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May 7, 2010

Mr. Russ Olsen  
Washington State Department of Ecology  
Northwest Regional Office  
3190 160<sup>th</sup> Avenue Southeast  
Bellevue, Washington 98008

**SUBJECT: SUMMARY OF ENVIRONMENTAL ACTIVITIES**  
**Olympic Athletic Club**  
**5301 Leary Avenue, Northwest**  
**Seattle, Washington 98107**  
**VCP Project No.: NW2108**  
**SES Project Number: 0670-001-03**

Dear Mr. Olsen:

Sound Environmental Strategies (SES) has prepared this letter on behalf of James R. Property LLC ("owner"), the owner of real property located at 5301 Leary Avenue Northwest in Seattle, Washington (hereinafter referred to as the Property). We are responding to the Washington State Department of Ecology's (Ecology) letter dated March 1, 2010, requesting information on cleanup activities at the Property in order for the Property to remain in Ecology's Voluntary Cleanup Program (VCP). The "Site" is defined by the extent of petroleum-contaminated soil and groundwater from releases at the Property and upgradient property that requires remedial action in accordance with the Washington State Model Toxics Control Act (MTCA) Cleanup Regulation as established in Washington Administrative Code (WAC) 173-340-200. In response to Ecology's request for additional information about the Site, SES is providing Ecology with the following documents and a brief summary of remedial investigation activities at the Site:

- *Remedial Investigation Report, Olympic Athletic Club, 5301 Leary Avenue Northwest, Seattle, Washington 98107*, prepared by SES and dated February 6, 2009 (RI Report).
- *Groundwater Monitoring and Sampling Report, Second Quarter 2009, Olympic Athletic Club, 5301 Leary Avenue Northwest Seattle, Washington*, prepared by SES and dated August 17, 2009 (2Q Report).
- *Groundwater Monitoring and Sampling Report, Fourth Quarter 2009, Olympic Athletic Club, 5301 Leary Avenue Northwest Seattle, Washington*, prepared by SES and dated January 13, 2010 (4Q Report).

## SITE HISTORY

The Property consists of King County Tax Parcel No. 2767702960, which covers approximately 0.42 acres (18,200 square feet [ft<sup>2</sup>]). Improvements to the Property include a two-story, masonry-framed building built in 1980 that occupies approximately 8,000 square feet of the Property. A 1,500-gallon underground storage tank (UST) that formerly contained heating oil is located beneath the concrete basement floor of the building. The UST was decommissioned

and closed in-place in June 2008. The Olympic Athletic Club (OAC) has operated at the Property since 1981 and historical aerial photographs indicate the current layout of the Property has existed at least since 1977.

## **PREVIOUS INVESTIGATION**

Subsurface investigations were conducted at the Property by others between 1993 and 2007. These investigations included advancing 26 borings at the Property and/or in the adjacent rights-of-way. The borings ranged in depth from 8 to 30 feet below ground surface (bgs). Eight of the borings were converted to groundwater monitoring wells and designated as monitoring wells MW01 through MW08 (see Figure 3 in the RI Report). An additional monitoring well, MW-D, was installed by others in conjunction with an environmental investigation conducted on an adjacent property (see Figure 3 in the RI Report). A more extensive discussion of prior investigations is set forth in the RI report.

## **SOIL QUALITY**

Soil samples collected from borings advanced during previous subsurface investigations were analyzed for gasoline range petroleum hydrocarbons (GRPH) and/or benzene, toluene, ethyl benzene, and total xylenes (BTEX). Concentrations of GRPH and benzene in soil samples exceeding the MTCA Method A cleanup level ranged from 30 milligrams per kilogram (mg/kg) to 830 mg/kg at depths ranging from 1 to 15 feet bgs and 0.04 mg/kg to 0.60 mg/kg at depth ranging from 7 to 15 feet bgs. The highest concentration of GRPH and benzene in soil was present beneath the OAC aboveground parking garage, which is the former location of the gasoline service station that operated between 1917 and 1949 (see Figure 4 in the RI Report). Concentrations of the remaining analytes were below laboratory reporting limits and/or not reported at concentrations exceeding their respective MTCA Method cleanup levels.

## **GROUNDWATER QUALITY – PRE-REMEDIAL INVESTIGATION**

Monitoring wells installed during subsurface investigations are located at the Property and upgradient of the Property on the northeast side of Leary Avenue Northwest (see Figure 5 in the RI Report). The monitoring wells were screened between 12 and 22 feet bgs. Groundwater samples collected from the monitoring wells by other consultants were analyzed for GRPH and BTEX. Selected groundwater samples were also analyzed for dissolved and total lead.

Prior to the most recent sampling events, groundwater samples collected from monitoring wells MW01 through MW07 contained concentrations of GRPH and benzene that exceeded the applicable MTCA Method A cleanup levels. Concentrations of GRPH in the groundwater samples at the Site ranged from 1,200 micrograms per liter ( $\mu\text{g/L}$ ) to 22,000  $\mu\text{g/L}$  (see Figure 5 in the RI Report). Concentrations of benzene in groundwater samples at the monitoring wells ranged from 7  $\mu\text{g/L}$  to 260  $\mu\text{g/L}$ . Separate-phase hydrocarbons (SPH) were measured on groundwater at monitoring well MW03 in January 2008 with a thickness 1.97 feet; SPH were not reported as present in any of the remaining wells. The measured direction of groundwater flow during previous investigations generally was toward the south-southwest with a gradient of 0.07 feet per foot.

## **GROUND-PENETRATING RADAR SURVEY**

In June 2005, a ground-penetrating radar (GPR) survey was conducted in the area below the OAC aboveground parking garage on the north side of the Property and below the OAC aboveground parking garage on the east side of Property. The purpose of the GPR survey was

to assess whether abandoned USTs were present beneath these areas of the Property. The GPR survey detected anomalies that were identified as disturbed soil in the central and northeast portions of the OAC aboveground parking garage adjacent to Leary Way Northwest and Northwest Vernon Place. USTs were not detected during the course of the survey. Additional GPR survey work was conducted as part of the RI, as discussed below.

## **REMEDIAL INVESTIGATION**

Between May and July 2008, SES conducted an RI at the Property. The remedial investigation included advancing six borings and converting the borings to monitoring wells (MW09 through MW14) (see Figure 5 in the RI Report). The monitoring wells were screened between 10 and 25 feet bgs. The additional remedial investigation activities included collecting groundwater samples from the monitoring wells at the Site, conducting an additional GPR survey, implementing a dual-phase extraction system (DPE) pilot test, and observing the in-place closure of a heating oil UST at the Property.

## **SOIL QUALITY**

Borings B03 through B08 were advanced at the Site in May of 2008 to a depth of 25 feet bgs (see Figure 4 in the RI Report). Selected soil samples collected from the borings were analyzed for GRPH or BTEX. Analytical results for the soil samples did not contain concentrations of GRPH and BTEX exceeding their respective MTCA Method A cleanup levels, with the exception of a sample collected from boring B08 at a depth of 15 feet bgs that contained elevated concentrations of GRPH, ethylbenzene, and total xylenes (see Figure 4 in the RI Report).

## **GROUNDWATER QUALITY**

Groundwater samples collected during the June 2008 sampling event were analyzed for GRPH and BTEX, and selected groundwater samples were analyzed for total and dissolved lead. Groundwater samples collected from monitoring wells MW01, MW02, MW05, MW06, MW07, and MW14 contained concentrations of GRPH and/or BTEX at concentrations above the applicable MTCA Method A cleanup levels (see Figure 5 in the RI Report). GRPH and BTEX were not detected above the laboratory limits and/or applicable MTCA Method A cleanup levels in groundwater samples collected from monitoring wells MW08, MW09, MW10, MW12, MW13, or MW-D. Total and dissolved lead were not detected in groundwater samples submitted for analysis from monitoring wells MW09, MW10, or MW14 at concentrations above the laboratory reporting limits or the MTCA Method A cleanup level.

In June 2008 and September 2008, the thickness of SPH in monitoring wells MW03 and MW04 measured 2.90 and 0.14 feet and 3.24 and 0.23 feet, respectively. SPH was measured in monitoring wells MW05 and MW07 in September 2008 with an apparent thickness of 0.03 and 0.06 feet, respectively.

On June 24, 2008, the depth to groundwater in monitoring wells located on the Site ranged from 8.96 feet (MW13) to 17.96 feet (MW03), as measured from the top of the monitoring well casing (TOC) and relative to the City of Seattle datum (i.e., NAV 88). Groundwater at the Property was measured to flow toward the south-southwest with a gradient of 0.016 feet per foot during the June 2008 monitoring event (see Figure 6 in the RI Report).

### **GPR SURVEY**

In May 2008, SES oversaw a GRP survey at the Property. The survey was conducted to confirm the absence or presence of suspected USTs located near the north side of the OAC aboveground parking garage. Results from the GPR survey indicated the presence of a subsurface metallic anomaly proximate to groundwater monitoring well MW06 and disturbed subsurface soil beneath the entrance of the OAC aboveground parking garage (see Figure 2 in the RI Report). The survey did not confirm the presence of the UST identified on the 1917 Sanborn Fire Insurance Map by others.

### **UST CLOSURE**

In June 2008, SES oversaw the decommissioning of a 1,500-gallon steel UST that formerly contained heating oil. The UST is located beneath the basement of the OAC main building (see Figure 2 in the RI Report). Approximately 350 gallons of heating oil were removed from the UST, and the UST was certified safe for hot work after the interior of the UST was pumped and rinsed. In July 2008, the UST was filled with approximately 1,000 gallons of control density fill.

### **DUAL-PHASE EXTRACTION PILOT TESTING**

In July 2008, SES conducted a DPE pilot test at the Property. The DPE pilot test was designed to evaluate the feasibility of using DPE technology to remove SPH, dissolved-phase petroleum constituents from the groundwater, and petroleum hydrocarbon constituents present in the vadose zone at the Property. Pilot testing activities included conducting a drawdown test to evaluate the hydraulic properties of the shallow water-bearing zone and a vacuum extraction test to assess the feasibility of extracting groundwater, SPH, and soil vapor from the overlying vadose zone soil.

Results from aquifer testing conducted at the Property indicated the aquifer has a transmissivity of 63.72 gallons per day per foot and a hydraulic conductivity of 0.568 feet per day. Using an average hydraulic gradient at the Site of 0.016 feet per foot and assuming the width of the dissolved GRPH plume at the Site is approximately 150 feet, the estimated pumping rate to extract and treat the GRPH plume at the Site is  $2.01 \times 10^1$  cubic feet per day or  $1.51 \times 10^2$  gallons per day. The estimated groundwater flow velocity for the shallow water-bearing zone is 13 feet per year. Data generated during the vacuum test indicated that the average radius of influence was approximately 46 feet in the unsaturated soil above the shallow water-bearing zone. Results from the pilot test indicated that DPE is a viable cleanup alternative for treatment of contaminated media at the Site.

### **ADDITIONAL INVESTIGATION ACTIVITIES**

Following completion of the RI, SES performed additional monitoring events to assess the environmental quality and flow direction of groundwater beneath the Site and conducted a baildown test to evaluate the hydraulic characteristics of SPH in the vadose zone above the groundwater at the Property. Additional information regarding these activities is provided below.

### **GROUNDWATER MONITORING AND SAMPLING**

SES conducted groundwater monitoring and sampling events at the Site in June and November of 2009. Groundwater samples were collected from monitoring wells MW01, MW02, MW06, MW07, and MW14 during the June and September 2009 groundwater monitoring and sampling events. A groundwater sample was also collected from monitoring well MW05 in June 2009.

Groundwater samples were analyzed for GRPH and BTEX. Concentrations of GRPH and/or BTEX were detected above the applicable MTCA Method A cleanup levels in groundwater samples collected from monitoring wells MW01, MW05, MW06, and MW011 during the June 2009 sampling event and in groundwater samples collected from monitoring wells MW01, MW06, and MW11 during the November 2009 sampling event (see Figure 3 in the 4Q Report).

The depth to groundwater (as measured from the TOC) ranged from 8.95 feet at monitoring well MW13 to 18.08 feet at monitoring well MW03 during the June 2009 monitoring event, and 9.31 feet at monitoring well MW13 to 18.38 feet at monitoring well MW03 during the November 2009 monitoring event. Groundwater elevations during the June and November 2009 monitoring events ranged from 25.82 feet at monitoring well MW13 to 28.49 feet at monitoring well MW-D and from 25.46 feet at monitoring well MW13 to 28.41 feet at monitoring well MW-D, respectively. For both sampling events, the direction of groundwater flow was generally toward the southwest with an average gradient of approximately 0.04 feet per foot beneath the northern portion of the Property to 0.002 feet per foot beneath the southern portion of the Property (see Figure 2 in the 2Q Report and in the 4Q Report).

In June 2009, SPH was measured on the groundwater at monitoring wells MW03, MW04, and MW07 at thicknesses of 3.06, 0.80, and 0.27 feet, respectively. In November 2009, SPH was measured on the groundwater at monitoring wells MW03, MW04, MW05, and MW07 at thicknesses of 2.98, 0.77, 0.04, and 0.90 feet, respectively.

### **SPH BAILODOWN TEST**

In February 2010, SES conducted a baildown test at the Property to evaluate the hydraulic characteristics of SPH in the vadose zone above the groundwater at the Property. The purpose of the baildown test was to assess remedial technologies to address SPH at the Site. The baildown test was conducted at monitoring well MW03. Based on the analysis of recovery data from the baildown test, the SPH hydraulic conductivity at monitoring well MW03 is  $2.30\text{E-}4$  feet per minute ( $3.31\text{E-}1$  feet per day). The calculated transmissivity for SPH at monitoring well MW03 is  $5.43\text{E-}4$  feet<sup>2</sup> per minute ( $7.68\text{E-}1$  feet<sup>2</sup> per day).

### **SITE CONCEPTUAL MODEL**

Soil and groundwater containing concentrations of GRPH and BTEX exceeding the applicable MTCA Method A cleanup levels are currently known to extend beneath and proximate to the OAC aboveground parking garage and may extend beneath the rights-of-way adjacent to the Property (see Figures 4 and 5 in the RI Report). SPH is also present beneath and proximate to the OAC aboveground parking garage. The primary source for the release of petroleum hydrocarbon contamination at the Site is likely the former gasoline station that operated at the Property (see Figure 2 in the RI Report). Another likely source area for the contamination present beneath the Site is the retail gasoline station that formerly operated on the Ballard Tire property, located upgradient of the Property on the east side of Leary Avenue Northwest (see Figure 2 in the RI Report). Groundwater samples collected from monitoring well MW05, located immediately downgradient of the Ballard Tire property and upgradient of the Property, contain concentrations of GRPH and benzene that exceed the applicable MTCA Method A cleanup levels (see Figure 3 in the 2Q and 4Q Reports). The groundwater flow direction at the Site, based upon work performed by SES and others, appears to fluctuate from south-southeast to south-southwest, causing the migration of contaminated groundwater from the Ballard Tire property toward the Property.

The lateral distribution of GRPH and/or BTEX in groundwater at the Site is the result of advection and dispersion in the groundwater beneath and upgradient of the OAC aboveground parking garage. One segment of the contaminated groundwater plume at the Site is likely sourced upgradient at the Ballard Tire property; the contamination from the Ballard Tire property appears to have migrated beneath the OAC aboveground parking garage, and together with the on-Property source may extend to areas located crossgradient of the OAC aboveground parking garage. Recent groundwater analytical results for groundwater samples collected in second and fourth quarter 2009 indicate that concentrations of GRPH and BTEX in the groundwater crossgradient of the OAC above ground parking garage have been decreasing since 2008 and are now below MTCA Method A cleanup levels (see Figure 3 in the 2Q and 4Q Reports). The plume does not appear to extend beyond the southern or eastern boundary of the Property, since groundwater samples collected from downgradient monitoring wells (MW08, MW12, and MW13) do not contain concentrations of GRPH and BTEX above laboratory reporting limits. Given the limited extent of impacts, along with the reported cessation of gasoline station operations in 1949, it appears as though the petroleum hydrocarbon groundwater plume has reached a steady-state condition.

The two types of risk exposure associated with the presence of GRPH and/or BTEX constituents at the Site are terrestrial ecological risk and human health risk. The Site qualifies for a Terrestrial Ecological Evaluation exclusion based on WAC 173-340-7491 (see Section 6.0 of the RI Report); mitigating the potential human health risk associated with exposure to GRPH and/or BTEX constituents in the affected media at the Site will be a primary objective of any cleanup action. Potential exposure pathways at the Site include soil and groundwater direct contact and ingestion, inhalation from the vapor pathway, and the direct contact with the surface water pathway.

Direct contact with soil and groundwater would require excavation activities that extend beneath the existing concrete slab of the OAC aboveground parking garage. At present, soil containing concentrations GRPH and/or BTEX exceeding the MTCA Method A cleanup levels are not considered a risk via the direct-contact pathway for dermal and/or ingestion because the soil is covered by the concrete slab of the OAC aboveground parking garage, which makes the risk of exposure negligible. There is no future development currently planned at the Property that would alter the existing design of the garage or result in exposure to the contaminated soil and groundwater beneath it. In addition, the groundwater directly beneath the Site is not used as a drinking water source and is likely a non-potable resource as defined in WAC 173-340-720 (2)(b)(i).

The potential exposure pathway for surface water consists of the direct-contact pathway, which comprises both dermal contact and ingestion pathways. Salmon Bay is located approximately 1,000 feet south and downgradient of the Site. Impacts to surface water quality from petroleum hydrocarbon constituents in groundwater at the Site are unlikely because groundwater at downgradient monitoring wells does not contain petroleum hydrocarbon constituents at concentrations above their respective laboratory reporting limits. Therefore, surface water is not a pathway of concern.

The presence of petroleum hydrocarbons in soil and groundwater beneath the Site has the potential to result in vapor intrusion to indoor and outdoor ambient air. Potential exposure would occur through the inhalation pathway. Vapor intrusion pathways may exist within the OAC aboveground parking garage and the OAC main building. Analytical results for groundwater samples collected from crossgradient monitoring wells in the second and fourth quarters of 2009

indicate that concentrations of GRPH and BTEX are below MTCA Method A cleanup levels; therefore, there is no potential for exposure to petroleum hydrocarbon vapors in off-Site buildings (see Figure 2 in the RI Report). The OAC aboveground parking garage is open to the outdoor ambient air; therefore, the potential risk for exposure to benzene through the inhalation pathway in this area is low.

### **DATA GAP**

Because the source area, nature, and extent of the petroleum hydrocarbon contaminated groundwater at the Ballard Tire property has not been adequately characterized, there is a potential for recontamination of the groundwater beneath the real Property. SES believes that additional investigation is warranted to define the extent of the contaminated groundwater plume originating at the Ballard Tire property.

### **CLOSING**

SES, on behalf James R. Property LLC, requests that Ecology continue to provide services under the VCP. SES also requests a meeting with Ecology to discuss the cleanup of Site. If you have questions or require additional information, please contact me at (206) 436-5940.

Respectfully,

**Sound Environmental Strategies**

  
Thomas Cammarata, LG, LHG  
Senior Environmental Geochemist

Attachments: Reports

*Remedial Investigation Report*  
*Groundwater Monitoring and Sampling Report, Second Quarter 2009*  
*Groundwater Monitoring and Sampling Report, Fourth Quarter 2009*

## REPORTS

## ***Remedial Investigation Report***



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## REMEDIAL INVESTIGATION REPORT

sound environmental strategies



*Property:*

**Olympic Athletic Club  
5301 Leary Avenue Northwest  
Seattle, Washington 98107**

*Prepared for:*

**James R. Property, LLC  
5301 Leary Avenue Northwest  
Seattle, Washington 98107**

**February 6, 2009**

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*Prepared for:*

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**Remedial Investigation Report**

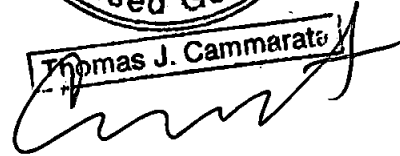
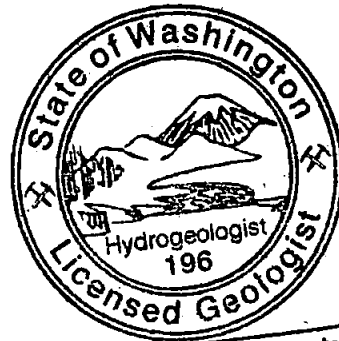
Olympic Athletic Club  
5301 Leary Avenue Northwest  
Seattle, Washington 98107

SES Project No.: 0670-001-03

*Prepared by:*

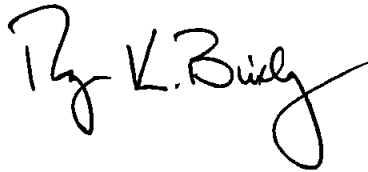


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## APPENDICES

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## ACRONYMS AND ABBREVIATIONS

bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and total xylenes
COC	chemical of concern
CVOCs	chlorinated volatile organic compounds
Converse	Converse Consultants NW
DPE	dual-phase extraction
DRPH	diesel-range petroleum hydrocarbon
Ecology	Washington State Department of Ecology
EPA	United States Environmental Protection Agency
Farallon	Farallon Consulting, LLC
Filco	Filco Company, Inc.
ft <sup>2</sup>	square feet
gpd/f	gallons per day per foot
GPR	ground-penetrating radar
GRPH	gasoline-range petroleum hydrocarbon
Kane	Kane Environmental, Inc.
Lloyd	Lloyd and Associates, Inc.
µg/L	micrograms per liter
mg/kg	milligrams per kilogram
MTCA	Washington State Model Toxics Control Act Cleanup Regulation
NAVD	North American Vertical Datum
NWTPH	Northwest Total Petroleum Hydrocarbon
OAC	Olympic Athletic Club
ORPH	oil-range petroleum hydrocarbon
Property	5301 Leary Way Northwest, Seattle, Washington
RI	remedial investigation
RI Report	Remedial Investigation Report
ROI	radius of influence
SES	Sound Environmental Strategies
SPH	separate-phase hydrocarbon
TEE	Terrestrial Ecological Evaluation
UST	underground storage tank
VOCs	volatile organic compounds
WAC	Washington Administrative Code

## 1.0 INTRODUCTION

Sound Environmental Strategies (SES) has prepared this Remedial Investigation Report (RI Report) for the Olympic Athletic Club (OAC) property, located at 5301 Leary Avenue Northwest, Seattle, Washington (herein referred to as the Property) and beneath rights-of-way that include Leary Way Northwest and Northwest Vernon Place (Figure 1). The Site is defined by the extent of petroleum-contaminated soil and groundwater that originated from a release at the Property and upgradient properties and requires remedial action in accordance with the Washington State Model Toxics Control Act Cleanup Regulation (MTCA) as established in Section 200 of Chapter 173-340 of the Washington Administrative Code (WAC 173-340-200). This RI Report has been prepared on behalf of James R. Property, LLC, the owner of the Property. The RI Report summarizes the results of previous investigations, the remedial investigation (RI) conducted at the Property, the conceptual site model for the Site, and the results of dual-phase extraction (DPE) pilot testing.

The Property consists of King County Tax Parcel No. 2767702960, which covers approximately 0.42 acres (18,200 square feet [ft<sup>2</sup>]). Improvements to the Property include a two-story, masonry-framed building built in 1980 that occupies approximately 8,000 ft<sup>2</sup> of the Property. The building operates as a health club and includes an attached one-story parking garage located on the north side of the health club (King County 2008) (Figure 2). A 1,500-gallon underground storage tank (UST) that formerly contained heating oil is located beneath the subgrade basement floor of the building. The UST was decommissioned and closed in-place in June 2008 (SES 2008).

### 1.1 PURPOSE

The RI Report was prepared in accordance with MTCA, WAC 173-340. The purpose of the remedial investigation is to collect, develop, and evaluate sufficient information to develop a technically feasible cleanup action for the Site.

### 1.2 ORGANIZATION

This RI Report has been organized into the following sections:

- **Section 1—Introduction.** This section describes the purpose of the remedial investigation.
- **Section 2—Remedial Investigation.** This section documents the remedial investigation conducted at the Site by SES. This section also documents the history of the Site and provides a summary of subsurface investigations previously conducted at the Site by others to define the nature and extent of contamination in soil and groundwater.
- **Section 3—Remedial Investigation Field Activities.** This section documents the RI field activities conducted at the Site by SES.
- **Section 4—Remedial Investigation Results.** This section documents the results of the RI conducted at the Site by SES.
- **Section 5—Data Gaps Analysis.** This section discusses whether sufficient data exist regarding the nature and extent of petroleum hydrocarbon contamination in soil and groundwater at the Site to evaluate remedial alternatives and to select a preferred cleanup alternative.
- **Section 6—Terrestrial Ecological Evaluation Results.** This section discusses the Terrestrial Ecological Evaluation (TEE) for the Site as required by WAC 173-340-7940.

- **Section 7—Conceptual Site Model.** This section discusses the components of the conceptual site model developed for the Site based on the results from previous investigations and the RI.
- **Section 8—Limitations.** This section presents SES' limitations with respect to the RI Report.
- **Section 9—References.** This section lists the documents used in preparation of the RI Report.

## 2.0 REMEDIAL INVESTIGATION

Between May and July 2008, SES conducted an RI at the Site that included conducting a subsurface investigation and ground-penetrating radar (GPR) survey, performing a DPE pilot test, and observing the in-place closure of a heating oil UST at the Property. The remedial investigation also included reviewing the Site background and history and previous investigations conducted by others at the Site; conducting a TEE in accordance with WAC 173-340-7940; analyzing data gaps; and preparing a conceptual site model.

The purpose of the remedial investigation was to assess, in conjunction with prior investigative activities at the Site, the nature and extent of petroleum hydrocarbon impacts in soil and groundwater. The pilot test was designed to evaluate the feasibility of using DPE technology to remove separate-phase and dissolved-phase petroleum constituents from soil and groundwater beneath the Site. Presented below is a discussion of the results from the remedial investigation conducted at the Site.

### 2.1 BACKGROUND

This section describes the history of the Site and provides a summary of previous investigations conducted by others at the Site. Additional information on the history of the Site and subsurface investigation documentation, procedures, and results are provided in the referenced reports. Analytical results for soil samples, reconnaissance groundwater samples, and groundwater samples, as well as groundwater elevations, are presented in Tables 1 through 3. Borings, monitoring wells, and other sample locations are shown on Figure 3. Boring logs are presented in Appendix A.

### 2.2 SITE HISTORY

Based on a 1917 Sanborn Fire Insurance Map, the north portion of the Property was developed as a gasoline service station in 1917. The station included seven service bays and a 220-gallon gasoline tank located beneath Leary Avenue Northwest (Farallon 2008). The gasoline station included one pit, one hydraulic hoist, and three 550-gallon tanks (Farallon 2008). The Sanborn Fire Insurance Map and a 1923 property tax card do not indicate whether the tanks were USTs or aboveground storage tanks. Based on Polk City Directories, the gas station continued to operate at the Property until approximately 1949. The Property was used as the Ballard Elks Building/Lodge/Club between 1954 and 1976 (Farallon 2008). Since 1981, the Property has been listed as the Olympic Racquet and Health Club. Historical aerial photographs indicate the current layout of the Property has existed at least since 1977 (Farallon 2008).

Based on a review of Sanborn Fire Insurance Maps from 1917, 1950, and 1968 and Polk City Directories, historical land use in the vicinity of the Site has been predominately light industrial, commercial, and/or retail. Since approximately 1939, a gasoline station and/or auto repair shop operated at the current location of the Ballard Tire site on the north side of Leary Avenue

Northwest (Farallon 2008) (Figure 2). Polk City Directories identify a gasoline station operating at this location between 1939 and 1966 (Farallon 2008). A gasoline station operated at the current location of the Canal Street Condominiums from 1939 to 1962 (Farallon 2008) (Figure 2). A used car lot operated at this location after 1962 (Farallon 2008).

## **2.3 PREVIOUS INVESTIGATIONS**

### **2.3.1 Converse Consultants NW—1993**

In September 1993, Converse Consultants NW (Converse) advanced two soil borings designated as B1 and B2 at the Site (Figure 3). Soil borings B-1 and B-2 were advanced to depths of approximately 13.5 and 22 feet below ground surface (bgs), respectively (Converse 1993). Boring B2 was converted to monitoring well MW01. Selected soil samples collected from each boring were analyzed for gasoline-, diesel-, and oil-range petroleum hydrocarbons (GRPH, DRPH, and ORPH, respectively) by Washington State Department of Ecology (Ecology) Method WTPH-HCID, and for benzene, toluene, ethylbenzene, and total xylenes (BTEX) by United States Environmental Protection Agency (EPA) Method 8020. The groundwater sample collected from monitoring well MW01 was analyzed for GRPH and DRPH by Ecology Methods WTPH-G and WTPH-D, for BTEX by EPA Method 8020, and for total lead by EPA Method 7421 (Converse 1993).

GRPH, DRPH, ORPH, and BTEX were not detected in soil samples at concentrations above laboratory reporting limits (Figure 4, Table 1). The groundwater sample collected from monitoring well MW01 contained benzene at a concentration that exceeded the MTCA Method A cleanup level. Concentrations of GRPH, DRPH, ORPH, toluene, ethylbenzene, xylenes, and total lead were not reported above laboratory reporting limits and/or were below applicable MTCA Method A cleanup levels (Figure 5, Table 2).

### **2.3.2 Lloyd and Associates, Inc.—1994 and 1995**

In February 1994, Lloyd and Associates, Inc. (Lloyd) advanced three soil borings (MW02 through MW04) at the Site and converted the borings to monitoring wells designated as MW02 through MW04 (Figure 3) (Kane 2005). Soil samples were collected from each boring at depths ranging from 1 to 5 feet bgs. Soil samples were analyzed for GRPH and BTEX. Groundwater samples were collected from monitoring wells MW01 through MW04 and were analyzed for GRPH, BTEX, and total lead.

Analytical results for soil samples collected from borings MW02 and MW04 contained concentrations of GRPH that exceeded the MTCA Method A cleanup level (Figure 4, Table 1). The soil sample collected from boring MW03 contained a concentration of total xylenes that exceeded the MTCA Method A cleanup level. Concentrations of all remaining analytes were reported at levels below laboratory reporting limits and/or applicable MTCA Method A cleanup levels.

Analytical results indicated that groundwater samples collected from monitoring wells MW03 and MW04 contained concentrations of GPRH that exceeded the MTCA Method A cleanup level (Figure 5, Table 2). The concentrations of benzene in groundwater samples collected from monitoring wells MW01 and MW04 exceeded the MTCA Method A cleanup level. The concentrations of ethylbenzene and total xylenes in groundwater samples collected from monitoring well MW03 exceeded applicable MTCA Method A cleanup levels (Kane 2005). Concentrations of BTEX in all remaining groundwater samples were below applicable MTCA Method A cleanup levels or laboratory reporting

limits. The concentration of total lead in the groundwater sample collected from monitoring well MW04 was below the MTCA Method A cleanup level. Concentrations of lead in all remaining samples were below laboratory reporting limits. Lloyd reportedly prepared a report detailing the installation of monitoring wells MW02 through MW04 and the analytical results for groundwater samples collected from the wells; however, a copy of the report was not available for review. Information regarding the Lloyd report was provided by others (Kane 2005).

In October 1995, Lloyd collected groundwater samples from monitoring wells MW01, MW02, and MW04 (Figure 3). Samples were analyzed for GRPH, BTEX, and total lead by Ecology Method WTPH-G, EPA Method 8020, and EPA Method 7421, respectively (Lloyd 1995). Analytical results indicated that groundwater collected from monitoring wells MW02 and MW04 contained concentrations of GRPH that exceeded the MTCA Method A cleanup level (Figure 5, Table 2). The concentrations of benzene, ethylbenzene, and total xylenes in groundwater at monitoring well MW04 exceeded applicable MTCA Method A cleanup levels. The concentrations of BTEX in the groundwater sample collected from monitoring well MW02 were below the applicable MTCA Method A cleanup levels and/or laboratory reporting limits (Figure 5, Table 2). The groundwater sample collected from monitoring well MW01 contained concentrations of GRPH, BTEX, and total lead below applicable laboratory reporting limits and/or MTCA Method A cleanup levels (Figure 5, Table 2).

### **2.3.3 Environmental Associates, Inc.—2005**

In May 2005, Environmental Associates, Inc. collected groundwater samples from monitoring wells MW01 through MW04 (Figure 3). Samples were analyzed for GRPH and BTEX by Northwest Total Petroleum Hydrocarbon (NWTPH) Method NWTPH-Gx and EPA Method 8020, respectively (Kane 2005). Analytical results indicated that the groundwater sample collected from monitoring well MW04 contained GRPH at a concentration that exceeded the MTCA Method A cleanup level. Concentrations of BTEX were below applicable MTCA Method A cleanup levels and/or laboratory reporting limits in the groundwater sample collected from monitoring well MW04. The concentration of benzene in groundwater collected from monitoring well MW01 exceeded the MTCA Method A cleanup level; concentrations of GRPH, toluene, ethylbenzene, and total xylenes were below applicable MTCA Method A cleanup levels and/or laboratory reporting limits (Figure 5, Table 2). Approximately 1.13 feet of separate-phase hydrocarbon (SPH) was measured on the groundwater at monitoring well MW03 (Table 3). Groundwater samples collected from monitoring well MW02 and MW03 did not contain concentrations of GRPH or BTEX above the laboratory reporting limits; however, the laboratory reporting limits were not included in the available reports (Figure 5, Table 2) (Kane 2005).

### **2.3.4 Kane Environmental, Inc.—2005**

In June 2005 through August 2005, Kane Environmental, Inc. (Kane) conducted subsurface investigations at the Site. The purpose of the subsurface investigations was to further characterize the nature and extent of petroleum hydrocarbon constituents in soil and groundwater at the Site. Field activities included:

- Conducting a GPR survey of the area below the aboveground parking garage on the north side of Property and below the aboveground parking garage on the east side of Property (Figure 2).

- Advancing nine direct-push borings designated GP1 through GP9 at the Site to depths of 8 to 20 feet bgs, collecting continuous soil samples from each boring from ground surface to the maximum drilling depth, and collecting soil and reconnaissance groundwater samples from each boring (Figure 3).
- Advancing 12 hollow-stem auger borings designated as HS1 through HS12 to depths of 15 to 30 feet bgs; collecting soil samples at 5-foot sample depth intervals; collecting soil samples from each boring; converting borings HS8, HS11, and HS12 to monitoring wells MW05 through MW07; and measuring the depth to groundwater and collecting groundwater samples from monitoring wells MW05 through MW07 (Figure 3).
- Analyzing soil, reconnaissance groundwater, and groundwater samples for GRPH and BTEX by NWTPH Method NWTPH-Gx and EPA Method 8021B, respectively.
- Collecting water samples from sumps located at the north and south ends of the subgrade basement (Figure 2). The water samples were analyzed for GRPH, BTEX, and DRPH by NWTPH Method NWTPH-Gx, EPA Method 8021B, and NWTPH Method NWTPH-Dx, respectively.

Results from the subsurface investigation were as follows:

- The GPR survey detected anomalies that were identified as disturbed soil in the central and northeast portions of the aboveground parking garage adjacent to Leary Way Northwest and Northwest Vernon Place (herein referred to as the aboveground parking garage). USTs were not detected during the course of the survey.
- Fill material composed of cobbles, burnt wood fragments, and broken pieces of concrete were encountered at depths ranging from 3 to 7 feet bgs. Underlying the fill was a mixture of silty sand and sand to the maximum drilling depth of 30 feet bgs. Silty clay was encountered at depths of 8 to 14 feet bgs beneath the aboveground parking garage. Groundwater was encountered in borings at approximately 10 to 25 feet bgs at the time of drilling. The groundwater flow direction at the Site, as measured in July 2005, was to the south-southeast.
- The water sample collected from the south sump did not contain concentrations of DRPH above laboratory reporting limits. DRPH was detected in the water sample collected from the north sump at a concentration below the MTCA Method A cleanup level (Figure 2, Table 2).
- GRPH and benzene were detected in soil samples collected at depths of 7 to 14 feet bgs from borings GP1 through GP4 at concentrations above the MTCA Method A cleanup level (Figure 4, Table 1). Concentrations of all remaining analytes were below laboratory reporting limits and/or MTCA Method A cleanup levels.
- GRPH and benzene were detected in soil samples collected at depths of 10 to 15 feet bgs from borings HS2, HS5, HS7, and HS11 at concentrations above applicable MTCA Method A cleanup levels. Concentrations of all remaining analytes were below laboratory reporting limits and/or MTCA Method A cleanup levels.
- GRPH and benzene were detected in reconnaissance groundwater samples collected from borings HS2, HS5, and HS7 and in groundwater samples collected from monitoring wells MW05 through MW07 at concentrations above the MTCA Method A cleanup level (Figure 5, Table 2).

- DRPH was detected at concentrations above the MTCA Method A cleanup level in reconnaissance groundwater samples collected from borings HS2 and HS7 (Table 2). However, the laboratory indicated that the chromatogram fingerprint for DRPH in the samples represented late-eluting gasoline petroleum hydrocarbons and was not indicative of diesel.
- Benzene was detected in the reconnaissance groundwater sample collected from boring GP9 at a concentration above the MTCA Method A cleanup level (Figure 5, Table 2). Concentrations of all remaining analytes were below laboratory reporting limits and/or MTCA Method A cleanup levels (Figure 5, Table 2).

### 2.3.5 Farallon Consulting, LLC—2006

Farallon Consulting, LLC (Farallon) conducted groundwater monitoring and sampling events at the Site in May and August 2006 (Farallon 2006). The monitoring and sampling events included:

- Measuring the depth to groundwater or, where applicable, SPH at monitoring wells MW01 through MW04 and collecting groundwater samples from monitoring wells MW01 and MW02 in May 2006 (Tables 2 and 3);
- Measuring the depth to groundwater at monitoring wells MW01 through MW07 and MW-D, and collecting groundwater samples from monitoring wells MW05 through MW07 in August 2006 (Tables 2 and 3); and
- Analyzing groundwater samples collected during both monitoring and sampling events for GRPH by NWTPH Method NWTPH-Gx, BTEX by EPA Method 8021B, DRPH and ORPH by NWTPH Method NWTPH-Dx, and dissolved lead by EPA Method 6010B.

Analytical results for groundwater samples collected in May and August 2006 were as follows:

- GRPH was detected in groundwater samples collected from monitoring wells MW05 through MW07 at concentrations above the MTCA Method A cleanup level (Figure 5, Table 2). Concentrations of GRPH in all remaining groundwater samples were below the MTCA Method A cleanup level (Figure 5, Table 2).
- Benzene was detected in groundwater samples collected from monitoring wells MW01, MW05, and MW07 at concentrations above the MTCA Method A cleanup level (Figure 5, Table 2). Concentrations of benzene in all remaining groundwater samples were below the MTCA Method A cleanup level (Figure 5, Table 2).
- Concentrations of DRPH, ORPH, and all remaining aromatic hydrocarbon constituents in groundwater samples collected from monitoring wells MW01, MW02, MW05 through MW07, and MW-D were below applicable MTCA Method A cleanup levels and/or not detected above laboratory reporting limits (Figure 5, Table 2).
- Concentrations of dissolved lead in groundwater samples collected from MW01, MW02, MW05 through MW07, and MW-D were below the MTCA Method A cleanup level or were not detected above laboratory reporting limits (Figure 5, Table 2).

In monitoring wells that did not contain measurable thicknesses of SPH, the depth to groundwater in May 2006 ranged from 13.20 feet (MW01) to 14.76 feet (MW03) below the top of the monitoring well casing and from 12.83 feet (MW01) to 15.76 feet (MW05)

during the August monitoring event. The relative groundwater elevations in August 2006 ranged from 53.73 feet (MW01) to 61.98 feet (MW-D) (elevations measured relative to the City of Seattle datum, i.e., North American Vertical Datum [NAVD] 88). The direction of groundwater flow in August 2006 was to the south with a gradient of 0.01 foot per foot (Farallon 2008). The thickness of SPH measured on the groundwater at monitoring wells MW03 and MW04 in May and August 2006 ranged from 0.04 feet (MW04) to 0.96 feet (MW03) (Table 3).

### 2.3.6 Farallon Consulting, LLC—2007 and 2008

Farallon conducted additional groundwater monitoring and sampling events at the Site in May and December 2007 and in January 2008. The monitoring and sampling events included:

- Measuring the depth to groundwater and/or SPH at monitoring wells MW01 through MW07 and MW-D in May 2007 and January 2008; and
- Collecting a groundwater sample from monitoring well MW08 in December 2007 and analyzing the groundwater sample for GRPH by NWTPH Method NWTPH-Gx, BTEX by EPA Method 8021B, DRPH and ORPH by NWTPH Method NWTPH-Dx, and chlorinated volatile organic compounds (CVOCs) by EPA Method 8260B.

Analytical results for the groundwater sample collected from monitoring well MW08 indicated that concentrations of GRPH, DRPH, ORPH, BTEX, and CVOCs were below laboratory reporting limits (Figure 5, Table 2) (Farallon 2008).

The depth to groundwater in January 2008 ranged from 14.12 feet (MW06) to 18.24 feet (MW03) below the top of the monitoring well casing and the groundwater elevations for January 2008 ranged from 55.12 feet (MW01) to 60.80 feet (MW05) (elevations measured relative to the City of Seattle datum, i.e., NAVD 88). The direction of groundwater flow in January 2008 was toward the southwest with a gradient of 0.07 foot per foot (Farallon 2008). The thickness of SPH measured on groundwater at monitoring well MW03 in January 2008 was 1.97 feet; SPH was not reported as present in any of the remaining wells (Table 3).

## 3.0 REMEDIAL INVESTIGATION FIELD ACTIVITIES

Between May and July 2008, SES conducted remedial investigation field activities at the Site. Field activities included conducting a GPR survey and a subsurface investigation of soil and groundwater, performing a pilot test, and observing the in-place closure of a heating oil UST at the Property. Field activities included the following work elements:

- Conducting a GPR survey to locate suspected USTs at and near the Site. The purpose of the GPR survey was to confirm the absence or presence of USTs that had been identified on a 1917 Sanborn Fire Insurance Map near the north side of the aboveground parking garage (Farallon 2008) (Figure 2).
- Observing the in-place closure of a heating oil UST located beneath the basement sub-slab of the OAC building (Figure 2).
- Advancing six hollow-stem auger borings (B03 through B08) at on- and off-Site locations to a maximum depth of 25.5 feet bgs (Figure 3), collecting soil samples in 2.5-foot

intervals in each boring, screening soil samples for total volatile organic compounds (VOCs) using a hand-held gas analyzer equipped with a photoionization detector, and analyzing selected soil samples for GRPH by NWTPH Method NWTPH-Gx and for BTEX by EPA Method 8021B. Boring logs are presented in Appendix A.

- Attempting to advance two hollow-stem auger borings/monitoring wells within Leary Way Northwest. The monitoring wells were not installed because subsurface conditions resulted in refusal before the design depths of the borings/monitoring wells could be reached.
- Completing each of the six borings as a monitoring well (MW09 through MW14) (Figure 2); screening the monitoring wells from 10 to 25 feet bgs, with the exception of MW13, which was screened from 5 to 20 feet bgs; measuring the depth to groundwater in each monitoring well; and collecting groundwater samples and analyzing the samples for GRPH by NWTPH Method NWTPH-Gx and BTEX by EPA Method 8021B. In addition, groundwater samples collected from monitoring wells MW09, MW10, and MW14 were analyzed for the presence of total and dissolved lead by EPA Method 200.8, as well as VOCs using EPA Method 8260B.

The pilot test included the following work elements:

- Conducting a drawdown test to evaluate the hydraulic properties of the shallow water-bearing zone and allow for the development of design parameters for a DPE system; and
- Conducting a vacuum extraction test to assess the feasibility of extracting groundwater, SPH, and soil vapor from the shallow water-bearing zone and the overlying unsaturated soil and to allow for the development of design parameters for the DPE system.

#### 4.0 REMEDIAL INVESTIGATION RESULTS

Results from the remedial investigation field activities were used to evaluate data gaps, conduct a TEE, prepare a conceptual site model, and develop a conceptual design for cleanup of the Site. The findings of the remedial investigation field activities conducted by SES are presented below. Laboratory reports are presented in Appendix B.

- Analytical results of soil samples collected from borings B03, B04, B06, and B07 indicated that samples collected from these borings did not contain GRPH or BTEX at concentrations above laboratory practical quantitation limits. Sample B05-15, which was collected from boring B05 (MW10) at a depth of 15 feet bgs, contained a trace concentration of GRPH, and sample B08-15, which was collected from boring B08 (MW14) at a depth of 15 feet bgs, contained GRPH, ethylbenzene, and total xylenes at concentrations in excess of their respective MTCA Method A cleanup levels (Figure 4, Table 1).
- Groundwater samples collected from monitoring wells MW01, MW02, MW05, MW06, MW07, and MW14 during the June 2008 sampling event and the groundwater sample collected from monitoring well MW11 during the September 2008 sampling event contained concentrations of GRPH and/or one or more of the BTEX constituents at concentrations above their respective MTCA Method A cleanup levels (Figure 2). GRPH and BTEX were not detected above their respective laboratory reporting limits and/or applicable MTCA Method A cleanup levels in groundwater samples collected from MW08, MW09, MW10, MW12, MW13, or MW-D (Figure 5, Table 2).

- Elevated concentrations of volatile organic compounds and total and dissolved lead were not detected in any of the samples submitted for analysis from monitoring wells MW09, MW10, or MW14 (Figure 5, Table 2).

The depth to groundwater in monitoring wells located on the Site and adjacent properties ranged from 8.96 feet (MW13) to 17.96 feet (MW03) on June 24, 2008 (Table 3) as measured from the top of the monitoring well casing and relative to the City of Seattle datum, i.e., NAVD 88. Groundwater at the Site was measured to flow toward the south-southwest with a gradient of 0.016 foot per foot during the June 2008 monitoring event. Groundwater elevation contours are shown on Figure 6. The thickness of SPH in monitoring wells MW03 and MW04 measured 2.90 and 0.14 feet, respectively, in June 2008 and 3.24 and 0.23 feet, respectively, in September 2008. SPH was measured in monitoring wells MW05 and MW07 in September 2008 with an apparent thickness of 0.03 and 0.06 feet, respectively (Table 3). SPH was measured in monitoring well MW07 in June 2008, but at the measurement limit of the interface probe (0.01 feet). SPH had not been previously found in monitoring well MW05.

#### 4.1 GPR SURVEY RESULTS

On May 7, 2008, SES oversaw a GPR survey by Underground Detection Service at the Property. The GPR survey was conducted in an effort to confirm the absence or presence of suspected USTs located near the north side of the aboveground parking garage (Figure 2). Results from the GPR survey indicated the presence of a subsurface metallic anomaly proximate to groundwater monitoring well MW06 and disturbed subsurface soil beneath the entrance of the aboveground parking garage (Figure 2). The survey did not confirm the presence of the UST identified on the 1917 Sanborn Fire Insurance Map (Farallon 2008).

#### 4.2 IN-PLACE CLOSURE OF HEATING OIL UST

On June 17, 2008, Filco Company, Inc. (Filco) and its representatives initiated the decommissioning of a 1,500-gallon steel heating oil UST located beneath the basement of the OAC (Figure 2). Approximately 350 gallons of product were removed from the UST by Marine Vacuum Service, Inc. Sound Testing Inc. certified that the UST was safe for hot work after the interior of the UST was pumped and rinsed.

On July 3, 2008, SES observed the in-place closure of the heating oil UST located beneath the basement of the OAC (Figure 2). The UST was decommissioned by Filco. SES observed that the UST was accessed by a 45-inch-diameter hole cut in the concrete sub-slab of the building. The interior of the UST was accessed by a 1-foot by 1.5-foot hole cut in the top of the UST. Following completion of the pumping and rinsing activities, the UST was filled with approximately 1,000 gallons of control density fill.

#### 4.3 PILOT TEST RESULTS

Data generated during the pilot test were evaluated to determine the efficacy of DPE and to develop design parameters for a possible full-scale implementation of the DPE technology if selected as the preferred remedial technology at the Site. Data obtained during the drawdown test were analyzed using aquifer testing analysis software Aquifer<sup>win32</sup>. The Theis (unconfined approximation), Cooper and Jacob, and Neuman (unconfined) solutions included in Aquifer<sup>win32</sup> were used to calculate the transmissivity of the shallow water-bearing zone. Results from the analysis of drawdown data indicated the shallow water-bearing zone has a transmissivity range from 46.26 to 106.51 gallons per day per foot (gpd/f) with a geometric mean of 63.72 gpd/f. Assuming a saturated thickness of 15 feet for the shallow water-bearing zone (well screen length), the geometric mean hydraulic conductivity calculated for monitoring well MW10 is 0.568

$$T = Kb$$

$$K = \frac{2E-A \text{ cm/s}}{\text{SILT}}$$

feet per day or  $2.00 \times 10^{-4}$  centimeters per second. Using an average hydraulic gradient at the Site of 0.016 foot per foot and assuming the width of the dissolved GRPH plume at the Site is approximately 150 feet, the estimated pumping rate to extract and treat the GRPH plume at the Site is  $2.01 \times 10^1$  cubic feet per day or  $1.51 \times 10^2$  gallons per day. The estimated groundwater flow velocity for the shallow water-bearing zone is 13 feet per year.  $20 \text{ ft}^3 \times 7.5 = 150 \text{ gal/day}$

Data generated during the vacuum test indicated that the average radius of influence (ROI) was approximately 46 feet in the unsaturated soil above the shallow water-bearing zone. However, the effective ROI for remediation is generally significantly less; applying a 50 percent safety factor results in an estimated effective ROI of 23 feet.

Based on the groundwater flow velocity, direction of groundwater flow of the shallow water-bearing zone in the vicinity of the Site, and analytical results for groundwater monitoring well MW05 located upgradient of the Property, dissolved-phase GRPH appears to be migrating beneath the Property from an upgradient source located proximate to monitoring well MW05 (Figure 1). These impacts are in addition to the contamination from sources at the Property. The results from the pilot test, in conjunction with the hydraulics of the shallow water-bearing zone, indicate that full-scale implementation of a DPE system at the Property would most likely capture dissolved-phase GRPH originating upgradient of the Property. The results of future monitoring efforts will be used to evaluate the significance of the impacts that the migration of dissolved-phase GRPH from the upgradient source may have on the duration and cost of the remedial efforts. Such impacts are not expected to inhibit the efficacy of DPE technology as a viable cleanup alternative for the Site; however, the restoration time frame for contamination at the Site will likely be materially shortened by the removal or hydrologic separation of the upgradient source. Results from the pilot test indicate that DPE is a viable cleanup alternative for treatment of contaminated media at the Site and will mitigate the risk to human health associated with the active exposure pathways at the Site.

## 5.0 DATA GAPS ANALYSIS

Analysis of the subsurface investigation reports prepared by others and results of the SES RI indicate that sufficient data exist regarding the nature and extent of contamination in soil and groundwater at the Site to evaluate remedial alternatives, to develop a conceptual site model for the Site, and to select a preferred cleanup alternative for cleanup of the Site. Therefore, additional RI work elements to define the nature and extent of soil and groundwater contamination are not required at the Site. The nature and extent of vapor-phase contamination inside the aboveground parking garage and the OAC building were not addressed as part of the RI. The vapor intrusion pathway is discussed with the conceptual site model (Section 7.0).

## 6.0 TERRESTRIAL ECOLOGICAL EVALUATION RESULTS

The TEE is required by WAC 173-340-7940 at sites where there has been a release of a hazardous substance to soil. The regulation requires that one of the following actions be taken:

- Document a TEE exclusion using the criteria presented in WAC 173-340-7491;
- Conduct a simplified TEE in accordance with WAC 173-340-7492; or
- Conduct a site-specific TEE in accordance with WAC 173-340-7493.

The Site qualifies for TEE exclusion based on WAC 173-340-7491. The results of ranking for the simplified TEE under Table 749-1 yields a score of 12, which qualifies the Site for TEE exclusion under the criteria set forth in WAC 173-340-7492. No further consideration of ecological impacts is required under MTCA. Results of the TEE are presented in Appendix A.

## 7.0 CONCEPTUAL SITE MODEL

The conceptual site model identifies suspected sources of contamination, affected media, transport mechanisms, contaminant fate and transport, and potential receptors and exposure pathways. The conceptual site model is a basis for developing technically feasible cleanup alternatives and selecting a final cleanup action. The conceptual site model is dynamic and may be refined throughout the project as additional information becomes available.

This section discusses the components of the conceptual site model developed for the Site based on completion of various investigations conducted by SES and others that comprise the RI for the Site. Included in the following subsections is a discussion of confirmed and suspected source areas, affected media, contaminant fate and transport, and the preliminary exposure assessment.

### 7.1 CONFIRMED AND SUSPECTED SOURCE AREAS

A source area is the location of release(s) of GRPH and BTEX that have affected soil and groundwater at the Site. Soil and groundwater containing concentrations of GRPH and BTEX exceeding applicable MTCA Method A cleanup levels are currently known to extend beneath and proximate to the aboveground parking garage and beneath the rights-of-way adjacent to the Property (Figures 4 and 5). SPH is also present beneath and proximate to the aboveground parking garage. The source for the release of petroleum hydrocarbon contamination at the Site is likely the former gasoline station that operated at the Property from 1917 to approximately 1949 (Figure 2) (Farallon 2008). The presence of SPH in the vicinity of the former gasoline station on the Property suggests that the SPH originated from a release at the Property. Another probable source area of Site contamination is the retail gasoline station that formerly operated on the Ballard Tire property, located upgradient of the Property on the east side of Leary Avenue Northwest (Figure 2). Groundwater samples collected from monitoring well MW05, located immediately downgradient of the Ballard Tire property, contain concentrations of GRPH and benzene exceeding the applicable MTCA Method A cleanup levels (Figure 5). The groundwater flow direction at the Site, based upon work performed by SES and others, appears to fluctuate from south-southeast to south-southwest, causing the migration of contaminated groundwater from the Ballard Tire property to the Property.

ALSO UNDER  
BUILDING

### 7.2 AFFECTED MEDIA

Concentrations of GRPH and BTEX have been confirmed in soil and groundwater at the Site. The distribution of GRPH and BTEX in the affected media has been investigated and identified sufficiently for evaluation of cleanup action alternatives and remedy selection. Each affected medium is discussed below.

Soil and groundwater at and proximate to the aboveground parking garage contain concentrations of GRPH and/or BTEX above applicable MTCA Method A cleanup levels (Figures 4 and 5, Tables 1 and 2). Soil containing concentrations of GRPH and/or BTEX has been detected at concentrations above applicable MTCA Method A cleanup levels at depths ranging from 7 to 14 feet bgs beneath the aboveground parking garage (Figures 4 and 7).

Groundwater containing concentrations of GRPH and/or BTEX above applicable MTCA Method A cleanup levels is present at locations upgradient relative to the Site (MW05), beneath the aboveground parking garage, and crossgradient of the aboveground parking garage (Figure 5). GRPH and BTEX have not been detected above laboratory reporting limits in groundwater samples collected from monitoring wells MW08, MW12, and MW13, which are located downgradient of the Property (Figure 5).

### 7.3 CONTAMINANT FATE AND TRANSPORT

This section includes a discussion of the fate and transport characteristics of the petroleum hydrocarbon constituents identified in the affected media at the Site that are relevant to the evaluation of potentially feasible remedial technologies. Although the affected media contain both GRPH and BTEX, benzene is the primary chemical of concern (COC) because of its solubility, volatility, and higher toxicity relative to other petroleum hydrocarbon constituents in gasoline. In addition, the MTCA Method A cleanup level for benzene is lower than the MTCA Method A cleanup levels for GRPH, toluene, ethylbenzene, and total xylenes. These characteristics make benzene an indicator COC to determine compliance with applicable cleanup standards at the points of compliance for the Site.

The subsurface investigation activities conducted at the Site have demonstrated the following:

- Benzene concentrations in soil exceeding the MTCA Method A cleanup level range from 0.04 to 0.57 milligrams per kilogram (mg/kg) and have been identified at depths of 7 to 14 feet bgs (Table 1). Benzene in soil has been identified beneath the aboveground parking garage at the Property.
- GRPH, ethylbenzene, and total xylenes concentrations exceeding applicable MTCA Method A cleanup levels have been identified in a soil sample collected at a depth of 15 feet bgs from boring B08 (MW14), which was advanced on the west side of Northwest Vernon Place and is in a hydrologically crossgradient position relative to the source area, based upon data that indicate the primary direction of groundwater flow at the Site is to the south. Benzene was not detected in the soil sample at a concentration above the laboratory reporting limit (Figure 4), although benzene was present in the groundwater sample collected from monitoring well MW14. The GRPH, ethylbenzene, and total xylenes detected in the soil sample collected from boring B08 represent dissolved-phase petroleum hydrocarbons that may have originated at the Property. This conclusion is supported by the presence of GRPH and BTEX in the groundwater sample collected from monitoring well MW14 (installed in boring B08). Alternatively, considering the hydrologically crossgradient position of monitoring well MW14 relative to the Property, the concentrations of petroleum hydrocarbon constituents in the groundwater collected from monitoring well MW14 may indicate a distinct source area located outside the Site. The depth to groundwater in monitoring well MW14 was measured to be 16.31 feet in June 2008 (Figures 4, 5, and 7; Table 3).
- Benzene concentrations in groundwater exceeding the MTCA Method A cleanup levels range from 6 to 430 micrograms per liter ( $\mu\text{g/L}$ ) and have been identified beneath the aboveground parking garage and upgradient of the garage (with the Ballard Tire property as the likely source). The samples with benzene concentrations include groundwater samples collected from monitoring wells where SPH has been identified on the groundwater table (MW03, MW04, MW05, and MW07) (Figure 5, Table 2).

The fate and transport mechanisms that have resulted in the distribution of benzene in the subsurface are discussed below.

### 7.3.1 Transport Mechanisms Affecting Distribution of Benzene in the Subsurface

The lateral distribution of benzene in groundwater is the result of advection and dispersion in the groundwater beneath and upgradient of the aboveground parking garage. One segment of the benzene groundwater plume at the Site is sourced upgradient at the Ballard Tire property; the contamination from the Ballard Tire property has migrated to the aboveground parking garage and together with the on-Property source may extend to areas located crossgradient (i.e., MW14/B08) relative to the aboveground parking garage. The plume does not appear to extend beyond the southern or eastern boundary of the Property, since groundwater samples collected from downgradient monitoring wells (MW08, MW12, and MW13) do not contain concentrations of benzene above laboratory reporting limits. Acknowledging the limited extent of impacts, along with the apparent cessation of gasoline station operations in 1949 (Farallon 2008), it appears as though the benzene groundwater plume has reached a steady-state condition.

Benzene in the unsaturated soil beneath the aboveground parking garage most likely occurs in vapor and dissolved phases in the soil pore spaces, adsorbed onto the soil particles, and as SPH in soil pore spaces. Under these conditions, benzene moves laterally and vertically by vapor-phase transport and in the dissolved phase by leaching. The vertical extent of benzene in the vadose zone is also affected by fluctuations in the groundwater elevation, which results in an area of contamination known as a smear zone. SPH will flow in the unsaturated soil if the amount of SPH in soil exceeds the soil capacity to retain the SPH, a condition known as exceeding the residual capacity of the soil. Since benzene-contaminated soil beneath the aboveground parking garage is capped by a concrete slab, vertical migration of benzene from the unsaturated zone to the groundwater by leaching and vapor-phase transport to outdoor ambient air are minor transport mechanisms.

### 7.3.2 Environmental Fate of Benzene in the Subsurface

Once benzene enters the subsurface, natural attenuation of the compound begins. The attenuation processes include intrinsic abiotic and biotic degradation in the groundwater and soil and adsorption onto soil particles. Abiotic and biotic processes degrade benzene to carbon dioxide assuming the appropriate geochemical conditions are present in soil and groundwater. Adsorption onto soil particles retards the vertical and lateral migration of benzene, and the residual saturation capacity of soil inhibits the vertical migration of SPH containing benzene. In addition, advection and dispersion dilute the concentration of benzene in groundwater as the compound migrates downgradient from the source area. Evidence for the natural attenuation processes in soil and groundwater beneath the Site includes the presence of aerobic conditions in the groundwater (the average dissolved oxygen concentration in 2008 was 3.44 milligrams per liter) and the absence of benzene in groundwater samples collected from downgradient monitoring wells MW08, MW12, and MW13. ←

## 7.4 PRELIMINARY EXPOSURE ASSESSMENT

The two types of risk exposure associated with the presence of petroleum hydrocarbon constituents at the Site are terrestrial ecological risk and human health risk. Because the Site qualifies for a TEE exclusion based on WAC 173-340-7491 (refer to Section 6.0), mitigating the potential human health risk associated with exposure to petroleum hydrocarbon constituents in the affected media at the Site will be a primary objective of any cleanup action. This subsection

presents the evaluation and conclusions pertaining to the exposure pathways at the Site. The goal of this subsection is to identify potential exposure scenarios that will assist in the evaluation of potential remediation technologies.

#### 7.4.1 Soil Pathway

The exposure pathway for unsaturated soil includes the direct contact pathway, which comprises direct contact by dermal contact with and/or ingestion of soil beneath the aboveground parking garage and proximate to the OAC building that contains concentrations of benzene above the MTCA Method A cleanup level (Figure 4). Other petroleum hydrocarbon constituents are present in soil located proximate to the OAC building (Figure 4). Direct contact with soil would require excavation activities that extend beneath the existing concrete slab of the garage. At present, soil containing concentrations of benzene exceeding the MTCA Method A cleanup level of 0.03 mg/kg is not considered a risk via the direct contact pathway for dermal and/or ingestion because the soil is covered by the concrete slab of the aboveground parking garage, which makes the risk of exposure negligible. The remainder of the Property is covered by OAC building. There is no future development currently planned at the Property that would alter the existing design of the garage or result in exposure to the contaminated soil beneath it.

#### 7.4.2 Groundwater Pathway

Potential exposure pathways for groundwater include the direct contact pathway, which comprises both dermal contact and ingestion pathways. There are no groundwater supply wells at or in the vicinity of the Site that are used for potable water supply (Ecology 2009). The groundwater directly beneath the Site is not used as a drinking water source and is likely a non-potable resource as defined in WAC 173-340-720 (2)(b)(i). Because there is no practical use of the groundwater beneath the Site and the groundwater is located at approximately 9 to 20 feet bgs and capped with concrete or asphalt or building structures, direct contact with contaminated groundwater would require excavation activities or drinking well development in order to become a potential risk to human health. Future redevelopment activities at the Site beneath the zone of saturation could result in an exposure to contaminated groundwater. Should redevelopment occur, a construction contingency plan would be developed to govern the handling of potentially contaminated soil and/or groundwater encountered during future construction, as necessary. Following completion of remediation, a restrictive covenant may be required for any residual contaminated soil and groundwater that may remain beneath the Site.

#### 7.4.3 Surface Water Pathway

The potential exposure pathway for surface water consists of the direct contact pathway, which comprises both dermal contact and ingestion pathways. Salmon Bay is located approximately 1,000 feet south and downgradient of the Site (Figure 1). Impacts to surface water quality from petroleum hydrocarbon constituents in groundwater at the Site are unlikely because groundwater at downgradient monitoring wells does not contain Site-specific petroleum hydrocarbon constituents at concentrations above laboratory reporting limits (Figure 5). Therefore, surface water is not a pathway of concern and will not be specifically addressed during the cleanup action at the Site.

NO RECORDED  
NOT SURE →

PROVE IT.

\*

#### 7.4.4 Vapor Pathway

The presence of benzene in soil and groundwater beneath the Site has the potential to result in vapor intrusion to indoor and outdoor ambient air. Potential exposure would occur through the inhalation pathway. Vapor intrusion pathways may exist within the aboveground parking garage and the OAC building, as well as within the commercial and residential buildings located on the west side of Northwest Vernon Place.

The aboveground parking garage is open to the outdoor ambient air; therefore, the potential risk for exposure to benzene through the inhalation pathway in this area is low.

The presence or absence of benzene in soil and groundwater beneath the OAC building has not been confirmed. However, analytical results for water samples collected from sumps located in the northern and southern portions of the OAC building's basement did not indicate concentrations of benzene or related compounds above laboratory reporting limits (Table 2). The remedial technology selected (such as DPE) should induce a vacuum in the subsurface to mitigate the vapor intrusion pathway.

The vapor pathway for indoor air has the potential to exist at the commercial/residential buildings located on the west side of Northwest Vernon Place proximate to monitoring well MW14. Benzene in groundwater collected from this location is present at a concentration equal to the MTCA Method A cleanup level, and the concentration of GRPH in the groundwater collected from monitoring well MW14 exceeds the MTCA Method A cleanup level. The remedial technology selected (such as DPE) should mitigate the vapor intrusion pathway for the commercial building by eliminating or reducing concentrations of GRPH and benzene in groundwater at MW14 to protective levels.

## 8.0 LIMITATIONS

The services described in this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, expressed or implied, is made. These services were performed consistent with our agreement with our client. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others or the use of segregated portions of this report.

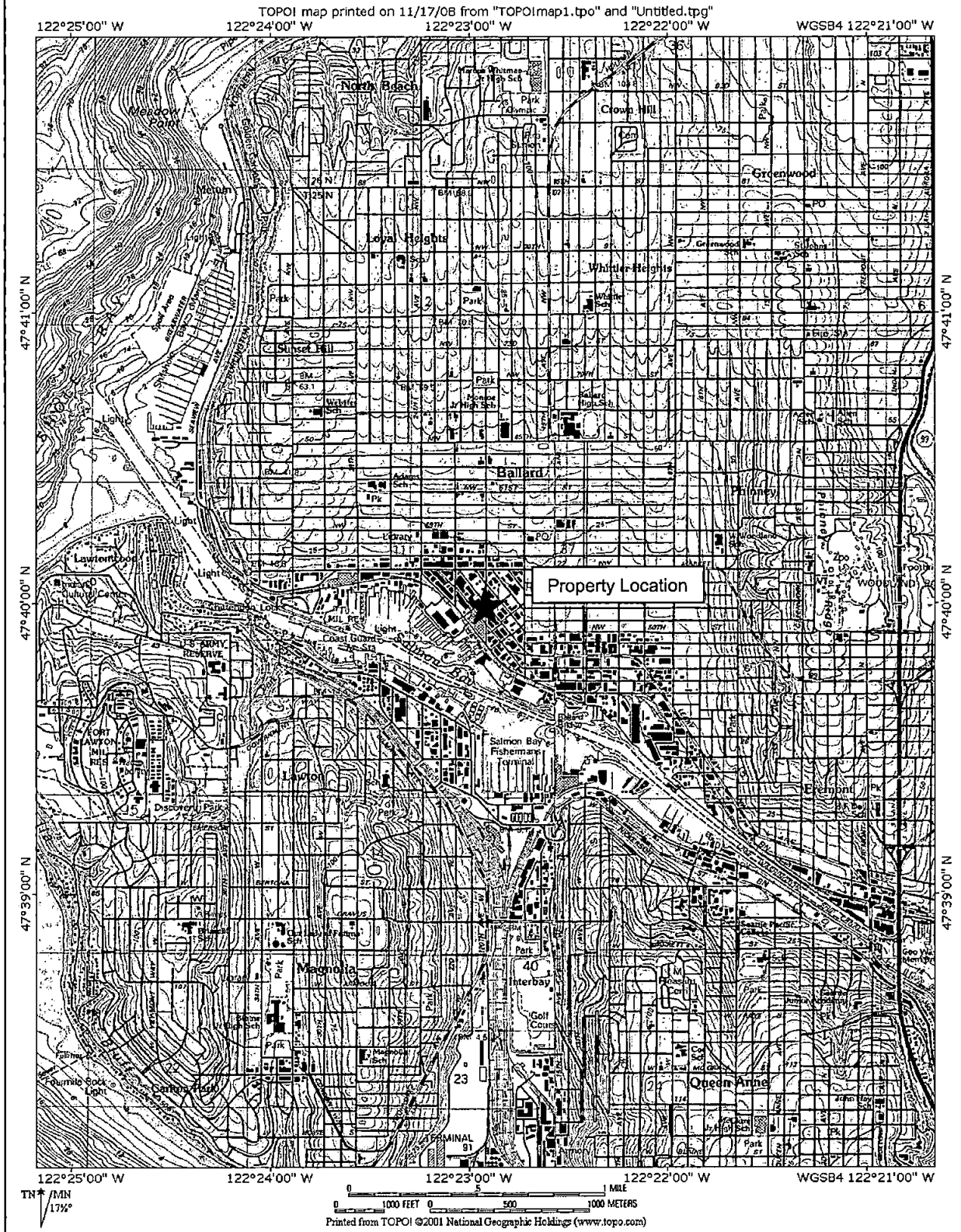
## 9.0 REFERENCES

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## FIGURES

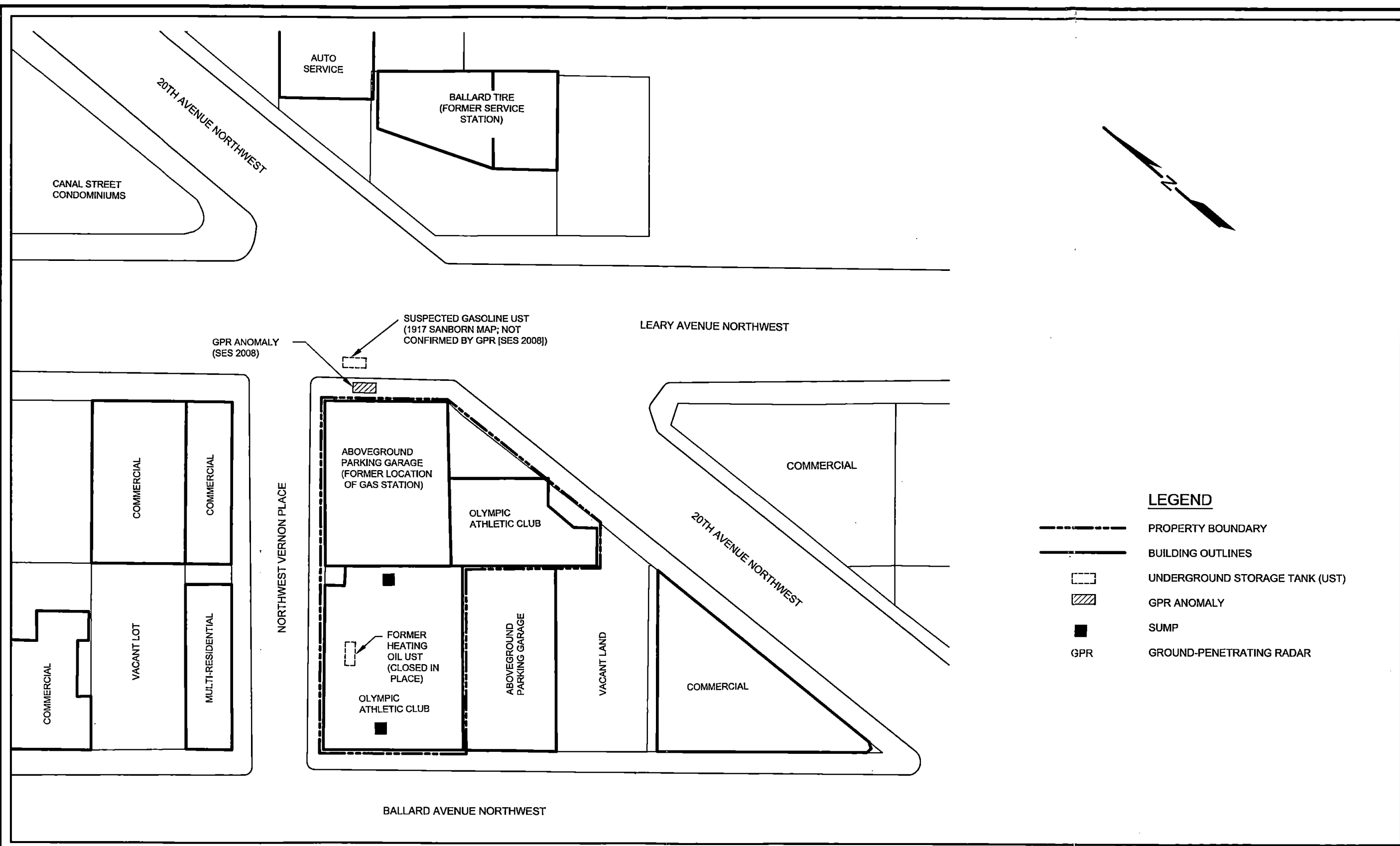


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 File ID: 0670-001-FIG1-TO








**Olympic Athletic Club**  
 5301 Leary Avenue Northwest  
 Seattle, Washington

**FIGURE 1**  
 Property  
 Location Map

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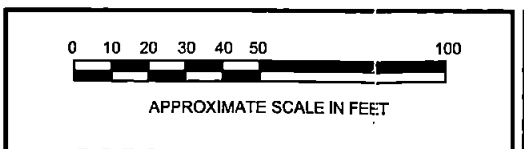
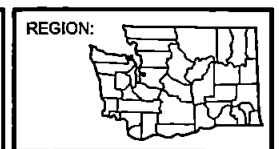
**LEGEND**

	PROPERTY BOUNDARY
	BUILDING OUTLINES
	UNDERGROUND STORAGE TANK (UST)
	GPR ANOMALY
	SUMP
	GPR
	GROUND-PENETRATING RADAR



DATE: ..... 12/10/08  
 DRAWN BY: ..... RLH/JQC  
 CHECKED BY: ..... TJC  
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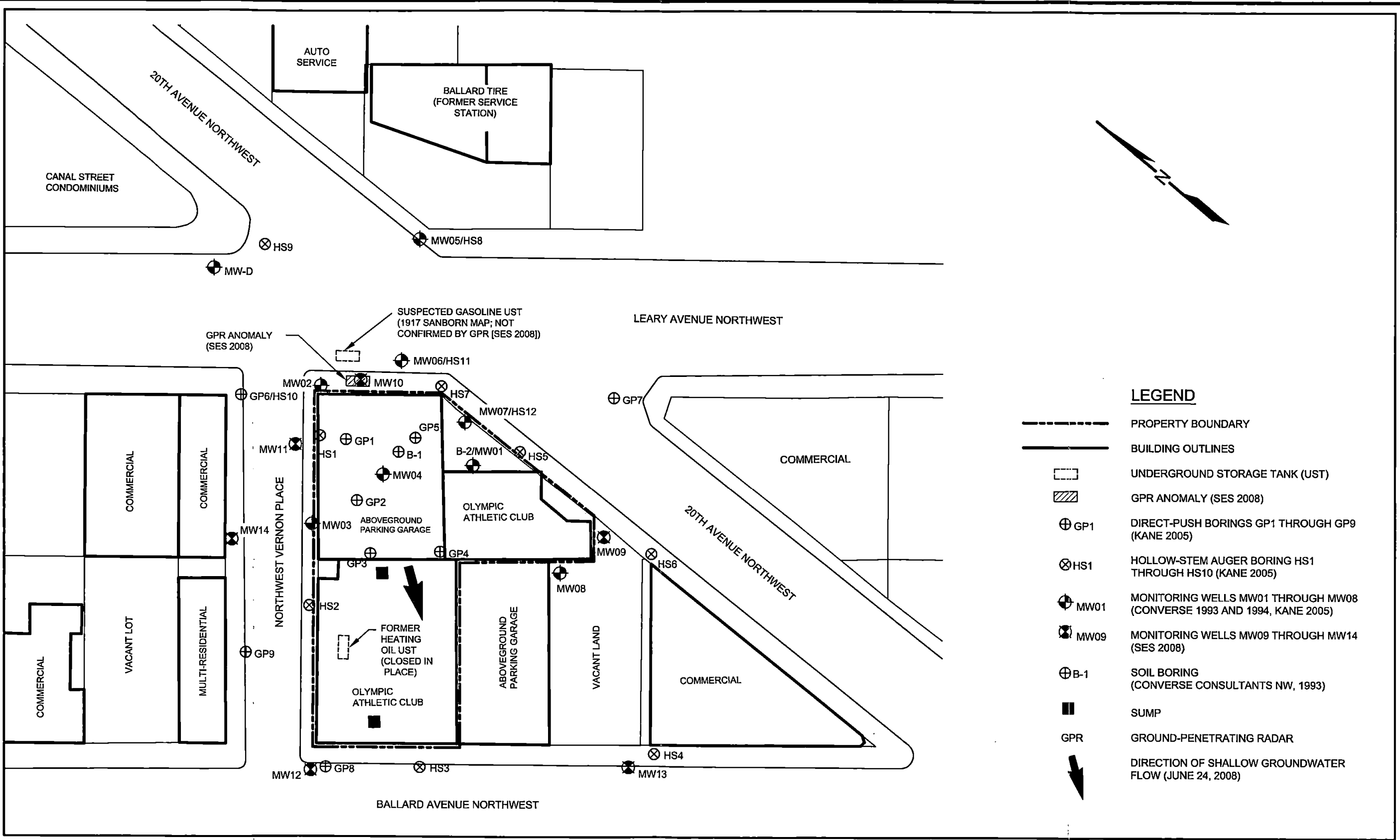
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 SES PROJECT NUMBER: ..... 0670-001-01  
 STREET ADDRESS: ..... 5301 LEARY AVENUE NORTHWEST  
 CITY, STATE: ..... SEATTLE, WASHINGTON



**FIGURE 2**  
SITE AND VICINITY PLAN

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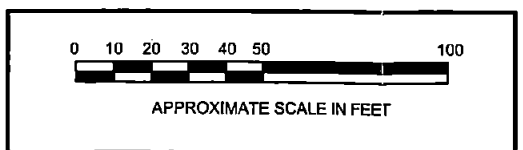
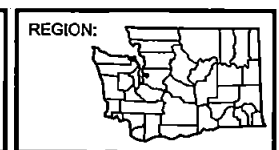
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- PROPERTY BOUNDARY
- BUILDING OUTLINES
- UNDERGROUND STORAGE TANK (UST)
- GPR ANOMALY (SES 2008)
- DIRECT-PUSH BORINGS GP1 THROUGH GP9 (KANE 2005)
- HOLLOW-STEM AUGER BORING HS1 THROUGH HS10 (KANE 2005)
- MONITORING WELLS MW01 THROUGH MW08 (CONVERSE 1993 AND 1994, KANE 2005)
- MONITORING WELLS MW09 THROUGH MW14 (SES 2008)
- SOIL BORING (CONVERSE CONSULTANTS NW, 1993)
- SUMP
- GROUND-PENETRATING RADAR
- DIRECTION OF SHALLOW GROUNDWATER FLOW (JUNE 24, 2008)



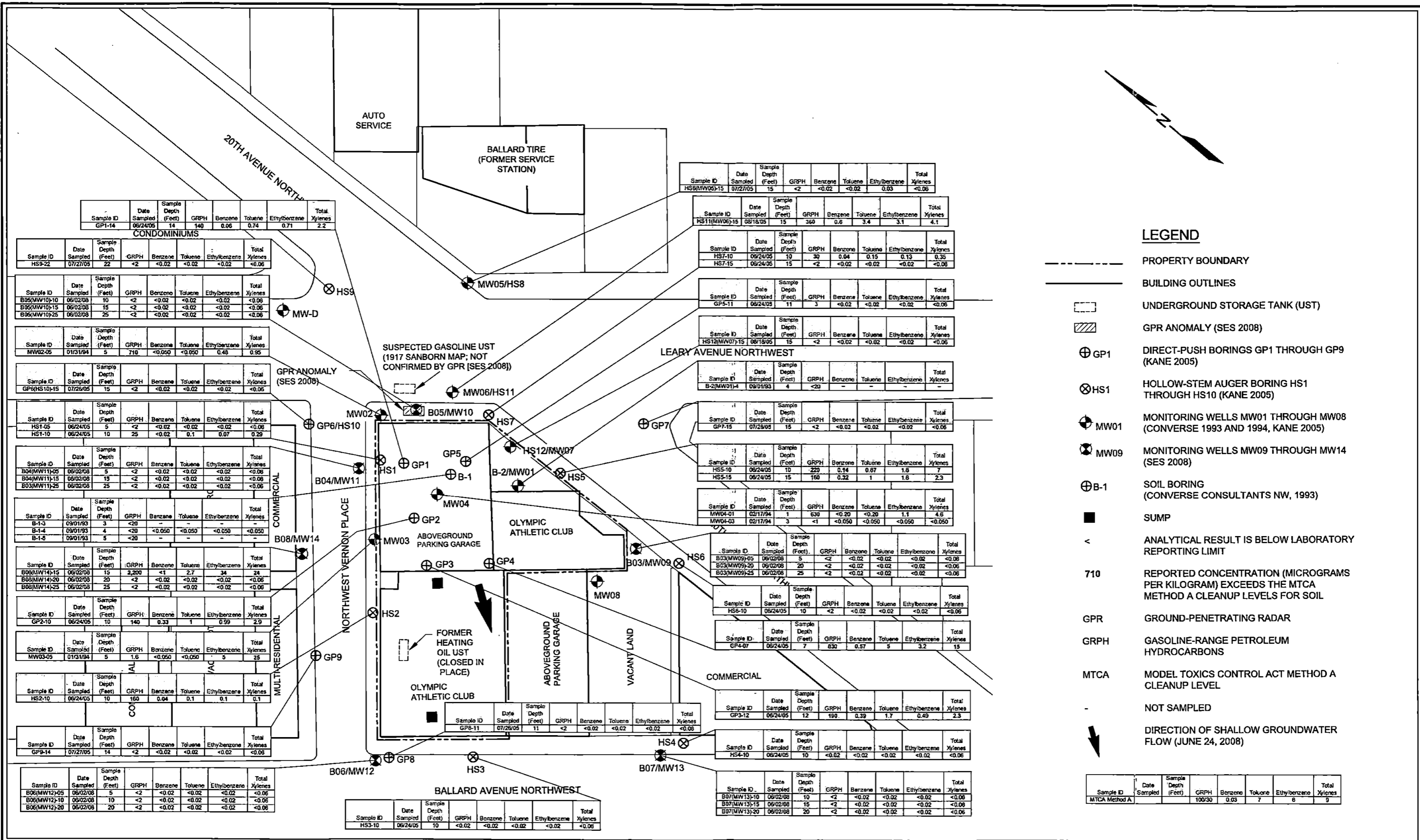
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 SES PROJECT NUMBER: ..... 0670-001-01  
 STREET ADDRESS: ..... 5301 LEARY AVENUE NORTHWEST  
 CITY, STATE: ..... SEATTLE, WASHINGTON



**FIGURE 3**  
EXPLORATION LOCATION PLAN

SOURCE: ENVIRONMENTAL CANADA



**LEGEND**

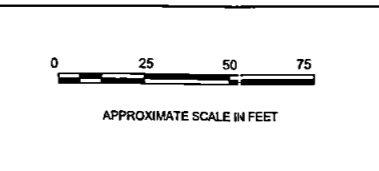
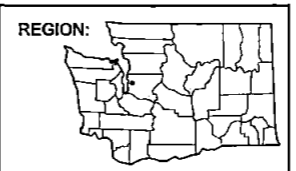
- PROPERTY BOUNDARY
- BUILDING OUTLINES
- UNDERGROUND STORAGE TANK (UST)
- ▨ GPR ANOMALY (SES 2008)
- ⊕ GP1 DIRECT-PUSH BORINGS GP1 THROUGH GP9 (KANE 2005)
- ⊗ HS1 HOLLOW-STEM AUGER BORING HS1 THROUGH HS10 (KANE 2005)
- MW01 MONITORING WELLS MW01 THROUGH MW08 (CONVERSE 1993 AND 1994, KANE 2005)
- ⊗ MW09 MONITORING WELLS MW09 THROUGH MW14 (SES 2008)
- ⊕ B-1 SOIL BORING (CONVERSE CONSULTANTS NW, 1993)
- SUMP
- < ANALYTICAL RESULT IS BELOW LABORATORY REPORTING LIMIT
- 710 REPORTED CONCENTRATION (MICROGRAMS PER KILOGRAM) EXCEEDS THE MTCA METHOD A CLEANUP LEVELS FOR SOIL
- GPR GROUND-PENETRATING RADAR
- GRPH GASOLINE-RANGE PETROLEUM HYDROCARBONS
- MTCA MODEL TOXICS CONTROL ACT METHOD A CLEANUP LEVEL
- NOT SAMPLED
- ↓ DIRECTION OF SHALLOW GROUNDWATER FLOW (JUNE 24, 2008)

Sample ID	Date Sampled	Sample Depth (Feet)	GRPH	Benzene	Toluene	Ethylbenzene	Total Xylenes
MTCA Method A			10030	0.03	7	8	9

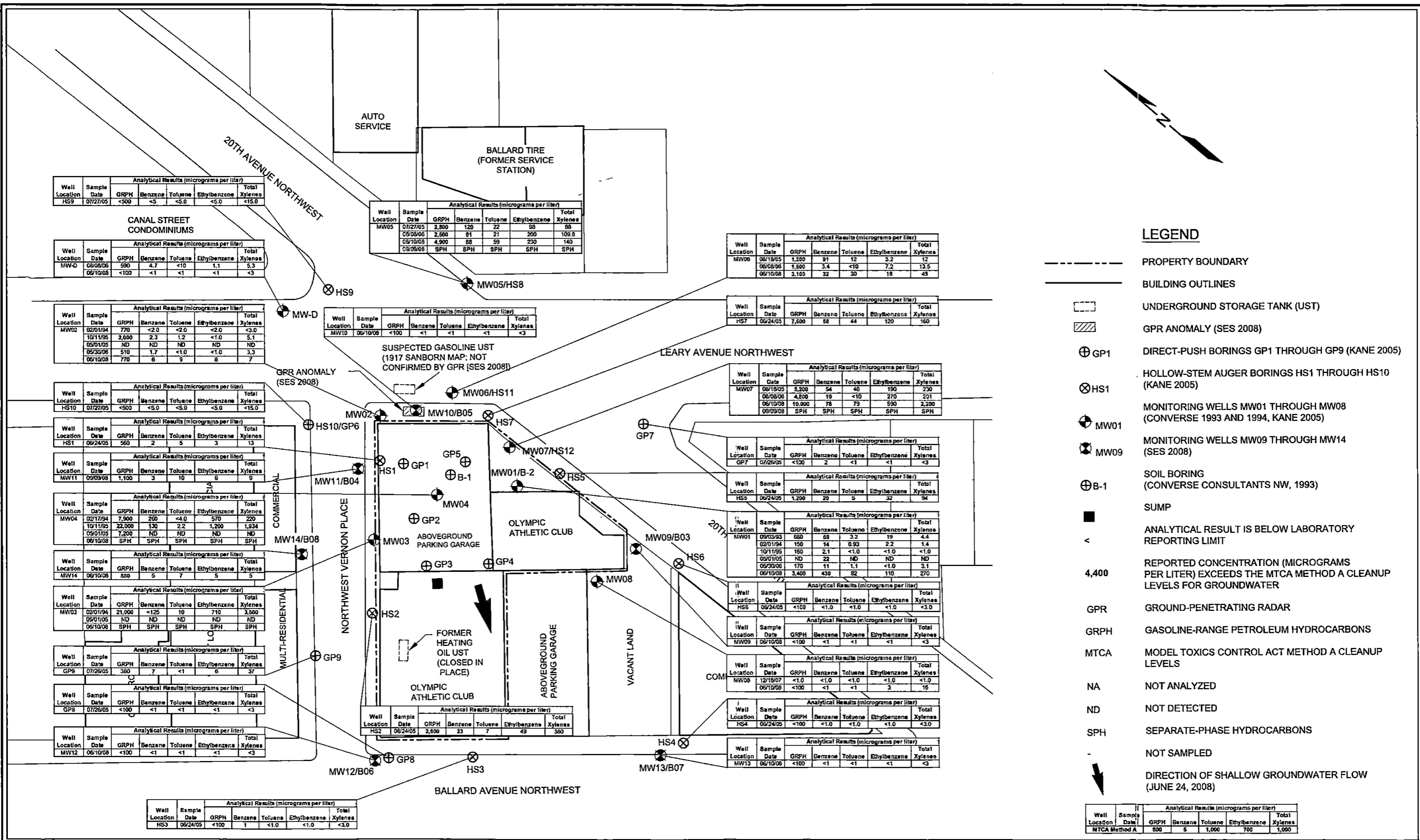


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 CITY, STATE: SEATTLE, WASHINGTON

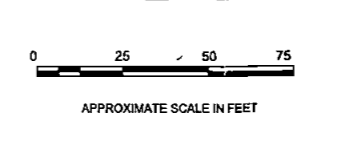
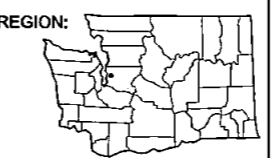


**FIGURE 4**  
 GRPH AND BTEX  
 CONCENTRATIONS IN SOIL



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PROJECT NAME: OLYMPIC ATHLETIC CLUB  
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 STREET ADDRESS: 5301 LEARY AVENUE NORTHWEST  
 CITY, STATE: SEATTLE, WASHINGTON

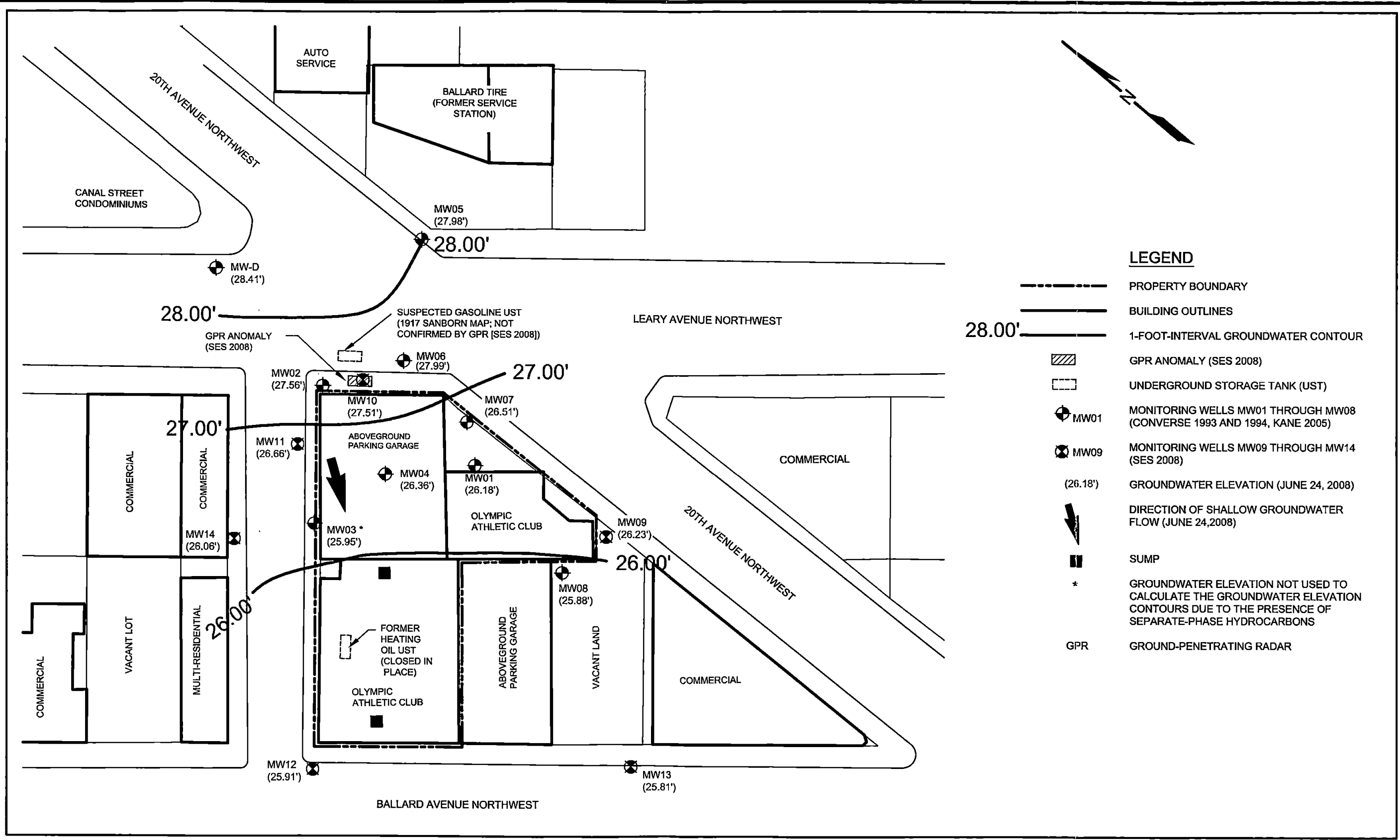


**FIGURE 5**  
 GRPH AND BTEX  
 CONCENTRATIONS IN GROUNDWATER

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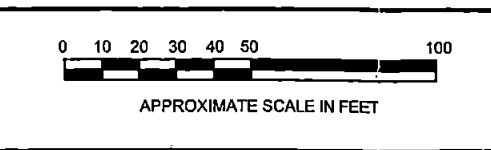
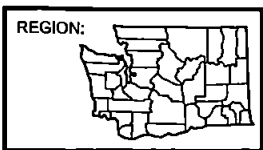
**LEGEND**

- PROPERTY BOUNDARY
- BUILDING OUTLINES
- 1-FOOT-INTERVAL GROUNDWATER CONTOUR
- GPR ANOMALY (SES 2008)
- UNDERGROUND STORAGE TANK (UST)
- MW01 THROUGH MW08 (CONVERSE 1993 AND 1994, KANE 2005)
- MW09 THROUGH MW14 (SES 2008)
- (26.18') GROUNDWATER ELEVATION (JUNE 24, 2008)
- DIRECTION OF SHALLOW GROUNDWATER FLOW (JUNE 24, 2008)
- SUMP
- \* GROUNDWATER ELEVATION NOT USED TO CALCULATE THE GROUNDWATER ELEVATION CONTOURS DUE TO THE PRESENCE OF SEPARATE-PHASE HYDROCARBONS
- GPR GROUND-PENETRATING RADAR



DATE: .....12/11/08  
 DRAWN BY: .....RLH/JQC  
 CHECKED BY: .....TJC  
 CAD FILE: .....0670-001\_2008CAP\_CM

PROJECT NAME: .....OLYMPIC ATHLETIC CLUB  
 SES PROJECT NUMBER: .....0670-001-01  
 STREET ADDRESS: .....5301 LEARY AVENUE NORTHWEST  
 CITY, STATE: .....SEATTLE, WASHINGTON



**FIGURE 6**  
 GROUNDWATER ELEVATION CONTOUR MAP  
 (JUNE 24, 2008)

## TABLES

**Table 1**  
**Summary of Historical Soil Analytical Results**  
**Olympic Athletic Club**  
**5301 Leary Avenue Northwest**  
**Seattle, Washington**

Sample Location	Sample Identification	Sampled By	Sample Date	Sample Depth <sup>1</sup> (Feet)	Analytical Results (milligrams per kilogram)						
					GRPH <sup>2</sup>	DRPH <sup>3</sup>	ORPH <sup>3</sup>	Benzene <sup>4</sup>	Toluene <sup>4</sup>	Ethylbenzene <sup>4</sup>	Total Xylenes <sup>4</sup>
B-1	B1-3	Converse	09/01/93	8-8.5	<20	<50	<100	--	--	--	--
B-1	B1-4	Converse	09/01/93	10-10.5	<20	<50	<100	<0.050	<0.050	<0.050	<0.050
B-1	B1-5	Converse	09/01/93	13-13.5	<20	<50	<100	--	--	--	--
B-2	MW-1-4	Converse	09/01/93	10-10.7	<20	<50	<100	--	--	--	--
MW02	MW02-05	Lloyd	01/31/94	5	710	--	--	<0.050	<0.050	0.48	0.95
MW03	MW03-05	Lloyd	01/31/94	5	1.6	--	--	<0.050	<0.050	5.0	25
MW04	MW04-01	Lloyd	02/17/94	1	630	--	--	<0.20	<0.20	1.1	4.6
MW04	MW04-03	Lloyd	02/17/94	3	<1	--	--	<0.050	<0.050	<0.050	<0.050
HS1	HS1-05	Kane	06/24/05	5	<2	--	--	<0.02	<0.02	<0.02	<0.06
HS1	HS1-10	Kane	06/24/05	10	25	--	--	<0.02	0.1	0.07	0.29
HS2	HS2-10	Kane	06/24/05	10	160	--	--	0.04	0.59	0.77	3.5
HS3	HS3-10	Kane	06/24/05	10	<2	--	--	<0.02	<0.02	<0.02	<0.06
HS4	HS4-10	Kane	06/24/05	10	<2	--	--	<0.02	<0.02	<0.02	<0.06
HS5	HS5-10	Kane	06/24/05	10	220	--	--	0.14	0.87	1.8	7.00
HS5	HS5-15	Kane	06/24/05	15	160	--	--	0.32	1.0	1.8	5.0
HS6	HS6-10	Kane	06/24/05	10	<2	--	--	<0.02	0.023	<0.02	<0.06
HS7	HS7-10	Kane	06/24/05	10	30	--	--	0.04	0.15	0.13	0.35
HS7	HS7-15	Kane	06/24/05	15	<2	--	--	<0.02	<0.02	<0.02	<0.06
GP1	GP1-14	Kane	06/24/05	13-14	140	--	--	0.06	0.74	0.71	2.2
GP2	GP2-10	Kane	06/24/05	10-11	140	--	--	0.33	1	0.99	2.9
GP3	GP3-12	Kane	06/24/05	11-12	190	--	--	0.39	1.7	0.49	2.3
GP4	GP4-07	Kane	06/24/05	7-8	830	--	--	0.57	5	3.2	15
GP5	GP5-11	Kane	06/24/05	11-12	3	--	--	<0.02	<0.02	<0.02	<0.06
GP6 (HS10)	GP6-15	Kane	07/26/05	14-15	<2	--	--	<0.02	<0.02	<0.02	<0.06
GP7	GP7-15	Kane	07/26/05	14-15	<2	--	--	<0.02	<0.02	<0.02	<0.06
GP8	GP8-11	Kane	07/26/05	10-11	<2	--	--	<0.02	<0.02	<0.02	<0.06
GP9	GP9-14	Kane	07/27/05	13-14	<2	--	--	<0.02	<0.02	<0.02	<0.06
HS8 (MW05)	HS08-15	Kane	07/27/05	15	<2	--	--	<0.02	<0.02	0.03	<0.06
HS9	HS09-22	Kane	07/27/05	22	<2	--	--	<0.02	<0.02	<0.02	<0.06
HS11 (MW06)	HS11-15	Kane	08/18/05	14-15	360	--	--	0.6	3.4	3.1	4.1
HS12 (MW07)	HS12-15	Kane	08/18/05	14-15	<2	--	--	<0.02	<0.02	<0.02	<0.06
<b>MTCA Method A Cleanup Levels for Soil<sup>5</sup></b>					<b>30/100<sup>a</sup></b>	<b>2,000</b>	<b>2,000</b>	<b>0.03</b>	<b>7</b>	<b>6</b>	<b>9</b>

**Table 1**  
**Summary of Historical Soil Analytical Results**  
**Olympic Athletic Club**  
**5301 Leary Avenue Northwest**  
**Seattle, Washington**

Sample Location	Sample Identification	Sampled By	Sample Date	Sample Depth (Feet)	Analytical Results (milligrams per kilogram)						
					GRPH <sup>2</sup>	DRPH <sup>3</sup>	ORPH <sup>3</sup>	Benzene <sup>4</sup>	Toluene <sup>4</sup>	Ethylbenzene <sup>4</sup>	Total Xylenes <sup>4</sup>
B03 (MW09)	B03-05	SES	06/02/08	5	<2	--	--	<0.02	<0.02	<0.02	<0.06
B03 (MW09)	B03-20	SES	06/02/08	20	<2	--	--	<0.02	<0.02	<0.02	<0.06
B03 (MW09)	B03-25	SES	06/02/08	25	<2	--	--	<0.02	<0.02	<0.02	<0.06
B04 (MW11)	B04-05	SES	06/04/08	5	<2	--	--	<0.02	<0.02	<0.02	<0.06
B04 (MW11)	B04-15	SES	06/04/08	15	<2	--	--	<0.02	<0.02	<0.02	<0.06
B04 (MW11)	B04-25	SES	06/04/08	25	<2	--	--	<0.02	<0.02	<0.02	<0.06
B05 (MW10)	B05-10	SES	06/03/08	10	<2	--	--	<0.02	<0.02	<0.02	<0.06
B05 (MW10)	B05-15	SES	06/03/08	15	3	--	--	<0.02	<0.02	<0.02	<0.06
B05 (MW10)	B05-25	SES	06/03/08	25	<2	--	--	<0.02	<0.02	<0.02	<0.06
B06 (MW12)	B06-05	SES	06/04/08	5	<2	--	--	<0.02	<0.02	<0.02	<0.06
B06 (MW12)	B06-10	SES	06/04/08	10	<2	--	--	<0.02	<0.02	<0.02	<0.06
B06 (MW12)	B06-20	SES	06/04/08	20	<2	--	--	<0.02	<0.02	<0.02	<0.06
B07 (MW13)	B07-10	SES	06/04/08	10	<2	--	--	<0.02	<0.02	<0.02	<0.06
B07 (MW13)	B07-15	SES	06/04/08	15	<2	--	--	<0.02	<0.02	<0.02	<0.06
B07 (MW13)	B07-20	SES	06/04/08	20	<2	--	--	<0.02	<0.02	<0.02	<0.06
B08 (MW14)	B08-15	SES	06/05/08	15	2,200	--	--	<1	2.7	34	24
B08 (MW14)	B08-20	SES	06/05/08	20	<2	--	--	<0.02	<0.02	<0.02	<0.06
B08 (MW14)	B08-25	SES	06/05/08	25	<2	--	--	<0.02	<0.02	<0.02	<0.06
<b>MTCA Method A Cleanup Levels for Soil<sup>5</sup></b>					<b>30/100<sup>a</sup></b>	<b>2,000</b>	<b>2,000</b>	<b>0.03</b>	<b>7</b>	<b>6</b>	<b>9</b>

**NOTES:**

Red denotes concentration exceeds MTCA Method A cleanup levels for soil.

<sup>1</sup>Sample depth, in feet below ground surface, as measured from ground surface.

<sup>2</sup>Analyzed by NWTPH Method NWTPH-Gx and/or TPH-G.

<sup>3</sup>Analyzed by NWTPH Method NWTPH-Dx and/or TPH-D.

<sup>4</sup>Analyzed by EPA Method 8021B or EPA Method 8020.

<sup>5</sup>MTCA Method A Cleanup Levels, Table 740-1 Section 900 of Chapter 173-340 of the Washington Administrative Code, revised November 2007.

<sup>a</sup>Cleanup level is 30 mg/kg when benzene is present and 100 mg/kg when benzene is not present.

-- = not sampled; not analyzed

< = not detected above laboratory reporting limit

Converse = Converse Consultants NW

DRPH = diesel-range petroleum hydrocarbon

EPA = United States Environmental Protection Agency

GRPH = gasoline-range petroleum hydrocarbon

Kane = Kane Environmental, Inc.

Lloyd = Lloyd and Associates, Inc.

mg/kg = milligrams per kilogram

MTCA = Model Toxics Control Act

NWTPH = Northwest Total Petroleum Hydrocarbon

ORPH = oil-range petroleum hydrocarbon

SES = Sound Environmental Strategies Corporation

Table 2  
Summary of Historical Groundwater Analytical Results  
Olympic Athletic Club  
5301 Leary Avenue Northwest  
Seattle, Washington

Sample Location	Sample Identification	Sampled By	Sample Date	Analytical Results (micrograms per liter)								
				GRPH <sup>1</sup>	DRPH <sup>2</sup>	ORPH <sup>2</sup>	Benzene <sup>3</sup>	Toluene <sup>3</sup>	Ethylbenzene <sup>3</sup>	Total Xylenes <sup>3</sup>	Total Lead <sup>4</sup>	Dissolved Lead <sup>4</sup>
MW01	MW01	Converse	09/03/93	680	0.66	--	59	3.2	19	4.4	5.2	--
	MW01	Lloyd	02/01/94	150	--	--	14	0.93	2.2	1.4	<2.0	--
	MW01	Lloyd	10/11/95	180	--	--	2.1	<1.0	<1.0	<1.0	<0.001	--
	MW01	EAI	05/01/05	ND	--	--	22	ND	ND	ND	--	--
	MW01	Farallon	05/30/06	170	<250	<400	11	1.1	<1.0	3.1	--	<1.0
MW02	MW02	SES	06/10/08	3,400	--	--	430	82	110	270	--	--
	MW02	Lloyd	02/01/94	770	--	--	<2.0	<2.0	<2.0	<3.0	<2.0	--
	MW02	Lloyd	10/11/95	2,000	--	--	2.3	1.2	<1.0	5.1	<0.01	--
	MW02	EAI	05/01/05	ND	--	--	ND	ND	ND	ND	--	--
	MW02	Farallon	05/30/06	510	<250	<400	1.7	<1.0	<1.0	3.3	--	<1.0
MW03	MW02-20080610	SES	06/10/08	770	--	--	6	9	8	7	--	--
	MW03	Lloyd	02/01/94	21,000	--	--	<125	10	710	3,500	<2.0	--
	MW03	EAI	05/01/05	ND	--	--	ND	ND	ND	ND	--	--
MW04	MW03-20080610	SES	06/10/08	SPH	--	--	SPH	SPH	SPH	SPH	--	--
	MW04	Lloyd	02/17/94	7,900	--	--	260	<4.0	570	220	9.7	--
	MW04	Lloyd	10/11/95	22,000	--	--	130	2.2	1,200	1,934	--	--
	MW04	EAI	05/01/05	7,200	--	--	ND	ND	ND	ND	--	--
MW05	MW04-20080610	SES	06/10/08	SPH	--	--	SPH	SPH	SPH	SPH	--	--
	HS08	Kane	07/27/05	2,800	--	--	120	22	98	88	--	--
	MW05	Farallon	08/08/06	2,600	<250	<400	81	21	200	109.8	--	<1.0
	MW05-20080610	SES	06/10/08	4,900	--	--	88	59	230	140	--	--
MW06	Not Sampled	SES	09/09/08	SPH	--	--	SPH	SPH	SPH	SPH	--	--
	HS11	Kane	08/18/05	1,200	--	--	91	12	5.2	12	--	--
	MW06	Farallon	08/08/06	1,500	<260	<420	3.4	<10	7.2	13.5	--	<1.0
MW07	MW06-20080610	SES	06/10/08	3,100	--	--	32	30	18	45	--	--
	HS12	Kane	08/18/05	5,200	--	--	54	46	190	230	--	--
	MW07	Farallon	08/08/06	4,800	<250	<400	19	<10	270	201	--	1.9
	MW07-20080610	SES	06/10/08	10,000	--	--	78	79	590	2,200	--	--
MW08	Not Sampled	SES	09/09/08	SPH	--	--	SPH	SPH	SPH	SPH	--	--
	MW08	Farallon	12/18/07	<1.0	<250	<400	<1.0	<1.0	<1.0	<1.0	--	--
MW09	MW08-20080610	SES	06/10/08	<100	--	--	<1	<1	3	16	--	--
	MW09-20080610	SES	06/10/08	<100	--	--	<1	<1	<1	<3	<1	<1
MW10	MW10-20080610	SES	06/10/08	<100	--	--	<1	<1	<1	<3	<1	<1
MW11	MW11-20080909	SES	09/09/08	1,100	--	--	3	10	6	9	--	--
MW12	MW12-20080610	SES	06/10/08	<100	--	--	<1	<1	<1	<3	--	--
MW13	MW13-20080610	SES	06/10/08	<100	--	--	<1	<1	<1	<3	--	--
MW14	MW14-20080610	SES	06/10/08	880	--	--	5	7	5	5	2.14	<1
MW-D	MWD	Farallon	08/08/06	590	<250	<400	4.7	<10	1.1	5.3	--	<1.0
	MWD-20080610	SES	06/10/08	<100	--	--	<1	<1	<1	<3	--	--
HS1	HS-1-W	Kane	06/24/05	560	470	--	2	5	3	13	--	--
HS2	HS-2-W	Kane	06/24/05	2,800	2,400	--	23	7	49	360	--	--
HS3	HS-3-W	Kane	06/24/05	<100	45	--	1	<1.0	<1.0	<3.0	--	--
HS4	HS-4-W	Kane	06/24/05	<100	91	--	<1.0	<1.0	<1.0	<3.0	--	--
HS5	HS-5-W	Kane	06/24/05	1,200	300	--	20	5	32	94	--	--
HS6	HS-6-W	Kane	06/24/05	<100	120	--	<1.0	<1.0	<1.0	<3.0	--	--
HS7	HS-7-W	Kane	06/24/05	7,600	11,000	--	58	44	120	160	--	--
South Sump	SS	Kane	06/24/05	<100	<50	--	<1	<1	<1	<3	--	--
North Sump	NS	Kane	06/24/05	<100	220	--	<1	<1	<1	<3	--	--
GP7	GW07	Kane	07/26/05	<100	--	--	2	<1	<1	<3	--	--
GP8	GW08	Kane	07/26/05	<100	--	--	<1	<1	<1	<3	--	--
GP9	GW09	Kane	07/26/05	360	--	--	7	<1	6	37	--	--
HS9	HS09	Kane	07/27/05	<500	--	--	<5	<5.0	<5.0	<15.0	--	--
HS10	HS10	Kane	07/27/05	<500	--	--	<5.0	<5.0	<5.0	<15.0	--	--
<b>MTCA Method A Cleanup Levels for Groundwater<sup>5</sup></b>				<b>800/1,000<sup>5</sup></b>	<b>500</b>	<b>500</b>	<b>5</b>	<b>1,000</b>	<b>700</b>	<b>1,000</b>	<b>15</b>	<b>15</b>

NOTES:

Red denotes concentration exceeds MTCA Method A cleanup levels for groundwater.

<sup>1</sup>Analyzed by NWTPH Method NWTPH-Gx and/or WTPH-G.

<sup>2</sup>Analyzed by NWTPH Method NWTPH-DX and/or WTPH-D.

<sup>3</sup>Analyzed by EPA Method 8021B and/or EPA Method 8020.

<sup>4</sup>Analyzed by EPA Method 200.8 and/or EPA Method 7421.

<sup>5</sup>MTCA Method A Cleanup Levels, Table 720-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, revised November 2007.

<sup>6</sup>Cleanup level is 800 µg/L when benzene is present and 1,000 µg/L when benzene is not present.

µg/L = micrograms per liter

< = not detected above the laboratory reporting limit

-- = not sampled; not analyzed

Converse = Converse Consultants NW

DRPH = diesel-range petroleum hydrocarbon

EAI = Environmental Associates, Inc.

EPA = United States Environmental Protection Agency

Farallon = Farallon Consulting, LLC

GRPH = gasoline-range petroleum hydrocarbon

Kane = Kane Environmental, Inc.

Lloyd = Lloyd and Associates, Inc.

MTCA = Model Toxics Control Act

ND = not detected - laboratory reporting limit not reported

NWTPH = Northwest Total Petroleum Hydrocarbon

ORPH = oil-range petroleum hydrocarbon

SES = Sound Environmental Strategies Corporation

SPH = separate-phase hydrocarbon

**Table 3**  
**Summary of Groundwater Elevation Data**  
**Olympic Athletic Club**  
**5301 Leary Avenue Northwest**  
**Seattle, Washington**

Well Identification <sup>1</sup>	Date Measured	Depth to Groundwater <sup>2</sup> (feet)	Depth to SPH <sup>2</sup> (feet)	SPH Thickness <sup>3</sup> (feet)	Groundwater Elevation <sup>4</sup> (feet)
MW01 (TOC = 40.90)	09/01/93	12.12	--	0.00	28.78
	10/11/95	12.22	--	0.00	28.68
	05/30/06	13.20	--	0.00	27.70
	08/02/06	12.83	--	0.00	28.07
	05/01/07	14.55	--	0.00	26.35
	01/18/08	14.22	--	0.00	26.68
	06/24/08	14.72	--	0.00	26.18
	09/09/08	-	--	-	--
MW02 (TOC = 43.56)	02/01/94	14.14	--	0.00	29.42
	10/11/95	13.87	--	0.00	29.69
	05/30/06	14.63	--	0.00	28.93
	08/02/06	14.46	--	0.00	29.10
	05/01/07	15.79	--	0.00	27.77
	01/18/08	15.79	--	0.00	27.77
	06/24/08	16.00	--	0.00	27.56
	09/09/08	16.26	--	0.00	27.30
MW03 (TOC = 41.73)	02/01/94	13.04	--	0.00	28.69
	10/11/95	14.51	--	0.00	27.22
	05/01/05	-	--	1.13	--
	05/30/06	14.76	13.94	0.82	27.59
	08/02/06	15.49	14.53	0.96	26.96
	05/01/07	20.60	15.94	2.66	23.13
	01/18/08	18.24	14.79	1.97	24.97
	06/24/08	17.96	15.06	2.90	25.95
	09/09/08	18.59	15.35	3.24	25.57
MW04 (TOC = 41.41)	02/17/94	12.60	--	0.00	28.81
	10/11/95	12.62	--	0.00	28.79
	05/30/06	13.50	13.47	0.04	27.94
	08/02/06	14.34	14.20	0.18	27.21
	05/01/07	16.24	15.80	0.25	25.36
	01/18/08	14.56	--	0.00	26.85
	06/24/08	15.15	15.01	0.14	26.37
	09/09/08	15.60	15.37	0.23	25.98
MW05 (TOC = 45.19)	08/02/06	15.76	--	0.00	29.43
	05/01/07	16.61	--	0.00	28.58
	01/18/08	16.61	--	0.00	28.58
	06/24/08	17.21	--	0.00	27.98
	09/09/08	17.51	17.48	0.03	27.70
MW06 (TOC = 43.01)	08/02/06	13.92	--	0.00	29.09
	05/01/07	14.82	--	0.00	28.19
	01/18/08	14.12	--	0.00	28.89
	06/24/08	15.02	--	0.00	27.99
	09/09/08	15.16	--	0.00	27.85
MW07 (TOC = 41.62)	08/02/06	13.45	--	0.00	28.17
	05/01/07	14.94	--	0.00	26.68
	01/18/08	14.57	--	0.00	27.05
	06/24/08	15.12	15.11	0.01	26.51
	09/09/08	15.52	15.46	0.06	26.15
MW08 (TOC = 36.55)	06/24/08	10.67	--	0.00	25.88
MW09 (TOC = 38.08)	09/09/08	10.88	--	0.00	25.67
	06/24/08	11.85	--	0.00	26.23
MW10 (TOC = 43.37)	09/09/08	12.30	--	0.00	25.78
	06/24/08	15.86	--	0.00	27.51
MW11 (TOC = 42.65)	09/09/08	16.05	--	0.00	27.32
	06/24/08	15.99	--	0.00	26.66
MW12 (TOC = 38.24)	09/09/08	16.41	--	0.00	26.24
	06/24/08	12.33	--	0.00	25.91
	09/09/08	12.72	--	0.00	25.52

**Table 3  
Summary of Groundwater Elevation Data  
Olympic Athletic Club  
5301 Leary Avenue Northwest  
Seattle, Washington**

Well Identification <sup>1</sup>	Date Measured	Depth to Groundwater <sup>2</sup> (feet)	Depth to SPH <sup>2</sup> (feet)	SPH Thickness <sup>3</sup> (feet)	Groundwater Elevation <sup>4</sup> (feet)
MW13 (TOC = 34.77)	06/24/08	8.96	--	0.00	25.81
	09/09/08	9.35	--	0.00	25.42
MW14 (TOC = 42.37)	06/24/08	16.31	--	0.00	26.06
	09/09/08	16.67	--	0.00	25.70
MW-D (TOC=46.30)	08/02/06	15.68	--	0.00	30.62
	05/01/07	17.18	--	0.00	29.12
	01/18/08	-	--	0.00	--
	06/24/08	17.89	--	0.00	28.41
	09/09/08	18.18	--	0.00	28.12

**NOTES:**

<sup>1</sup>Top of casing elevations surveyed to City of Seattle Datum by Harstad Consultants in June 2008.

<sup>2</sup>Depth to groundwater and SPH in feet below ground surface, as measured from a fixed spot on the top of well casing.

<sup>3</sup>SPH thickness = depth to groundwater - depth to SPH.

<sup>4</sup>Groundwater Elevation = Top of well casing elevation - depth to groundwater + (SPH thickness x [density of gasoline/density of water]). Density of gasoline is assumed to be 0.75 g/ml and density of water is assumed to be 1.0 g/ml.

-- = not measured

g/ml = grams per milliliter

SPH = separate-phase hydrocarbons

**APPENDIX A**  
**Boring Logs**

# LOG OF BORING NO. MW-1

Sheet 1 of 2

Date drilled 9/1/93

Sampler / Driving Weight 140lb./30" drop

Elevation (ft) 97

Depth, ft	Elevation	Samples	Blows/6"	Graphic Symbol	DESCRIPTION	Observation	Dry density pcf	Moisture Content, %	Other tests
				XXXX	Concrete Surface				OVM
				XXXX	FILL				PPM
				XXXX	construction debris, bricks, cobbles				
				XXXX	GRAVEL WITH SAND				
	95	1	6	XXXX	SAND WITH GRAVEL; yellow brown, fine to coarse, gravel fine to coarse; medium dense, moist			0	
			9	XXXX					
			15	XXXX	grades to SILTY SAND WITH GRAVEL; blue gray, fine to coarse, gravel fine, rounded; medium dense, moist				
5		2	15	XXXX	SILTY SAND WITH GRAVEL; yellow brown, fine to coarse, angular, gravel fine to coarse, sub angular, pockets of organic material; medium dense, moist			0	
			24	XXXX					
			28	XXXX	same; trace clay pockets				
	90	3	30	XXXX				0	
			50/2"	XXXX					
10		4	25	XXXX	becomes very dense			0	
			50/2"	XXXX					
				XXXX	trace charred wood fragments				
	85	5	50/4"	XXXX	GLACIAL TILL			0	
				XXXX	SILTY SAND; brown gray, few fine gravel; very dense, wet				
15		6	50/3"	XXXX				0	
				XXXX					
80		7	50/3"	XXXX				0	
				XXXX					

Continued Next Page

OLYMPIC ATHLETIC CLUB

Seattle, Washington

OFF THE WALL PARTNERS

Project No.

93-35520-03



Converse Consultants NW

Geotechnical Engineering

Figure No.

# LOG OF BORING NO. MW-1

Sheet 2 of 2

Date drilled 9/1/93

Sampler / Driving Weight 140lb./30"drop

Elevation (ft) 97

Depth, ft	Elevation	Samples	Blows/6"	Graphic Symbol	DESCRIPTION	Observation Well	Dry density pcf	Moisture Content, %	Other tests
		8	50/3"		<p>This log is part of the report prepared by Conversa Consultants NW for the named project and should be read together with that report for complete interpretation. This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented are a simplification of actual conditions encountered.</p> <p style="text-align: center;">DESCRIPTION</p>				0
	75	9	50/4"			<p>slight hydrocarbon odor</p>			
25		10	50/5"		<p>Bottom of boring at depth 25 feet. monitoring well installed to depth 22 feet. Project Datum: MW-2 top of Monument=100 feet.</p>				
	70								
	30								
	65								
	35								
	60								

**OLYMPIC ATHLETIC CLUB**  
 Seattle, Washington  
**OFF THE WALL PARTNERS**

Project No.

93-35520-03



# LOG OF BORING NO. MW-1

Sheet 1 of 2

Date drilled 9/1/93 Sampler / Driving Weight 140lb./30"drop Elevation (ft) 40

Depth, ft	Elevation	Samples	Blows/6"	Graphic Symbol	DESCRIPTION	Observation Well	Dry density pcf	Moisture Content, %	Other tests
	40				<p><b>DESCRIPTION</b></p> <p>This log is part of the report prepared by Converse Consultants NW for the named project and should be read together with that report for complete interpretation. This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented are a simplification of actual conditions encountered.</p>				
				[Cross-hatch symbol]	Concrete Surface				
				[Dotted symbol]	FILL				
				[Dotted symbol]	construction debris, bricks, cobbles				
				[Dotted symbol]	GRAVEL WITH SAND				
		1	6	[Dotted symbol]	SAND WITH GRAVEL; yellow brown, fine to coarse, gravel fine to coarse; medium dense, moist				
			9	[Dotted symbol]					
			15	[Dotted symbol]	grades to SILTY SAND WITH GRAVEL; fine to coarse, gravel, fine rounded, bluish gray; medium dense, moist				
5	35	2	15	[Dotted symbol]	SILTY SAND WITH GRAVEL; yellow brown, fine to coarse, angular, gravel fine to coarse, sub angular, pockets of organic material; medium dense, moist				
			24	[Dotted symbol]					
			28	[Dotted symbol]	same; trace clay pockets				
		3	30	[Dotted symbol]					
			50/2"	[Dotted symbol]					
0	30	4	25	[Dotted symbol]	becomes very dense				
			50/2"	[Dotted symbol]					
				[Dotted symbol]	trace charred wood fragments				
		5	50/4"	[Dotted symbol]	GLACIAL TILL				
				[Dotted symbol]	SILTY SAND; brown gray, few fine gravel; very dense, wet				
15	25	6	50/3"	[Dotted symbol]					
				[Dotted symbol]					
		7	50/3"	[Dotted symbol]					
				[Dotted symbol]					
	20								

Continued Next Page

**OLYMPIC ATHLETIC CLUB**  
 Seattle, Washington  
 OFF THE WALL

Project No.  
 93-35520-02



**Converse Consultants NW**

Geotechnical Engineering  
and Applied Earth Sciences

Figure No.  
 A-2

# LOG OF BORING NO. MW-1

Sheet 2 of 2

Date drilled 9/1/93 Sampler / Driving Weight 140lb./30"drop Elevation (ft) 40

Depth, ft	Elevation	Samples	Blows/6"	Graphic Symbol	DESCRIPTION	Observation Well	Dry density pcf	Moisture Content, %	Other tests
	20	8	50/3"		slight hydrocarbon odor				
		9	50/4"						
25	15	10	50/5"		Bottom of boring at depth 25 feet. monitoring well installed to depth 22 feet.				
30	10								
35	5								
0									

OLYMPIC ATHLETIC CLUB

Seattle, Washington

OFF THE WALL

Project No.

93-35520-02



**Converse Consultants NW**

Geotechnical Engineering  
and Applied Earth Sciences

Figure No.

A-2

# LOG OF BORING NO. MW-2

Sheet 1 of 1

Date drilled 1/31/94

Sampler / Driving Weight SS 300lb./30" drop

Elevation (ft) 100

Depth, ft	Elevation	Samples	Blows/6"	Graphic Symbol	DESCRIPTION	Observation	Dry density pcf	Moisture Content, %	Other tests
	100				FILL				OVM PPM
		1			SILTY SAND WITH GRAVEL; brown, fine to coarse, gravel, fine to coarse, rounded; very moist, medium dense				0
					GLACIAL TILL				
5	95	2	30		SILTY SAND; gray, fine to medium, trace coarse, trace fine gravel; very moist to moist, very dense				0
			70						
		3	60		few fine gravel, moist				0
			50						
			100/6"						
10	90	4	40/6"		SILTY SAND; blue-gray, fine to coarse; moist, very dense				0
					GLACIAL OUTWASH				
		5	50		SAND; dark gray, fine to medium, few coarse, few silt, trace fine to coarse gravel; wet, very dense. hydrocarbon like odor				250
			100/6"						
15	85	6	100/6"		SILTY SAND; gray-brown, trace fine gravel; moist, very dense				0
					GLACIAL TILL				
		7	100/6"		same, very moist				0
20	80	8	100/3"		Bottom of boring at depth 21.5 feet. Monitoring well installed to 21.2 feet. Project Datum: MW-2 top of monument=100 feet.				0
	75								

OLYMPIC ATHLETIC CLUB

Seattle, Washington

OFF THE WALL PARTNERS

Project No.

93-35520-03



# LOG OF BORING NO. MW-3

Sheet 1 of 1

Date drilled 1/31/94

Sampler / Driving Weight SS 300lb./30" drop

Elevation (ft) 98

Depth, ft	Elevation	Samples	Blows/6"	Graphic Symbol	DESCRIPTION	Observation Well	Dry density pcf	Moisture Content, %	Other tests
					<b>FILL</b>				OVM PPM
95		1			SILTY SAND WITH GRAVEL; brown, fine to coarse gravel, fine to coarse; wet to very moist, medium dense				0
5		2	40		becomes wet <span style="float: right;">SM</span>				0
			40						
			50/3"		<b>GLACIAL TILL</b>				
90		3	100/6"		SAND WITH SILT, gray, fine to medium, trace coarse, trace coarse gravel; moist, very dense <span style="float: right;">SM</span>				0
10		4	100/6"		SILTY SAND; gray-brown, fine to medium, trace coarse, fine gravel; moist to very moist, very dense				0
					<b>GLACIAL OUTWASH</b>				
85		5	50		SAND; blue-gray, fine to coarse, trace silt, trace fine gravel; very moist to wet, very dense. hydrocarbon like odor <span style="float: right;">SP</span>	W			60
			100/6"						
15		6	50		SAND; blue-gray, fine to coarse, trace to few silt, trace fine gravel; wet, very dense. hydrocarbon like odor				70
			100/6"						
80		7	60		hydrocarbon like odor				100
			50/2"						
20		8	50		SAND; gray-brown, fine to coarse, trace fine gravel; wet, very dense				0
			100/6"						
75					Bottom of boring at depth of 21 feet. Monitoring well installed to 19 feet. Project Datum: MW-2 top of monument=100 feet.				

OLYMPIC ATHLETIC CLUB  
Seattle, Washington  
OFF THE WALL PARTNERS

Project No.

93-35520-03



# LOG OF BORING NO. MW-4

Sheet 1 of 1

Date drilled 2/17/94

Sampler / Driving Weight SPT 300lb./30" drop

Elevation (ft) 97

Depth, ft	Elevation	Samples	Blows/6"	Graphic Symbol	DESCRIPTION	Observation Well	Dry density pcf	Moisture content, %	Other tests
				X	FILL				
	95			•••••	8" concrete				OVM (ppm)
				•••••	SILTY SAND WITH GRAVEL; brown, fine to coarse, gravel fine to coarse, few; 3-4 inch cobbles, few to some clay pockets; dense, very moist to wet	SM			
	5			•••••	SILTY SAND; blue-gray, fine to medium, trace fine gravel; dense, moist, moderate hydrocarbon like odor	SM			
	90			•••••	strong hydrocarbon like odor				
	10			•••••	becomes gray-brown				
				•••••	cobble at 11 feet				
	85	1	100/6"	•••••	GLACIAL TILL				29
				•••••	SILTY SAND; blue gray, fine to coarse, trace fine, rounded gravel; very dense, moist, slight hydrocarbon like odor				
	15	2	100/3"	•••••	same, trace hydrocarbon like odor	SM			0
	80	3	100/4"	•••••	GLACIAL OUTWASH				4
				•••••	SAND; gray brown, fine to medium, trace coarse, few to some silt; very dense, very moist to wet, trace hydrocarbon like odor	SP			
	20	4	40/50/6"	•••••	SAND; gray blue, fine to medium, trace silt; very dense, wet, slight hydrocarbon like odor				0
	75				Bottom of boring at depth of 21 feet. Monitoring well installed from 10.5 to 21 feet.				

**OLYMPIC ATHLETIC CLUB**  
Seattle, Washington  
**OFF THE WALL PARTNERS**


Project No.

93-35520-03




Sample Number	Sample Interval	Groundwater	% Recovery	PID (ppm)	Well Construction	Soil Log	Soil Description
			100				0-1": Asphalt 1"-6": Brick 6"-1.5': Concrete 1.5'-7.5': Dark brown silt with fine sand (fill). (medium stiff, moist)
HS-1-2.5				2.8			
HS-1-5			100	5.0		ML	
			100				
HS-1-10				23.8		SM	7.5'-9': Gray silty fine sand with occasional gravel (medium dense, moist) 9'-20': Gray fine sand (medium dense, moist)
HS-1-15				4.3		SP	
HS-1-20				2.9			
							End of Boring at 20 feet bgs Groundwater sample HS-1-W collected

Logged by: Steve Worsley  
 Driller: Cascade Drillers  
 Drilling Method: Hollow Stem Auger  
 Sampling Method: Split Spoon  
 Casing Type: NA  
 Annular Pack: NA  
 Slot Size: NA  
 Hammer Size: NA  
 Date Drilled: 6/24/05  
 Hole Diameter: 5 1/4 inches  
 Hole Depth: 20 feet  
 Well Diameter: NA  
 Well Depth: NA  
 Screened Interval: NA  
 Depth to Water (First Encountered): 10 feet  
 Depth to Water (Static): NA

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Depth Below Ground Surface (bgs) in feet	Sample Number	Sample Interval	Groundwater	% Recovery	PID (ppm)	Well Construction	Soil Log	Soil Description
								0'-3": Asphalt 3'-9": Concrete 9"-5': Brown silty fine sand (medium dense, moist)
5	HS-2-5			100	3.1		SM	
10	HS-2-10			100	225		SP	6'-20': Grey fine sand with trace silt (medium dense, moist)
15	HS-2-15			100	4.7			
20	HS-2-20			100	3.4			
								End of Boring at 20 feet bgs Groundwater sample HS-2-W
25								
30								

Logged by: Steve Worsley Driller: Cascade Drillers Drilling Method: Hollow Stem Auger Sampling Method: Split Spoon Casing Type: NA Annular Pack: NA Slot Size: NA	Hammer Size: NA Date Drilled: 6/24/05 Hole Diameter: 5 1/4 inches Hole Depth: 20 feet Well Diameter: NA Well Depth: NA Screened Interval: NA	Depth to Water (First Encountered): ~12 feet Depth to Water (Static): 14 feet
---	--	--

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--	---	------------------------

Depth Below Ground Surface (bgs) in feet	Sample Number	Sample Interval	Groundwater	% Recovery	PID (ppm)	Well Construction	Soil Log	Soil Description
	0-3"							
3"-10"								3"-10": Brown/orange silt with fine-coarse sand (fill) (medium dense, moist)
10"-15"								10"-15": Gray fine-medium sand (medium dense, moist, wet)
5	HS-3-5			100	2.8			
10	HS-3-10			100	3.5		SP	
15	HS-3-15			100	4.2			
15	End of Boring at 15 feet bgs Groundwater sample H-3-W collected							
20								
25								
30								

Logged by: Steve Worsley Driller: Cascade Drillers Drilling Method: Hollow Stem Auger Sampling Method: Split Spoon Casing Type: NA Annular Pack: NA Slot Size: NA	Hammer Size: NA Date Drilled: 6/24/05 Hole Diameter: 5 1/4 inches Hole Depth: 15 feet Well Diameter: NA Well Depth: NA Screened Interval: NA	Depth to Water (First Encountered): 15 feet Depth to Water (Static): 12 feet
---	--	---




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Seattle, Washington

Soil Boring Log

Sample Number	Sample Interval	Groundwater	% Recovery	PID (ppm)	Well Construction	Soil Log	Soil Description
							0'-3": Concrete sidewalk 3"-6": Brown fine-medium sand (medium dense, moist)
							6'-15": Gray fine-medium sand with trace silt (medium dense, moist, wet)
HS-4-5			100	2.4		SP	
HS-4-10			100	1.8			
HS-4-15			100	3.6			
							End of Boring at 15 feet bgs Groundwater sample HS-4-W collected

Logged by: Steve Worsley  
 Driller: Cascade Drillers  
 Drilling Method: Hollow Stem Auger  
 Sampling Method: Split Spoon  
 Casing Type: NA  
 Annular Pack: NA  
 Slot Size: NA  
 Hammer Size: NA  
 Date Drilled: 6/24/05  
 Hole Diameter: 5 1/4 inches  
 Hole Depth: 15 feet  
 Well Diameter: NA  
 Well Depth: NA  
 Screened Interval: NA  
 Depth to Water (First Encountered): 11-12 feet  
 Depth to Water (Static): NA

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--	---	------------------------

Sample Number	Sample Interval	Groundwater	% Recovery	PID (ppm)	Well Construction	Soil Log	Soil Description
							0-4': Concrete 4"-6.5': Brown silt with fine sand (soft, moist)
HS-5-5			100	16.1		ML	
HS-5-10			100	187		SP	6.5'-20': Grey fine sand with trace silt (medium dense, moist)
HS-5-15			100	927			
HS-5-20			100	6.6			
							End of Boring at 20 feet bgs Groundwater sample HS-5-W collected

Logged by: Steve Worsley  
 Drillers: Cascade Drillers  
 Drilling Method: Hollow Stem Auger  
 Sampling Method: Split Spoon  
 Casing Type: NA  
 Annular Pack: NA  
 Slot Size: NA  
 Hammer Size: NA  
 Date Drilled: 6/24/05  
 Hole Diameter: 5 1/4 inches  
 Hole Depth: 20 feet  
 Well Diameter: NA  
 Well Depth: NA  
 Screened Interval: NA  
 Depth to Water (First Encountered): 20 feet  
 Depth to Water (Static): 17 feet



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Soil Boring Log

Sample Number	Sample Interval	Groundwater	% Recovery	PID (ppm)	Well Construction	Soil Log	Soil Description
							0-4": Concrete 4"-9": Brown orange silt with fine sand (medium stiff, moist)
5	HS-6-5		100	3.4		ML	
10	HS-6-10		100	4.1		SP	9'-15': Grey fine sand (medium dense, moist)
15	HS-6-15		100	3.2		SP	15'-20': Grey fine sand with trace silt (medium dense, moist, wet)
20	HS-6-20		100	4.0			
25							
30							

Logged by: Steve Worsley  
 Driller: Cascade Drillers  
 Drilling Method: Hollow Stem Auger  
 Sampling Method: Split Spoon  
 Casing Type: NA  
 Annular Pack: NA  
 Slot Size: NA  
 Hammer Size: NA  
 Date Drilled: 6/24/05  
 Hole Diameter: 5 1/4 inches  
 Hole Depth: 20 feet  
 Well Diameter: NA  
 Well Depth: NA  
 Screened Interval: NA  
 Depth to Water (First Encountered): 16 feet  
 Depth to Water (Static): NA



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Soil Boring Log

Sample Number	Sample Interval	Groundwater	% Recovery	PID (ppm)	Well Construction	Soil Log	Soil Description
							0-4": Concrete 4"-8": Grey silt with trace, fine sand (medium dense, moist)
HS-7-5						ML	
HS-7-10							8'-20': Grey fine sand (medium dense, moist)
HS-7-15						SP	
HS-7-20							
							End of Boring at 20 feet bgs Groundwater sample HS-7-W collected

Logged by: Steve Worsley  
 Driller: Cascade Drillers  
 Drilling Method: Hollow Stem Auger  
 Sampling Method: Split Spoon  
 Casing Type: NA  
 Annular Pack: NA  
 Slot Size: NA  
 Hammer Size: NA  
 Date Drilled: 6/24/05  
 Hole Diameter: 6 inches  
 Hole Depth: 20 feet  
 Well Diameter: NA  
 Well Depth: NA  
 Screened Interval: NA  
 Depth to Water (First Encountered): 20 feet  
 Depth to Water (Static): 16 feet

  
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Soil Boring Log

Sample Number	Sample Interval	Groundwater	% Recovery	PID (ppm)	Well Construction	Soil Log	Soil Description
			100	2.2			0-4": Concrete 4"-6": Organic debris. ML 6"-4": Medium brownish-gray silty CLAY. Moist.
			100	2.6			CL 4'-5': Medium greenish-gray CLAY. Moist. ML 5'-6': Medium greenish-gray silty CLAY. Moist. SP 6'-13': Medium gray fine- to medium-grained SAND. Moist.
			100	220			SP 13'-15': Medium brown fine- to medium-grained SAND. Petroleum odor. Moist.
HS-8-15			100	820			SP 15'-23': Medium brown fine- to medium-grained SAND. Petroleum odor. Dry.
			100	201			
			100	40.8			SP 23'-30': Medium brown fine- to medium-grained SAND. Wet.
HS-8-27			100	22.1			End of Boring at 30 feet bgs.

Logged by: M. Williams  
 Driller: ESN NW  
 Drilling Method: Hollow Stem Auger  
 Sampling Method: Split Spoon  
 Casing Type: Schedule 40 PVC  
 Annular Pack: 10-20 Sand  
 Slot Size: 0.01  
 Hammer Size: NA  
 Date Drilled: 7/27/05  
 Hole Diameter: 6 inches  
 Hole Depth: 30 feet  
 Well Diameter: 2 inches  
 Well Depth: 29 feet  
 Screened Interval: 14-29 feet bgs  
 Depth to Water (First Encountered): 23 feet  
 Depth to Water (Static): 16 feet



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Soil Boring Log

Sample Number	Sample Interval	Groundwater	% Recovery	PID (ppm)	Well Construction	Soil Log	Soil Description
							Depth, Below Ground Surface (bgs) in feet
			100	1.8		ML	0'-2': Asphalt. 2'-6': Brick. 6'-9': Medium brown silty CLAY. Moist.
			100	2.2			
			100	2.4		SP	9'-22': Medium brown SILT SAND mix. Dry.
			100	3.5			
			100	3.2			
HS-9-22			100	3.8		SP	22'-24': Medium brown SILT SAND mix. Wet.
							End of Boring at 24 feet bgs.

Logged by: M. Williams Driller: ESN NW Drilling Method: Hollow Stem Auger Sampling Method: Split Spoon Casing Type: NA Annular Pack: NA Slot Size: NA	Hammer Size: NA Date Drilled: 7/27/05 Hole Diameter: 6 inches Hole Depth: 24 feet Well Diameter: NA Well Depth: NA Screened Interval: NA	Depth to Water (First Encountered): 21 feet Depth to Water (Static): 20 feet
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Soil Boring Log

Sample Number	Sample Interval	Groundwater	% Recovery	PID (ppm)	Well Construction	Soil Log	Soil Description
			100	1.8		SM	0-2": Asphalt. 2"-6": Brick. 6"-10": Medium brown silty SAND with minor gravel. Dry.
			100	2.2			
			100	2.4		SM	10-13": Medium brown fine- to medium-grained SAND with minor gravel. Moist.
						SM	13-14": Medium gray fine- to medium-grained SAND with minor gravel. Moist.
			100	3.5		SM	14-24": Medium brown silty CLAY. Moist.
			100	3.2			
			100	3.8			
							End of Boring at 24 feet bgs.

Logged by: M. Williams  
 Driller: ESN NW  
 Drilling Method: Hollow Stem Auger  
 Sampling Method: Split Spoon  
 Casing Type: NA  
 Annular Pack: NA  
 Slot Size: NA  
 Hammer Size: NA  
 Date Drilled: 7/27/05  
 Hole Diameter: 6 inches  
 Hole Depth: 24 feet  
 Well Diameter: NA  
 Well Depth: NA  
 Screened Interval: NA  
 Depth to Water (First Encountered): 23 feet  
 Depth to Water (Static): 23 feet

  
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Soil Boring Log

Sample Number	Sample Interval	Groundwater	% Recovery	PID (ppm)	Well Construction	Soil Log	Soil Description
			100	3.8			0-2": Asphalt. 2"-6": Brick.
			100	5.9		SM	6"-1': Medium brown CLAY. Dry.
			100	482		SM	1"-3': Medium greenish gray SILT/SAND/CLAY mix. Dry.
			100	527		SM	3'-5': Medium gray silty SAND. Dry.
			100	47.8		SM	5'-9': Medium brown silty SAND. Petroleum Odor. Dry.
			100	482		SM	9'-12': Medium gray SILT/SAND/CLAY mix. Petroleum odor. Moist.
			100	527		SM	12'-15': Medium gray silty SAND. Moist.
			100	47.8		SM	16'-20': Medium brown silty SAND. Wet.
							End of Boring at 20 feet bgs.

Logged by: M. Williams  
 Driller: ESN NW  
 Drilling Method: Hollow Stem Auger  
 Sampling Method: Split Spoon  
 Casing Type: NA  
 Annular Pack: NA  
 Slot Size: NA

Hammer Size: NA  
 Date Drilled: 8/18/05  
 Hole Diameter: 6 inches  
 Hole Depth: 20 feet  
 Well Diameter: NA  
 Well Depth: NA  
 Screened Interval: NA

Depth to Water (First Encountered): 15 feet  
 Depth to Water (Static): NA



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Soil Boring Log

Sample Number	Sample Interval	Groundwater	% Recovery	PIB (ppm)	Well Construction	Soil Log	Soil Description
			100	3.8			0-4": Concrete. 4"-1': Debris (brick and wood pieces). Dry
						SM	6"-1': Medium brown CLAY. Dry.
						SM	1"-3': Medium greenish gray SILT/SAND/CLAY mix. Dry.
						SM	3'-5': Medium gray silty SAND. Dry.
5			100	5.9			
						SM	5'-9': Medium brown silty SAND. Petroleum Odor. Dry.
10			100	482			
						SM	9-12': Medium gray SILT/SAND/CLAY mix. Petroleum odor Moist.
						SM	12-15': Medium gray silty SAND. Moist.
15			100	527			
						SM	16-20': Medium brown silty SAND. Wet.
20			100	47.8			
							End of Boring at 20 feet bgs.
25							
30							

Logged by: M. Williams Driller: ESN NW Drilling Method: Hollow Stem Auger Sampling Method: Split Spoon Casing Type: NA Annular Pack: NA Sial Size: NA	Hammer Size: NA Date Drilled: 8/18/05 Hole Diameter: 6 inches Hole Depth: 20 feet Well Diameter: NA Well Depth: NA Screened Interval: NA	Depth to Water (First Encountered): 15 feet Depth to Water (Static): NA
---	--	--

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Seattle, Washington

Soil Boring Log

# Log of Exploratory Boring:

Notes

Drilling Co./Driller: Cascade / Curtis  
 Drilling Method: LAR HSA  
 Location: 8'.10" N and 24'.0" E of NW corner of building

**Moisture Content:**  
 Dry = Dry, Dp = Damp, Mst = Moist, Wet = Wet

**Hydrocarbon Odor:** NO = no odor, VFO = very faint odor  
 WO = weak odor, MO = moderate odor, SO = strong odor

**Water Levels**  
 ▼ After Completion  
 ▽ During Drilling

Surface Condition: Concrete  
 Total Depth: 25  
 First GW Depth: 23

Depth (feet)	Blow Count	PID	Sample Recovery	Sample Interval	Sample ID	Lithography	USCS Class	Description	Moisture Content	Well Detail
0							CONC	Concrete 6" thick		
1										
2										
3										
4										
5	3				B05-05		SP	Damp, very dense, fine to medium SAND with silt and fine subrounded gravel, brown, no hydrocarbon odor, fill material. 15-75-10	Damp	
6	4	0.0	100							
7	2									
8										
9										
10										
11	50/6"	1.0	33		B05-10		SM	Damp, very dense, silty SAND with fine subrounded gravel, brown, no hydrocarbon odor. 30-65-5	Damp	
12										
13										
14										
15										
16	50/2"	9.7	33		B05-15		SM	Damp, very dense, silty SAND with fine sand and fine subrounded gravel, grey, no hydrocarbon odor. 30-65-5	Damp	
17										
18										
19										
20										
21								No Recovery		
22										
23									▽	
24										
25	50/2"	0.2	33		B05-25		SM	Wet, very dense, silty SAND, grey, no hydrocarbon odor. 35-65-0	Wet	
26										



Seattle, Washington  
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 Seattle, Washington

Date Started: 6/3/2008  
 Date Finished: 6/3/2008  
 Logged By: RAH  
 Chk By:  
 SES Project No.: 0670-001-01  
 File ID.: F:\SES GINT\PROJECTS\0670 OLYMPIC ATHLETIC CLUB.GPJ

BORING LOG  
 MW10

# Log of Exploratory Boring:

Notes

Drilling Co./Driller:	Cascade / Curtis
Drilling Method:	LAR HSA
Location:	8'.10" N and 24'.0" E of NW corner of building
Surface Condition:	Concrete
Total Depth:	25
First GW Depth:	23

**Moisture Content:**  
 Dry = Dry, Dp = Damp, Mst = Moist, Wet = Wet

**Hydrocarbon Odor:** NO = no odor, VFO = very faint odor  
 WO = weak odor, MO = moderate odor, SO = strong odor

**Water Levels**

▼ After Completion  
 ▼ During Drilling

Depth (feet)	Blow Count	PID	Sample Recovery	Sample Interval	Sample ID	Lithography	USCS Class	Description	Moisture Content	Well Detail
26								Boring terminated at 25.5 feet below ground surface and a 4-inch groundwater monitoring well was installed as shown in the well detail.		
27										
28										
29										
30										
31										
32										
33										
34										
35										
36										
37										
38										
39										
40										
41										
42										
43										
44										
45										
46										
47										
48										
49										
50										
51										
52										



Seattle, Washington  
 5301 Leary Avenue Northwest  
 Seattle, Washington

Date Started: 6/3/2008  
 Date Finished: 6/3/2008  
 Logged By: RAH  
 Chk By:  
 SES Project No.: 0670-001-01  
 File ID.: FASES 001\PROJECTS\0670 OLYMPIC ATHLETIC CLUB.GPJ

BORING LOG  
 MW10  
 Page 2 of 2

# Log of Exploratory Boring:

Notes

Drilling Co./Driller:	Cascade / Curtis
Drilling Method:	LAR HSA
Location:	15'.6" S and 3'.11" W of SE corner of building
Surface Condition:	Gravel
Total Depth:	25
First GW Depth:	23

**Moisture Content:**

Dry = Dry, Dp = Damp, Mst = Moist, Wet = Wet

**Water Levels**

▼ After Completion  
 ▽ During Drilling

**Hydrocarbon Odor:** NO = no odor, VFO = very faint odor

WO = weak odor, MO = moderate odor, SO = strong odor

Depth (feet)	Blow Count	PID	Sample Recovery	Sample Interval	Sample ID	Lithography	USCS Class	Description	Moisture Content	Well Detail
0							FILL	Damp, 5/8" crushed rock gravel.		
1										
2										
3										
4										
5	27	2.3	66		B03-05		SM	Damp, very dense, silty SAND, brownish grey, no hydrocarbon odor. 30-70-0	Damp	
6	50/6"									
7										
8										
9										
10	35	0.4	66		B03-10		SP-SM	Damp, very dense, fine to medium SAND with silt, brownish grey, no hydrocarbon odor. 15-85-0	Damp	
11	50/4"									
12										
13										
14										
15	50/4"	0.0	33		B03-15		SP-SM	Damp, very dense, fine to medium SAND with silt, grey, no hydrocarbon odor. 15-85-0	Damp	
16										
17										
18										
19										
20	50/3"	1.8	33		B03-20		SP-SM	Damp, very dense, fine to medium SAND with silt, grey, no hydrocarbon odor. 15-85-0	Damp	
21										
22										
23									▽	
24										
25	50/6"	3.1	33		B03-25		SP-SM	Wet, very dense, fine to medium SAND with silt, grey, no	Wet	
26										



Seattle, Washington  
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 Seattle, Washington

Date Started: 6/2/2008  
 Date Finished: 6/2/2008  
 Logged By: RAH  
 Chk By:  
 SES Project No.: 0670-001-01  
 File ID.: FILES ON PROJECT 20080602 01YAPC ATHLETIC CLUB.GPJ

BORING LOG  
 MW09

<b>Log of Exploratory Boring:</b>		Drilling Co./Driller: Cascade / Curtis
Notes		Drilling Method: LAR HSA
		Location: 15'.6" S and 3'.11" W of SE corner of building
<b>Moisture Content:</b> Dry = Dry, Dp = Damp, Mst = Moist, Wet = Wet	<b>Water Levels</b> ▼ After Completion ▽ During Drilling	Surface Condition: Gravel
<b>Hydrocarbon Odor:</b> NO = no odor, VFO = very faint odor WO = weak odor, MO = moderate odor, SO = strong odor		Total Depth: 25
		First GW Depth: 23

Depth (feet)	Blow Count	PID	Sample Recovery	Sample Interval	Sample ID	Lithography	USCS Class	Description	Moisture Content	Well Detail
26								hydrocarbon odor. 25-75-0		
27								Boring terminated at 25.5 feet below ground surface and a 2-inch groundwater monitoring well was installed as shown in the well detail.		
28										
29										
30										
31										
32										
33										
34										
35										
36										
37										
38										
39										
40										
41										
42										
43										
44										
45										
46										
47										
48										
49										
50										
51										
52										

# Log of Exploratory Boring:

Notes

Drilling Co./Driller: Cascade / Curtis  
 Drilling Method: LAR HSA  
 Location: 26'.8" S and 11'.3" W of NW corner of building

**Moisture Content:**

Dry = Dry, Dp = Damp, Mst = Moist, Wet = Wet

**Water Levels**

▼ After Completion  
 ∇ During Drilling

**Hydrocarbon Odor:** NO = no odor, VFO = very faint odor  
 WO = weak odor, MO = moderate odor, SO = strong odor

Surface Condition: Asphalt, brick, concrete  
 Total Depth: 25  
 First GW Depth: 24.5

Depth (feet)	Blow Count	PID	Sample Recovery	Sample Interval	Sample ID	Lithography	USCS Class	Description	Moisture Content	Well Detail
0							CONC	Asphalt, Brick, Concrete		
1										
2										
3										
4										
5	7				B04-05		SM	Damp, very dense, silty SAND with fine subrounded gravel, brown, no hydrocarbon odor. 35-60-5	Damp	
6	18 20	0.8	100							
7										
8										
9										
10					B04-10		SM	Damp, very dense, silty SAND, grey, no hydrocarbon odor. 30-70-0	Damp	
11	50/6'	0.2	33							
12										
13										
14										
15					B04-15		SM	Damp, very dense, silty SAND with cobbles, grey, no hydrocarbon odor. 30-65-5	Damp	
16	50/6'	0.7	33							
17										
18										
19										
20					B04-20		SM	Damp, very dense, silty SAND, grey, no hydrocarbon odor. 35-65-0	Damp	
21	50/5'	0.4	33							
22										
23										
24										
25	50/2'	0.2	33		B04-25		SM	Wet, very dense, silty SAND, grey, no hydrocarbon odor. 30-70-0	Wet	
26										



Seattle, Washington  
 5301 Leary Avenue Northwest  
 Seattle, Washington

Date Started: 6/3/2008  
 Date Finished: 6/4/2008  
 Logged By: RAH  
 Chk By:  
 SES Project No.: 0670-001-01  
 File ID.: F:\SES\0811\PROJECTS\0670\0670-001-01\ATHLETIC CLUB.GPJ

BORING LOG  
 MW11

# Log of Exploratory Boring:

Notes

Drilling Co./Driller: Cascade / Curtis  
 Drilling Method: LAR HSA  
 Location: 26'.8" S and 11'.3" W of NW corner of building

**Moisture Content:**  
 Dry = Dry, Dp = Damp, Mst = Moist, Wet = Wet

**Hydrocarbon Odor:** NO = no odor, VFO = very faint odor  
 WO = weak odor, MO = moderate odor, SO = strong odor

**Water Levels**  
 ▼ After Completion  
 ▽ During Drilling

Surface Condition: Asphalt, brick, concrete  
 Total Depth: 25  
 First GW Depth: 24.5

Depth (feet)	Blow Count	PID	Sample Recovery	Sample Interval	Sample ID	Lithography	USCS Class	Description	Moisture Content	Well Detail
26								Boring terminated at 25.5 feet below ground surface and a 4-inch groundwater monitoring well was installed as shown in the well detail.		
27										
28										
29										
30										
31										
32										
33										
34										
35										
36										
37										
38										
39										
40										
41										
42										
43										
44										
45										
46										
47										
48										
49										
50										
51										
52										



Seattle, Washington  
 5301 Leary Avenue Northwest  
 Seattle, Washington

Date Started: 6/3/2008  
 Date Finished: 6/4/2008  
 Logged By: RAH  
 Chk By:  
 SES Project No.: 0670-001-01  
 File ID.: SESSES GINT/PROJECTS/0670 OLYMPIC ATHLETIC CLUB.GPJ

BORING LOG  
 MW11

# Log of Exploratory Boring:

Notes

Drilling Co./Driller: Cascade / Curtis

Drilling Method: LAR HSA

Location: 13'.3" S and 2'.5" W of SW corner of building

## Moisture Content:

Dry = Dry, Dp = Damp, Mst = Moist, Wet = Wet

## Water Levels

▼ After Completion

▽ During Drilling

Surface Condition: Asphalt, brick, concrete

Total Depth: 25

First GW Depth: 20.5

**Hydrocarbon Odor:** NO = no odor, VFO = very faint odor

WO = weak odor, MO = moderate odor, SO = strong odor

Depth (feet)	Blow Count	PID	Sample Recovery	Sample Interval	Sample ID	Lithography	USCS Class	Description	Moisture Content	Well Detail
0							CONC	Asphalt, Brick, Concrete		
1										
2										
3										
4										
5	18				B06-05		ML	Damp, very dense, SILT with sand and few fine subrounded gravels, brown, no hydrocarbon odor. 45-50-5	Damp	
6	30 45	0.3	100	X						
7										
8										
9										
10										
11	50/6'	1.0	33	X	B06-10		SM	Damp, very dense, silty SAND with fine subrounded gravels, brown, no hydrocarbon odor. 30-65-5	Damp	
12										
13										
14										
15										
16								No Recovery, rock in sampler.		
17										
18										
19										
20										
21	50/6'	0.5	33	X	B06-20		SM	Wet, very dense, silty SAND with fine subrounded gravels, brownish grey, no hydrocarbon odor. 30-65-5	Wet	
22										
23										
24										
25										
26								No Recovery.		



Seattle, Washington  
5301 Leary Avenue Northwest  
Seattle, Washington

Date Started: 6/4/2008  
Date Finished: 6/4/2008  
Logged By: RAH  
Chk By:  
SES Project No.: 0670-001-01  
File ID.: FISE 6 CNT PROJECT 00101 OLYMPIC ATHLETIC CLUB.GPJ

BORING LOG  
MW12

<b>Log of Exploratory Boring:</b>		Drilling Co./Driller: Cascade / Curtis
<u>Notes</u>		Drilling Method: LAR HSA
		Location: 13'.3" S and 2'.5" W of SW corner of building
<b>Moisture Content:</b> Dry = Dry, Dp = Damp, Mst = Moist, Wet = Wet	<b>Water Levels</b> ▼ After Completion ▽ During Drilling	Surface Condition: Asphalt, brick, concrete
<b>Hydrocarbon Odor:</b> NO = no odor, VFO = very faint odor WO = weak odor, MO = moderate odor, SO = strong odor		Total Depth: 25
		First GW Depth: 20.5

Depth (feet)	Blow Count	PID	Sample Recovery	Sample Interval	Sample ID	Lithography	USCS Class	Description	Moisture Content	Well Detail
26								Boring terminated at 25.5 feet below ground surface and a 2-inch groundwater monitoring well was installed as shown in the well detail.		
27										
28										
29										
30										
31										
32										
33										
34										
35										
36										
37										
38										
39										
40										
41										
42										
43										
44										
45										
46										
47										
48										
49										
50										
51										
52										

# Log of Exploratory Boring:

Notes

Drilling Co./Driller: Cascade / Curtis

Drilling Method: LAR HSA

Location: 11'.10" S and 43'.6" E of SW corner of parking building

Surface Condition: Asphalt, brick, concrete

Total Depth: 20

First GW Depth: 15

## Moisture Content:

Dry = Dry, Dp = Damp, Mst = Moist, Wet = Wet

## Water Levels

▼ After Completion

▽ During Drilling

## Hydrocarbon Odor:

NO = no odor, VFO = very faint odor  
WO = weak odor, MO = moderate odor, SO = strong odor

Depth (feet)	Blow Count	PID	Sample Recovery	Sample Interval	Sample ID	Lithography	USCS Class	Description	Moisture Content	Well Detail
0							CONC	Asphalt, Brick, Concrete		
1										
2										
3										
4										
5	11				B07-05		ML	Damp, very dense, SILT with sand, brown, no hydrocarbon odor. 45-60-0	Damp	
6	10	0.0	100							
7	26									
8										
9										
10										
11	50/6"	1.0	33		B07-10		SP-SM	Damp, very dense, fine to medium SAND with silt, brownish grey, no hydrocarbon odor. 20-80-0	Damp	
12										
13										
14										
15										
16	50/6"	1.4	33		B07-15		SP-SM	Damp, very dense, fine to medium SAND with silt, grey, no hydrocarbon odor. 20-80-0	Wet	
17										
18										
19										
20										
21	50/6"	0.0	33		B07-20		SP	Wet, very dense, fine to medium SAND with silt and fine subrounded gravels, grey, no hydrocarbon odor. 15-80-5 Boring terminated at 21 feet below ground surface and a 2-inch groundwater monitoring well was installed as shown in the well detail.	Wet	
22										
23										
24										
25										
26										



Seattle, Washington  
5301 Leary Avenue Northwest  
Seattle, Washington

Date Started: 6/4/2008  
Date Finished: 6/4/2008  
Logged By: RAH  
Chk By:  
SES Project No.: 0670-001-01  
File ID.: FSES 001 PROJECTS 0070 01V1.P10  
ATHLETIC CLUB.GPJ

BORING LOG  
MW13

# Log of Exploratory Boring:

Notes

Drilling Co./Driller: Cascade / Curtis  
 Drilling Method: LAR HSA  
 Location: 77'.7" S and 46'.0" W of NW corner of building

**Moisture Content:**

Dry = Dry, Dp = Damp, Mst = Moist, Wet = Wet

**Water Levels**

▼ After Completion  
 ▽ During Drilling

**Hydrocarbon Odor:** NO = no odor, VFO = very faint odor  
 WO = weak odor, MO = moderate odor, SO = strong odor

Surface Condition: Concrete  
 Total Depth: 25  
 First GW Depth: 23

Depth (feet)	Blow Count	PID	Sample Recovery	Sample Interval	Sample ID	Lithography	USCS Class	Description	Moisture Content	Well Detail
0							CONC	Concrete 6-inches		
5	26 50/6"	0.1	66	X	B08-05		SP	Damp, very dense, fine SAND with silt, brown, no hydrocarbon odor. 20-80-0	Damp	
11	18 50/6"	1.1	66	X	B08-10		SM	Damp, very dense, silty SAND, brown, no hydrocarbon odor. 30-70-0	Damp	
16	50/6"	2000	33	X	B08-15		SM	Damp, very dense, silty SAND, brown, strong hydrocarbon odor. 30-70-0	Damp	
21	50/6"	202	33	X	B08-20		SM	Damp, very dense, silty SAND, brown, strong hydrocarbon odor. 30-70-0	Damp	
25	50/6"	2.6	33	X	B08-25		SM	Damp, very dense, silty SAND, brown, slight hydrocarbon odor.	Wet	



Seattle, Washington  
 5301 Leary Avenue Northwest  
 Seattle, Washington

Date Started: 6/5/2008  
 Date Finished: 6/5/2008  
 Logged By: RAH  
 Chk By:  
 SES Project No.: 0670-001-01  
 File ID.: FASE 01 NT PROJECTS 0670 OLYMPIC ATHLETIC CLUB 01

BORING LOG  
 MW-14

# Log of Exploratory Boring:

Notes

Drilling Co./Driller: Cascade / Curtis  
 Drilling Method: LAR HSA  
 Location: 77.7" S and 46.0" W of NW corner of building

**Moisture Content:**  
 Dry = Dry, Dp = Damp, Mst = Moist, Wet = Wet

**Hydrocarbon Odor:** NO = no odor, VFO = very faint odor  
 WO = weak odor, MO = moderate odor, SO = strong odor

**Water Levels**  
 ▼ After Completion  
 ▽ During Drilling

Surface Condition: Concrete  
 Total Depth: 25  
 First GW Depth: 23

Depth (feet)	Blow Count	PID	Sample Recovery	Sample Interval	Sample ID	Lithography	USCS Class	Description	Moisture Content	Well Detail
26										
27								30-70-0		
28								Boring terminated at 25.5 feet below ground surface and a 2-inch groundwater monitoring well was installed as shown in the well detail.		
29										
30										
31										
32										
33										
34										
35										
36										
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46										
47										
48										
49										
50										
51										
52										



Seattle, Washington  
 5301 Leary Avenue Northwest  
 Seattle, Washington

Date Started: 6/5/2008  
 Date Finished: 6/5/2008  
 Logged By: RAH  
 Chk By:  
 SES Project No.: 0670-001-01  
 File ID.: F:\SES\GINT\PROJECTS\0670 OLYMPIC ATHLETIC CLUB.GPJ

BORING LOG  
 MW-14

**APPENDIX B**  
**Laboratory Reports**

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

June 6, 2008

Tom Cammarata, Project Manager  
Sound Environmental Strategies Corporation  
2400 Airport Way S., Suite 200  
Seattle, WA 98134-2020

Dear Mr. Cammarata:

Included are the results from the testing of material submitted on June 2, 2008 from the SOU\_0670-001-01\_20080602, F&BI 806011 project. There are 4 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  
SOU0606R.DOC

FRIEDMAN & BRUYA, INC.

---

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on June 2, 2008 by Friedman & Bruya, Inc. from the Sound Environmental Strategies SOU\_0670-001-01\_20080602, F&BI 806011 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Sound Environmental Strategies</u>
806011-01	B03-05
806011-02	B03-10
806011-03	B03-15
806011-04	B03-20
806011-05	B03-25

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/06/08

Date Received: 06/02/08

Project: SOU\_0670-001-01\_20080602, F&BI 806011

Date Extracted: 06/03/08

Date Analyzed: 06/04/08

**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 mg/kg (ppm)

<u>Sample ID</u> Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl Benzene</u>	<u>Total Xylenes</u>	<u>Gasoline Range</u>	<u>Surrogate (% Recovery)</u> (Limit 50-150)
B03-05 806011-01	<0.02	<0.02	<0.02	<0.06	<2	99
B03-20 806011-04	<0.02	<0.02	<0.02	<0.06	<2	102
B03-25 806011-05	<0.02	<0.02	<0.02	<0.06	<2	87
Method Blank	<0.02	<0.02	<0.02	<0.06	<2	104

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/06/08

Date Received: 06/02/08

Project: SOU\_0670-001-01\_20080602, F&BI 806011

**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: 805274-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference (Limit 20)
Benzene	mg/kg (ppm)	0.09	0.06	40 a
Toluene	mg/kg (ppm)	0.43	0.33	26 vo
Ethylbenzene	mg/kg (ppm)	0.12	0.11	9
Xylenes	mg/kg (ppm)	0.50	0.54	8
Gasoline	mg/kg (ppm)	6	6	0

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	0.5	90	70-130
Toluene	mg/kg (ppm)	0.5	86	70-130
Ethylbenzene	mg/kg (ppm)	0.5	84	70-130
Xylenes	mg/kg (ppm)	1.5	85	70-130
Gasoline	mg/kg (ppm)	20	96	70-130

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### 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.

A1 - More than one compound of similar molecule structure was identified with equal probability.

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 this range fell outside of acceptance criteria. The value reported is an estimate.

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

d - The sample was diluted. Detection limits may be raised due to dilution.

ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.

dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.

fb - The analyte indicated was found in the method blank. The result should be considered an estimate.

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. The variability is attributed to sample inhomogeneity.

ht - The sample was extracted outside of holding time. Results should be considered estimates.

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

j - The result is below normal reporting limits. 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 analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.

jr - The rpd result in laboratory control sample associated with the analyte is 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 compound indicated 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 in a container not approved by the method. The value reported should be considered an estimate.

pr - The sample was received with incorrect preservation. The value reported should be considered an estimate.

ve - The value reported exceeded the calibration range established for the analyte. The reported concentration should be considered an estimate.

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

x - The pattern of peaks present is not indicative of diesel.

y - The pattern of peaks present is not indicative of motor oil.

806011

SAMPLE CHAIN OF CUSTODY

ME 06-02-08 VS2/803

Send Report To Tom Cannata

Company SES

Address 2400 Airport Way S. Suite 200

City, State, ZIP Seattle WA 98134

Phone # 206 306 1900 Fax # 206 306 1907

SAMPLERS (signature)	
PROJECT NAME/NO. Olympic Athletic Club 0670-001-01	PO #
REMARKS	GEMS Y / N

Page # 1 of 1

TURNAROUND TIME	
<input checked="" type="checkbox"/> Standard (2 Weeks)	
<input type="checkbox"/> RUSH	
Rush charges authorized by:	
SAMPLE DISPOSAL	
<input type="checkbox"/> Dispose after 30 days	
<input type="checkbox"/> Return samples	
<input type="checkbox"/> Will call with instructions	

Sample ID	Sample Location	Sample Depth	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	ANALYSES REQUESTED						Notes	
								NWTPH-Dx	NWTPH-Gx	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	RCRA-8 Metals		
B03-05	B03	05	01A-E	6-2-08	1350	Soil	5		X	X					
B03-10	B03	10	02A-E	11	1355	"	5		X	X					Hold
B03-15	B03	15	03A-E	11	1400	"	5		X	X					Hold
B03-20	B03	20	04A-E	11	1405	"	5		X	X					<del>Hold</del>
B03-25	B03	25	05A-E	11	1415	"	5		X	X					

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

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Robert A. Hunsberger	SES	6-2-08	1555
Received by:	David	FBI		
Relinquished by:				
Received by:				

Samples received at 12/°C

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

June 6, 2008

Tom Cammarata, Project Manager  
Sound Environmental Strategies Corporation  
2400 Airport Way S., Suite 200  
Seattle, WA 98134-2020

Dear Mr. Cammarata:

Included are the results from the testing of material submitted on June 3, 2008 from the SOU\_0670-001-01\_20080603, F&BI 806041 project. There are 4 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  
SOU0606R.DOC

FRIEDMAN & BRUYA, INC.

---

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on June 3, 2008 by Friedman & Bruya, Inc. from the Sound Environmental Strategies SOU\_0670-001-01\_20080603, F&BI 806041 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Sound Environmental Strategies</u>
806041-01	B05-05
806041-02	B05-10
806041-03	B05-15
806041-04	B05-25

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/06/08  
Date Received: 06/03/08  
Project: SOU\_0670-001-01\_20080603, F&BI 806041  
Date Extracted: 06/04/08  
Date Analyzed: 06/04/08 and 06/05/08

**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 mg/kg (ppm)

<u>Sample ID</u> Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl Benzene</u>	<u>Total Xylenes</u>	<u>Gasoline Range</u>	<u>Surrogate (% Recovery)</u> (Limit 50-150)
B05-10 806041-02	<0.02	<0.02	<0.02	<0.06	<2	94
B05-15 806041-03	<0.02	<0.02	<0.02	<0.06	3	101
B05-25 806041-04	<0.02	<0.02	<0.02	<0.06	<2	100
Method Blank	<0.02	<0.02	<0.02	<0.06	<2	103

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/06/08

Date Received: 06/03/08

Project: SOU\_0670-001-01\_20080603, F&BI 806041

**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: 806041-02 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference (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)	1.0	82	70-130
Toluene	mg/kg (ppm)	1.0	79	70-130
Ethylbenzene	mg/kg (ppm)	1.0	80	70-130
Xylenes	mg/kg (ppm)	3.0	80	70-130
Gasoline	mg/kg (ppm)	20	103	70-130

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### 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.
- A1 - More than one compound of similar molecule structure was identified with equal probability.
- 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 this range fell outside of acceptance criteria. The value reported is an estimate.
- c - The presence of the analyte indicated may be due to carryover from previous sample injections.
- d - The sample was diluted. Detection limits may be raised due to dilution.
- ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.
- dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.
- fb - The analyte indicated was found in the method blank. The result should be considered an estimate.
- 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. The variability is attributed to sample inhomogeneity.
- ht - The sample was extracted outside of holding time. Results should be considered estimates.
- ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.
- j - The result is below normal reporting limits. 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 analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.
- jr - The rpd result in laboratory control sample associated with the analyte is 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 compound indicated 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 in a container not approved by the method. The value reported should be considered an estimate.
- pr - The sample was received with incorrect preservation. The value reported should be considered an estimate.
- ve - The value reported exceeded the calibration range established for the analyte. The reported concentration should be considered an estimate.
- vo - The value reported fell outside the control limits established for this analyte.
- x - The pattern of peaks present is not indicative of diesel.
- y - The pattern of peaks present is not indicative of motor oil.

806 041

**SAMPLE CHAIN OF CUSTODY**

ME 06-03-08

VR1/CT1

Send Report To Tom Comarata  
 Company SES  
 Address 2400 Airport Way S, Suite 200  
 City, State, ZIP Seattle WA 98134  
 Phone # 206 306 1900 Fax # 206 306 1907

SAMPLERS (signature) <i>[Signature]</i>	
PROJECT NAME/NO. <u>Olympic Athlete Club</u> <u>0670-001-01</u>	PO #
REMARKS	GEMS Y / N

Page # 1 of 1

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

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

Sample ID	Sample Location	Sample Depth	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	ANALYSES REQUESTED						Notes	
								NWTPH-Dx	NWTPH-Cx	BTEX by 8021B	VOC's by 8260	SVOC's by 8270	RCRA-8 Metals		
B05-05	B05	05	01A-E	6-3-08	1125	Soil	5		X	X					Hold
B05-10	B05	10	02A-E	11	1145	"	5		X	X					
B05-15	B05	15	03A-E	11	1230	"	5		X	X	X				Hold 8260 Analysis
B05-25	B05	25	04A-E	11	1300	"	5		X	X					

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

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: <i>[Signature]</i>	Robert A. Honsberger	SES	6-3-08	15:55
Received by: <i>[Signature]</i>	Michael Erdahl	FLB Inc	L	L
Relinquished by:				
Received by:		Samples received at 4 °C		

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

June 13, 2008

Tom Cammarata, Project Manager  
Sound Environmental Strategies Corporation  
2400 Airport Way S., Suite 200  
Seattle, WA 98134-2020

Dear Mr. Cammarata:

Included are the results from the testing of material submitted on June 4, 2008 from the SOU\_0670-001-01\_20080604, F&BI 806057 project. There are 4 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  
SOU0613R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on June 4, 2008 by Friedman & Bruya, Inc. from the Sound Environmental Strategies SOU\_0670-001-01\_20080604, F&BI 806057 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Sound Environmental Strategies</u>
806057-01	B04-05
806057-02	B04-10
806057-03	B04-15
806057-04	B04-20
806057-05	B04-25
806057-06	B06-05
806057-07	B06-10
806057-08	B06-20
806057-09	B07-05
806057-10	B07-10
806057-11	B07-15
806057-12	B07-20

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/13/08  
Date Received: 06/04/08  
Project: SOU\_0670-001-01\_20080604, F&BI 806057  
Date Extracted: 06/09/08  
Date Analyzed: 06/11/08

**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 mg/kg (ppm)

<u>Sample ID</u> Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl Benzene</u>	<u>Total Xylenes</u>	<u>Gasoline Range</u>	<u>Surrogate (% Recovery)</u> (Limit 50-150)
B04-05 806057-01	<0.02	<0.02	<0.02	<0.06	<2	100
B04-15 806057-03	<0.02	<0.02	<0.02	<0.06	<2	99
B04-25 806057-05	<0.02	<0.02	<0.02	<0.06	<2	83
B06-05 806057-06	<0.02	<0.02	<0.02	<0.06	<2	80
B06-10 806057-07	<0.02	<0.02	<0.02	<0.06	<2	98
B06-20 806057-08	<0.02	<0.02	<0.02	<0.06	<2	92
B07-10 806057-10	<0.02	<0.02	<0.02	<0.06	<2	91
B07-15 806057-11	<0.02	<0.02	<0.02	<0.06	<2	94
B07-20 806057-12	<0.02	<0.02	<0.02	<0.06	<2	89
Method Blank	<0.02	<0.02	<0.02	<0.06	<2	110

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/13/08

Date Received: 06/04/08

Project: SOU\_0670-001-01\_20080604, F&BI 806057

**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: 806057-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference (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	112	70-130
Toluene	mg/kg (ppm)	0.5	110	70-130
Ethylbenzene	mg/kg (ppm)	0.5	110	70-130
Xylenes	mg/kg (ppm)	1.5	110	70-130
Gasoline	mg/kg (ppm)	20	96	70-130

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### 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.
- A1 - More than one compound of similar molecule structure was identified with equal probability.
- 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 this range fell outside of acceptance criteria. The value reported is an estimate.
- c - The presence of the analyte indicated may be due to carryover from previous sample injections.
- d - The sample was diluted. Detection limits may be raised due to dilution.
- ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.
- dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.
- fb - The analyte indicated was found in the method blank. The result should be considered an estimate.
- 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. The variability is attributed to sample inhomogeneity.
- ht - The sample was extracted outside of holding time. Results should be considered estimates.
- ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.
- j - The result is below normal reporting limits. 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 analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.
- jr - The rpd result in laboratory control sample associated with the analyte is 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 compound indicated 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 in a container not approved by the method. The value reported should be considered an estimate.
- pr - The sample was received with incorrect preservation. The value reported should be considered an estimate.
- ve - The value reported exceeded the calibration range established for the analyte. The reported concentration should be considered an estimate.
- vo - The value reported fell outside the control limits established for this analyte.
- x - The pattern of peaks present is not indicative of diesel.
- y - The pattern of peaks present is not indicative of motor oil.

806057

**SAMPLE CHAIN OF CUSTODY**

ME 06-04-08 C03/V93

Send Report To Tom Connors  
 Company SES  
 Address 2400 Airport way S. Suite 200  
 City, State, ZIP Seattle, WA 98134  
 Phone # 206 306 1900 Fax # 206 306 1907

SAMPLERS (signature) <i>[Signature]</i>	
PROJECT NAME/NO. <u>Olympic Athletic club</u> <u>0670-001-01</u>	PO #
REMARKS	GEMS Y / N

Page # 1 of 1

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

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

Sample ID	Sample Location	Sample Depth	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	ANALYSES REQUESTED							Notes	
								NWTPH-Dx	NWTPH-Gx	BTEX by 8021B	VOC's by 8260	SVOC's by 8270	RCRA-8 Metals			
B04-05	B04	05	01A-E	6-4-08	0835	Soil	5		X	X						
B04-10	B04	10	02A-E		0850				X	X						Hold
B04-15	B04	15	03A-E	0900	0900				X	X						
B04-20	B04	20	04A-E	0915	0915				X	X						Hold
B04-25	B04	25	05A-E	0925	0925				X	X						
B06-05	B06	05	06A-E		1115				X	X						
B06-10	B06	10	07A-E		1125				X	X						
B06-20	B06	20	08A-E		1135				X	X						
B07-05	B07	05	09A-E		1410				X	X						Hold
B07-10	B07	10	10A-E		1415				X	X						
B07-15	B07	15	11A-E		1435				X	X						
B07-20	B07	20	12A-E		1445				X	X						

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

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: <i>[Signature]</i>	Robert A. Hansberger	SES	6-4-08	1645
Received by: <i>[Signature]</i>	Keranda Gerhart	F/K		
Relinquished by:				
Received by:				

Samples received at 14 °C

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

June 11, 2008

Tom Cammarata, Project Manager  
Sound Environmental Strategies Corporation  
2400 Airport Way S., Suite 200  
Seattle, WA 98134-2020

Dear Mr. Cammarata:

Included are the results from the testing of material submitted on June 6, 2008 from the SOU\_0670-001-01\_20080606, F&BI 806073 project. There are 4 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  
SOU0611R.DOC

FRIEDMAN & BRUYA, INC.

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ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on June 6, 2008 by Friedman & Bruya, Inc. from the Sound Environmental Strategies SOU\_0670-001-01\_20080606, F&BI 806073 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Sound Environmental Strategies</u>
806073-01	B08-05
806073-02	B08-10
806073-03	B08-15
806073-04	B08-20
806073-05	B08-25

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/11/08  
Date Received: 06/06/08  
Project: SOU\_0670-001-01\_20080606, F&BI 806073  
Date Extracted: 06/06/08  
Date Analyzed: 06/07/08

**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 mg/kg (ppm)

<u>Sample ID</u> Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl</u> <u>Benzene</u>	<u>Total</u> <u>Xylenes</u>	<u>Gasoline</u> <u>Range</u>	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 50-150)
B08-15 d 806073-03 1/50	<1	2.7	34	24	2,200	ip
B08-20 806073-04	<0.02	<0.02	<0.02	<0.06	<2	99
B08-25 806073-05	<0.02	<0.02	<0.02	<0.06	<2	84
Method Blank	<0.02	<0.02	<0.02	<0.06	<2	95

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/11/08

Date Received: 06/06/08

Project: SOU\_0670-001-01\_20080606, F&BI 806073

**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: 806068-07 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference (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	96	70-130
Toluene	mg/kg (ppm)	0.5	92	70-130
Ethylbenzene	mg/kg (ppm)	0.5	92	70-130
Xylenes	mg/kg (ppm)	1.5	93	70-130
Gasoline	mg/kg (ppm)	20	99	70-130

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### 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.
- A1 - More than one compound of similar molecule structure was identified with equal probability.
- 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 this range fell outside of acceptance criteria. The value reported is an estimate.
- c - The presence of the analyte indicated may be due to carryover from previous sample injections.
- d - The sample was diluted. Detection limits may be raised due to dilution.
- ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.
- dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.
- fb - The analyte indicated was found in the method blank. The result should be considered an estimate.
- 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. The variability is attributed to sample inhomogeneity.
- ht - The sample was extracted outside of holding time. Results should be considered estimates.
- ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.
- j - The result is below normal reporting limits. 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 analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.
- jr - The rpd result in laboratory control sample associated with the analyte is 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 compound indicated 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 in a container not approved by the method. The value reported should be considered an estimate.
- pr - The sample was received with incorrect preservation. The value reported should be considered an estimate.
- ve - The value reported exceeded the calibration range established for the analyte. The reported concentration should be considered an estimate.
- vo - The value reported fell outside the control limits established for this analyte.
- x - The pattern of peaks present is not indicative of diesel.
- y - The pattern of peaks present is not indicative of motor oil.

806 073

SAMPLE CHAIN OF CUSTODY

ME 06-06-08

152 / BI

Send Report To Tom Camarata

Company SES

Address 2400 A-put way

City, State, ZIP Seattle WA 98134

Phone # 206 306 1900 Fax # 206 306 1907

SAMPLERS (signature) [Signature]

PROJECT NAME/NO. Olympic Athletic Club  
0670-001-01

PO #

REMARKS

GEMS Y / N

Page # 1 of 1

TURNAROUND TIME

Standard (2 Weeks)

RUSH

Rush charges authorized by:

SAMPLE DISPOSAL

Dispose after 30 days

Return samples

Will call with instructions

Sample ID	Sample Location	Sample Depth	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	ANALYSES REQUESTED							Notes	
								NWTPH-Dx	NWTPH-Gx	BTEX by 8021B	VOC's by 8260	Full list SVOCs by 8270	RCRA-8 Metals	Lead		
B08-05	B08	05	01A-E	6-5-08	1135	Soil	5		X	X						Hold
B08-10		10	02A-E		1145		5		X	X		X	X			Hold
B08-15		15	03A-D		1150		5		X	X		X	X			Hold 8260 & Lead
B08-20		20	04A-E		1200		5		X	X		X	X			
B08-25		25	05A-E		1205		5		X	X		X	X			

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

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: <u>[Signature]</u>	Robert A. Hirschberger	SES	6-5-08	01600
Received by: <u>[Signature]</u>	Michael E-Lhl	FSB Inc	6-6-08	7:40AM
Relinquished by:				
Received by:				
Samples received at <u>6</u> °C				

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

July 7, 2008

Tom Cammarata, Project Manager  
Sound Environmental Strategies Corporation  
2400 Airport Way S., Suite 200  
Seattle, WA 98134-2020

Dear Mr. Cammarata:

Included are the results from the testing of material submitted on June 11, 2008 from the SOU\_0670-001-01\_20080611, F&BI 806119 project. There are 21 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  
SOU0707R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on June 11, 2008 by Friedman & Bruya, Inc. from the Sound Environmental Strategies SOU\_0670-001-01\_20080611, F&BI 806119 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Sound Environmental Strategies</u>
806119-01	MWD-20080610
806119-02	MW02-20080610
806119-03	MW04-20080610
806119-04	MW05-20080610
806119-05	MW06-20080610
806119-06	MW07-20080610
806119-07	MW08-20080610
806119-08	MW09-20080610
806119-09	MW10-20080610
806119-10	MW12-20080610
806119-11	MW13-20080610
806119-12	MW14-20080610
806119-13	MW01-20080610

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/07/08  
 Date Received: 06/11/08  
 Project: SOU\_0670-001-01\_20080611, F&BI 806119  
 Date Extracted: 06/12/08  
 Date Analyzed: 06/12/08, 06/13/08, 06/14/08, and 06/17/08

**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 ug/L (ppb)**

<u>Sample ID</u> Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl Benzene</u>	<u>Total Xylenes</u>	<u>Gasoline Range</u>	<u>Surrogate (% Recovery)</u> (Limit 52-124)
MWD-20080610 806119-01	<1	<1	<1	<3	<100	109
MW02-20080610 806119-02	6	9	8	7	770	88
MW05-20080610 d 806119-04 1/10	88	59	230	140	4,900	105
MW06-20080610 806119-05	32	30	18	45	3,100	ip
MW07-20080610 d 806119-06 1/10	78	79	590	2,200	10,000	123
MW08-20080610 806119-07	<1	<1	3	16	<100	116
MW09-20080610 806119-08	<1	<1	<1	<3	<100	95
MW10-20080610 806119-09	<1	<1	<1	<3	<100	93
MW12-20080610 806119-10	<1	<1	<1	<3	<100	84
MW13-20080610 806119-11	<1	<1	<1	<3	<100	89
MW14-20080610 806119-12	5	7	5	5	880	110

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/07/08

Date Received: 06/11/08

Project: SOU\_0670-001-01\_20080611, F&BI 806119

Date Extracted: 06/12/08

Date Analyzed: 06/12/08, 06/13/08, 06/14/08, and 06/17/08

**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 ug/L (ppb)**

<u>Sample ID</u> Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl Benzene</u>	<u>Total Xylenes</u>	<u>Gasoline Range</u>	<u>Surrogate (% Recovery)</u> (Limit 52-124)
MW01-20080610 d 806119-13 1/10	430	82	110	270	3,400	90
Method Blank	<1	<1	<1	<3	<100	89

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	MW09-20080610	Client:	Sound Environmental Strategies
Date Received:	06/11/08	Project:	SOU_0670-001-01_20080611
Date Extracted:	06/17/08	Lab ID:	806119-08
Date Analyzed:	06/17/08	Data File:	806119-08.063
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	hr

Internal Standard:	% Recovery:	Lower	Upper
Holmium	100	Limit:	Limit:
		60	125

Analyte:	Concentration
	ug/L (ppb)
Lead	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	MW10-20080610	Client:	Sound Environmental Strategies
Date Received:	06/11/08	Project:	SOU_0670-001-01_20080611
Date Extracted:	06/17/08	Lab ID:	806119-09
Date Analyzed:	06/17/08	Data File:	806119-09.066
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	hr

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	88	60	125

Analyte:	Concentration ug/L (ppb)
Lead	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	MW14-20080610	Client:	Sound Environmental Strategies
Date Received:	06/11/08	Project:	SOU_0670-001-01_20080611
Date Extracted:	06/17/08	Lab ID:	806119-12
Date Analyzed:	06/17/08	Data File:	806119-12.067
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	hr

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	91	60	125

Analyte:	Concentration ug/L (ppb)
Lead	2.14

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Sound Environmental Strategies
Date Received:	NA	Project:	SOU_0670-001-01_20080611
Date Extracted:	06/17/08	Lab ID:	I8-225 mb
Date Analyzed:	06/17/08	Data File:	I8-225 mb.060
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	hr

Internal Standard:	% Recovery:	Lower	Upper
Holmium	101	Limit:	Limit:
		60	125

Analyte:	Concentration
	ug/L (ppb)
Lead	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW09-20080610	Client:	Sound Environmental Strategies
Date Received:	06/11/08	Project:	SOU_0670-001-01_20080611
Date Extracted:	06/17/08	Lab ID:	806119-08
Date Analyzed:	06/17/08	Data File:	806119-08.027
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	hr

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	70	60	125

Analyte:	Concentration ug/L (ppb)
----------	-----------------------------

Lead	<1
------	----

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW10-20080610	Client:	Sound Environmental Strategies
Date Received:	06/11/08	Project:	SOU_0670-001-01_20080611
Date Extracted:	06/17/08	Lab ID:	806119-09
Date Analyzed:	06/17/08	Data File:	806119-09.028
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	hr

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	72	60	125

Analyte:	Concentration ug/L (ppb)
----------	-----------------------------

Lead	<1
------	----

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW14-20080610	Client:	Sound Environmental Strategies
Date Received:	06/11/08	Project:	SOU_0670-001-01_20080611
Date Extracted:	06/17/08	Lab ID:	806119-12
Date Analyzed:	06/17/08	Data File:	806119-12.029
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	hr

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	71	60	125

Analyte:	Concentration ug/L (ppb)
Lead	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Sound Environmental Strategies
Date Received:	NA	Project:	SOU_0670-001-01_20080611
Date Extracted:	06/17/08	Lab ID:	I8-217 mb
Date Analyzed:	06/17/08	Data File:	I8-217 mb.013
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	hr

Internal Standard:	% Recovery:	Lower	Upper
Holmium	93	Limit:	Limit:
		60	125

Analyte:	Concentration
	ug/L (ppb)
Lead	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260B

Client Sample ID:	MW09-20080610	Client:	Sound Environmental Strategies
Date Received:	06/11/08	Project:	SOU_0670-001-01_20080611
Date Extracted:	06/12/08	Lab ID:	806119-08
Date Analyzed:	06/12/08	Data File:	061213.D
Matrix:	Water	Instrument:	GCMS5
Units:	ug/L (ppb)	Operator:	MB

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Dibromofluoromethane	93	69	124
1,2-Dichloroethane-d4	98	67	131
Toluene-d8	90	73	132
4-Bromofluorobenzene	88	81	146

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### Analysis For Volatile Compounds By EPA Method 8260B

Client Sample ID:	MW10-20080610	Client:	Sound Environmental Strategies
Date Received:	06/11/08	Project:	SOU_0670-001-01_20080611
Date Extracted:	06/12/08	Lab ID:	806119-09
Date Analyzed:	06/12/08	Data File:	061214.D
Matrix:	Water	Instrument:	GCMS5
Units:	ug/L (ppb)	Operator:	MB

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Dibromofluoromethane	89	69	124
1,2-Dichloroethane-d4	96	67	131
Toluene-d8	89	73	132
4-Bromofluorobenzene	89	81	146

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### Analysis For Volatile Compounds By EPA Method 8260B

Client Sample ID:	MW14-20080610	Client:	Sound Environmental Strategies
Date Received:	06/11/08	Project:	SOU_0670-001-01_20080611
Date Extracted:	06/12/08	Lab ID:	806119-12
Date Analyzed:	06/12/08	Data File:	061215.D
Matrix:	Water	Instrument:	GCMS5
Units:	ug/L (ppb)	Operator:	MB

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Dibromofluoromethane	97	69	124
1,2-Dichloroethane-d4	104	67	131
Toluene-d8	97	73	132
4-Bromofluorobenzene	94	81	146

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260B

Client Sample ID:	Method Blank	Client:	Sound Environmental Strategies
Date Received:	NA	Project:	SOU_0670-001-01_20080611
Date Extracted:	06/12/08	Lab ID:	080880 mb
Date Analyzed:	06/12/08	Data File:	061207.D
Matrix:	Water	Instrument:	GCMS5
Units:	ug/L (ppb)	Operator:	MB

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Dibromofluoromethane	93	69	124
1,2-Dichloroethane-d4	100	67	131
Toluene-d8	94	73	132
4-Bromofluorobenzene	94	81	146

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/07/08

Date Received: 06/11/08

Project: SOU\_0670-001-01\_20080611, F&BI 806119

**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: 806105-37 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference (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	97	65-118
Toluene	ug/L (ppb)	50	98	72-122
Ethylbenzene	ug/L (ppb)	50	99	73-126
Xylenes	ug/L (ppb)	150	98	74-118
Gasoline	ug/L (ppb)	1,000	82	69-134

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/07/08

Date Received: 06/11/08

Project: SOU\_0670-001-01\_20080611, F&BI 806119

**QUALITY ASSURANCE RESULTS  
FOR THE ANALYSIS OF WATER SAMPLES  
FOR TOTAL METALS USING EPA METHOD 200.8**

Laboratory Code: 806119-08 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference	Acceptance Criteria
Lead	ug/L (ppb)	<1	<1	nm	0-20

Laboratory Code: 806119-08 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Lead	ug/L (ppb)	10	<1	102	50-150

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Lead	ug/L (ppb)	10	106	70-130

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/07/08

Date Received: 06/11/08

Project: SOU\_0670-001-01\_20080611, F&BI 806119

**QUALITY ASSURANCE RESULTS  
FOR THE ANALYSIS OF WATER SAMPLES  
FOR DISSOLVED METALS USING EPA METHOD 200.8**

Laboratory Code: 806039-02 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference	Acceptance Criteria
Lead	ug/L (ppb)	<1	<1	nm	0-20

Laboratory Code: 806039-02 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Lead	ug/L (ppb)	10	<1	96	50-150

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Lead	ug/L (ppb)	10	100	70-130

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/07/08

Date Received: 06/11/08

Project: SOU\_0670-001-01\_20080611, F&BI 806119

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

Laboratory Code: 806119-12 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference (Limit 20)
Vinyl chloride	ug/L (ppb)	<0.2	<0.2	nm
Chloroethane	ug/L (ppb)	<1	<1	nm
1,1-Dichloroethene	ug/L (ppb)	<1	<1	nm
Methylene chloride	ug/L (ppb)	<5	<5	nm
trans-1,2-Dichloroethene	ug/L (ppb)	<1	<1	nm
1,1-Dichloroethane	ug/L (ppb)	<1	<1	nm
cis-1,2-Dichloroethene	ug/L (ppb)	<1	<1	nm
1,2-Dichloroethane (EDC)	ug/L (ppb)	<1	<1	nm
1,1,1-Trichloroethane	ug/L (ppb)	<1	<1	nm
Trichloroethene	ug/L (ppb)	<1	<1	nm
Tetrachloroethene	ug/L (ppb)	<1	<1	nm

Laboratory Code: 806119-12 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Vinyl chloride	ug/L (ppb)	50	<0.2	106	35-159
Chloroethane	ug/L (ppb)	50	<1	98	19-172
1,1-Dichloroethene	ug/L (ppb)	50	<1	111	34-149
Methylene chloride	ug/L (ppb)	50	<5	100	64-126
trans-1,2-Dichloroethene	ug/L (ppb)	50	<1	101	65-131
1,1-Dichloroethane	ug/L (ppb)	50	<1	105	59-132
cis-1,2-Dichloroethene	ug/L (ppb)	50	<1	104	64-134
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	<1	106	67-133
1,1,1-Trichloroethane	ug/L (ppb)	50	<1	98	59-142
Trichloroethene	ug/L (ppb)	50	<1	102	71-121
Tetrachloroethene	ug/L (ppb)	50	<1	104	71-130

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/07/08

Date Received: 06/11/08

Project: SOU\_0670-001-01\_20080611, F&BI 806119

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

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Vinyl chloride	ug/L (ppb)	50	122	117	48-142	4
Chloroethane	ug/L (ppb)	50	114	95	28-161	18
1,1-Dichloroethene	ug/L (ppb)	50	118	118	61-127	0
Methylene chloride	ug/L (ppb)	50	106	106	56-136	0
trans-1,2-Dichloroethene	ug/L (ppb)	50	111	108	78-118	3
1,1-Dichloroethane	ug/L (ppb)	50	111	110	78-117	1
cis-1,2-Dichloroethene	ug/L (ppb)	50	111	109	81-118	2
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	109	109	74-128	0
1,1,1-Trichloroethane	ug/L (ppb)	50	123	120	70-135	2
Trichloroethene	ug/L (ppb)	50	111	110	80-114	1
Tetrachloroethene	ug/L (ppb)	50	113	112	83-115	1

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### 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.
- A1 - More than one compound of similar molecule structure was identified with equal probability.
- 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 this range fell outside of acceptance criteria. The value reported is an estimate.
- c - The presence of the analyte indicated may be due to carryover from previous sample injections.
- d - The sample was diluted. Detection limits may be raised due to dilution.
- ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.
- dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.
- fb - The analyte indicated was found in the method blank. The result should be considered an estimate.
- 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. The variability is attributed to sample inhomogeneity.
- ht - The sample was extracted outside of holding time. Results should be considered estimates.
- ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.
- j - The result is below normal reporting limits. 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 analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.
- jr - The rpd result in laboratory control sample associated with the analyte is 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 compound indicated 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 in a container not approved by the method. The value reported should be considered an estimate.
- pr - The sample was received with incorrect preservation. The value reported should be considered an estimate.
- ve - The value reported exceeded the calibration range established for the analyte. The reported concentration should be considered an estimate.
- vo - The value reported fell outside the control limits established for this analyte.
- x - The pattern of peaks present is not indicative of diesel.
- y - The pattern of peaks present is not indicative of motor oil.

806118 (H) 806119

SAMPLE CHAIN OF CUSTODY

ME 6/11/08

AI5/V3

Send Report To Tom Cammarata  
 Company Sound Environmental Strategies  
 Address 2400 Airport Way South, Suite 200  
 City, State, ZIP Seattle, WA 98134  
 Phone # 206.306.1900 Fax # 306.1907

SAMPLERS (signature) <u>L. Namba, E. Baggett</u>	
PROJECT NAME/NO. <u>Olympic Athletic club</u> <u>0670-001-01</u>	PO #
REMARKS <u>Laboratory to filter and preserved Dissolved Pb Samples</u>	GEMS (V) / N

Page # 1 of 2

TURNAROUND TIME	
<input type="checkbox"/> Standard (2 Weeks)	<input checked="" type="checkbox"/> RUSH 7 day
Rush charges authorized by: <u>Tom Camarrata</u>	
SAMPLE DISPOSAL	
<input checked="" type="checkbox"/> Dispose after 30 days	<input type="checkbox"/> Return samples
<input type="checkbox"/> Will call with instructions	

Sample ID	Sample Location	Sample Depth	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	ANALYSES REQUESTED							Notes		
								NW1PH-Dx	NW1PH-Gx	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	Chlorinated Solvents	Total Pb (6010/6020)		Dissolved Pb (6010/6020)	
MW01-20080610	MW-D	-	01 <sup>A-C</sup>	06/10/08	1635	water	3		✓	✓							
<del>MW01-20080610</del>	<del>MW-01</del>	-		<del>06/10/08</del>	<del>1533</del>	<del>water</del>	<del>3</del>		✓	✓							No sample 6/11/08
MW02-20080610	MW-02	-	02 <sup>A-C</sup>	06/10/08	1410	water	3		✓	✓							
<del>MW03-20080610</del>	<del>MW-03</del>	-		<del>06/10/08</del>	<del>e</del>												No sample
MW04-20080610	MW-04	-	03 <sup>A-C</sup>	06/10/08	1744	water	3		✓	✓							Hold -04 per LN
MW05-20080610	MW-05	-	04 <sup>A-C</sup>	06/10/08	1836	water	3		✓	✓							
MW06-20080610	MW-06	-	05 <sup>A-C</sup>	06/10/08	1705	water	3		✓	✓							
MW07-20080610	MW-07	-	06 <sup>A-C</sup>	06/10/08	1616	water	3		✓	✓							
MW08-20080610	MW-08	-	07 <sup>A-C</sup>	06/10/08	1729	water	3		✓	✓							
MW09-20080610	MW-09	-	08 <sup>A-F</sup>	06/10/08	1808	water	8		✓	✓		✓	✓	✓			
MW10-20080610	MW-10	-	09 <sup>A-F</sup>	06/10/08	1453	water	8		✓	✓		✓	✓	✓			
MW12-20080610	MW-12	-	10 <sup>A-F</sup>	06/10/08	1153	water	3.3		✓	✓							extra 3 sample 6/11/08
MW13-20080610	MW-13	-	11 <sup>A-C</sup>	06/10/08	1858	water	3		✓	✓							

Friedman & Bruya, Inc.  
 3012 16th Avenue West  
 Seattle, WA 98119-  
 0000  
 Ph. (206) 285-8282  
 Fax (206) 283-5044

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: <u>Larry Namba</u>	<u>Larry Namba</u>	<u>SES</u>	<u>06/11/08</u>	<u>1327</u>
Received by: <u>H. Rankin</u>	<u>H. Rankin</u>	<u>FBI</u>	<u>6/11/08</u>	<u>1327</u>
Relinquished by:				
Received by:				

~~806119~~ (HA) 806119

**SAMPLE CHAIN OF CUSTODY**

ME 6/11/08 AI5/13

Send Report To Tom Camarrata

Company Sand Environmental Strategies

Address 2400 Airport Way, Suite 200

City, State, ZIP Seattle, WA

Phone # 206.306.1900 Fax # 306.1907

SAMPLERS (signature) <u>L. Namba, E. Baggett</u>	
PROJECT NAME/NO. <u>Olympic Athletic Club</u> <u>0670-001-01</u>	PO #
REMARKS <u>Laboratory to filter and</u> <u>preserve dissolved Pb samples</u>	GEMS <u>Y</u> N

Page # 2 of 2

**TURNAROUND TIME**

Standard (2 Weeks)

RUSH 7 day

Rush charges authorized by:  
Tom Camarrata

**SAMPLE DISPOSAL**

Dispose after 30 days

Return samples

Will call with instructions

Sample ID	Sample Location	Sample Depth	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	ANALYSES REQUESTED								Notes
								NWTPH-Dx	NWTPH-Gx	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	2-chlorinated solvents	Total Pb (6010/6020)	Dissolved Pb (6010/6020)	
MW14-20080610	MW-14	—	12 <sup>A-H</sup>	06/10/08	1302	water	8		✓	✓			✓	✓	✓	
MW01-20080610			13 <sup>A-C</sup>	6/10/08	15-33	✓	3		✓	✓						Add 6/11/08 (HA)

Friedman & Bruya, Inc.  
3012 16th Avenue West  
Seattle, WA 98119-2000  
Ph. (206) 285-8282  
Fax (206) 283-5044

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: <u>Larry Namba</u>	<u>Larry Namba</u>	<u>SES</u>	<u>06/11/08</u>	<u>1327</u>
Received by: <u>H. Rankin</u>	<u>H. Rankin</u>	<u>FBI</u>	<u>6/11/08</u>	<u>L</u>
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

July 15, 2008

Tom Cammarata, Project Manager  
Sound Environmental Strategies Corporation  
2400 Airport Way S., Suite 200  
Seattle, WA 98134-2020

Dear Mr. Cammarata:

Included are the results from the testing of material submitted on July 3, 2008 from the SOU\_0670-001-01\_20080703, F&BI 807036 project. There are 4 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  
SOU0715R.DOC

FRIEDMAN & BRUYA, INC.

---

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on July 3, 2008 by Friedman & Bruya, Inc. from the Sound Environmental Strategies SOU\_0670-001-01\_20080703, F&BI 807036 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Sound Environmental Strategies</u>
807036-01	MW3-20080702
807036-02	MW11-20080702

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/15/08  
Date Received: 07/03/08  
Project: SOU\_0670-001-01\_20080703, F&BI 807036  
Date Extracted: 07/03/08  
Date Analyzed: 07/03/08

**RESULTS FROM THE ANALYSIS OF VAPOR SAMPLES  
FOR BENZENE, TOLUENE, ETHYLBENZENE,  
XYLENES AND TPH AS GASOLINE  
USING MODIFIED EPA METHOD 8021B AND NWTPH-Gx**  
Results Reported as mg/m<sup>3</sup>

<u>Sample ID</u> Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl Benzene</u>	<u>Total Xylenes</u>	<u>Gasoline Range</u>	<u>Surrogate (% Recovery)</u> (Limit 50-150)
MW3-20080702 d 807036-01 1/10	<0.1	19	61	69	24,000 ve	100
MW11-20080702 807036-02	<0.1	57 ve	100 ve	88 ve	29,000 ve	ip
Method Blank	<0.1	<0.1	<0.1	<0.3	<10	87

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/15/08

Date Received: 07/03/08

Project: SOU\_0670-001-01\_20080703, F&BI 807036

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

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent	Percent	Acceptance Criteria	RPD (Limit 20)
			Recovery LCS	Recovery LCSD		
Benzene	mg/m <sup>3</sup>	5.0	88	86	70-130	2
Toluene	mg/m <sup>3</sup>	5.0	88	86	70-130	2
Ethylbenzene	mg/m <sup>3</sup>	5.0	81	80	70-130	1
Xylenes	mg/m <sup>3</sup>	15	89	87	70-130	2
Gasoline	mg/m <sup>3</sup>	100	105	87	70-130	19

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### 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.

A1 - More than one compound of similar molecule structure was identified with equal probability.

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 this range fell outside of acceptance criteria. The value reported is an estimate.

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

d - The sample was diluted. Detection limits may be raised due to dilution.

ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.

dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.

fb - The analyte indicated was found in the method blank. The result should be considered an estimate.

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. The variability is attributed to sample inhomogeneity.

ht - The sample was extracted outside of holding time. Results should be considered estimates.

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

j - The result is below normal reporting limits. 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 analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.

jr - The rpd result in laboratory control sample associated with the analyte is 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 compound indicated 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 in a container not approved by the method. The value reported should be considered an estimate.

pr - The sample was received with incorrect preservation. The value reported should be considered an estimate.

ve - The value reported exceeded the calibration range established for the analyte. The reported concentration should be considered an estimate.

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

x - The pattern of peaks present is not indicative of diesel.

y - The pattern of peaks present is not indicative of motor oil.

807036

SAMPLE CHAIN OF CUSTODY

ME 07-03-08

Send Report To Tom Cammarata  
 Company SES  
 Address 2400 AIRPORT WAY S, STE 200  
 City, State, ZIP SEATTLE, WA 98134  
 Phone # 206-306-1900 Fax # 206-306-1907

SAMPLERS (signature) [Signature]  
 PROJECT NAME/NO. OLYMPIC ATHLETIC CLUB PO #  
0670-001-01  
 REMARKS \* VAPOR SAMPLES GEMS Y / N

Page # 1 of 1  
 TURNAROUND TIME  
 Standard (2 Weeks)  
 RUSH  
 Rush charges authorized by:  
 SAMPLE DISPOSAL  
 Dispose after 30 days  
 Return samples  
 Will call with instructions

Sample ID	Sample Location	Sample Depth	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	ANALYSES REQUESTED						Notes	
								NWTPH-Dx	NWTPH-Gx	BTEX by 8021B	VOC's by 8260	SVOC's by 8270	RCRA-8 Metals		
MW3-20080702	MW-3	-	01A-8	7/2/08	1250	AIR	2		X	X					
MW11-20080702	MW-11	-	02A-13	7/2/08	1515	AIR	2		X	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: <u>[Signature]</u>	Suzanne Reilly	SES	7/2/08	2008
Received by: <u>[Signature]</u>	Michael Erlich	FEI	7/2/08	7:45 AM
Relinquished by:				
Received by:				Samples received at <u>24</u> °C

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

September 17, 2008

Tom Cammarata, Project Manager  
Sound Environmental Strategies Corporation  
2400 Airport Way S., Suite 200  
Seattle, WA 98134-2020

Dear Mr. Cammarata:

Included are the results from the testing of material submitted on September 9, 2008 from the SOU\_0670-001-01\_20080909, F&BI 809073 project. There are 4 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  
SOU0917R.DOC

FRIEDMAN & BRUYA, INC.

---

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on September 9, 2008 by Friedman & Bruya, Inc. from the Sound Environmental Strategies SOU\_0670-001-01\_20080909, F&BI 809073 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID  
809073-01

Sound Environmental Strategies  
MW11-20080909

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 09/17/08

Date Received: 09/09/08

Project: SOU\_0670-001-01\_20080909, F&BI 809073

Date Extracted: 09/12/08

Date Analyzed: 09/12/08

**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 ug/L (ppb)**

<u>Sample ID</u> Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl Benzene</u>	<u>Total Xylenes</u>	<u>Gasoline Range</u>	<u>Surrogate (% Recovery)</u> (Limit 52-124)
MW11-20080909 809073-01	3	10	6	9	1,100	111
Method Blank	<1	<1	<1	<3	<100	81

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 09/17/08

Date Received: 09/09/08

Project: SOU\_0670-001-01\_20080909, F&BI 809073

**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: 809073-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference (Limit 20)
Benzene	ug/L (ppb)	3	3	5
Toluene	ug/L (ppb)	10	10	0
Ethylbenzene	ug/L (ppb)	6	6	0
Xylenes	ug/L (ppb)	9	9	0
Gasoline	ug/L (ppb)	1,100	1,100	0

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/L (ppb)	50	96	65-118
Toluene	ug/L (ppb)	50	99	72-122
Ethylbenzene	ug/L (ppb)	50	101	73-126
Xylenes	ug/L (ppb)	150	99	74-118
Gasoline	ug/L (ppb)	1,000	95	69-134

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### 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.
- A1 - More than one compound of similar molecule structure was identified with equal probability.
- 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 this range fell outside of acceptance criteria. The value reported is an estimate.
- c - The presence of the analyte indicated may be due to carryover from previous sample injections.
- d - The sample was diluted. Detection limits may be raised due to dilution.
- ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.
- dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.
- fb - The analyte indicated was found in the method blank. The result should be considered an estimate.
- 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. The variability is attributed to sample inhomogeneity.
- ht - The sample was extracted outside of holding time. Results should be considered estimates.
- ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.
- j - The result is below normal reporting limits. 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 analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.
- jr - The rpd result in laboratory control sample associated with the analyte is 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 compound indicated 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 in a container not approved by the method. The value reported should be considered an estimate.
- pr - The sample was received with incorrect preservation. The value reported should be considered an estimate.
- ve - The value reported exceeded the calibration range established for the analyte. The reported concentration should be considered an estimate.
- vo - The value reported fell outside the control limits established for this analyte.
- x - The pattern of peaks present is not indicative of diesel.
- y - The pattern of peaks present is not indicative of motor oil.

809073

SAMPLE CHAIN OF CUSTODY

ME 9/9/08 VZ

Send Report To Tom Cammarada  
 Company SES  
 Address 2400 Airport Way S  
 City, State, ZIP Seattle, WA  
 Phone # 206-306-8900 Fax #

SAMPLERS (Signature) [Signature]  
 PROJECT NAME/NO. Olympia Athletic Club PO # 0670-00-01  
 REMARKS

Page # 1 of 1  
**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							Notes
						TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS	6x/16TEX	
www 11-20080909	01 A-D	9-9-08	1340	W	4							X	
<del>_____</del>													

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

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: <u>[Signature]</u>	<u>Gene Singer</u>	<u>SES</u>	<u>9-9-08</u>	<u>1505</u>
Received by: <u>[Signature]</u>	<u>Paul Benson</u>	<u>FABT</u>	<u>9-9-08</u>	<u>1505</u>
Relinquished by:				
Received by:				

**APPENDIX C**  
**Terrestrial Ecological Evaluation Form**

OAC 11/11/08

Table 749-1

Simplified Terrestrial Ecological Evaluation-Exposure Analysis Procedure

Estimate the area of contiguous (connected) <u>undeveloped land</u> on the site or within 500 feet of any area of the site to the nearest 1/2 acre (1/4 acre if the area is less than 0.5 acre).		0																				
1) From the table below, find the number of points corresponding to the area and enter this number in the field to the right.																						
	<table border="1"> <thead> <tr> <th>Area (acres)</th> <th>Points</th> </tr> </thead> <tbody> <tr> <td>0.25 or less</td> <td>4</td> </tr> <tr> <td>0.5</td> <td>5</td> </tr> <tr> <td>1.0</td> <td>6</td> </tr> <tr> <td>1.5</td> <td>7</td> </tr> <tr> <td>2.0</td> <td>8</td> </tr> <tr> <td>2.5</td> <td>9</td> </tr> <tr> <td>3.0</td> <td>10</td> </tr> <tr> <td>3.5</td> <td>11</td> </tr> <tr> <td>4.0 or more</td> <td>12</td> </tr> </tbody> </table>	Area (acres)	Points	0.25 or less	4	0.5	5	1.0	6	1.5	7	2.0	8	2.5	9	3.0	10	3.5	11	4.0 or more	12	4
Area (acres)	Points																					
0.25 or less	4																					
0.5	5																					
1.0	6																					
1.5	7																					
2.0	8																					
2.5	9																					
3.0	10																					
3.5	11																					
4.0 or more	12																					
2) Is this an <u>industrial</u> or <u>commercial</u> property? If yes, enter a score of 3. If no, enter a score of 1		3																				
3) <sup>a</sup> Enter a score in the box to the right for the habitat quality of the site, using the following rating system <sup>b</sup> . High=1, Intermediate=2, Low=3		3 (1)																				
4) Is the undeveloped land likely to attract wildlife? If yes, enter a score of 1 in the box to the right. If no, enter a score of 2. <sup>c</sup>		2 (1)																				
5) Are there any of the following soil contaminants present: Chlorinated dioxins/furans, PCB mixtures, DDT, DDE, DDD, aldrin, chlordane, dieldrin, endosulfan, endrin, heptachlor, benzene hexachloride, toxaphene, hexachlorobenzene, pentachlorophenol, pentachlorobenzene? If yes, enter a score of 1 in the box to the right. If no, enter a score of 4.		4																				
6) Add the numbers in the boxes on lines 2-5 and enter this number in the box to the right. If this number is larger than the number in the box on line 1, the simplified evaluation may be ended.		12 9																				

Notes for Table 749-1

<sup>a</sup> It is expected that this habitat evaluation will be undertaken by an experienced field biologist. If this is not the case, enter a conservative score of (1) for questions 3 and 4.

<sup>b</sup> **Habitat rating system.** Rate the quality of the habitat as high, intermediate or low based on your professional judgment as a field biologist. The following are suggested factors to consider in making this evaluation:

**Low:** Early successional vegetative stands; vegetation predominantly noxious, nonnative, exotic plant species or weeds. Areas severely disturbed by human activity, including intensively cultivated croplands. Areas isolated from other habitat used by wildlife.

***Groundwater Monitoring and Sampling Report  
Second Quarter 2009***



August 17, 2009

Mr. Jim Riggle  
James R. Property, LLC  
5301 Leary Avenue Northwest  
Seattle, Washington 98107

**SUBJECT: GROUNDWATER MONITORING AND SAMPLING REPORT  
SECOND QUARTER 2009  
Olympic Athletic Club  
5301 Leary Avenue Northwest  
Seattle, Washington**

Dear Mr. Riggle:

Sound Environmental Strategies Corporation (SES) has prepared this letter report to present the results of the Second Quarter 2009 groundwater monitoring and sampling event conducted at the Olympic Athletic Club located at 5301 Leary Avenue Northwest in Seattle, Washington (herein referred to as the Property), as shown on Figure 1. As established in Section 200 of Chapter 173-340 of the Washington Administrative Code (WAC 173-340-200), the "Site" is defined by the full lateral and vertical extent of contamination that resulted from the former operation of a retail gasoline service station on the Property. The Second Quarter 2009 groundwater monitoring and sampling event was performed as part of ongoing compliance monitoring to evaluate the environmental quality and flow direction of groundwater beneath the Site. The monitoring and sampling event was conducted in accordance with the *Proposal for Supplemental Groundwater Monitoring and Sampling, 5301 Leary Avenue Northwest, Seattle, Washington*, prepared by SES and dated May 11, 2009. This report documents the field activities performed at the Site during the groundwater monitoring and sampling event, and includes the laboratory analytical results for groundwater samples, our conclusions, and a description of future work.

The Second Quarter 2009 groundwater monitoring and sampling event was conducted on June 25, 2009. This work included measuring the depth to groundwater at accessible groundwater monitoring wells, monitoring field parameters, and collecting groundwater samples for laboratory analysis. Details of field activities and analytical results for the Second Quarter 2009 groundwater monitoring event are presented below.

## **FIELD ACTIVITIES**

Upon arrival at the Site on June 25, 2009, SES removed the caps from monitoring wells MW01 through MW07, MW09 through MW14, and MW-D (Figure 2). Monitoring well MW08 could not be located. The groundwater in each monitoring well was allowed a minimum of 15 minutes to equilibrate with atmospheric pressure prior to collecting static groundwater level measurements.

Groundwater levels were measured to an accuracy of 0.01 feet using an electronic water level indicator. Purging and sampling of each monitoring well was performed using a peristaltic pump and dedicated polyethylene tubing, and in accordance with United States Environmental Protection Agency (EPA) guidance on low-flow sampling protocols. Measured flow rates ranged from 50 to 100 milliliters per minute. The pump tubing intake was placed a minimum of 2 feet below the static groundwater level in the monitoring well. During purging, parameters were monitored using a HORIBA U-22 water quality meter (or equivalent) equipped with a flow-through cell. The water quality parameters that were monitored and recorded included temperature, pH, specific conductance, dissolved oxygen, turbidity, and oxidation-reduction potential; additionally, groundwater levels and flow rates were monitored and recorded. Each monitoring well was purged until, at a minimum, pH, specific conductance, and dissolved oxygen or turbidity stabilized. The presence or absence of separate-phase hydrocarbon (SPH) was measured at monitoring wells MW03, MW04, and MW07 using a Solinst oil/water interface probe.

Once stabilization of low-flow parameters was achieved at each well, the tubing was disconnected from the flow-through cell and groundwater was collected from the pump outlet into laboratory-prepared sample containers. The sample containers were placed on ice in a cooler and transported for analysis to Friedman & Bruya, Inc. of Seattle, Washington, under standard chain-of-custody protocols for laboratory analysis.

Purge water generated during the Second Quarter 2009 groundwater monitoring and sampling event was placed in a labeled 55-gallon steel drum and temporarily stored on the Site pending disposal. Upon receipt of laboratory analytical data for groundwater samples, purge water will be disposed of in accordance with applicable Washington State Dangerous Waste Regulations, WAC 173-303.

## **LABORATORY ANALYSIS**

Groundwater samples were submitted for analysis of gasoline-range petroleum hydrocarbons (GRPH) by Northwest Total Petroleum Hydrocarbon (NWTPH) Method NWTPH-Gx and benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method 8021B.

## **RESULTS**

Depth to groundwater at the Site ranged from 8.95 feet below top of casing elevation (TOC) at monitoring well MW13 to 18.08 feet below TOC at monitoring well MW03. The groundwater elevation ranged from 25.82 feet at monitoring well MW13 to 28.49 feet at monitoring well MW-D (Table 1). Based on depth-to-groundwater measurements taken from monitoring wells on June 25, 2009, the direction of groundwater flow at the Site is toward the southwest. The hydraulic gradient at the Site ranges from 0.02 feet per foot on the northern portion of the Site to 0.004 feet per foot on the southern portion of the Site (Figure 2).

Analytical results for GRPH and BTEX for Second Quarter 2009 and from previous groundwater monitoring and sampling events are presented on Figure 3 and in Table 2. Groundwater samples were not collected from monitoring wells MW03, MW04, or MW07 because SPH was present on the groundwater in these monitoring wells. Analytical results from the Second Quarter 2009 groundwater monitoring and sampling event are as follows:

- Concentrations of GRPH exceeded the Washington State Model Toxics Control Act (MTCA) Method A cleanup level in the groundwater samples collected from monitoring wells MW01, MW05, MW06, and MW11 (Figure 3, Table 2). Concentrations of other GRPH in all remaining groundwater samples submitted for analysis were below the laboratory reporting limit and/or the MTCA Method A cleanup level (Table 2).
- Concentrations of benzene exceeded the MTCA Method A cleanup levels in the groundwater samples collected from monitoring wells MW01 and MW05 (Figure 3, Table 2). Concentrations of BTEX in all remaining groundwater samples submitted for analysis were below the laboratory reporting limit and/or applicable MTCA Method A cleanup levels (Table 2).

SPH was measured on the groundwater at monitoring wells MW03, MW04, and MW07 at thicknesses of 3.06, 0.80, and 0.27 feet, respectively (Table 2). Considering the presence of SPH, groundwater in these monitoring wells was presumed to contain concentrations of GRPH and BTEX in excess of their respective MTCA Method A cleanup levels.

#### DATA QUALITY REVIEW

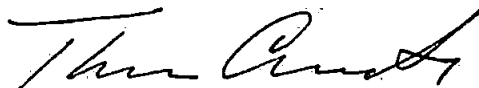
SES performed a quality assurance/quality control (QA/QC) review of the analytical results, which included a review of the accuracy and precision of data supplied by the laboratory. Laboratory QA/QC data were within laboratory supplied control limits. A copy of the laboratory analytical report is provided in Attachment A.

#### FUTURE WORK

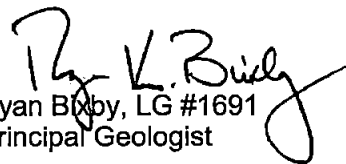
SES will conduct the Third Quarter 2009 groundwater monitoring and sampling event at the Site in late August or early September 2009, the results of which will be included in a groundwater monitoring report.

Respectfully,

**Sound Environmental Strategies Corporation**



Tom Cammarata, LG, LHG #196  
Senior Geochemist

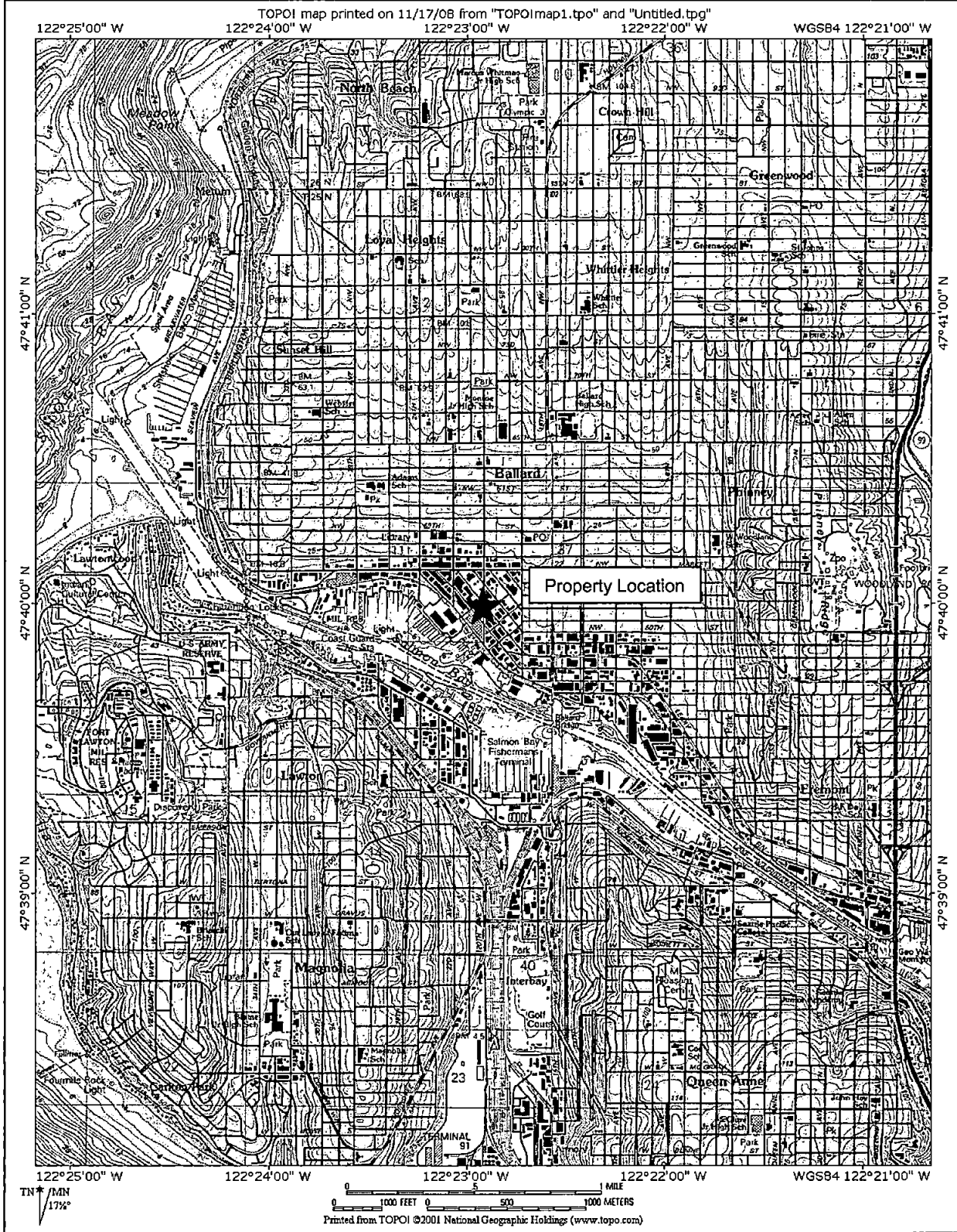


Ryan Bixby, LG #1691  
Principal Geologist

Attachments: Figure 1, Property Location Map  
Figure 2, Groundwater Elevation Contour Map (June 25, 2009)  
Figure 3, GRPH and BTEX Concentrations in Groundwater  
Table 1, Summary of Groundwater Elevation Data  
Table 2, Summary of Groundwater Analytical Results  
Attachment A, Laboratory Analytical Report  
*Friedman & Bruya, Inc. 906262*

cc: Mr. Barry Ziker, Salter Joyce Ziker, PLLC

## FIGURES



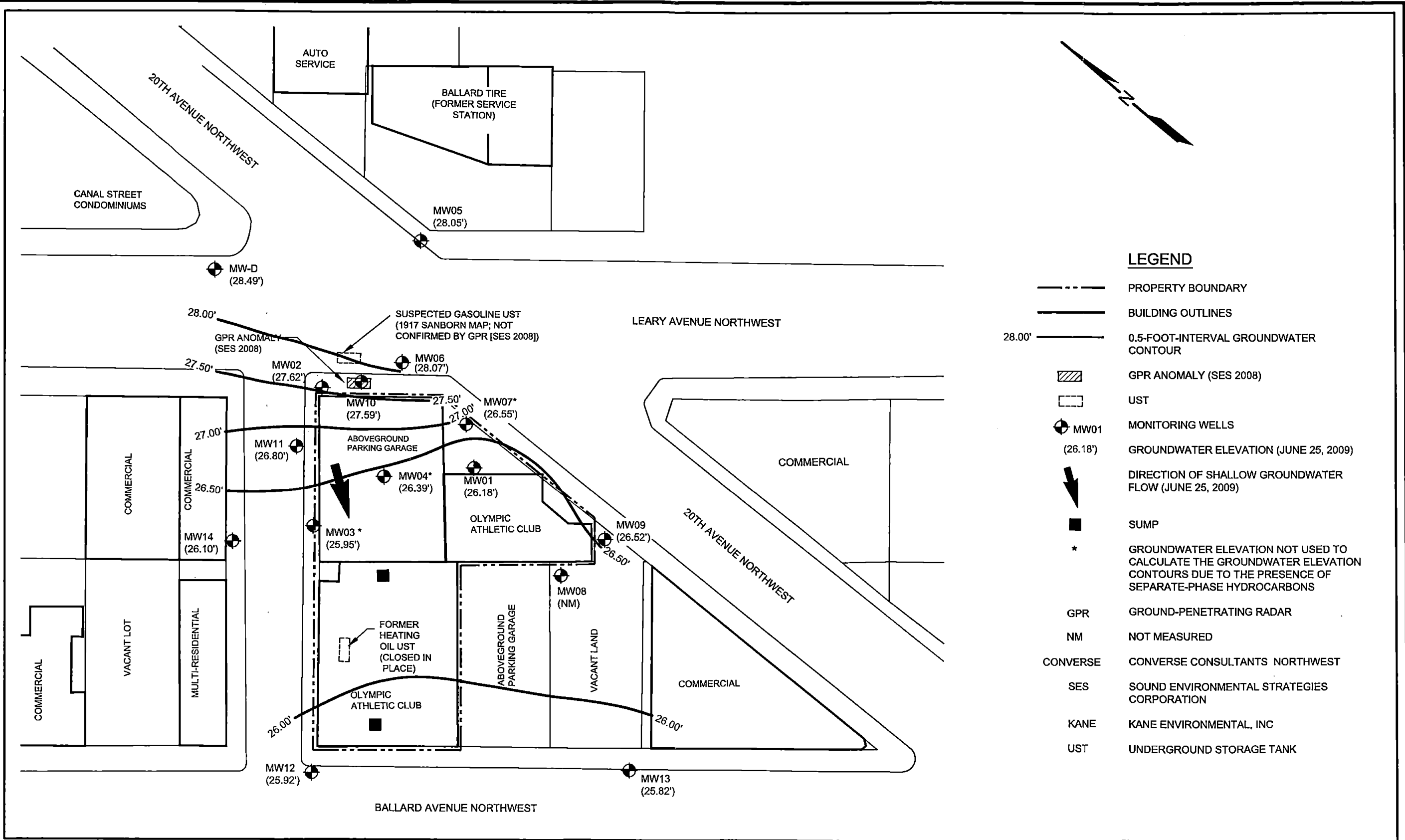
Date: November 17, 2008  
 Drawn By: JQC  
 Chk By: TJC  
 SES Project No.: 0670-001  
 File ID: 0670-001-FIG1-TO

**Olympic Athletic Club**  
 5301 Leary Avenue Northwest  
 Seattle, Washington

**FIGURE 1**  
 Property Location Map

8/10/2009

P:\0670 Olympic Athletic Club\Technical\CAD\2009Q2\0670\_2009Q2\_CM\_E.dwg



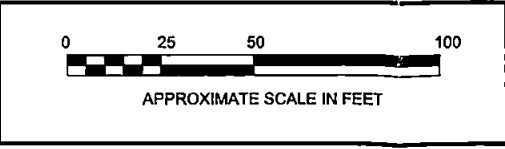
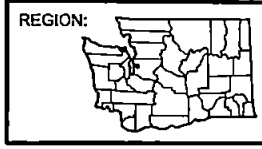
**LEGEND**

- PROPERTY BOUNDARY
- BUILDING OUTLINES
- 0.5-FOOT-INTERVAL GROUNDWATER CONTOUR
- ▨ GPR ANOMALY (SES 2008)
- ▭ UST
- ⊕ MW01 (26.18')
- ⊕ GROUNDWATER ELEVATION (JUNE 25, 2009)
- ➔ DIRECTION OF SHALLOW GROUNDWATER FLOW (JUNE 25, 2009)
- SUMP
- \* GROUNDWATER ELEVATION NOT USED TO CALCULATE THE GROUNDWATER ELEVATION CONTOURS DUE TO THE PRESENCE OF SEPARATE-PHASE HYDROCARBONS
- GPR GROUND-PENETRATING RADAR
- NM NOT MEASURED
- CONVERSE CONVERSE CONSULTANTS NORTHWEST
- SES SOUND ENVIRONMENTAL STRATEGIES CORPORATION
- KANE KANE ENVIRONMENTAL, INC
- UST UNDERGROUND STORAGE TANK



DATE: .....07/22/09  
 DRAWN BY: .....RLH/JQC  
 CHECKED BY: .....TJC  
 CAD FILE: .....0670\_2009Q2\_CM

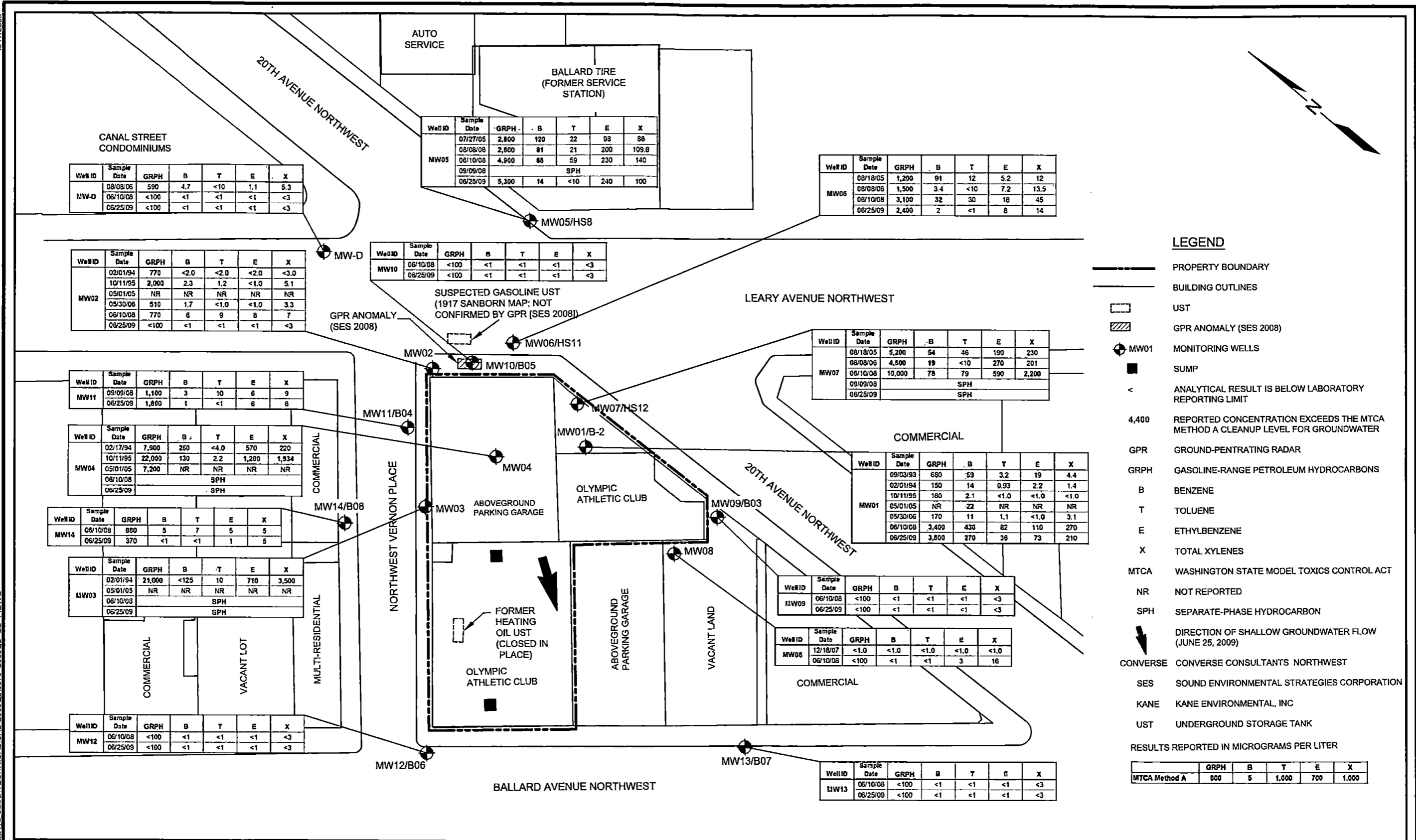
PROJECT NAME: .....OLYMPIC ATHLETIC CLUB  
 SES PROJECT NUMBER: .....0670-001  
 STREET ADDRESS: .....5301 LEARY AVENUE NORTHWEST  
 CITY, STATE: .....SEATTLE, WASHINGTON



**FIGURE 2**  
 GROUNDWATER ELEVATION CONTOUR MAP  
 (JUNE 25, 2009)

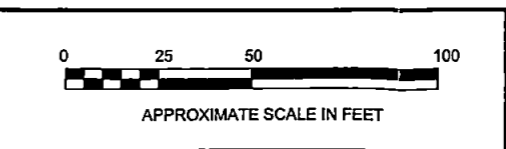
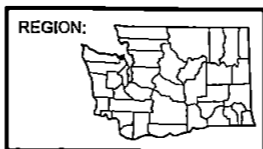
8/17/2009

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DATE: 07/24/09  
 DRAWN BY: NAC  
 CHECKED BY: TJC  
 CAD FILE: 0670\_2009Q2\_GD

PROJECT NAME: OLYMPIC ATHLETIC CLUB  
 SES PROJECT NUMBER: 0670-001  
 STREET ADDRESS: 5301 LEARY AVENUE NORTHWEST  
 CITY, STATE: SEATTLE, WASHINGTON



**FIGURE 3**  
 GRPH AND BTEX  
 CONCENTRATIONS IN GROUNDWATER

8/17/2009

## **TABLES**

**Table 1**  
**Summary of Groundwater Elevation Data**  
**Olympic Athletic Club**  
**5301 Leary Avenue Northwest**  
**Seattle, Washington**

Well ID <sup>1</sup>	Date Measured	Depth to Groundwater <sup>2</sup> (feet)	Depth to SPH <sup>2</sup> (feet)	SPH Thickness <sup>3</sup> (feet)	Groundwater Elevation <sup>4</sup> (feet)
MW01 TOC: 40.90	09/01/93	12.12	--	0.00	28.78
	10/11/95	12.22	--	0.00	28.68
	05/30/06	13.20	--	0.00	27.70
	08/02/06	12.83	--	0.00	28.07
	05/01/07	14.55	--	0.00	26.35
	01/18/08	14.22	--	0.00	26.68
	06/24/08	14.72	--	0.00	26.18
	06/25/09	14.72	--	0.00	26.18
MW02 TOC: 43.56	02/01/94	14.14	--	0.00	29.42
	10/11/95	13.87	--	0.00	29.69
	05/30/06	14.63	--	0.00	28.93
	08/02/06	14.46	--	0.00	29.10
	05/01/07	15.79	--	0.00	27.77
	01/18/08	15.79	--	0.00	27.77
	06/24/08	16.00	--	0.00	27.56
	09/09/08	16.26	--	0.00	27.30
	06/25/09	15.94	--	0.00	27.62
MW03 TOC: 41.73	02/01/94	13.04	--	0.00	28.69
	10/11/95	14.51	--	0.00	27.22
	05/01/05	-	--	1.13	--
	05/30/06	14.76	13.94	0.82	27.59
	08/02/06	15.49	14.53	0.96	26.96
	05/01/07	20.60	15.94	2.66	23.13
	01/18/08	18.24	14.79	1.97	24.97
	06/24/08	17.96	15.06	2.90	25.95
	09/09/08	18.59	15.35	3.24	25.57
	06/25/09	18.08	15.02	3.06	25.95
MW04 TOC: 41.41	02/17/94	12.60	--	0.00	28.81
	10/11/95	12.62	--	0.00	28.79
	05/30/06	13.50	13.47	0.04	27.94
	08/02/06	14.34	14.20	0.18	27.21
	05/01/07	16.24	15.80	0.25	25.36
	01/18/08	14.56	--	0.00	26.85
	06/24/08	15.15	15.01	0.14	26.37
	09/09/08	15.60	15.37	0.23	25.98
	06/25/09	15.62	14.82	0.80	26.39
MW05 TOC: 45.19	08/02/06	15.76	--	0.00	29.43
	05/01/07	16.61	--	0.00	28.58
	01/18/08	16.61	--	0.00	28.58
	06/24/08	17.21	--	0.00	27.98
	09/09/08	17.51	17.48	0.03	27.70
	06/25/09	17.14	--	0.00	28.05
MW06 TOC: 43.01	08/02/06	13.92	--	0.00	29.09
	05/01/07	14.82	--	0.00	28.19
	01/18/08	14.12	--	0.00	28.89
	06/24/08	15.02	--	0.00	27.99
	09/09/08	15.16	--	0.00	27.85
	06/25/09	14.94	--	0.00	28.07

**Table 1**  
**Summary of Groundwater Elevation Data**  
**Olympic Athletic Club**  
**5301 Leary Avenue Northwest**  
**Seattle, Washington**

Well ID <sup>1</sup>	Date Measured	Depth to Groundwater <sup>2</sup> (feet)	Depth to SPH <sup>2</sup> (feet)	SPH Thickness <sup>3</sup> (feet)	Groundwater Elevation <sup>4</sup> (feet)
MW07 TOC: 41.62	08/02/06	13.45	--	0.00	28.17
	05/01/07	14.94	--	0.00	26.68
	01/18/08	14.57	--	0.00	27.05
	06/24/08	15.12	15.11	0.01	26.51
	09/09/08	15.52	15.46	0.06	26.15
	06/25/09	15.27	15.00	0.27	26.55
MW08 TOC: 36.55	06/24/08	10.67	--	0.00	25.88
	09/09/08	10.88	--	0.00	25.67
MW09 TOC: 38.08	06/24/08	11.85	--	0.00	26.23
	09/09/08	12.30	--	0.00	25.78
	06/25/09	11.56	--	0.00	26.52
MW10 TOC: 43.37	06/24/08	15.86	--	0.00	27.51
	09/09/08	16.05	--	0.00	27.32
	06/25/09	15.78	--	0.00	27.59
MW11 TOC: 42.65	06/24/08	15.99	--	0.00	26.66
	09/09/08	16.41	--	0.00	26.24
	06/25/09	15.85	--	0.00	26.80
MW12 TOC: 38.24	06/24/08	12.33	--	0.00	25.91
	09/09/08	12.72	--	0.00	25.52
	06/25/09	12.32	--	0.00	25.92
MW13 TOC: 34.77	06/24/08	8.96	--	0.00	25.81
	09/09/08	9.35	--	0.00	25.42
	06/25/09	8.95	--	0.00	25.82
MW14 TOC: 42.37	06/24/08	16.31	--	0.00	26.06
	09/09/08	16.67	--	0.00	25.70
	06/25/09	16.27	--	0.00	26.10
MW-D TOC: 46.30	08/02/06	15.68	--	0.00	30.62
	05/01/07	17.18	--	0.00	29.12
	06/24/08	17.89	--	0.00	28.41
	09/09/08	18.18	--	0.00	28.12
	06/25/09	17.81	--	0.00	28.49

**NOTES:**

<sup>1</sup>TOCs surveyed to City of Seattle Datum by Harstad Consultants in June 2008. TOCs shown in feet.

<sup>2</sup>Depth to groundwater and SPH in feet below ground surface, as measured from a fixed spot on the top of well casing.

<sup>3</sup>SPH thickness = depth to groundwater - depth to SPH.

<sup>4</sup>Groundwater Elevation = top of well casing elevation - depth to groundwater + (SPH thickness x [density of gasoline/density of water]). Density of gasoline is assumed to be 0.75 g/mL and density of water is assumed to be 1.0 g/mL.

-- = not measured

g/mL = grams per milliliter

SPH = separate-phase hydrocarbons

TOC = top of casing elevation



**Table 2**  
**Summary of Groundwater Analytical Results**  
**Olympic Athletic Club**  
**5301 Leary Avenue Northwest**  
**Seattle, Washington**

Well ID	Well ID	Sample Date	Analytical Results (micrograms per liter)								
			GRPH <sup>1</sup>	DRPH <sup>2</sup>	ORPH <sup>2</sup>	Benzene <sup>3</sup>	Toluene <sup>3</sup>	Ethylbenzene <sup>3</sup>	Total Xylenes <sup>3</sup>	Total Lead <sup>4</sup>	Dissolved Lead <sup>4</sup>
MW01	Converse	09/03/93	680	0.66	--	59	3.2	19	4.4	5.2	--
	Lloyd	02/01/94	150	--	--	14	0.93	2.2	1.4	<2.0	--
	Lloyd	10/11/95	180	--	--	2.1	<1.0	<1.0	<1.0	<0.001	--
	EAI	05/01/05	NR	--	--	22	NR	NR	NR	--	--
	Farallon	05/30/06	170	<250	<400	11	1.1	<1.0	3.1	--	<1.0
	SES	06/10/08	3,400	--	--	430	82	110	270	--	--
	SES	06/25/09	3,800	--	--	270	36	73	210	--	--
MW02	Lloyd	02/01/94	770	--	--	<2.0	<2.0	<2.0	<3.0	<2.0	--
	Lloyd	10/11/95	2,000	--	--	2.3	1.2	<1.0	5.1	<0.01	--
	EAI	05/01/05	NR	--	--	NR	NR	NR	NR	--	--
	Farallon	05/30/06	510	<250	<400	1.7	<1.0	<1.0	3.3	--	<1.0
	SES	06/10/08	770	--	--	6	9	8	7	--	--
	SES	06/25/09	<100	--	--	<1	<1	<1	<3	--	--
MW03	Lloyd	02/01/94	21,000	--	--	<125	10	710	3,500	<2.0	--
	EAI	05/01/05	NR	--	--	NR	NR	NR	NR	--	--
	SES	06/10/08	SPH								
	SES	06/25/09	SPH								
MW04	Lloyd	02/17/94	7,900	--	--	260	<4.0	570	220	9.7	--
	Lloyd	10/11/95	22,000	--	--	130	2.2	1,200	1,934	--	--
	EAI	05/01/05	7,200	--	--	NR	NR	NR	NR	--	--
	SES	06/10/08	SPH								
	SES	06/25/09	SPH								
MW05	Kane	07/27/05	2,800	--	--	120	22	98	88	--	--
	Farallon	08/08/06	2,600	<250	<400	81	21	200	109.8	--	<1.0
	SES	06/10/08	4,900	--	--	88	59	230	140	--	--
		09/09/08	SPH								
	SES	06/25/09	5,300	--	--	14	<10	240	100	--	--
MTCA Method A Cleanup Level <sup>5</sup>			800	500	500	5	1,000	700	1,000	15	15

**Table 2**  
**Summary of Groundwater Analytical Results**  
**Olympic Athletic Club**  
**5301 Leary Avenue Northwest**  
**Seattle, Washington**

Well ID	Well ID	Sample Date	Analytical Results (micrograms per liter)								
			GRPH <sup>1</sup>	DRPH <sup>2</sup>	ORPH <sup>2</sup>	Benzene <sup>3</sup>	Toluene <sup>3</sup>	Ethylbenzene <sup>3</sup>	Total Xylenes <sup>3</sup>	Total Lead <sup>4</sup>	Dissolved Lead <sup>4</sup>
MW06	Kane	08/18/05	1,200	--	--	91	12	5.2	12	--	--
	Farallon	08/08/06	1,500	<260	<420	3.4	<10	7.2	13.5	--	<1.0
	SES	06/10/08	3,100	--	--	32	30	18	45	--	--
		06/25/09	2,400	--	--	2	<1	8	14	--	--
MW07	Kane	08/18/05	5,200	--	--	54	46	190	230	--	--
	Farallon	08/08/06	4,800	<250	<400	19	<10	270	201	--	1.9
	SES	06/10/08	10,000	--	--	78	79	590	2,200	--	--
		09/09/08	SPH								
		06/25/09	SPH								
MW08	Farallon	12/18/07	<1.0	<250	<400	<1.0	<1.0	<1.0	<1.0	--	--
	SES	06/10/08	<100	--	--	<1	<1	3	16	--	--
MW09	SES	06/10/08	<100	--	--	<1	<1	<1	<3	<1	<1
		06/25/09	<100	--	--	<1	<1	<1	<3	--	--
MW10	SES	06/10/08	<100	--	--	<1	<1	<1	<3	<1	<1
		06/25/09	<100	--	--	<1	<1	<1	<3	--	--
MW11	SES	09/09/08	1,100	--	--	3	10	6	9	--	--
		06/25/09	1,800	--	--	1	<1	6	6	--	--
MW12	SES	06/10/08	<100	--	--	<1	<1	<1	<3	--	--
		06/25/09	<100	--	--	<1	<1	<1	<3	--	--
MW13	SES	06/10/08	<100	--	--	<1	<1	<1	<3	--	--
		06/25/09	<100	--	--	<1	<1	<1	<3	--	--
MW14	SES	06/10/08	880	--	--	5	7	5	5	2.14	<1
		06/25/09	370	--	--	<1	<1	1	5	--	--
MW-D	Farallon	08/08/06	590	<250	<400	4.7	<10	1.1	5.3	--	<1.0
	SES	06/10/08	<100	--	--	<1	<1	<1	<3	--	--
		06/25/09	<100	--	--	<1	<1	<1	<3	--	--
<b>MTCA Method A Cleanup Level<sup>5</sup></b>			<b>800</b>	<b>500</b>	<b>500</b>	<b>5</b>	<b>1,000</b>	<b>700</b>	<b>1,000</b>	<b>15</b>	<b>15</b>

**NOTES:**

Red denotes concentration exceeds MTCA Method A cleanup levels for groundwater.

<sup>1</sup>Analyzed by Method NWTPH-Gx and/or WTPH-G.

<sup>2</sup>Analyzed by Method NWTPH-DX and/or WTPH-D.

<sup>3</sup>Analyzed by EPA Method 8021B and/or EPA Method 8020.

<sup>4</sup>Analyzed by EPA Method 200.8 and/or EPA Method 7421.

<sup>5</sup>MTCA Method A Cleanup Levels, Table 720-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, revised November 2007.

< = not detected above the laboratory reporting limit

-- = not sampled; not analyzed

Converse = Converse Consultants NW

DRPH = diesel-range petroleum hydrocarbons

EAI = Environmental Associates, Inc.

EPA = United States Environmental Protection Agency

Farallon = Farallon Consulting, LLC

GRPH = gasoline-range petroleum hydrocarbons

Kane = Kane Environmental, Inc.

Lloyd = Lloyd and Associates, Inc.

MTCA = Washington State Model Toxics Control Act

NR = not reported

NWTPH = Northwest Total Petroleum Hydrocarbon

ORPH = oil-range petroleum hydrocarbons

SES = Sound Environmental Strategies Corporation

SPH = separate-phase hydrocarbon

## **ATTACHMENT A**

**Laboratory Analytical Report**  
***Friedman & Bruya, Inc. 906262***

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

July 6, 2009

Tom Cammarata, Project Manager  
Sound Environmental Strategies Corporation  
2400 Airport Way S., Suite 200  
Seattle, WA 98134-2020

Dear Mr. Cammarata:

Included are the results from the testing of material submitted on June 26, 2009 from the SOU\_0670-001-01, F&BI 906262 project. There are 5 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  
c: Ryan Thompson  
SOU0706R.DOC

FRIEDMAN & BRUYA, INC.

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ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on June 26, 2009 by Friedman & Bruya, Inc. from the Sound Environmental Strategies SOU\_0670-001-01, F&BI 906262 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Sound Environmental Strategies</u>
906262-01	MWD-20090625
906262-02	MW14-20090625
906262-03	MW12-20090625
906262-04	MW02-20090625
906262-05	MW10-20090625
906262-06	MW06-20090625
906262-07	MW13-20090625
906262-08	MW09-20090625
906262-09	MW11-20090625
906262-10	MW05-20090625
906262-11	MW99-20090625
906262-12	MW01-20090625

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/06/09  
 Date Received: 06/26/09  
 Project: SOU\_0670-001-01, F&BI 906262  
 Date Extracted: 07/01/09  
 Date Analyzed: 07/01/09 and 07/02/09

**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 ug/L (ppb)**

<u>Sample ID</u> Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl Benzene</u>	<u>Total Xylenes</u>	<u>Gasoline Range</u>	<u>Surrogate (% Recovery)</u> (Limit 50-150)
MWD-20090625 906262-01	<1	<1	<1	<3	<100	102
MW14-20090625 906262-02	<1	<1	1	5	370	101
MW12-20090625 906262-03	<1	<1	<1	<3	<100	100
MW02-20090625 906262-04	<1	<1	<1	<3	<100	99
MW10-20090625 906262-05	<1	<1	<1	<3	<100	100
MW06-20090625 906262-06	2	<1	8	14	2,400	117
MW13-20090625 906262-07	<1	<1	<1	<3	<100	100
MW09-20090625 906262-08	<1	<1	<1	<3	<100	99
MW11-20090625 906262-09	1	<1	6	6	1,800	114
MW05-20090625 d 906262-10 1/10	14	<10	240	100	5,300	100
MW99-20090625 d 906262-11 1/10	350	45	93	260	4,200	100

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/06/09  
Date Received: 06/26/09  
Project: SOU\_0670-001-01, F&BI 906262  
Date Extracted: 07/01/09  
Date Analyzed: 07/01/09 and 07/02/09

**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 ug/L (ppb)**

<u>Sample ID</u> Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl Benzene</u>	<u>Total Xylenes</u>	<u>Gasoline Range</u>	<u>Surrogate (% Recovery)</u> (Limit 50-150)
MW01-20090625 d 906262-12 1/10	270	36	73	210	3,800	100
Method Blank	<1	<1	<1	<3	<100	103

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/06/09  
 Date Received: 06/26/09  
 Project: SOU\_0670-001-01, F&BI 906262

**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: 906262-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference (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	102	70-130
Toluene	ug/L (ppb)	50	101	70-130
Ethylbenzene	ug/L (ppb)	50	104	70-130
Xylenes	ug/L (ppb)	150	100	70-130
Gasoline	ug/L (ppb)	1,000	92	70-130

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### 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.

A1 - More than one compound of similar molecule structure was identified with equal probability.

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 this range fell outside of acceptance criteria. The value reported is an estimate.

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

d - The sample was diluted. Detection limits may be raised due to dilution.

ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.

dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.

fb - The analyte indicated was found in the method blank. The result should be considered an estimate.

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. The variability is attributed to sample inhomogeneity.

ht - The sample was extracted outside of holding time. Results should be considered estimates.

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

j - The result is below normal reporting limits. 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 analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.

jr - The rpd result in laboratory control sample associated with the analyte is 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 compound indicated 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 in a container not approved by the method. The value reported should be considered an estimate.

pr - The sample was received with incorrect preservation. The value reported should be considered an estimate.

ve - The value reported exceeded the calibration range established for the analyte. The reported concentration should be considered an estimate.

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

x - The pattern of peaks present is not indicative of diesel.

y - The pattern of peaks present is not indicative of motor oil.



***Groundwater Monitoring and Sampling Report  
Fourth Quarter 2009***



January 13, 2010

Mr. Jim Riggle  
James R. Property, LLC  
5301 Leary Avenue Northwest  
Seattle, Washington 98107

**SUBJECT: GROUNDWATER MONITORING AND SAMPLING REPORT  
FOURTH QUARTER 2009  
Olympic Athletic Club  
5301 Leary Avenue Northwest  
Seattle, Washington**

Dear Mr. Riggle:

Sound Environmental Strategies Corporation (SES) has prepared this letter report to present the results of the Fourth Quarter 2009 groundwater monitoring and sampling event conducted at the Olympic Athletic Club located at 5301 Leary Avenue Northwest in Seattle, Washington (herein referred to as the Property), as shown on Figure 1. As established in Section 200 of Chapter 173-340 of the Washington Administrative Code (WAC 173-340-200), the "Site" is defined by the full lateral and vertical extent of contamination that resulted from the former operation of a retail gasoline service station on the Property. The Fourth Quarter 2009 groundwater monitoring and sampling event was performed as part of ongoing investigation monitoring to evaluate the environmental quality and flow direction of groundwater beneath the Site. The monitoring and sampling event was conducted in accordance with the *Proposal for Supplemental Groundwater Monitoring and Sampling, 5301 Leary Avenue Northwest, Seattle, Washington*, prepared by SES and dated May 11, 2009. This report documents the field activities performed at the Site during the groundwater monitoring and sampling event and includes the laboratory analytical results for groundwater samples, and our conclusions.

The Fourth Quarter 2009 groundwater monitoring and sampling event was conducted on November 2 and 3, 2009. This work included measuring the depth to groundwater at accessible groundwater monitoring wells, monitoring field parameters, and collecting groundwater samples for laboratory analysis. Details of field activities and analytical results for the Fourth Quarter 2009 groundwater monitoring event are presented below.

## **FIELD ACTIVITIES**

Upon arrival at the Site on November 2, 2009, SES personnel removed the caps from monitoring wells MW01 through MW07, MW09 through MW14, and MW-D (Figure 2). Monitoring well MW08 could not be accessed because an automobile was parked over the monitoring well. The groundwater in each monitoring well was allowed a minimum of 15 minutes to equilibrate with atmospheric pressure prior to collecting and recording static groundwater level measurements and flow rates.

Groundwater levels were measured to an accuracy of 0.01 feet using an electronic water level indicator. Purging and sampling of each monitoring well was performed using a peristaltic pump and dedicated polyethylene tubing, in accordance with United States Environmental Protection Agency (EPA) guidance on low-flow sampling protocols. Measured flow rates ranged from 50 to 100 milliliters per minute. The pump tubing intake was placed a minimum of 2 feet below the static groundwater level in the monitoring well. During purging, water quality parameters were monitored using a HORIBA U-22 water quality meter (or equivalent) equipped with a flow-through cell. The water quality parameters monitored and recorded included temperature, pH, specific conductance, dissolved oxygen, turbidity, and oxidation-reduction potential. Each monitoring well was purged until, at a minimum, pH, specific conductance, and dissolved oxygen or turbidity stabilized. The presence or absence of separate-phase hydrocarbon (SPH) was measured in each of the accessible monitoring wells using a Solinst oil/water interface probe.

Once stabilization of low-flow parameters was achieved at each well, the tubing was disconnected from the flow-through cell and groundwater was collected from the pump outlet into laboratory-prepared sample containers. The sample containers were placed on ice in a cooler and transported for analysis to Friedman & Bruya, Inc. of Seattle, Washington, under standard chain-of-custody protocols for laboratory analysis.

Purge water generated during the Fourth Quarter 2009 groundwater monitoring and sampling event was placed in a labeled 55-gallon steel drum and temporarily stored on the Property pending disposal. Upon receipt of laboratory analytical data for groundwater samples, purge water will be disposed of in accordance with applicable Washington State Dangerous Waste Regulations, WAC 173-303.

## **LABORATORY ANALYSIS**

Groundwater samples were submitted for analysis of gasoline-range petroleum hydrocarbons (GRPH) by Northwest Total Petroleum Hydrocarbon Method NWTPH-Gx and benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method 8021B.

## **RESULTS**

Depth to groundwater at the Site ranged from 9.31 feet below the top of casing elevation (TOC) at monitoring well MW13 to 18.38 feet below the TOC at monitoring well MW03. The measured depth-to-groundwater in monitoring wells MW03, MW04, MW05, and MW07 were increased because of the presence of SPH on the groundwater. Groundwater elevations beneath the Site ranged from 25.46 feet at monitoring well MW13 to 28.41 feet at monitoring well MW-D (Table 1). The groundwater elevations in the monitoring wells where SPH was present were corrected to account for the presence of SPH. The method used to correct the groundwater elevations is presented in the footnotes of Table 2.

Based on depth-to-groundwater measurements taken from monitoring wells on November 2, 2009, the direction of groundwater flow at the Site is toward the southwest. The hydraulic gradient at the Site ranges from 0.04 feet per foot on the northern portion of the Site to 0.002 feet per foot on the southern portion of the Site (Figure 2). The groundwater elevations for monitoring wells MW03, MW04, MW05, and MW07 were not used to contour groundwater elevations for the Fourth Quarter 2009 groundwater monitoring and sampling event because of

the presence of SPH on the groundwater at the monitoring wells. SPH depresses groundwater in the monitoring wells and does not allow for an accurate presentation of the groundwater flow direction at the Site.

Analytical results from the Fourth Quarter 2009 and from previous groundwater monitoring and sampling events are presented on Figure 3 and in Table 2. Groundwater samples were not collected from monitoring wells MW03, MW04, MW05, or MW07 because SPH was present on the groundwater in these monitoring wells. A summary of the analytical results from the Fourth Quarter 2009 groundwater monitoring and sampling event follows:

- Concentrations of GRPH exceeded the Washington State Model Toxics Control Act (MTCA) Method A cleanup level in the groundwater samples collected from monitoring wells MW01, MW06, and MW11 (Figure 3, Table 2). Concentrations of other GRPH in all remaining groundwater samples submitted for analysis were below the laboratory reporting limit and/or the MTCA Method A cleanup level (Table 2).
- Concentrations of benzene exceeded the MTCA Method A cleanup level in the groundwater samples collected from monitoring wells MW01 and MW06 (Figure 3, Table 2).
- Concentrations of GRPH and BTEX constituents in all remaining groundwater samples submitted for analysis were below the laboratory reporting limit and/or applicable MTCA Method A cleanup levels (Table 2).
- SPH was measured on the groundwater at monitoring wells MW03, MW04, MW05, and MW07 at thicknesses of 2.98, 0.77, 0.04, and 0.90 feet, respectively (Table 1). Considering the presence of SPH, groundwater in these monitoring wells was presumed to contain concentrations of GRPH and BTEX in excess of their respective MTCA Method A cleanup levels.

Previous analytical results from groundwater samples collected from monitoring well MW08 in December of 2007 and June 2008 indicated that concentrations of GRPH and BTEX were not above laboratory reporting limits.

## **DATA QUALITY REVIEW**


SES performed a quality assurance/quality control (QA/QC) review of the analytical results, which included a review of the accuracy and precision of data supplied by the laboratory. Laboratory QA/QC data were within laboratory supplied control limits. A copy of the laboratory analytical report is provided in Attachment A.

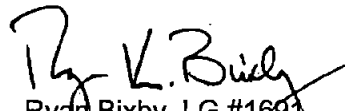
## **FUTURE WORK**

SES is not scheduled to conduct any additional groundwater monitoring and sampling events at the Site at this time.

Respectfully,

**Sound Environmental Strategies Corporation**

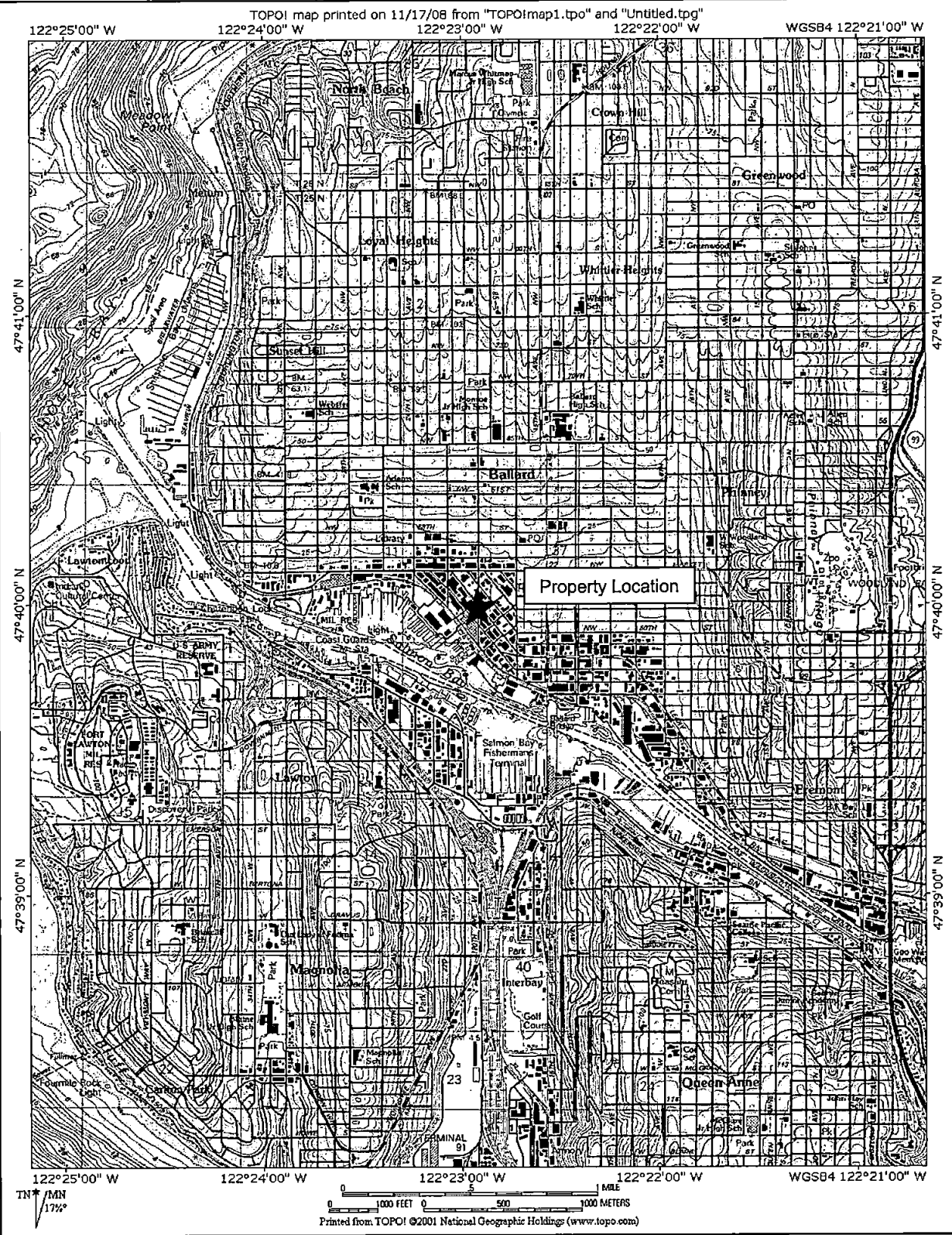
  
Tom Cammarata, LG, LHG #196  
Senior Geochemist

  
Ryan Bixby, LG #1691  
Principal Geologist

Attachments: Figure 1, Property Location Map  
Figure 2, Groundwater Elevation Contour Map (November 2, 2009)  
Figure 3, Groundwater Analytical Results  
Table 1, Summary of Groundwater Elevation Data  
Table 2, Summary of Groundwater Analytical Results  
Attachment A, Laboratory Analytical Report  
*Friedman & Bruya, Inc. 911016*

cc: Mr. Barry Ziker, Salter Joyce Ziker, PLLC

## FIGURES

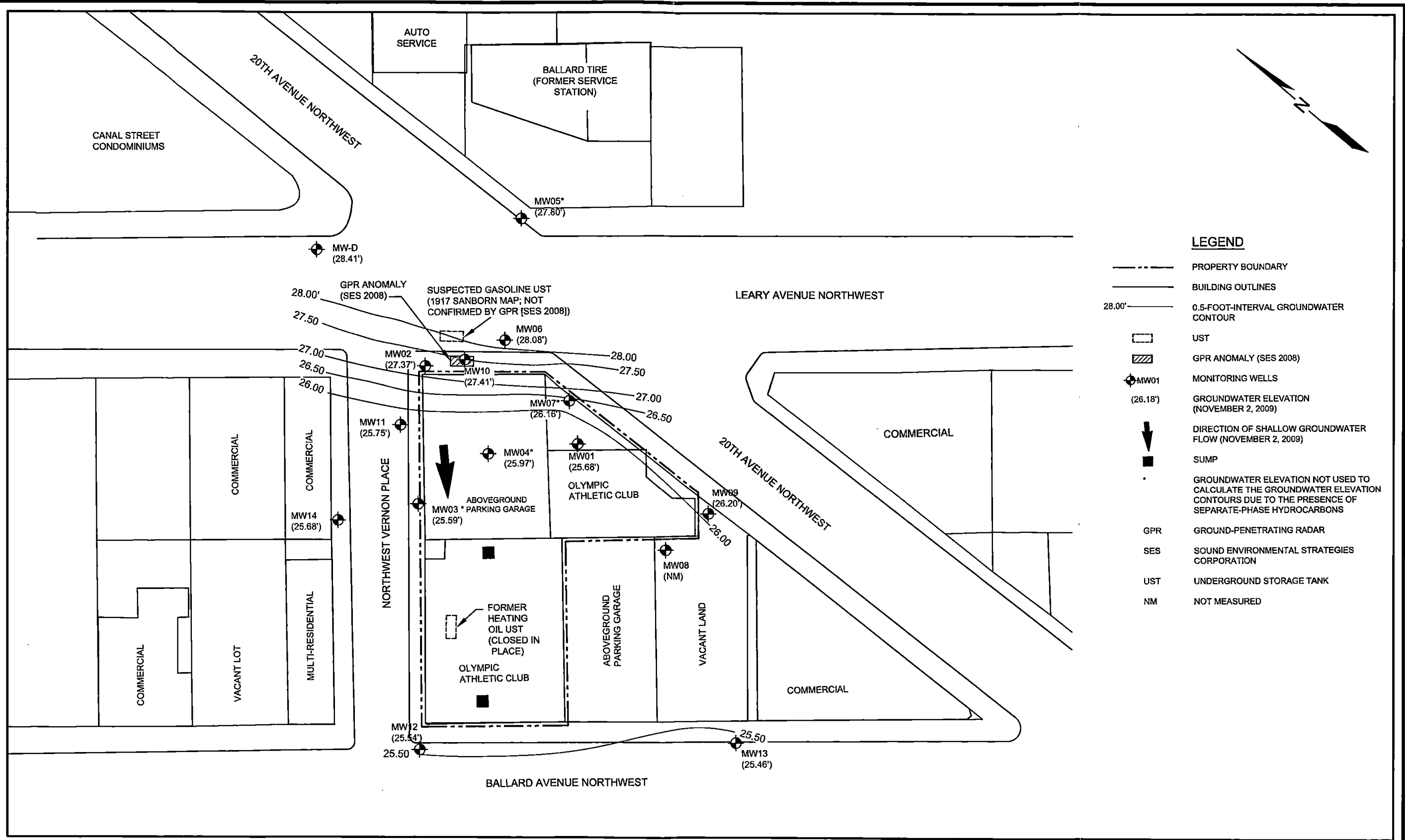


Date: November 17, 2008  
 Drawn By: JQC  
 Chk By: TJC  
 SES Project No.: 0670-001  
 File ID: 0670-001-FIG1-TO

**Olympic Athletic Club**  
 5301 Leary Avenue Northwest  
 Seattle, Washington

**FIGURE 1**  
 Property Location Map

12/10/2009 P:\0670 OLYMPIC ATHLETIC CLUB\TECHNICAL\CAD\2009Q4\0670\_2009Q4\_CM.DWG



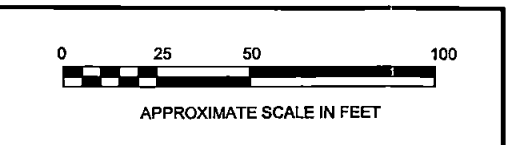
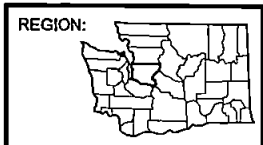
**LEGEND**

- PROPERTY BOUNDARY
- BUILDING OUTLINES
- 28.00' — 0.5-FOOT-INTERVAL GROUNDWATER CONTOUR
- UST
- ▨ GPR ANOMALY (SES 2008)
- ⊕ MW01 (26.18')
- ⊕ GROUNDWATER ELEVATION (NOVEMBER 2, 2009)
- ↓ DIRECTION OF SHALLOW GROUNDWATER FLOW (NOVEMBER 2, 2009)
- SUMP
- GROUNDWATER ELEVATION NOT USED TO CALCULATE THE GROUNDWATER ELEVATION CONTOURS DUE TO THE PRESENCE OF SEPARATE-PHASE HYDROCARBONS
- GPR GROUND-PENETRATING RADAR
- SES SOUND ENVIRONMENTAL STRATEGIES CORPORATION
- UST UNDERGROUND STORAGE TANK
- NM NOT MEASURED



DATE: 11/17/09  
 DRAWN BY: BLR  
 CHECKED BY: TJC  
 CAD FILE: 0670\_2009Q4\_CM

PROJECT NAME: OLYMPIC ATHLETIC CLUB  
 SES PROJECT NUMBER: 0670-001  
 STREET ADDRESS: 5301 LEARY AVENUE NORTHWEST  
 CITY, STATE: SEATTLE, WASHINGTON

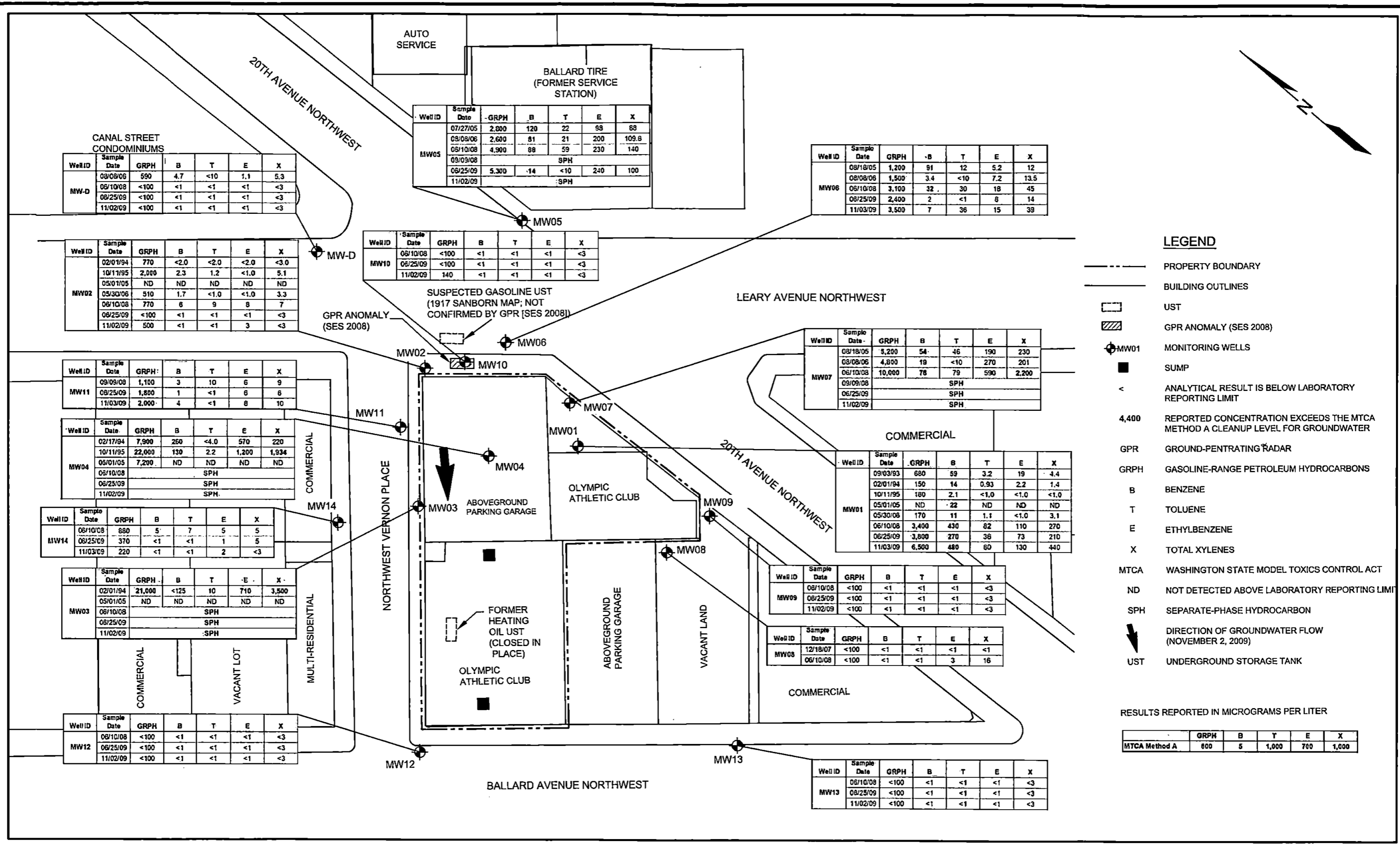


**FIGURE 2**  
 GROUNDWATER ELEVATION CONTOUR MAP  
 (NOVEMBER 2, 2009)

SOUNDENVIRONMENTAL.COM

1/11/2010

P:\0670 OLYMPIC ATHLETIC CLUB\TECHNICAL\CAD\2009Q4\0670\_2009Q4\_GD.DWG



**CANAL STREET CONDOMINIUMS**

Well ID	Sample Date	GRPH	B	T	E	X
MW-D	03/08/06	590	4.7	<10	1.1	5.3
	05/10/08	<100	<1	<1	<1	<3
	08/25/09	<100	<1	<1	<1	<3
	11/02/09	<100	<1	<1	<1	<3

**MW05**

Well ID	Sample Date	GRPH	B	T	E	X
MW05	07/27/05	2,000	120	22	98	68
	08/08/06	2,600	81	21	200	109.8
	05/10/08	4,900	88	59	230	140
	09/09/08				SPH	
	08/25/09	5,300	14	<10	2+0	100

**MW06**

Well ID	Sample Date	GRPH	B	T	E	X
MW06	08/18/05	1,200	91	12	5.2	12
	08/08/06	1,500	3.4	<10	7.2	13.5
	06/10/08	3,100	32	30	18	45
	08/25/09	2,400	2	<1	8	14
	11/03/09	3,500	7	36	15	39

**MW02**

Well ID	Sample Date	GRPH	B	T	E	X
MW02	02/01/94	770	<2.0	<2.0	<2.0	<3.0
	10/11/95	2,000	2.3	1.2	<1.0	5.1
	05/01/05	ND	ND	ND	ND	ND
	05/30/06	510	1.7	<1.0	<1.0	3.3
	06/10/08	770	6	9	8	7
	08/25/09	<100	<1	<1	<1	<3
	11/02/09	500	<1	<1	3	<3

**MW10**

Well ID	Sample Date	GRPH	B	T	E	X
MW10	08/10/08	<100	<1	<1	<1	<3
	08/25/09	<100	<1	<1	<1	<3
	11/02/09	140	<1	<1	<1	<3

**MW07**

Well ID	Sample Date	GRPH	B	T	E	X
MW07	08/18/05	5,200	54	46	190	230
	08/08/06	4,800	19	<10	270	201
	06/10/08	10,000	78	79	590	2,200
	09/09/08				SPH	
	06/25/09				SPH	
	11/02/09				SPH	

**MW11**

Well ID	Sample Date	GRPH	B	T	E	X
MW11	09/09/08	1,100	3	10	6	9
	08/25/09	1,800	1	<1	8	8
	11/03/09	2,000	4	<1	8	10

**MW04**

Well ID	Sample Date	GRPH	B	T	E	X
MW04	02/17/94	7,900	260	<4.0	570	220
	10/11/95	22,000	130	2.2	1,200	1,934
	05/01/05	7,200	ND	ND	ND	ND
	05/10/08				SPH	
	08/25/09				SPH	
	11/02/09				SPH	

**MW14**

Well ID	Sample Date	GRPH	B	T	E	X
MW14	08/10/08	880	5	7	5	5
	08/25/09	370	<1	<1	1	5
	11/03/09	220	<1	<1	2	<3

**MW03**

Well ID	Sample Date	GRPH	B	T	E	X
MW03	02/01/94	21,000	<125	10	710	3,500
	05/10/05	ND	ND	ND	ND	ND
	06/10/08				SPH	
	08/25/09				SPH	
	11/02/09				SPH	

**MW12**

Well ID	Sample Date	GRPH	B	T	E	X
MW12	08/10/08	<100	<1	<1	<1	<3
	08/25/09	<100	<1	<1	<1	<3
	11/02/09	<100	<1	<1	<1	<3

**MW01**

Well ID	Sample Date	GRPH	B	T	E	X
MW01	09/03/93	680	59	3.2	19	4.4
	02/01/94	150	14	0.93	2.2	1.4
	10/11/95	180	2.1	<1.0	<1.0	<1.0
	05/01/05	ND	22	ND	ND	ND
	05/30/06	170	11	1.1	<1.0	3.1
	06/10/08	3,400	430	82	110	270
	08/25/09	3,800	270	36	73	210
	11/03/09	6,500	480	80	130	440

**MW09**

Well ID	Sample Date	GRPH	B	T	E	X
MW09	08/10/08	<100	<1	<1	<1	<3
	08/25/09	<100	<1	<1	<1	<3
	11/02/09	<100	<1	<1	<1	<3

**MW08**

Well ID	Sample Date	GRPH	B	T	E	X
MW08	12/18/07	<100	<1	<1	<1	<1
	06/10/08	<100	<1	<1	3	16

**MW13**

Well ID	Sample Date	GRPH	B	T	E	X
MW13	08/10/08	<100	<1	<1	<1	<3
	08/25/09	<100	<1	<1	<1	<3
	11/02/09	<100	<1	<1	<1	<3

**LEGEND**

- PROPERTY BOUNDARY
- BUILDING OUTLINES
- UST
- ▨ GPR ANOMALY (SES 2008)
- MW01 MONITORING WELLS
- SUMP
- < ANALYTICAL RESULT IS BELOW LABORATORY REPORTING LIMIT
- 4,400 REPORTED CONCENTRATION EXCEEDS THE MTCA METHOD A CLEANUP LEVEL FOR GROUNDWATER
- GPR GROUND-PENETRATING RADAR
- GRPH GASOLINE-RANGE PETROLEUM HYDROCARBONS
- B BENZENE
- T TOLUENE
- E ETHYLBENZENE
- X TOTAL XYLENES
- MTCA WASHINGTON STATE MODEL TOXICS CONTROL ACT
- ND NOT DETECTED ABOVE LABORATORY REPORTING LIMIT
- SPH SEPARATE-PHASE HYDROCARBON
- ↘ DIRECTION OF GROUNDWATER FLOW (NOVEMBER 2, 2009)
- UST UNDERGROUND STORAGE TANK

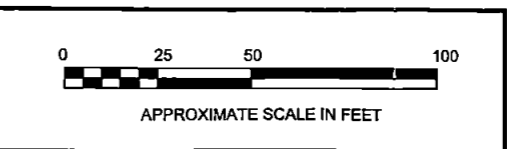
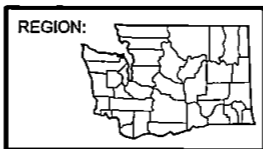
RESULTS REPORTED IN MICROGRAMS PER LITER

MTCA Method A	GRPH	B	T	E	X
	600	5	1,000	700	1,000



DATE: 11/17/09  
 DRAWN BY: BLR  
 CHECKED BY: TJC  
 CAD FILE: 0670\_2009Q4\_GD

PROJECT NAME: OLYMPIC ATHLETIC CLUB  
 SES PROJECT NUMBER: 0670-001  
 STREET ADDRESS: 5301 LEARY AVENUE NORTHWEST  
 CITY, STATE: SEATTLE, WASHINGTON



**FIGURE 3**  
 GROUNDWATER ANALYTICAL RESULTS

## TABLES

**Table 1**  
**Summary of Groundwater Elevation Data**  
**Olympic Athletic Club**  
**5301 Leary Avenue Northwest**  
**Seattle, Washington**

Well ID <sup>1</sup>	Date Measured	Depth to Groundwater <sup>2</sup> (feet)	Depth to SPH <sup>2</sup> (feet)	SPH Thickness <sup>3</sup> (feet)	Groundwater Elevation <sup>4</sup> (feet)
MW01 TOC: 40.90	09/01/93	12.12	--	0.00	28.78
	10/11/95	12.22	--	0.00	28.68
	05/30/06	13.20	--	0.00	27.70
	08/02/06	12.83	--	0.00	28.07
	05/01/07	14.55	--	0.00	26.35
	01/18/08	14.22	--	0.00	26.68
	06/24/08	14.72	--	0.00	26.18
	06/25/09	14.72	--	0.00	26.18
	11/02/09	15.22	--	0.00	25.68
MW02 TOC: 43.56	02/01/94	14.14	--	0.00	29.42
	10/11/95	13.87	--	0.00	29.69
	05/30/06	14.63	--	0.00	28.93
	08/02/06	14.46	--	0.00	29.10
	05/01/07	15.79	--	0.00	27.77
	01/18/08	15.79	--	0.00	27.77
	06/24/08	16.00	--	0.00	27.56
	09/09/08	16.26	--	0.00	27.30
	06/25/09	15.94	--	0.00	27.62
	11/02/09	16.19	--	0.00	27.37
MW03 TOC: 41.73	02/01/94	13.04	--	0.00	28.69
	10/11/95	14.51	--	0.00	27.22
	05/01/05	--	--	1.13	--
	05/30/06	14.76	13.94	0.82	27.59
	08/02/06	15.49	14.53	0.96	26.96
	05/01/07	20.60	15.94	2.66	23.13
	01/18/08	18.24	14.79	1.97	24.97
	06/24/08	17.96	15.06	2.90	25.95
	09/09/08	18.59	15.35	3.24	25.57
	06/25/09	18.08	15.02	3.06	25.95
	11/02/09	18.38	15.40	2.98	25.59
MW04 TOC: 41.41	02/17/94	12.60	--	0.00	28.81
	10/11/95	12.62	--	0.00	28.79
	05/30/06	13.50	13.47	0.04	27.94
	08/02/06	14.34	14.20	0.18	27.21
	05/01/07	16.24	15.80	0.25	25.36
	01/18/08	14.56	--	0.00	26.85
	06/24/08	15.15	15.01	0.14	26.37
	09/09/08	15.60	15.37	0.23	25.98
	06/25/09	15.62	14.82	0.80	26.39
	11/02/09	16.02	15.25	0.77	25.97

**Table 1**  
**Summary of Groundwater Elevation Data**  
**Olympic Athletic Club**  
**5301 Leary Avenue Northwest**  
**Seattle, Washington**

Well ID <sup>1</sup>	Date Measured	Depth to Groundwater <sup>2</sup> (feet)	Depth to SPH <sup>2</sup> (feet)	SPH Thickness <sup>3</sup> (feet)	Groundwater Elevation <sup>4</sup> (feet)
MW05 TOC: 45.19	08/02/06	15.76	--	0.00	29.43
	05/01/07	16.61	--	0.00	28.58
	01/18/08	16.61	--	0.00	28.58
	06/24/08	17.21	--	0.00	27.98
	09/09/08	17.51	17.48	0.03	27.70
	06/25/09	17.14	--	0.00	28.05
	11/02/09	17.42	17.38	0.04	27.80
MW06 TOC: 43.01	08/02/06	13.92	--	0.00	29.09
	05/01/07	14.82	--	0.00	28.19
	01/18/08	14.12	--	0.00	28.89
	06/24/08	15.02	--	0.00	27.99
	09/09/08	15.16	--	0.00	27.85
	06/25/09	14.94	--	0.00	28.07
	11/02/09	14.93	--	0.00	28.08
MW07 TOC: 41.62	08/02/06	13.45	--	0.00	28.17
	05/01/07	14.94	--	0.00	26.68
	01/18/08	14.57	--	0.00	27.05
	06/24/08	15.12	15.11	0.01	26.51
	09/09/08	15.52	15.46	0.06	26.15
	06/25/09	15.27	15.00	0.27	26.55
	11/02/09	16.14	15.24	0.90	26.16
MW08 TOC: 36.55	06/24/08	10.67	--	0.00	25.88
	09/09/08	10.88	--	0.00	25.67
MW09 TOC: 38.08	06/24/08	11.85	--	0.00	26.23
	09/09/08	12.30	--	0.00	25.78
	06/25/09	11.56	--	0.00	26.52
	11/02/09	11.88	--	0.00	26.20
MW10 TOC: 43.37	06/24/08	15.86	--	0.00	27.51
	09/09/08	16.05	--	0.00	27.32
	06/25/09	15.78	--	0.00	27.59
	11/02/09	15.96	--	0.00	27.41
MW11 TOC: 42.65	06/24/08	15.99	--	0.00	26.66
	09/09/08	16.41	--	0.00	26.24
	06/25/09	15.85	--	0.00	26.80
	11/02/09	16.90	--	0.00	25.75
MW12 TOC: 38.24	06/24/08	12.33	--	0.00	25.91
	09/09/08	12.72	--	0.00	25.52
	06/25/09	12.32	--	0.00	25.92
	11/02/09	12.70	--	0.00	25.54
MW13 TOC: 34.77	06/24/08	8.96	--	0.00	25.81
	09/09/08	9.35	--	0.00	25.42
	06/25/09	8.95	--	0.00	25.82
	11/02/09	9.31	--	0.00	25.46

**Table 1**  
**Summary of Groundwater Elevation Data**  
**Olympic Athletic Club**  
**5301 Leary Avenue Northwest**  
**Seattle, Washington**

Well ID <sup>1</sup>	Date Measured	Depth to Groundwater <sup>2</sup> (feet)	Depth to SPH <sup>2</sup> (feet)	SPH Thickness <sup>3</sup> (feet)	Groundwater Elevation <sup>4</sup> (feet)
MW14 TOC: 42.37	06/24/08	16.31	--	0.00	26.06
	09/09/08	16.67	--	0.00	25.70
	06/25/09	16.27	--	0.00	26.10
	11/02/09	16.69	--	0.00	25.68
MW-D TOC: 46.30	08/02/06	15.68	--	0.00	30.62
	05/01/07	17.18	--	0.00	29.12
	06/24/08	17.89	--	0.00	28.41
	09/09/08	18.18	--	0.00	28.12
	06/25/09	17.81	--	0.00	28.49
	11/02/09	17.89	--	0.00	28.41

**NOTES:**

<sup>1</sup>TOCs surveyed to City of Seattle Datum by Harstad Consultants in June 2008. TOCs shown in feet.

<sup>2</sup>Depth to groundwater and SPH in feet below ground surface, as measured from a fixed spot on the top of well casing.

<sup>3</sup>SPH thickness = depth to groundwater - depth to SPH.

<sup>4</sup>Groundwater Elevation = top of well casing elevation - depth to groundwater + (SPH thickness x [density of gasoline/density of water]). Density of gasoline is assumed to be 0.75 g/mL and density of water is assumed to be 1.0 g/mL.

-- = not measured

g/mL = grams per milliliter

SPH = separate-phase hydrocarbons

TOC = top of casing elevation

## **ATTACHMENT A**

**Laboratory Analytical Report  
*Friedman & Bruya, Inc. 911016***

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

November 9, 2009

Tom Cammarata, Project Manager  
Sound Environmental Strategies Corporation  
2400 Airport Way S., Suite 200  
Seattle, WA 98134-2020

Dear Mr. Cammarata:

Included are the results from the testing of material submitted on November 3, 2009 from the SOU\_0610-001\_20091103, F&BI 911016 project. There are 4 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  
SOU1109R.DOC

FRIEDMAN & BRUYA, INC.

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ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on November 3, 2009 by Friedman & Bruya, Inc. from the Sound Environmental Strategies SOU\_0610-001\_20091103, F&BI 911016 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Sound Environmental Strategies</u>
911016-01	MW-12-20091102
911016-02	MW-13-20091102
911016-03	MW-09-20091102
911016-04	MW-D-20091102
911016-05	MW-10-20091102
911016-06	MW-02-20091102
911016-07	MW-11-20091103
911016-08	MW-14-20091103
911016-09	MW-06-20091103
911016-10	MW-01-20091103

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/09/09  
 Date Received: 11/03/09  
 Project: SOU\_0610-001\_20091103, F&BI 911016  
 Date Extracted: 11/04/09  
 Date Analyzed: 11/04/09

**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 ug/L (ppb)

<u>Sample ID</u> Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl Benzene</u>	<u>Total Xylenes</u>	<u>Gasoline Range</u>	<u>Surrogate (% Recovery)</u> (Limit 52-124)
MW-12-20091102 911016-01	<1	<1	<1	<3	<100	64
MW-13-20091102 911016-02	<1	<1	<1	<3	<100	83
MW-09-20091102 911016-03	<1	<1	<1	<3	<100	83
MW-D-20091102 911016-04	<1	<1	<1	<3	<100	84
MW-10-20091102 911016-05	<1	<1	<1	<3	140	78
MW-02-20091102 911016-06	<1	<1	3	<3	500	90
MW-11-20091103 911016-07	4	<1	8	10	2,000	88
MW-14-20091103 911016-08	<1	<1	2	<3	220	89
MW-06-20091103 911016-09	7	36	15	39	3,500	113
MW-01-20091103 d 911016-10 1/10	480	80	130	440	6,500	80
Method Blank	<1	<1	<1	<3	<100	89

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/09/09

Date Received: 11/03/09

Project: SOU\_0610-001\_20091103, F&BI 911016

**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: 911016-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference (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	93	65-118
Toluene	ug/L (ppb)	50	93	72-122
Ethylbenzene	ug/L (ppb)	50	90	73-126
Xylenes	ug/L (ppb)	150	92	74-118
Gasoline	ug/L (ppb)	1,000	97	69-134

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### 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.

A1 - More than one compound of similar molecule structure was identified with equal probability.

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 this range fell outside of acceptance criteria. The value reported is an estimate.

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

d - The sample was diluted. Detection limits may be raised due to dilution.

ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.

dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.

fb - The analyte indicated was found in the method blank. The result should be considered an estimate.

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. The variability is attributed to sample inhomogeneity.

ht - The sample was extracted outside of holding time. Results should be considered estimates.

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

j - The result is below normal reporting limits. 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 analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.

jr - The rpd result in laboratory control sample associated with the analyte is 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 compound indicated 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 in a container not approved by the method. The value reported should be considered an estimate.

pr - The sample was received with incorrect preservation. The value reported should be considered an estimate.

ve - The value reported exceeded the calibration range established for the analyte. The reported concentration should be considered an estimate.

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

x - The pattern of peaks present is not indicative of diesel.

y - The pattern of peaks present is not indicative of motor oil.

911016

**SAMPLE CHAIN OF CUSTODY**

ME 11-3-09

V3

Send Report To TAN Cammarata  
 Company SOUND Environmental Strategies  
 Address 2400 Airport Way S. St 200  
 City, State, ZIP Seattle, WA 98134  
 Phone # 206-306-1900 Fax # 206-306-1907

SAMPLERS (signature) \_\_\_\_\_

PROJECT NAME/NO. Olympic Athletic Club PO # 0610

REMARKS 0610 (01)

GEMS Y / N

Page # 1 of 1

**TURNDOWN TIME**  
 Standard (2 Weeks)  
 RUSH  
 Rush charges authorized by: \_\_\_\_\_

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

Sample ID	Sample Location	Sample Depth	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	ANALYSES REQUESTED						Notes	
								NWTPH-Dx	NWTPH-Gx	BTEX by 8021B	VOC's by 8260	SVOC's by 8270	RCRA-8 Metals		
MW12-20091102	MW12	17.5	01 A-C	11-2-09	1111	W	3		X	X					
MW13-20091102	MW13	13	02 A-C	11-2-09	1155				X	X					
MW09-20091102	MW09	18	03 A-C	11-2-09	1241				X	X					
MW08-20091102	MW08	20	04 A-C	11-2-09	1337				X	X					
MW10-20091102	MW10	19	05 A-C	11-2-09	1417				X	X					
MW02-20091102	MW02	18	06 A-C	11-2-09	1451	DA-B			X	X					
MW11-20091103	MW11	18.5	07 A-C	11-3-09	0917				X	X					
MW14-20091103	MW14	19	08 A-C	11-3-09	0954				X	X					
MW06-20091103	MW06	18	09 A-C	11-3-09	1033				X	X					
MW01-20091103	MW01	18.5	10 A-C	11-3-09	1106				X	X					

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

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: _____	Jessica Brown	SES	11-3-09	1140
Received by: _____	VINH	FBI	11-3-09	11:40
Relinquished by:				
Received by:				