2]*

Sample results in **bold** are above Model Toxics Control Act (MTCA) Method A cleanup level.
BTEX - benzene, toluene, ethylbenzene, and xylenes.
fbg – feet below grade
Sample results are in parts per million (ppm)
1) Total xylenes
2) Cleanup Level is 30 milligrams per kilogram (mg-kg) if benzene is present and 100 mg/kg if benzene is absent

Table 4
Site Assessment Analytical Results (Soil)
EPA Method 6010 ICP/Total Lead

Sample Number	Date Collected	Depth fbg	Lead
WP-UST2-B-9	3/28/03	9	21
MTCA Method A Cleanup Level			**250**

Sample results in **bold** are above Model Toxics Control Act (MTCA) Method A cleanup level.
Sample results are in parts per million (ppm)
fbg – feet below grade

On May 6 2003, AESI arrived onsite to supervise the installation of three (3) ground water monitoring wells. Well MW-1 was installed upgradient of the release area near the shop. Monitoring wells MW-2 and MW-3 were installed in the inferred downgradient direction from the petroleum hydrocarbon-impacted UST basin (Figure 4). The monitoring wells were installed using a truck-mounted geoprobe. The monitoring wells were advanced to depths of approximately 12 to 12.5 feet below grade (fbg). The annular space around each of the wells was augered out and sealed with bentonite and concrete to provide a surface seal conforming to Washington State monitoring well construction standards. Using direct-push technology, continuous soil cores were collected in clear polyvinyl chloride (PVC) plastic tubing. The soil samples were collected directly above the water table if sufficient soil was present to sample.

[1] Total xylenes (m,pxylene + o-xylene).
[2] If benzene is present above 0.03 parts per million (ppm) the cleanup level for total petroleum hydrocarbons as gasoline is 30 ppm. If benzene is less than 0.03, and if the total of toluene, ethylbenzene and xylenes are less than 1 percent of the total gasoline mixture, then the cleanup level is 100 ppm.

Field tests did not indicate detectable levels of petroleum hydrocarbons in any of the probe cores. The soil samples were submitted for analysis for gasoline, and benzene, toluene, ethylbenzene and xylenes (BTEX) (Table 5). The results of this work are presented in the AESI report "Independent Cleanup and Ground Water Characterization Monitoring, Winger Land Company Property" (AESI 2003b).

Table 5
Geoprobe Soil Sample Analytical Results
Method NWTPH-Gx/BTEX*

Sample Number	Date	Depth (feet)	Benzene	Toluene	Ethyl-benzene	Total xylenes	TPH Gasoline
WP-GP1-9 (MW-1)	5/6/03	9.0	<0.02	<0.02	<0.02	<0.02	<1
WP-GP2-7 (MW-2)	5/6/03	7.0	<0.02	<0.02	<0.02	<0.02	<1
WP-GP3-10 (MW-3)	5/6/03	10.0	<0.02	<0.02	<0.02	<0.02	<1
MTCA Method A Cleanup Level			*0.03*	*7*	*6*	*9*	*30/100*

* Total Petroleum Hydrocarbons as Gasoline (TPHG) with BTEX (benzene, toluene, ethylbenzene and xylenes) distinction.
Sample results are in parts per million (ppm)
MTCA – Model Toxics Control Act

Ground Water Samples

Ground water was encountered at 9 fbg during remedial excavation activities. Field observations indicated that petroleum hydrocarbon-impacted soil was in contact with ground water, although no measurable free product was observed. Ground water samples were collected from the three monitoring wells following their installation. Prior to sampling, approximately 2.5 gallons of water was pumped from each well using a peristaltic pump. The ground water was turbid at first, gradually clearing up during development as fine-grained sediments were purged from the wells. The ground water samples collected were submitted for analysis for total petroleum hydrocarbons as gasoline/BTEX. Water samples collected from wells MW-2 and MW-3 were also analyzed for volatile organic compounds including napthalene and the gasoline additives MTBE[3], EDC[4] and EDB[5]. The sample from monitoring well MW-3 was also submitted for total lead. Analytical results are presented in Tables 6 and 7. The ground water samples were decanted into the appropriate sampling bottles supplied by the laboratory. The sample bottles were then placed into a cooler, chilled with frozen gel packs, and delivered to Friedman & Bruya, Inc. in Seattle, Washington by courier. Complete laboratory reports are presented in Appendix B.

[3] MTBE: acronym for Methyl tertiary butyl ether
[4] EDC: acronym for 1,2-Dichloroethane
[5] EDB: acronym for 1,2-Dibromoethane

Table 6
Ground Water Analytical Results
Method NWTPH-Gx/BTEX* and Total Lead
using EPA Method 6010

Sample Number	Date	Benzene	Toluene	Ethyl-benzene	Total xylenes	TPH Gasoline	Total Lead
WP-Q203-MW-1	5/6/03	<1	<1	<1	<1	<50	NA
WP-Q203-MW-2	5/6/03	<1	<1	<1	<1	<50	NA
WP-Q203-MW-3	5/6/03	<1	<1	<1	<1	<50	**30**
MTCA Method A Cleanup Level		*5*	*1,000*	*700*	*1,000*	*800/1,000***	*15*

Sample results are in parts per billion (ppb)
* Total Petroleum Hydrocarbons as Gasoline (TPHG) with BTEX (benzene, toluene, ethylbenzene and xylenes) distinction.
**If benzene is present, the cleanup level for TPHG is 800 (ppb. If benzene is absent, the cleanup level is 1,000 ppb.
NA - not analyzed
MTCA – Model Toxics Control Act
EPA – Environmental Protection Agency

Table 7
Ground Water Analytical Results
Volatile Organic Compounds (VOCs)
using EPA Method 8260B

Compounds	WP-Q203-MW-2	WP-Q203-MW-3	*MTCA Cleanup Level*
Dichlorodifluoromethane	<1	<1	*
Chloromethane	<1	<1	*
Vinyl chloride	<1	<1	*0.2*
Bromomethane	<1	<1	*
Chloroethane	<1	<1	*
Trichlorofluoromethane	<1	<1	*
Acetone	<10	<10	*
1,1-Dichloroethene	<1	<1	*
Methylene chloride	<5	<5	*
MTCA CL (MTBE)	<1	<1	*20*
Methy tertiary butyl ether (MTBE)	<1	NA	*NA*
trans-1,2-Dichloroethene	<1	<1	*
1,1-Dichloroethane	<1	<1	*
2,2-Dichloropropane	<1	<1	*
cis-1,2-Dichloroethene	<1	<1	*
Chloroform	<1	<1	*
2-Butanone (MEK)	<10	<10	*
1,2-Dichloroethane (EDC)	<1	<1	*5*
1,1,1-Trichloroethane	<1	<1	*200*
1,1-Dichloropropene	<1	<1	*
Carbon Tetrachloride	<1	<1	*
Benzene	<1	<1	*5*
Trichloroethene	<1	<1	*5*
1,2-Dichloropropane	<1	<1	*

Compounds	WP-Q203-MW-2	WP-Q203-MW-3	*MTCA Cleanup Level*
Bromodichloromethane	<1	<1	*
Dibromomethane	<1	<1	*
4-Methyl-2-pentanone	<10	<10	*
cis-1,3-Dichloropropene	<1	<1	*
Toluene	<1	<1	*1,000*
trans-1,3-Dichloropropene	<1	<1	*
1,1,2-Trichloroethane	<1	<1	*
2-Hexanone	<10	<10	*
1,3-Dichloropropane	<1	<1	*
Tetrachloroethene	<1	<1	***5***
Dibromochloromethane	<1	<1	*
1,2-Dibromoethane (EDB)	<1	<1	*0.01*
Chlorobenzene	<1	<1	*
Ethyl benzene	<1	<1	*700*
1,1,1,2-Tetrachloroethane	<1	<1	*
m,p-Xylene	<1	<1	*1,000*
o-Xylene	<1	<1	*1,000*
Styrene	<1	<1	*
Isopropylbenzene	<1	<1	*
Bromoform	<1	<1	*
n-Propylbenzene	<1	<1	*
Bromobenzene	<1	<1	*
1,3,5-Trimethylbenzene	<1	<1	*
1,1,2,2-Tetrachloroethane	<1	<1	*
1,2,3-Trichloropropane	<1	<1	*
2-Chlorotoluene	<1	<1	*
4-Chlorotoluene	<1	<1	*
tert-Butylbenzene	<1	<1	*
1,2,4-Trimethylbenzene	<1	<1	*
sec-Butylbenzene	<1	<1	*
p-Isopropyltoluene	<1	<1	*
1,3-Dichlorobenzene	<1	<1	*
1,4-Dichlorobenzene	<1	<1	*
1,2-Dichlorobenzene	<1	<1	*
1,2-Dibromo-3-Chloropropane	<1	<1	*
1,2,4-Trichlorobenzene	<1	<1	*
Hexachlorobutadiene	<1	<1	*
Naphthalene	<1	<1	*160*
1,2,3-Trichlorobenzene	<1	<1	*

Sample results are in parts per billion (ppb)
MTCA – Model Toxics Control Act
EPA – Environmental Protection Agency
NA - not analyzed

Results of the initial ground water sampling event did not indicate the presence of detectable petroleum hydrocarbons, BTEX or semi-volatile organics in the ground water. Total lead was detected in well MW-3 at 30 parts per million (ppm) which was above the MTCA Method A cleanup level. However, the sample tested from MW-3 was not filtered and contained suspended sediment that could have resulted in an elevated concentration.

TERRESTRIAL ECOLOGICAL EVALUATION

A terrestrial ecological evaluation was performed as required under WAC 173-340-7492(2)(a)(ii). Table 8 below shows the calculations and numerical values used for this evaluation. The point score reported in Criteria Number 1 was eight. The sum of the variables (Numbers 2 through 5) is twelve. Since twelve is larger than eight, the terrestrial evaluation may be ended under WAC 173-340-7492 (2)(a)(ii).

Table 8
Terrestrial Ecological Exposure Evaluation

Criteria	Score
1) Estimated contiguous undeveloped land within 500 feet: 2 *acres (west of site)*	***8***
2) Industrial or commercial property: *Commercial*	3
3) Habitat Quality: *Low (commercial property)*	3
4) Is wildlife likely to be attracted: *no, either paved , buildings, or gravel*	2
5) Specified[(1)] organic compounds present in soil: *no*	4
Total Score (2 through 5)	***12***

[(1)] Specified compounds: chlorinated dioxins, furans, polychlorinated biphenyls (PCBs), DDT, DDE, DDD, aldrin, chlordane, dieldrin, endosulfan, endrin, heptachlor, benzene, hexachloride, toxaphene, hexachlorobenzene, pentachlorophenol, pentachlorobenzene.

REMEDIAL ACTION

Cleanup Action Overview

Petroleum Contaminated Soil Model Remedy 1 was determined to be applicable for this site because complete removal of the gasoline-impacted soils was feasible and ground water was not impacted. Upon completion of the contaminated soil excavation, benzene concentrations at or slightly above MTCA Method A cleanup levels were exhibited by two soil confirmation samples. An air sparging system to aid in in-situ remediation and natural degradation was installed within the remedial excavation and operated for approximately one year through the end of ground water monitoring from June 2003 to June 2004.

Regulatory Framework

This CAR does not have any relationship to other local, state, or federal regulatory actions at the Site such as the local development review process, SEPA, Landfill Permit, RCRA corrective action, and CERCLA. The CAR does not propose any work requiring other regulatory agencies to be involved at this time.

Human Health and Environmental Concerns

Prior to site remediation, only one characterization sample (WP-UST2-NSW-8) located at the northeast corner of the tank pit exhibited concentrations of benzene and gasoline above MTCA Method A cleanup levels. Ground water samples collected at the site have never exhibited detectable concentrations of BTEX or petroleum hydrocarbons. Contamination at the site was of limited extent, did not impact ground water and was not a significant threat to human health or the environment.

Cleanup Standards

Contaminants of Concern

Contaminants detected above the MTCA Method A cleanup level at the site are benzene, ethylbenzene, xylenes and gasoline-range petroleum hydrocarbons (GRPH) in soil. Total lead above the MTCA Method A cleanup level was detected in ground water from well MW-3.

Cleanup Levels

Due to the contaminant of concern (petroleum hydrocarbons) and potential ultimate use (multi-family residential) of the Site, MTCA Method A Unrestricted Land Use cleanup levels have been chosen for this Site. The proposed cleanup levels are presented in Table 9 below:

Table 9
MTCA Method A Site Cleanup Levels

Media	GRPH	Benzene	Ethylbenzene	Xylenes	Lead
Soil (ppm)	30	0.03	6	9	250
Ground Water (ppb)	800	5	700	1,000	15[(1)]

GRPH - gasoline-range petroleum hydrocarbons
ppm – parts per million
ppb – parts per billion
[(1)] Based upon dissolved lead

Cleanup Action Alternatives

Three remedial alternatives were considered following site characterization and tank removal activities. A feasibility study was not completed for the site because this is a simple site and a localized area of contamination. The three alternatives are as follows:

1. No action and implementation of monitoring and natural attenuation
2. Excavation and disposal
3. In-situ bio-remediation

Initial Screening of Alternatives

During initial review of cleanup action alternatives the no action and in-situ bioremediation alternatives were screened out due to the Site generally being accessible and the desire of the owners to achieve a short-term solution.

The second remedial option consisting of excavation of all contaminated soil was selected because it was determined to meet all the requirements set forth in the Ecology guidance document. The selected alternative would be protective of human health and the environment and would be a long-term solution since all contamination could be removed.

Following removal of the tanks and collection of compliance soil samples, concentrations of benzene that exhibited concentrations slightly above the MTCA Method A cleanup level were found in two compliance soil samples. At this time in situ air sparging was added as a remedial action in addition to excavation in order to aid in the degradation of the benzene in soil.

Model Remedy 1 Adherence to MTCA

Per the Model Remedy document, "This model remedy is for situations where complete removal of the contaminated soil will take place and Method A Soil Cleanup Levels for Unrestricted Site Use have been selected. Following excavation, confirmation testing must be performed to document that the applicable Method A cleanup levels found in Table 740-1 of WAC 173-340-900 have been met at the point of compliance, such that no environmental covenants are necessary."

The chosen remedial action is protective of ground water and direct contact because all of the contamination was removed either through excavation or in-situ degradation and ground water has never been impacted.

The Environmental Protection Agency (EPA) *Technical Guidance for Addressing Petroleum Vapor Intrusion at Leaking Underground Storage Tank Sites* (June 2015) addresses vapor due to gasoline releases. The Ecology 2009 Draft: *Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action* states the contaminant must be sufficiently volatile and toxic to pose a potential threat to indoor air quality via the vapor intrusion (VI) pathway. Since the gasoline and benzene have been totally removed from the Site, the potential for vapor intrusion in to site structures has been removed.

The remedy is protective of human health and the environment because complete removal of the contamination from soil has been accomplished and ground water has not been impacted by the release.

DESCRIPTION OF SELECTED REMEDY

Site Description

The project site is located at 19647 Viking Way NW, Poulsbo, Washington. The project location is shown in Figure 1 (Vicinity Map) and Figure 5 (Site Schematic). The subject property is located in an area of commercial properties along Viking Way, with residential properties west of and upgradient from the site.

Description of the Cleanup Action

Based on the comparative analysis presented above, the selected remedial action alternative for the Site is Petroleum Contaminated Soil Model Remedy 1. This alternative was determined to be applicable for the Site because removal of the gasoline contaminated soils was feasible and the site was accessible. As described above, the selected remedy (Model Remedy 1) does not pose a threat to human health or the environment.

Table 10 provides a comparison of the proposed remedial action against the MTCA evaluation criteria. As shown in the table, the proposed remedial action performs satisfactorily with regards to all the criteria.

Table 10
Evaluation of Remedial Action

Criteria	Model Remedy 1
Protectiveness	Achieves protectiveness since the soil contamination is completely removed and ground water has not been impacted.
Permanence	Permanent since the contamination is completely removed.
Cost	Model Remedy 1 is second lowest cost option but obtains better permanence and protectiveness over the other alternatives since the contamination is completely removed.
Long-Term Effectiveness	Very good since the contaminated soil is completely removed and ground water has not been impacted.
Management of Short-Term Risks	Very good because of the limited time to complete and personal protective measures implemented during remedial activities.
Implementability	There are no impediments to effective implementation.
Consideration of Public Concerns	The property is commercial. No public concerns were expressed at the time the work was performed.

Excavation and on-site bioremediation of petroleum hydrocarbon-impacted soil was determined to be the appropriate remediation technology for this site. Saybr Contractors, Inc., provided a trackhoe and operator for the project. Soil impacted by petroleum hydrocarbons was excavated, field screened, and placed on plastic sheeting in preparation for on-site bioremediation. An air sparging system was installed in the bottom of the excavation below the existing saturated zone and backfilled with pea gravel. Details of the air sparging system are

shown on Figure 6. The property owner operated and maintained the air sparging system and Sabyr Contractors monitored the on-site land farming of the contaminated soil and documented when cleanup levels had been obtained.

Approximately 100-cubic yards of petroleum hydrocarbon-impacted soil were removed from the former UST excavation and stockpiled on plastic sheeting onsite for on-site bioremediation. Cleanup confirmation soil samples collected from the remedial excavation indicated that benzene slightly above the MTCA Method A cleanup level of 0.03 ppm remained in the western and northeastern sidewalls. These areas were bioremediated by oxygen supplied by the air sparging system within the permeable pea gravel tank basin.

Soil removed from the excavation was placed onsite in a thin lift pile on which water and fertilizer were applied. The soil was tilled and aeriated frequently until all noticeable indications of petroleum hydrocarbons were removed. The soil was then placed onsite as fill for newly graded parking areas.

Cleanup Standards and Point of Compliance

Due to the contaminant of concern (gasoline and BEX) and ultimate use (multi-family residential) of the Site, MTCA Method A cleanup levels are used for the Site. The proposed cleanup level is 30 milligrams per kilogram (mg/kg) for the GRPH, 0.03 mg/kg for benzene, 6 mg/kg for ethylbenzene and 9 mg/kg for xylene affected soils.

Under MTCA, the point of compliance is the point or location on a site where the cleanup levels must be attained. The point of compliance for the soil cleanup levels summarized above in Table 9 will be throughout the soil column from the ground surface to 15 feet below ground surface (bgs), in accordance with WAC 173-340-740(6)(d). The contaminated soil does not extend off the property.

The property boundary of the Site is specified as the point of compliance for ground water. Monitoring wells MW-1, MW-2, and MW-3 are located within the property boundaries. Samples from Wells MW-2 and MW-3, downgradient and closest to the property line, were non-detect for ground water contaminants of concern.

Applicable, Relevant and Appropriate Requirements (ARARs)

In addition to the cleanup standards developed through the MTCA process and summarized above, other regulatory requirements must be considered in the selection and implementation of the cleanup action. Applicable state and federal laws may also impose certain technical and procedural requirements for performing cleanup actions (WAC 173-340-710). City of Poulsbo permits were obtained for removal and inspection of the USTs at removal. The USTs were cleaned and rinsed by Protective Environmental Services, Inc. of Seattle, Washington prior to

removal and the USTs were disposed of at Navy City Metals in Bremerton, Washington, by Saybr Contractors. No other ARARs were required.

Restoration Timeframe

Model Remedy 1 was determined to be applicable for this site because gasoline and BEX were the only contaminants, the site was easily accessible and ground water was not impacted. In-situ air sparging was used to polish limited benzene contamination in soil remaining after soil removal. The restoration time frame was approximately one year.

Compliance Monitoring

Soil Sampling

At the time of site remediation 2003, an AESI site assessor collected cleanup confirmation soil samples from the natural, fine-grained sands from depths ranging from 8 to 9 fbg when removal of petroleum hydrocarbon-impacted soil appeared to be complete based on visual observations and field screening results. Approximate locations of soil samples collected are shown on Figure 7 and analytical results are summarized in Table 11. All samples were collected using AESI's standard sampling and decontamination protocols. Soil samples were collected using clean, stainless steel sampling spoons, rinsed with distilled, de-ionized water. Samples collected for analysis were placed in borosilicate glass sample containers with Teflon-lined lids supplied by the laboratory. Additional soil confirmation samples (GP-1-101316 and GP-2-101316) were collected in 2016 from two explorations completed in the vicinity of former soil confirmation samples WP-CCS1-9 and WP-CCS5-8 to document successful in-place remediation of elevated benzene. After the samples were logged in the field, they were placed in a cooler, chilled with frozen gel packs, and transported by courier directly to Friedman & Bruya, Inc. in Seattle, Washington for analysis. The laboratory chain-of-custody is located in Appendix B.

Soil removed from the UST remedial excavation was land-farmed onsite until clean, then reused at the Site to level the parking lot area. Confirmation soil samples MW-102:8-9 and MW-103:8-9 were collected from this fill when wells MW-102 and MW-103 were installed in December 2016.

Table 11
Soil Cleanup Confirmation Sample Analytical Results
Method NWTPH-Gx/BTEX*

Sample Number	Date	Depth (feet)	Benzene	Toluene	Ethyl-benzene	Total xylenes	TPH Gasoline
WP-RX-SS1	5/6/03	Stockpile	**0.04**	0.13	0.21	1.1	14
WP-CCS1-9	5/6/03	9.0	<0.02	<0.02	<0.02	<0.02	<1
WP-CCS2-9	5/6/03	9.0	<0.02	<0.02	<0.02	0.07	<1
WP-CCS3-9	5/6/03	9.0	**0.04**	<0.02	0.12	0.63	3
WP-CCS4-9	5/6/03	9.0	<0.02	<0.02	0.03	0.11	<1
WP-CCS5-8	5/6/03	8.0	**0.06**	0.03	0.38	2.1	15
GP-1-101316	10/13/16	6.5-7	<0.02	<0.02	<0.02	<0.06	<2
GP-2-101316	10/13/16	8-9	<0.02	<0.02	<0.02	<0.06	<2
MW-102:8-9	12/9/16	8-9	<0.02	<0.02	<0.02	<0.06	<2
MW-103:8-9	12/9/16	8-9	<0.02	<0.02	<0.02	<0.06	<2
MTCA Method A Cleanup Level			*0.03*	*7*	*6*	*9*	*30/100***

* Total Petroleum Hydrocarbons as Gasoline (TPHG) with BTEX (benzene, toluene, ethylbenzene and xylenes) distinction.

**If benzene is absent and the total of ethylbenzene, toluene and xylene is less than 1 percent of the gasoline mixture the CL for TPH-G is 100ppm; for all other gasoline mixtures with BTEX the CL is 30ppm.

Bold = Concentrations above MTCA Method A cleanup levels.

Sample results are in parts per million (ppm)

MCTA – Model Toxics Control Act

Ground Water Sampling

Starting in May 2003, ground water samples were collected on a quarterly basis for one year. Prior to sampling, approximately 2.5 gallons of water was pumped from each well using a peristaltic pump. The ground water samples were decanted into the appropriate sampling bottles supplied by the laboratory. The sample bottles were then placed into a cooler, chilled with frozen gel packs, and delivered to Friedman & Bruya, Inc. in Seattle, Washington by courier. The ground water samples collected were submitted for analysis for total petroleum hydrocarbons as gasoline/BTEX. For the first quarter event in May 2003, water samples collected from wells MW-2 and MW-3 were also analyzed for volatile organic compounds (including naphthalene), and the gasoline additives MTBE[6], EDC[7] and EDB[8]. The sample from monitoring well MW-3 was also submitted for total lead. The water sample collected from well MW-3 during the third quarter was analyzed for total dissolved lead. Analytical results for all quarters are presented in Tables 12 and 13. Water samples were also collected from the geoporbe explorations accomplished in 2016. Complete laboratory reports are presented in Appendix B.

[6] MTBE: acronym for Methyl tertiary butyl ether
[7] EDC: acronym for 1,2-Dichloroethane
[8] EDB: acronym for 1,2-Dibromoethane

Table 12
Ground Water Confirmation Samples Analytical Results
Method NWTPH-Gx/BTEX* and Total Lead using EPA Method 6010

Sample Number	Date	Benzene	Toluene	Ethyl-benzene	Total xylenes	TPH Gasoline	Lead
WP-Q203-MW-1	5/6/03	<1	<1	<1	<1	<50	NA
WP-Q303-MW1	8/22/03	<1	<1	<1	<1	<50	NA
WP-WQ-MW1	1/26/04	<1	<1	<1	<3	<50	<1(1)
WP- MW1-504	5/03/04	<1	<1	<1	<3	<50	NA
WP-Q203-MW-2	5/6/03	<1	<1	<1	<1	<50	NA
WP-Q303-MW2	8/22/03	<1	<1	<1	<1	<50	NA
WP-WQ-MW2	1/26/04	<1	<1	<1	<3	<50	<1(1)
WP- MW2-504	5/03/04	<1	<1	<1	<3	<50	NA
WP-Q203-MW-3	5/6/03	<1	<1	<1	<1	<50	**30(2)**
WP-Q303-MW3	8/22/03	<1	<1	<1	<1	<50	NA
WP-WQ-MW3	1/26/04	<1	<1	<1	<3	<50	<1(1)
WP- MW3-504	5/03/04	<1	<1	<1	<3	<50	NA
GP-1-101316	10/13/16	<1	<1	<1	<3	<100	NA
GP-2-101316	10/13/16	<1	<1	<1	<3	<100	NA
MTCA Method A Cleanup Level		*5*	*1,000*	*700*	*1,000*	*800/1,000***	*15*

* Total Petroleum Hydrocarbons as Gasoline (TPHG) with BTEX (benzene, toluene, ethylbenzene and xylenes) distinction.

**If benzene is present, the cleanup level for TPHG is 800 ppb. If benzene is absent, the cleanup level is 1,000 ppb.

NA - not analyzed

(1) Dissolved Lead

(2) Total Lead

Sample results are in parts per billion (ppb)

MTCA – Model Toxics Control Act

EPA - Environmental Protection Agency

Table 13
Ground Water Analytical Results
Volatile Organic Compounds (VOCs)
using EPA Method 8260B

Compounds	WP-Q203-MW-2	WP-Q203-MW-3	*MTCA Cleanup Level*
Dichlorodifluoromethane	<1	<1	*
Chloromethane	<1	<1	*
Vinyl chloride	<1	<1	*0.2*
Bromomethane	<1	<1	*
Chloroethane	<1	<1	*
Trichlorofluoromethane	<1	<1	*
Acetone	<10	<10	*
1,1-Dichloroethene	<1	<1	*
Methylene chloride	<5	<5	*
MTCA CL (MTBE)	<1	<1	*20*
Methy tertiary butyl ether (MTBE)	<1	NA	NA
trans-1,2-Dichloroethene	<1	<1	*
1,1-Dichloroethane	<1	<1	*
2,2-Dichloropropane	<1	<1	*
cis-1,2-Dichloroethene	<1	<1	*
Chloroform	<1	<1	*
2-Butanone (MEK)	<10	<10	*
1,2-Dichloroethane (EDC)	<1	<1	*5*
1,1,1-Trichloroethane	<1	<1	*200*
1,1-Dichloropropene	<1	<1	*
Carbon Tetrachloride	<1	<1	*
Benzene	<1	<1	*5*
Trichloroethene	<1	<1	*5*
1,2-Dichloropropane	<1	<1	*
Bromodichloromethane	<1	<1	*
Dibromomethane	<1	<1	*
4-Methyl-2-pentanone	<10	<10	*
cis-1,3-Dichloropropene	<1	<1	*
Toluene	<1	<1	*1,000*
trans-1,3-Dichloropropene	<1	<1	*
1,1,2-Trichloroethane	<1	<1	*
2-Hexanone	<10	<10	*
1,3-Dichloropropane	<1	<1	*
Tetrachloroethene	<1	<1	***5***
Dibromochloromethane	<1	<1	*
1,2-Dibromoethane (EDB)	<1	<1	*0.01*
Chlorobenzene	<1	<1	*
Ethyl benzene	<1	<1	*700*
1,1,1,2-Tetrachloroethane	<1	<1	*
m,p-Xylene	<1	<1	*1,000*
o-Xylene	<1	<1	*1,000*
Styrene	<1	<1	*
Isopropylbenzene	<1	<1	*
Bromoform	<1	<1	*

Compounds	WP-Q203-MW-2	WP-Q203-MW-3	*MTCA Cleanup Level*
n-Propylbenzene	<1	<1	*
Bromobenzene	<1	<1	*
1,3,5-Trimethylbenzene	<1	<1	*
1,1,2,2-Tetrachloroethane	<1	<1	*
1,2,3-Trichloropropane	<1	<1	*
2-Chlorotoluene	<1	<1	*
4-Chlorotoluene	<1	<1	*
tert-Butylbenzene	<1	<1	*
1,2,4-Trimethylbenzene	<1	<1	*
sec-Butylbenzene	<1	<1	*
p-Isopropyltoluene	<1	<1	*
1,3-Dichlorobenzene	<1	<1	*
1,4-Dichlorobenzene	<1	<1	*
1,2-Dichlorobenzene	<1	<1	*
1,2-Dibromo-3-Chloropropane	<1	<1	*
1,2,4-Trichlorobenzene	<1	<1	*
Hexachlorobutadiene	<1	<1	*
Naphthalene	<1	<1	*160*
1,2,3-Trichlorobenzene	<1	<1	*

Sample results are in parts per billion (ppb)
MTCA – Model Toxics Control Act
EPA - Environmental Protection Agency
NA - not analyzed

Schedule for Implementation

The remedial action was completed in May 2003 and ground water monitoring was completed in May 2004.

Institutional/Engineering Controls

Institutional controls were not implemented because the contamination was remediated to below MTCA Method A clean up levels.

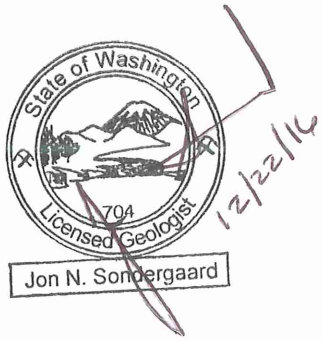
CONCLUSION

Soil contaminated with gasoline, benzene, ethylbenzene, and xylenes have been completely removed and remediated at the Site. Soil confirmation samples collected in 2003 from the south, east, and northwest portions of the remedial excavation were below MTCA Method A cleanup levels for all Contaminants/Chemicals of Concern (COC). Soil confirmation samples collected in 2016 from the west and northeast portion of the remedial area following completion of in-situ bioremediation and air sparging were below MTCA Method A cleanup levels for all COC. Ground water contamination was not present at the Site either during site

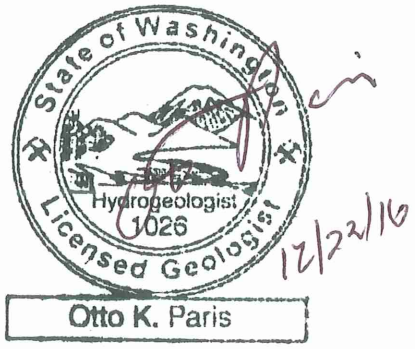
characterization activities or during four consecutive quarters of ground water monitoring. We request that Ecology provide a NFA determination for the Site.

Please let us know as soon as possible if Ecology requires additional information or documentation to receive a NFA determination under Model Remedy for this site and to remove the site from the environmental data base lists.

Sincerely,
ASSOCIATED EARTH SCIENCES, INC.
Kirkland, Washington



Jon N. Sondergaard, L.G., L.E.G.
Senior Principal Engineering Geologist



Otto Paris, L.Hg
Associate Hydrogeologist

REFERENCES

Associated Earth Sciences, Inc. (AESI 2003a), Underground storage tank site assessment report, Winger Property, May 7, 2003 prepared for Saybr Contractors.

Associated Earth Sciences, Inc. (AESI, 2003b), Independent cleanup and ground water characterization report, June 26, 2003 prepared for Winger Land Company.

Associated Earth Sciences, Inc. (AESI, 2003c), Ground water monitoring report, third quarter, 2003, Winger Land Property, December 2, 2003.

Associated Earth Sciences, Inc. (AESI, 2004a), Ground water monitoring report, winter quarter, 2003-2004, Winger Land Property, June 2, 2004.

Associated Earth Sciences, Inc. (AESI, 2004b), Ground water monitoring report, spring quarter, 2004, Winger Land Company Property, June 2, 2004.

Kitsap Public Health District, site hazard assessment: facility site ID #:5181107, Winger Land Golden Homes, 19647 Viking Way NW, Poulsbo, Washington, Property Tax #: 152601-4-023-2003, Cleanup Site ID: 7621, August 10, 2015.

Washington Division of Geology and Earth Resources (WDGER, 2013), Geologic map of the Seabeck and Poulsbo 7.5-minute Quadrangles, Map Series 2013-02, October 2013.

DEPARTMENT OF ECOLOGY
State of Washington

Voluntary Cleanup Program

Washington State Department of Ecology
Toxics Cleanup Program

APPLICATION FORM

Under the Voluntary Cleanup Program (VCP), the Department of Ecology (Ecology) may provide informal site-specific technical consultations to persons conducting independent remedial actions at a hazardous waste site. Ecology may provide such consultations under the authority of the Model Toxics Control Act (MTCA), Chapter 70.105D RCW, and its implementing regulations, Chapter 173-340 WAC.

To enter the VCP, complete and submit to Ecology a VCP Application. The Application consists of the following two documents:

1. Application Form (including required attachments). ← THIS DOCUMENT
2. Agreement.

For guidance on how to complete your Application, please refer to the Application Instructions, which are available separately on the VCP web site: www.ecy.wa.gov/programs/tcp/vcp/vcpmain.htm.

Part 1 - ADMINISTRATION

A. Customer Information. The Customer is the person or organization requesting services from Ecology under the VCP, and is responsible for paying the costs incurred by Ecology. The authority and duty of the Customer are explained in the Agreement.

Name of Customer: Winger Land Company

What type of entity is the Customer?

☐ Person

*If the Customer is a **"person,"** then the Customer shall serve as both the Project Manager and the Project Billing Contact. Please identify this person and their contact information in both Parts 1B and 1C.*

☒ Organization

*If the Customer is an **"organization,"** then please identify the Project Manager in Part 1B and the Project Billing Contact in Part 1C. **Both persons must be employed by the Customer organization.***

What is the Customer's involvement at the Site? Please check all that apply.

- ☒ Property owner
- ☐ Past property owner
- ☐ Future property owner
- ☐ Property lessee
- ☐ Other – please specify: _____
- ☐ Business owner (operator)
- ☐ Mortgage holder
- ☐ Consultant
- ☐ Attorney

If not the current property owner, is the Customer acting as the agent for the property owner?

☐ Yes ☒ No

If not the current property owner, is the Customer authorized to grant access to the property?

☐ Yes ☐ No

Part 1 – ADMINISTRATION continued

B. Project Manager Information. Ecology will send this person all official correspondence. This person must either be the Customer or be employed by the Customer. This person may not be an independent contractor hired by the Customer. Please enter the required information below.

Name: Chad Winger	Title:	
Mailing address: Winger Family Limited Partnership 4600 Shady Hollow Lane NW		
City: Bremerton	State: WA	Zip: 98312
Phone: 206-396-1653	Fax:	E-mail: chadawinger@aol.com

C. Project Billing Contact Information. Ecology will send this person monthly invoices. This person must either be the Customer or be employed by the Customer. This person may not be an independent contractor hired by the Customer. Please enter the required information below.

Name: Chad Winger	Title:	
Mailing address: Winger Family limited Partnership 4600 Shady Hollow Lane NW		
City: Bremerton	State: WA	Zip: 98312
Phone: 206-396-1653	Fax:	E-mail: chadawinger@aol.com

D. Project Consultant Information.

Is the Customer a consultant?

☐ Yes *If you answered **"YES,"** then skip to the next question.*

☒ No *If you answered **"NO"** and the Customer hired a consultant to conduct the independent remedial action, then enter the required information below.*

Name: Jon Sondergaard	Title: Senior Principal	
Organization: Associated Earth Sciences, Inc.		
Mailing address: 911 5th Avenue		
City: Kirkland	State: WA	Zip: 98033
Phone: 425-827-7701	Fax:	E-mail: jsondergaard@esgeo.com

Do you want Ecology to contact the Project Consultant?

☒ Yes ☐ No

E. Property Owner Information.

Is the Customer the owner of the property where independent remedial action is being conducted?

☒ Yes *If you answered **"YES,"** then enter the type of entity and skip to the next question.*

☐ No *If you answered **"NO,"** then please enter all of the required information below.*

Name:	Title:	
Organization:		
Mailing address:		
City:	State:	Zip:
Phone:	Fax:	E-mail:

Part 1 – ADMINISTRATION continued

What type of entity is the property owner? Please check only one.

- ☒ Private
- ☐ Tribal
- ☐ Federal
- ☐ State
- ☐ Other – please specify: _____
- ☐ County
- ☐ Municipal
- ☐ Mixed
- ☐ Public School

F. Request for Written Opinion.

Are you requesting a written opinion at this time?

☒ Yes ☐ No

If you answered **"YES,"** on what planned or completed remedial action do you want a written opinion?

Soil remediation of former UST location

Please attach to this Application any additional remedial action plans or reports you want Ecology to review. Ecology will base its opinion on the information contained in the Site file, including any information attached to this Application.

If you answered **"NO,"** please explain why you are enrolling in the VCP at this time and when you expect to request a written opinion from Ecology.

Attach additional pages if necessary.

G. Reporting Requirements.

Please comply with the following reporting requirements when requesting written opinions on planned or completed remedial actions:

- ❑ **Licensing.** Documents submitted containing geologic, hydrologic, or engineering work must be under the seal of an appropriately licensed professional, as required by Chapters 18.43 and 18.220 RCW.
- ❑ **Data Submittal.** Environmental sampling data must be submitted in both a printed form and an electronic form capable of being transferred into Ecology's data management systems. For instructions on how to submit the data, please refer to the following Ecology web site: www.ecy.wa.gov/programs/tcp/data_submittal/Data_Requirements.htm.

Failure to comply with these requirements may result in unnecessary delays. **Ecology will not issue a No Further Action (NFA) opinion unless these requirements are satisfied.**

Part 2 - DESCRIPTION OF THE SITE

A. Name of the Site. If Ecology has already identified the Site, enter the name provided by Ecology. Otherwise, enter a suggested name for the Site. You may also include an alternate name.

Name: Golden Homes

Alternate Name: Winger Land Company Property

B. Location of Property where the Releases Occurred (Source Property).

The "source property" is the property where hazardous substances were released into the environment. For example, if petroleum was released from a leaking UST, the source property is the property where the UST was located.

Do you know on which property the releases occurred?

☒ Yes — *If you answered **"YES,"** then please refer to the source property when answering the following questions.*

☐ No — *If you answered **"NO,"** then please refer to the property addressed by your remedial action (cleanup) when answering the following questions.*

Physical Address. Please enter the physical address of the property below.

Street Address: 19647 Viking Way NW

City: Poulsbo	State: WA	Zip: 98370

Geographic Position. Please enter the geographical position of the property below. For additional guidance on how to complete this part, please refer to instructions on the VCP web site.

COORDINATES	LATITUDE:	Degrees: 47.741293	Minutes:	Seconds:
	LONGITUDE:	Degrees: -122.658649	Minutes:	Seconds:
LOCATION ON PROPERTY: [e.g., point of release or center of parcel]		West center portion of parcel		
COLLECTION METHOD: [e.g., GPS or address matching]		Address matching		
COLLECTION SOURCE: [i.e., map scale]		Google Earth		
HORIZONTAL DATUM: [i.e., base reference for coordinate system]				
ACCURACY LEVEL: [i.e., +/- feet or meters]				

Legal Descriptions.

TRS DATA:	Township: 26N	Range: 1E	Section: 15	Quarter-Quarter: NW1/4, SE1/4
TAX PARCEL #(S):	15260140232003			

Part 2 - DESCRIPTION OF THE SITE continued

C. Identification of Properties affected by the Releases (Affected Properties).

An "affected property" is a property affected by the release of hazardous substances on the source property. For example, petroleum released from a leaking UST on one property (source property) may migrate through the soil or ground water onto an adjacent property (affected property).

Do any of the releases affect any properties adjacent to the source property?

☐ Yes — *If you answered **"YES,"** then please identify below each property that you know has been affected by the releases on the source property. If you need to identify additional properties, please attach additional pages.*

☒ No — *If you answered **"NO,"** then skip to the next question.*

☐ Unknown — *If you answered **"UNKNOWN,"** then skip to the next question.*

1.	Address:
	Tax Parcel(s):
2.	Address:
	Tax Parcel(s):
3.	Address:
	Tax Parcel(s):
4.	Address:
	Tax Parcel(s):

D. Identification of Public Right-of-Ways affected by the Releases.

Do any of the releases affect any public right-of-ways (e.g., streets)?

☐ Yes ☒ No ☐ Unknown

If you answered **"YES"** above, please specify below. Otherwise, skip to the next question.

Attach additional pages if necessary.

E. Extent of the Site.

What is the approximate areal extent of the Site? Please check only one.

☒ < 5,000 square feet
☐ > 5,000 square feet, but < 1 acre
☐ > 1 acre, but < 10 acres
☐ > 10 acres
☐ Unknown

Part 2 - DESCRIPTION OF THE SITE continued

F. Description of Release(s) at the Site.

Source of Release(s).

What are the source(s) of the release(s) at the Site? Please check all that apply.

- ☒ Point source (e.g., leaking tank)
- ☐ Non-point source (e.g., contaminated soil used as fill)
- ☐ Area-wide lead and arsenic soil contamination (see questions below)
- ☐ Other – please specify: _____
- ☐ Unknown

To the extent known, please describe the source(s) of the release(s):

1,000 gallon gasoline underground storage tank

Attach additional pages if necessary.

Circumstances of Release(s). To the extent known, please describe below the circumstances of the release(s).

Historic release of gasoline from former vehicle fueling facility.

Attach additional pages if necessary.

Circumstances of Release Discovery. To the extent known, please describe below the circumstances of the discovery of the release(s).

Encountered during Phase II ESA

Attach additional pages if necessary.

Part 2 - DESCRIPTION OF THE SITE continued

Area-Wide Soil Contamination. For information about the area-wide soil contamination project, please refer to the following web site: www.ecy.wa.gov/programs/tcp/area_wide/area_wide_hp.html. For information about the Tacoma Smelter Plume (TSP) and the associated Management Plan, please refer to the following web site: www.ecy.wa.gov/programs/tcp/sites/tacoma_smelter/ts_hp.htm.

Is the Site located within an area affected by smelter emissions, such as the TSP area?

☐ Yes ☒ No ☐ Unknown

To determine whether your Site is located within the TSP area, please refer to the map on the TSP web site identified above.

Is the Site located on a former apple or pear orchard in operation prior to 1947?

☐ Yes ☒ No ☐ Unknown

Is the Site impacted by area-wide arsenic and/or lead soil contamination?

☐ Yes ☒ No ☐ Unknown

G. Nature and Extent of Hazardous Substances Released at the Site. The following questions refer to conditions after the release, but prior to any cleanup, of the hazardous substances at the Site.

Hazardous Substances and Affected Media. To the extent known, please identify in the following table the hazardous substances released at the Site and the media (e.g., soil) impacted by those substances. Use the codes at the bottom of the table.

Hazardous Substance	Affected Media				
	Soil	Ground Water	Surface Water	Sediment	Air
EXAMPLE: Benzene	C	S	N/A	N/A	B
Benzene	C	O	NA	NA	NA
Ethylbenzene	C	O	NA	NA	NA
Xylene	C	O	NA	NA	NA
Gasoline	C	O	NA	NA	NA

When identifying the affected media in the table above, please use one of the following codes:

- C = confirmed, above cleanup level
- B = confirmed, below cleanup level
- O = confirmed, not present
- S = suspected
- N/A = not suspected
- U = unknown

Part 2 - DESCRIPTION OF THE SITE continued

Drinking Water.

Does any of the contamination at the Site pose a threat or potential threat to an existing drinking water source (ground water or surface water)?

☐ Yes ☒ No ☐ Unknown

If you answered "YES" above, what type of drinking water system is threatened by the contamination? Please check all that apply.

☐ Single Family
☐ Public Drinking Water Supply

If you checked "Public Drinking Water Supply" above, is the contamination located within or upstream of a 10-year wellhead protection area?

☐ Yes ☐ No ☐ Unknown

To help answer the above question or if you answered "Yes" to that question, then go to https://fortress.wa.gov/doh/eh/dw/swap/maps/ or call (800) 521-0323.

Indoor Air.

Are contaminant odors present in any buildings, manholes, or other confined spaces?

☐ Yes ☒ No ☐ Unknown

If you answered "YES" above, please specify:

_____

_____

_____

_____

Attach additional pages if necessary.

H. Maps of the Site.

Please attach to this application map(s) that identify, to the extent known, the following:

- ❑ The location of the site.
- ❑ The properties, and any public right-of ways, affected by the site.
- ❑ The source(s) of the release(s) at the site.
- ❑ The nature and extent of contamination at the site.
- ❑ Any human or ecological receptors impacted by the site (e.g., drinking water wells).
- ❑ The physical characteristics of the site (e.g., property lines, building and road outlines, surface water bodies, water supply wells, ground water flow direction, and utility right-of-ways).
- ❑ The properties adjacent to the site and the uses of those properties (e.g., gas station, dry cleaner, residential).

Part 3 – OPERATIONAL HISTORY OF THE SITE

A. Current Use of Source Property. *Note that the following questions refer only to the Source Property, not other properties affected by the Site. Answer these questions to the best of your ability.*

Current Property Owners. To the extent known, please identify below the current owner of the source property.

Name: Chad Winger	Title:	
Organization: Winger Family Limited Partnership		
Mailing address: 4600 Shady Hollow Lane		
City: Bremerton	State: WA	Zip code: 98312
Phone: 206-396-1653		

Current Business Owner (Operator). To the extent known, please identify below the current owner of the business located on the source property.

Name: Brannon Birrer	Title:	
Organization: Golden Homes		
Mailing address: 19647 Viking Way NW		
City: Poulsbo	State: WA	Zip code:
Phone:		

Current Business Operations. To the extent known, please identify below the current operations of the business located on the source property.

What is the current land use of the source property? Please check all that apply.

- ☐ Residential
- ☒ Commercial
- ☐ Industrial
- ☐ Agricultural
- ☐ Other – please specify: _____
- ☐ School
- ☐ Childcare facility
- ☐ Park

Is there a currently operational commercial or industrial business located on the source property?

☒ Yes ☐ No ☐ Unknown

If you answered "YES" above, please identify in the following table the current business operations using the North American Industry Classification System (NAICS) codes and specifying the operations.

NAICS Code	Description of Operations
EX: 447110	Gasoline Stations with Convenience Stores
441210	RV Sales

Part 3 – OPERATIONAL HISTORY OF THE SITE continued

Is there a solid waste handling facility located on the Source Property?

☐ Yes ☒ No ☐ Unknown

If you answered "YES" above, please identify:

_____

Attach additional pages if necessary.

Is there a dangerous waste treatment, storage, or disposal facility located on the Source Property?

☐ Yes ☒ No ☐ Unknown

If you answered "YES" above, please identify:

_____

Attach additional pages if necessary.

Regulation of Current Business Operations.

Does the business operate under any federal, state, or local permits related to the release of hazardous substances into the environment (e.g., NPDES permit)?

☐ Yes ☒ No ☐ Unknown

If you answered "YES" above, please specify the regulated operation, the name of the permit, and the date it was issued in the table below.

REGULATED OPERATION	PERMIT	DATE ISSUED
EX: Wastewater discharge	NPDES permit	02/02/02

Has a state or federal notice of enforcement action (e.g., notice of violation) ever been issued related to the release of hazardous substances at the business?

☐ Yes ☒ No ☐ Unknown

If you answered "yes" above, please specify (notice and year issued): _____

Have business operations resulted in any other spills or other unpermitted releases on the source property?

☐ Yes ☒ No ☐ Unknown

If you answered "YES" above, please specify in the table below.

RELEASE	DATE OF RELEASE	STATUS OF RELEASE

Part 3 – OPERATIONAL HISTORY OF THE SITE continued

Storage Tank Information. In table below, please identify all above ground storage tanks (AST) and underground storage tanks (UST) that have been used for storing hazardous substances on the source property, irrespective of whether the tanks are still in use or in place. *If you are unable to provide answers to specific questions regarding a tank, please enter "U" for unknown.*

IDENTIFICATION				STATUS AND CLOSURE				RELEASES	
Hazardous Substance	Type (AST/UST)	Size (Gallons)	TANK ID	DATE INSTALL	IN USE (Y/N)	DATE CLOSED	CLOSURE METHOD (*)	PAST (Y/N)	CURRENT (Y/N)
EX: Diesel	UST	10,000	4	02/87	N	05/98	Removed	Y	N
Diesel	UST	500	1	Unk	N	03/03	Removed	Y	N
Gasoline	UST	1,000	2	Unk	N	03/03	Removed	Y	N

(*) Options = Removed or Closed in Place

B. Past Use of Source Property. *Note that the following questions refer only to the Source Property, not other properties affected by the Site. Please answer these questions to the best of your ability.*

Past Property Owners. To the extent known, please identify below the owner of the source property at the time the release occurred.

Name: Chad Winger		Title:
Organization: Winger Family Unlimited		
Mailing address: PO Box 603		
City: Seabeck	State: WA	Zip code: 98380
Phone:	Fax:	E-mail:

Past Business Owners (Operators). To the extent known, please identify below the owner of the business (operator) at the time the release occurred.

Name:		Title:
Organization:		
Mailing address:		
City:	State:	Zip code:
Phone:	Fax:	E-mail:

Identification of Past Business Operations. Please identify in the following table the past operations of businesses located on the source property using the North American Industry Classification System (NAICS) codes and/or specifying the operations.

NAICS CODE	DESCRIPTION OF OPERATIONS
EX: 447110	Gasoline Stations with Convenience Stores

Part 3 – OPERATIONAL HISTORY OF THE SITE continued

C. Future Use of Source and Affected Properties. The following questions refer to both source and affected properties. Please answer these questions to the best of your ability.

Will any ownership interest in the source or affected properties be conveyed prior to, or upon completion of, the cleanup?

☒ Yes ☐ No ☐ Unknown

If you answered "YES" above, please specify:

The property is for sale.

Attach additional pages if necessary.

Will any of the source or affected properties, or portions of those properties, be redeveloped as part of the cleanup?

☐ Yes ☐ No ☒ Unknown

If you answered "YES" above, please specify the proposed land use below. Please check all that apply.

☐ Residential
☐ Commercial
☐ Industrial
☐ Agricultural
☐ School
☐ Childcare facility
☐ Park
☐ Other – please specify:

Please also specify the activities proposed for that land use:

The property is for sale and it is likely that it will be redeveloped but the nature of redevelopment is unknown at this time.

Attach additional pages if necessary.

Part 4 – ADMINISTRATIVE HISTORY OF THE SITE

Have you previously reported the release(s) of hazardous substances at the Site to Ecology?

☒ Yes – If so, when? 4/28/2003 ☐ No ☐ Unknown

Has the cleanup of the Site, or any portion of the Site, ever been managed under the VCP?

☐ Yes – If so, please specify the VCP Project Number: _____
☒ No
☐ Unknown

Has the cleanup of the Site, or any portion of the Site, ever been managed under a federal or state order or decree?

☐ Yes – If so, please specify the type and docket number: _____
☒ No
☐ Unknown

Part 5 – DESCRIPTION OF INDEPENDENT REMEDIAL ACTIONS AT THE SITE

A. Scope of Remedial Actions.

Do you plan to characterize and address all of the contamination at the Site, including any contamination located on affected adjacent properties, as part of the VCP project?

☒ Yes ☐ No ☐ Unknown

If you answered "NO" above, please describe below the scope of the VCP project, including the contamination (properties, portions of a property, media and/or hazardous substances) that you DO NOT plan on characterizing and/or addressing as part of the VCP project. Please include additional pages if necessary.

Attach additional pages if necessary.

Part 5 – DESCRIPTION OF INDEPENDENT REMEDIAL ACTIONS AT THE SITE continued

B. Status of Remedial Actions.

What is the current status of remedial actions at the site? Please check all that apply in the table below.

Remedial Action	Planned	Ongoing	Completed	Not Applicable
Initial response (UST only)			X	
Interim action				X
Remedial investigation			X	
Feasibility study				X
Cleanup action			X	

C. Documentation of Remedial Actions.

Please list in the table below all known remedial action plans or reports produced for the site, including:

- The title of the plan or report,
- The author (e.g. consulting firm) of the plan or report,
- The date the plan or report was produced,
- Whether the plan or report has been submitted to Ecology,
- The date the plan or report was submitted to Ecology.

	Title	Author	Date	Submitted to Ecology	
				Y/N?	Date
Ex:	John Doe's Site: Remedial Investigation Work Plan	Mom's Consulting Firm	02/20/05	NO	N/A
1.	UST Site Assessment Report	AESI	05/2003	Y	
2.	Independent Cleanup/GW Characterization	AESI	06//2003	Y	
3.	GW Monitoring Report Third Quarter 2003	AESI	12/2003	Y	
4.	GW Monitoring Report Winter Quarter 03-04	AESI	6/2004	Y	
5.	GW Monitoring Report Spring Quarter 2004	AESI	6/2004	Y	
6.	Cleanup Action Report	AESI	11/3016	Y	
7.					
8.					
9.					
10.					

Part 6 – STATEMENT AND SIGNATURE

A. Statement and Signature. The undersigned affirms that the information contained in this application is true and accurate to the best of his or her knowledge. Please note that someone other than the Customer may sign this Application Form.

Name: Jon Sondergaard	Title: Sr. Principal	
Signature:		Date: 12/21/16
Organization: Associated Earth Sciences, Inc.		
Mailing address: 911 Fifth Avenue		
City: Kirkland	State: WA	Zip code: 98033
Phone: 425-827-7701	Fax:	E-mail: jsondergaard@aesgo.com

B. Affiliation.

What is the signatory's involvement at the Site? Please check all that apply.

- ☐ Customer
- ☐ Property Owner
- ☒ Consultant
- ☐ Attorney
- ☐ Other – please specify: _____

If you need this publication in an alternate format, please call the Toxics Cleanup Program at 360-407-7170. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.

VCP AGREEMENT

DEPARTMENT OF ECOLOGY
State of Washington

INSTRUCTIONS: Submit this Agreement (original) to Ecology as part of your Application. Before submitting, enter the Customer's name and the Site's address on the first page and sign the Agreement on the second page. If your Application is accepted, then Ecology will do the following: 1) identify the Site and VCP project in the box below; 2) sign the Agreement; and 3) send you a copy of the completed Agreement.

This document constitutes an Agreement between the State of Washington Department of Ecology (Ecology) and WINGER FAMILY LIMITED PARTNERSHIP (Customer) to provide informal site-specific technical consultations under the Voluntary Cleanup Program (VCP) for the Site identified below and associated with the following address: 19647 VIKING AV. N.W. POULSBO, WA.

The purpose of this Agreement is to facilitate independent remedial action at the Site. Ecology is entering into this Agreement under the authority of the Model Toxics Control Act (MTCA), Chapter 70.105D RCW, and its implementing regulations, Chapter 173-340 WAC. If a term in this Agreement is defined in MTCA or Chapter 173-340 WAC, then that definition shall govern.

Services Provided by Ecology

Upon request, Ecology agrees to provide the Customer informal site-specific technical consultations on the independent remedial actions proposed for or performed at the Site consistent with WAC 173-340-515(5). Those consultations may include assistance in identifying applicable regulatory requirements and opinions on whether the remedial actions proposed for or conducted at the Site meet those requirements.

Ecology may use any appropriate resource to provide the Customer with the requested consultative services. Those resources may include, but shall not be limited to, those of Ecology and the Office of the Attorney General. However, Ecology shall not use independent contractors unless the Customer provides Ecology with prior written authorization.

In accordance with RCW 70.105D.030(1)(i), any opinions provided by Ecology under this Agreement are advisory only and not binding on Ecology. Ecology, the state, and officers and employees of the state are immune from all liability. Furthermore, no cause of action of any nature may arise from any act or omission in providing, or failing to provide, informal advice and assistance under the VCP.

Payment for Services by Customer

The Customer agrees to pay all costs incurred by Ecology in providing the informal site-specific technical consultations requested by the Customer consistent with WAC 173-340-515(6) and 173-340-550(6). Those costs may include the costs incurred by attorneys or independent contractors used by Ecology to provide the requested consultative services. Ecology's hourly costs shall be determined based on the method in WAC 173-340-550(2).

Ecology shall mail the Customer a monthly itemized statement of costs (invoice) by the tenth day of each month (invoice date) that there is a balance on the account. The invoice shall include a summary of the costs incurred, payments received, identity of staff involved, and amount of time staff spent on the project.

The Customer shall pay the required amount by the due date, which shall be thirty (30) calendar days after the invoice date. If payment has not been received by the due date, then Ecology shall withhold

FOR COMPLETION BY ECOLOGY ONLY	**Facility / Site Name:**
	Facility / Site No.:
	VCP Project No.:

any requested opinions and notify the Customer by certified mail that the debt is past due. If payment has not been received within sixty (60) calendar days of the invoice date, then Ecology shall stop all work under the Agreement and may, as appropriate, assign the debt to a collection agency under Chapter 19.16 RCW. The Customer agrees to pay the collection agency fee incurred by Ecology in the course of debt collection.

Reservation of Rights / No Settlement

This Agreement does not constitute a settlement of liability to the state under MTCA. This Agreement also does not protect a liable person from contribution claims by third parties for matters addressed by the Agreement. The state does not have the authority to settle with any person potentially liable under MTCA except in accordance with RCW 70.105D.040(4). Ecology's signature on this Agreement in no way constitutes a covenant not to sue or a compromise of any Ecology rights or authority.

Ecology reserves all rights under MTCA, including the right to require additional or different remedial actions at the Site should it deem such actions necessary to protect human health and the environment, and to issue orders requiring such remedial actions. Ecology also reserves all rights regarding the injury to, destruction of, or loss of natural resources resulting from the release or threatened release of hazardous substances at the Site.

Effective Date, Modifications, and Severability

The effective date of this Agreement shall be the date on which this Agreement is signed by the Toxics Cleanup Program's Section Manager or delegated representative. This Agreement may be amended by mutual agreement of Ecology and the Customer. Amendments shall be in writing and shall be effective when signed by the Toxics Cleanup Program's Section Manager or delegated representative. If any provision of this Agreement proves to be void, it shall in no way invalidate any other provision of this Agreement.

Termination of Agreement

Either party may terminate this Agreement without cause by sending written notice by U.S. mail to the other party. The effective date of termination shall be the date Ecology sends notice to the Customer or the date Ecology receives notice from the Customer, whichever occurs first. Unless otherwise directed, issuance of a No Further Action opinion, either for the Site as a whole or for a portion of the real property located within the Site, shall constitute notice of termination by Ecology.

Under this Agreement, the Customer is only responsible for costs incurred by Ecology before the effective date of termination. However, termination of this Agreement shall not affect any right Ecology may have to recover its costs under MTCA or any other provision of law.

Representations and Signatures

The undersigned representative of the Customer hereby certifies that he or she is fully authorized to enter into this Agreement and to execute and legally bind the Customer to comply with the Agreement.

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

_____
Signature

_____
Printed Name

Section Manager, _____
Toxics Cleanup Program *Section*

Date: _____

MICHAEL K WINGER
Name of Customer

Michael K Winger
Signature

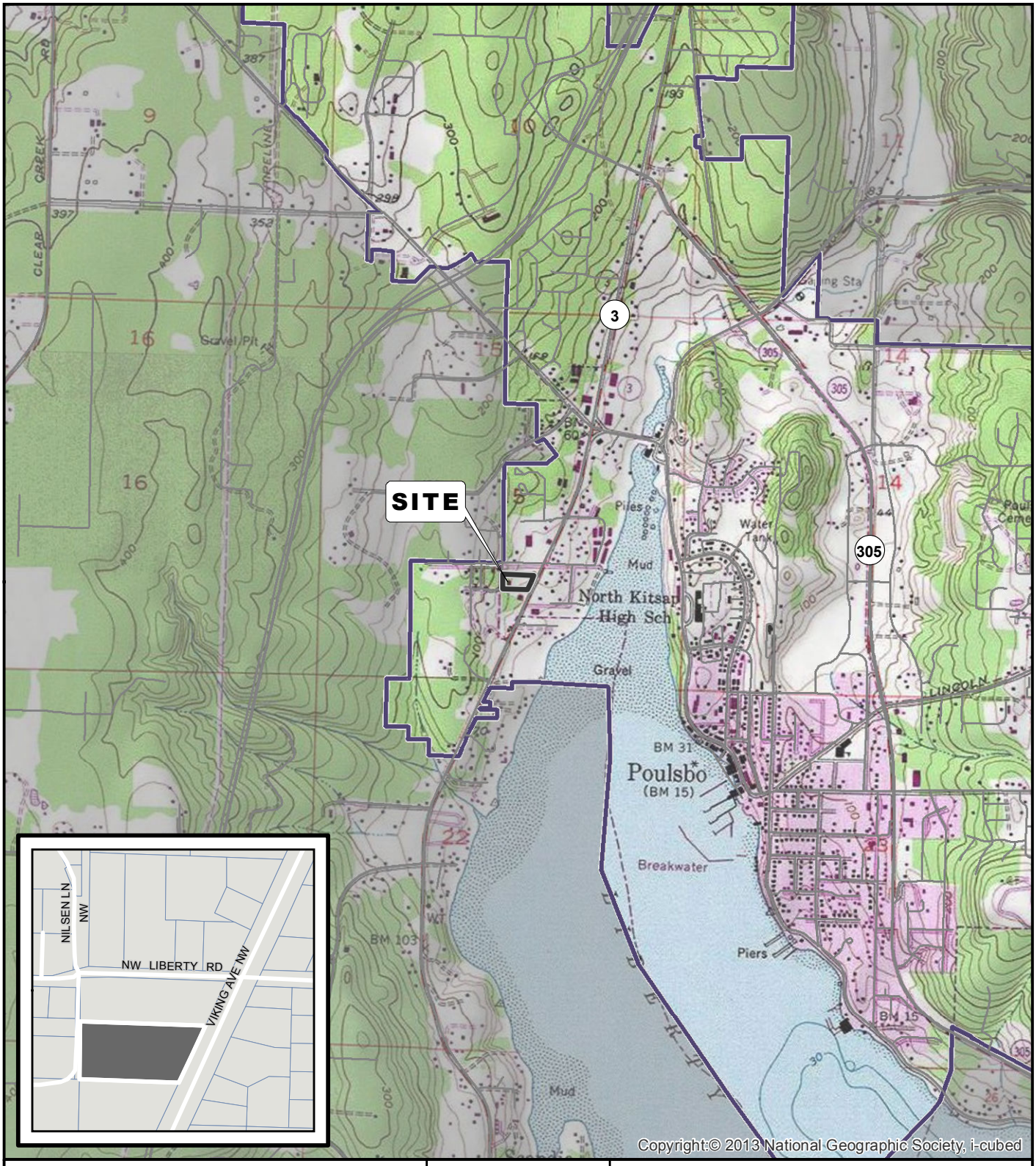
MICHAEL K WINGER
Printed Name of Signatory

GENERAL PARTNER
Title of Signatory

Date: 11/15/16

If you need this document in an alternative format, please call the Toxics Cleanup Program at 360-407-7170. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.

FIGURES



DATA SOURCES / REFERENCES:
USGS: 24K SERIES TOPOGRPAHIC MAPS
KITSAP CO: STREETS, PARCELS 2015

LOCATIONS AND DISTANCES SHOWN ARE APPROXIMATE

N

0 1000 2000

FEET

NOTE: BLACK AND WHITE REPRODUCTION OF THIS COLOR ORIGINAL MAY REDUCE ITS EFFECTIVENESS AND LEAD TO INCORRECT INTERPRETATION

associated earth sciences incorporated

VICINITY MAP

WINGER PROPERTY / GOLDEN HOMES
POULSBO, WASHINGTON

PROJ NO.	DATE:	FIGURE:
KV160495A	12/16	1

Document Path: G:\GIS_Projects\aTemplates\NTRPlaVM_Template\160XXX Fig1 ProjectVicinity_Kitsap.mxd

LEGEND:

SITE BOUNDARY

NOTE: LOCATION AND DISTANCES SHOWN ARE APPROXIMATE.
BASE MAP REFERENCE: BING

N

0 100 200

FEET

NOTE: BLACK AND WHITE REPRODUCTION OF THIS COLOR ORIGINAL MAY REDUCE ITS EFFECTIVENESS AND LEAD TO INCORRECT INTERPRETATION.

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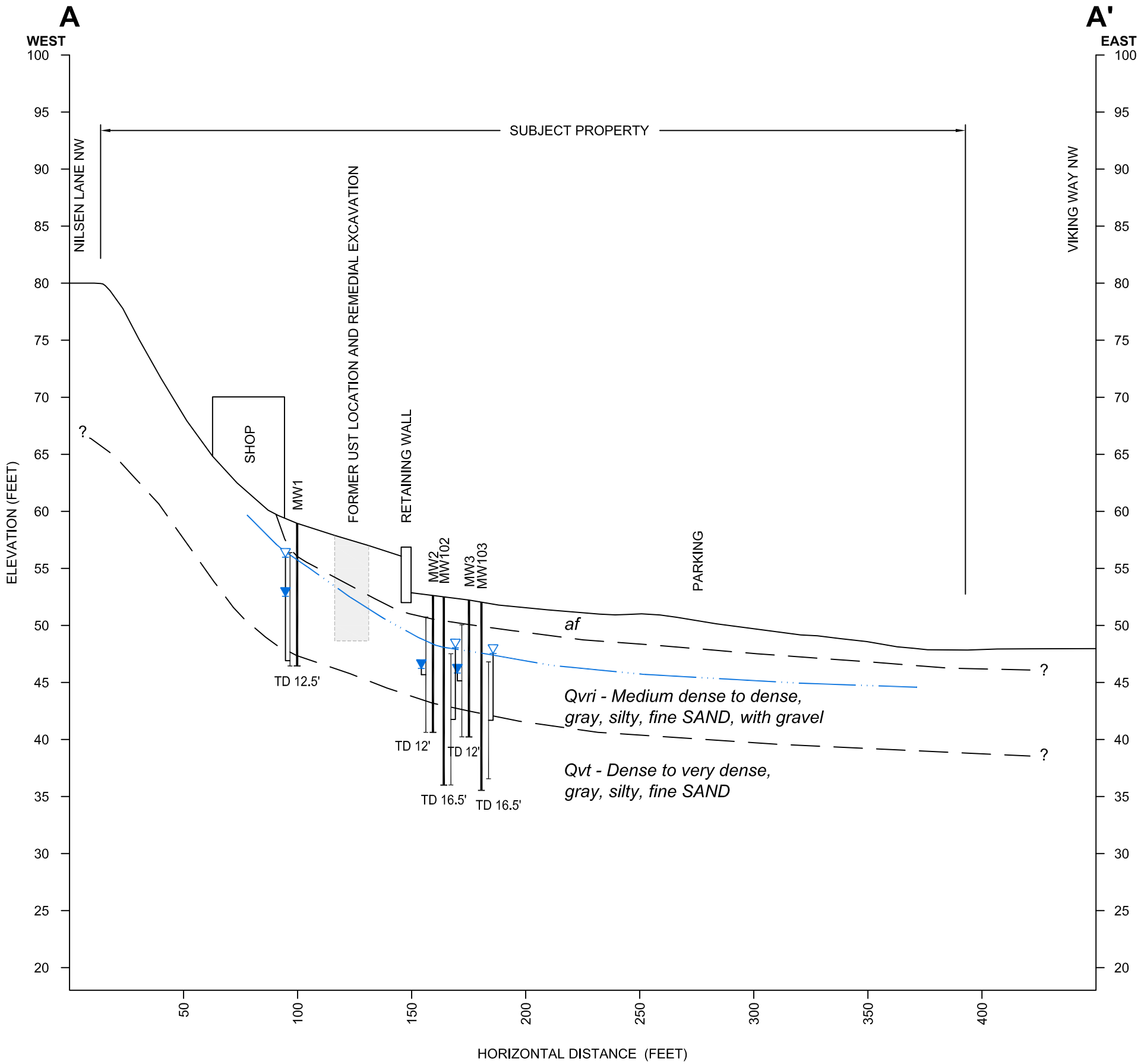
SITE AND SURROUNDING AREA

GOLDEN HOMES
POULSBO, WASHINGTON

PROJ NO.	DATE:	FIGURE:
KV160495A	12/16	2

160495 Golden Homes \ 160495 F2 Site Area.cdr



LEGEND:

af	FILL
Qvri	VASHON ICE CONTACT DEPOSITS
Qvt	VASHON LODGEMENT TILL
	BORING
	WATER LEVEL AT TIME OF DRILLING
	STATIC WATER LEVEL DATE PROVIDED IN LOGS
	SCREENED INTERVAL
TD	TOTAL DEPTH OF BORING
	GEOLOGIC CONTACT
	INFERRED GROUND WATER TABLE

VERTICAL EXAGGERATION = 5X

NOTE: LOCATION AND DISTANCES SHOWN ARE APPROXIMATE

NOTES:
1. THE SUBSURFACE CONDITIONS PRESENTED IN THIS GEOLOGIC CROSS-SECTION ARE BASED ON AN INTERPRETATION OF CONDITIONS ENCOUNTERED IN WIDELY SPACED EXPLORATIONS COMPLETED AT THE SUBJECT SITE AND RELEVANT SITE INFORMATION DEVELOPED AND PROVIDED BY OTHERS. THE SUBSURFACE INTERPRETATIONS PRESENTED IN THIS GEOLOGIC CROSS-SECTION SHOULD NOT BE CONSTRUED AS A WARRANTY OF ACTUAL SUBSURFACE CONDITIONS AT THE SITE. OUR EXPERIENCE HAS SHOWN THAT SOIL AND GROUND WATER CONDITIONS CAN VARY SIGNIFICANTLY OVER SMALL DISTANCES.

NOTE: BLACK AND WHITE REPRODUCTION OF THIS COLOR ORIGINAL MAY REDUCE ITS EFFECTIVENESS AND LEAD TO INCORRECT INTERPRETATION

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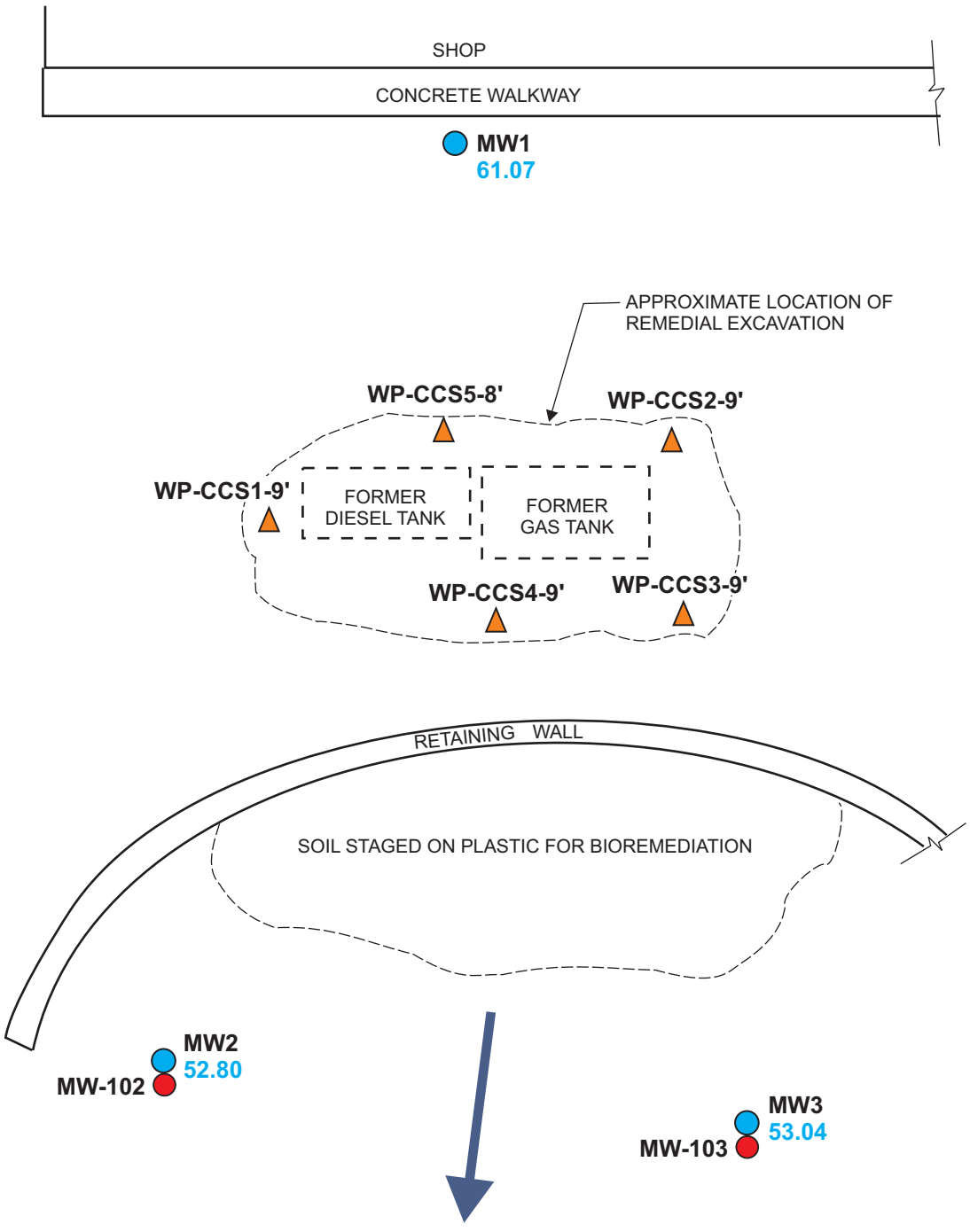
CONCEPTUAL SITE MODEL
GEOLOGIC CROSS-SECTION A - A'
GOLDEN HOMES
POULSBO, WASHINGTON

PROJ NO.	DATE:	FIGURE:
KV160495A	12/16	3

160495 Golden Homes \ 160495 GeoSect.dwg LAYOUT: F3 Sect A-A



LEGEND:

- **MW** — MONITORING WELL - 2003
- **WP** — CONFIRMATION SOIL SAMPLE - 2003
- **52.80** — GROUNDWATER ELEVATION IN FEET
- INFERRED GROUND WATER FLOW DIRECTION
- **MW** — MONITORING WELL - 2016

NOTE: LOCATION AND DISTANCES SHOWN ARE APPROXIMATE.

N

NO SCALE

NOTE: BLACK AND WHITE REPRODUCTION OF THIS COLOR ORIGINAL MAY REDUCE ITS EFFECTIVENESS AND LEAD TO INCORRECT INTERPRETATION.

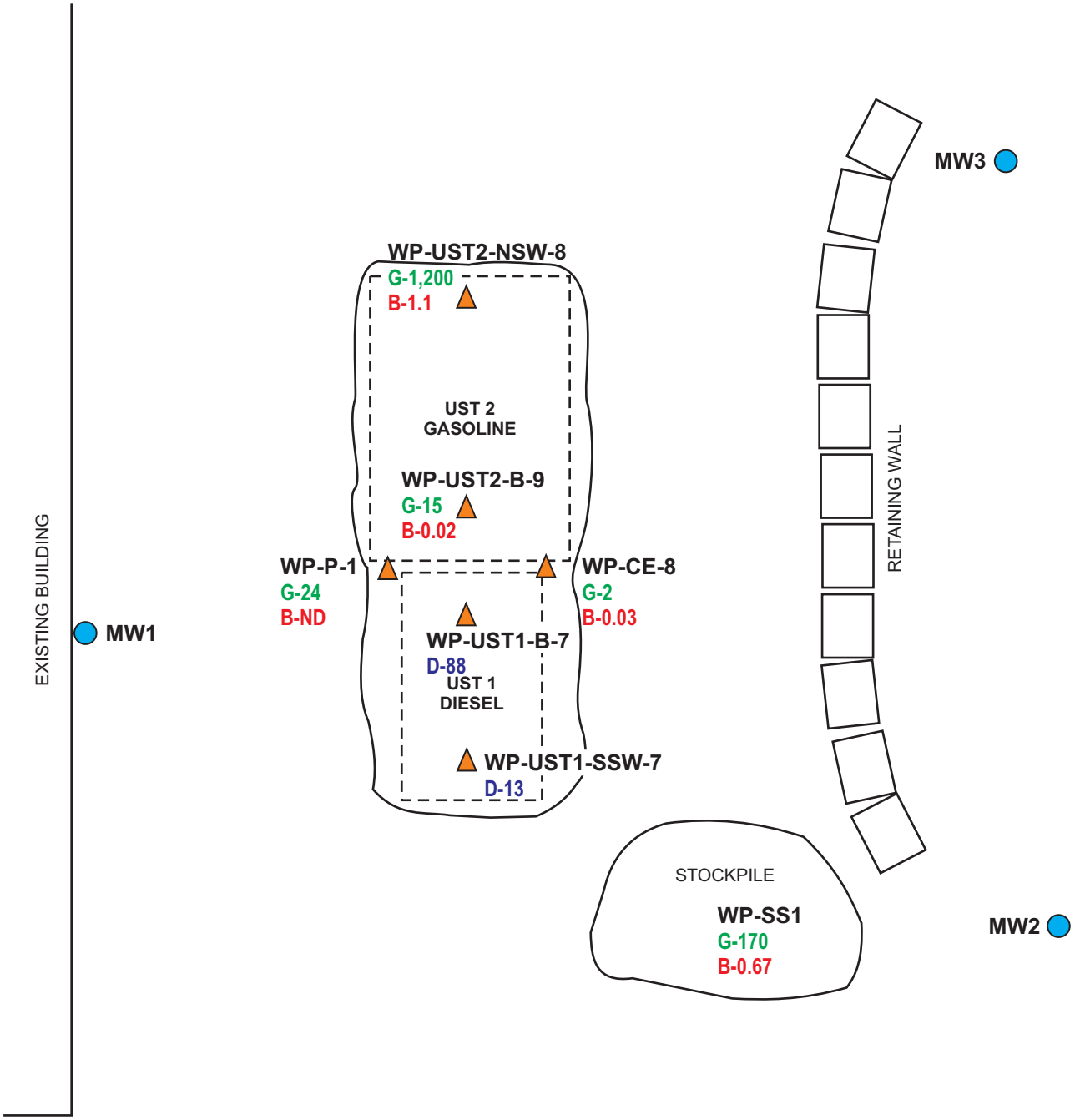
associated earth sciences incorporated

GROUND WATER FLOW MAP

GOLDEN HOMES
POULSBO, WASHINGTON

PROJ NO.	DATE:	FIGURE:
KV160495A	12/16	4

160495 Golden Homes \ 160495 F4 GW Flow.cdr



LEGEND:

- **MW** — MONITORING WELL - 2003
- **WP** — SITE CHARACTERIZATION SAMPLE - 2003

CONTAMINANT CONCENTRATION IN SOIL:

- **G** = GASOLINE PPM
- **B** = BENZENE PPM
- **D** = DIESEL PPM
- **ND** = BELOW LABORATORY REPORTING LIMITS

NOTE: LOCATION AND DISTANCES SHOWN ARE APPROXIMATE.

N

NO SCALE

NOTE: BLACK AND WHITE REPRODUCTION OF THIS COLOR ORIGINAL MAY REDUCE ITS EFFECTIVENESS AND LEAD TO INCORRECT INTERPRETATION.

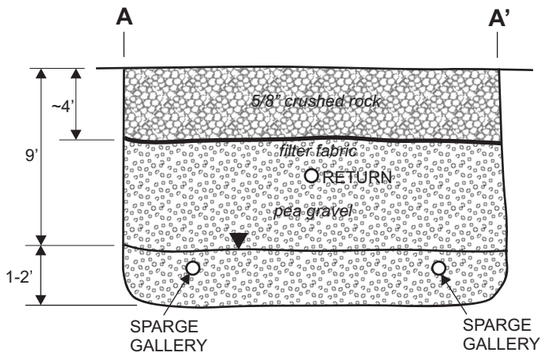
associated earth sciences incorporated

SITE SCHEMATIC WITH CHARACTERIZATION SAMPLES

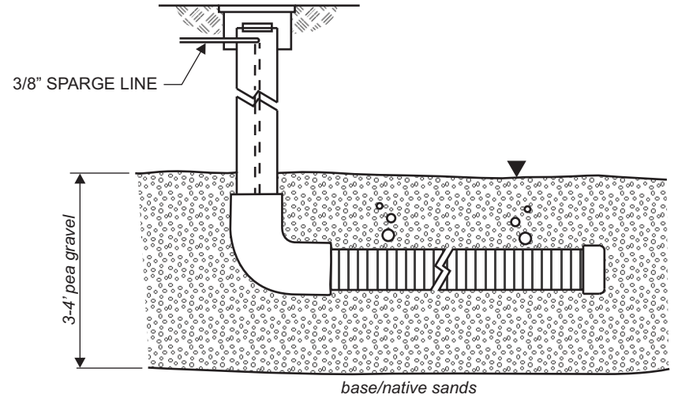
GOLDEN HOMES
POULSBO, WASHINGTON

PROJ NO.	DATE:	FIGURE:
KV160495A	12/16	5

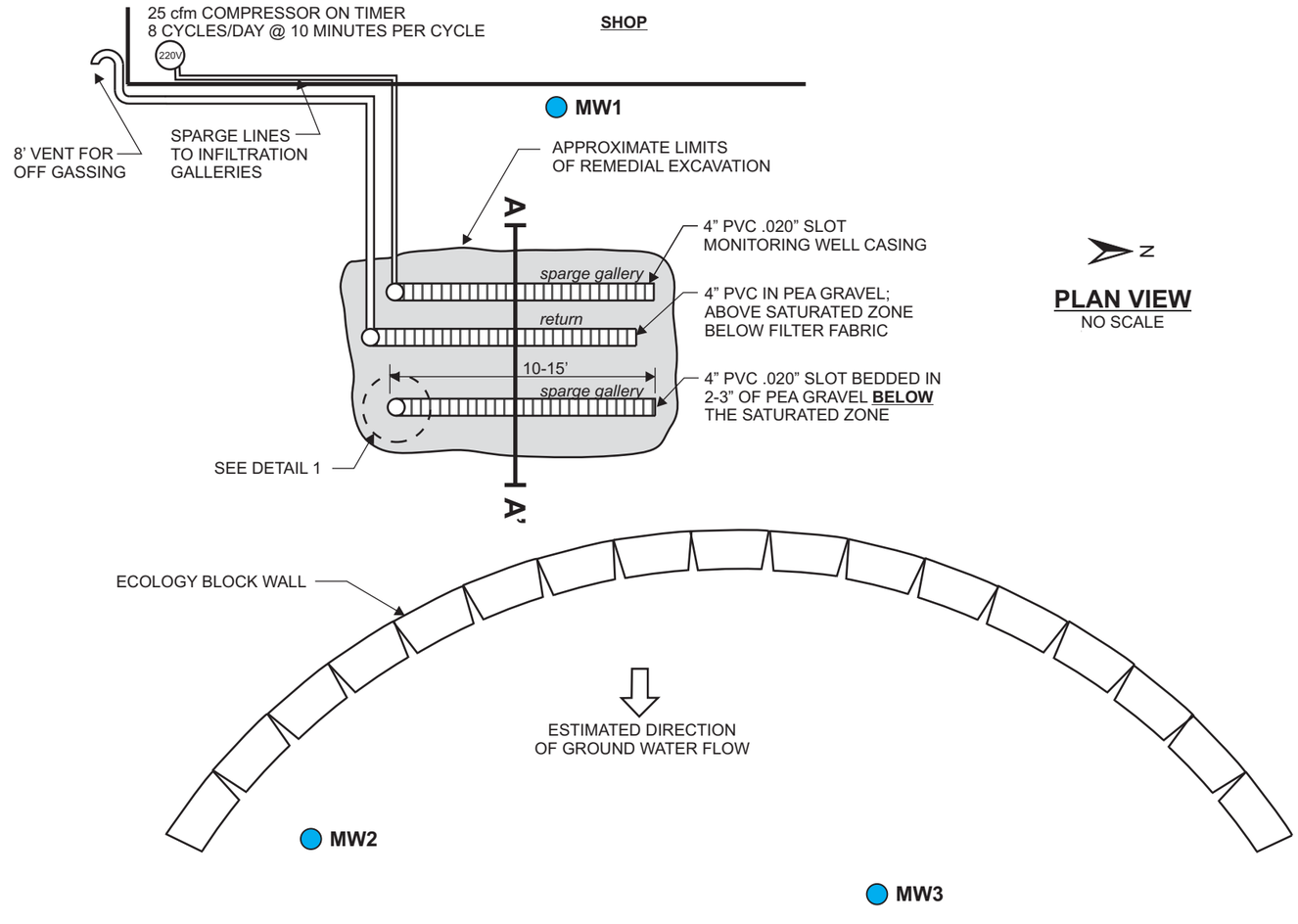
160495 Golden Homes \ 160495 F5 Character.cdr



SECTION A-A'
NO SCALE



DETAIL 1
NO SCALE



N

PLAN VIEW
NO SCALE

LEGEND:

MW MONITORING WELL

NOTE: LOCATION AND DISTANCES SHOWN ARE APPROXIMATE.

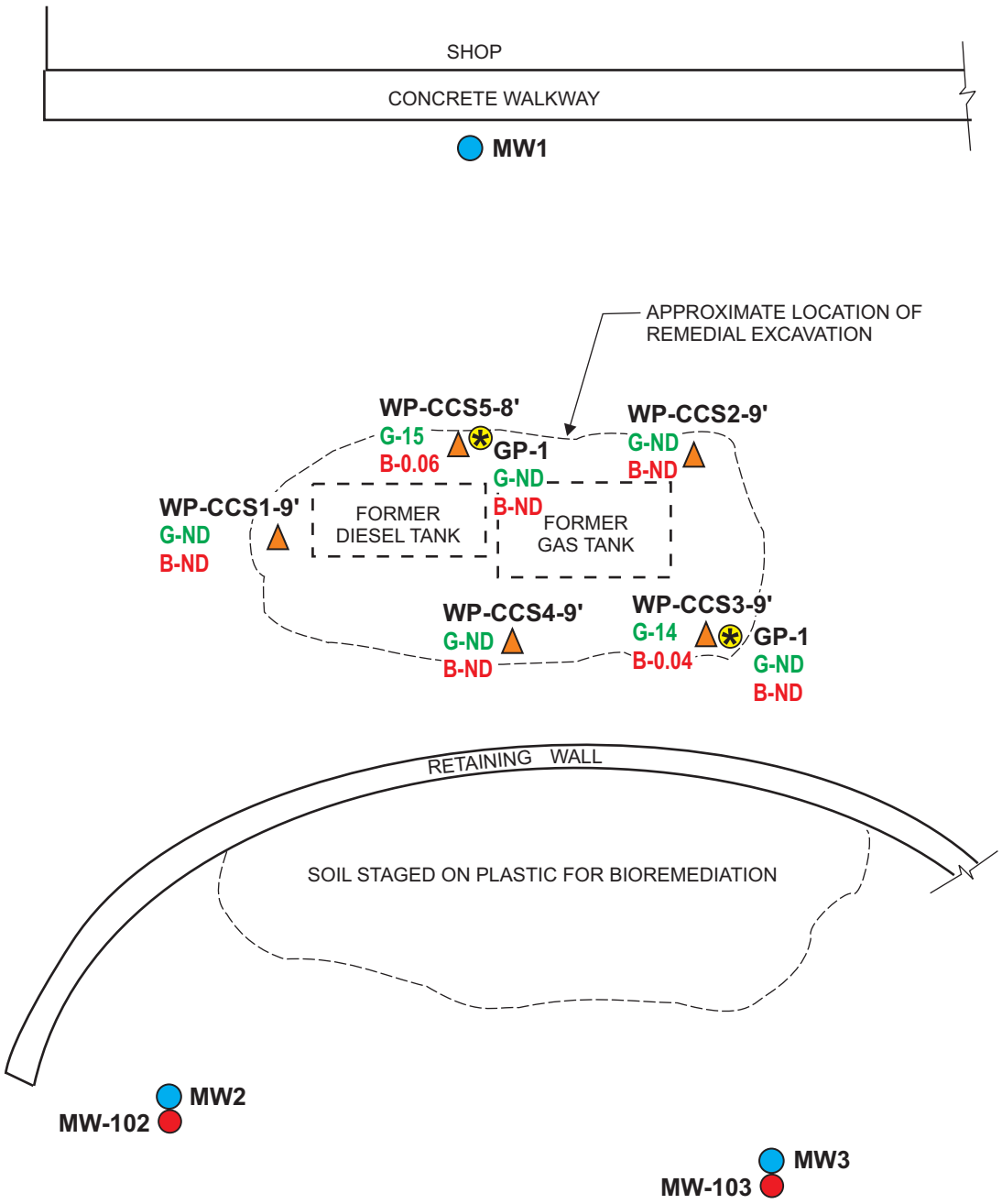
associated earth sciences incorporated

AIR SPARGING SYSTEM

GOLDEN HOMES
POULSBO, WASHINGTON

PROJ NO.	DATE:	FIGURE:
KV160495A	12/16	6

160495 Golden Homes \ 160495 F6 Sparge.cdr



LEGEND:

- **MW** — MONITORING WELL - 2003
- **WP** — SOIL SAMPLE - 2003
- **GP** — CONFIRMATION BORING - 2016
- **G** / **B** / **ND** — CONTAMINANT CONCENTRATION IN SOIL:
  - G = GASOLINE PPM
  - B = BENZENE PPM
  - ND = BELOW LABORATORY REPORTING LIMITS
- **MW** — MONITORING WELL - 2016

NOTE: LOCATION AND DISTANCES SHOWN ARE APPROXIMATE.

N

NO SCALE

NOTE: BLACK AND WHITE REPRODUCTION OF THIS COLOR ORIGINAL MAY REDUCE ITS EFFECTIVENESS AND LEAD TO INCORRECT INTERPRETATION.

associated earth sciences incorporated

SOIL CONFIRMATION SAMPLES

GOLDEN HOMES
POULSBO, WASHINGTON

PROJ NO.	DATE:	FIGURE:
KV160495A	12/16	7

160495 Golden Homes \ 160495 F7 Samples.cdr

APPENDIX A

WELL LOGS

Coarse-Grained Soils - More than 50% [1] Retained on No. 200 Sieve	Gravels - More than 50% [1] of Coarse Fraction Retained on No. 4 Sieve	≤5% Fines [5]	GW	Well-graded gravel and gravel with sand, little to no fines
			GP	Poorly-graded gravel and gravel with sand, little to no fines
		≥12% Fines [5]	GM	Silty gravel and silty gravel with sand
			GC	Clayey gravel and clayey gravel with sand
	Sands - 50% [1] or More of Coarse Fraction Passes No. 4 Sieve	≤5% Fines [5]	SW	Well-graded sand and sand with gravel, little to no fines
			SP	Poorly-graded sand and sand with gravel, little to no fines
		≥12% Fines [5]	SM	Silty sand and silty sand with gravel
			SC	Clayey sand and clayey sand with gravel
Fine-Grained Soils - 50% [1] or More Passes No. 200 Sieve	Silts and Clays Liquid Limit Less than 50		ML	Silt, sandy silt, gravelly silt, silt with sand or gravel
			CL	Clay of low to medium plasticity; silty, sandy, or gravelly clay, lean clay
			OL	Organic clay or silt of low plasticity
	Silts and Clays Liquid Limit 50 or More		MH	Elastic silt, clayey silt, silt with micaceous or diatomaceous fine sand or silt
			CH	Clay of high plasticity, sandy or gravelly clay, fat clay with sand or gravel
			OH	Organic clay or silt of medium to high plasticity
Highly Organic Soils			PT	Peat, muck and other highly organic soils

Terms Describing Relative Density and Consistency

	Density	SPT [2] blows/foot
Coarse-Grained Soils	Very Loose	0 to 4
	Loose	4 to 10
	Medium Dense	10 to 30
	Dense	30 to 50
	Very Dense	>50
	Consistency	**SPT [2] blows/foot**
Fine-Grained Soils	Very Soft	0 to 2
	Soft	2 to 4
	Medium Stiff	4 to 8
	Stiff	8 to 15
	Very Stiff	15 to 30
	Hard	>30

Test Symbols

G = Grain Size
M = Moisture Content
A = Atterberg Limits
C = Chemical
DD = Dry Density
K = Permeability

Component Definitions

Descriptive Term	Size Range and Sieve Number
Boulders	Larger than 12"
Cobbles	3" to 12"
Gravel	3" to No. 4 (4.75 mm)
Coarse Gravel	3" to 3/4"
Fine Gravel	3/4" to No. 4 (4.75 mm)
Sand	No. 4 (4.75 mm) to No. 200 (0.075 mm)
Coarse Sand	No. 4 (4.75 mm) to No. 10 (2.00 mm)
Medium Sand	No. 10 (2.00 mm) to No. 40 (0.425 mm)
Fine Sand	No. 40 (0.425 mm) to No. 200 (0.075 mm)
Silt and Clay	Smaller than No. 200 (0.075 mm)

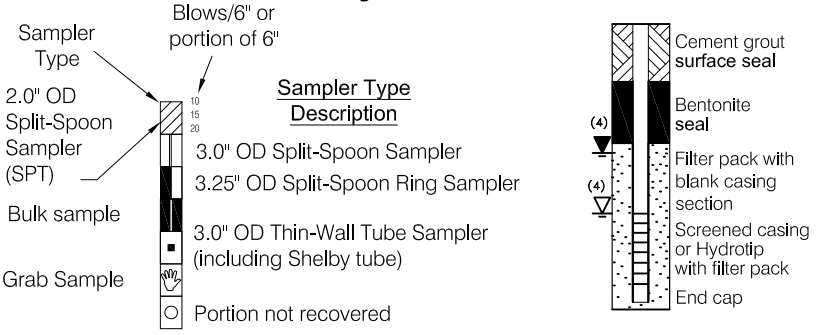
[3] Estimated Percentage

Component	Percentage by Weight
Trace	<5
Some	5 to <12
Modifier (silty, sandy, gravelly)	12 to <30
Very *modifier* (silty, sandy, gravelly)	30 to <50

Moisture Content

Dry - Absence of moisture, dusty, dry to the touch
Slightly Moist - Perceptible moisture
Moist - Damp but no visible water
Very Moist - Water visible but not free draining
Wet - Visible free water, usually from below water table

Symbols



(1) Percentage by dry weight
(2) (SPT) Standard Penetration Test (ASTM D-1586)
(3) In General Accordance with Standard Practice for Description and Identification of Soils (ASTM D-2488)
(4) Depth of ground water
▼ ATD = At time of drilling
▽ Static water level (date)
(5) Combined USCS symbols used for fines between 5% and 12%

Classifications of soils in this report are based on visual field and/or laboratory observations, which include density/consistency, moisture condition, grain size, and plasticity estimates and should not be construed to imply field or laboratory testing unless presented herein. Visual-manual and/or laboratory classification methods of ASTM D-2487 and D-2488 were used as an identification guide for the Unified Soil Classification System.

associated earth sciences incorporated

Exploration Log

Project Number	Exploration Number	Sheet
KV160495A	GP-1 (SW)	1 of 1

Project Name	Golden Homes	Ground Surface Elevation (ft)	
Location	Poulsbo, WA	Datum	N/A
Driller/Equipment	ESN / Geoprobe	Date Start/Finish	10/13/16,10/13/16
Hammer Weight/Drop	N/A	Hole Diameter (in)	2 inches

Depth (ft)	ST	Samples	Graphic Symbol	DESCRIPTION	Well Completion	Water Level	Blows/6"	Blows/Foot (10 20 30 40)	Other Tests
				Gravel					
				Fill					
				Loose to medium dense, slightly moist, brownish gray, gravelly, fine to medium SAND, trace silt; subangular gravels; no odor, no staining (SW).					
5									
		S-1		**GP-1-101316**					
				Pea gravel; no odor, no staining (GP).					
				Becomes very moist to wet.		▼			
		S-2		**GP-1-101316-GW**					
10				Bottom of exploration boring at 10 feet Backfilled with bentonite chips					
15									

Sampler Type (ST):

- 2" OD Split Spoon Sampler (SPT)
- 3" OD Split Spoon Sampler (D & M)
- Grab Sample
- No Recovery
- Ring Sample
- Shelby Tube Sample

M - Moisture

- Water Level ()
- Water Level at time of drilling (ATD)

Logged by: KMA

Approved by: JNS

AESIBOR 160495.GPJ October 19, 2016

associated earth sciences incorporated

Exploration Log

Project Number	Exploration Number	Sheet
KV160495A	GP-2 (NE)	1 of 1

Project Name	Golden Homes	Ground Surface Elevation (ft)	
Location	Poulsbo, WA	Datum	N/A
Driller/Equipment	ESN / Geoprobe	Date Start/Finish	10/13/16,10/13/16
Hammer Weight/Drop	N/A	Hole Diameter (in)	2 inches

Depth (ft)	ST	Samples	Graphic Symbol	DESCRIPTION	Well Completion	Water Level	Blows/6"	Blows/Foot (10 20 30 40)	Other Tests
				Grass / Root Mat					
				Fill					
				Loose, slightly moist, brownish gray, gravelly, fine to medium SAND, trace silt; subangular gravel; no odor, no staining (SW).					
				Vashon Ice-Contact					
				Loose to medium dense, moist, brownish gray to gray, sandy SILT, trace fine to coarse gravel, trace organics; no odor, no staining (ML).					
5				Loose to medium dense, moist to very moist, gray, medium SAND to fine to medium SAND, some silt, trace gravel; no odor, slight gray staining (SM).					
				Becomes wet; no sheen, slight odor, slight gray staining.		▼			
		S-1		**GP-2-101316**					
		S-2		**GP-2-101316-GW**					
10				Bottom of exploration boring at 10 feet Backfilled with bentonite chips					
15									

Sampler Type (ST):

- 2" OD Split Spoon Sampler (SPT)
- 3" OD Split Spoon Sampler (D & M)
- Grab Sample
- No Recovery
- Ring Sample
- Shelby Tube Sample

M - Moisture

- Water Level ()
- Water Level at time of drilling (ATD)

Logged by: KMA

Approved by: JNS

AESIBOR 160495.GPJ October 19, 2016

associated earth sciences incorporated

Geologic & Monitoring Well Construction Log

Project Number	Well Number	Sheet
KV160495A	MW-102	1 of 1

Project Name: Golden Homes
Location: Poulsbo, WA
Elevation (Top of Well Casing):
Surface Elevation (ft):
Water Level Elevation:
Date Start/Finish: 12/7/16,12/7/16
Drilling/Equipment: Holocene / HSA
Hole Diameter (in): 6 inches
Hammer Weight/Drop: 140# / 30"

Depth (ft)	Water Level	WELL CONSTRUCTION	ST	Blows/ 6"	Graphic Symbol	DESCRIPTION
		Flush mount monument				**Gravel - 3 inches**
						Fill
		Concrete 0 to 1.5 feet				
		Bentonite 1.5 to 3 feet		2		Loose, slightly moist, dark brown, fine sandy SILT, some to trace organics (topsoil); poor recovery; no staining, no odor (ML).
		2-inch I.D. Sch 40 PVC casing 0 to 5 feet		1 2		
5				2 2 3		As above, trace organics.
						Ice-Contact
						Loose, slightly moist, grayish brown, medium SAND, trace fine sand, trace coarse sand; no staining, no odor (SP).
						Medium dense, moist to very moist, gray, fine to medium SAND, trace gravel; no staining, no odor (SW).
		10/20 Colorado silica sand 3 to 15 feet		7 16 17		**MW-102:8-9**
10		2-inch I.D. Sch 40 PVC well screen 0.010-inch slot width 5 to 15 feet		16 16 15		Medium dense, slightly moist to moist, gray, silty, fine to medium SAND, trace gravel; no staining, no odor (SM).
						Vashon Lodgement Till
		Slip cap				
15				17 31 50/6"		Very dense, slightly moist, gray, very silty, fine to medium SAND, trace fine gravel; no staining, no odor (SM).
		Well tag #BJU-356				Boring terminated at 16.5 feet. Well completed at 15 feet on 12/7/16.

Sampler Type (ST):

- 2" OD Split Spoon Sampler (SPT)
- 3" OD Split Spoon Sampler (D & M)
- Grab Sample
- No Recovery
- Ring Sample
- Shelby Tube Sample
- M - Moisture
- Water Level ()
- Water Level at time of drilling (ATD)

Logged by: KMA
Approved by: JNS

NWWELL- B 160495MW.GPJ BORING.GDT 12/14/16

associated earth sciences incorporated

Geologic & Monitoring Well Construction Log

Project Number	Well Number	Sheet
KV160495A	MW-103	1 of 1

Project Name: Golden Homes
Location: Poulsbo, WA
Elevation (Top of Well Casing):
Surface Elevation (ft):
Water Level Elevation:
Date Start/Finish: 12/7/16,12/7/16
Drilling/Equipment: Holocene / HSA
Hole Diameter (in): 6 inches
Hammer Weight/Drop: 140# / 30"

Depth (ft)	Water Level	WELL CONSTRUCTION	ST	Blows/ 6"	Graphic Symbol	DESCRIPTION
		Flush mount monument				**Gravel - 3 inches**
						Fill
		Concrete 0 to 1.5 feet				
		Bentonite 1.5 to 3 feet		2		Loose, slightly moist, brownish gray, silty, fine to medium SAND, trace gravel, trace wood debris, trace organics; no staining, no odor (SM).
		2-inch I.D. Sch 40 PVC casing 0 to 5 feet		3 2		
5				1		Loose, slightly moist, brownish gray, silty, fine to medium SAND, trace gravel, trace wood debris, trace organics; no staining, no odor (SM).
				1 1		
						As above, abundant wood debris.
		10/20 Colorado silica sand 3 to 15 feet		7 12 16		**Ice-Contact** Medium dense, slightly moist, gray, fine to medium SAND, trace to some gravel; no staining, no odor (SW). **MW-103:8-9**
10		2-inch I.D. Sch 40 PVC well screen 0.010-inch slot width 5 to 15 feet		16 31 15		As above (SW).
						Vashon Lodgement Till
		Slip cap				
15				17 32 50/5"		Very dense, wet, gray, very silty, fine to medium SAND, trace gravel; no staining, no odor (SM).
						Boring terminated at 16.5 feet. Well completed at 15 feet on 12/7/16.
		Well tag #BJU-357				

Sampler Type (ST):

- 2" OD Split Spoon Sampler (SPT)
- 3" OD Split Spoon Sampler (D & M)
- Grab Sample
- No Recovery
- Ring Sample
- Shelby Tube Sample
- M - Moisture
- Water Level ()
- Water Level at time of drilling (ATD)

Logged by: KMA
Approved by: JNS

NWWELL- B 160495MW.GPJ BORING.GDT 12/14/16

associated earth sciences incorporated

Exploration Log

Project Number	Exploration Number	Sheet
KV160495A	MW-1	1 of 1

Project Name	Golden Homes	Ground Surface Elevation (ft)	
Location	Poulsbo, WA	Datum	N/A
Driller/Equipment	ESN / Geoprobe	Date Start/Finish	5/06/03,5/06/03
Hammer Weight/Drop	N/A	Hole Diameter (in)	1.5 inches

Depth (ft)	ST	Samples	Graphic Symbol	DESCRIPTION	Well Completion	Water Level	Blows/6"	Blows/Foot (10 20 30 40)	Other Tests
				Fill					
				Surface seal *Well monument*					
				Ice-Contact Deposit					
5		S-1		Medium dense to dense, moist to wet, SILTY fine SAND with gravel, 25% recovery. No sheen or odors.					
				Colorado siica sand filter pack					
10		S-2		Dense, wet, gray, medium-grained SAND. 90% recovery. No sheen or odors.					
				3/4" PVC 0.10" slot screen					
				Lodgement Till					
				Very dense, wet, gray, SILTY fine-grained SAND. No sheen or odor.					
				Bottom of exploration boring at 12.5 feet					
15									
20									
25									
30									
35									

Sampler Type (ST):

- 2" OD Split Spoon Sampler (SPT)
- 3" OD Split Spoon Sampler (D & M)
- Grab Sample
- No Recovery
- Ring Sample
- Shelby Tube Sample

M - Moisture

- Water Level ()
- Water Level at time of drilling (ATD)

Logged by: RNS

Approved by: JNS

AESIBOR 160495.GPJ December 1, 2016

associated earth sciences incorporated

Exploration Log

Project Number	Exploration Number	Sheet
KV160495A	MW-2	1 of 1

Project Name	Golden Homes	Ground Surface Elevation (ft)	
Location	Poulsbo, WA	Datum	N/A
Driller/Equipment	ESN / Geoprobe	Date Start/Finish	5/06/03,5/06/03
Hammer Weight/Drop	N/A	Hole Diameter (in)	1.5 inches

Depth (ft)	ST	Samples	Graphic Symbol	DESCRIPTION	Well Completion	Water Level	Blows/6"	Blows/Foot (10 20 30 40)	Other Tests
				Fill					
				Surface seal					
				Well monument					
				Ice-Contact Deposit					
5		S-1		Medium dense to dense, moist to wet, gray, SILTY fine SAND with gravel. 25% recovery. No sheen or odors.					
				Colorado siica sand filter pack					
				Lodgement Till					
10		S-2		Dense, wet, gray, SILTY fine SAND with gravel. 5% recovery (pounded on a rock). No sheen or odor.					
				10' screen 3/4" PVC 0.10" slot					
				Bottom of exploration boring at 12 feet					
15									
20									
25									
30									
35									

Sampler Type (ST):

- 2" OD Split Spoon Sampler (SPT)
- 3" OD Split Spoon Sampler (D & M)
- Grab Sample
- No Recovery
- Ring Sample
- Shelby Tube Sample

M - Moisture

- Water Level ()
- Water Level at time of drilling (ATD)

Logged by: RNS

Approved by: JNS

AESIBOR 160495.GPJ December 1, 2016

associated earth sciences incorporated

Exploration Log

Project Number	Exploration Number	Sheet
KV160495A	MW-3	1 of 1

Project Name	Golden Homes	Ground Surface Elevation (ft)	
Location	Poulsbo, WA	Datum	N/A
Driller/Equipment	ESN / Geoprobe	Date Start/Finish	5/06/03,5/06/03
Hammer Weight/Drop	N/A	Hole Diameter (in)	1.5 inches

Depth (ft)	ST	Samples	Graphic Symbol	DESCRIPTION	Well Completion	Water Level	Blows/6"	Blows/Foot (10 20 30 40)	Other Tests
				Fill					
				Surface seal					
				Well monument					
				Ice-Contact Deposit					
5		S-1		Ground water seepage at 4' bgs. Medium dense, moist, gray, SILTY SAND with gravel. 5% recovery, pounded on a rock. No sheen or odor. Medium dense, wet, gray SANDY GRAVEL with silt. No sheen or odor.					
				Colorado siica sand filter pack					
				Lodgement Till					
10		S-2		Dense, wet, gray, SILTY fine SAND.					
				3/4" PVC 0.10" slot screen					
				Bottom of exploration boring at 12 feet					
15									
20									
25									
30									
35									

Sampler Type (ST):

- 2" OD Split Spoon Sampler (SPT)
- 3" OD Split Spoon Sampler (D & M)
- Grab Sample
- No Recovery
- Ring Sample
- Shelby Tube Sample

M - Moisture

- Water Level ()
- Water Level at time of drilling (ATD)

Logged by: RNS

Approved by: JNS

AESIBOR 160495.GPJ December 1, 2016

APPENDIX B

LABORATORY TEST CERTIFICATES

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

October 19, 2016

Kellie Andrews, Project Manager
Associated Earth Sciences, Inc.
1552 Commerce St., Suite 102
Tacoma, WA 98402

Dear Ms Andrews:

Included are the results from the testing of material submitted on October 13, 2016 from the Golden Homes KV160495, F&BI 610190 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Jon Sondergaard
AE11019R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on October 13, 2016 by Friedman & Bruya, Inc. from the Associated Earth Sciences Golden Homes KV160495, F&BI 610190 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Associated Earth Sciences
610190 -01	GP-1-101316
610190 -02	GP-1-101316-GW
610190 -03	GP-2-101316
610190 -04	GP-2-101316-GW

All quality control requirements were acceptable.

Date of Report: 10/19/16
Date Received: 10/13/16
Project: Golden Homes KV160495, F&BI 610190
Date Extracted: 10/14/16
Date Analyzed: 10/14/16

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-132)
GP-1-101316 610190-01	<0.02	<0.02	<0.02	<0.06	<2	91
GP-2-101316 610190-03	<0.02	<0.02	<0.02	<0.06	<2	91
Method Blank 06-2074 MB	<0.02	<0.02	<0.02	<0.06	<2	92

Date of Report: 10/19/16
Date Received: 10/13/16
Project: Golden Homes KV160495, F&BI 610190
Date Extracted: 10/17/16
Date Analyzed: 10/17/16

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 52-124)
GP-1-101316-GW 610190-02	<1	<1	<1	<3	<100	91
GP-2-101316-GW 610190-04	<1	<1	<1	<3	<100	89
Method Blank 06-2076 MB	<1	<1	<1	<3	<100	94

Date of Report: 10/19/16
Date Received: 10/13/16
Project: Golden Homes KV160495, F&BI 610190

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 610192-03 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	<0.02	<0.02	nm
Xylenes	mg/kg (ppm)	<0.06	<0.06	nm
Gasoline	mg/kg (ppm)	<2	<2	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	0.5	78	66-121
Toluene	mg/kg (ppm)	0.5	81	72-128
Ethylbenzene	mg/kg (ppm)	0.5	76	69-132
Xylenes	mg/kg (ppm)	1.5	80	69-131
Gasoline	mg/kg (ppm)	20	80	61-153

Date of Report: 10/19/16
Date Received: 10/13/16
Project: Golden Homes KV160495, F&BI 610190

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 610216-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	ug/L (ppb)	<1	<1	nm
Toluene	ug/L (ppb)	<1	<1	nm
Ethylbenzene	ug/L (ppb)	<1	<1	nm
Xylenes	ug/L (ppb)	<3	<3	nm
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/L (ppb)	50	98	65-118
Toluene	ug/L (ppb)	50	95	72-122
Ethylbenzene	ug/L (ppb)	50	88	73-126
Xylenes	ug/L (ppb)	150	89	74-118
Gasoline	ug/L (ppb)	1,000	93	69-134

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

610190 (cc) Co: Jon Sondergaard

SAMPLE CHAIN OF CUSTODY

ME 10/13/16 VI/VSI

Report To Kellie Andrews

Company Associated Earth Sciences, Inc.

Address 1552 Commerce ST

City, State, ZIP Tacoma WA 98402

Phone 425 7810 3455 Email kandrews@aesgeo.com

SAMPLERS (*signature*) Kellie Andrews

PROJECT NAME: Golden Homes

PO #: KV160495

REMARKS

INVOICE TO

Page # 1 of 1

TURNAROUND TIME
- ☒ Standard Turnaround
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Dispose after 30 days
- ☐ Archive Samples
- ☐ Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
						ANALYSES REQUESTED											
GP-1-101316	01 A-D	10/13/16	9:05	SOIL	4			X	X								
GP-1-101316-GW	02 A-C	↓	9:30	H2O	3			X	X								
GP-2-101316	03 A-D		9:45	SOIL	4			X	X								
GP-2-101316-GW	04 A-C		10:00	H2O	3			X	X								

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Kellie Andrews	Kellie Andrews	AESI	10/13/16	courier
Received by:	Eric Clow	FB	10/14/16	1620
Relinquished by:		Samples received at 4 °C		
Received by:				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282

DRAFT

Date of Report: 12/16/16
Date Received: 12/09/16
Project: Golden Homes, PO KV160495A, F&BI 612155
Date Extracted: 12/14/16
Date Analyzed: 12/14/16

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
MW-102:8-9 612155-01	<0.02	<0.02	<0.02	<0.06	<2	98
MW-103:8-9 612155-02	<0.02	<0.02	<0.02	<0.06	<2	98
Method Blank 06-2556 MB2	<0.02	<0.02	<0.02	<0.06	<2	97

612155

SAMPLE CHAIN OF CUSTODY

ME 12/9/16 1 of 1 VS2/CT1

Report To Kellie Andrews
Company AESI
Address 911 5th Ave
City, State, ZIP Kirkland WA 98033
Phone 425 827 7701 Email Kandrews@aesgeo.com

SAMPLERS (*signature*) Kellie Andrews

PROJECT NAME: Golden Homes
PO #: KV1160495A

REMARKS

INVOICE TO

Page # 1 of 1

TURNAROUND TIME
☒ Standard Turnaround
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Dispose after 30 days
☐ Archive Samples
☐ Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
MW-102:8-9	01 A-E	12.7.16	9:15	Soil	5			X	X								Hold Jar
MW-103:8-9	02	12.7.16	1025	Soil	5			X	X								Hold Jar
													Samples received at 3 °C				

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Kellie Andrews	Kellie Andrews	AESI	12/9/16	8:30
Received by:	Khan Phan	FCBI	12/9/16	0830
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282

FRIEDMAN & BRUYA, INC.
ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Charlene Morrow, M.S.
Yelena Aravkina, M.S.
Bradley T. Benson, B.S.
Kurt Johnson, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
TEL: (206) 285-8282
FAX: (206) 283-5044
e-mail: fbi@isomedia.com

April 8, 2003

Richard Simpson, Project Manager
Associated Earth Sciences, Inc.
911 5th Avenue, Suite 100
Kirkland, WA 98033

Dear Mr. Simpson:

Included are the results from the testing of material submitted on March 28, 2003 from the Winger Prop. KV03140A, F&BI 303279 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
AE10408R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 04/08/03
Date Received: 03/28/03
Project: Winger Prop. KV03140A, F&BI 303279
Date Extracted: 03/31/03
Date Analyzed: 04/01/03

RESULTS FROM THE ANALYSIS OF THE SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL USING METHOD NWTPH-Dx
Extended to Include Motor Oil Range Compounds
Results Reported on a Dry Weight Basis
Results Reported as µg/g (ppm)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 45-153)
WP-UST1-B-7 303279-01	88	<50	94
WP-UST1-SSW-7 303279-02	13	<50	92
Method Blank	<10	<50	88

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 04/08/03
Date Received: 03/28/03
Project: Winger Prop. KV03140A, F&BI 303279
Date Extracted: 03/31/03
Date Analyzed: 03/31/03 and 04/01/03

RESULTS FROM THE ANALYSIS OF THE SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis
Results Reported as µg/g (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 76-129)
WP-CE-8 303279-03	0.03	<0.02	0.06	0.33	2	82
WP-P-1 d 303279-04	<0.2	<0.2	0.5	3.5	24	78
WP-UST2-NSW-8 d 303279-05	1.1	6.0	14	81	1,200	78
WP-UST2-B-9 303279-06	0.02	0.02	0.25	1.5	15	79
WP-SS1 303279-07	0.07	0.19	0.70	3.8	170	98
Method Blank	<0.02	<0.02	<0.02	<0.02	<1	77

d - The sample was diluted due to matrix effects (foamy). Detection limits are raised due to dilution.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 04/08/03
Date Received: 03/28/03
Project: Winger Prop. KV03140A, F&BI 303279
Date Extracted: 04/01/03
Date Analyzed: 04/02/03

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS BY INDUCTIVELY COUPLED PLASMA (ICP) (METHOD 6010)

Results Reported as µg/g (ppm)

Sample ID Laboratory ID	Total Lead
WP-UST2-B-9 303279-06	21
Method Blank	<2.0

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 04/08/03
Date Received: 03/28/03
Project: Winger Prop. KV03140A, F&BI 303279

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 303266-15 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference (Limit 20)
Diesel Extended	µg/g (ppm)	<50	<50	nm

Laboratory Code: 303266-15 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	µg/g (ppm)	500	<50	102	97	62-142	5

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	µg/g (ppm)	500	114	66-132

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 04/08/03
Date Received: 03/28/03
Project: Winger Prop. KV03140A, F&BI 303279

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 303279-07 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference (Limit 20)
Benzene	µg/g (ppm)	0.07	0.07	0
Toluene	µg/g (ppm)	0.19	0.20	5
Ethylbenzene	µg/g (ppm)	0.70	0.72	3
Xylenes	µg/g (ppm)	3.8	3.9	3
Gasoline	µg/g (ppm)	170	200	16

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Benzene	µg/g (ppm)	0.5	82	84	68-116	2
Toluene	µg/g (ppm)	0.5	82	86	75-114	5
Ethylbenzene	µg/g (ppm)	0.5	87	89	79-114	2
Xylenes	µg/g (ppm)	1.5	75	79	75-122	5
Gasoline	µg/g (ppm)	20	93	100	51-141	7

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 04/08/03
Date Received: 03/28/03
Project: Winger Prop. KV03140A, F&BI 303279

QUALITY ASSURANCE RESULTS FROM TOTAL METALS BY INDUCTIVELY COUPLED PLASMA (ICP) (METHOD 6010)

Laboratory Code: 303221-03 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference	Acceptance Criteria
Lead	µg/g (ppm)	2.6	3.1	18	0-20

Laboratory Code: 303221-03 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	% Recovery MS	Acceptance Criteria
Lead	µg/g (ppm)	20	2.6	93	50-150

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	% Recovery LCS	% Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Lead	µg/g (ppm)	20	108	114	80-120	5

303279

ME 03/28/03 BI2

SAMPLE CHAIN OF CUSTODY

Page # _____ of _____

Send Report To: Richard Shepson
Company: AES1
Address: 911 5th Ave Ste 100
City, State, ZIP: Kirkland, WA 98033
Phone #: 425 827 7701 Fax #: 425 827 5424

SAMPLERS (signature):
PROJECT NAME/NO.: Winger Prop. kv03140n
PO #:
REMARKS:

TURNAROUND TIME
☐ Standard (2 Weeks)
☐ RUSH _____
Rush charges authorized by: _____

SAMPLE DISPOSAL
☐ Dispose after 30 days
☐ Return samples
☐ Will call with instructions

Sample ID	Lab ID	Date	Time	Sample Type	# of containers	ANALYSES REQUESTED: TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS	NWTPH-GX BTEX		Total Pb				Notes
WP-UST1-B-7	01	3.28.03	1035	Soil	1	X												
WP-UST1-SSW-7	02	"	1030	"	1	X												
WP-CE-8	03	"	1410	"	1	RNV						X						
WP-P-1	04	"	1040	"	1							X						
WP-UST2-NSW-8	05	"	1421	"	1							X						
WP-UST2-B-9	06	"	1415	"	1							X		X				
WP-SS1	07	3.28.03	1056	Soil	1							X						

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Richard Shepson	AES1	3.28.03	1725
Received by:	Tara E. DeBraff	F&BI	03/28/03	1725
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

FORMS\COC\COC.DOC

FRIEDMAN & BRUYA, INC.
ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Charlene Morrow, M.S.
Yelena Aravkina, M.S.
Bradley T. Benson, B.S.
Kurt Johnson, B.S.

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Seattle, WA 98119-2029
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e-mail: fbi@isomedia.com

May 14, 2003

MAY 16 2003

Richard Simpson, Project Manager
Associated Earth Sciences, Inc.
911 5th Avenue, Suite 100
Kirkland, WA 98033

Dear Mr. Simpson:

Included are the results from the testing of material submitted on May 7, 2003 from the Winger Land CO. KV03242A, F&BI 305049 project. There are 12 pages included in this report. Sample WP-Q203-MW3 was sent to North Creek Analytical for Total Lead analysis. The report generated by NCA will be forwarded to your office upon receipt.

Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
AE1051-4R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 05/14/03
Date Received: 05/07/03
Project: Winger Land CO. KV03242A, F&BI 305049
Date Extracted: 05/07/03
Date Analyzed: 05/08/03

RESULTS FROM THE ANALYSIS OF THE SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis

Results Reported as µg/g (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 76-129)
WP-GP1-9 305049-05	<0.02	<0.02	<0.02	<0.02	<1	110
WP-GP2-7 305049-06	<0.02	<0.02	<0.02	<0.02	<1	110
WP-GP3-10 305049-07	<0.02	<0.02	<0.02	<0.02	<1	112
WP-RX-SS1 305049-08	0.04	0.13	0.21	1.1	14	106
WP-CCS3-9 305049-11	0.04	<0.02	0.12	0.63	3	102
WP-CCS4-9 305049-12	<0.02	<0.02	0.03	0.11	<1	101
WP-CCS5-8 305049-13	0.06	0.03	0.38	2.1	15	105
Method Blank	<0.02	<0.02	<0.02	<0.02	<1	99
Method Blank	<0.02	<0.02	<0.02	<0.02	<1	101
Method Blank	<0.02	<0.02	<0.02	<0.02	<1	100

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 05/14/03
Date Received: 05/07/03
Project: Winger Land CO. KV03242A, F&BI 305049
Date Extracted: 05/08/03
Date Analyzed: 05/08/03

RESULTS FROM THE ANALYSIS OF THE SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis

Results Reported as µg/g (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 76-129)
WP-CCS1-9 305049-09	<0.02	<0.02	<0.02	<0.02	<1	97
WP-CCS2-9 305049-10	<0.02	<0.02	<0.02	0.07	<1	96
Method Blank	<0.02	<0.02	<0.02	<0.02	<1	98

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 05/14/03
Date Received: 05/07/03
Project: Winger Land CO. KV03242A, F&BI 305049
Date Extracted: 05/08/03
Date Analyzed: 05/08/03

RESULTS FROM THE ANALYSIS OF THE WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE XYLENES AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Results Reported as µg/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 79-132)
WP-Q203-MW3 305049-01	<1	<1	<1	<1	<50	111
WP-Q203-MW2 305049-02	<1	<1	<1	<1	<50	109
WP-Q203-MW1 305049-03	<1	<1	<1	<1	<50	105
Method Blank	<1	<1	<1	<1	<50	103

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260B

Client Sample ID:	WP-Q203-MW3	Client:	Associated Earth Sciences, Inc.
Date Received:	05/07/03	Project:	Winger Land Co. KV03242A
Date Extracted:	05/09/03	Lab ID:	305049-01 rr
Date Analyzed:	05/10/03	Data File:	050945.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	YA

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Dibromofluoromethane	99	50	150
1,2-Dichloroethane-d4	97	50	150
Toluene-d8	98	50	150
4-Bromofluorobenzene	114	50	150

Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1
Chloromethane	<1
Vinyl chloride	<1
Bromomethane	<1
Chloroethane	<1
Trichlorofluoromethane	<1
Acetone	<10
1,1-Dichloroethene	<1
Methylene chloride	<5
Methyl t-butyl ether (MTBE)	<1
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
2,2-Dichloropropane	<1
cis-1,2-Dichloroethene	<1
Chloroform	<1
2-Butanone (MEK)	<10
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
1,1-Dichloropropene	<1
Carbon Tetrachloride	<1
Benzene	<1
Trichloroethene	<1
1,2-Dichloropropane	<1
Bromodichloromethane	<1
Dibromomethane	<1
4-Methyl-2-pentanone	<10
cis-1,3-Dichloropropene	<1
Toluene	<1
trans-1,3-Dichloropropene	<1
1,1,2-Trichloroethane	<1
2-Hexanone	<10

Compounds:	Concentration ug/L (ppb)
1,3-Dichloropropane	<1
Tetrachloroethene	<1
Dibromochloromethane	<1
1,2-Dibromoethane (EDB)	<1
Chlorobenzene	<1
Ethylbenzene	<1
1,1,1,2-Tetrachloroethane	<1
m,p-Xylene	<1
o-Xylene	<1
Styrene	<1
Isopropylbenzene	<1
Bromoform	<1
n-Propylbenzene	<1
Bromobenzene	<1
1,3,5-Trimethylbenzene	<1
1,1,2,2-Tetrachloroethane	<1
1,2,3-Trichloropropane	<1
2-Chlorotoluene	<1
4-Chlorotoluene	<1
tert-Butylbenzene	<1
1,2,4-Trimethylbenzene	<1
sec-Butylbenzene	<1
p-Isopropyltoluene	<1
1,3-Dichlorobenzene	<1
1,4-Dichlorobenzene	<1
1,2-Dichlorobenzene	<1
1,2-Dibromo-3-chloropropane	<1
1,2,4-Trichlorobenzene	<1
Hexachlorobutadiene	<1
Naphthalene	<1
1,2,3-Trichlorobenzene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260B

Client Sample ID:	WP-Q203-MW2	Client:	Associated Earth Sciences, Inc.
Date Received:	05/07/03	Project:	Winger Land Co. KV03242A
Date Extracted:	05/09/03	Lab ID:	305049-02 rr
Date Analyzed:	05/10/03	Data File:	050946.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	YA

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Dibromofluoromethane	97	50	150
1,2-Dichloroethane-d4	99	50	150
Toluene-d8	98	50	150
4-Bromofluorobenzene	111	50	150

Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1
Chloromethane	<1
Vinyl chloride	<1
Bromomethane	<1
Chloroethane	<1
Trichlorofluoromethane	<1
Acetone	<10
1,1-Dichloroethene	<1
Methylene chloride	<5
Methyl t-butyl ether (MTBE)	<1
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
2,2-Dichloropropane	<1
cis-1,2-Dichloroethene	<1
Chloroform	<1
2-Butanone (MEK)	<10
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
1,1-Dichloropropene	<1
Carbon Tetrachloride	<1
Benzene	<1
Trichloroethene	<1
1,2-Dichloropropane	<1
Bromodichloromethane	<1
Dibromomethane	<1
4-Methyl-2-pentanone	<10
cis-1,3-Dichloropropene	<1
Toluene	<1
trans-1,3-Dichloropropene	<1
1,1,2-Trichloroethane	<1
2-Hexanone	<10

Compounds:	Concentration ug/L (ppb)
1,3-Dichloropropane	<1
Tetrachloroethene	<1
Dibromochloromethane	<1
1,2-Dibromoethane (EDB)	<1
Chlorobenzene	<1
Ethylbenzene	<1
1,1,1,2-Tetrachloroethane	<1
m,p-Xylene	<1
o-Xylene	<1
Styrene	<1
Isopropylbenzene	<1
Bromoform	<1
n-Propylbenzene	<1
Bromobenzene	<1
1,3,5-Trimethylbenzene	<1
1,1,2,2-Tetrachloroethane	<1
1,2,3-Trichloropropane	<1
2-Chlorotoluene	<1
4-Chlorotoluene	<1
tert-Butylbenzene	<1
1,2,4-Trimethylbenzene	<1
sec-Butylbenzene	<1
p-Isopropyltoluene	<1
1,3-Dichlorobenzene	<1
1,4-Dichlorobenzene	<1
1,2-Dichlorobenzene	<1
1,2-Dibromo-3-chloropropane	<1
1,2,4-Trichlorobenzene	<1
Hexachlorobutadiene	<1
Naphthalene	<1
1,2,3-Trichlorobenzene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260B

Client Sample ID:	Method Blank	Client:	Associated Earth Sciences, Inc.
Date Received:	Not Applicable	Project:	Winger Land Co. KV03242A
Date Extracted:	05/09/03	Lab ID:	03-523 mb
Date Analyzed:	05/10/03	Data File:	050944.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	YA

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Dibromofluoromethane	98	50	150
1,2-Dichloroethane-d4	98	50	150
Toluene-d8	98	50	150
4-Bromofluorobenzene	114	50	150

Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1
Chloromethane	<1
Vinyl chloride	<1
Bromomethane	<1
Chloroethane	<1
Trichlorofluoromethane	<1
Acetone	<10
1,1-Dichloroethene	<1
Methylene chloride	<5
Methyl t-butyl ether (MTBE)	<1
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
2,2-Dichloropropane	<1
cis-1,2-Dichloroethene	<1
Chloroform	<1
2-Butanone (MEK)	<10
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
1,1-Dichloropropene	<1
Carbon Tetrachloride	<1
Benzene	<1
Trichloroethene	<1
1,2-Dichloropropane	<1
Bromodichloromethane	<1
Dibromomethane	<1
4-Methyl-2-pentanone	<10
cis-1,3-Dichloropropene	<1
Toluene	<1
trans-1,3-Dichloropropene	<1
1,1,2-Trichloroethane	<1
2-Hexanone	<10

Compounds:	Concentration ug/L (ppb)
1,3-Dichloropropane	<1
Tetrachloroethene	<1
Dibromochloromethane	<1
1,2-Dibromoethane (EDB)	<1
Chlorobenzene	<1
Ethylbenzene	<1
1,1,1,2-Tetrachloroethane	<1
m,p-Xylene	<1
o-Xylene	<1
Styrene	<1
Isopropylbenzene	<1
Bromoform	<1
n-Propylbenzene	<1
Bromobenzene	<1
1,3,5-Trimethylbenzene	<1
1,1,2,2-Tetrachloroethane	<1
1,2,3-Trichloropropane	<1
2-Chlorotoluene	<1
4-Chlorotoluene	<1
tert-Butylbenzene	<1
1,2,4-Trimethylbenzene	<1
sec-Butylbenzene	<1
p-Isopropyltoluene	<1
1,3-Dichlorobenzene	<1
1,4-Dichlorobenzene	<1
1,2-Dichlorobenzene	<1
1,2-Dibromo-3-chloropropane	<1
1,2,4-Trichlorobenzene	<1
Hexachlorobutadiene	<1
Naphthalene	<1
1,2,3-Trichlorobenzene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 05/14/03
Date Received: 05/07/03
Project: Winger Land CO. KV03242A, F&BI 305049

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 304248-21 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference (Limit 20)
Benzene	µg/g (ppm)	<0.02	<0.02	nm
Toluene	µg/g (ppm)	<0.02	<0.02	nm
Ethylbenzene	µg/g (ppm)	<0.02	<0.02	nm
Xylenes	µg/g (ppm)	<0.02	<0.02	nm
Gasoline	µg/g (ppm)	<1	<1	nm

Laboratory Code: 304248-21 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Benzene	µg/g (ppm)	0.5	<0.02	74	76	60-131	3
Toluene	µg/g (ppm)	0.5	<0.02	78	80	68-129	3
Ethylbenzene	µg/g (ppm)	0.5	<0.02	82	84	69-131	2
Xylenes	µg/g (ppm)	1.5	0.03	79	82	69-137	4

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Benzene	µg/g (ppm)	0.5	74	78	68-116	5
Toluene	µg/g (ppm)	0.5	76	80	75-114	5
Ethylbenzene	µg/g (ppm)	0.5	81	85	79-114	5
Xylenes	µg/g (ppm)	1.5	79	83	76-122	5
Gasoline	µg/g (ppm)	20	72	80	51-141	11

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 05/14/03
Date Received: 05/07/03
Project: Winger Land CO. KV03242A, F&BI 305049

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 304128-09 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference (Limit 20)
Benzene	µg/g (ppm)	<0.02	<0.02	nm
Toluene	µg/g (ppm)	<0.02	<0.02	nm
Ethylbenzene	µg/g (ppm)	<0.02	<0.02	nm
Xylenes	µg/g (ppm)	<0.02	<0.02	nm
Gasoline	µg/g (ppm)	<1	<1	nm

Laboratory Code: 304128-09 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Benzene	µg/g (ppm)	0.5	<0.02	106	108	60-131	2
Toluene	µg/g (ppm)	0.5	<0.02	106	106	68-129	0
Ethylbenzene	µg/g (ppm)	0.5	<0.02	112	114	69-131	2
Xylenes	µg/g (ppm)	1.5	<0.02	109	111	69-137	2

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Benzene	µg/g (ppm)	0.5	82	80	68-116	2
Toluene	µg/g (ppm)	0.5	86	84	75-114	2
Ethylbenzene	µg/g (ppm)	0.5	90	87	79-114	3
Xylenes	µg/g (ppm)	1.5	87	85	76-122	2
Gasoline	µg/g (ppm)	20	98	98	51-141	0

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 05/14/03
Date Received: 05/07/03
Project: Winger Land CO. KV03242A, F&BI 305049

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 304181-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Benzene	µg/g (ppm)	0.5	0.03	96	98	60-131	2
Toluene	µg/g (ppm)	0.5	0.03	94	94	68-129	0
Ethylbenzene	µg/g (ppm)	0.5	<0.02	105	105	69-131	0
Xylenes	µg/g (ppm)	1.5	0.04	98	98	69-137	0

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Benzene	µg/g (ppm)	0.5	86	88	68-116	2
Toluene	µg/g (ppm)	0.5	82	84	75-114	2
Ethylbenzene	µg/g (ppm)	0.5	86	88	79-114	2
Xylenes	µg/g (ppm)	1.5	83	85	76-122	2
Gasoline	µg/g (ppm)	20	95	98	51-141	3

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 05/14/03
Date Received: 05/07/03
Project: Winger Land CO. KV03242A, F&BI 305049

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING EPA METHODS 8021B AND 8015M

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Benzene	µg/L (ppb)	25	93	96	71-117	3
Toluene	µg/L (ppb)	25	92	95	71-119	3
Ethylbenzene	µg/L (ppb)	25	94	97	67-125	3
Xylenes	µg/L (ppb)	75	92	95	65-127	3
Gasoline	µg/L (ppb)	1,000	108	108	62-120	0

Date of Report: 05/14/03
Date Received: 05/07/03
Project: Winger Land CO. KV03242A, F&BI 305049

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260B

Laboratory Code: 305068-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference (Limit 20)
1,1-Dichloroethene	µg/L (ppb)	<1	<1	nm
Benzene	µg/L (ppb)	<1	<1	nm
Trichloroethene	µg/L (ppb)	<1	<1	nm
Toluene	µg/L (ppb)	<1	<1	nm
Chlorobenzene	µg/L (ppb)	<1	<1	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
1,1-Dichloroethene	µg/L (ppb)	50	93	100	50-150	7
Benzene	µg/L (ppb)	50	99	106	50-150	7
Trichloroethene	µg/L (ppb)	50	87	93	50-150	7
Toluene	µg/L (ppb)	50	94	101	50-150	7
Chlorobenzene	µg/L (ppb)	50	95	101	50-150	6

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 05/14/03
Date Received: 05/07/03
Project: Winger Land CO. KV03242A, F&BI 305049

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR ETHERS BY EPA METHOD 8260B

Laboratory Code: 305068-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference (Limit 20)
Methyl t-butyl ether (MTBE)	µg/L (ppb)	<1	<1	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Methyl t-butyl ether (MTBE)	µg/L (ppb)	50	99	104	50-150	5

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

305049

ME 05/07/03 ~~ETC~~ AO, V

SAMPLE CHAIN OF CUSTODY

Page # 1 of 2

Send Report To Richard Simpson
Company Associated Earth Sciences Inc.
Address 911 5th Ave. Ste 100
City, State, ZIP Kirkland, WA 98033
Phone # 425 827 7701 Fax # 425 827 5424

SAMPLERS (signature)

PROJECT NAME/NO. WINGER LAND CO. KV03242A

PO #

REMARKS

TURNAROUND TIME
☐ Standard (2 Weeks)
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Dispose after 30 days
☐ Return samples
☐ Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	ANALYSES REQUESTED: NWTPHG/BTEX	NWTPH - DX	NWTPHG/BTEX w/ MTBE	VOCs by 8260	SVOCs by 8270	Total Pb	8260B w/MTBE					Notes
WP-Q203-MW3	01	5.6.03	1400	water	3	X					X	X					
WP-Q203-MW2	02		1216		2	X						X					
WP-Q203-MW1	03		1109		1	X											
WP-GP1-5	04		1011														
WP-GP1-9	05		1016			X											
WP-GP2-7	06		1127			X											
WP-GP3-10	07		1230			X											
WP-RX-SS1	08		1130			X											
WP-CCS1-9	09	↓	1008			X											per Richard Simpson 5/8/03 MG
WP-CCS2-9	10	5.6.03	1208			X											

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Richard Simpson	AESI	5.7.03	1230
Received by:		Eric Young	FBT	5/7/03	1230
Relinquished by:					
Received by:					

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

305044

INE 05/07/03 EFile AU3.V

SAMPLE CHAIN OF CUSTODY

Page # 2 of 2

Send Report To: Richard Simpson
Company: Associated Earth Sciences Inc.
Address: 911 5th Ave. Ste 100
City, State, ZIP: Kirkland, WA 98033
Phone #: 425 827 7701 Fax #: 425 827 5424

SAMPLERS (signature)

PROJECT NAME/NO.: WINGER LAND CO KV03242A

PO #

REMARKS

TURNAROUND TIME
- ☐ Standard (2 Weeks)
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Dispose after 30 days
- ☐ Return samples
- ☐ Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	NWTPH G/BTEX	NWTPH-DX	NWTPH G/BTEX w/ MTBE	VOCs by 8260	SVOCs by 8270	Notes
WP-CCS3-9	11	5.6.03	1430	Soil	1	X					
WP-CCS4-9	12		1530	↓	1	X					
WP-CCS5-8	13	5.6.03	1450	Soil	1	X					

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Richard Simpson	AES	5.7.03	1230
Received by:		Eric Young	FBR	5/9/03	1230
Relinquished by:					
Received by:					

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
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509.924.9200 fax 509.924.9290
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132
503.906.9200 fax 503.906.9210
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
541.383.9310 fax 541.382.7588
Anchorage 2000 W. International Airport Road, Suite A10, Anchorage, AK 99502-1119
907.563.9200 fax 907.563.9210

14 May 2003

Michael Erdahl
Friedman & Bruya
3012 16th Ave W
Seattle, WA/USA 98119-2029

RE: Michael Erdahl

Enclosed are the results of analyses for samples received by the laboratory on 05/08/03 17:25. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jeanne Garthwaite

Jeanne Garthwaite
Project Manager

www.ncalabs.com

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Friedman & Bruya	Project: Michael Erdahl	
3012 16th Ave W	Project Number: 305049	**Reported:**
Seattle WA/USA, 98119-2029	Project Manager: Michael Erdahl	05/14/03 15:54

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
WP-Q203-MW3	B3E0191-01	Water	05/06/03 14:00	05/08/03 17:25

Jeanne Garthwaite

Jeanne Garthwaite, Project Manager

www.ncalabs.com

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Friedman & Bruya	Project: Michael Erdahl	
3012 16th Ave W	Project Number: 305049	**Reported:**
Seattle WA/USA, 98119-2029	Project Manager: Michael Erdahl	05/14/03 15:54

Total Metals by EPA 6000/7000 Series Methods
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
WP-Q203-MW3 (B3E0191-01) Water	**Sampled: 05/06/03 14:00**		**Received: 05/08/03 17:25**						
Lead	**0.0300**	0.00100	mg/l	1	3E12034	05/12/03	05/13/03	EPA 6020	

Jeanne Garthwaite

Jeanne Garthwaite, Project Manager

www.ncalabs.com

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907.563.9200 fax 907.563.9210

Friedman & Bruya	Project: Michael Erdahl	
3012 16th Ave W	Project Number: 305049	**Reported:**
Seattle WA/USA, 98119-2029	Project Manager: Michael Erdahl	05/14/03 15:54

Total Metals by EPA 6000/7000 Series Methods - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3E12034: Prepared 05/12/03 Using EPA 3020A										
Blank (3E12034-BLK1)										
Lead	ND	0.00100	mg/l							
LCS (3E12034-BS1)										
Lead	0.0804	0.00100	mg/l	0.0800		100	80-120			
LCS Dup (3E12034-BSD1)										
Lead	0.0817	0.00100	mg/l	0.0800		102	80-120	1.60	20	
Matrix Spike (3E12034-MS1)					**Source: B3E0118-11**					
Lead	0.0807	0.00100	mg/l	0.0800	ND	101	75-125			
Matrix Spike (3E12034-MS2)					**Source: B3E0259-17**					
Lead	0.0814	0.00100	mg/l	0.0800	ND	102	75-125			
Matrix Spike Dup (3E12034-MSD1)					**Source: B3E0118-11**					
Lead	0.0822	0.00100	mg/l	0.0800	ND	103	75-125	1.84	20	
Matrix Spike Dup (3E12034-MSD2)					**Source: B3E0259-17**					
Lead	0.0803	0.00100	mg/l	0.0800	ND	100	75-125	1.36	20	
Post Spike (3E12034-PS1)					**Source: B3E0259-17**					
Lead	0.0993	0.00100	mg/l	0.0800	ND	124	75-125			

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907.563.9200 fax 907.563.9210

Friedman & Bruya	Project: Michael Erdahl	
3012 16th Ave W	Project Number: 305049	**Reported:**
Seattle WA/USA, 98119-2029	Project Manager: Michael Erdahl	05/14/03 15:54

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

SAMPLE CHAIN OF CUSTODY 03E0191

Send Report To Mike Erdahl
Company F:Bini
Address 3012 16th Ave W
City, State, ZIP Seattle, WA 98119
Phone # _____ Fax # _____

SAMPLERS *(signature)*

PROJECT NAME/NO. 305049

PO # E377

REMARKS Due 5/14/03

Page # 1 of 1

TURNAROUND TIME
☐ Standard (2 Weeks)
☒ RUSH 5-Day
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Dispose after 30 days
☐ Return samples
☐ Will call with instructions

Sample ID	Lab ID	Date	Time	Sample Type	# of containers	ANALYSES REQUESTED: TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS	Total Pb					Notes
WP-Q203-MW3		5/6/03	14:00	Water	1							✓					-01

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Michael Erdahl	F:Bini	5/7/03	MC
Received by:	FRANK TONTY	NCA	5/8/03	1725
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

FORMS\COC\COC.DOC

19.2 °W/O

FRIEDMAN & BRUYA, INC.
ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Charlene Morrow, M.S.
Yelena Aravkina, M.S.
Bradley T. Benson, B.S.
Kurt Johnson, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
TEL: (206) 285-8282
FAX: (206) 283-5044
e-mail: fbi@isomedia.com

May 27, 2004

Richard Simpson, Project Manager
Associated Earth Sciences, Inc.
911 5th Avenue, Suite 100
Kirkland, WA 98033

Dear Mr. Simpson:

Included are the results from the testing of material submitted on May 5, 2004 from the Winger Land Co, KV03242A, F&BI 405122 project. There are 2 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
AE10527R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 05/27/04
Date Received: 05/05/04
Project: Winger Land Co, KV03242A, F&BI 405122
Date Extracted: 05/14/04
Date Analyzed: 05/14/04

RESULTS FROM THE ANALYSIS OF THE WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE XYLENES AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Results Reported as µg/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 61-136)
WP-MW1-504 405122-01	<1	<1	<1	<3	<50	99
WP-MW2-504 405122-02	<1	<1	<1	<3	<50	98
WP-MW3-504 405122-03	<1	<1	<1	<3	<50	99
Method Blank	<1	<1	<1	<3	<50	87

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 05/27/04
Date Received: 05/05/04
Project: Winger Land Co, KV03242A, F&BI 405122

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 405110-04 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference (Limit 20)
Benzene	µg/L (ppb)	4	5	a
Toluene	µg/L (ppb)	<1	<1	nm
Ethylbenzene	µg/L (ppb)	<1	<1	nm
Xylenes	µg/L (ppb)	<3	<3	nm
Gasoline	µg/L (ppb)	96	110	14

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Benzene	µg/L (ppb)	25	95	93	77-116	2
Toluene	µg/L (ppb)	25	101	96	64-126	5
Ethylbenzene	µg/L (ppb)	25	105	100	67-124	5
Xylenes	µg/L (ppb)	75	99	94	71-121	5
Gasoline	µg/L (ppb)	1,000	93	93	49-119	0

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

a - The analyte was detected at a level less than five times the detection limit. The RPD results may not provide reliable information on the variability of the analysis.

"ICI5"

Page 1 of 1

Send Report To Jamey S. Battermann

Company Associated Earth Sciences, Inc.

Address 911 5th Avenue, Ste. 100

City, State, ZIP Kirkland, WA 98033

Phone # (425) 827-7701 Fax # (425) 827-5424

SAMPLERS (signature)

PROJECT NAME/NO. Trilogy - Equestrian Park KE02121A

PO #

REMARKS

TURNAROUND TIME
- ☐ Standard (2 Weeks)
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Dispose after 30 days
- ☐ Return samples
- ☐ Will call with instructions

Sample ID	Lab ID	Date	Time	Sample Type	# of containers	ANALYSES REQUESTED: TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS	NWTPH-Gx/BTEX	Total Pb	NWTPH-Dx	Heavy Metals			Notes
Wheel wash sediment	01 A-C	5/17/04	14:35	grab	3										X			

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Jesse P. Overton	AESI	5/18/04	11:20
Received by:	Ryan Tuomisto	Ryan Tuomisto	AESI	5/18/04	11:20
Relinquished by:	Ryan Tuomisto	Ryan Tuomisto	AESI	5/18/04	12:05
Received by:	Nhan Phan	Nhan Phan	FrBI	5/18/04	12:05

nd Report To Richard Simpson

ompany Associated Earth Sciences, Inc.

ddress 911 5th Avenue, Ste. 100

ty, State, ZIP Kirkland, WA 98033

hone # (425) 827-7701 Fax # (425) 827-5424

SA[illegible]ignal

PROJECT NAME/NO. Winger Land Co, KV03242A | PO #

REMARKS

TURNAROUND TIME
- [x] Standard (2 Weeks)
- [ ] RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Dispose after 30 days
- [ ] Return samples
- [ ] Will call with instructions

Sample ID	Lab ID	Date	Time	Sample Type	# of containers	ANALYSES REQUESTED: TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS	NWTPH-Gx BTEX	Total Pb	NWTPH-Dx				Notes
WP-MW1-504		5.3.01	1445	water	1							X						
WP-MW2-504		5.3.01	1420	"	1							X						
WP-MW2-504		5.3.01	1400	water	1							X						

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Richard Simpson	AES	5.5.04	1345
Received by:		Eric Young	FSE	5.5.04	1
Relinquished by:					
Received by:					

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Charlene Morrow, M.S.
Yelena Aravkina, M.S.
Bradley T. Benson, B.S.
Kurt Johnson, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
TEL: (206) 285-8282
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e-mail: fbi@isomedia.com

February 13, 2004

Richard Simpson, Project Manager
Associated Earth Sciences, Inc.
911 5th Avenue, Suite 100
Kirkland, WA 98033

Dear Mr. Simpson:

Included are the results from the testing of material submitted on February 3, 2004 from the Winger Land Co KV03242A, F&BI 402021 project. There are 2 pages included in this report. The samples were sent to North Creek Analytical, Inc. for dissolved lead analysis. The report generated by NCA will be forwarded to your office upon receipt.

Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
AE10213R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 02/13/04
Date Received: 02/03/04
Project: Winger Land Co KV03242A, F&BI 402021
Date Extracted: 02/04/04
Date Analyzed: 02/04/04

RESULTS FROM THE ANALYSIS OF THE WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE XYLENES AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Results Reported as µg/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 61-136)
WP-WQ-MW1 402021-01	<1	<1	<1	<3	<50	94
WP-WQ-MW2 402021-02	<1	<1	<1	<3	<50	97
WP-WQ-MW3 402021-03	<1	<1	<1	<3	<50	94
Method Blank	<1	<1	<1	<3	<50	93

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 02/13/04
Date Received: 02/03/04
Project: Winger Land Co KV03242A, F&BI 402021

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Benzene	µg/L (ppb)	25	104	106	77-116	2
Toluene	µg/L (ppb)	25	103	103	64-126	0
Ethylbenzene	µg/L (ppb)	25	103	103	67-124	0
Xylenes	µg/L (ppb)	75	103	103	71-121	0
Gasoline	µg/L (ppb)	1,000	93	90	49-119	3

402021

CHAIN OF CUSTODY

MT 12/07/04

Page # 1 of 1

Send Report To Richard Simpson

Company Associated Earth Sciences, Inc.

Address 911 5th Avenue, Ste. 100

City, State, ZIP Kirkland, WA 98033

Phone # (425) 827-7701 Fax # (425) 827-5424

SAMPLERS (signature)

PROJECT NAME/NO. KR03242A Wiger Land Co

PO #

REMARKS poly bottles non-acidified

TURNAROUND TIME
- ☐ Standard (2 Weeks)
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Dispose after 30 days
- ☐ Return samples
- ☐ Will call with instructions

Sample ID	Lab ID	Date	Time	Sample Type	# of containers	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS	NWTPH-Gx/BTEX	Total Pb	NWTPH-Dx	Dissolved Pb			Notes
WP-WQ-MW1	01 A-B	1.26.04	1300	water	2							X			X			Filter for Pb
WP-WQ-MW2	02 A-B	1.26.04	1230	water	2							X			X			Filter "
WP-WQ-MW3	03 A-B	1.26.04	1200	water	2							X			X			Filter "

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Richard Simpson	AESI	2.3.04	12:15
Received by:		Eric Young	EBI	2.3.04	1
Relinquished by:					
Received by:					

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Charlene Morrow, M.S.
Yelena Aravkina, M.S.
Bradley T. Benson, B.S
Kurt Johnson, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
TEL: (206) 285-8282
FAX: (206) 283-5044
e-mail: fbi@isomedia.com

TRANSMITTAL

DATE: 2-20-04

TO: Richard Simpson

COMPANY: AESI **PROJECT ID:**

FAX #: **PHONE #:**

FROM: Mike Erdahl

We are sending you the following:

# Pages/Documents (including cover sheet)	Description
	MCA results

These are transmitted as indicated:

☑ For your use ☐ For review and comment ☐ For your signature and return

☐ As requested ☐ As noted ☐ Other

Remarks:

For items sent via Fax:

Original: Will Follow ☐ Will Not Follow ☐

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www.ncalabs.com

Seattle 11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244
425.420.9200 fax 425.420.9210
Spokane 11922 E. 1st Avenue, Spokane Valley, WA 99206-5302
509.924.9200 fax 509.924.9290
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132
503.906.9200 fax 503.906.9210
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
541.383.9310 fax 541.382.7588
Anchorage 2000 W. International Airport Road, Suite A10, Anchorage, AK 99502-1119
907.563.9200 fax 907.563.9210

17 February 2004

Michael Erdahl
Friedman & Bruya
3012 16th Ave W
Seattle, WA/USA 98119-2029

RE: Michael Erdahl

Enclosed are the results of analyses for samples received by the laboratory on 02/05/04 16:10. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jeanne Garthwaite

Jeanne Garthwaite
Project Manager

nca™
www.ncalabs.com

Seattle 11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244
425.420.9200 fax 425.420.9210
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541.383.9310 fax 541.382.7588
Anchorage 2000 W. International Airport Road, Suite A10, Anchorage, AK 99502-1119
907.563.9200 fax 907.563.9210

Friedman & Bruya
3012 16th Ave W
Seattle, WA/USA 98119-2029

Project: Michael Erdahl
Project Number: 402021
Project Manager: Michael Erdahl

Reported:
02/17/04 16:13

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
WP-WQ-MW1	B4B0152-01	Water	01/26/04 13:00	02/05/04 16:10
WP-WQ-MW2	B4B0152-02	Water	01/26/04 12:30	02/05/04 16:10
WP-WQ-MW3	B4B0152-03	Water	01/26/04 12:00	02/05/04 16:10

orth Creek Analytical - Bothell

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

Jeanne Garthwaite

anne Garthwaite, Project Manager

www.ncalabs.com

Seattle 11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244
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541.383.9310 fax 541.382.7588
Anchorage 2000 W. International Airport Road, Suite A10, Anchorage, AK 99502-1119
907.563.9200 fax 907.563.9210

Friedman & Bruya	Project: Michael Erdahl	
3012 16th Ave W	Project Number: 402021	**Reported:**
Seattle, WA/USA 98119-2029	Project Manager: Michael Erdahl	02/17/04 16:13

Dissolved Metals by EPA 6000/7000 Series Methods
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
WP-WQ-MW1 (B4B0152-01) Water	**Sampled: 01/26/04 13:00**		**Received: 02/05/04 16:10**						**Q-30**
Lead	ND	0.00100	mg/l	1	4B06046	02/06/04	02/10/04	EPA 6020	
WP-WQ-MW2 (B4B0152-02) Water	**Sampled: 01/26/04 12:30**		**Received: 02/05/04 16:10**						**Q-30**
Lead	ND	0.00100	mg/l	1	4B06046	02/06/04	02/10/04	EPA 6020	
WP-WQ-MW3 (B4B0152-03) Water	**Sampled: 01/26/04 12:00**		**Received: 02/05/04 16:10**						**Q-30**
Lead	ND	0.00100	mg/l	1	4B06046	02/06/04	02/10/04	EPA 6020	

North Creek Analytical - Bothell

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

Jeanne Garthwaite

Jeanne Garthwaite, Project Manager

www.ncalabs.com

Seattle 11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244
425.420.9200 fax 425.420.9210
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Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
541.383.9310 fax 541.382.7588
Anchorage 2000 W. International Airport Road, Suite A10, Anchorage, AK 99502-1119
907.563.9200 fax 907.563.9210

Friedman & Bruya 3012 16th Ave W Seattle, WA/USA 98119-2029	Project: Michael Erdahl Project Number: 402021 Project Manager: Michael Erdahl	**Reported:** 02/17/04 16:13

Dissolved Metals by EPA 6000/7000 Series Methods - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4B06046: Prepared 02/06/04 Using EPA 3005A										
Blank (4B06046-BLK1)										
Lead	ND	0.00100	mg/l							
LCS (4B06046-BS1)										
Lead	0.189	0.00100	mg/l	0.200		94.5	80-120			
LCS Dup (4B06046-BSD1)										
Lead	0.191	0.00100	mg/l	0.200		95.5	80-120	1.05	20	
Matrix Spike (4B06046-MS1)					**Source: B4B0180-01**					
Lead	0.0998	0.00100	mg/l	0.100	ND	99.8	75-125			
Matrix Spike Dup (4B06046-MSD1)					**Source: B4B0180-01**					
Lead	0.0982	0.00100	mg/l	0.100	ND	98.2	75-125	1.62	20	

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425.420.9200 fax 425.420.9210
Spokane 11922 E. 1st Avenue, Spokane Valley, WA 99206-5302
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541.383.9310 fax 541.382.7588
Anchorage 2000 W. International Airport Road, Suite A10, Anchorage, AK 99502-1119
907.563.9200 fax 907.563.9210

Friedman & Bruya	Project: Michael Erdahl	**Reported:**
3012 16th Ave W	Project Number: 402021	02/17/04 16:13
Seattle, WA/USA 98119-2029	Project Manager: Michael Erdahl	

Notes and Definitions

Q-30	This sample was laboratory filtered since it was not field filtered as is required by the methodology.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

orth Creek Analytical - Bothell

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

Jeanne Garthwaite

anne Garthwaite, Project Manager

SAMPLE CHAIN OF CUSTODY

F-202

Page # 1 of 1

Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 Fax # (206) 283-5044

SAMPLERS *(signature)*

PROJECT NAME/NO. 402021

PO # F-202

REMARKS

Please Fax Results Due 2/17/04

TURNAROUND TIME
- ☒ Standard (2 Weeks)
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Dispose after 30 days
- ☐ Return samples
- ☐ Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	ANALYSES REQUESTED: Dissolved Pb	Notes
WP-WQ-MW1	01	1/26/04	13:00	W	1	✓	not filtered
WP-WQ-MW2	02	↓	12:30	↓	1	✓	↓
WP-WQ-MW3	03	↓	12:00	↓	1	✓	

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Michael Erdahl	FBinc	2/4/04	1130 AM
Received by: Tom Blankinship	Blankinship	NCA	2/5/04	1610
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

Samples were not @2-6c upon receipt!

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Charlene Morrow, M.S.
Yelena Aravkina, M.S.
Bradley T. Benson, B.S.
Kurt Johnson, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
TEL: (206) 285-8282
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e-mail: fbi@isomedia.com

September 9, 2003

Richard Simpson, Project Manager
Associated Earth Sciences, Inc.
911 5th Avenue, Suite 100
Kirkland, WA 98033

Dear Mr. Simpson:

Included are the results from the testing of material submitted on August 26, 2003 from the Winger Property/KV03242A, F&BI 308269 project. There are 2 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
AE10909R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 09/09/03
Date Received: 08/26/03
Project: Winger Property/KV03242A, F&BI 308269
Date Extracted: 08/27/03
Date Analyzed: 08/27/03

RESULTS FROM THE ANALYSIS OF THE WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE XYLENES AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Results Reported as µg/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 79-132)
WP-Q303-MW1 308269-01	<1	<1	<1	<1	<50	84
WP-Q303-MW2 308269-02	<1	<1	<1	<1	<50	83
WP-Q303-MW3 308269-03	<1	<1	<1	<1	<50	85
Method Blank	<1	<1	<1	<1	<50	90

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 09/09/03
Date Received: 08/26/03
Project: Winger Property/KV03242A, F&BI 308269

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 308242-05 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference (Limit 20)
Benzene	µg/L (ppb)	7	7	0
Toluene	µg/L (ppb)	2	2	0
Ethylbenzene	µg/L (ppb)	<1	<1	nm
Xylenes	µg/L (ppb)	3	3	0
Gasoline	µg/L (ppb)	<50	<50	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	µg/L (ppb)	25	94	71-117
Toluene	µg/L (ppb)	25	86	71-119
Ethylbenzene	µg/L (ppb)	25	85	67-125
Xylenes	µg/L (ppb)	75	84	65-127
Gasoline	µg/L (ppb)	1,000	66	62-120

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

[redacted] 26/

Send Report To Richard Simpson

Company Associated Earth Sciences, Inc.

Address 911 5th Avenue, Ste. 100

City, State, ZIP Kirkland, WA 98033

Phone # (425) 827-7701 Fax # (425) 827-5424

SAMPLERS (signature) [signature] Cole

PROJECT NAME/NO. Winger Property / KV03242A
~~Silverdale / KV03026A~~

PO #

REMARKS

[redacted] 1 of 1

V3

TURNAROUND TIME
- ☐ Standard (2 Weeks)
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Dispose after 30 days
- ☐ Return samples
- ☐ Will call with instructions

Sample ID	Lab ID	Date	Time	Sample Type	# of containers	ANALYSES REQUESTED: TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS	NWTPH-Gx/BTEX	Total Pb	NWTPH-Dx				Notes
WP-Q303-MW1	01 A-B	8-22-03	1325	water	2							X						
WP-Q303-MW2	02 A-B	8-22-03	1335	water	2							X						
WP-Q303-MW3	03 A-B	8-22-03	1340	water	2							X						

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	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	[signature]	Richard Simpson	AES	8-26-03	3:58
Received by:	[signature]	R BUCKLEY	CHAMPION	8-26	838
Relinquished by:					
Received by:	[signature]	Nhan Phan	FBI	8-26-03	10:40