

: JYFYj Jk

: cfa Yf' @ 9l | cb  
% %) '@Y'6ci `Yj UfX  
F ]W`UbXžK Ug\]b[ hcb

for  
K Ug\]b[ hcb'GHUY'8YdUfra YbhcZ9M'c[ m

A Urf%' ž&\$%&



**GEOENGINEERS** 

Earth Science + Technology

**File Review**

Former L&L Exxon  
1315 Lee Boulevard  
Richland, Washington

*for*

**Washington State Department of Ecology**

May 16, 2012



523 East 2<sup>nd</sup> Avenue  
Spokane, Washington  
509.363.3125

**File Review**  
**Former L&L Exxon**  
**1315 Lee Boulevard**  
**Richland, Washington**

**File No. 0504-081-00**

**May 16, 2012**

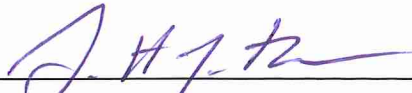
Prepared for:


Washington State Department of Ecology  
Toxics Cleanup Program - Central Region Office  
15 West Yakima Avenue, Suite 200  
Yakima, Washington 98902-3452

Attention: Norm Hepner, PE

Prepared by:

GeoEngineers, Inc.  
523 East 2nd Avenue  
Spokane, Washington 99202  
509.363.3125

  
\_\_\_\_\_  
Scott H. Lathen, PE  
Staff Environmental Engineer

  
\_\_\_\_\_  
Bruce D. Williams  
Managing Principal

SHL:BDW:jlr

Disclaimer: Any electronic form, facsimile or hard copy of the original document (email, text, table, and/or figure), if provided, and any attachments are only a copy of the original document. The original document is stored by GeoEngineers, Inc. and will serve as the official document of record.

Copyright© 2012 by GeoEngineers, Inc. All rights reserved.

# Table of Contents

<b>INTRODUCTION .....</b>	<b>1</b>
<b>SITE DESCRIPTION.....</b>	<b>1</b>
<b>DOCUMENT SUMMARIES.....</b>	<b>2</b>
Underground Storage Tank Site Assessment: Former L&L Exxon Service Station, March 19, 19992 Ecology LUST File .....	2
<b>INTERVIEWS .....</b>	<b>3</b>
Mr. Leland Davis – Property Owner .....	3
Mr. Gilbert Jones – Retired Contractor: Major Petroleum Inc. ....	4
<b>RECOMMENDED SOIL AND GROUNDWATER ASSESSMENT .....</b>	<b>4</b>

## LIST OF FIGURES

- Figure 1. Vicinity Map
- Figure 2. Site Plan

## INTRODUCTION

This report summarizes the file review conducted for the Mid States Cooperative site located at 1315 Lee Boulevard in Richland, Washington (herein referred to as “site”). The site is located approximately as shown in the attached Vicinity Map, Figure 1. In this report, we identify potential site contaminants and components of a recommended soil and groundwater assessment program. We reviewed the following documents:

- “Underground Storage Tank Site Assessment: Former L&L Exxon Service Station, 1315 Lee Boulevard, Richland, Washington” GN Northern, Inc., March 19, 1999.
- Department of Ecology Leaking Underground Storage Tank (LUST) File.

In addition to reviewing the underground storage tank (UST) assessment report and Ecology file, we interviewed the following individuals familiar with assessment and remediation work previously conducted at the site in connection with the UST decommissioning:

- Leland Davis, the property owner;
- Gilbert Jones, retired contractor (Major Petroleum Inc.) who conducted the UST excavation work at the site; and

We also attempted to contact Gerry Harper, the environmental consultant (GN Northern, Inc.) who conducted the UST assessment. We had not received a response from Mr. Harper at the time of this report.

## SITE DESCRIPTION

The site was the former L&L Exxon service station, which was closed in 1999. Former site features removed at the time of closure included (shown on Site Plan, Figure 2):

- Two 6,000-gallon gasoline USTs (designated as UST-1 and UST-2, respectively), installed in the late 1950s, were located on the north side of the property;
- One 4,000-gallon gasoline UST (designated as UST-3), installed in 1979, located south of the 6,000-gallon USTs;;
- Two 500-gallon USTs (waste oil and heating oil, designated as UST-4 and UST-5 respectively) located near the south side of the building; and
- Four dispensers and associated subsurface piping were located on the north side of the property, west of the USTs.

The site is located in a generally commercial area and currently operates as a used car dealership and maintenance shop. Mr. Davis showed GeoEngineers the location of four existing groundwater monitoring wells (MW-1 through MW-4) and a blower formerly included as part of an in-situ remediation system. The monitoring wells were in poor condition (including missing caps, caps paved with asphalt) or inaccessible (MW-4 was located beneath a storage unit) and are not serviceable to collect future groundwater samples. According to the GN Northern report, the

groundwater flow gradient is toward the east. Existing and historical site features, including former USTs and dispensers and current monitoring wells, are depicted on Figure 2.

## DOCUMENT SUMMARIES

### Underground Storage Tank Site Assessment: Former L&L Exxon Service Station, March 19, 1999

This report describes the removal of the site UST system and subsequent assessment activities. Major Petroleum Inc. removed the USTs and associated piping; however, the dispenser islands were removed prior to UST removal. The gasoline USTs were reported to be in good condition; only minor rusting was observed. The heating and waste oil USTs were reportedly in poor condition; severe rusting was observed.

Field screening evidence of petroleum-contaminated soil was not observed from the excavation containing the two 500-gallon USTs. Stained soil exhibiting a petroleum-like odor was observed near the base and sidewalls of the gasoline UST excavation and beneath the former dispensers. Confirmation soil samples were collected from the UST excavations and beneath the former locations of the fuel dispensers. Chemical analytical results indicated the following:

- Gasoline-range petroleum hydrocarbons (GRPH) were detected at concentrations exceeding Washington State Model Toxics Control Act (MTCA) Method A cleanup levels from three samples collected beneath (about 3 to 4 feet below ground surface [bgs]) the northwest, southeast, and southwest dispensers. GRPH concentrations ranged between 40,000 milligrams per kilogram (mg/kg) and 45,000 mg/kg.
- Benzene, toluene, ethylbenzene, and/or total xylene (BTEX) concentrations also were detected at concentrations exceeding MTCA Method A cleanup levels from the same three dispenser samples.
- Benzene was detected from base confirmation samples collected beneath each of the gasoline USTs (at about 9½ to 10 feet bgs) and from the west sidewall sample (at about 7 feet bgs) of the UST excavation. Benzene concentrations ranged between 0.15 mg/kg and 1.3 mg/kg.
- Base confirmation samples collected beneath the two 6,000-gallon gasoline UST and the west sidewall sample contained detected GRPH concentrations ranging between 41 mg/kg and 89 mg/kg.
- Profile samples were collected from the stockpiled overburden soil. GRPH was detected at 30 mg/kg. No other contaminants of concern were detected from the stockpiled soil.

Based on the chemical analytical results, the overburden stockpile was returned to the excavations as fill. GN Northern concluded that a petroleum release from the UST system had occurred.

### Ecology LUST File

The Ecology LUST file included reviews of the above report, recommendation decision, and notification forms associated with the UST decommissioning. In addition to documents related to the work conducted in 1999, the file includes correspondence and chemical analytical results regarding the excavation, treatment, and disposal of contaminated soil conducted in 1989.

The file indicates Dick Bassett from Ecology conducted a site visit in May 1999. His report identified “groundwater contamination encountered” in the UST excavation. He assigned the site an Interim Action status. During a phone interview on May 2, 2012, Mr. Bassett could not recall specific actions taken at the site.

In 1989, correspondence from the Benton-Franklin District Health Department (Health Department) indicated contaminated soil stockpiles should be landfarmed at the Richland Landfill. A hand-drawn site plan indicated the soil was excavated from between the three gasoline USTs. The Health Department letter stated about 10 to 15 cubic yards of soil were excavated. Westinghouse Environmental Systems and Services (Westinghouse) collected samples from the excavation. The soil sample contained BTEX contamination at concentrations greater than the applicable cleanup levels at the time of the work. Additionally, a groundwater sample was collected from the excavation with BTEX concentrations greater than the applicable cleanup levels. Westinghouse concluded that additional remediation was warranted; however no documentation of additional remediation in response to the 1989 work is available.

## INTERVIEWS

### Mr. Leland Davis – Property Owner

GeoEngineers visited the Site on April 27, 2012, met with Mr. Leland Davis, the property owner, and discussed the historical assessment and remediation activities conducted. According to Mr. Davis, in addition to the UST decommissioning and assessment described in the GN Northern report, further assessment and remediation actions occurred at the site. He believes the source of the release was from the dispensers. Mr. Davis’ recollection of assessment and remedial actions included:

- Installation of four groundwater monitoring wells by Major Petroleum, Inc. According to Mr. Davis, contaminants of concern were not detected from monitoring well MW-4, located near the southwest corner of the property. Mr. Davis also mentioned that he has not noticed an odor from MW-2 in at least a year. Previously, an obvious gasoline-like odor was observed when opening MW-2.
- Excavation of petroleum-contaminated soil from the area of the USTs and dispensers after the reported UST assessment. Soil was excavated to the groundwater interface (estimated at about 12 feet below ground surface) and transported to a landfill. Imported fill was used to backfill the excavation.
- Injection points were installed beneath the eastern portion of the building and microbes were introduced to the subsurface. According to Mr. Davis, GN Northern introduced the microbes on two separate occasions. GN Northern indicated the microbes introduced the first time did not survive and a second injection was required.
- A blower also was connected to the microbe injection points to supply air to aid biodegradation of the subsurface contaminants. The blower is still located on the northeast corner of the existing building.

Mr. Davis does not possess or have access to files describing the assessment and remedial actions he described.

### **Mr. Gilbert Jones – Retired Contractor: Major Petroleum Inc.**

Mr. Gilbert Jones was contacted by phone on April 25, 2012. Mr. Jones is retired and does not have files relating to the site. According to his recollection, “quite a few” injection points were drilled beneath the building for microbial injection. The injection points extended about 8 to 10 feet beneath the building. He installed the four monitoring wells by excavating test pits to below the groundwater table, installing 4-inch-diameter screened PVC pipe, and backfilling around the pipe. According to Mr. Jones, groundwater samples collected from the wells were “clean”. Excavation of contaminated soil extended to about 10 to 12 feet bgs, the approximate depth of the groundwater interface. Excavated contaminated soil was transported to a landfill for disposal.

### **ASSESSMENT AND REMEDIATION TIMELINE**

Based on the file review and interviews, the following timeline can be constructed. Actual dates for many of the events have not been established; therefore the timeline is based on the relative time of the actions taken.

1. 1989 – Petroleum-contaminated soil excavation and disposal from near the gasoline USTs. Westinghouse conducted soil and groundwater assessments associated with the excavation.
2. Petroleum dispenser removal.
3. February 1999 – UST decommissioning and assessment conducted by Major Petroleum, Inc. and GN Northern.
4. Monitoring well installation by Major Petroleum, Inc.
5. Remedial excavation to the groundwater level (about 12 feet bgs) conducted by Major Petroleum, Inc.
6. In-situ remediation using microbial injection beneath the existing building supplemented with air injection.

### **RECOMMENDED SOIL AND GROUNDWATER ASSESSMENT**

Based on the file review and interviews, additional soil and groundwater assessment is required to close the site. Assessment actions will include subsurface soil sampling near former dispenser locations and installation of groundwater monitoring wells. Recommended assessment steps are designed to confirm if soil and/or groundwater contamination at the site requires further remedial action and/or an environmental covenant are as follows:

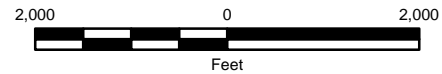
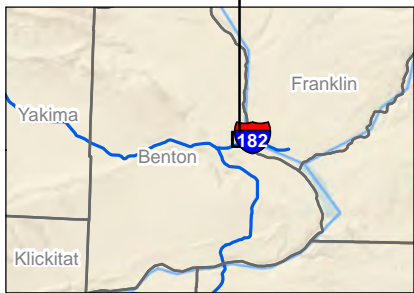
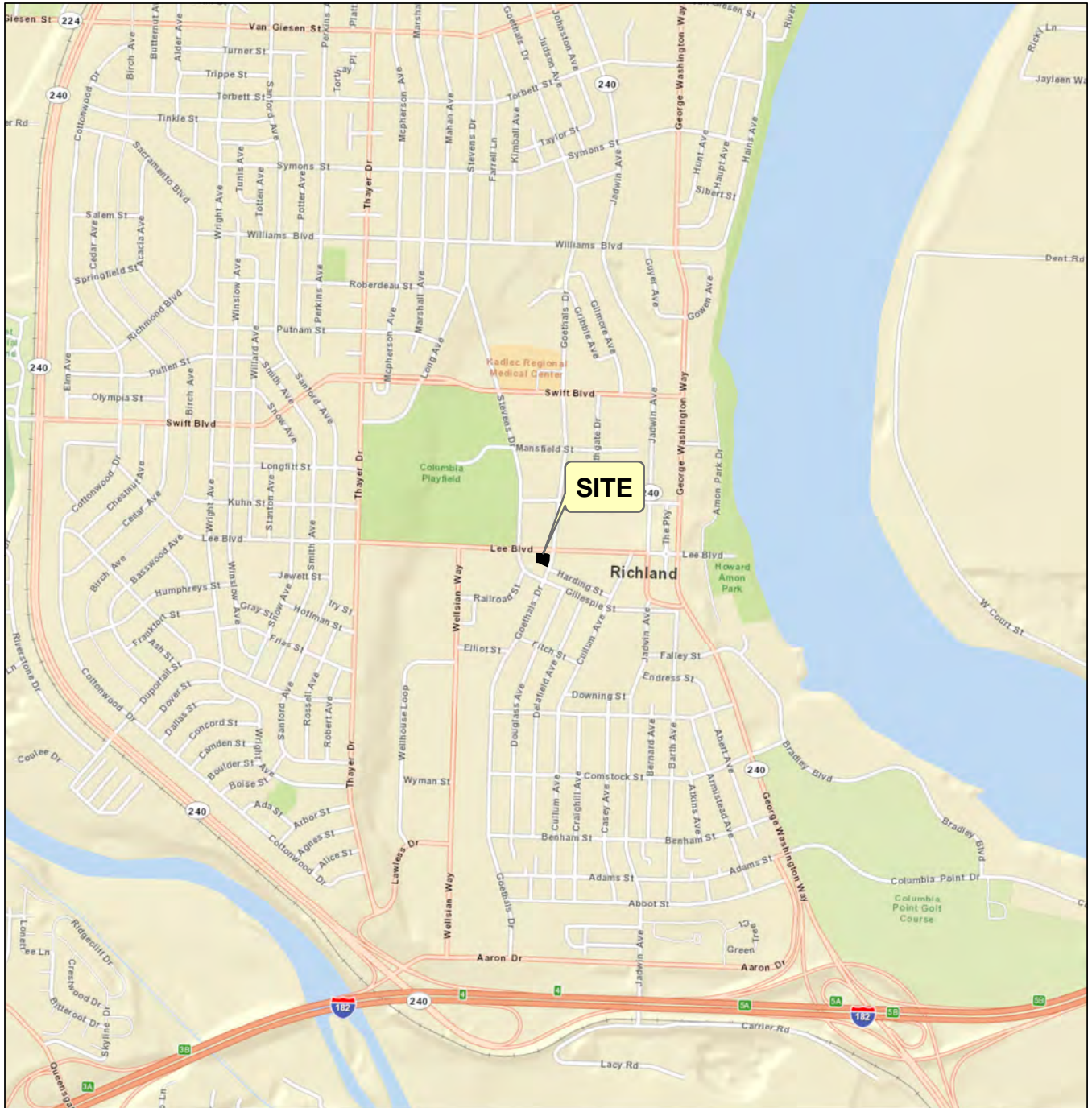
- Prepare a Health and Safety Plan (HASP) for field activities.
- Coordinate underground utility location services using the state one-call system.
- Prepare a draft work plan for sampling activities and submit to Ecology for review. The work plan will include a sampling and analysis plan (SAP) and State Environmental Policy Act (SEPA) checklist. GeoEngineers will prepare a final work plan to address Ecology’s comments on the draft Work Plan.




- Conduct a remedial investigation (RI) at the site. We anticipate the RI will include three days of air-rotary drilling (about eight soil borings). Borings will be advanced near the location of the former gasoline USTs and dispensers. Specifically, we anticipate advancing three borings near the former dispensers; two borings near the former gasoline USTs; and three borings will be constructed as monitoring wells (two downgradient wells near the east property line and one upgradient well near the west property boundary and near existing wells MW-1 through MW-3). Proposed boring locations are depicted on Figure 2.
- Soil samples will be collected continuously during drilling at approximate 5-foot depth intervals using split-spoon samplers. Select sub-samples will be field-screened using visual observations, water sheen, and headspace vapor measurements with a photoionization detector (PID) to assess possible presence of petroleum-related contaminants. At least one sample from each 5-foot depth interval will be collected for potential chemical analysis.
- Construct groundwater monitoring wells in three of the exploratory borings. Wells will be screened based on groundwater conditions observed in the field.
- Develop monitoring wells using surging and bailing/pumping.
- Submit at least one soil sample from each boring to a qualified analytical laboratory for chemical analysis. One sample from within the vadose zone of each boring, exhibiting the greatest indications of petroleum contamination based on field-screening measurements, will be submitted for chemical analysis (see below). The remaining samples will be held at the laboratory or GeoEngineers' Spokane office for potential analysis.
- Soil samples will be analyzed for GRPH, DRPH, ORPH, BTEX, EDB, EDC, MTBE, n-hexane, lead, and PAHs. Two soil samples will be further analyzed for fractionalized petroleum hydrocarbons (aliphatics and aromatics) using Northwest VPH and EPH methods. Samples will be analyzed on standard turn-around-time; Ecology and GeoEngineers collectively will determine which samples are submitted for fractionalized petroleum hydrocarbons.
- Collect groundwater samples from each well using low-flow/low-stress sampling techniques.
- Submit groundwater samples to a qualified laboratory for chemical analysis. Samples will be analyzed for GRPH using Northwest Method NWTPH-Gx; DRPH using Northwest Method NWTPH-Dx, BTEX, EDB, EDC, MTBE and n-hexane using EPA Method 8260B; lead using EPA 6000 Series Methods, and PAHs using EPA Method 8270-SIM.
- Investigation-derived waste (IDW) will be drummed, labeled, and stored on-site pending results of analytical testing.
- Enter data results information into Ecology's Environmental Information Management (EIM) database.

After concluding the remedial investigation, we will prepare a draft and final Interim Action Plan. This plan will summarize the data gap investigation and detail the preferred remedial alternative.



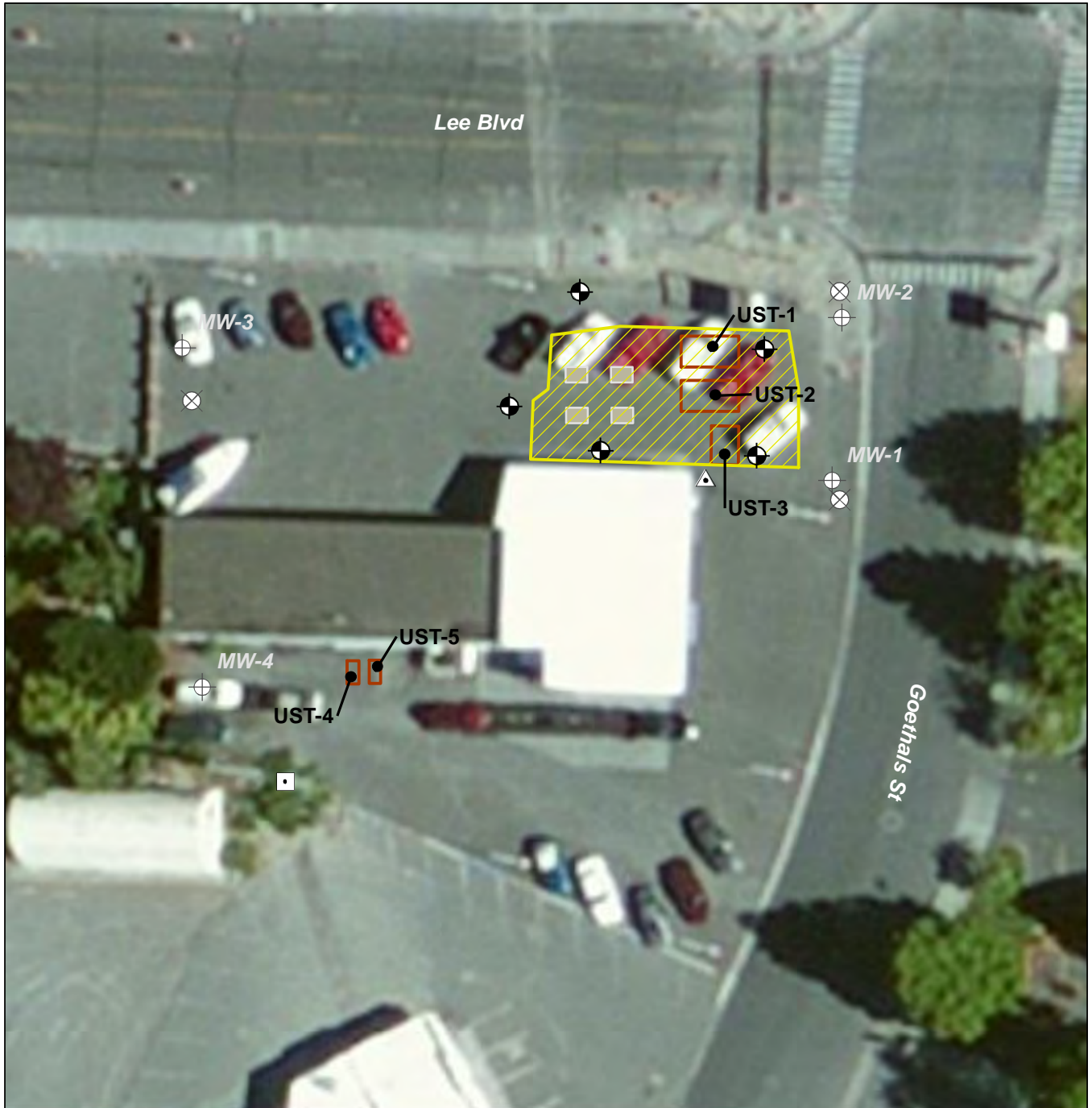


Notes:  
 1. The locations of all features shown are approximate.  
 2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document.  
 GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.  
 Data Sources: ESRI Data & Maps, Street Maps 2008.  
 Basemap streets base from ESRI Data Online.  
 Projection: NAD 1983, UTM Zone 11 North.

<b>Vicinity Map</b>	
Former L&L Exxon 1315 Lee Boulevard Richland, Washington	
<b>GEOENGINEERS</b> 	<b>Figure 1</b>

Map Revised: 5/16/2012 CRC

Office: PORT Path: P:\00504081\_SP\OK\_GIS\00\GIS\050408100\_F2\_SP.mxd



- |  |   |  |  |
|--|---|--|--|
|  | Proposed Monitoring Well Approximate Location |  | Monitoring Well Number and Approximate Location    |
|  | Proposed Soil Boring Approximate Location     |  | UST Number and Approximate Location                |
|  | Approximate Location of Remediation System    |  | Approximate Location of Excavation Area            |
|  | Approximate Location of Transformer           |  | Historical Fuel Dispenser and Approximate Location |



**Notes:**

1. The locations of all features shown are approximate.
  2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document.
- GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
- Data Sources: ESRI Data & Maps, Street Maps 2008.  
 Basemap streets base from ESRI Data Online.  
 Projection: NAD 1983, UTM Zone 11 North.

<b>Site Plan</b>	
Former L&L Exxon 1315 Lee Boulevard Richland, Washington	
	<b>Figure 2</b>

Have we delivered World Class Client Service?  
Please let us know by visiting [www. geoengineers.com/feedback](http://www.geoengineers.com/feedback).

