REMEDIAL ACTION PLAN AND ENGINEERING DESIGN REPORT

TERRY'S AUTO SALVAGE

Prepared for
CITY OF KELSO
TERRY'S AUTO SALVAGE
May 29, 2013
Project No. 0443.02.02

Prepared by
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The material and data in this report were prepared under the supervision and direction of the undersigned.

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CONTENTS

TABLE AND ILLUSTRATIONS

FOLLOWING REPORT:

ACRONYMS AND ABBREVIATIONS

bgs	below ground surface
City	City of Kelso
cPAH	carcinogenic polycyclic aromatic hydrocarbon
CUL	cleanup level
Ecology	Washington State Department of Ecology
FSA	focused site assessment
HASP	health and safety plan
IHS	indicator hazardous substance
MFA	Maul Foster & Alongi, Inc.
MTCA	Model Toxics Control Act
PCB	polychlorinated biphenyl
Plan	remedial action plan and engineering design report
Property	1124 North Pacific Avenue, Kelso, Washington
SAP	sampling and analysis plan
TCLP	toxicity characteristic leaching procedure
TPH	total petroleum hydrocarbons
WBZ	water-bearing zone

1 INTRODUCTION

On behalf of the City of Kelso (City), Maul Foster & Alongi, Inc. (MFA) has prepared this remedial action plan and engineering design report (Plan) for the soil removal action at the former Terry's Auto Salvage property at 1124 North Pacific Avenue, Kelso, Washington (the Property) (see Figure 1). Improper disposal and handling of hazardous materials and wastes, associated with historical automobile wrecking and salvage operations, resulted in soil impacts to the Property. As a result, the Property was listed with the Washington State Department of Ecology (Ecology) as Facility Site No. 74599527 and Cleanup Site No. 3111. Hazardous materials and waste have been removed from the Property and properly disposed of, but impacted soil remains. This Plan has been developed to provide details for the preferred remedial action to address impacted soil and to ensure that remedial action work is conducted consistent with Ecology requirements.

For efficiency, the two elements of this Plan (i.e., the remedial action plan and the engineering design report) have been combined to address the requirements of both documents, thereby removing redundancies where the requirements are the same. The approach described in this report has been discussed with Ecology and is agreed to be the preferred alternative identified in the focused site assessment (FSA) (MFA, 2012). This Plan defines the approach for implementation of the preferred alternative and includes the following Ecology-required elements, consistent with the requirements of Washington Administrative Code 173-340-400 and 173-303-410:

- A brief site operational history and site characterization (Sections 1 and 2), including attached maps and figures identifying existing site conditions as well as locations of the proposed cleanup actions.
- Contaminant and contaminated media characteristics as well as sampling specifications (Section 3).
- The proposed remedial action, including a soil excavation plan; sampling specifications; and backfill, compaction, and final grading (Section 4).
- Appendices, including construction plans and specifications detailing the work to be performed; a health and safety plan (HASP); and a sampling and analysis plan (SAP) that incorporates quality assurance project plan elements.

2 SITE DESCRIPTION AND OVERVIEW

2.1 Location and Background

The physical address of the Property is 1124 North Pacific Avenue in Kelso, Washington (see Figure 1). The Property comprises two triangular-shaped parcels (tax assessor parcel numbers 20476

and 20489) bordered by Redpath Street to the north, 1st Avenue North and residential properties to the east, and North Pacific Avenue to the west. The Property is zoned for multifamily housing and is on the edge of a single-family-housing neighborhood.

The Property is located in section 27 of township 8 north and range 2 west of the Willamette Meridian. The northwest parcel (parcel number 20476) is approximately 0.51 acre, and the southeast parcel (parcel number 20489) is approximately 0.21 acre.

A garage/office building that once stood on the Property has been removed and there are no structures on the Property at this time. The ground surface is unpaved, with little vegetation and only a few trees and shrubs. There is a downward slope from North Pacific Avenue to the center of the Property and a depression in the former location of the building, but otherwise the parcels are generally flat. The Property is located approximately 500 feet east of the Cowlitz River. An active Burlington Northern Santa Fe rail line runs north-south between the Property and the river.

2.2 Overview of Historical Operations and Impacts

The Property had been used as an auto salvage yard since the 1950s. The operations left the Property in a degraded condition, with stockpiles of old tires, scrap cars, and automotive parts (see Figure 2). By 2010, operations at the Property had ceased and the Property was abandoned. As part of a Neighborhood Stabilization Program grant, the City removed the derelict garage/office building and debris (e.g., tires, junk cars, auto parts) left on the Property. Demolition of the building was completed in November 2010. The Property was in arrears on taxes and the City initiated foreclosure in 2012.

There is a history of complaints concerning improper handling of hazardous materials and waste on the Property, which resulted in Ecology site visits in 1996, 1999, and 2002 (Ecology, 1999a,b; 2002). Ecology staff instructed the property owner to clean up contaminated areas; however, concerns with the Property continued and Ecology received further complaints. In response to complaints from neighbors regarding spills of waste motor oil and other automobile fluids, Ecology conducted an initial investigation of the Property in 2002 (Ecology, 2002).

During the initial investigation, Ecology collected two surface soil samples from the Property. The approximate sample locations are shown in Figure 2. The samples were analyzed for petroleum hydrocarbons. Lube oil was identified in both samples at concentrations above the Model Toxics Control Act (MTCA) Method A cleanup level (CUL) for unrestricted land use.

The Property was subsequently listed on the Washington State Confirmed and Suspected Contaminated Sites list. In 2004, a site hazard assessment was conducted (Ecology, 2004), resulting in a hazard ranking of 2 (with 1 as the highest risk and 5 the lowest risk).

3 SITE CONDITIONS

3.1 Geology and Hydrogeology

The site geology generally consists of an approximately 1-foot-thick surficial layer of gravel and gravelly sand with debris. Large debris was removed from the Property during the site demolition and clearing, but trace amounts of auto scrap debris, consisting of chunks of wood and tire and bits of wire, glass, plastic, and metal, remain scattered across the ground surface and within the top foot of soil. Underlying the surficial gravel and debris is a unit consisting of silt and sand extending to approximately 17 feet below ground surface (bgs). During sampling, a layer of dark gray sand was encountered at 17 feet bgs, which generally coarsened with depth and extended to approximately 35 feet bgs. Gravel was encountered at 35 feet bgs. The soil types encountered at the site are consistent with Quaternary alluvial deposits known to exist in the area, which likely were deposited by the Cowlitz River.

Groundwater was encountered between 0 and 6 feet bgs (see Table A-1 in Appendix A); the shallowest groundwater was encountered in the depression left by the removal of the building. Soil was fully saturated from the top of the water table to the maximum depth explored (40 feet bgs), suggesting that there is one unconfined and continuous water-bearing zone (WBZ) extending from the ground surface to an unknown depth greater than 40 feet bgs. Three monitoring wells were installed in the deeper part of the WBZ, screened from approximately 35 to 40 feet bgs, to evaluate potential impacts observed in reconnaissance samples. Groundwater elevations indicate that groundwater in the deeper part of the WBZ is flowing toward the south. Groundwater elevations measured in temporary boreholes suggest shallow flow toward the northeast; however, groundwater elevations from reconnaissance borings may be unreliable. Soil boring and monitoring well logs and the driller's logs are provided as Appendix B.

3.2 Environmental Conditions

An FSA was performed to assess the nature and extent of contamination in soil and groundwater (MFA, 2012). Investigation locations are shown in Figure 2. Analytical results and boring logs from the FSA are provided as Appendices A and B, respectively. Sample locations with soil CUL exceedances are shown in Figure 3; soil CULs are summarized in the attached table. No CUL exceedances were observed in shallow groundwater samples collected from the reconnaissance borings or groundwater samples collected from the monitoring wells screened in the deeper WBZ.

The following indicator hazardous substances (IHSs) were identified in soil:

- Total petroleum hydrocarbons (TPH)
- Carcinogenic polycyclic aromatic hydrocarbons (cPAHs)
- Benzene
- Xylenes

- Polychlorinated biphenyls (PCBs)
- Arsenic
- Cadmium
- Lead
- Mercury

Metals above CULs are present in soil throughout the Property and on the neighboring property, primarily at depths shallower than 2 feet bgs. TPH and multiple compounds associated with TPH releases (benzene, xylenes, cPAHs, and PCBs) are present above CULs in the central area of the northern parcel at depths shallower than 2 feet bgs. The vertical extent of IHSs in soil is generally consistent with observations of debris (e.g., bits of glass, plastic, wire, and metal; and chunks of wood and tire).

Vapor-phase partitioning from benzene-impacted soil was identified as a potential future exposure pathway that may result if structures are constructed on the Property.

There are no IHSs in groundwater. Therefore, groundwater appears not to be significantly impacted by site-related contaminants and all groundwater-related exposure pathways are insignificant.

4 REMEDIAL ACTION ENGINEERING DESIGN

The selected remedial action involves removal of soil exceeding MTCA Method A, unrestricted land use, CULs (see the attached table). Soils exceeding Method A CULs will be excavated and transported off site to a permitted treatment, storage, or disposal facility. The selected remedial action will address the following objectives:

- Preventing or minimizing direct contact with or ingestion of contaminated soil by humans or ecological receptors
- Preventing or minimizing the potential for migration of contaminants from soil to groundwater

Lateral and vertical excavation extents have been established based on analytical results from the field investigation conducted by MFA in 2012. These results were presented in the FSA report and are shown in Appendices A and B. Approximate excavation extents are shown on Plan Sheet C3.0.

Because of the heterogeneous nature of the surface contamination, additional material will be removed by scraping. It is anticipated that a minimum of 8 inches of material will be scraped from the entire site; this depth may extend to 24 inches as needed.

Excavated materials and site scrape materials will be stockpiled on site for waste profiling and possible treatment, then transported off site for disposal, as appropriate. Soils not exceeding MTCA Method A CULs will remain on site. On-site treatment of soil for lead may be considered if waste

characterization samples are obtained that identify the soil as hazardous waste. If on-site treatment for lead is not feasible because of cost, the contaminated soil will be disposed of at a permitted Subtitle C landfill facility.

The objective of the remedial action is to remove all soil with impacts exceeding MTCA Method A CULs. The volume of removed material was estimated in the FSA to be 1,770 cubic yards (3,275 tons). This estimate includes removal of materials by excavation and site scraping. If impacted soil exceeding MTCA Method A CULs is encountered outside the excavation extents shown on Plan Sheet C3.0, the material will be excavated and disposed of off site, if allowed by the project budget. If budget funds are not available, a contingency plan shall be developed with Ecology that may include capping of metals-impacted soils exceeding MTCA Method A CULs. The contingency plan would require all volatile-organic-compound-impacted soils to be removed from the site. Soil with metals impacts would be consolidated and placed under a demarcation fabric and 1-foot cap of clean general fill, which is to be imported to achieve desired site development grades. All impacted soils remaining on site would be documented in a soil management plan.

Design elements for the remedial action are described below.

4.1 Mobilization and Site Preparation

The garage/office building was removed in November 2012 and surface debris was removed in November 2011; however, a concrete slab at the northwest corner of the site was left in place to be removed as part of the remedial action soil excavation. before excavation activities, the fence along the east property boundary will be demolished and reconstructed using wood materials, similar to the existing fence.

The site was surveyed by a registered land surveyor in March 2012 as part of the investigation. Excavation extents will be located, staked, and painted by the contractor and will be verified by the engineer. The final extent of the excavations will be directed through visual observations by MFA and Ecology and then documented by surveying the excavation extents. Before excavation, the locations of subsurface utilities within 50 feet of the excavation areas will be identified by "One-Call" public notification and a private utility locating company.

The site will be controlled during construction activities by the erection of a temporary chain-link fence, with exclusion zones designated by warning tape. Any additional site controls will be established in accordance with the site HASP found in Appendix C, and as determined by the construction contractor's HASP. The site will be secured when the engineer and/or contractor are not present.

Equipment will be mobilized to the site and is expected to include, but not be limited to, the following:

- Trackhoe excavator
- Front-end loader
- Skid-steer loader

- Dump truck
- Water truck
- Support vehicles and equipment

Erosion-control measures will be installed by the contractor and are shown in the erosion and sediment control plan on Plan Sheet C2.1. The erosion and sediment control plan will require a silt fence to be maintained on site and soil stockpiles to be covered when not in use or at night, and protected during rain or wind events. All erosion-control measures will be installed before excavation activities begin and will be maintained throughout the construction effort.

4.2 Soil Excavation and Management

The soil remedial action includes the excavation of soils exceeding MTCA Method A CULs (see the attached table). These areas are defined in Plan Sheet C3.0.

Oversight and monitoring for consistency with this Plan will be performed under the direction of an engineer or geologist registered in the State of Washington. Field screening will be performed throughout excavation activities and confirmation sampling conducted upon reaching apparent contamination boundaries. Field screening and sampling techniques may include, but are not limited to:

- For TPH, benzene, and xylenes:
  - Visual
  - Olfactory
  - Photoionization detector—optional
  - Solution test kit (e.g., OilScreenSoil™ by Cheiron Resources)—optional
  - Analytical—optional
- For arsenic, cadmium, and lead:
  - Field-portable X-ray fluorescence instrument
  - Analytical—optional
- For benzo(a)pyrene, cPAH toxicity equivalent quotient and PCBs:
  - Analytical—optional

Analytical testing is an optional technique that may be used to supplement field screening results; however, analytical testing will be performed on confirmation samples in accordance with the procedure outlined in section 4.2.6.

4.2.1 Excavation

Excavation activities will initially be limited to the extent shown on Plan Sheet C3.0. The excavation boundaries were developed as part of the FSA (MFA, 2012) and are expected to result in the removal of all soils exceeding MTCA Method A CULs. The estimated volume of removed soil is

1,770 cubic yards (3,275 tons). Because of the uncertainty associated with estimating the true size of the excavation, a 15 percent volume contingency above the estimated volume has been assumed for the purposes of cost estimating. All monitoring wells will be decommissioned before the start of excavation activities.

Upon removal of all soils as described above, confirmation sampling will be completed as outlined in Section 4.2.6 and in the SAP. The results of the initial excavation confirmation sampling will be compiled and reviewed with Ecology to determine appropriate management prior to backfill. This could include removal, further evaluation of risk, and/or management through institutional controls.

Table A-3 in Appendix A indicates that soils within the excavation limits may be defined as characteristic waste because of elevated lead concentrations. Some of the excavated soils may require on-site treatment (stabilization) before transportation and disposal. All excavated soils will be stockpiled on site for waste profiling and possible treatment before transportation to a permitted off-site disposal facility.

4.2.2 Dust Controls

Excavation activities will disturb soil and have the potential to generate dust. Appropriate dust-control measures will be employed during excavation to prevent generation of airborne contaminants. These control methods will include soil wetting and misting, at a minimum. The excavation area may be wetted before the start of excavation activities during dry weather by spraying the area immediately around the excavation so that visible dust emissions are controlled.

A City fire hydrant is located to the south of the southeast parcel. The contractor will provide water for all excavation activities throughout the entire construction effort. A permit to use the existing fire hydrant may be obtained by the contractor should it be required.

Soils will be kept wet during handling until the soil is either (1) placed in haul trucks and covered pending transport to an off-site permitted landfill, or (2) placed on site in stockpiles and covered (as described in Section 4.2.3). Dry excavation, dry shoveling, and dry sweeping of soil will not be allowed.

4.2.3 Stockpiling

All excavated soils will be stockpiled within the property boundary. Soil to be disposed of off site will be profiled to determine lead characteristics. The property boundary is defined on the attached plans.

Any soil excavated at the Property and temporarily stockpiled will be managed in a manner that minimizes erosion, contact with stormwater runoff, dust generation, and worker and public contact, unless the soil is immediately loaded into trucks for off-site disposal.

Soil stockpiles will be covered with plastic sheeting at the end of each workday to minimize erosion, dust generation, and direct contact by humans. The plastic sheeting that covers the pile must be regularly inspected to ensure that it remains functional and protective of human health and the

environment. Temporary stockpiles of contaminated soil must be properly managed and disposed of off site within 60 days of completion of excavation work.

Soil stockpiles will be located on site in an area approved by the engineer. Upon the removal of the stockpile, the contractor will remove an additional 0.5 foot of material from within the footprint of the stockpile.

4.2.4 Waste Characterization

Excavated material will be stockpiled on site. Soil stockpiles to be disposed of off site will be measured and delineated to estimate 100-cubic-yard sections. Five-point composite samples will be obtained from each 100-cubic-yard stockpile section that is to be disposed of off site. In order to develop a representative sample of the stockpile, five discrete subsamples will be composited. The 100-cubic-yard sections will be divided into four quadrants, with one additional subsample obtained from a random location in one of the quadrants.

The five-point composite sample methodology is intended to result in data that are representative of the contaminants in the pile while accounting for the variability of the waste that is generated from the different excavation locations. The soil in each stockpile is anticipated to be homogenized through on-site handling procedures (i.e., excavation and stockpiling). Composite sampling, combined with homogenization gained through soil handling, is expected to result in a sample that is representative of the specific stockpile. Variability of the soil from different excavation areas will be addressed by collecting one composite per every 100 cubic yards of excavated soil; field precision will be evaluated by obtaining one field duplicate sample for every 20 composite samples. Laboratory quality assurance and quality control (QA/QC) data, along with sample results, will be validated before handling procedures are determined for any soil. This review will be conducted as laboratory reports are received so that soil management may proceed efficiently. Specifics regarding soil sampling, handling, and QA/QC requirements are provided in the SAP (Appendix D).

Based on the volume of soil to be excavated, it is estimated that 18 composite soil samples will be adequate for waste profiling. Once the data have been received, the stockpiled material will either be treated to stabilize any leachable lead, as described below (if failing the toxicity characteristic leaching procedure [TCLP]), or disposed of as a special waste at a Subtitle D landfill (if passing TCLP).

4.2.5 Treatment

Each 100-cubic-yard section whose associated composite sample exceeds 5.0 milligrams per liter TCLP lead will be treated within the site boundaries. Soil treatment will consist of phosphate mineralization or cement stabilization to decrease the leachability of lead in a soil matrix. Following treatment, the subject soil stockpile sections will be characterized through collection and analysis of an additional five-point composite sample collected using the same methodology as the initial composite sample. The soil profile samples showing passage of the TCLP lead criterion will be provided to the landfill for acceptance before transport. In the event that TCLP analysis results fail the lead subtitle D lead criterion, Ecology will be informed so that next steps may be established.

4.2.6 Excavation Limits Sampling and Analysis

Soil will be excavated to the extent shown in Plan Sheet C3.0, and soil samples collected from the excavation walls and floor will be analyzed for IHSs at a certified laboratory. The results of the initial excavation confirmation sampling will be compiled and reviewed with Ecology to determine whether any adaptive management is required before backfill. This could include additional removal, further evaluation of risk, and/or management through institutional controls.

A minimum of one sample every 625 square feet will be collected from the floor of the excavation for analysis. Discrete samples will be collected every 30 linear feet along the sidewalls of the excavation at depths that coincide with known impacts. Predetermined sample locations are shown on Figure 4. Sidewall confirmation samples from the excavation area will be collected approximately halfway between the floor of the excavation and the original ground surface. Soil sampling and analysis are described further in the SAP (Appendix D).

In the event that additional excavation is conducted after evaluation of the confirmation samples, the sampling procedures described above will be followed for these newly developed excavation limits.

4.3 Backfill, Compaction, and Final Grade

Following confirmation sampling, authorization to proceed with backfill operations will be provided by the engineer. Excavations will be backfilled using clean soil from a local source or clean overburden from on-site excavations. Before imported soil is accepted and placed, verification will be required documenting that the soil does not contain contaminant concentrations exceeding MTCA Method A CULs. Verification will be in the form of laboratory analysis following applicable U.S. Environmental Protection Agency test methods. Additionally, a fill source statement will be required from the landowner for each proposed off-site soil borrow source, indicating the location and the current and previous land uses, and confirming that to the best of the landowner's knowledge there has never been contamination of the borrow source site with hazardous or toxic materials.

Clean soil backfill will be placed in the excavated areas and compacted in accordance with project specifications (Appendix E). The final grade will be placed in accordance with the engineered drawings following this Plan. Grades will be leveled, sloped, and protected with gravel to guard against runoff (see Plan Sheet C4.0).

4.4 Soil Gas

Soil gas contaminant levels will be eliminated through removal of impacted soil.

LIMITATIONS

The services undertaken in completing this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express 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.

REFERENCES

Ecology. 1999a. Memorandum (re: complaint investigation #S103341 and #S505970) to file from R. W. Warren, Washington State Department of Ecology, Olympia, Washington. August 26.

Ecology. 1999b. Letter (re: releases of petroleum contamination) to T. Sexton, Terry's Wrecking & Auto Salvage, from Washington State Department of Ecology, Olympia, Washington. November 16.

Ecology. 2002. Letter (re: ERTS # 526301, Terry's Salvage Yard) to T. Sexton Terry's Wrecking & Auto Salvage, from F. A. Svendsen, Washington State Department of Ecology, Olympia, Washington. June 20.

Ecology. 2004. Letter (re: site hazard assessment—Terry's Salvage, Ecology Facility Site I.D. No. 74599527) to C. G. McGraw, from M. J. Spencer, Washington State Department of Ecology, Olympia, Washington. July 27.

MFA. 2012. Focused site assessment report, former Terry's Auto Salvage property. Maul Foster & Alongi, Inc., Bellingham, Washington. October 2.

TABLE

Table
Soil Cleanup Levels
Former Terry's Auto Salvage Property, City of Kelso
Kelso, Washington

Indicator Hazardous Substance	Cleanup Level (mg/kg)
TPH	
Gasoline	30
Heavy Oils	2,000
Metals	
Arsenic	20
Cadmium	2
Lead	250
Mercury	2
VOCs	
Benzene	0.03
Total Xylenes	9
cPAHs	
cPAH TEQ	0.1
PCBs	
Total PCBs	1

Notes

Cleanup levels are based on Model Toxics Control Act, Method A, unrestricted land use, table values.

cPAH = carcinogenic polycyclic aromatic hydrocarbon

mg/kg = milligrams per kilogram

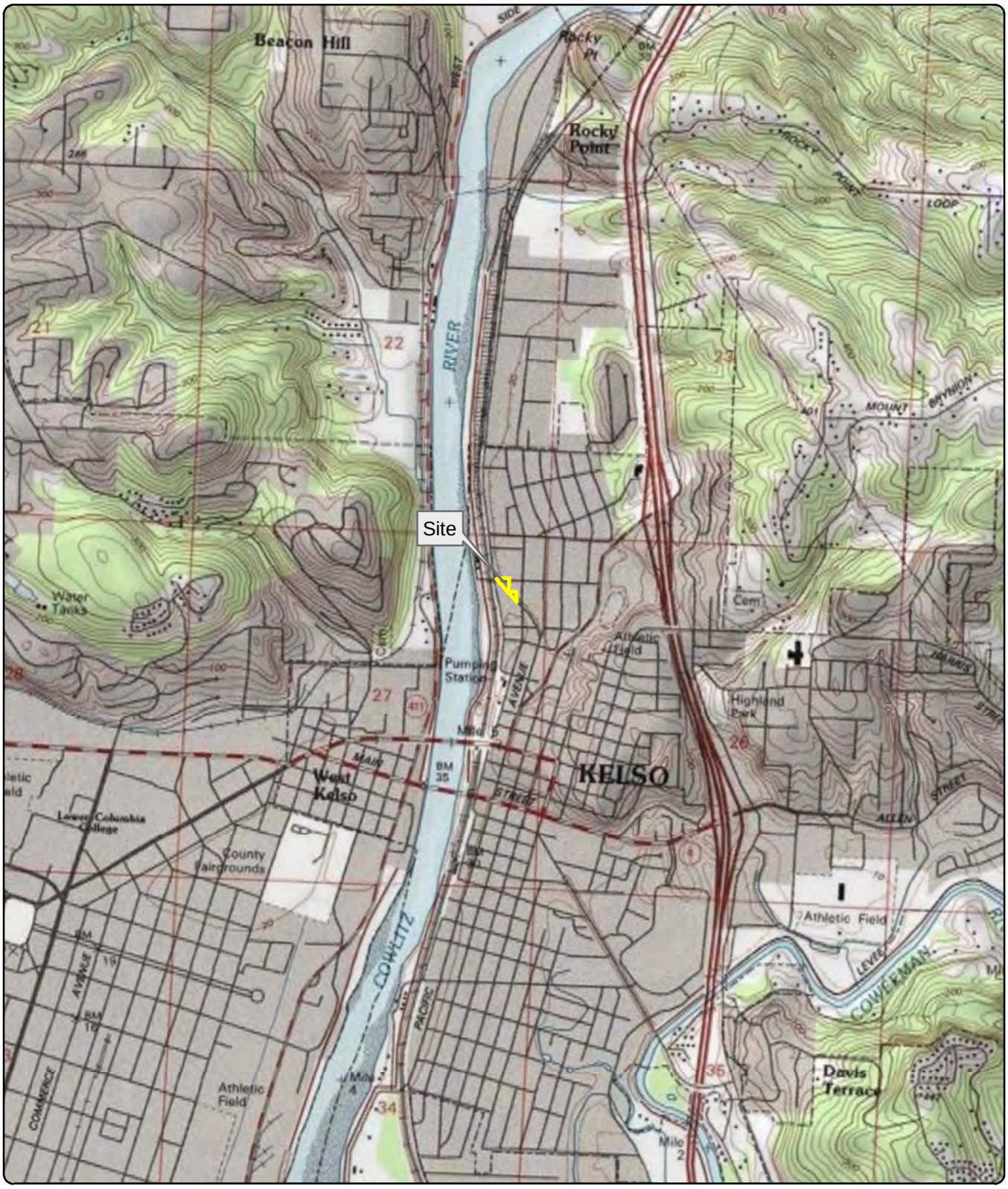
PCB = polychlorinated biphenyl

TEQ =toxic equivalency quotient

TPH = total petroleum hydrocarbons

VOC = volatile organic compound

FIGURES



Site Address: 1124 North Pacific Avenue, Kelso, Washington
Source: US Geological Survey (1990) 7.5-minute topographic quadrangle: Kelso
Section 27, Township 8N, Range 2W

Legend

Site

Figure 1
Site Location

Terry's Auto Salvage
Kelso, Washington

0 1,000 2,000
Feet

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Path: X:\0443.02\Projects\Fig1_Site Location.mxd
Print Date: 5/24/2013
Approved By: H. Hirsch
Produced By: Hines
Project: 0443.02.02

Source: Aerial photograph obtained from ESRI, DRAFT Inc. ArcGIS Online/Bing Maps; parcels obtained from Cowlitz County GIS Department; sample location points collected by Minister-Glaeser Surveying, Inc. on 3/21/2012 and by MFA GPS receiver on 3/20/2012, 3/22/2012, 5/29/2012, and 5/30/2012.

Note:
Historical site features and locations are approximated from Department of Ecology initial investigation reports and anecdotal evidence.

Legend

- MFA 2012 Sample Location (Boring)
- MFA 2012 Sample Location (Hand Auger)
- MFA 2012 Monitoring Well Location
- Approximate 2002 Ecology Surface Soil Sample Location
- Approximate Current Drum Storage Location
- Approximate Former Drum Storage Location
- Approximate Pole-mounted Transformer Location
- Approximate Scrap Car Storage Location
- Site Parcel
- Parcel (Cowlitz County)

Figure 2
Site Features and Sample Locations

Terry's Auto Salvage
Kelso, Washington

0 20 40
Feet

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Print Date: 5/24/2013
Approved By: H. Hirsch
Produced By: rmaronn
Project: 0433.02.02/01

Path: X:\0443.02\Projects\03\Cleanup Action Plan\Fig3_Soil Sample Locations and Exceedances.mxd

Analyte (mg/kg)	GP04
Sample Date	3/20/2012
Sample Depth Interval (ft bgs)	0-2
Metals	
Cadmium	**4.73**
Lead	**838**

Analyte (mg/kg)	HA03
Sample Date	3/20/2012
Sample Depth Interval (ft bgs)	0-1
Metals	
Cadmium	**6.04**
Lead	**2,400**
Mercury	**72.3**
cPAHs	
cPAH TEQ	**0.115**

Analyte (mg/kg)	HA01	
Sample Date	3/20/2012	
Sample Depth Interval (ft bgs)	0-1	1-2
Metals		
Cadmium	**2.04**	**0.231**
Lead	**898**	**25.7**

Analyte (mg/kg)	HA02
Sample Date	3/20/2012
Sample Depth Interval (ft bgs)	0-1
Metals	
Cadmium	**2.7**
Lead	**354**

Analyte (mg/kg)	HA04	
Sample Date	3/22/2012	
Sample Depth Interval (ft bgs)	0-1	1-2
Metals		
Cadmium	**4.05**	**0.564**
Lead	**417**	**78.3**

Analyte (mg/kg)	HA10	
Sample Date	5/29/2012	
Sample Depth Interval (ft bgs)	0-1	1-2
Metals		
Cadmium	**3.97**	**2.4**
Lead	**639**	**203**

Analyte (mg/kg)	MW03	
Sample Date	5/31/2012	
Sample Depth Interval (ft bgs)	0.7-1.3	1-2
VOCs		
Benzene	**0.056**	0.069 U

Analyte (mg/kg)	HA14	
Sample Date	5/29/2012	
Sample Depth Interval (ft bgs)	0-1	1-2
Metals		
Cadmium	**7.16**	**1.55**

Analyte (mg/kg)	HA11	
Sample Date	5/29/2012	
Sample Depth Interval (ft bgs)	0-1	1-2
VOCs		
Benzene	0.07 U	**0.65**

Analyte (mg/kg)	HA13	
Sample Date	5/29/2012	
Sample Depth Interval (ft bgs)	0-1	1-2
Metals		
Cadmium	**2.03**	**0.292**

Analyte (mg/kg)	GP13	
Sample Date	5/31/2012	
Sample Depth Interval (ft bgs)	0-2	2-3.5
TPH		
Gasoline	**50.7**	**4.05**
Heavy Oils	**10,910**	**149.4**
Metals		
Cadmium	**19.2**	**0.139**
Lead	**1,480**	**786**
VOCs		
Benzene	**0.44**	0.033 U
PCBs		
Total PCBs	**2.77**	ND

Analyte (mg/kg)	HA07	
Sample Date	3/22/2012	
Sample Depth Interval (ft bgs)	0-1	1-2
TPH		
Heavy Oils	**226.8**	**2,300**
Metals		
Arsenic	16.4 U	**24.8**
Cadmium	**5.14**	**22**
Lead	**552**	**1,160**
cPAHs		
cPAH TEQ	ND	**0.368**

Analyte (mg/kg)	GP07	
Sample Date	3/20/2012	
Sample Depth Interval (ft bgs)	0-1	1-3.4
Metals		
Arsenic	**22.7**	**2.13**
Cadmium	**2.09**	0.142 U

Analyte (mg/kg)	GP01	
Sample Date	3/20/2012	
Sample Depth Interval (ft bgs)	0-1	5-5.8
TPH		
Gasoline	**691**	**5.55**
Heavy Oils	**12,268.15**	**200.7**
Metals		
Cadmium	**14.9**	**0.258**
Lead	**887**	**26.1**
VOCs		
Benzene	**0.111**	0.014 U
Total Xylenes	**11.39**	ND
PCBs		
Total PCBs	**3.89**	**0.093**

Analyte (mg/kg)	HA05	
Sample Date	3/22/2012	
Sample Depth Interval (ft bgs)	0-1	1-2
Metals		
Cadmium	**3.63**	**0.302**
Lead	**372**	**32.5**

Analyte (mg/kg)	HA06	
Sample Date	3/22/2012	
Sample Depth Interval (ft bgs)	0-1	1-2
Metals		
Arsenic	**37.3**	**224**
Lead	**238**	**337**

Analyte (mg/kg)	MTCA A CUL, Unrestricted Land Use
TPH	
Gasoline	30
Heavy Oils	2,000
Metals	
Arsenic	20
Cadmium	2
Lead	250
Mercury	2
VOCs	
Benzene	0.03
Total Xylenes	9
cPAHs	
cPAH TEQ	0.1
PCBs	
Total PCBs	1

Notes
Bold indicates a detected value.
Bold and highlighted indicates a detected value that exceeds the cleanup level.
cPAH = carcinogenic polycyclic aromatic hydrocarbon
CUL = cleanup level
For calculated totals, the maximum reported result from all methods was used (excluding NWTPH-HCID). For non-detects, one-half the lowest method reporting limit was used.
ft bgs = feet below ground surface
mg/kg = milligrams per kilogram
MTCA = Model Toxics Control Act
ND = Non-detect
PCB = polychlorinated biphenyl
TEQ = toxic equivalency quotient
TPH = total petroleum hydrocarbons
U = compound not detected at a concentration above the method reporting limit
VOC = volatile organic compound

Source: Aerial photograph obtained from ESRI, Inc. ArcGIS Online/Bing Maps; parcels obtained from Cowlitz County GIS Department; sample location points collected by Minister-Glaeser Surveying, Inc. on 3/21/2012 and by MFA GPS receiver on 3/20/2012, 3/22/2012, 5/29/2012, and 5/30/2012.

Note: Historical site features and locations are approximated from Department of Ecology initial investigation reports and anecdotal evidence.

Legend

- Monitoring Well Location
- Sample Location (Boring)
- Sample Location (Hand Auger)
- Soil Exceedances
- Site Parcels
- Parcels (Cowlitz County)

0 25 50
Feet

Figure 3
Soil Sample Locations and Exceedances

Terry's Auto Salvage
Kelso, Washington

MAUL FOSTER ALONGI
p. 360 594 6262 | www.maulfoster.com

Print Date: 5/24/2013
Approved By: H. Hirsch
Produced By: rmaronn
Project: 0443.02.03

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360.694.2691 (phone) | www.maulfoster.com

Legend

- APPX. EXCAVATION EXTENT
- X.X' — APPX DEPTH OF EXCAVATION, FT
- MONITORING WELL LOCATION
- SITE PARCELS
- PARCELS (COWLITZ COUNTY)
- FENCE
- MAJOR CONTOUR
- MINOR CONTOUR
- CS — APPX CONFIRMATION SAMPLE LOCATION

0 40' 80'

NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

Figure 4
Approximate Confirmation Sample Locations

Terry's Auto Salvage
Kelso, WA

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Date: 5/29/2013 10:26:42 AM

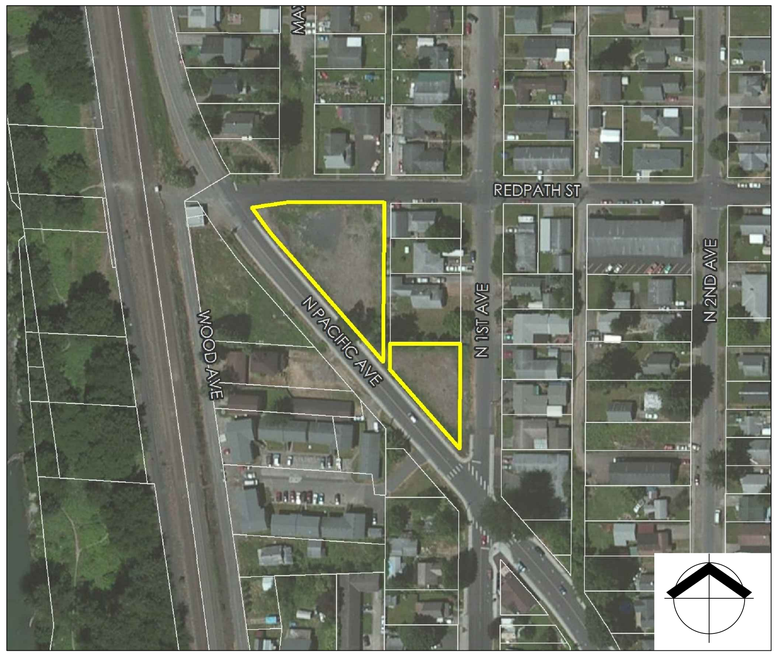
DRAWINGS

REMEDIAL ACTION—SOIL REMOVAL

PREPARED FOR:

CITY OF KELSO

Terry's Auto Salvage
1124 North Pacific Avenue
Kelso, Washington



VICINITY MAP

1 IN = 2400 FT

ABBREVIATIONS

APPX	APPROXIMATE
BGS	BELOW GROUND SURFACE
BMP	BEST MANAGEMENT PRACTICE
ECOLOGY	WASHINGTON STATE DEPARTMENT OF ECOLOGY
EL	ELEVATION
EX, EXIST	EXISTING
FND	FOUND
FT	FOOT
IN	INCH
LCA	LEAD CHARACTERISTIC AREA
MAX	MAXIMUM
MIN	MINIMUM
MW	MONITORING WELL
N	NORTH
NTS	NOT TO SCALE
PL	PROPERTY LINE
ST, STM	STORM
TEMP	TEMPORARY
TYP	TYPICAL
XRF	X-RAY FLUORESCENCE

GENERAL LEGEND

- EXISTING MAJOR CONTOUR (10')
- EXISTING MINOR CONTOUR (2')
- EXISTING EDGE OF CURB
- EXISTING GAS LINE
- EXISTING SANITARY SEWER
- EXISTING UNDERGROUND POWER
- EXISTING STORM SEWER
- SILT FENCE
- PROPERTY LINE
- TEMPORARY SITE SECURITY FENCE
- FENCE
- PROFILE EXISTING GRADE
- PROFILE DESIGN GRADE
- APPX EXCAVATION BOUNDARY
- X.X' APPX DEPTH OF EXCAVATION, FT
- EXISTING MONITORING WELL
- UTILITY POLE
- SOIL EXCAVATION AREAS TO BE DIRECT LOADED
- SOIL EXCAVATION AREAS TO BE STOCKPILED
- EXISTING CONCRETE
- STOCKPILE AREA

DETAIL NUMBER — X / C1.X — DETAIL REFERENCE SHEET
TYPICAL DETAIL CALLOUT

- CONTINGENCY: APPROXIMATE CAP BOUNDARY
- CONTINGENCY: GEOTEXTILE DEMARCATION LAYER
- CONTINGENCY: APPROXIMATE CAP AREA
- CONTINGENCY: CLEAN CAP
- CONTINGENCY: CAPPED SOILS

GENERAL NOTES

1. LOCATIONS OF ALL UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR TO VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION.
2. CONTRACTOR TO DEMOLISH AND REMOVE CONCRETE SLAB(S) FOR OFF-SITE DISPOSAL PRIOR TO PROJECT CLOSEOUT.
3. PROTECT EXISTING OVERHEAD ELECTRICAL WIRING AND ASSOCIATED POWER POLES.
4. PROTECT ADJACENT BUILDINGS, CURB, GUTTER AND SIDEWALK DURING CONSTRUCTION ACTIVITIES. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIR OF ALL DAMAGE RESULTING FROM PROJECT ACTIVITIES TO THE CITY OF KELSO'S APPROVAL.
5. SURVEY COORDINATES ARE IN WASHINGTON SOUTH STATE PLANE FEET. VERTICAL DATUM NAD 1983/91.

SHEET INDEX

PROJECT CONTACTS

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ERIK T. BAKKOM — STATE OF WASHINGTON — 43788 — REGISTERED PROFESSIONAL ENGINEER

REMEDIAL ACTION - SOIL REMOVAL
CITY OF KELSO
TERRY'S AUTO SALVAGE, KELSO, WA

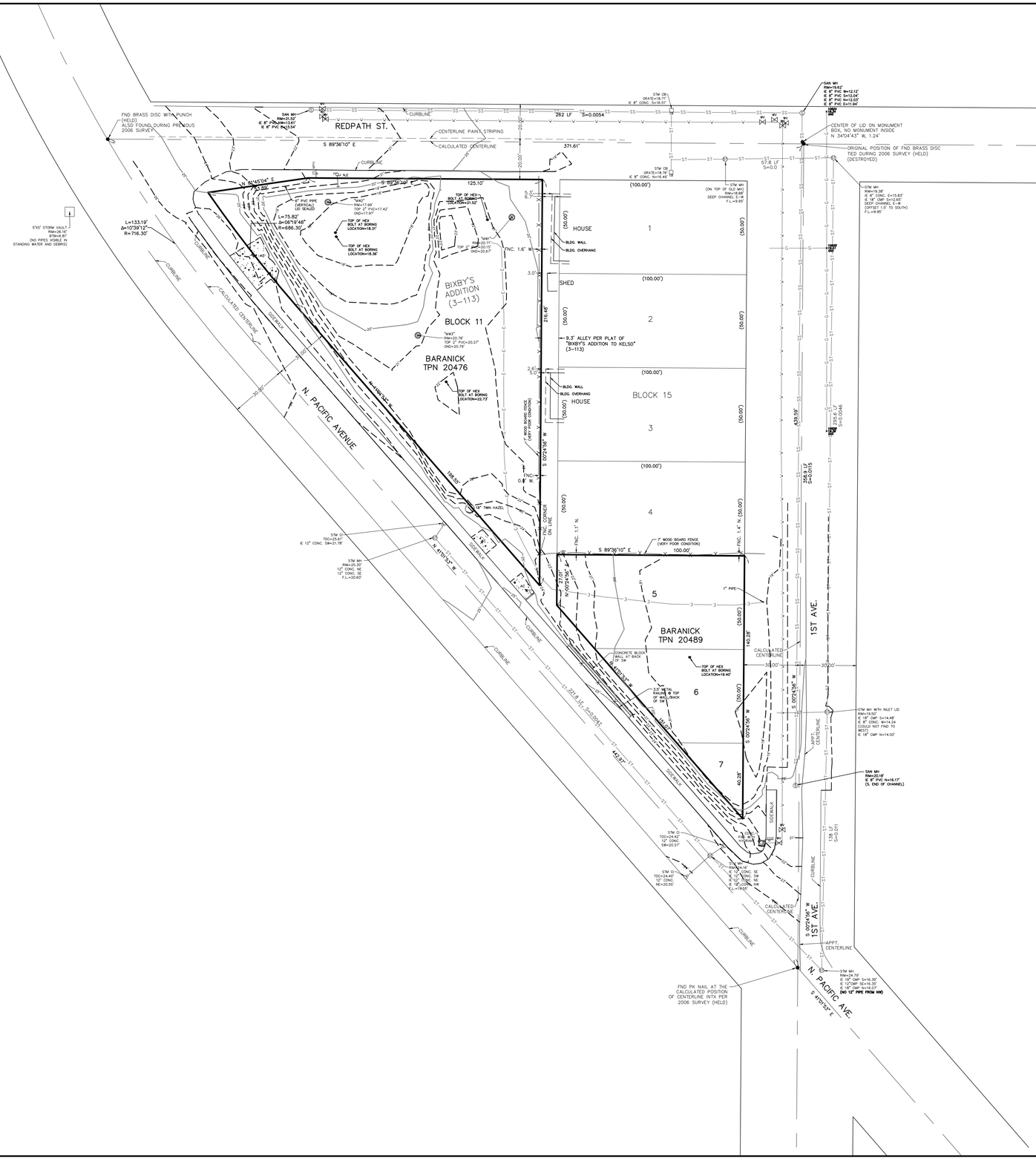
ISSUE	DATE	DESCRIPTION
	6/28/2013	CONSTRUCTION PLAN SET

PROJECT: 0443.02.02
DESIGNED: D. KNUTSON
DRAWN: D. KNUTSON
CHECKED: E. BAKKOM
SCALE
DRAWING NOT TO SCALE

SHEET TITLE
COVER SHEET

SHEET
CO.O

PLOTTED ON: 2013-02-21 10:26 AM PLOTTED BY: David Knutson FILENAME: I:\0_mfa civil 3d\0_projects\0443.02-City of Kelso\PLANS\Cover Sheet.dwg



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REMEDIAL ACTION - SOIL REMOVAL
CITY OF KELSO
TERRY'S AUTO SALVAGE, KELSO, WA

ISSUE	DATE	DESCRIPTION

PROJECT: 0443.02.02
DESIGNED: D. KNUTSON
DRAWN: D. KNUTSON
CHECKED: E. BAKKOM
SCALE

0 20' 40'

NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

SHEET TITLE

EXISTING CONDITIONS

SHEET

C1.0

PLOTTED ON: 2013-02-21 10:26 AM PLOTTED BY: David Knutson FILENAME: I:\00_mfa civil 3d\00_projects\0443.02-city of kelso\PLANS\C1.0 EXISTING CONDITIONS PLAN.dwg

REDPATH ST.

MW2 TO BE DECOMMISSIONED BY OTHERS PRIOR TO WORK

MW1 TO BE DECOMMISSIONED BY OTHERS PRIOR TO WORK

ENTRANCE GATE

INLET PROTECTION

EXISTING CONCRETE TO BE REMOVED BY CLOSE OF PROJECT

EXISTING FENCE TO BE DEMOLISHED

DEMO ELECTRICAL TO PROPERTY LINE

MW3 TO BE DECOMMISSIONED BY OTHERS PRIOR TO WORK

TEMPORARY SITE SECURITY FENCE TO BE INSTALLED BY CONTRACTOR

N. PACIFIC AVENUE

STABILIZED CONSTRUCTION ENTRANCE, SEE DETAIL C, SHEET 2.1

PROTECT TREE DURING CONSTRUCTION ACTIVITIES

18" TWIN HAZEL

EXISTING CONCRETE TO BE REMOVED BY CLOSE OF PROJECT

1ST AVE.

GENERAL

1. EXISTING FENCE TO BE REMOVED BY CONTRACTOR. NEW FENCE WILL BE INSTALLED ALONG THE PROPERTY BOUNDARY PRIOR TO EXCAVATION ACTIVITIES.
2. INSTALL SEDIMENT FENCING AND OTHER BMPS AS NECESSARY TO PREVENT SEDIMENT-LADEN RUNOFF FROM EXITING THE STOCKPILE AREA.
3. STOCKPILE COVER SHALL BE DEPLOYED DURING HEAVY RAIN/WIND AND WHEN STOCKPILE IS NOT USED FOR MORE THAN 48 HOURS. COVER MATERIAL SHALL BE DEPLOYED AS SHOWN ON DETAILS A AND B, SHEET C2.1.
4. STOCKPILE PERIMETER SILT FENCING REMOVED FOR ACCESS SHALL BE REPLACED AT THE END OF EACH WORKING DAY. THE PERIMETER SHALL REMAIN COMPLETELY ENCLOSED DURING NON-WORKING HOURS.
5. THE IMPLEMENTATION OF THESE EROSION CONTROL (ESC) MEASURES AND THE CONSTRUCTION, MAINTENANCE, AND UPGRADING OF THESE FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR UNTIL ALL CONSTRUCTION IS COMPLETED AND APPROVED.
6. THE EXTENT OF THE WORK AREA SHOWN ON THIS PLAN SHALL BE CLEARLY MARKED IN THE FIELD PRIOR TO CONSTRUCTION. DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE BEYOND THE FLAGGED WORK AREA LIMITS SHALL BE PERMITTED EXCEPT SILT FENCE PLACEMENT AND MAINTENANCE AND OTHER ACTIVITIES ASSOCIATED WITH EROSION CONTROL. THE FLAGGING SHALL BE MAINTAINED BY THE CONTRACTOR FOR THE DURATION OF CONSTRUCTION.
7. THE ESC FACILITIES SHOWN ON THESE PLANS MUST BE CONSTRUCTED IN CONJUNCTION WITH ALL EXCAVATION, STOCKPILING, AND BACKFILLING ACTIVITIES, AND IN SUCH A MANNER AS TO ENSURE THAT SEDIMENT AND SEDIMENT-LADEN WATER DO NOT ENTER THE DRAINAGE SYSTEM, ROADWAYS, AND WATERWAYS, OR VIOLATE APPLICABLE STANDARDS.
8. STOCKPILED SOIL SHALL BE PLACED IN THE STOCKPILE AREA SHOWN ON THESE PLANS OR AS APPROVED BY THE ENGINEER.
9. IF WIND EROSION (I.E., DUST GENERATION) IS OBSERVED, APPROPRIATE DUST CONTROL MEASURES SHALL BE IMPLEMENTED, INCLUDING THE APPLICATION OF A FINE SPRAY OF WATER, PLASTIC SHEETING, STRAW MULCHING, OR OTHER APPROVED MEASURES.
10. THE ESC MEASURES SHOWN IN THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE ESC FACILITIES SHALL BE UPGRADED AS NEEDED FOR UNEXPECTED STORM EVENTS AND TO ENSURE THAT SEDIMENT AND SEDIMENT-LADEN WATERS DO NOT LEAVE THE SITE.
11. NO SOIL MAY BE TRACKED OFF SITE BY ANY TRAFFIC RELATED TO THE CONSTRUCTION ACTIVITIES. THIS MAY BE ACHIEVED BY ONE OF THE FOLLOWING METHODS:
    - 11.1. USE EXISTING ASPHALT AS THE ONLY ALLOWABLE SURFACE FOR CONSTRUCTION THROUGH TRAFFIC.
    - 11.2. INSTALL CONSTRUCTION ENTRANCE/EXIT AND ALLOW CONSTRUCTION TRAFFIC TO ENTIRE EXTENT OF SITE (DETAIL C, SHEET 2.1).
    - 11.3. ADDITIONAL MEASURES MAY BE REQUIRED TO ENSURE THAT ADJACENT PAVED AREAS ARE KEPT CLEAN FOR THE DURATION OF THE PROJECT.
12. PRIOR TO THE START OF ON-SITE CONSTRUCTION ACTIVITY, THE CONTRACTOR SHALL INSTALL TEMPORARY PERIMETER FENCE TO ENCLOSE CONSTRUCTION AREA, AS NOTED ON PLAN, AS WELL AS ANY OTHER MEANS NECESSARY TO ENSURE PUBLIC SAFETY.
13. INSTALL INLET PROTECTION AS SHOWN ON THESE PLANS AND ON DETAIL D, SHEET 2.1.

SILT FENCE

1. MAINTAIN SILT FENCE DURING EXCAVATION AS SHOWN ON THESE PLANS AND ON DETAIL E, SHEET 2.1 TO PREVENT SILT INTRUSION TO ADJACENT LAND. THE SILT FENCE SHALL BE MAINTAINED TO FOLLOW THE SITE TOPOGRAPHY WHERE FEASIBLE. THE FENCE POSTS SHALL BE SPACED A MAXIMUM OF 8 FEET APART AND DRIVEN SECURELY INTO THE GROUND A MINIMUM OF 24 INCHES.
2. FILTER FABRIC SHALL BE PURCHASED IN A CONTINUOUS ROLL TO THE LENGTH OF THE BARRIER TO AVOID USE OF JOINTS. WHEN JOINTS ARE NECESSARY, FILTER CLOTH SHALL BE SPLICED TOGETHER ONLY AT A SUPPORT POST, WITH A MINIMUM 6-INCH OVERLAP, AND BOTH ENDS SECURELY FASTENED TO THE POST.
3. A MINIMUM 4-INCH WIDE TRENCH SHALL BE EXCAVATED ALONG THE LINE OF POSTS AND UPSLOPE OF THE BARRIER. THE TRENCH SHALL BE BACKFILLED WITH NATIVE SOIL.
4. WHEN STANDARD STRENGTH FILTER FABRIC IS USED, A WIRE SUPPORT FENCE SHALL BE FASTENED SECURELY TO THE UPSLOPE SIDE OF THE POSTS USING HEAVY-DUTY WIRE STAPLES AT LEAST 1 INCH LONG, TIE WIRE OR HOG RINGS. FILTER FABRIC SHALL NOT BE STAPLED TO TREES. THE WIRE SHALL EXTEND INTO THE TRENCH A MINIMUM OF 4 INCHES AND SHALL NOT EXTEND MORE THAN 30 INCHES ABOVE THE ORIGINAL GROUND SURFACE.
5. SILT FENCES SHALL BE INSPECTED BY THE CONTRACTOR IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.
6. SILT FENCES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFUL PURPOSE AND AT THE ENGINEER'S DIRECTION.

SITE RESTORATION

1. UPON COMPLETION OF SITE GRADING ACTIVITIES AND PRIOR TO FINAL ACCEPTANCE OF WORK, PROVIDE HYDROSEED STABILIZATION OF THE SITE USING WSDOT APPROVED SEED MIX. IF PRIOR TO OCTOBER 1, CONTRACTOR SHALL PROVIDE SEMI-WEEKLY WATERING.

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REMEDIAL ACTION - SOIL REMOVAL

CITY OF KELSO

TERRY'S AUTO SALVAGE, KELSO, WA

ISSUE	DATE	DESCRIPTION

PROJECT: 0443.02.02
DESIGNED: D. KNUTSON
DRAWN: D. KNUTSON
CHECKED: E. BAKKOM
SCALE

0 20' 40'

NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

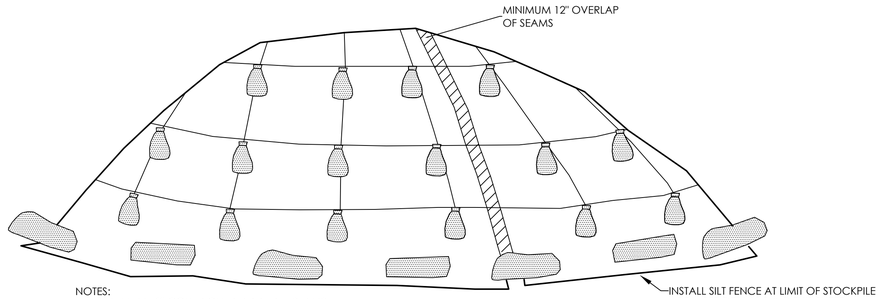
SHEET TITLE

EROSION CONTROL AND DEMO PLAN

SHEET

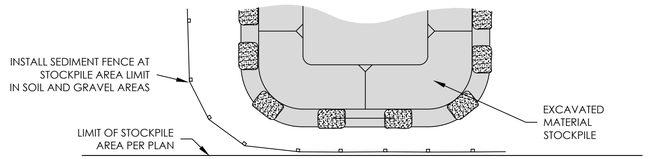
C2.0

PLOTTED ON: 2013/02/21 10:24 AM PLOTTED BY: David Knutson FILENAME: T:\00_misc civil 3d\00_projects\\0443.02-city of kelso\PLANS\C2.0 EROSION CONTROL & STOCKPILE PLAN.dwg

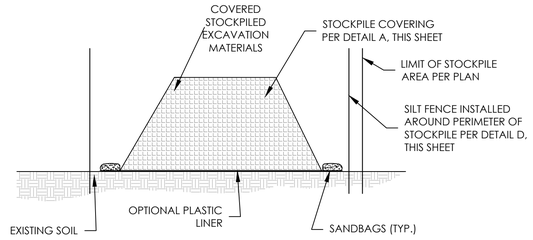


NOTES:
1. MINIMUM 12" COVER OVERLAP AT ALL SEAMS.
2. COMPOST SOCK OR SILT FENCE REQUIRED AT TOE OF STOCKPILE AREA AS SHOWN IN THE PERIMETER PLAN VIEW, DETAIL B, THIS SHEET.
   2.1. SILT FENCE IS TO BE INSTALLED AS SHOWN IN PERIMETER PLAN VIEW, DETAIL B, THIS SHEET.
3. STOCKPILE COVER SHALL BE MAINTAINED TIGHTLY IN PLACE BY USING SAND BAGS OR TIRES ON ROPES WITH A MAXIMUM OF 10' GRID SPACING IN ALL DIRECTIONS.
4. STOCKPILE COVERING SHALL BE BLACK PLASTIC WITH U.V. PROTECTION.

A C2.0 STOCKPILE COVER DETAIL
NTS

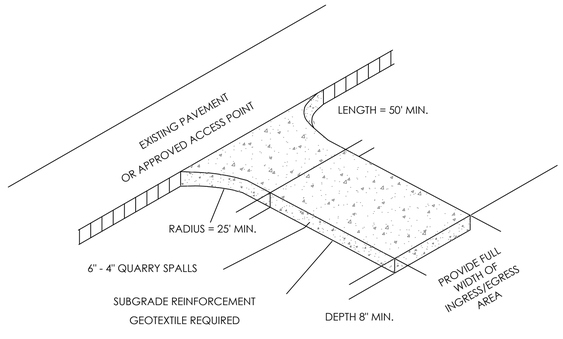


PERIMETER PLAN VIEW DETAIL
NTS

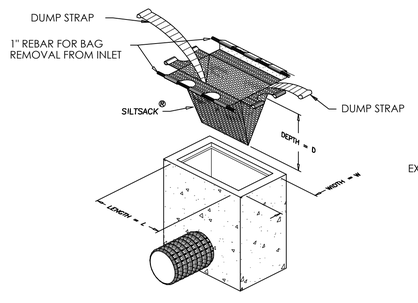


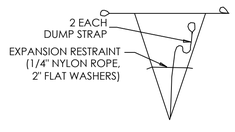
CROSS SECTION VIEW FOR PERVIOUS SURFACE W/ SILT FENCE
NTS

B C2.0 STOCKPILE EROSION CONTROL DETAIL
NTS



C C2.0 STABILIZED CONSTRUCTION ENTRANCE DETAIL
NTS

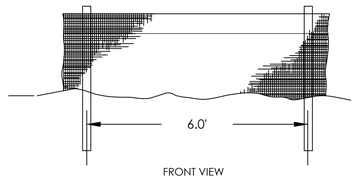


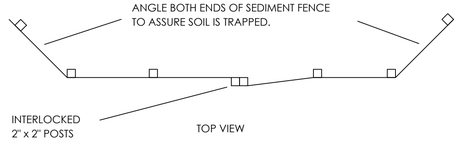


BAG DETAIL

REGULAR FLOW ONLY
DO NOT USE HIGH FLOW INSERTS

D C2.0 INLET PROTECTION DETAIL
N.T.S.





NOTES:
1. BURY BOTTOM OF FILTER FABRIC 6" MIN. VERTICALLY BELOW GRADE.
2. 2" x 2" FIR, PINE, OR STEEL FENCE POSTS.
3. STITCHED LOOPS TO BE INSTALLED ON UPHILL SIDE OF SLOPE.
4. COMPACT NATIVE FILL IN ALL AREAS OF FILTER FABRIC TRENCH.
5. SILT FENCING SHALL BE INSTALLED ON CONTOUR.

E C2.0 SILT FENCE DETAIL
NTS

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STATE OF WASHINGTON
43788
REGISTERED PROFESSIONAL ENGINEER

REMEDIAL ACTION - SOIL REMOVAL
CITY OF KELSO
TERRY'S AUTO SALVAGE, KELSO, WA

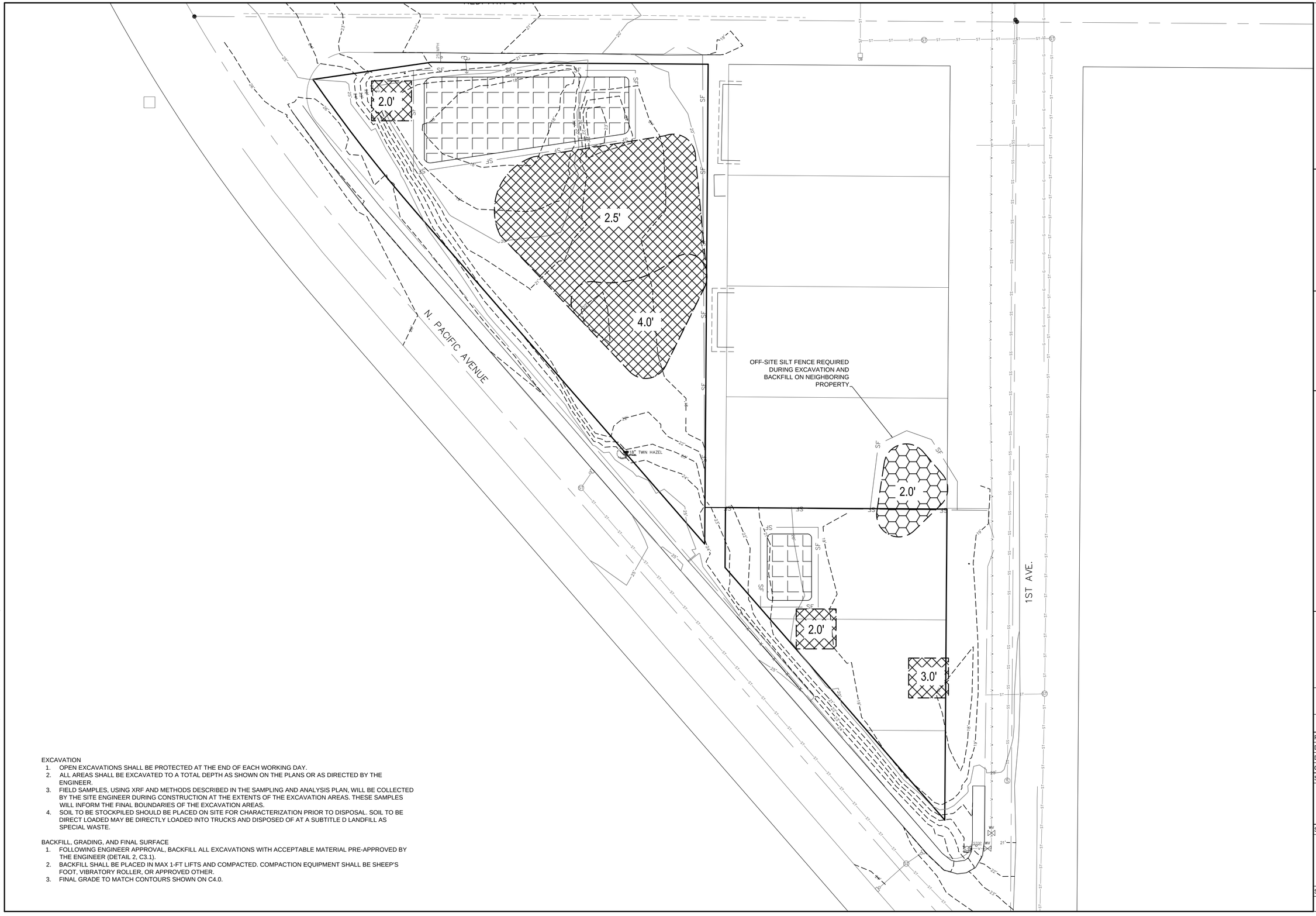
ISSUE	DATE	DESCRIPTION

PROJECT: 0443.02.02
DESIGNED: D. KNUTSON
DRAWN: D. KNUTSON
CHECKED: E. BAKKOM
SCALE
DRAWING NOT TO SCALE

SHEET TITLE
EROSION CONTROL DETAILS

SHEET
C2.1

PLOTTED ON: 2013-02-21 10:26 AM PLOTTED BY: David Knutson FILENAME: I:\06_mfa civil 3d\06_projects\0443.02-city of kelso\PLANS\C2.1 EROSION CONTROL DETAILS.dwg



EXCAVATION

1. OPEN EXCAVATIONS SHALL BE PROTECTED AT THE END OF EACH WORKING DAY.
2. ALL AREAS SHALL BE EXCAVATED TO A TOTAL DEPTH AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
3. FIELD SAMPLES, USING XRF AND METHODS DESCRIBED IN THE SAMPLING AND ANALYSIS PLAN, WILL BE COLLECTED BY THE SITE ENGINEER DURING CONSTRUCTION AT THE EXTENTS OF THE EXCAVATION AREAS. THESE SAMPLES WILL INFORM THE FINAL BOUNDARIES OF THE EXCAVATION AREAS.
4. SOIL TO BE STOCKPILED SHOULD BE PLACED ON SITE FOR CHARACTERIZATION PRIOR TO DISPOSAL. SOIL TO BE DIRECT LOADED MAY BE DIRECTLY LOADED INTO TRUCKS AND DISPOSED OF AT A SUBTITLE D LANDFILL AS SPECIAL WASTE.

BACKFILL, GRADING, AND FINAL SURFACE

1. FOLLOWING ENGINEER APPROVAL, BACKFILL ALL EXCAVATIONS WITH ACCEPTABLE MATERIAL PRE-APPROVED BY THE ENGINEER (DETAIL 2, C3.1).
2. BACKFILL SHALL BE PLACED IN MAX 1-FT LIFTS AND COMPACTED. COMPACTION EQUIPMENT SHALL BE SHEEP'S FOOT, VIBRATORY ROLLER, OR APPROVED OTHER.
3. FINAL GRADE TO MATCH CONTOURS SHOWN ON C4.0.

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REMEDIAL ACTION - SOIL REMOVAL

CITY OF KELSO

TERRY'S AUTO SALVAGE, KELSO, WA

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0 20' 40'

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SHEET TITLE

EXCAVATION PLAN

SHEET

C3.0

PLOTTED ON: 2013-02-21 10:26 AM PLOTTED BY: David Knutson FILENAME: I:\06_mfa civil 3d\06_projects\0443.02 city of kelso\PLANS\C3.0 CIVIL & SITE PLAN.dwg

CONSTRUCTION NOTES

1. CONSTRUCTION SHALL COMPLY WITH ALL APPLICABLE GOVERNING CODES AND BE CONSTRUCTED TO SAME.
2. PROPERTIES AND WATERWAYS DOWNSTREAM OF THE SITE SHALL BE PROTECTED FROM EROSION DUE TO INCREASES IN VOLUME, VELOCITY, AND PEAK FLOW RATE OF STORMWATER RUNOFF FROM PROJECT SITE.
3. CONTRACTOR SHALL GRADE ALL AREAS TO PRECLUDE PONDING OF WATER.
4. CLEAN MATERIAL EXCAVATED TO ACHIEVE FINISH GRADE SHOULD BE PLACED IN THE DEPRESSION IN THE NORTHWEST CORNER OF THE SITE.
5. EXCAVATION AT YARD AT 1123 N 1ST AVENUE SHALL BE BACKFILLED WITH TOPSOIL APPROVED BY THE ENGINEER TO MATCH EXISTING GRADES AND PLANTED WITH SOD, BUSHES, AND TREES AT THE DIRECTION OF THE ENGINEER.

RESTORE THE EXISTING GRADE AND VEGETATION

N. PACIFIC AVENUE

1ST AVE.

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REMEDIAL ACTION - SOIL REMOVAL

CITY OF KELSO

TERRY'S AUTO SALVAGE, KELSO, WA

ISSUE	DATE	DESCRIPTION

PROJECT: 0443.02.02
DESIGNED: D. KNUTSON
DRAWN: D. KNUTSON
CHECKED: E. BAKKOM
SCALE

0 20' 40'

NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

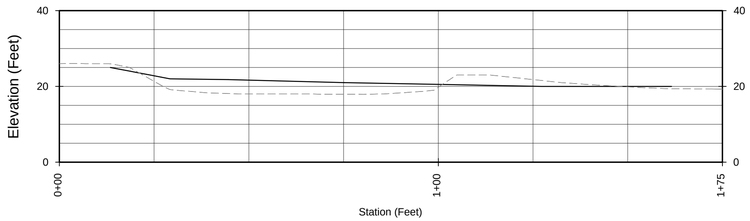
SHEET TITLE

GRADING PLAN

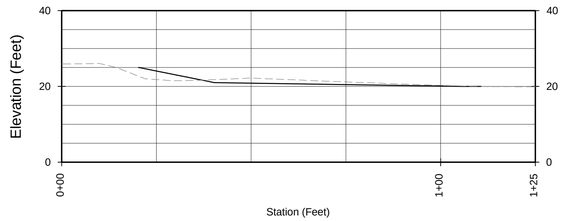
SHEET

C4.0

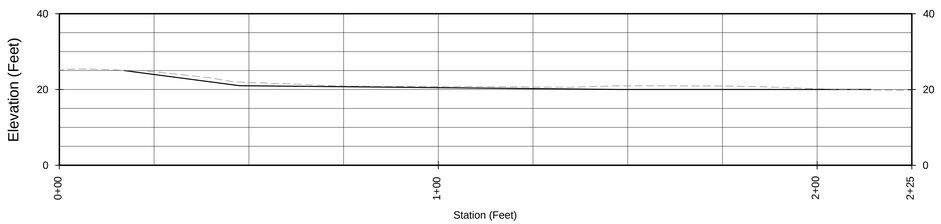
PLOTTED BY: David Knutson FILENAME: I:\0D_mfa cvil 3d\0D_projects\0443.02-city of kelso\PLANS\C4.0 GRADING PLAN.dwg
PLOTTED ON: 2013-02-21 10:27 AM



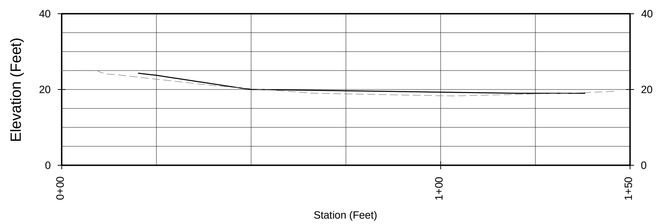
PROFILE VIEW OF SECTION A-A'
HORIZONTAL SCALE: 1" = 1' VERTICAL SCALE: 1" = 1'
VERTICAL EXAGGERATION: 1



PROFILE VIEW OF SECTION B-B'
HORIZONTAL SCALE: 1" = 1' VERTICAL SCALE: 1" = 1'
VERTICAL EXAGGERATION: 1



PROFILE VIEW OF SECTION C-C'
HORIZONTAL SCALE: 1" = 1' VERTICAL SCALE: 1" = 1'
VERTICAL EXAGGERATION: 1



PROFILE VIEW OF SECTION D-D'
HORIZONTAL SCALE: 1" = 1' VERTICAL SCALE: 1" = 1'
VERTICAL EXAGGERATION: 1

NOTE: SOIL EXCAVATIONS NOT SHOWN

MAUL FOSTER ALONGI
400 EAST MILL PLAIN BLVD, SUITE 400
VANCOUVER, WA 98660
360.694.2691 | www.maulfoster.com

ERIK T. BAKKOM
STATE OF WASHINGTON
43788
REGISTERED PROFESSIONAL ENGINEER

REMEDIAL ACTION - SOIL REMOVAL
CITY OF KELSO
TERRY'S AUTO SALVAGE, KELSO, WA

ISSUE	DATE	DESCRIPTION
1		
2		

PROJECT: 0443.02.02
DESIGNED: D. KNUTSON
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CHECKED: E. BAKKOM
SCALE
0 20' 40'
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SHEET TITLE
GRADING PROFILES

SHEET
C4.1

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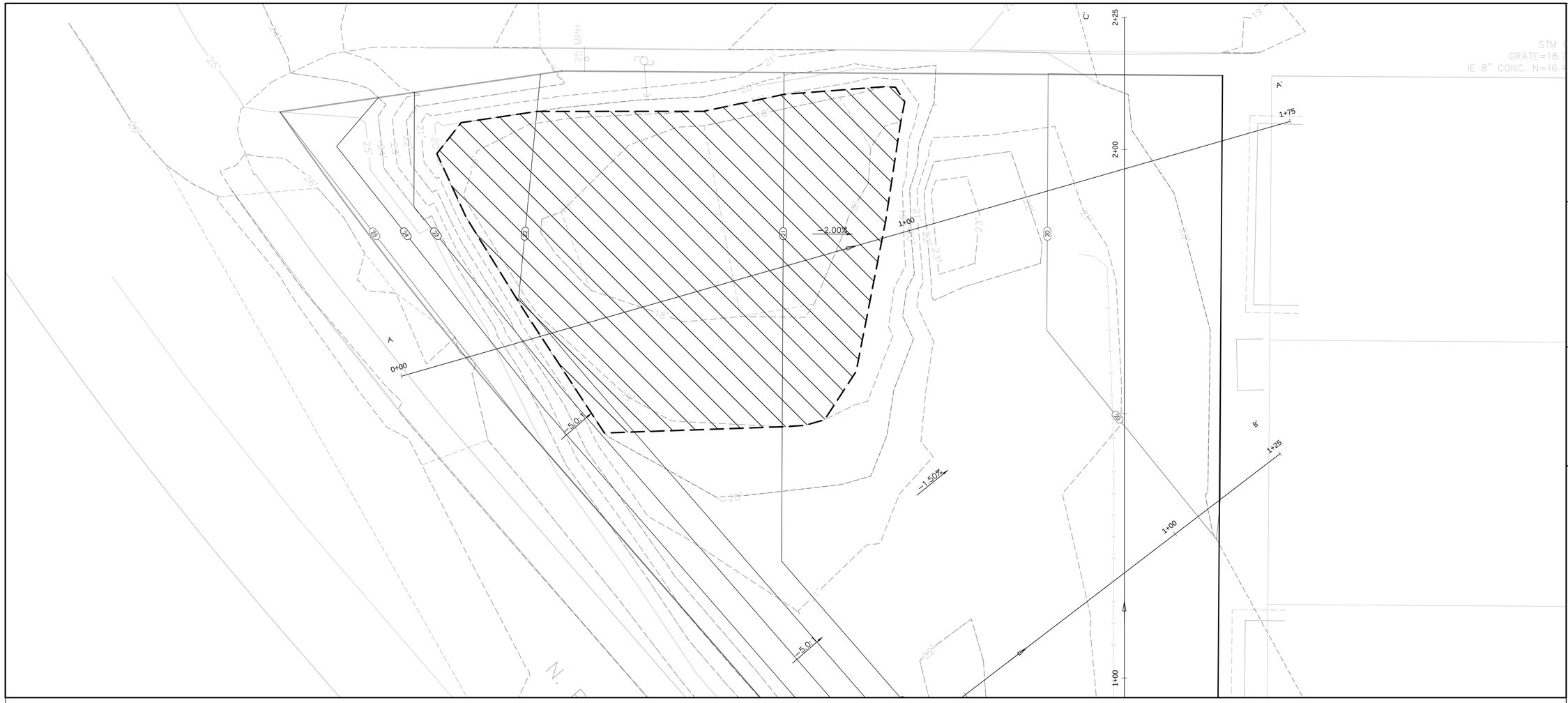

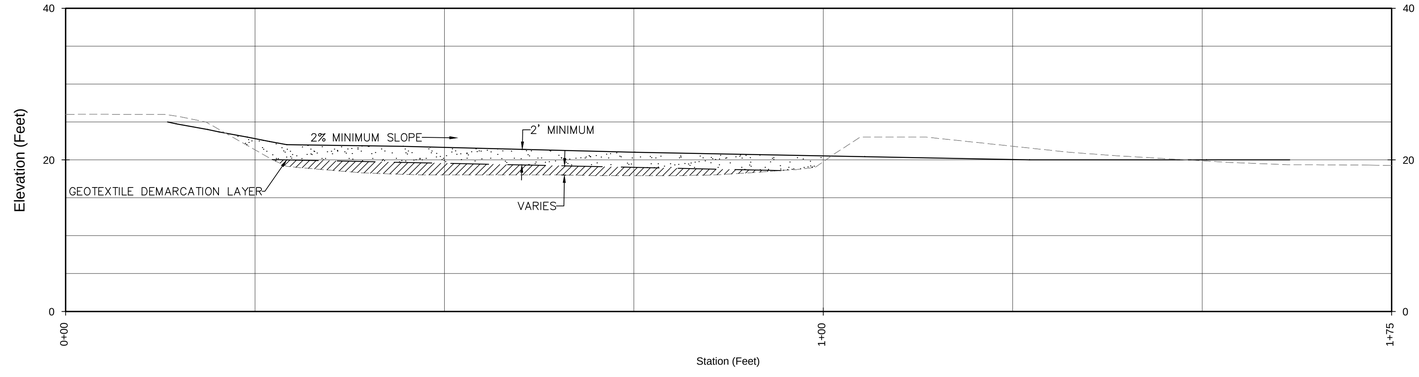

PROFILE VIEW OF SECTION A-A'
HORIZONTAL SCALE: 1" = 1' VERTICAL SCALE: 1" = 1'
VERTICAL EXAGGERATION: 1

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CITY OF KELSO

TERRY'S AUTO SALVAGE, KELSO, WA

ISSUE	DATE	DESCRIPTION

PROJECT: 0443.02.02
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CHECKED: E. BAKKOM

SCALE

0 10' 20'

NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

SHEET TITLE

CONTINGENCY SOIL PLACEMENT

SHEET

C5.0

PLOTTED ON: 2013-02-21 10:27 AM PLOTTED BY: David Knutson FILENAME: I:\00_mfa civil 3d\00_projects\0443.02-city of kelso\PLANS\C5.0 CONTINGENCY PLAN.dwg

APPENDIX A

FOCUSED SITE ASSESSMENT ANALYTICAL TABLES

Table A-1
Water Level Data
Former Terry's Auto Salvage Property, City of Kelso
Kelso, Washington

Location	Borehole Depth (feet bgs)	Screened Interval (feet bgs)	Measuring Point Elevation (feet NAVD)	Measurement Date	Depth to Water (feet MPE)	Groundwater Elevation (feet NAVD)
Reconnaissance Boring						
GP01	10	8-12	22.73	03/21/2012	5.25	17.48
GP09	10	5-9	18.36	03/21/2012	0.00	18.36
	40	36-40	18.31	03/21/2012	24.50	-6.19
GP10	12	8-12	21.52	03/22/2012	6.20	15.32
	40	36-40	21.52	03/22/2012	22.40	-0.88
GP11	10	6-10	19.40	03/22/2012	1.90	17.50
Monitoring Well						
MW01	40.5	35-40	20.15	06/13/2012	4.28	15.87
MW02	40.5	35-40	17.42	06/13/2012	1.54	15.88
MW03	40.5	35-40	20.27	06/13/2012	4.45	15.82

NOTES:

bgs = below ground surface.

MPE = measuring point elevation.

NAVD = 1988 North American Vertical Datum.

Table A-2
Sample and Analysis Summary
Former Terry's Auto Salvage Property, City of Kelso
Kelso, Washington

Location	Sample Matrix	Sample Date	Sample Depth (ft bgs)	Sample Depth Interval (ft bgs)	NWTPH-HCID	NWTPH-Gx	NWTPH-Dx	Metals (6010)	Arsenic (6020)	Cadmium (6010)	Lead (6010)	Mercury (SW7471)	VOCs (8260B)	BTEX (8021)	Benzene (8021)	SVOCs (8270C)	PAHs (8270SIM)	PCBs (8082)
GP01	Soil	03/20/2012	0.5	0-1	X	X	X	X	X			X	X			X		X
	Soil	03/20/2012	5.4	5-5.8	X	X	X	X	X			X	X			X		X
	Soil	03/20/2012	6.8	5.8-7.8	Not Analyzed													
	Groundwater	03/21/2012	10	8-12		X	X	X	X			X	X				X	
GP02	Soil	03/20/2012	0.5	0-1	X			X	X			X						
	Soil	03/20/2012	2	1-3	X			X	X			X						
GP03	Soil	03/20/2012	0.5	0-1	X			X	X			X						
	Soil	03/20/2012	2.3	1-3.5	X			X	X			X						
GP04	Soil	03/20/2012	1	0-2	X			X	X			X						
GP05	Soil	03/20/2012	0.5	0-1	X		X	X	X			X				X		X
	Soil	03/20/2012	2.1	1-3.2	X		X	X	X			X				X		X
GP06	Soil	03/20/2012	0.5	0-1	X			X	X			X						
	Soil	03/20/2012	2.2	1-3.4	X			X	X			X						
GP07	Soil	03/20/2012	0.5	0-1	X		X	X	X			X				X		X
	Soil	03/20/2012	2.2	1-3.4	X		X	X	X			X				X		X
GP08	Soil	03/20/2012	0.5	0-1	X			X	X			X						
	Soil	03/20/2012	2.2	1-3.4	X			X	X			X						

Table A-2
Sample and Analysis Summary
Former Terry's Auto Salvage Property, City of Kelso
Kelso, Washington

Location	Sample Matrix	Sample Date	Sample Depth (ft bgs)	Sample Depth Interval (ft bgs)	NWTPH-HCID	NWTPH-Gx	NWTPH-Dx	Metals (6010)	Arsenic (6020)	Cadmium (6010)	Lead (6010)	Mercury (SW7471)	VOCs (8260B)	BTEX (8021)	Benzene (8021)	SVOCs (8270C)	PAHs (8270SIM)	PCBs (8082)
GP09	Soil	03/21/2012	0.5	0-1	X			X	X			X						
	Soil	03/21/2012	2.4	1-2.7	X			X	X			X						
	Soil	03/21/2012	6.9	5-8.8	X													
	Soil	03/21/2012	11	10-13.9	X													
	Soil	03/21/2012	17.5	15-20	X													
	Soil	03/21/2012	22.1	20-24.3	X													
	Soil	03/21/2012	25.6	25-28.2	X													
	Soil	03/21/2012	31.6	30-33.3	X													
	Soil	03/21/2012	37.5	35-39	X													
	Groundwater	03/21/2012	7	5-9		X	X	X	X			X	X				X	
	Groundwater	03/21/2012	38	36-40		X	X	X	X			X	X				X	
GP10	Soil	03/21/2012	0.5	0-1	X			X	X			X						
	Soil	03/21/2012	2.8	1-3.5	X			X	X			X						
	Soil	03/21/2012	5.2	5-5.4	X													
	Soil	03/21/2012	12.5	10-15	X													
	Soil	03/21/2012	17.5	15-20	X													
	Soil	03/21/2012	22.5	20-25	X													
	Soil	03/21/2012	27.5	25-30	X													
	Soil	03/21/2012	32	30-34	X													
	Soil	03/21/2012	37.5	35-40	X													
	Groundwater	03/22/2012	10	8-12		X	X	X	X			X	X				X	
	Groundwater	03/21/2012	38	36-40		X	X	X	X			X	X				X	

Table A-2
Sample and Analysis Summary
Former Terry's Auto Salvage Property, City of Kelso
Kelso, Washington

Location	Sample Matrix	Sample Date	Sample Depth (ft bgs)	Sample Depth Interval (ft bgs)	NWTPH-HCID	NWTPH-Gx	NWTPH-Dx	Metals (6010)	Arsenic (6020)	Cadmium (6010)	Lead (6010)	Mercury (SW7471)	VOCs (8260B)	BTEX (8021)	Benzene (8021)	SVOCs (8270C)	PAHs (8270SIM)	PCBs (8082)
GP11	Soil	03/21/2012	0.5	0-1	X		X	X	X			X				X		
	Soil	03/21/2012	2.3	1-3.6	X		X	X	X			X				X		
	Soil	03/21/2012	6.3	5-7.5	X			X	X			X						
	Groundwater	03/22/2012	8	6-10		X							X					
GP12	Soil	05/31/2012	1.3	0.7-2.0						X	X	X					X	
	Soil	05/31/2012	6	5.0-7.1	Not Analyzed													
	Soil	05/31/2012	7.4	7.1-7.8	Not Analyzed													
GP13	Soil	05/31/2012	1	0-2.0		X	X			X	X			X				X
	Soil	05/31/2012	2.6	2-3.5		X	X			X	X			X				X
GP14	Soil	05/31/2012	1.1	0.7-2.5			X		X	X	X						X	X
	Soil	05/31/2012	6	5.0-7.0	Not Analyzed													
	Soil	05/31/2012	8.1	7.1-9.3	Not Analyzed													
GP15	Soil	05/31/2012	1.3	0.4-2.3						X	X						X	
	Soil	05/31/2012	3.1	2.3-3.9						X	X						X	
GP16	Soil	05/31/2012	1.2	0.4-2.1					X		X							
	Soil	05/31/2012	2.8	2.1-3.5					X		X							
HA01	Soil	03/20/2012	0.5	0-1.0	X		X	X	X			X				X		
	Soil	03/20/2012	1.5	1.0-2.0			X	X	X			X				X		
HA02	Soil	03/20/2012	0.5	0-1.0	X		X	X	X			X				X		
	Soil	03/20/2012	1.5	1.0-2.0	Not Analyzed													
HA03	Soil	03/20/2012	0.5	0-1.0	X		X	X	X			X				X		
	Soil	03/20/2012	1.5	1.0-2.0	Not Analyzed													
HA04	Soil	03/22/2012	0.5	0-1.0	X		X	X	X			X				X		X
	Soil	03/22/2012	1.5	1.0-2.0			X	X	X			X				X		X

Table A-2
Sample and Analysis Summary
Former Terry's Auto Salvage Property, City of Kelso
Kelso, Washington

Location	Sample Matrix	Sample Date	Sample Depth (ft bgs)	Sample Depth Interval (ft bgs)	NWTPH-HCID	NWTPH-Gx	NWTPH-Dx	Metals (6010)	Arsenic (6020)	Cadmium (6010)	Lead (6010)	Mercury (SW7471)	VOCs (8260B)	BTEX (8021)	Benzene (8021)	SVOCs (8270C)	PAHs (8270SIM)	PCBs (8082)
HA05	Soil	03/22/2012	0.5	0-1.0	X		X	X	X			X				X		X
	Soil	03/22/2012	1.5	1.0-2.0			X	X	X			X				X		X
HA06	Soil	03/22/2012	0.5	0-1.0	X		X	X	X			X				X		X
	Soil	03/22/2012	1.5	1.0-2.0			X	X	X			X				X		X
HA07	Soil	03/22/2012	0.5	0-1.0	X		X	X	X			X				X		X
	Soil	03/22/2012	1.5	1.0-2.0			X	X	X			X				X		X
HA08	Soil	05/29/2012	0.5	0-1.0					X	X								
	Soil	05/29/2012	1.5	1.0-2.0	Not Analyzed													
HA09	Soil	05/29/2012	0.5	0-1.0					X		X							
	Soil	05/29/2012	1.5	1.0-2.0	Not Analyzed													
HA10	Soil	05/29/2012	0.5	0-1.0		X	X		X	X	X			X			X	X
	Soil	05/29/2012	1.5	1.0-2.0						X	X							
HA11	Soil	05/29/2012	0.5	0-1.0										X				
	Soil	05/29/2012	1.5	1.0-2.0											X			
HA12	Soil	05/29/2012	0.5	0-1.0										X				
	Soil	05/29/2012	1.5	1.0-1.2	Not Analyzed													
HA13	Soil	05/29/2012	0.5	0-1.0					X	X								
	Soil	05/29/2012	1.5	1.0-2.0						X								
HA14	Soil	05/29/2012	0.5	0-1.0					X	X								
	Soil	05/29/2012	1.5	1.0-2.0						X								
HA15	Soil	05/30/2012	0.5	0-1.0					X	X								
	Soil	05/30/2012	1.5	1.0-2.0	Not Analyzed													

Table A-2
Sample and Analysis Summary
Former Terry's Auto Salvage Property, City of Kelso
Kelso, Washington

Location	Sample Matrix	Sample Date	Sample Depth (ft bgs)	Sample Depth Interval (ft bgs)	NWTPH-HCID	NWTPH-Gx	NWTPH-Dx	Metals (6010)	Arsenic (6020)	Cadmium (6010)	Lead (6010)	Mercury (SW7471)	VOCs (8260B)	BTEX (8021)	Benzene (8021)	SVOCs (8270C)	PAHs (8270SIM)	PCBs (8082)
MW01	Groundwater	06/13/2012	37.5	35-40				X								X		
MW02	Groundwater	06/14/2012	37.5	35-40				X								X		
MW03	Soil	05/31/2012	1	0.7-1.3									X					
	Soil	05/31/2012	1.5	1.3-1.7									X					
	Groundwater	06/14/2012	37.5	35-40				X								X		

NOTES:

U.S. Environmental Protection Agency analytical methods are shown in parentheses behind analytical designations.

Metals = aluminum, copper, cadmium, chromium (total), lead, nickel, and zinc

BTEX = benzene, toluene, ethylbenzene, and xylenes.

ft bgs = feet below ground surface.

NWTPH-Dx = Northwest Total Petroleum Hydrocarbon—Diesel- and Heavy-Oil-Range Organics Method.

NWTPH-Gx = Northwest Total Petroleum Hydrocarbon—Gasoline-Range Organics Method.

NWTPH-HCID = Northwest Total Petroleum Hydrocarbon —Hydrocarbon Identification Method.

PAH = polycyclic aromatic hydrocarbon.

PCB = polychlorinated biphenyl.

SIM = selective ion monitoring.

SVOC = semivolatile organic compound.

Table A-3
Soil Analytical Results (mg/kg)
Former Terry's Auto Salvage Property, City of Kelso
Kelso, Washington

Analyte	MTCA Method A CUL	GP01	GP01	GP02	GP02	GP03	GP03	GP04	GP05	GP05	GP06	GP06	GP07	GP07	GP08	GP08	GP09
	Sample Date	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/21/2012
	Depth (ft bgs)	0.5	5.4	0.5	2	0.5	2.3	1	0.5	2.1	0.5	2.2	0.5	2.2	0.5	2.2	0.5
Metals																	
Aluminum	80000*	**7940**	**15900**	**23400**	**19800**	**17300**	**21900**	**15400**	**20100**	**18100**	**26000**	**18200**	**11600**	**11000**	**18100**	**22700**	**20000**
Arsenic	20	**15.4**	**1.4**	**2.85**	**2.84**	**1.55**	**2.93**	**4.47**	**5.42**	**3.99**	**1.85**	**2.88**	**22.7**	**2.13**	**5.99**	**4.64**	**1.48**
Cadmium	2	**14.9**	**0.258**	0.142 U	0.133 U	0.146 U	**0.397**	**4.73**	**1.41**	**0.496**	**0.815**	0.118 U	**2.09**	0.142 U	**0.799**	0.126 U	0.129 U
Chromium (Total)	2000	**51.2**	**15.5**	**16.9**	**39.5**	**10.5**	**25.8**	**19.4**	**18.6**	**18.4**	**18.4**	**22.5**	**90.2**	**16.3**	**21.1**	**21.7**	**16.4**
Copper	3200*	**224**	**32**	**35.7**	**42.8**	**33.8**	**55.8**	**588**	**52**	**41.8**	**36.6**	**39.5**	**133**	**50.8**	**106**	**39.7**	**26.4**
Lead	250	**887**	**26.1**	**6.48**	**4.32**	2.91 U	**45.2**	**838**	**74.8**	**15.9**	**19**	2.37 U	**219**	**16.9**	**113**	2.53 U	2.59 U
Mercury	2	**0.589**	**0.0333**	**0.0591**	**0.0427**	**0.029**	**0.0368**	**0.154**	**0.0607**	**0.0694**	**0.0677**	**0.0396**	**0.0939**	0.0188 U	**0.737**	**0.0443**	0.0233 U
Nickel	1600*	**56.6**	**12.3**	**13.2**	**30.3**	**9.75**	**25.6**	**22.5**	**25.7**	**18.6**	**23**	**15.8**	**102**	**13.2**	**28.8**	**15.6**	**10.3**
Zinc	24000*	**3970**	**157**	**129**	**83.4**	**182**	**427**	**1490**	**830**	**232**	**250**	**78.8**	**441**	**193**	**211**	**72.5**	**58.4**
BTEX																	
Benzene	0.03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Xylenes	9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Toluene	7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
VOCs																	
1,1,1,2-Tetrachloroethane	38*	0.0115 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,1-Trichloroethane	2	0.0115 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	5*	0.624 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,2-Trichloroethane	18*	0.0115 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethane	16000*	0.0115 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethene	4000*	0.0115 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloropropene	NV	0.0115 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3-Trichlorobenzene	NV	0.624 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3-Trichloropropane	0.033*	0.624 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,4-Trichlorobenzene	35*	0.624 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,4-Trimethylbenzene	NV	**8.94**	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dibromo-3-chloropropane	1.3*	0.624 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dibromoethane	0.005	0.0115 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	7200*	0.624 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloroethane	11*	0.0115 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloropropane	NV	0.0115 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	800*	**5.6**	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,3-Dichlorobenzene	NV	0.624 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,3-Dichloropropane	NV	0.0115 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,4-Dichlorobenzene	NV	0.624 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2,2-Dichloropropane	NV	0.0115 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table A-3
Soil Analytical Results (mg/kg)
Former Terry's Auto Salvage Property, City of Kelso
Kelso, Washington

Analyte	MTCA Method A CUL	GP01	GP01	GP02	GP02	GP03	GP03	GP04	GP05	GP05	GP06	GP06	GP07	GP07	GP08	GP08	GP09
	Sample Date	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/21/2012
	Depth (ft bgs)	0.5	5.4	0.5	2	0.5	2.3	1	0.5	2.1	0.5	2.2	0.5	2.2	0.5	2.2	0.5
2-Butanone	48000*	0.023 U	0.0274 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Chlorotoluene	1600*	0.624 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Hexanone	NV	0.023 U	0.0274 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Chlorotoluene	NV	0.624 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Isopropyltoluene	NV	0.624 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Methyl-2-pentanone	6400*	0.023 U	0.0274 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acetone	72000*	**0.171**	0.0684 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzene	0.03	**0.111**	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bromobenzene	NV	0.624 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bromodichloromethane	16*	0.0115 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bromoform	130*	0.0115 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bromomethane	110*	0.0115 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon disulfide	8000*	0.0115 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon tetrachloride	14*	0.0115 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chlorobenzene	1600*	0.0115 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chlorobromomethane	NV	0.0115 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroethane	NV	0.0115 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroform	800*	0.0115 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloromethane	NV	0.0115 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	160*	0.0115 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
cis-1,3-Dichloropropene	10*	0.0115 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibromochloromethane	12*	0.0115 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibromomethane	800*	0.0115 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dichlorodifluoromethane	16000*	0.0115 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	6	**3.08**	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexachlorobutadiene	13*	0.624 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Isopropylbenzene	800*	**0.0335**	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
m,p-Xylene	9	**8.43**	0.0274 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methyl tert-butyl ether	0.1	0.0115 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylene chloride	0.02	0.0575 U	0.0684 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	5	**2.95**	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
n-Butylbenzene	NV	0.624 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
n-Propylbenzene	8000*	**0.773**	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
o-Xylene	16000*	**2.96**	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
sec-Butylbenzene	NV	0.624 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Styrene	16000*	0.0115 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
tert-Butylbenzene	NV	0.624 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table A-3
Soil Analytical Results (mg/kg)
Former Terry's Auto Salvage Property, City of Kelso
Kelso, Washington

Analyte	MTCA Method A CUL	GP01	GP01	GP02	GP02	GP03	GP03	GP04	GP05	GP05	GP06	GP06	GP07	GP07	GP08	GP08	GP09
	Sample Date	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/21/2012
	Depth (ft bgs)	0.5	5.4	0.5	2	0.5	2.3	1	0.5	2.1	0.5	2.2	0.5	2.2	0.5	2.2	0.5
Tetrachloroethene	0.05	0.0115 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Toluene	7	**0.159**	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
trans-1,2-dichloroethene	1600*	0.0115 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
trans-1,3-Dichloropropene	10*	0.0115 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichloroethene	0.03	0.0115 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichlorofluoromethane	24000*	0.0115 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vinyl chloride	0.67*	0.0115 U	0.0137 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Xylenes	9	**11.4**	0.02055 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SVOCs																	
1,2,4-Trichlorobenzene	35*	0.075 U	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
1,2-Dichlorobenzene	7200*	0.075 U	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
1,3-Dichlorobenzene	NV	0.075 U	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
1,4-Dichlorobenzene	NV	0.075 U	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
1-Methylnaphthalene	35*	**0.346**	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
2,4-Dinitrotoluene	160*	0.075 U	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
2,6-Dinitrotoluene	80*	0.075 U	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
2-Chloronaphthalene	6400*	0.075 U	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
2-Methylnaphthalene	320*	**0.589**	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
2-Nitroaniline	800*	0.075 U	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
3-Nitroaniline	NV	0.075 U	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
4-Bromophenylphenyl ether	NV	0.075 U	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
4-Chloroaniline	5*	0.075 U	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
4-Chlorophenylphenyl ether	NV	0.075 U	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
4-Nitroaniline	NV	0.075 U	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
Acenaphthene	4800*	0.075 U	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
Acenaphthylene	1*	0.075 U	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
Anthracene	24000*	0.075 U	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
Benzo(a)anthracene	1.4*	0.075 U	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
Benzo(a)pyrene	0.1	0.075 U	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
Benzo(b)fluoranthene	1.4*	0.075 U	0.0453 U	--	--	--	--	--	**0.0736**	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
Benzo(ghi)perylene	NV	**0.248**	0.0453 U	--	--	--	--	--	**0.0634**	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
Benzo(k)fluoranthene	14*	0.075 U	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
Benzoic acid	320000*	1.5 U	0.907 U	--	--	--	--	--	0.975 U	0.935 U	--	--	0.786 U	0.95 U	--	--	--
Benzyl alcohol	8000*	0.075 U	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
Bis(2-chloro-1-methylethyl) ether	14*	0.075 U	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
Bis(2-chloroethoxy)methane	NV	0.075 U	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
Bis(2-chloroethyl)ether	0.91*	0.075 U	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--

Table A-3
Soil Analytical Results (mg/kg)
Former Terry's Auto Salvage Property, City of Kelso
Kelso, Washington

Analyte	MTCA Method A CUL	GP01	GP01	GP02	GP02	GP03	GP03	GP04	GP05	GP05	GP06	GP06	GP07	GP07	GP08	GP08	GP09
	Sample Date	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/21/2012
	Depth (ft bgs)	0.5	5.4	0.5	2	0.5	2.3	1	0.5	2.1	0.5	2.2	0.5	2.2	0.5	2.2	0.5
Bis(2-ethylhexyl)phthalate	71*	**29.2**	**0.0766**	--	--	--	--	--	**0.434**	**0.0528**	--	--	**0.601**	0.0474 U	--	--	--
Butylbenzylphthalate	530*	**6.78**	0.0453 U	--	--	--	--	--	**0.593**	0.0467 U	--	--	**0.355**	0.0474 U	--	--	--
Chrysene	140*	0.075 U	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
Dibenzo(a,h)anthracene	0.14*	0.075 U	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
Dibenzofuran	80*	0.075 U	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
Diethylphthalate	64000*	0.075 U	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
Dimethyl phthalate	NV	**0.0901**	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
Di-n-butyl phthalate	8000*	**1.53**	0.0453 U	--	--	--	--	--	**0.119**	0.0467 U	--	--	**0.168**	0.0474 U	--	--	--
Di-n-octyl phthalate	NV	0.075 U	**0.0984**	--	--	--	--	--	0.0487 U	0.0467 U	--	--	**0.0652**	0.0474 U	--	--	--
Fluoranthene	3200*	**0.179**	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
Fluorene	3200*	0.075 U	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
Hexachlorobenzene	0.63*	0.075 U	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
Hexachlorobutadiene	13*	0.075 U	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
Hexachlorocyclopentadiene	480*	0.075 U	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
Hexachloroethane	71*	0.075 U	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
Indeno(1,2,3-cd)pyrene	1.4*	0.075 U	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
Isophorone	1100*	0.075 U	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
Naphthalene	5	**0.438**	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
Nitrobenzene	160*	0.075 U	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
N-Nitrosodimethylamine	0.02*	0.075 U	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
N-Nitrosodiphenylamine	200*	0.075 U	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
N-Nitrosodipropylamine	0.14*	0.075 U	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
Phenanthrene	NV	**0.2**	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
Pyrene	2400*	**0.462**	0.0453 U	--	--	--	--	--	0.0487 U	0.0467 U	--	--	0.0392 U	0.0474 U	--	--	--
Total Naphthalenes	5	**3.89**	0.0522 U	--	--	--	--	--	0.0731 U	0.0701 U	--	--	0.0588 U	0.0711 U	--	--	--
cPAH TEQ	0.1	0.0566 U	0.0342 U	--	--	--	--	--	**0.0417**	0.0329 U	--	--	0.0296 U	0.0358 U	--	--	--
NWTPH-HCID																	
Diesel	NV	**DETECT**	ND	ND	ND	ND	ND	ND	**DETECT**	ND	ND	ND	**DETECT**	ND	ND	ND	ND
Gasoline	NV	**DETECT**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Kerosene	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lube Oil	NV	**DETECT**	ND	ND	ND	ND	ND	ND	**DETECT**	ND	ND	ND	**DETECT**	ND	ND	ND	ND
Mineral Spirits	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NWTPH-Dx																	
Diesel	2000	**3290 J**	**45.7**	--	--	--	--	--	**88.2**	21 U	--	--	**147**	21.4 U	--	--	--
Hydraulic Oil	NV	**8950**	**--**	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lube Oil	2000	56.3 U	**155**	--	--	--	--	--	**443**	70.1 U	--	--	**554**	71.2 U	--	--	--
Heavy-Oil-Range Hydrocarbons	2000	**12268.2**	**200.7**	--	--	--	--	--	**531.2**	45.55 U	--	--	**701**	46.3 U	--	--	--

Table A-3
Soil Analytical Results (mg/kg)
Former Terry's Auto Salvage Property, City of Kelso
Kelso, Washington

Analyte	MTCA Method A CUL	GP01	GP01	GP02	GP02	GP03	GP03	GP04	GP05	GP05	GP06	GP06	GP07	GP07	GP08	GP08	GP09
Sample Date		3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/21/2012
Depth (ft bgs)		0.5	5.4	0.5	2	0.5	2.3	1	0.5	2.1	0.5	2.2	0.5	2.2	0.5	2.2	0.5
NWTPH-Gx																	
Gasoline	30	**691**	**5.55**	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PCBs																	
Aroclor 1016	14*	0.000375 U	0.000453 U	--	--	--	--	--	0.000487 U	0.000467 U	--	--	0.000392 U	0.000474 U	--	--	--
Aroclor 1221	NV	0.000375 U	0.000453 U	--	--	--	--	--	0.000487 U	0.000467 U	--	--	0.000392 U	0.000474 U	--	--	--
Aroclor 1232	NV	0.000375 U	0.000453 U	--	--	--	--	--	0.000487 U	0.000467 U	--	--	0.000392 U	0.000474 U	--	--	--
Aroclor 1242	NV	**0.998**	**0.0327**	--	--	--	--	--	**0.0166**	0.000467 U	--	--	**0.0157**	0.000474 U	--	--	--
Aroclor 1248	NV	0.000375 U	0.000453 U	--	--	--	--	--	0.000487 U	0.000467 U	--	--	0.000392 U	0.000474 U	--	--	--
Aroclor 1254	0.5*	**2.12**	**0.0381**	--	--	--	--	--	**0.0848**	0.000467 U	--	--	**0.0534**	0.000474 U	--	--	--
Aroclor 1260	0.5*	**0.773**	**0.0209**	--	--	--	--	--	**0.0595**	0.000467 U	--	--	**0.0471**	0.000474 U	--	--	--
Aroclor 1262	NV	0.000375 U	0.000453 U	--	--	--	--	--	0.000487 U	0.000467 U	--	--	0.000392 U	0.000474 U	--	--	--
Aroclor 1268	NV	0.000375 U	0.000453 U	--	--	--	--	--	0.000487 U	0.000467 U	--	--	0.000392 U	0.000474 U	--	--	--
Total PCBs	1	**3.89**	**0.0931**	--	--	--	--	--	**0.162**	0.000467 U	--	--	**0.117**	0.000474 U	--	--	--

Table A-3
Soil Analytical Results (mg/kg)
Former Terry's Auto Salvage Property, City of Kelso
Kelso, Washington

Analyte	MTCA Method A CUL	GP09	GP09	GP09	GP09	GP09	GP09	GP09	GP09	GP10	GP10	GP10	GP10	GP10	GP10	GP10	GP10
Sample Date		3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012
Depth (ft bgs)		2.4	6.9	11	17.5	22.1	25.6	31.6	37.5	0.5	2.8	5.2	12.5	17.5	22.5	27.5	32
Metals																	
Aluminum	80000*	**24400**	--	--	--	--	--	--	--	**16600**	**12700**	--	--	--	--	--	--
Arsenic	20	**1.71**	--	--	--	--	--	--	--	6.36 U	**3.68**	--	--	--	--	--	--
Cadmium	2	0.136 U	--	--	--	--	--	--	--	0.127 U	0.141 U	--	--	--	--	--	--
Chromium (Total)	2000	**18.9**	--	--	--	--	--	--	--	**17.3**	**17.7**	--	--	--	--	--	--
Copper	3200*	**47**	--	--	--	--	--	--	--	**40.2**	**52.8**	--	--	--	--	--	--
Lead	250	2.72 U	--	--	--	--	--	--	--	**7.15**	2.83 U	--	--	--	--	--	--
Mercury	2	**0.0594**	--	--	--	--	--	--	--	**0.153**	**0.0304**	--	--	--	--	--	--
Nickel	1600*	**13.1**	--	--	--	--	--	--	--	**18**	**11.8**	--	--	--	--	--	--
Zinc	24000*	**55**	--	--	--	--	--	--	--	**384**	**71.8**	--	--	--	--	--	--
BTEX																	
Benzene	0.03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Xylenes	9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Toluene	7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
VOCs																	
1,1,1,2-Tetrachloroethane	38*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,1-Trichloroethane	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	5*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,2-Trichloroethane	18*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethane	16000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethene	4000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloropropene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3-Trichlorobenzene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3-Trichloropropane	0.033*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,4-Trichlorobenzene	35*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,4-Trimethylbenzene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dibromo-3-chloropropane	1.3*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dibromoethane	0.005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	7200*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloroethane	11*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloropropane	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	800*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,3-Dichlorobenzene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,3-Dichloropropane	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,4-Dichlorobenzene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2,2-Dichloropropane	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table A-3
Soil Analytical Results (mg/kg)
Former Terry's Auto Salvage Property, City of Kelso
Kelso, Washington

Analyte	MTCA Method A CUL	GP09	GP09	GP09	GP09	GP09	GP09	GP09	GP09	GP10	GP10	GP10	GP10	GP10	GP10	GP10	GP10
	Sample Date	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012
	Depth (ft bgs)	2.4	6.9	11	17.5	22.1	25.6	31.6	37.5	0.5	2.8	5.2	12.5	17.5	22.5	27.5	32
2-Butanone	48000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Chlorotoluene	1600*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Hexanone	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Chlorotoluene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Isopropyltoluene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Methyl-2-pentanone	6400*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acetone	72000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzene	0.03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bromobenzene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bromodichloromethane	16*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bromoform	130*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bromomethane	110*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon disulfide	8000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon tetrachloride	14*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chlorobenzene	1600*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chlorobromomethane	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroethane	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroform	800*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloromethane	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	160*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
cis-1,3-Dichloropropene	10*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibromochloromethane	12*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibromomethane	800*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dichlorodifluoromethane	16000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexachlorobutadiene	13*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Isopropylbenzene	800*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
m,p-Xylene	9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methyl tert-butyl ether	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylene chloride	0.02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
n-Butylbenzene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
n-Propylbenzene	8000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
o-Xylene	16000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
sec-Butylbenzene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Styrene	16000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
tert-Butylbenzene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table A-3
Soil Analytical Results (mg/kg)
Former Terry's Auto Salvage Property, City of Kelso
Kelso, Washington

Analyte	MTCA Method A CUL	GP09	GP09	GP09	GP09	GP09	GP09	GP09	GP09	GP10	GP10	GP10	GP10	GP10	GP10	GP10	GP10
	Sample Date	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012
	Depth (ft bgs)	2.4	6.9	11	17.5	22.1	25.6	31.6	37.5	0.5	2.8	5.2	12.5	17.5	22.5	27.5	32
Tetrachloroethene	0.05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Toluene	7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
trans-1,2-dichloroethene	1600*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
trans-1,3-Dichloropropene	10*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichloroethene	0.03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichlorofluoromethane	24000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vinyl chloride	0.67*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Xylenes	9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SVOCs																	
1,2,4-Trichlorobenzene	35*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	7200*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,3-Dichlorobenzene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,4-Dichlorobenzene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Methylnaphthalene	35*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2,4-Dinitrotoluene	160*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2,6-Dinitrotoluene	80*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Chloronaphthalene	6400*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	320*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Nitroaniline	800*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Nitroaniline	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Bromophenylphenyl ether	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Chloroaniline	5*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Chlorophenylphenyl ether	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Nitroaniline	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthene	4800*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthylene	1*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene	24000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene	1.4*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	1.4*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(ghi)perylene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	14*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzoic acid	320000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzyl alcohol	8000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bis(2-chloro-1-methylethyl) ether	14*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bis(2-chloroethoxy)methane	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bis(2-chloroethyl)ether	0.91*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table A-3
Soil Analytical Results (mg/kg)
Former Terry's Auto Salvage Property, City of Kelso
Kelso, Washington

Analyte	MTCA Method A CUL	GP09	GP09	GP09	GP09	GP09	GP09	GP09	GP09	GP10	GP10	GP10	GP10	GP10	GP10	GP10	GP10
	Sample Date	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012
	Depth (ft bgs)	2.4	6.9	11	17.5	22.1	25.6	31.6	37.5	0.5	2.8	5.2	12.5	17.5	22.5	27.5	32
Bis(2-ethylhexyl)phthalate	71*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Butylbenzylphthalate	530*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene	140*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene	0.14*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenzofuran	80*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Diethylphthalate	64000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dimethyl phthalate	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Di-n-butyl phthalate	8000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Di-n-octyl phthalate	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene	3200*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluorene	3200*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexachlorobenzene	0.63*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexachlorobutadiene	13*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexachlorocyclopentadiene	480*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexachloroethane	71*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	1.4*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Isophorone	1100*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrobenzene	160*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
N-Nitrosodimethylamine	0.02*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
N-Nitrosodiphenylamine	200*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
N-Nitrosodipropylamine	0.14*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene	2400*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Naphthalenes	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
cPAH TEQ	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
NWTPH-HCID																	
Diesel	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Gasoline	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Kerosene	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lube Oil	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Mineral Spirits	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NWTPH-Dx																	
Diesel	2000	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hydraulic Oil	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lube Oil	2000	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Heavy-Oil-Range Hydrocarbons	2000	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table A-3
Soil Analytical Results (mg/kg)
Former Terry's Auto Salvage Property, City of Kelso
Kelso, Washington

Analyte	MTCA Method A CUL	GP09	GP09	GP09	GP09	GP09	GP09	GP09	GP09	GP10	GP10	GP10	GP10	GP10	GP10	GP10	GP10
Sample Date		3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012
Depth (ft bgs)		2.4	6.9	11	17.5	22.1	25.6	31.6	37.5	0.5	2.8	5.2	12.5	17.5	22.5	27.5	32
NWTPH-Gx																	
Gasoline	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PCBs																	
Aroclor 1016	14*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1221	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1232	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1242	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1248	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1254	0.5*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1260	0.5*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1262	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1268	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total PCBs	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table A-3
Soil Analytical Results (mg/kg)
Former Terry's Auto Salvage Property, City of Kelso
Kelso, Washington

Analyte	MTCA Method A CUL	GP10	GP11	GP11	GP11	GP12	GP12	GP12	GP13	GP13	GP14	GP14	GP14	GP15	GP15	GP16	GP16
	Sample Date	3/21/2012	3/21/2012	3/21/2012	3/21/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012
	Depth (ft bgs)	37.5	0.5	2.3	6.3	1.3	6	7.4	1	2.6	1.1	6	8.1	1.3	3.1	1.2	2.8
Metals																	
Aluminum	80000*	--	**16400**	**21400**	**24700**	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	20	--	**9.26**	**2.29**	**6.96**	--	--	--	--	--	**5.26**	--	--	--	--	**6.9**	**1.25**
Cadmium	2	--	**0.592**	0.132 U	0.127 U	**1.57**	--	--	**19.2**	**0.139**	0.13 U	--	--	0.133 U	0.148 U	**--**	**--**
Chromium (Total)	2000	--	**10.9**	**16.8**	**21.2**	--	--	--	--	**--**	--	--	--	--	--	**--**	**--**
Copper	3200*	--	**47.9**	**35.3**	**46.4**	--	--	--	--	**--**	--	--	--	--	--	**--**	**--**
Lead	250	--	**51.4**	**39.3**	2.55 U	**138**	--	--	**1480**	**786**	2.6 U	--	--	2.65 U	2.96 U	**19.3**	**7.72**
Mercury	2	--	0.0182 U	**0.0627**	**0.0674**	**0.174**	--	--	--	--	--	--	--	--	--	--	--
Nickel	1600*	--	**51.7**	**12.4**	**15**	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	24000*	--	**166**	**129**	**59.7**	--	--	--	--	--	--	--	--	--	--	--	--
BTEX																	
Benzene	0.03	--	--	--	--	--	--	--	**0.44**	0.033 U	--	--	--	--	--	--	--
Ethylbenzene	6	--	--	--	--	--	--	--	**0.28**	0.13 U	--	--	--	--	--	--	--
Total Xylenes	9	--	--	--	--	--	--	--	**0.79**	0.4 U	--	--	--	--	--	--	--
Toluene	7	--	--	--	--	--	--	--	**0.42**	0.13 U	--	--	--	--	--	--	--
VOCs																	
1,1,1,2-Tetrachloroethane	38*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,1-Trichloroethane	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	5*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,2-Trichloroethane	18*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethane	16000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethene	4000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloropropene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3-Trichlorobenzene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3-Trichloropropane	0.033*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,4-Trichlorobenzene	35*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,4-Trimethylbenzene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dibromo-3-chloropropane	1.3*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dibromoethane	0.005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	7200*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloroethane	11*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloropropane	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	800*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,3-Dichlorobenzene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,3-Dichloropropane	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,4-Dichlorobenzene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2,2-Dichloropropane	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table A-3
Soil Analytical Results (mg/kg)
Former Terry's Auto Salvage Property, City of Kelso
Kelso, Washington

Analyte	MTCA Method A CUL	GP10	GP11	GP11	GP11	GP12	GP12	GP12	GP13	GP13	GP14	GP14	GP14	GP15	GP15	GP16	GP16
	Sample Date	3/21/2012	3/21/2012	3/21/2012	3/21/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012
	Depth (ft bgs)	37.5	0.5	2.3	6.3	1.3	6	7.4	1	2.6	1.1	6	8.1	1.3	3.1	1.2	2.8
2-Butanone	48000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Chlorotoluene	1600*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Hexanone	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Chlorotoluene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Isopropyltoluene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Methyl-2-pentanone	6400*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acetone	72000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzene	0.03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bromobenzene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bromodichloromethane	16*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bromoform	130*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bromomethane	110*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon disulfide	8000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon tetrachloride	14*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chlorobenzene	1600*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chlorobromomethane	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroethane	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroform	800*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloromethane	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	160*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
cis-1,3-Dichloropropene	10*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibromochloromethane	12*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibromomethane	800*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dichlorodifluoromethane	16000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexachlorobutadiene	13*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Isopropylbenzene	800*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
m,p-Xylene	9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methyl tert-butyl ether	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylene chloride	0.02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
n-Butylbenzene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
n-Propylbenzene	8000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
o-Xylene	16000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
sec-Butylbenzene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Styrene	16000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
tert-Butylbenzene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table A-3
Soil Analytical Results (mg/kg)
Former Terry's Auto Salvage Property, City of Kelso
Kelso, Washington

Analyte	MTCA Method A CUL	GP10	GP11	GP11	GP11	GP12	GP12	GP12	GP13	GP13	GP14	GP14	GP14	GP15	GP15	GP16	GP16
	Sample Date	3/21/2012	3/21/2012	3/21/2012	3/21/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012
	Depth (ft bgs)	37.5	0.5	2.3	6.3	1.3	6	7.4	1	2.6	1.1	6	8.1	1.3	3.1	1.2	2.8
Tetrachloroethene	0.05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Toluene	7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
trans-1,2-dichloroethene	1600*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
trans-1,3-Dichloropropene	10*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichloroethene	0.03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichlorofluoromethane	24000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vinyl chloride	0.67*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Xylenes	9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SVOCs																	
1,2,4-Trichlorobenzene	35*	--	0.0363 U	0.0458 U	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	7200*	--	0.0363 U	0.0458 U	--	--	--	--	--	--	--	--	--	--	--	--	--
1,3-Dichlorobenzene	NV	--	0.0363 U	0.0458 U	--	--	--	--	--	--	--	--	--	--	--	--	--
1,4-Dichlorobenzene	NV	--	0.0363 U	0.0458 U	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Methylnaphthalene	35*	--	0.0363 U	0.0458 U	--	0.00822 U	--	--	--	--	0.0101 U	--	--	0.0092 U	0.00987 U	--	--
2,4-Dinitrotoluene	160*	--	0.0363 U	0.0458 U	--	--	--	--	--	--	--	--	--	--	--	--	--
2,6-Dinitrotoluene	80*	--	0.0363 U	0.0458 U	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Chloronaphthalene	6400*	--	0.0363 U	0.0458 U	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	320*	--	0.0363 U	0.0458 U	--	0.00822 U	--	--	--	--	0.0101 U	--	--	0.0092 U	0.00987 U	--	--
2-Nitroaniline	800*	--	0.0363 U	0.0458 U	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Nitroaniline	NV	--	0.0363 U	0.0458 U	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Bromophenylphenyl ether	NV	--	0.0363 U	0.0458 U	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Chloroaniline	5*	--	0.0363 U	0.0458 U	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Chlorophenylphenyl ether	NV	--	0.0363 U	0.0458 U	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Nitroaniline	NV	--	0.0363 U	0.0458 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthene	4800*	--	0.0363 U	0.0458 U	--	0.00822 U	--	--	--	--	0.0101 U	--	--	0.0092 U	0.00987 U	--	--
Acenaphthylene	1*	--	0.0363 U	0.0458 U	--	0.00822 U	--	--	--	--	0.0101 U	--	--	0.0092 U	0.00987 U	--	--
Anthracene	24000*	--	0.0363 U	0.0458 U	--	0.00822 U	--	--	--	--	0.0101 U	--	--	0.0092 U	0.00987 U	--	--
Benzo(a)anthracene	1.4*	--	0.0363 U	0.0458 U	--	0.00822 U	--	--	--	--	0.0101 U	--	--	0.0092 U	0.00987 U	--	--
Benzo(a)pyrene	0.1	--	0.0363 U	0.0458 U	--	0.00822 U	--	--	--	--	0.0101 U	--	--	0.0092 U	0.00987 U	--	--
Benzo(b)fluoranthene	1.4*	--	0.0363 U	0.0458 U	--	0.00822 U	--	--	--	--	0.0101 U	--	--	0.0092 U	0.00987 U	--	--
Benzo(ghi)perylene	NV	--	0.0363 U	0.0458 U	--	0.00822 U	--	--	--	--	0.0101 U	--	--	0.0092 U	0.00987 U	--	--
Benzo(k)fluoranthene	14*	--	0.0363 U	0.0458 U	--	0.00822 U	--	--	--	--	0.0101 U	--	--	0.0092 U	0.00987 U	--	--
Benzoic acid	320000*	--	0.727 U	0.917 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzyl alcohol	8000*	--	0.0363 U	0.0458 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Bis(2-chloro-1-methylethyl) ether	14*	--	0.0363 U	0.0458 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Bis(2-chloroethoxy)methane	NV	--	0.0363 U	0.0458 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Bis(2-chloroethyl)ether	0.91*	--	0.0363 U	0.0458 U	--	--	--	--	--	--	--	--	--	--	--	--	--

Table A-3
Soil Analytical Results (mg/kg)
Former Terry's Auto Salvage Property, City of Kelso
Kelso, Washington

Analyte	MTCA Method A CUL	GP10	GP11	GP11	GP11	GP12	GP12	GP12	GP13	GP13	GP14	GP14	GP14	GP15	GP15	GP16	GP16
	Sample Date	3/21/2012	3/21/2012	3/21/2012	3/21/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012
	Depth (ft bgs)	37.5	0.5	2.3	6.3	1.3	6	7.4	1	2.6	1.1	6	8.1	1.3	3.1	1.2	2.8
Bis(2-ethylhexyl)phthalate	71*	--	**1.1**	0.0458 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Butylbenzylphthalate	530*	--	0.468	0.0458 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene	140*	--	0.0363 U	0.0458 U	--	0.00822 U	--	--	--	--	0.0101 U	--	--	0.0092 U	0.00987 U	--	--
Dibenzo(a,h)anthracene	0.14*	--	0.0363 U	0.0458 U	--	0.00822 U	--	--	--	--	0.0101 U	--	--	0.0092 U	0.00987 U	--	--
Dibenzofuran	80*	--	0.0363 U	0.0458 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Diethylphthalate	64000*	--	0.0363 U	0.0458 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Dimethyl phthalate	NV	--	0.0363 U	0.0458 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Di-n-butyl phthalate	8000*	--	**0.0715**	0.0458 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Di-n-octyl phthalate	NV	--	0.0363 U	0.0458 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene	3200*	--	0.0363 U	0.0458 U	--	0.00822 U	--	--	--	--	0.0101 U	--	--	0.0092 U	0.00987 U	--	--
Fluorene	3200*	--	0.0363 U	0.0458 U	--	0.00822 U	--	--	--	--	0.0101 U	--	--	0.0092 U	0.00987 U	--	--
Hexachlorobenzene	0.63*	--	0.0363 U	0.0458 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexachlorobutadiene	13*	--	0.0363 U	0.0458 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexachlorocyclopentadiene	480*	--	0.0363 U	0.0458 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexachloroethane	71*	--	0.0363 U	0.0458 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	1.4*	--	0.0363 U	0.0458 U	--	0.00822 U	--	--	--	--	0.0101 U	--	--	0.0092 U	0.00987 U	--	--
Isophorone	1100*	--	0.0363 U	0.0458 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	5	--	0.0363 U	0.0458 U	--	0.00822 U	--	--	--	--	0.0101 U	--	--	0.0092 U	0.00987 U	--	--
Nitrobenzene	160*	--	0.0363 U	0.0458 U	--	--	--	--	--	--	--	--	--	--	--	--	--
N-Nitrosodimethylamine	0.02*	--	0.0363 U	0.0458 U	--	--	--	--	--	--	--	--	--	--	--	--	--
N-Nitrosodiphenylamine	200*	--	0.0363 U	0.0458 U	--	--	--	--	--	--	--	--	--	--	--	--	--
N-Nitrosodipropylamine	0.14*	--	0.0363 U	0.0458 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	NV	--	0.0363 U	0.0458 U	--	0.00822 U	--	--	--	--	0.0101 U	--	--	0.0092 U	0.00987 U	--	--
Pyrene	2400*	--	**0.0487**	0.0458 U	--	0.00822 U	--	--	--	--	0.0101 U	--	--	0.0092 U	0.00987 U	--	--
Total Naphthalenes	5	--	0.0545 U	0.0687 U	--	0.0123 U	--	--	--	--	0.0152 U	--	--	0.0138 U	0.01481 U	--	--
cPAH TEQ	0.1	--	0.0274	0.0346	--	0.00621	--	--	--	--	0.00763	--	--	0.00695	0.00745	--	--
NWTPH-HCID																	
Diesel	NV	ND	**DETECT**	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--
Gasoline	NV	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--
Kerosene	NV	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--
Lube Oil	NV	ND	**DETECT**	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--
Mineral Spirits	NV	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--
NWTPH-Dx																	
Diesel	2000	--	**192**	20.6 U	--	--	--	--	**2190 J**	**19.4**	22.6 U	--	--	--	--	--	--
Hydraulic Oil	NV	--	**606**	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lube Oil	2000	--	54.5 U	68.8 U	--	--	--	--	**8720**	**130**	75.5 U	--	--	--	--	--	--
Heavy-Oil-Range Hydrocarbons	2000	--	**825.3**	44.7 U	--	--	--	--	**10910**	**149.4**	49.05 U	--	--	--	--	--	--

Table A-3
Soil Analytical Results (mg/kg)
Former Terry's Auto Salvage Property, City of Kelso
Kelso, Washington

Analyte	MTCA Method A CUL	GP10	GP11	GP11	GP11	GP12	GP12	GP12	GP13	GP13	GP14	GP14	GP14	GP15	GP15	GP16	GP16
	Sample Date	3/21/2012	3/21/2012	3/21/2012	3/21/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012	5/31/2012
	Depth (ft bgs)	37.5	0.5	2.3	6.3	1.3	6	7.4	1	2.6	1.1	6	8.1	1.3	3.1	1.2	2.8
NWTPH-Gx																	
Gasoline	30	--	--	--	--	--	--	--	**50.7**	**4.05**	--	--	--	--	--	--	--
PCBs																	
Aroclor 1016	14*	--	--	--	--	--	--	--	0.00037 U	0.00041 U	0.000503 U	--	--	--	--	--	--
Aroclor 1221	NV	--	--	--	--	--	--	--	0.00037 U	0.00041 U	0.000503 U	--	--	--	--	--	--
Aroclor 1232	NV	--	--	--	--	--	--	--	0.00037 U	0.00041 U	0.000503 U	--	--	--	--	--	--
Aroclor 1242	NV	--	--	--	--	--	--	--	**0.769**	0.00041 U	0.000503 U	--	--	--	--	--	--
Aroclor 1248	NV	--	--	--	--	--	--	--	0.00037 U	0.00041 U	0.000503 U	--	--	--	--	--	--
Aroclor 1254	0.5*	--	--	--	--	--	--	--	**1.36**	0.00041 U	**0.0201**	--	--	--	--	--	--
Aroclor 1260	0.5*	--	--	--	--	--	--	--	**0.643**	0.00041 U	0.000503 U	--	--	--	--	--	--
Aroclor 1262	NV	--	--	--	--	--	--	--	0.00037 U	0.00041 U	0.000503 U	--	--	--	--	--	--
Aroclor 1268	NV	--	--	--	--	--	--	--	0.00037 U	0.00041 U	0.000503 U	--	--	--	--	--	--
Total PCBs	1	--	--	--	--	--	--	--	**2.77**	0.00041 U	**0.0221**	--	--	--	--	--	--

Table A-3
Soil Analytical Results (mg/kg)
Former Terry's Auto Salvage Property, City of Kelso
Kelso, Washington

Analyte	MTCA Method A CUL	HA01	HA01	HA02	HA03	HA04	HA04	HA05	HA05	HA06	HA06	HA07	HA07	HA08	HA08	HA09
	Sample Date	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/22/2012	3/22/2012	3/22/2012	3/22/2012	3/22/2012	3/22/2012	3/22/2012	3/22/2012	5/29/2012	5/29/2012	5/29/2012
	Depth (ft bgs)	0.5	1.5	0.5	0.5	0.5	1.5	0.5	1.5	0.5	1.5	0.5	1.5	0.5	1.5	0.5
Metals																
Aluminum	80000*	**16500**	**19800**	**17900**	**11900**	**16900**	**18500**	**11600**	**19300**	**11700**	**9140**	**13000**	**14100**	--	--	--
Arsenic	20	**9.65**	**3.92**	**3.75**	**13.9**	**4.36**	**2.9**	**4.6**	**3.25**	**37.3**	**224**	**16.4 U**	**24.8**	--	--	**14.9**
Cadmium	2	**2.04**	**0.231**	**2.7**	**6.04**	**4.05**	**0.564**	**3.63**	**0.302**	**1.81**	**1.73**	**5.14**	**22**	0.099 U	--	--
Chromium (Total)	2000	**18.8**	**15.6**	**15.4**	**31**	**16.6**	**15.6**	**15.8**	**14**	**25.8**	**45.1**	**23.8**	**41.4**	--	--	--
Copper	3200*	**138**	**33.3**	**434**	**951**	**139**	**60.5**	**121**	**33.2**	**111**	**182**	**207**	**530**	--	--	--
Lead	250	**898**	**25.7**	**354**	**2400**	**417**	**78.3**	**372**	**32.5**	**238**	**337**	**552**	**1160**	1.99 U	--	**89.8**
Mercury	2	**0.843**	**0.0545**	**0.123**	**72.3**	**0.104**	**0.0572**	**0.136**	**0.0557**	**0.0519**	**0.0744**	**0.521**	**1.44**	--	--	--
Nickel	1600*	**18.7**	**12.2**	**31.9**	**37.6**	**25.6**	**12.1**	**34.5**	**10.7**	**43**	**20.7**	**59.6**	**57.9**	--	--	--
Zinc	24000*	**21600**	**114**	**1790**	**3370**	**1570**	**274**	**620**	**148**	**451**	**775**	**1010**	**1990**	--	--	--
BTEX																
Benzene	0.03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Xylenes	9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Toluene	7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
VOCs																
1,1,1,2-Tetrachloroethane	38*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,1-Trichloroethane	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	5*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,2-Trichloroethane	18*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethane	16000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethene	4000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloropropene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3-Trichlorobenzene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3-Trichloropropane	0.033*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,4-Trichlorobenzene	35*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,4-Trimethylbenzene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dibromo-3-chloropropane	1.3*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dibromoethane	0.005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	7200*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloroethane	11*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloropropane	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	800*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,3-Dichlorobenzene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,3-Dichloropropane	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,4-Dichlorobenzene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2,2-Dichloropropane	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table A-3
Soil Analytical Results (mg/kg)
Former Terry's Auto Salvage Property, City of Kelso
Kelso, Washington

Analyte	MTCA Method A CUL	HA01	HA01	HA02	HA03	HA04	HA04	HA05	HA05	HA06	HA06	HA07	HA07	HA08	HA08	HA09
	Sample Date	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/22/2012	3/22/2012	3/22/2012	3/22/2012	3/22/2012	3/22/2012	3/22/2012	3/22/2012	5/29/2012	5/29/2012	5/29/2012
	Depth (ft bgs)	0.5	1.5	0.5	0.5	0.5	1.5	0.5	1.5	0.5	1.5	0.5	1.5	0.5	1.5	0.5
2-Butanone	48000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Chlorotoluene	1600*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Hexanone	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Chlorotoluene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Isopropyltoluene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Methyl-2-pentanone	6400*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acetone	72000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzene	0.03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bromobenzene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bromodichloromethane	16*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bromoform	130*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bromomethane	110*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon disulfide	8000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon tetrachloride	14*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chlorobenzene	1600*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chlorobromomethane	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroethane	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroform	800*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloromethane	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	160*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
cis-1,3-Dichloropropene	10*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibromochloromethane	12*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibromomethane	800*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dichlorodifluoromethane	16000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexachlorobutadiene	13*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Isopropylbenzene	800*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
m,p-Xylene	9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methyl tert-butyl ether	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylene chloride	0.02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
n-Butylbenzene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
n-Propylbenzene	8000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
o-Xylene	16000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
sec-Butylbenzene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Styrene	16000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
tert-Butylbenzene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table A-3
Soil Analytical Results (mg/kg)
Former Terry's Auto Salvage Property, City of Kelso
Kelso, Washington

Analyte	MTCA Method A CUL	HA01	HA01	HA02	HA03	HA04	HA04	HA05	HA05	HA06	HA06	HA07	HA07	HA08	HA08	HA09
	Sample Date	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/22/2012	3/22/2012	3/22/2012	3/22/2012	3/22/2012	3/22/2012	3/22/2012	3/22/2012	5/29/2012	5/29/2012	5/29/2012
	Depth (ft bgs)	0.5	1.5	0.5	0.5	0.5	1.5	0.5	1.5	0.5	1.5	0.5	1.5	0.5	1.5	0.5
Tetrachloroethene	0.05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Toluene	7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
trans-1,2-dichloroethene	1600*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
trans-1,3-Dichloropropene	10*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichloroethene	0.03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichlorofluoromethane	24000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vinyl chloride	0.67*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Xylenes	9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SVOCs																
1,2,4-Trichlorobenzene	35*	0.0438 U	0.0462 U	0.0432 U	0.0411 U	0.0408 U	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	0.0409 U	0.0422 U	--	--	--
1,2-Dichlorobenzene	7200*	0.0438 U	0.0462 U	0.0432 U	0.0411 U	0.0408 U	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	0.0409 U	0.0422 U	--	--	--
1,3-Dichlorobenzene	NV	0.0438 U	0.0462 U	0.0432 U	0.0411 U	0.0408 U	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	0.0409 U	0.0422 U	--	--	--
1,4-Dichlorobenzene	NV	0.0438 U	0.0462 U	0.0432 U	0.0411 U	0.0408 U	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	0.0409 U	0.0422 U	--	--	--
1-Methylnaphthalene	35*	0.0438 U	0.0462 U	0.0432 U	0.0411 U	0.0408 U	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	**0.146**	0.0422 U	--	--	--
2,4-Dinitrotoluene	160*	0.0438 U	0.0462 U	0.0432 U	0.0411 U	0.0408 U	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	0.0409 U	0.0422 U	--	--	--
2,6-Dinitrotoluene	80*	0.0438 U	0.0462 U	0.0432 U	0.0411 U	0.0408 U	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	0.0409 U	0.0422 U	--	--	--
2-Chloronaphthalene	6400*	0.0438 U	0.0462 U	0.0432 U	0.0411 U	0.0408 U	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	0.0409 U	0.0422 U	--	--	--
2-Methylnaphthalene	320*	0.0438 U	0.0462 U	0.0432 U	0.0411 U	0.0408 U	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	**0.247**	0.0422 U	--	--	--
2-Nitroaniline	800*	0.0438 U	0.0462 U	0.0432 U	0.0411 U	0.0408 U	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	0.0409 U	0.0422 U	--	--	--
3-Nitroaniline	NV	0.0438 U	0.0462 U	0.0432 U	0.0411 U	0.0408 U	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	0.0409 U	0.0422 U	--	--	--
4-Bromophenylphenyl ether	NV	0.0438 U	0.0462 U	0.0432 U	0.0411 U	0.0408 U	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	0.0409 U	0.0422 U	--	--	--
4-Chloroaniline	5*	0.0438 U	0.0462 U	0.0432 U	0.0411 U	0.0408 U	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	0.0409 U	0.0422 U	--	--	--
4-Chlorophenylphenyl ether	NV	0.0438 U	0.0462 U	--	--	0.0408 U	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	0.0409 U	0.0422 U	--	--	--
4-Nitroaniline	NV	0.0438 U	0.0462 U	0.0432 U	0.0411 U	0.0408 U	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	0.0409 U	0.0422 U	--	--	--
Acenaphthene	4800*	0.0438 U	0.0462 U	0.0432 U	0.0411 U	0.0408 U	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	0.0409 U	0.0422 U	--	--	--
Acenaphthylene	1*	0.0438 U	0.0462 U	0.0432 U	0.0411 U	0.0408 U	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	0.0409 U	0.0422 U	--	--	--
Anthracene	24000*	0.0438 U	0.0462 U	0.0432 U	0.0411 U	0.0408 U	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	0.0409 U	**0.0634**	--	--	--
Benzo(a)anthracene	1.4*	0.0438 U	0.0462 U	0.0432 U	**0.0456**	0.0408 U	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	0.0409 U	**0.0807**	--	--	--
Benzo(a)pyrene	0.1	0.0438 U	0.0462 U	0.0432 U	**0.0781**	0.0408 U	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	0.0409 U	**0.278**	--	--	--
Benzo(b)fluoranthene	1.4*	**0.0575**	0.0462 U	0.0432 U	**0.129**	0.0408 U	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	0.0409 U	**0.191**	--	--	--
Benzo(ghi)perylene	NV	**0.0461**	0.0462 U	0.0432 U	**0.138**	0.0408 U	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	0.0409 U	**0.322**	--	--	--
Benzo(k)fluoranthene	14*	0.0438 U	0.0462 U	0.0432 U	**0.0477**	0.0408 U	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	0.0409 U	**0.349**	--	--	--
Benzoic acid	320000*	0.878 U	0.925 U	0.865 U	0.822 U	0.816 U	0.855 U	0.852 U	0.945 U	0.77 U	0.754 U	0.819 U	0.845 U	--	--	--
Benzyl alcohol	8000*	0.0438 U	0.0462 U	0.0432 U	0.0411 U	0.0408 U	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	0.0409 U	0.0422 U	--	--	--
Bis(2-chloro-1-methylethyl) ether	14*	0.0438 U	0.0462 U	--	--	0.0408 U	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	0.0409 U	0.0422 U	--	--	--
Bis(2-chloroethoxy)methane	NV	0.0438 U	0.0462 U	0.0432 U	0.0411 U	0.0408 U	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	0.0409 U	0.0422 U	--	--	--
Bis(2-chloroethyl)ether	0.91*	0.0438 U	0.0462 U	0.0432 U	0.0411 U	0.0408 U	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	0.0409 U	0.0422 U	--	--	--

Table A-3
Soil Analytical Results (mg/kg)
Former Terry's Auto Salvage Property, City of Kelso
Kelso, Washington

Analyte	MTCA Method A CUL	HA01	HA01	HA02	HA03	HA04	HA04	HA05	HA05	HA06	HA06	HA07	HA07	HA08	HA08	HA09
	Sample Date	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/22/2012	3/22/2012	3/22/2012	3/22/2012	3/22/2012	3/22/2012	3/22/2012	3/22/2012	5/29/2012	5/29/2012	5/29/2012
	Depth (ft bgs)	0.5	1.5	0.5	0.5	0.5	1.5	0.5	1.5	0.5	1.5	0.5	1.5	0.5	1.5	0.5
Bis(2-ethylhexyl)phthalate	71*	0.0438 U	0.0462 U	0.0432 U	**0.374**	**1.44**	0.0427 U	**0.884**	0.0472 U	**0.459**	**0.143**	**0.483**	0.0422 U	--	--	--
Butylbenzylphthalate	530*	0.0438 U	0.0462 U	0.0432 U	**0.434**	**0.54**	0.0427 U	**0.724**	0.0472 U	**0.777**	**0.201**	**1.25**	**0.97**	--	--	--
Chrysene	140*	0.0438 U	0.0462 U	0.0432 U	**0.0699**	**0.0698**	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	0.0409 U	**0.365**	--	--	--
Dibenzo(a,h)anthracene	0.14*	0.0438 U	0.0462 U	0.0432 U	**0.0444**	0.0408 U	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	0.0409 U	0.0422 U	--	--	--
Dibenzofuran	80*	0.0438 U	0.0462 U	0.0432 U	0.0411 U	0.0408 U	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	0.0409 U	0.0422 U	--	--	--
Diethylphthalate	64000*	0.0438 U	0.0462 U	0.0432 U	0.0411 U	0.0408 U	0.0427 U	0.0425 U	0.0472 U	**0.0412**	0.0376 U	0.0409 U	0.0422 U	--	--	--
Dimethyl phthalate	NV	0.0438 U	0.0462 U	0.0432 U	0.0411 U	0.0408 U	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	0.0409 U	0.0422 U	--	--	--
Di-n-butyl phthalate	8000*	0.0438 U	0.0462 U	0.0432 U	**0.0736**	**0.25**	0.0427 U	**0.161**	0.0472 U	**0.0916**	**0.13**	**0.0889**	**1.42**	--	--	--
Di-n-octyl phthalate	NV	0.0438 U	0.0462 U	0.0432 U	0.0411 U	0.0408 U	0.0427 U	0.0425 U	0.0472 U	**0.281**	0.0376 U	0.0409 U	0.0422 U	--	--	--
Fluoranthene	3200*	0.0438 U	0.0462 U	0.0432 U	**0.0859**	**0.0608**	0.0427 U	**0.0651**	0.0472 U	0.0385 U	0.0376 U	0.0409 U	**0.284**	--	--	--
Fluorene	3200*	0.0438 U	0.0462 U	0.0432 U	0.0411 U	0.0408 U	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	0.0409 U	0.0422 U	--	--	--
Hexachlorobenzene	0.63*	0.0438 U	0.0462 U	0.0432 U	0.0411 U	0.0408 U	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	0.0409 U	0.0422 U	--	--	--
Hexachlorobutadiene	13*	0.0438 U	0.0462 U	0.0432 U	0.0411 U	0.0408 U	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	0.0409 U	0.0422 U	--	--	--
Hexachlorocyclopentadiene	480*	0.0438 U	0.0462 U	0.0432 U	0.0411 U	0.0408 U	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	0.0409 U	0.0422 U	--	--	--
Hexachloroethane	71*	0.0438 U	0.0462 U	0.0432 U	0.0411 U	0.0408 U	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	0.0409 U	0.0422 U	--	--	--
Indeno(1,2,3-cd)pyrene	1.4*	0.0438 U	0.0462 U	0.0432 U	**0.0954**	0.0408 U	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	0.0409 U	**0.226**	--	--	--
Isophorone	1100*	0.0438 U	0.0462 U	0.0432 U	0.0411 U	0.0408 U	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	0.0409 U	0.0422 U	--	--	--
Naphthalene	5	0.0438 U	0.0462 U	0.0432 U	0.0411 U	0.0408 U	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	**0.268**	0.0422 U	--	--	--
Nitrobenzene	160*	0.0438 U	0.0462 U	0.0432 U	0.0411 U	0.0408 U	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	0.0409 U	0.0422 U	--	--	--
N-Nitrosodimethylamine	0.02*	0.0438 U	0.0462 U	0.0432 U	0.0411 U	0.0408 U	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	0.0409 U	0.0422 U	--	--	--
N-Nitrosodiphenylamine	200*	0.0438 U	0.0462 U	0.0432 U	0.0411 U	0.0408 U	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	0.0409 U	0.0422 U	--	--	--
N-Nitrosodipropylamine	0.14*	0.0438 U	0.0462 U	0.0432 U	0.0411 U	0.0408 U	0.0427 U	0.0425 U	0.0472 U	0.0385 U	0.0376 U	0.0409 U	0.0422 U	--	--	--
Phenanthrene	NV	0.0438 U	0.0462 U	0.0432 U	0.0411 U	0.0408 U	0.0427 U	**0.046**	0.0472 U	0.0385 U	0.0376 U	0.0409 U	**0.147**	--	--	--
Pyrene	2400*	0.0438 U	0.0462 U	0.0432 U	**0.0777**	**0.112**	0.0427 U	**0.0958**	0.0472 U	0.0385 U	0.0376 U	0.0409 U	**0.406**	--	--	--
Total Naphthalenes	5	0.0657 U	0.0693 U	0.0648 U	0.0617 U	0.0612 U	0.0641 U	0.0638 U	0.0708 U	0.0578 U	0.0564 U	**0.661**	0.0633 U	--	--	--
cPAH TEQ	0.1	0.0366	0.0349	0.0326	**0.115**	**0.0313**	0.0322	0.0321 U	0.0356	0.0291	0.0284	0.0309	**0.368**	--	--	--
NWTPH-HCID																
Diesel	NV	**DETECT**	**--**	**DETECT**	**DETECT**	**DETECT**	**--**	**DETECT**	**--**	**DETECT**	**--**	**DETECT**	**--**	**--**	**--**	**--**
Gasoline	NV	ND	**--**	ND	ND	ND	**--**	ND	**--**	ND	**--**	ND	**--**	**--**	**--**	**--**
Kerosene	NV	ND	--	ND	ND	ND	--	ND	--	ND	--	ND	--	--	--	--
Lube Oil	NV	**DETECT**	**--**	**DETECT**	**DETECT**	**DETECT**	**--**	**DETECT**	**--**	**DETECT**	**--**	**DETECT**	**--**	**--**	**--**	**--**
Mineral Spirits	NV	ND	--	ND	ND	ND	--	ND	--	ND	--	ND	--	--	--	--
NWTPH-Dx																
Diesel	2000	**29**	20.8 U	**63.6 J**	**244 J**	**292**	**31.7**	**348**	21.2 U	**187**	**62.6**	**35.8**	**260**	--	--	--
Hydraulic Oil	NV	**--**	--	--	--	--	**--**	**1050**	--	**620**	**206**	--	--	--	--	--
Lube Oil	2000	**252**	69.3 U	**336**	**1100**	**1360**	**181**	63.9 U	70.8 U	57.7 U	56.5 U	**191**	**2040**	--	--	--
Heavy-Oil-Range Hydrocarbons	2000	**281**	45.05 U	**399.6**	**1344**	**1652**	**212.7**	**1430.0**	46 U	**835.9**	**296.9**	**226.8**	**2300**	--	--	--

Table A-3
Soil Analytical Results (mg/kg)
Former Terry's Auto Salvage Property, City of Kelso
Kelso, Washington

Analyte	MTCA Method A CUL	HA01	HA01	HA02	HA03	HA04	HA04	HA05	HA05	HA06	HA06	HA07	HA07	HA08	HA08	HA09
	Sample Date	3/20/2012	3/20/2012	3/20/2012	3/20/2012	3/22/2012	3/22/2012	3/22/2012	3/22/2012	3/22/2012	3/22/2012	3/22/2012	3/22/2012	5/29/2012	5/29/2012	5/29/2012
	Depth (ft bgs)	0.5	1.5	0.5	0.5	0.5	1.5	0.5	1.5	0.5	1.5	0.5	1.5	0.5	1.5	0.5
NWTPH-Gx																
Gasoline	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PCBs																
Aroclor 1016	14*	--	--	--	--	0.000408 U	0.000427 U	0.000425 U	0.00047 U	0.000385 U	0.00038 U	0.000409 U	0.00211 U	--	--	--
Aroclor 1221	NV	--	--	--	--	0.000408 U	0.000427 U	0.000425 U	0.00047 U	0.000385 U	0.00038 U	0.000409 U	0.00211 U	--	--	--
Aroclor 1232	NV	--	--	--	--	0.000408 U	0.000427 U	0.000425 U	0.00047 U	0.000385 U	0.00038 U	0.000409 U	0.00211 U	--	--	--
Aroclor 1242	NV	--	--	--	--	**0.062**	**0.00256**	**0.00766**	0.00047 U	**0.0169**	0.00038 U	**0.0106**	**0.0845**	--	--	--
Aroclor 1248	NV	--	--	--	--	0.000408 U	0.000427 U	0.000425 U	0.00047 U	0.000385 U	0.00038 U	0.000409 U	0.00211 U	--	--	--
Aroclor 1254	0.5*	--	--	--	--	**0.24**	**0.00496**	**0.063**	0.00047 U	**0.0393**	**0.0392**	**0.0876**	**0.334**	--	--	--
Aroclor 1260	0.5*	--	--	--	--	**0.264**	**0.00684**	**0.0587**	0.00047 U	**0.0608**	**0.0557**	**0.165**	**0.57**	--	--	--
Aroclor 1262	NV	--	--	--	--	0.000408 U	0.000427 U	0.000425 U	0.00047 U	0.000385 U	0.00038 U	0.000409 U	0.00211 U	--	--	--
Aroclor 1268	NV	--	--	--	--	0.000408 U	0.000427 U	0.000425 U	0.00047 U	0.000385 U	0.00038 U	0.000409 U	0.00211 U	--	--	--
Total PCBs	1	--	--	--	--	**0.567**	**0.0156**	**0.131**	0.00047 U	**0.118**	**0.0962**	**0.264**	**0.995**	--	--	--

Table A-3
Soil Analytical Results (mg/kg)
Former Terry's Auto Salvage Property, City of Kelso
Kelso, Washington

Analyte	MTCA Method A CUL	HA09	HA10	HA10	HA11	HA11	HA12	HA12	HA13	HA13	HA14	HA14	HA15	MW-03	MW-03
	Sample Date	5/29/2012	5/29/2012	5/29/2012	5/29/2012	5/29/2012	5/29/2012	5/29/2012	5/29/2012	5/29/2012	5/29/2012	5/29/2012	5/30/2012	5/31/2012	5/31/2012
	Depth (ft bgs)	1.5	0.5	1.5	0.5	1.5	0.5	1.1	0.5	1.5	0.5	1.5	0.5	1	1.5
Metals															
Aluminum	80000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	20	--	**7.16**	--	--	--	--	--	**4.22**	--	**6.49**	--	**7.28**	--	--
Cadmium	2	--	**3.97**	**2.4**	--	--	--	--	**2.03**	**0.292**	**7.16**	**1.55**	**1.25**	--	--
Chromium (Total)	2000	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	3200*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	250	--	**639**	**203**	--	--	--	--	--	--	--	--	--	--	--
Mercury	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	1600*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	24000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BTEX															
Benzene	0.03	--	0.046 U	--	0.07 U	**0.65**	0.06 U	--	--	--	--	--	--	**0.056**	0.069 U
Ethylbenzene	6	--	0.18 U	--	**0.38**	--	0.24 U	--	--	--	--	--	--	**0.22**	0.28 U
Total Xylenes	9	--	0.55 U	--	0.84 U	--	0.72 U	--	--	--	--	--	--	**0.74**	0.83 U
Toluene	7	--	0.18 U	--	0.28 U	--	0.24 U	--	--	--	--	--	--	0.16 U	0.28 U
VOCs															
1,1,1,2-Tetrachloroethane	38*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,1-Trichloroethane	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	5*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,2-Trichloroethane	18*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethane	16000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethene	4000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloropropene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3-Trichlorobenzene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3-Trichloropropane	0.033*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,4-Trichlorobenzene	35*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,4-Trimethylbenzene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dibromo-3-chloropropane	1.3*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dibromoethane	0.005	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	7200*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloroethane	11*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloropropane	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	800*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,3-Dichlorobenzene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,3-Dichloropropane	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,4-Dichlorobenzene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2,2-Dichloropropane	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table A-3
Soil Analytical Results (mg/kg)
Former Terry's Auto Salvage Property, City of Kelso
Kelso, Washington

Analyte	MTCA Method A CUL	HA09	HA10	HA10	HA11	HA11	HA12	HA12	HA13	HA13	HA14	HA14	HA15	MW-03	MW-03
	Sample Date	5/29/2012	5/29/2012	5/29/2012	5/29/2012	5/29/2012	5/29/2012	5/29/2012	5/29/2012	5/29/2012	5/29/2012	5/29/2012	5/30/2012	5/31/2012	5/31/2012
	Depth (ft bgs)	1.5	0.5	1.5	0.5	1.5	0.5	1.1	0.5	1.5	0.5	1.5	0.5	1	1.5
2-Butanone	48000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Chlorotoluene	1600*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Hexanone	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Chlorotoluene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Isopropyltoluene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Methyl-2-pentanone	6400*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acetone	72000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzene	0.03	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bromobenzene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bromodichloromethane	16*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bromoform	130*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bromomethane	110*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon disulfide	8000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon tetrachloride	14*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chlorobenzene	1600*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chlorobromomethane	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroethane	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroform	800*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloromethane	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	160*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
cis-1,3-Dichloropropene	10*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibromochloromethane	12*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibromomethane	800*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dichlorodifluoromethane	16000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexachlorobutadiene	13*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Isopropylbenzene	800*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
m,p-Xylene	9	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methyl tert-butyl ether	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylene chloride	0.02	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--
n-Butylbenzene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--
n-Propylbenzene	8000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
o-Xylene	16000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
sec-Butylbenzene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Styrene	16000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
tert-Butylbenzene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table A-3
Soil Analytical Results (mg/kg)
Former Terry's Auto Salvage Property, City of Kelso
Kelso, Washington

Analyte	MTCA Method A CUL	HA09	HA10	HA10	HA11	HA11	HA12	HA12	HA13	HA13	HA14	HA14	HA15	MW-03	MW-03
	Sample Date	5/29/2012	5/29/2012	5/29/2012	5/29/2012	5/29/2012	5/29/2012	5/29/2012	5/29/2012	5/29/2012	5/29/2012	5/29/2012	5/30/2012	5/31/2012	5/31/2012
	Depth (ft bgs)	1.5	0.5	1.5	0.5	1.5	0.5	1.1	0.5	1.5	0.5	1.5	0.5	1	1.5
Tetrachloroethene	0.05	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Toluene	7	--	--	--	--	--	--	--	--	--	--	--	--	--	--
trans-1,2-dichloroethene	1600*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
trans-1,3-Dichloropropene	10*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichloroethene	0.03	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichlorofluoromethane	24000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vinyl chloride	0.67*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Xylenes	9	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SVOCs															
1,2,4-Trichlorobenzene	35*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	7200*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,3-Dichlorobenzene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,4-Dichlorobenzene	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Methylnaphthalene	35*	--	**0.024**	--	--	--	--	--	--	--	--	--	--	--	--
2,4-Dinitrotoluene	160*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2,6-Dinitrotoluene	80*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Chloronaphthalene	6400*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	320*	--	**0.07**	--	--	--	--	--	--	--	--	--	--	--	--
2-Nitroaniline	800*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Nitroaniline	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Bromophenylphenyl ether	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Chloroaniline	5*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Chlorophenylphenyl ether	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Nitroaniline	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthene	4800*	--	0.00667 U	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthylene	1*	--	0.00667 U	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene	24000*	--	**0.00733**	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene	1.4*	--	**0.0107**	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	0.1	--	**0.014**	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	1.4*	--	**0.0473**	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(ghi)perylene	NV	--	**0.044**	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	14*	--	**0.0107**	--	--	--	--	--	--	--	--	--	--	--	--
Benzoic acid	320000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzyl alcohol	8000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bis(2-chloro-1-methylethyl) ether	14*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bis(2-chloroethoxy)methane	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bis(2-chloroethyl)ether	0.91*	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table A-3
Soil Analytical Results (mg/kg)
Former Terry's Auto Salvage Property, City of Kelso
Kelso, Washington

Analyte	MTCA Method A CUL	HA09	HA10	HA10	HA11	HA11	HA12	HA12	HA13	HA13	HA14	HA14	HA15	MW-03	MW-03
	Sample Date	5/29/2012	5/29/2012	5/29/2012	5/29/2012	5/29/2012	5/29/2012	5/29/2012	5/29/2012	5/29/2012	5/29/2012	5/29/2012	5/30/2012	5/31/2012	5/31/2012
	Depth (ft bgs)	1.5	0.5	1.5	0.5	1.5	0.5	1.1	0.5	1.5	0.5	1.5	0.5	1	1.5
Bis(2-ethylhexyl)phthalate	71*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Butylbenzylphthalate	530*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene	140*	--	**0.0207**	--	--	--	--	--	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene	0.14*	--	**0.0193**	--	--	--	--	--	--	--	--	--	--	--	--
Dibenzofuran	80*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Diethylphthalate	64000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dimethyl phthalate	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Di-n-butyl phthalate	8000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Di-n-octyl phthalate	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene	3200*	--	**0.026**	--	--	--	--	--	--	--	--	--	--	--	--
Fluorene	3200*	--	0.00667 U	--	--	--	--	--	--	--	--	--	--	--	--
Hexachlorobenzene	0.63*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexachlorobutadiene	13*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexachlorocyclopentadiene	480*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexachloroethane	71*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	1.4*	--	**0.028**	--	--	--	--	--	--	--	--	--	--	--	--
Isophorone	1100*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	5	--	**0.048**	--	--	--	--	--	--	--	--	--	--	--	--
Nitrobenzene	160*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
N-Nitrosodimethylamine	0.02*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
N-Nitrosodiphenylamine	200*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
N-Nitrosodipropylamine	0.14*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	NV	--	**0.0267**	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene	2400*	--	**0.0273**	--	--	--	--	--	--	--	--	--	--	--	--
Total Naphthalenes	5	--	**0.142**	--	--	--	--	--	--	--	--	--	--	--	--
cPAH TEQ	0.1	--	**0.0258**	--	--	--	--	--	--	--	--	--	--	--	--
NWTPH-HCID															
Diesel	NV	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
Gasoline	NV	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
Kerosene	NV	--	--	--	**--**	--	--	--	--	--	--	--	--	--	--
Lube Oil	NV	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
Mineral Spirits	NV	--	--	--	**--**	--	--	--	--	--	--	--	--	--	--
NWTPH-Dx															
Diesel	2000	--	**103**	--	--	--	--	--	--	--	--	--	--	--	--
Hydraulic Oil	NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lube Oil	2000	--	**522**	--	--	--	--	--	--	--	--	--	--	--	--
Heavy-Oil-Range Hydrocarbons	2000	--	**625**	--	--	--	--	--	--	--	--	--	--	--	--

Table A-3
Soil Analytical Results (mg/kg)
Former Terry's Auto Salvage Property, City of Kelso
Kelso, Washington

Analyte	MTCA Method A CUL	HA09	HA10	HA10	HA11	HA11	HA12	HA12	HA13	HA13	HA14	HA14	HA15	MW-03	MW-03
	Sample Date	5/29/2012	5/29/2012	5/29/2012	5/29/2012	5/29/2012	5/29/2012	5/29/2012	5/29/2012	5/29/2012	5/29/2012	5/29/2012	5/30/2012	5/31/2012	5/31/2012
	Depth (ft bgs)	1.5	0.5	1.5	0.5	1.5	0.5	1.1	0.5	1.5	0.5	1.5	0.5	1	1.5
NWTPH-Gx															
Gasoline	30	--	4.61 U	--	--	--	--	--	--	--	--	--	--	--	--
PCBs															
Aroclor 1016	14*	--	0.000449 U	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1221	NV	--	0.000449 U	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1232	NV	--	0.000449 U	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1242	NV	--	0.000449 U	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1248	NV	--	**0.097**	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1254	0.5*	--	**0.154**	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1260	0.5*	--	**0.119**	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1262	NV	--	0.000449 U	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1268	NV	--	0.000449 U	--	--	--	--	--	--	--	--	--	--	--	--
Total PCBs	1	--	**0.371**	--	--	--	--	--	--	--	--	--	--	--	--

Table A-3
Soil Analytical Results (mg/kg)
Former Terry's Auto Salvage Property, City of Kelso
Kelso, Washington

Detections in **bold.**
Exceedances highlighted.
-- = not analyzed.
BTEX = benzene, ethylbenzene, toluene, xylenes.
cPAH = carcinogenic polycyclic aromatic hydrocarbon.
CUL = cleanup level.
ft bgs = feet below ground surface.
J = Result is an estimated quantity. Associated numerical value is approximate concentration of analyte in sample.
mg/kg = milligrams per kilogram (parts per million).
MTCA = Model Toxics Control Act.
ND = not detected.
NV = no value.
NWTPH-Dx = Northwest Total Petroleum Hydrocarbon—Diesel-Range Hydrocarbon Method.
NWTPH-Gx= Northwest Total Petroleum Hydrocarbon—Gasoline-Range Hydrocarbon Method.
NWTPH-HCID = Northwest Total Petroleum Hydrocarbon—Hydrocarbon Identification Scan.
PCB = polychlorinated biphenyl.
SVOC = semivolatile organic compound.
TEQ = toxic equivalency quotient.
U = Analyte was not detected at or above method detection limit.
VOC = volatile organic compound.
*MTCA Method B CUL.

Table A-4
Groundwater Analytical Results (µg/L)
Former Terry's Auto Salvage Property, City of Kelso
Kelso, Washington

Analyte	MTCA Method A CUL	GP01	GP09		GP10		GP11	MW-01	MW-01 (Duplicate)	MW-02	MW-03
Sample Date		3/21/2012	3/21/2012	3/21/2012	3/22/2012	3/21/2012	3/22/2012	6/13/2012	6/13/2012	6/13/2012	6/13/2012
Depth (ft bgs)		10	7	38	10	38	8	37.5	37.5	37.5	37.5
Metals, Dissolved											
Aluminum	16000*	50 U	50 U	50 U	**808**	50 U	--	--	--	--	--
Arsenic	5	0.1 U	0.1 U	**0.298**	0.1 U	**0.194**	--	**0.553**	**0.467**	**0.192**	**0.453**
Cadmium	5	1 U	1 U	1 U	1 U	1 U	--	--	--	--	--
Chromium (Total)	50	**5.3**	5 U	5 U	5 U	5 U	--	--	--	--	--
Copper	640*	10 U	10 U	10 U	10 U	10 U	--	--	--	--	--
Lead	15	20 U	20 U	20 U	20 U	20 U	--	--	--	--	--
Mercury	2	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	--	--	--	--	--
Nickel	320*	5 U	5 U	**5.4**	5 U	5.8	--	--	--	--	--
Zinc	4800*	**10.6**	10 U	**12.4**	**68.7**	**13.9**	--	--	--	--	--
VOCs											
1,1,1,2-Tetrachloroethane	1.7*	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
1,1,1-Trichloroethane	200	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
1,1,2,2-Tetrachloroethane	0.22*	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
1,1,2-Trichloroethane	0.77*	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
1,1-Dichloroethane	1600*	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
1,1-Dichloroethene	400*	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
1,1-Dichloropropene	NV	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
1,2,3-Trichlorobenzene	NV	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
1,2,3-Trichloropropane	0.0015*	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
1,2,4-Trichlorobenzene	1.5*	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
1,2,4-Trimethylbenzene	NV	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
1,2-Dibromo-3-chloropropane	0.055*	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
1,2-Dibromoethane	0.01	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
1,2-Dichlorobenzene	720*	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
1,2-Dichloroethane	5	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
1,2-Dichloropropane	NV	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
1,3,5-Trimethylbenzene	80*	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
1,3-Dichlorobenzene	NV	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
1,3-Dichloropropane	NV	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
1,4-Dichlorobenzene	NV	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
2,2-Dichloropropane	NV	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
2-Butanone	4800*	10 U	10 U	10 U	10 U	10 U	10 U	--	--	--	--
2-Chlorotoluene	160*	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
2-Hexanone	NV	10 U	10 U	10 U	10 U	10 U	10 U	--	--	--	--
4-Chlorotoluene	NV	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--

Table A-4
Groundwater Analytical Results (µg/L)
Former Terry's Auto Salvage Property, City of Kelso
Kelso, Washington

Analyte	MTCA Method A CUL	GP01	GP09		GP10		GP11	MW-01	MW-01 (Duplicate)	MW-02	MW-03
	Sample Date	3/21/2012	3/21/2012	3/21/2012	3/22/2012	3/21/2012	3/22/2012	6/13/2012	6/13/2012	6/13/2012	6/13/2012
	Depth (ft bgs)	10	7	38	10	38	8	37.5	37.5	37.5	37.5
4-Isopropyltoluene	NV	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
4-Methyl-2-pentanone	640*	20 U	20 U	20 U	20 U	20 U	20 U	--	--	--	--
Acetone	7200*	50 U	50 U	50 U	50 U	50 U	50 U	--	--	--	--
Acrylonitrile	0.081*	5 U	5 U	5 U	5 U	5 U	5 U	--	--	--	--
Benzene	5	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	--	--	--	--
Bromobenzene	NV	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
Bromodichloromethane	0.71*	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
Bromoform	5.5*	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
Bromomethane	11*	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
Carbon disulfide	800*	2 U	2 U	2 U	2 U	2 U	2 U	--	--	--	--
Carbon tetrachloride	0.63*	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
Chlorobenzene	160*	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
Chlorobromomethane	NV	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
Chloroethane	NV	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
Chloroform	80*	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
Chloromethane	NV	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
cis-1,2-Dichloroethene	16*	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
cis-1,3-Dichloropropene	NV	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
Dibromochloromethane	0.52*	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
Dibromomethane	80*	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
Dichlorodifluoromethane	1600*	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
Ethylbenzene	700	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
Hexachlorobutadiene	0.56*	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
Isopropylbenzene	800*	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
m,p-Xylene	1000	2 U	2 U	2 U	2 U	2 U	2 U	--	--	--	--
Methyl tert-butyl ether	20	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
Methylene chloride	5	20 U	20 U	20 U	20 U	20 U	20 U	--	--	--	--
Naphthalene	160	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
n-Butylbenzene	NV	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
n-Propylbenzene	800*	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
o-Xylene	1600*	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
sec-Butylbenzene	NV	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
Styrene	1600*	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
tert-Butylbenzene	NV	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
Tetrachloroethene	5	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
Toluene	1000	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--

Table A-4
Groundwater Analytical Results (µg/L)
Former Terry's Auto Salvage Property, City of Kelso
Kelso, Washington

Analyte	MTCA Method A CUL	GP01	GP09		GP10		GP11	MW-01	MW-01 (Duplicate)	MW-02	MW-03
Sample Date		3/21/2012	3/21/2012	3/21/2012	3/22/2012	3/21/2012	3/22/2012	6/13/2012	6/13/2012	6/13/2012	6/13/2012
Depth (ft bgs)		10	7	38	10	38	8	37.5	37.5	37.5	37.5
trans-1,2-dichloroethene	160*	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
trans-1,3-Dichloropropene	NV	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
Trichloroethene	5	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
Trichlorofluoromethane	2400*	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
Vinyl chloride	0.2	1 U	1 U	1 U	1 U	1 U	1 U	--	--	--	--
Total Xylenes	1000	2 U	2 U	2 U	2 U	2 U	2 U	--	--	--	--
PAHs											
1-Methylnaphthalene	1.5*	0.0518 U	0.0514 U	0.0513 U	0.0499 U	**0.0613**	--	0.048 U	0.048 U	0.048 U	0.048 U
2-Methylnaphthalene	32*	0.0518 U	0.0514 U	0.0513 U	0.0499 U	0.0511 U	--	0.048 U	0.048 U	0.048 U	0.048 U
Acenaphthene	960*	0.0518 U	0.0514 U	**0.226**	0.0499 U	**1**	--	0.048 U	0.048 U	0.048 U	0.048 U
Acenaphthylene	NV	0.0518 U	0.0514 U	0.0513 U	0.0499 U	**0.0613**	--	0.048 U	0.048 U	0.048 U	0.048 U
Anthracene	4800*	0.0518 U	0.0514 U	**0.565**	0.0499 U	**0.798**	--	0.048 U	0.048 U	0.048 U	0.048 U
Benzo(a)anthracene	0.12*	0.0518 U	0.0514 U	**0.164**	0.0499 U	**0.123**	--	0.048 U	0.048 U	0.048 U	0.048 U
Benzo(a)pyrene	0.1	0.0518 U	0.0514 U	**0.144**	0.0499 U	**0.0613**	--	0.048 U	0.048 U	0.048 U	0.048 U
Benzo(b)fluoranthene	0.12*	0.0518 U	0.0514 U	**0.133**	0.0499 U	**0.0511**	--	0.048 U	0.048 U	0.048 U	0.048 U
Benzo(ghi)perylene	NV	0.0518 U	0.0514 U	**0.0924**	0.0499 U	0.0511 U	--	0.048 U	0.048 U	0.048 U	0.048 U
Benzo(k)fluoranthene	1.2*	0.0518 U	0.0514 U	0.0513 U	0.0499 U	0.0511 U	--	0.048 U	0.048 U	0.048 U	0.048 U
Chrysene	12*	0.0518 U	0.0514 U	**0.236**	0.0499 U	**0.153**	--	0.048 U	0.048 U	0.048 U	0.048 U
Dibenzo(a,h)anthracene	0.012*	0.0518 U	0.0514 U	0.0513 U	0.0499 U	0.0511 U	--	0.048 U	0.048 U	0.048 U	0.048 U
Fluoranthene	640*	**0.0622 J**	**0.0823**	**1.16**	**0.0599**	**0.818**	--	0.048 U	0.048 U	0.048 U	0.048 U
Fluorene	640*	0.0518 U	0.0514 U	**0.493**	0.0499 U	**1.52**	--	0.048 U	0.048 U	0.048 U	0.048 U
Indeno(1,2,3-cd)pyrene	0.12*	0.0518 U	0.0514 U	**0.0719**	0.0499 U	0.0511 U	--	0.048 U	0.048 U	0.048 U	0.048 U
Naphthalene	160	0.194 U	0.194 U	0.194 U	**0.11**	0.194 U	--	**0.076**	0.048 U	0.048 U	**0.115**
Phenanthrene	NV	**0.187 J**	**0.185 J**	**3.4**	**0.11**	**5.46**	--	0.048 U	0.048 U	0.048 U	0.048 U
Pyrene	480*	0.0714 U	0.0714 U	**1.39**	**0.0499**	**0.9**	--	0.048 U	0.048 U	0.048 U	0.048 U
Total Naphthalenes	1.5*	0.149 U	0.148 U	0.148 U	**0.160**	**0.184**	--	**0.12**	0.072 U	0.072 U	**0.163**
cPAH TEQ	0.1	0.0391 U	0.0388 U	**0.188**	**0.03767**	**0.08791**	--	0.0362 U	0.0362 U	0.0362 U	0.0362 U
NWTPH-Dx											
Diesel	500	**91.9**	**84.6**	**110**	**96.3**	**129**	--	--	--	--	--
Lube Oil	500	193 U	192 U	193 U	**304**	198 U	--	--	--	--	--
Heavy-Oil-Range Hydrocarbons	500	**188.4**	**180.6**	**207**	**400.3**	**228**	--	--	--	--	--
NWTPH-Gx											
Gasoline	1000	100 U	100 U	100 U	100 U	100 U	100 U	--	--	--	--

Table A-4
Groundwater Analytical Results (µg/L)
Former Terry's Auto Salvage Property, City of Kelso
Kelso, Washington

Detections in **bold.**
Exceedances highlighted.
-- = not analyzed.
BTEX = benzene, ethylbenzene, toluene, xylenes.
cPAH = carcinogenic polycyclic aromatic hydrocarbon.
CUL = cleanup level.
ft bgs = feet below ground surface.
J = Result is an estimated quantity. Associated numerical value is approximate concentration of analyte in sample.
MTCA = Model Toxics Control Act.
µg/L = micrograms per liter (parts per billion).
NV = no value.
NWTPH-Dx = Northwest Total Petroleum Hydrocarbon—Diesel-Range Hydrocarbon Method.
NWTPH-Gx= Northwest Total Petroleum Hydrocarbon—Gasoline-Range Hydrocarbon Method.
PAH = polycyclic aromatic hydrocarbon.
TEQ = toxic equivalency quotient.
U = Analyte was not detected at or above method detection limit.
VOC = volatile organic compound.
*MTCA Method B CUL.

Table A-5
Water Quality Data
Former Terry's Auto Salvage Property, City of Kelso
Kelso, Washington

Location ID	Date	Time	pH (SU)	Temperature (deg. C)	Conductivity (ms/cm)	DO (mg/L)	Turbidity (NTU)
MW01	06/13/2012	15:37	6.54	12.83	0.228	0.81	2.62
MW02	06/14/2012	9:53	6.40	12.53	0.222	0.08	7.18
MW03	06/14/2012	11:15	6.48	12.47	0.228	0.11	3.04

NOTES:
deg. C = degrees Celsius.
DO = dissolved oxygen.
mg/L = milligrams per liter.
ms/cm = millisiemens per centimeter.
NTU = nephelometric turbidity units.
SU = standard units.

APPENDIX B

SOIL BORING AND MONITORING WELL LOGS

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
0443.02.02	**GP01**	**1 of 1**

Project Name	***City of Kelso IPG***	*TOC Elevation (feet)*	
Project Location	***1124 N. Pacific Ave., Kelso, WA***	*Surface Elevation (feet)*	
Start/End Date	***3/20/12 to 3/20/12***	*Northing*	
Driller/Equipment	***Cascade/Geoprobe***	*Easting*	
Geologist/Engineer	***Heather Hirsch***	*Hole Depth*	***10.0-feet***
Sample Method	***Geoprobe***	*Outer Hole Diam*	***2-inch***

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1			**34%**	**GP**		**GP01-S-0.5**			*0.0 to 1.7 feet: DEBRIS with SAND; dark brown to black; 5% fines, non-plastic; 20% sand, fine to medium, loose; 15% gravel, angular to subangular; trace glass and plastic; 60% tire, debris, wire; petroleum-like odor; damp.*
2									*1.7 to 5.0 feet: No Recovery.*
3									
4									
5		▽	**56%**	**GP**		**GP01-S-5.4**			*5.0 to 7.8 feet: SAND with SILT (SW-SM); dark brown; 10% fines, low plasticity; 90% sand, fine to medium, loose; trace metal; moist.*
6									
7						**GP01-S-6.8**			
8									*7.8 to 10.0 feet: No Recovery.*
9									
10						**GP01-W-10.0**			*Total Depth: 10.0 feet below ground surface*

NOTES: *1) bgs= below ground surface*

2) Borehole abandoned with bentonite chips hydrated with potable water.

▽ ***Water level with screened interval = 8 to 12 bgs***

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Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
0443.02.02	**GP02**	**1 of 1**

Project Name	***City of Kelso IPG***	*TOC Elevation (feet)*	
Project Location	***1124 N. Pacific Ave., Kelso, WA***	*Surface Elevation (feet)*	
Start/End Date	***3/20/12 to 3/20/12***	*Northing*	
Driller/Equipment	***Cascade/Geoprobe***	*Easting*	
Geologist/Engineer	***Heather Hirsch***	*Hole Depth*	***5.0-feet***
Sample Method	***Geoprobe***	*Outer Hole Diam*	***2-inch***

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1			**60%**	**GP**		**GP02-S-0.5**			*0.0 to 1.0 feet: GRAVELLY SILTY SAND (SM); dark orangish brown; 20% fines; 65% sand, fine, loose; 15% gravel, subangular; trace glass; damp.*
2						**GP02-S-2.0**			*1.0 to 3.0 feet: SILT (ML); orange to dark orangish brown with gray mottling; 100% fines, low plasticity, firm; damp.*
3									*3.0 to 5.0 feet: No Recovery.*
4									
5									

Total Depth: 5.0 feet below ground surface

NOTES: *1) bgs= below ground surface*

2) Borehole abandoned with bentonite chips hydrated with potable water.

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Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
0443.02.02	**GP03**	**1 of 1**

Project Name	***City of Kelso IPG***	*TOC Elevation (feet)*	
Project Location	***1124 N. Pacific Ave., Kelso, WA***	*Surface Elevation (feet)*	
Start/End Date	***3/20/12 to 3/20/12***	*Northing*	
Driller/Equipment	***Cascade/Geoprobe***	*Easting*	
Geologist/Engineer	***Heather Hirsch***	*Hole Depth*	***5.0-feet***
Sample Method	***Geoprobe***	*Outer Hole Diam*	***2-inch***

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1			**70%**	**GP**		**GP03-S-0.5**			*0.0 to 0.5 feet: SILTY SAND (SM); dark brown to black; 40% fines, non-plastic, soft; 60% sand, fine, loose; trace glass and rootlets; damp.*
2									*0.5 to 3.0 feet: SILT (ML); dark gray with dark yellowish brown mottling; 100% fines, medium plasticity, firm; iron staining; damp.*
3						**GP03-S-2.3**			
4									*3.0 to 5.0 feet: No Recovery.*
5									

Total Depth: 5.0 feet below ground surface.

NOTES: *1) bgs= below ground surface*

2) Borehole abandoned with bentonite chips hydrated with potable water.

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Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
0443.02.02	**GP04**	**1 of 1**

Project Name	**City of Kelso IPG**	TOC Elevation (feet)	
Project Location	**1124 N. Pacific Ave., Kelso, WA**	Surface Elevation (feet)	
Start/End Date	**3/20/12 to 3/20/12**	Northing	
Driller/Equipment	**Cascade/Geoprobe**	Easting	
Geologist/Engineer	**Heather Hirsch**	Hole Depth	**5.0-feet**
Sample Method	**Geoprobe**	Outer Hole Diam	**2-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1			**40%**	**GP**		**GP04-S-1.0**			0.0 to 0.5 feet: SILTY SAND (SM); dark brown to black; 40% fines, non-plastic, soft; 60% sand, fine, loose; trace rootlets and wood debris; damp.
2									0.5 to 2.0 feet: SILTY SAND (SM) dark brown; 30% fines; 70% sand, fine, loose; damp to moist.
3									2.0 to 5.0 feet: No Recovery.
4									
5									Total Depth: 5.0 feet below ground surface.

NOTES: 1) bgs= below ground surface

2) Borehole abandoned with bentonite chips hydrated with potable water.

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
0443.02.02	**GP05**	**1 of 1**

Project Name	***City of Kelso IPG***	*TOC Elevation (feet)*	
Project Location	***1124 N. Pacific Ave., Kelso, WA***	*Surface Elevation (feet)*	
Start/End Date	***3/20/12 to 3/20/12***	*Northing*	
Driller/Equipment	***Cascade/Geoprobe***	*Easting*	
Geologist/Engineer	***Heather Hirsch***	*Hole Depth*	***5.0-feet***
Sample Method	***Geoprobe***	*Outer Hole Diam*	***2-inch***

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1			**64%**	**GP**		***GP05-S-0.5***			*0.0 to 0.5 feet: GRAVELLY SILTY SAND (SM); dark brown to black; 30% fines; 50% sand, fine, loose; 20% gravel, subangular; trace rootlets and glass; damp.*
2									*0.5 to 3.2 feet: SILT with SAND (ML); dark yellowish brown; 70% fines, medium plasticity, soft; 30% sand, fine; damp.*
3						***GP05-S-2.1***			
4									*3.2 to 5.0 feet: No Recovery.*
5									

Total Depth: 5.0 feet below ground surface.

NOTES: *1) bgs= below ground surface*

2) Borehole abandoned with bentonite chips hydrated with potable water.

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
0443.02.02	**GP06**	**1 of 1**

Project Name	**City of Kelso IPG**	TOC Elevation (feet)	
Project Location	**1124 N. Pacific Ave., Kelso, WA**	Surface Elevation (feet)	
Start/End Date	**3/20/12 to 3/20/12**	Northing	
Driller/Equipment	**Cascade/Geoprobe**	Easting	
Geologist/Engineer	**Heather Hirsch**	Hole Depth	**5.0-feet**
Sample Method	**Geoprobe**	Outer Hole Diam	**2-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1			**68%**	**GP**		**GP06-S-0.5**			0.0 to 1.1 feet: GRAVELLY SILTY SAND (SM); very dark brown to reddish brown; 20% fines; 60% sand, fine, loose; 20% gravel, subangular; trace rootlets; damp.
2									1.1 to 3.4 feet: SILT with SAND (ML); gray with dark yellowish brown mottling; 80% fines, medium plasticity, firm; 20% sand, fine; gray from 1.1 to 3.0 feet, dark yellowish brown mottles from 3.0 to 3.4 feet; damp to moist.
3						**GP06-S-2.2**			
4									3.4 to 5.0 feet: No Recovery.
5									

Total Depth: 5.0 feet below ground surface.

NOTES: 1) bgs= below ground surface

2) Borehole abandoned with bentonite chips hydrated with potable water.

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
0443.02.02	**GP07**	**1 of 1**

Project Name	***City of Kelso IPG***	*TOC Elevation (feet)*	
Project Location	***1124 N. Pacific Ave., Kelso, WA***	*Surface Elevation (feet)*	
Start/End Date	***3/20/12 to 3/20/12***	*Northing*	
Driller/Equipment	***Cascade/Geoprobe***	*Easting*	
Geologist/Engineer	***Heather Hirsch***	*Hole Depth*	***5.0-feet***
Sample Method	***Geoprobe***	*Outer Hole Diam*	***2-inch***

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1			**68%**	**GP**		**GP07-S-0.5**			*0.0 to 1.3 feet: GRAVELLY SILTY SAND (SM); very dark brown; 20% fines; 55% sand, fine to medium, loose; 25% gravel; trace glass and rootlets; damp to moist.*
2									*1.3 to 3.4 feet: SILT with SAND (ML); gray with dark yellowish brown mottling; 80% fines, medium plasticity, firm; 20% sand, fine; damp to moist.*
3						**GP07-S-2.2**			*@1.4 feet: 0.5-inch lens of dark gray soil with petroleum-like odor.*
4									*3.4 to 5.0 feet: No Recovery.*
5									

Total Depth: 5.0 feet below ground surface.

NOTES: *1) bgs= below ground surface*

2) Borehole abandoned with bentonite chips hydrated with potable water.

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
0443.02.02	**GP08**	**1 of 1**

Project Name	***City of Kelso IPG***	*TOC Elevation (feet)*	
Project Location	***1124 N. Pacific Ave., Kelso, WA***	*Surface Elevation (feet)*	
Start/End Date	***3/20/12 to 3/20/12***	*Northing*	
Driller/Equipment	***Cascade/Geoprobe***	*Easting*	
Geologist/Engineer	***Heather Hirsch***	*Hole Depth*	***5.0-feet***
Sample Method	***Geoprobe***	*Outer Hole Diam*	***2-inch***

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1			**68%**	**GP**		**GP08-S-0.5**			*0.0 to 0.5 feet: GRAVELLY SILTY SAND (SM); very dark brown; 20% fines; 60% sand, fine, loose; 20% gravel, subangular; trace rootlets and glass; damp.*
2									*0.5 to 3.4 feet: SANDY SILT (ML); gray with dark yellowish brown mottling; 80% fines, medium plasticity, firm; 20% sand, fine; trace rootlets above 1 foot bgs; damp.*
3						**GP08-S-2.2**			
4									*3.4 to 5.0 feet: No Recovery.*
5									

Total Depth: 5.0 feet below ground surface.

NOTES: *1) bgs= below ground surface*

2) Borehole abandoned with bentonite chips hydrated with potable water.

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
0443.02.02	GP09	1 of 2

Project Name	City of Kelso IPG	TOC Elevation (feet)	
Project Location	1124 N. Pacific Ave., Kelso, WA	Surface Elevation (feet)	
Start/End Date	3/21/12 to 3/21/12	Northing	
Driller/Equipment	Cascade/Geoprobe	Easting	
Geologist/Engineer	Heather Hirsch	Hole Depth	40.0-feet
Sample Method	Geoprobe	Outer Hole Diam	2-inch

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
0			54%	GP		GP09-S-0.5			0.0 to 0.4 feet: GRAVEL (GP); black; 5% fines; 95% gravel, coarse, subangular; trace rootlets; moist.
1									0.4 to 2.7 feet: SILTY SAND (SM); very dark brown; 20% to 40% fines; 60% to 80% sand, fine, loose; moist to wet.
2						GP09-S-1.9			
3									2.7 to 5.0 feet: No Recovery.
4									
5			76%	GP					5.0 to 8.8 feet: SAND with SILT (SP-SM); very dark brown; 10% fines; 90% sand, fine, loose; wet.
6									
7						GP09-S-6.9			
8						GP09-W-7.0			
9									8.8 to 10.0 feet: No Recovery.
10			78%	GP					10.0 to 13.9 feet: SAND with SILT (SP-SM); very dark brown; 10% fines; 90% sand, fine, loose; some reddish staining; wet.
11									
12						GP09-S-12.0			
13									
14									13.9 to 15.0 feet: No Recovery.
15			100%	GP					15.0 to 16.8 feet: SILTY SAND (SM); very dark brown; 15% fines, non-plastic; 85% sand, fine, loose; wet.
16									
17									16.8 to 20.0 feet: SAND with SILT (SP-SM); dark reddish brown; 10% fines; 90% sand, fine to medium, loose; reddish staining throughout; wet.
18						GP09-S-17.5			@16.8 feet: 1-inch lens of gray, fine sand.
19									
20									

NOTES: 1) bgs= below ground surface 2) Borehole abandoned with bentonite chips hydrated with potable water.

▽ **Water level with screened interval = 5 to 9 feet bgs and 4-inch O.D. casing 0 to 3 feet bgs**

▼ **Water level with screened interval = 36 to 40 feet bgs and 4-inch O.D. casing 0 to 10 feet bgs**

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Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
0443.02.02	GP09	2 of 2

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
21			86%	GP					20.0 to 21.8 feet: SILTY SAND (SM); dark brown; 15% fines; 85% sand, fine, loose; wet.
22						GP09-S-22.0			21.8 to 24.3 feet: SAND (SP); dark gray; 100% sand, fine, medium; wet.
23									
24									
25	▼								24.3 to 25.0 feet: No Recovery.
26			64%	GP					25.0 to 28.2 feet: SAND (SW); dark gray; 90% to 95% sand, fine to coarse; 5% to 10% gravel, coarse, subround; coarsens with depth; wet.
27						GP09-S-26.6			
28									
29									28.2 to 30.0 feet: No Recovery.
30			66%	GP					30.0 to 33.3 feet: SILTY SAND (SM); 15% fines; 85% sand, fine to medium, loose; wet.
31									
32						GP09-S-31.5			
33									
34									33.3 to 35.0 feet: No Recovery.
35			80%	GP					35.0 to 36.7 feet: SILTY SAND (SM); dark brown to dark gray; 20% fines; 75% sand, fine to medium, loose; 5% gravel, coarse, subround; wet.
36									@36.0 feet: 0.4-ft bed of coarse gravel.
37						GP09-S-37.0			36.7 to 39.0 feet: SAND (SW); dark gray; 5% fines; 85% sand, medium to coarse, loose; 10% gravel, medium to coarse, subangular to subround; gravels are gray, pink, and green; wet.
38						GP09-W-38.0			
39									39.0 to 40.0 feet: No Recovery.
40									Total Depth: 40.0 feet below ground surface.

NOTES: 1) bgs= below ground surface 2) Borehole abandoned with bentonite chips hydrated with potable water.

▽ **Water level with screened interval = 5 to 9 feet bgs and 4-inch O.D. casing 0 to 3 feet bgs**

▼ **Water level with screened interval = 36 to 40 feet bgs and 4-inch O.D. casing 0 to 10 feet bgs**

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Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
0443.02.02	GP10	1 of 2

Project Name	City of Kelso IPG	TOC Elevation (feet)	
Project Location	1124 N. Pacific Ave., Kelso, WA	Surface Elevation (feet)	
Start/End Date	3/22/12 to 3/22/12	Northing	
Driller/Equipment	Cascade/Geoprobe	Easting	
Geologist/Engineer	Heather Hirsch	Hole Depth	40.0-feet
Sample Method	Geoprobe	Outer Hole Diam	2-inch

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1			70%	GP		GP10-S-0.5			0.0 to 0.4 feet: GRAVEL with SILT (GW-GM); dark gray to black; 10% fines; 10% sand, medium to coarse; 80% gravel, subangular, coarse, loose; trace rootlets; damp.
									0.4 to 3.5 feet: SILT (ML); dark yellowish brown; 100% fines, low plasticity, stiff; damp.
2									
3						GP10-S-2.3			@2.5 feet: Orange mottling.
4									3.5 to 5.0 feet: No Recovery.
5	▽								
			0.08%	GP		GP10-S-5.2			5.0 to 5.4 feet: SILT (ML); dark yellowish brown; 100% fines, low plasticity, soft; wet.
6									5.4 to 10.0 feet: No Recovery.
7									
8									
9									
10									
			100%	GP		GP10-W-10.0			10.0 to 15.0 feet: SILT (ML); dark yellowish brown to dark gray; 100% fines, non-plastic, very soft; wet.
11									
12									
13						GP10-S-12.5			
14									
15									@14.6 feet: grades to dark gray.
			100%	GP					15.0 to 18.3 feet: SILT (ML); dark yellowish brown to dark gray; 100% fines, non-plastic, very soft; wet.
16									
17									
18						GP10-S-17.5			@17.5 feet: trace orange staining.
19									18.3 to 20.0 feet: SAND (SP); dark gray; 10% fines; 90% sand, fine, firm; wet.
20									@19.7 feet: large, flakey, rubber-like material.

NOTES: 1) bgs= below ground surface 2) Borehole abandoned with bentonite chips hydrated with potable water.

▽ **Water level with screened interval = 8 to 12 feet bgs**

▼ **Water level with screened interval = 36 to 40 feet bgsand 4-inch O.D. casing 0 to 10 feet bgs**

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Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
0443.02.02	GP10	2 of 2

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
21			100%	GP					20.0 to 25.0 feet: SAND (SP); dark gray; 10% fines; 90% sand, fine, firm; fines decrease with depth; wet.
22									
23						GP10-S-22.5			@22.5 feet: 0.3-ft chunk of wood.
24									
25			100%	GP					25.0 to 32.5 feet: SAND (SP); dark gray; 10% fines; 90% sand, fine, firm; wet.
26									
27									
28						GP10-S-27.5			
29									
30			80%	GP					
31									
32						GP10-S-32.0			
33									32.5 to 34.0 feet: SAND (SW); dark gray; 10% fines; 80% sand, medium to coarse, loose; 10% gravel, coarse, subangular; wet.
34									34.0 to 35.0 feet: No Recovery.
35			100%	GP					35.0 to 37.5 feet: SAND (SW); dark gray; 10% fines; 80% sand, medium to coarse, loose; 10% gravel, coarse, subangular; wet.
36									
37									
38						GP10-S-37.5 GP10-W-38.0			37.5 to 40.0 feet: SANDY GRAVEL (GW); dark gray; 10% fines; 20% sand, medium to coarse; 70% gravel, medium to coarse, subangular, loose; gravels are reddish orange, white, green, and gray; wet.
39									
40									Total Depth: 40.0 feet below ground surface.

NOTES: 1) bgs= below ground surface 2) Borehole abandoned with bentonite chips hydrated with potable water.

▽ **Water level with screened interval = 8 to 12 feet bgs**

▼ **Water level with screened interval = 36 to 40 feet bgsand 4-inch O.D. casing 0 to 10 feet bgs**

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Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
0443.02.02	**GP11**	**1 of 1**

Project Name	***City of Kelso IPG***	*TOC Elevation (feet)*	
Project Location	***1124 N. Pacific Ave., Kelso, WA***	*Surface Elevation (feet)*	
Start/End Date	***3/21/12 to 3/21/12***	*Northing*	
Driller/Equipment	***Cascade/Geoprobe***	*Easting*	
Geologist/Engineer	***Heather Hirsch***	*Hole Depth*	***10.0-feet***
Sample Method	***Geoprobe***	*Outer Hole Diam*	***2-inch***

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1			**100%**	**GP**		**GP11-S-0.5**			*0.0 to 1.6 feet: SANDY GRAVEL (GW); dark gray; 5% fines; 20% sand, medium; 75% gravel, coarse, subangular, loose; damp.*
2	▽								*1.6 to 3.6 feet: SILT (ML); dark gray; 100% fines, stiff to very stiff, low plasticity; petroleum-like odor; moist.*
3						**GP11-S-2.8**			
4									*3.6 to 5.0 feet: No Recovery.*
5			**100%**	**GP**					*5.0 to 7.5 feet: SILT (ML); very dark brown to dark gray; 100% fines, medium plasticity, soft; wet.*
6									
7						**GP11-S-6.3**			
8						**GP11-W-8.0**			*7.5 to 10.0 feet: No Recovery.*
9									
10									*Total Depth: 10.0 feet below ground surface.*

NOTES: *1) bgs= below ground surface*

2) Borehole abandoned with bentonite chips hydrated with potable water.

▽ ***Water level with screened interval = 6 to 10 feet bgs***

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Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
0443.02.02	**GP12**	**1 of 1**

Project Name	**City of Kelso IPG**	TOC Elevation (feet)	
Project Location	**1124 N. Pacific Ave., Kelso, WA**	Surface Elevation (feet)	
Start/End Date	**5/31/12 to 5/31/12**	Northing	
Driller/Equipment	**Cascade/Geoprobe**	Easting	
Geologist/Engineer	**Heather Hirsch**	Hole Depth	**10.0-feet**
Sample Method	**Geoprobe**	Outer Hole Diam	**2-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1			**40%**	**GP**		**GP12-S-1.4**			*0 to 0.7 feet: GRAVELLY SAND with SILT (SW-SM); black; 10% fines; 50% sand, fine to coarse, loose; 40% gravel, fine to coarse, subangular; trace glass; black staining; dry.*
2									*0.7 to 2.0 feet: SILTY SAND (SM); dark reddish brown with orange mottling; 20% fines, non-plastic; 80% sand, fine, loose; damp to moist.*
3									*2.0 to 5.0 feet: No Recovery.*
4									
5			**56%**	**GP**					*5.0 to 7.1 feet: SILTY SAND (SM); dark reddish brown with orange mottling; 20% fines, non-plastic; 80% sand, fine, medium dense; trace rootlets; wet.*
6									
7						**GP12-S-6.0**			*7.1 to 7.8 feet: SAND with SILT (SP-SM); 15% fines, non-plastic; 85% sand, fine, medium dense; wet.*
8									*7.8 to 10.0 feet: No Recovery.*
9									
10									*Total Depth: 10.0 feet below ground surface*

NOTES: *1) bgs = below ground surface*

2) Borehole abandoned with bentonite chips hydrated with potable water.

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Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
0443.02.02	**GP13**	**1 of 1**

Project Name	**City of Kelso IPG**	TOC Elevation (feet)	
Project Location	**1124 N. Pacific Ave., Kelso, WA**	Surface Elevation (feet)	
Start/End Date	**5/31/12 to 5/31/12**	Northing	
Driller/Equipment	**Cascade/Geoprobe**	Easting	
Geologist/Engineer	**Heather Hirsch**	Hole Depth	**5.0-feet**
Sample Method	**Geoprobe**	Outer Hole Diam	**2-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1			**70%**	**GP**		**GP13-S-1.0**			0.0 to 2.1 feet: GRAVELLY SAND with SILT (SW-SM); black; 10% fines; 50% sand, fine to coarse, loose; 40% gravel, fine to coarse, subangular; black staining and petroleum-like odor; trace glass; dry.
2									@ 1.0 foot: black stained, net-like, absorbent material.
3						**GP13-S-2.8**			2.1 to 3.5 feet: SILTY SAND (SM); dark gray; 20% fines, non-plastic; 80% sand, fine, medium dense; black staining and petroleum-like odor; damp.
4									3.5 to 5.0 feet: No Recovery.
5									

Total Depth: 5.0 feet below ground surface

NOTES: 1) bgs = below ground surface

2) Borehole abandoned with bentonite chips hydrated with potable water.

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
0443.02.02	**GP14**	**1 of 1**

Project Name	**City of Kelso IPG**	TOC Elevation (feet)	
Project Location	**1124 N. Pacific Ave., Kelso, WA**	Surface Elevation (feet)	
Start/End Date	**5/31/12 to 5/31/12**	Northing	
Driller/Equipment	**Cascade/Geoprobe**	Easting	
Geologist/Engineer	**Heather Hirsch**	Hole Depth	**10.0-feet**
Sample Method	**Geoprobe**	Outer Hole Diam	**2-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1			**50%**	**GP**					*0 to 0.7 feet: GRAVELLY SAND with SILT (SW-SM); gray to dark gray; 10% fines; 50% sand, fine to coarse, loose; 40% gravel, fine to coarse, subangular; trace glass; dry.*
2						**GP14-S-1.6**			*0.7 to 2.5 feet: SILTY SAND (SM); dark reddish brown with orange mottling; 20% fines, non-plastic; 80% sand, fine, medium dense; damp.*
									@ 1.0 foot: 3-inch cobble, subangular.
3									*2.5 to 5.0 feet: No Recovery.*
4									
5			**86%**	**GP**					*5.0 to 7.1 feet: SILTY SAND (SM); dark reddish brown with orange mottling; 20% fines, non-plastic; 80% sand, fine, medium dense; damp to moist.*
6						**GP14-S-6.0**			
7									*7.1 to 9.3 feet: SAND with SILT (SP-SM); dark gray; 15% fines; 85% sand, fine, loose; wet.*
8									
9						**GP14-S-8.8**			
10									*9.3 to 10.0 feet: No Recovery.*
									Total Depth: 10.0 feet below ground surface

NOTES: *1) bgs = below ground surface*

2) Borehole abandoned with bentonite chips hydrated with potable water.

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
0443.02.02	**GP15**	**1 of 1**

Project Name	**City of Kelso IPG**	TOC Elevation (feet)	
Project Location	**1124 N. Pacific Ave., Kelso, WA**	Surface Elevation (feet)	
Start/End Date	**5/31/12 to 5/31/12**	Northing	
Driller/Equipment	**Cascade/Geoprobe**	Easting	
Geologist/Engineer	**Heather Hirsch**	Hole Depth	**5.0-feet**
Sample Method	**Geoprobe**	Outer Hole Diam	**2-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1			**78%**	**GP**					*0 to 3.9 feet: SILT (ML); dark reddish brown with orange mottling grading to dark gray at 2.0 feet bgs; 90% fines, medium plasticity, stiff; 10% sand, fine; trace rootlets; damp.*
2						***GP15-S-1.4***			
3									
4						***GP15-S-3.1***			
5									*3.9 to 5.0 feet: No Recovery.*

Total Depth: 5.0 feet below ground surface

NOTES: *1) bgs = below ground surface*

2) Borehole abandoned with bentonite chips hydrated with potable water.

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Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
0443.02.02	**GP16**	**1 of 1**

Project Name	**City of Kelso IPG**	TOC Elevation (feet)	
Project Location	**1124 N. Pacific Ave., Kelso, WA**	Surface Elevation (feet)	
Start/End Date	**5/31/12 to 5/31/12**	Northing	
Driller/Equipment	**Cascade/Geoprobe**	Easting	
Geologist/Engineer	**Heather Hirsch**	Hole Depth	**5.0-feet**
Sample Method	**Geoprobe**	Outer Hole Diam	**2-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1			**70%**	**GP**					0 to 0.4 feet: GRAVELLY SAND with SILT (SW-SM); dark brown; 10% fines; 70% sand, fine to coarse, loose; 20% gravel, fine to medium, subangular; trace rootlets; dry.
2						**GP16-S-2.1**			0.4 to 1.7 feet: SAND (SW); dark gray to black; 10% fines; 90% sand, fine to coarse, loose; trace wood chips; dry to damp. @ 1.6 feet: charcoal-like material.
3						**GP16-S-2.8**			1.7 to 2.1 feet: SILT (ML); dark gray with orange mottling; 90% fines, medium plasticity, stiff; 10% sand, fine; moist to wet. 2.1 to 3.5 feet: Lithology not recorded.
4									3.5 to 5.0 feet: No Recovery.
5									

Total Depth: 5.0 feet below ground surface

NOTES: *1) bgs = below ground surface*

2) Borehole abandoned with bentonite chips hydrated with potable water.

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Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
0443.02.02	**MW1**	**1 of 3**

Project Name	**City of Kelso IPG**	TOC Elevation (feet)	
Project Location	**1124 N. Pacific Ave., Kelso, WA**	Surface Elevation (feet)	
Start/End Date	**5/29/12 to 5/30/12**	Northing	
Driller/Equipment	**Cascade/Geoprobe**	Easting	
Geologist/Engineer	**Heather Hirsch**	Hole Depth	**40.5-feet**
Sample Method	**Geoprobe**	Outer Hole Diam	**3.5-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1			**80%**	**GP**					0 to 2.0 feet: SILT with SAND (ML); brown; 70% fines, non-plastic, soft; 30% sand, fine; trace glass, rootlets; dry to damp.
2									2.0 to 2.5 feet: No Recovery.
3			**72%**	**SS**					2.5 to 3.6 feet: SILT (ML); brown with orange mottling; 90% fines, low plasticity, firm; 10% sand, fine; trace glass; damp. @ 3.6 feet: black, coal-like material.
4									3.6 to 4.0 feet: No Recovery.
									4.0 to 5.0 feet: Not Sampled.
5			**94%**	**SS**					5.0 to 6.4 feet: SILT (ML); reddish brown with orange mottling; 100% fines, low plasticity, firm; trace rootlets; moist.
6									
7			**100%**	**GP**					6.4 to 6.5 feet: No Recovery.
									6.5 to 7.0 feet: SILT (ML); reddish brown with orange mottling; 95% fines, medium plasticity, soft; 5% sand, fine; moist.
8			**100%**	**SS**					7.0 to 7.5 feet: Not Sampled.
									7.5 to 9.0 feet: SILT with SAND (SM); dark reddish brown with orange mottling; 80% fines, non-plastic, soft; 20% sand, fine; moist to wet.
9									
									9.0 to 10.0 feet: Not Sampled.
10			**100%**	**SS**					10.0 to 11.5 feet: SILT with SAND (SM): dark reddish brown with orange mottling; 80% fines, non-plastic, soft; 20% sand, fine; wet.
11									
12			**100%**	**GP**					11.5 to 15.0 feet: SILT with SAND (SM): dark reddish brown with orange mottling; 70% fines, non-plastic, very soft; 30% sand, fine; wet.
13									
14									
15			**67%**	**SS**					15.0 to 16.0 feet: SILT with SAND (SM): dark gray; 20% fines; 80% sand, fine, loose; wet.
16									16.0 to 16.5 feet: No Recovery.
17			**60%**	**GP**					16.5 to 18.6 feet: SAND (SP); dark gray; 5% fines; 95% sand, fine, firm; wet.
18									
19									18.6 to 20.0 feet: No Recovery.
20									

NOTES: 1) bgs = below ground surface

2) From 6.5 to 7.0 feet bgs, approximately 12 inches of material were compacted into the 6-inch sampler.

3) At 20.0 feet bgs, heaving sands made sampling difficult; therefore, a sample was not collected and the casing was advanced to 25.0 feet bgs to resume sample collection.

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Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
0443.02.02	MW1	2 of 3

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
20									20.0 to 25.0 feet: Not Sampled.
25			22%	GP					25.0 to 26.0 feet: SAND (SP); dark gray; 5% fines; 95% sand, fine, firm; rock in shoe; wet.
26									26.0 to 26.1 feet: SANDY GRAVEL (GP); dark gray; 5% fines; 25% sand, fine; 70% gravel, coarse, subangular; trace woody debris, cobbles; wet.
27									26.1 to 30.0 feet: No Recovery.
30			24%	GP					30.0 to 30.8 feet: SAND (SW); dark gray; 5% fines; 95% sand, medium to coarse, loose; wet.
31									30.8 to 31.2 feet: SANDY GRAVEL (GW); dark gray; 40% sand, medium to coarse, loose; 60% gravel, medium to coarse, subrounded; wet.
32									31.2 to 35.0 feet: No Recovery.
35			52%	GP					35.0 to 37.6 feet: SANDY GRAVEL (GW); dark gray; 40% sand, medium to coarse, medium dense to loose; 60% gravel, medium to coarse, subrounded; trace cobbles; wet.
38									37.6 to 40.0 feet: No Recovery.
40			0%	GP					40.0 to 40.5 feet: Not Sampled.

Total Depth: 40.5 feet below ground surface

Borehole Completion Details
0.0 to 40.5 feet bgs: 3.5-inch borehole.
0.0 to 1.0 feet bgs: Concrete.
1.0 to 34.0 feet bgs: Bentonite chips hydrated with potable water.

NOTES: 1) bgs = below ground surface

2) From 6.5 to 7.0 feet bgs, approximately 12 inches of material were compacted into the 6-inch sampler.

3) At 20.0 feet bgs, heaving sands made sampling difficult; therefore, a sample was not collected and the casing was advanced to 25.0 feet bgs to resume sample collection.

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Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
0443.02.02	**MW1**	**3 of 3**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description

34.0 to 40.5 feet bgs: Filter pack sand.

Well Completion Details
0.0 to 1.0 feet bgs: Flush monument.
0.4 to 35.0 feet bgs: 2-inch diameter, PVC, schedule 40, flush threaded, blank riser.
35.0 to 40.0 feet bgs: 2-inch diameter, PVC, schedule 40, flush threaded, 0.010-inch machine slotted, pre-pack well screen.
40.0 to 40.5 feet bgs: 2-inch diameter, PVC, schedule 40, flush threaded, end cap.

NOTES: *1) bgs = below ground surface*

2) From 6.5 to 7.0 feet bgs, approximately 12 inches of material were compacted into the 6-inch sampler.

3) At 20.0 feet bgs, heaving sands made sampling difficult; therefore, a sample was not collected and the casing was advanced to 25.0 feet bgs to resume sample collection.

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Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
0443.02.02	**MW2**	**1 of 2**

Project Name	**City of Kelso IPG**	TOC Elevation (feet)	
Project Location	**1124 N. Pacific Ave., Kelso, WA**	Surface Elevation (feet)	
Start/End Date	**5/31/12 to 5/31/12**	Northing	
Driller/Equipment	**Cascade/Geoprobe**	Easting	
Geologist/Engineer	**Heather Hirsch**	Hole Depth	**40.5-feet**
Sample Method	**Geoprobe**	Outer Hole Diam	**3.5-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1			**50%**	**GP**					*0 to 2.5 feet: SILTY SAND (SM); dark reddish brown with orange mottling; 40% fines; 60% sand, fine, loose; trace rootlets; moist to wet.*
2									
3									*2.5 to 5.0 feet: No Recovery.*
4									
5			**82%**	**GP**					*5.0 to 9.1 feet: SILTY SAND (SM); dark reddish brown with orange mottling; 20% fines; 80% sand, fine, very loose to loose; wet.*
6									
7									
8									
9									
10									*9.1 to 10.0 feet: No Recovery.*
11			**44%**	**GP**					*10.0 to 11.2 feet: SAND with SILT (SP-SM); dark reddish brown with orange mottling; 15% fines; 85% sand, fine, loose; wet.*
12									*11.2 to 12.2 feet: SAND with SILT (SP-SM); dark reddish brown and dark gray with strongly laminated orange mottling; 15% fines; 85% sand, fine, firm; wet.*
13									*12.2 to 15.0 feet: No Recovery.*
14									
15									*15.0 to 40.5 feet: Not Sampled.*
16									
17									
18									
19									
20									

NOTES: *1) bgs = below ground surface*

2) At 15.0 feet bgs, heaving sands made sampling difficult; therefore, sampling did not continue and the casing was advanced to the well installation depth.

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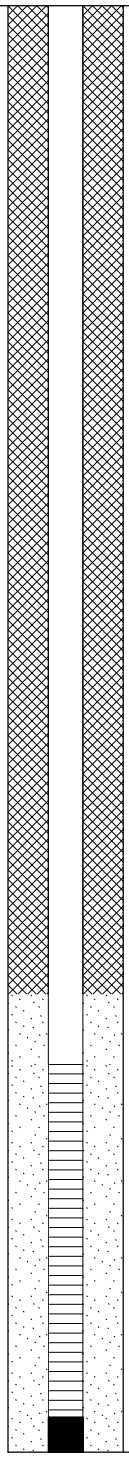
Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
0443.02.02	**MW2**	**2 of 2**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Sample Data: Percent Recovery	Sample Data: Collection Method	Sample Data: Number	Sample Data: Name (Type)	Sample Data: Blows/6"	Lithologic Column	Soil Description
21									
22									
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37									
38									
39									
40									

Borehole Completion Details
0.0 to 40.5 feet bgs: 3.5-inch borehole.
0.0 to 1.0 feet bgs: Concrete.
1.0 to 34.0 feet bgs: Bentonite chips hydrated with potable water.
34.0 to 40.5 feet bgs: Filter pack sand.

Well Completion Details
0.0 to 1.0 feet bgs: Flush monument.
0.4 to 35.0 feet bgs: 2-inch diameter, PVC, schedule 40, flush threaded, blank riser.
35.0 to 40.0 feet bgs: 2-inch diameter, PVC, schedule 40, flush threaded, 0.010-inch machine slotted, pre-pack well screen.
40.0 to 40.5 feet bgs: 2-inch diameter, PVC, schedule 40, flush threaded, end cap.

Total Depth: 40.5 feet below ground surface

NOTES: *1) bgs = below ground surface*

2) At 15.0 feet bgs, heaving sands made sampling difficult; therefore, sampling did not continue and the casing was advanced to the well installation depth.

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Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
0443.02.02	**MW3**	**1 of 2**

Project Name	**City of Kelso IPG**	TOC Elevation (feet)	
Project Location	**1124 N. Pacific Ave., Kelso, WA**	Surface Elevation (feet)	
Start/End Date	**5/31/12 to 5/31/12**	Northing	
Driller/Equipment	**Cascade/Geoprobe**	Easting	
Geologist/Engineer	**Heather Hirsch**	Hole Depth	**40.5-feet**
Sample Method	**Geoprobe**	Outer Hole Diam	**3.5-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1			**34%**	**GP**		**MW3-S-1.0**			0 to 0.7 feet: GRAVELLY SAND (SW); black; 5% fines; 55% sand, fine to coarse, loose; 40% gravel, fine to coarse, subangular to subrounded; trace glass; black staining and petroleum-like odor; dry.
2						**MW3-S-1.5**			0.7 to 1.3 feet: SILTY SAND (SM); dark gray; 25% fines, non-plastic; 75% sand, fine, medium dense; gray staining and petroleum-like odor; damp.
3									1.3 to 1.7 feet: SILTY SAND (SM); dark reddish brown; 25% fines, non-plastic; 75% sand, fine, medium dense; petroleum-like odor; damp.
4									1.7 to 5.0 feet: No Recovery.
5			**60%**	**GP**					5.0 to 5.6 feet: SAND with SILT (SP-SM); dark reddish brown with orange mottling; 15% fines; 85% sand, fine, loose; moist.
6									5.6 to 8.0 feet: SAND with SILT (SP-SM); dark reddish brown with orange mottling; 15% fines; 85% sand, fine, loose; moist to wet.
7									
8									
9									8.0 to 10.0 feet: No Recovery.
10			**78%**	**GP**					10.0 to 13.9 feet: SAND with SILT (SP-SM); dark reddish brown with orange mottling; 15% fines; 85% sand, fine, loose; wet.
11									
12									
13									
14									13.9 to 15.0 feet: No Recovery.
15			**100%**	**GP**					15.0 to 20.0 feet: SAND (SP); dark gray with orange mottling; 5% fines; 95% sand, fine, loose; wet.
16									
17									
18									
19									
20									

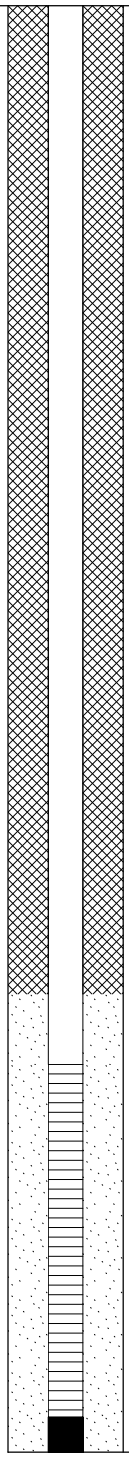
NOTES: *1) bgs = below ground surface*

2) At 20.0 feet bgs, heaving sands made sampling difficult; therefore, sampling did not continue and the casing was advanced to the well installation depth.

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
0443.02.02	**MW3**	**2 of 2**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Sample Data: Percent Recovery	Sample Data: Collection Method	Sample Data: Number	Sample Data: Name (Type)	Sample Data: Blows/6"	Lithologic Column	Soil Description
21									*20.0 to 40.5 feet: Not Sampled.*
22									
23									
24									
25									*@ 25.0 feet: Driller noted harder drilling likely due to firmer material.*
26									
27									
28									
29									*<u>Borehole Completion Details</u>* *0.0 to 40.5 feet bgs: 3.5-inch borehole.* *0.0 to 1.0 feet bgs: Concrete.* *1.0 to 34.0 feet bgs: Bentonite chips hydrated with potable water.* *34.0 to 40.5 feet bgs: Filter pack sand.*
30									
31									*<u>Well Completion Details</u>* *0.0 to 1.0 feet bgs: Flush monument.* *0.4 to 35.0 feet bgs: 2-inch diameter, PVC, schedule 40, flush threaded, blank riser.* *35.0 to 40.0 feet bgs: 2-inch diameter, PVC, schedule 40, flush threaded, 0.010-inch machine slotted, pre-pack well screen.* *40.0 to 40.5 feet bgs: 2-inch diameter, PVC, schedule 40, flush threaded, end cap.*
32									
33									
34									
35									
36									
37									
38									
39									
40									

Total Depth: 40.5 feet below ground surface

NOTES: *1) bgs = below ground surface*

2) At 20.0 feet bgs, heaving sands made sampling difficult; therefore, sampling did not continue and the casing was advanced to the well installation depth.

GBLWC W:\GINT\GINTWPROJECTS\0443.02 KELSO IPG\GP12-MW3.GPJ 8/27/12

GEOTECHNICAL BORING REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT

Notice of Intent No. EE03894

Construction/Decommission

P12076-6450

Type of Well

[x] Construction

[ ] Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

[X] Geotechnical Soil Boring

Property Owner **DENNIS BARANICK**

Site Address **1124 N PACIFIC AVENUE**

Consulting Firm **MAUL FOSTER & ALONGI**

City **KELSO** County **COWLITZ**

Geotechnical Soil Boring Hole # B1

Location 1/4 **NE** 1/4 **NE** Sec **27** Twn **8N** R **2W** EWM or WWM

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

Lat/Long (s,t,r still Required) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____

[X] Driller [ ] Trainee Name (Print) **Marc Chalona**

Driller/Trainee Signature Marc Chalona

Driller/Trainee License No. 3000

Tax Parcel No. **20476**

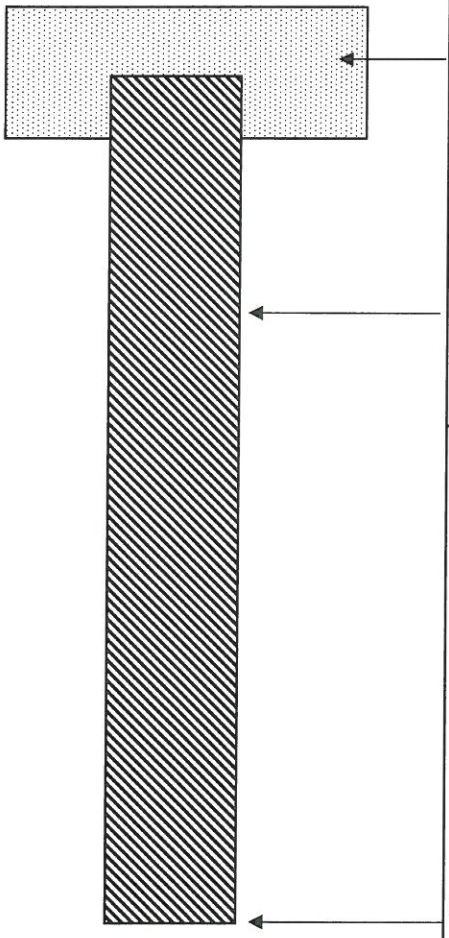
Cased or **Uncased** Diameter **2.25"** Static Level **5'**

Work/Decommission Start Date **3/21/2012**

If trainee, licensed driller's Signature and License No. _____

Work/Decommission Completed Date **3/21/2012**

Construction/Design



CONCRETE SURFACE SEAL 1 FT

BACKFILL 1 - 12 FT

DEPTH OF BORING 12 FT

Formation Description

0 - 1 FT
GRAVELS AND SANDS

1 - 12 FT
SANDY SILT

_____ FT

_____ FT

_____ FT

Scale 1" = _____

ECY 050-12 (Rec=v 2/01)

GEOTECHNICAL BORING REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT
Notice of Intent No. AE16668

Construction/Decommission

P12076-6450

Type of Well

☐ Construction

☒ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* EE03894

☒ Geotechnical Soil Boring

Property Owner: DENNIS BARANICK
Site Address: 1124 N PACIFIC AVENUE
Consulting Firm: MAUL FOSTER & ALONGI
City: KELSO County: COWLITZ

Geotechnical Soil Boring Hole # B1

Location 1/4 NE 1/4 NE Sec 27 Twn 8N R 2W EWM or WWM

Lat/Long (s,t,r still Required) Lat Deg ____ Lat Min/Sec ____ Long Deg ____ Long Min/Sec ____

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

Tax Parcel No. ____

☒ Driller ☐ Trainee Name (Print) Marc Chalona

Driller/Trainee Signature Marc Chalona

Driller/Trainee License No. 3000

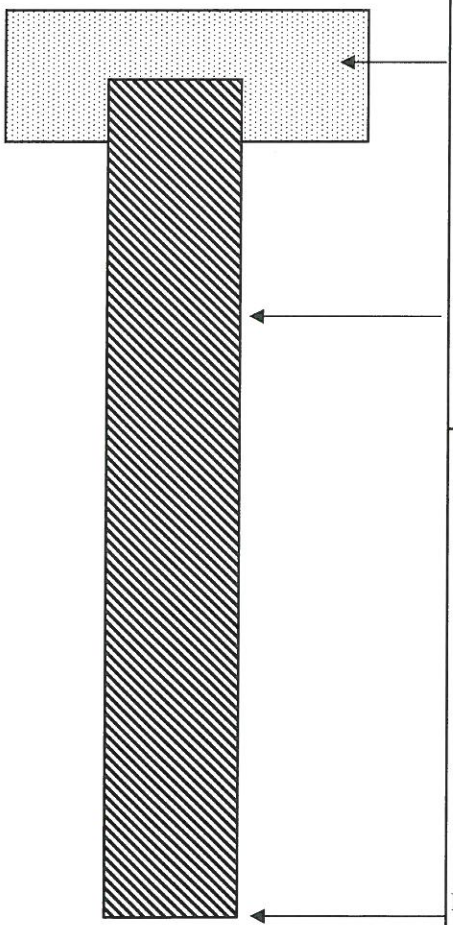
Cased or **Uncased** Diameter 2.25" Static Level 5'

Work/Decommission Start Date 3/21/2012

Work/Decommission Completed Date 3/21/2012

If trainee, licensed driller's Signature and License No. ____

Construction/Design



CONCRETE SURFACE SEAL 1 FT

BACKFILL 1 - 12 FT

DEPTH OF BORING 12 FT

Formation Description

0 - 1 FT GRAVELS AND SANDS

1 - 12 FT SANDY SILT

____ FT

____ FT

____ FT

Scale 1" = ____

ECY 050-12 (Rec=v 2/01)

GEOTECHNICAL BORING REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT

Notice of Intent No. EE03894

Construction/Decommission

P12076-6450

Type of Well

[x] Construction

[ ] Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

[X] Geotechnical Soil Boring

Property Owner: **DENNIS BARANICK**

Site Address: **1124 N PACIFIC AVENUE**

Consulting Firm: **MAUL FOSTER & ALONGI**

City: **KELSO** County: **COWLITZ**

Geotechnical Soil Boring

Hole # **B2**

Location 1/4 **NE** 1/4 **NE** Sec **27** Twn **8N** R **2W** EWM or WWM

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

Lat/Long (s,t,r still Required) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____

[X] Driller [ ] Trainee Name (Print) **Marc Chalona**

Driller/Trainee Signature *Marc Chalona*

Driller/Trainee License No. 3000

Tax Parcel No. **20476**

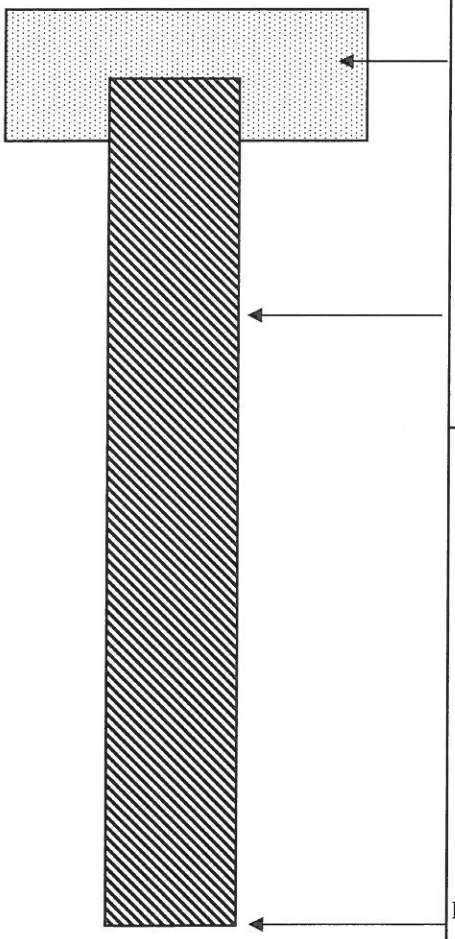
Cased or **Uncased** Diameter **2.25"** Static Level **19'**

Work/Decommission Start Date **3/21/2012**

If trainee, licensed driller's Signature and License No. _____

Work/Decommission Completed Date **3/21/2012**

Construction/Design



CONCRETE SURFACE SEAL **1** FT

BACKFILL **1 - 40** FT

DEPTH OF BORING **40** FT

Formation Description

0 - 1 FT
GRAVELS AND SANDS

1 - 35 FT
SANDY SILT

35 - 40 FT
SAND AND GRAVELS

_____ FT

_____ FT

Scale 1" = _____

ECY 050-12 (Rec=v 2/01)

GEOTECHNICAL BORING REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT
Notice of Intent No. AE16668

Construction/Decommission

P12076-6450

Type of Well

☐ Construction

☒ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* EE03894

☒ Geotechnical Soil Boring

Property Owner: DENNIS BARANICK
Site Address: 1124 N PACIFIC AVENUE
Consulting Firm: MAUL FOSTER & ALONGI
City: KELSO County: COWLITZ

Geotechnical Soil Boring
Hole # B2

Location 1/4 NE 1/4 NE Sec 27 Twn 8N R 2W EWM or WWM

Lat/Long (s,t,r still Required) Lat Deg ____ Lat Min/Sec ____ Long Deg ____ Long Min/Sec ____

Tax Parcel No. ____

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

☒ Driller ☐ Trainee Name (Print) Marc Chalona

Driller/Trainee Signature Marc Chalona

Driller/Trainee License No. 3000

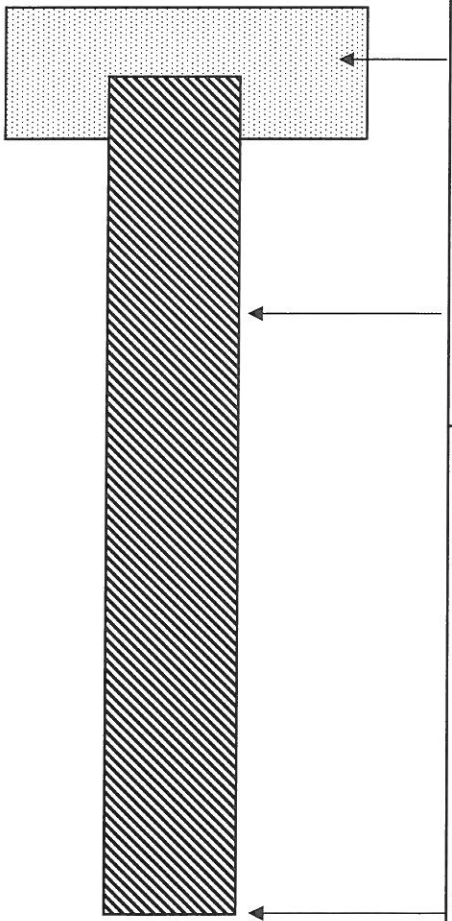
Cased or **Uncased** Diameter 2.25" Static Level 19'

Work/Decommission Start Date 3/21/2012

Work/Decommission Completed Date 3/21/2012

If trainee, licensed driller's Signature and License No. ____

Construction/Design



CONCRETE SURFACE SEAL 1 FT

BACKFILL 1 - 40 FT

DEPTH OF BORING 40 FT

Formation Description

0 - 1 FT
GRAVELS AND SANDS

1 - 35 FT
SANDY SILT

35 - 40 FT
SAND AND GRAVELS

FT

FT

Scale 1" = ____

ECY 050-12 (Rec=v 2/01)

GEOTECHNICAL BORING REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT

Notice of Intent No. EE03894

Construction/Decommission

P12076-6450

Type of Well

[x] Construction

[ ] Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

[X] Geotechnical Soil Boring

Property Owner **DENNIS BARANICK**

Site Address **1124 N PACIFIC AVENUE**

Consulting Firm **MAUL FOSTER & ALONGI**

City **KELSO** County **COWLITZ**

Geotechnical Soil Boring

Hole # **B3**

Location 1/4 **NE** 1/4 **NE** Sec **27** Twn **8N** R **2W** EWM or WWM

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

Lat/Long (s,t,r still Required) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____

[X] Driller [ ] Trainee Name (Print) **Marc Chalona**

Driller/Trainee Signature Marc Chalona

Driller/Trainee License No. 3000

Tax Parcel No. **20476**

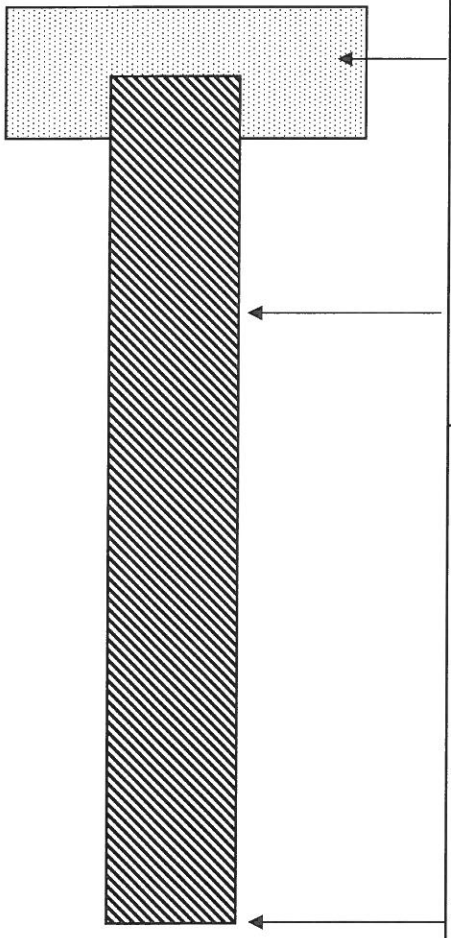
Cased or **Uncased** Diameter **2.25"** Static Level **19'**

Work/Decommission Start Date **3/21/2012**

If trainee, licensed driller's Signature and License No. _____

Work/Decommission Completed Date **3/21/2012**

Construction/Design



CONCRETE SURFACE SEAL 1 FT

BACKFILL 1 - 40 FT

DEPTH OF BORING 40 FT

Formation Description

0 - 1 FT
GRAVELS AND SANDS

1 - 35 FT
SANDY SILT

35 - 40 FT
SAND AND GRAVELS

_____ FT

_____ FT

Scale 1" = _____

GEOTECHNICAL BORING REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT
Notice of Intent No. AE16668

Construction/Decommission

P12076-6450

Type of Well

☐ Construction

☒ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* EE03894

☒ Geotechnical Soil Boring

Property Owner: DENNIS BARANICK
Site Address: 1124 N PACIFIC AVENUE
Consulting Firm: MAUL FOSTER & ALONGI
City: KELSO County: COWLITZ

Geotechnical Soil Boring
Hole # B3

Location 1/4 NE 1/4 NE Sec 27 Twn 8N R 2W EWM or WWM

Lat/Long (s,t,r still Required) Lat Deg ____ Lat Min/Sec ____ Long Deg ____ Long Min/Sec ____

Tax Parcel No. ____

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

☒ Driller ☐ Trainee Name (Print) Marc Chalona

Driller/Trainee Signature Marc Chalona

Driller/Trainee License No. 3000

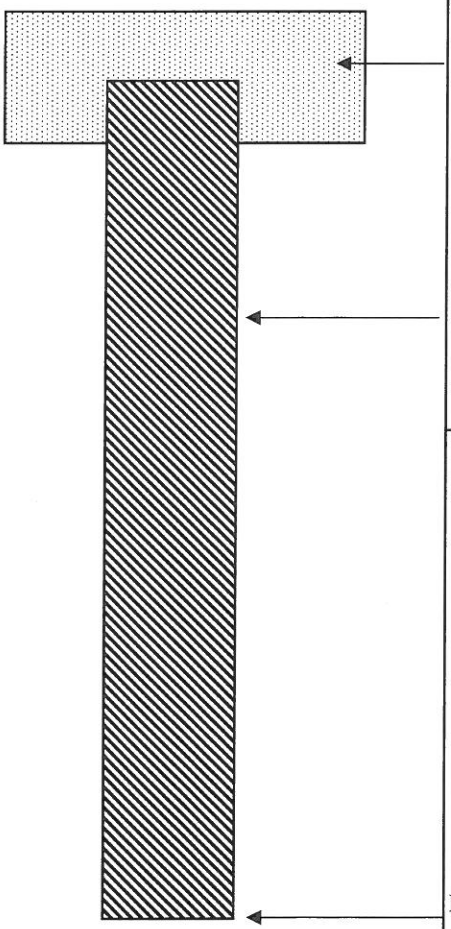
Cased or **Uncased** Diameter 2.25" Static Level 19'

Work/Decommission Start Date 3/21/2012

Work/Decommission Completed Date 3/21/2012

If trainee, licensed driller's Signature and License No. ____

Construction/Design



CONCRETE SURFACE SEAL 1 FT

BACKFILL 1 - 40 FT

DEPTH OF BORING 40 FT

Formation Description

0 - 1 FT GRAVELS AND SANDS

1 - 35 FT SANDY SILT

35 - 40 FT SAND AND GRAVELS

FT

FT

Scale 1" = ____

ECY 050-12 (Rec=v 2/01)

GEOTECHNICAL BORING REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT

Notice of Intent No. EE03894

Construction/Decommission

P12076-6450

Type of Well

[x] Construction

[ ] Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

[X] Geotechnical Soil Boring

Property Owner: **DENNIS BARANICK**

Site Address: **1124 N PACIFIC AVENUE**

Consulting Firm: **MAUL FOSTER & ALONGI**

City: **KELSO** County: **COWLITZ**

Geotechnical Soil Boring

Hole # **B4**

Location 1/4 **NE** 1/4 **NE** Sec **27** Twn **8N** R **2W** EWM or WWM

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

Lat/Long (s,t,r still Required) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____

[X] Driller [ ] Trainee Name (Print) **Marc Chalona**

Driller/Trainee Signature *Marc Chalona*

Driller/Trainee License No. 3000

Tax Parcel No. **20476**

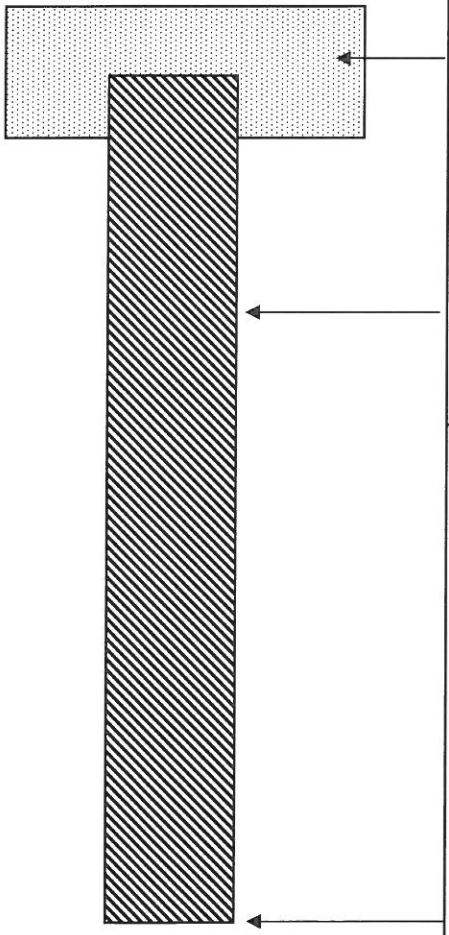
Cased or **Uncased** Diameter **2.25"** Static Level **1'**

Work/Decommission Start Date **3/21/2012**

If trainee, licensed driller's Signature and License No. _____

Work/Decommission Completed Date **3/21/2012**

Construction/Design



CONCRETE SURFACE SEAL 1 FT

BACKFILL 1 - 10 FT

DEPTH OF BORING 10 FT

Formation Description

0 - 1 FT GRAVELS AND SANDS

1 - 10 FT SANDY SILT

_____ FT

_____ FT

_____ FT

Scale 1" = _____

Page 1 of 1

ECY 050-12 (Rec=v 2/01)

GEOTECHNICAL BORING REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT
Notice of Intent No. AE16668

Construction/Decommission

P12076-6450

Type of Well

☐ Construction

☒ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* EE03894

☒ Geotechnical Soil Boring

Property Owner: DENNIS BARANICK
Site Address: 1124 N PACIFIC AVENUE
Consulting Firm: MAUL FOSTER & ALONGI
City: KELSO County: COWLITZ

Geotechnical Soil Boring
Hole # B4

Location 1/4 NE 1/4 NE Sec 27 Twn 8N R 2W EWM or WWM

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

Lat/Long (s,t,r still Required) Lat Deg ____ Lat Min/Sec ____ Long Deg ____ Long Min/Sec ____

Tax Parcel No. ____

☒ Driller ☐ Trainee Name (Print) Marc Chalona

Driller/Trainee Signature Marc Chalona

Driller/Trainee License No. 3000

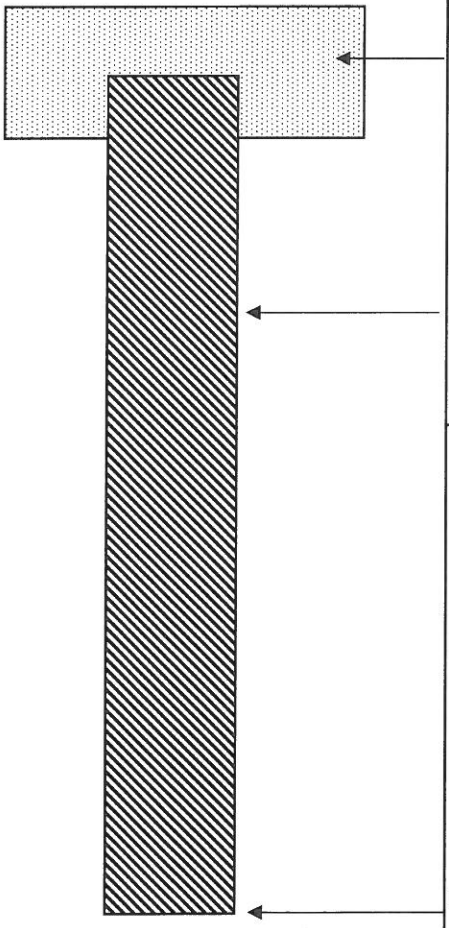
Cased or **Uncased** Diameter 2.25" Static Level 1'

Work/Decommission Start Date 3/21/2012

Work/Decommission Completed Date 3/21/2012

If trainee, licensed driller's Signature and License No. ____

Construction/Design



CONCRETE SURFACE SEAL 1 FT

BACKFILL 1 - 10 FT

DEPTH OF BORING 10 FT

Formation Description

0 - 1 FT GRAVELS AND SANDS

1 - 10 FT SANDY SILT

____ FT

____ FT

____ FT

Scale 1" = ____

GEOTECHNICAL BORING REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT
Notice of Intent No. SE44816

Construction/Decommission

P12076-6450

Type of Well

[x] Construction

[ ] Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

[X] Geotechnical Soil Boring

Property Owner: **DENNIS BARANICK**

Site Address: **1124 N PACIFIC AVENUE**

Consulting Firm: **MAUL FOSTER & ALONGI**

City: **KELSO** County: **COWLITZ**

Geotechnical Soil Boring

Hole # **GP1**

Location 1/4 **NE** 1/4 **NE** Sec **27** Twn **8N** R **2W** EWM or WWM

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

Lat/Long (s,t,r still Required) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____

[X] Driller [ ] Trainee Name (Print) **Marc Chalona**

Driller/Trainee Signature *Marc Chalona*

Driller/Trainee License No. 3000

Tax Parcel No. **20476**

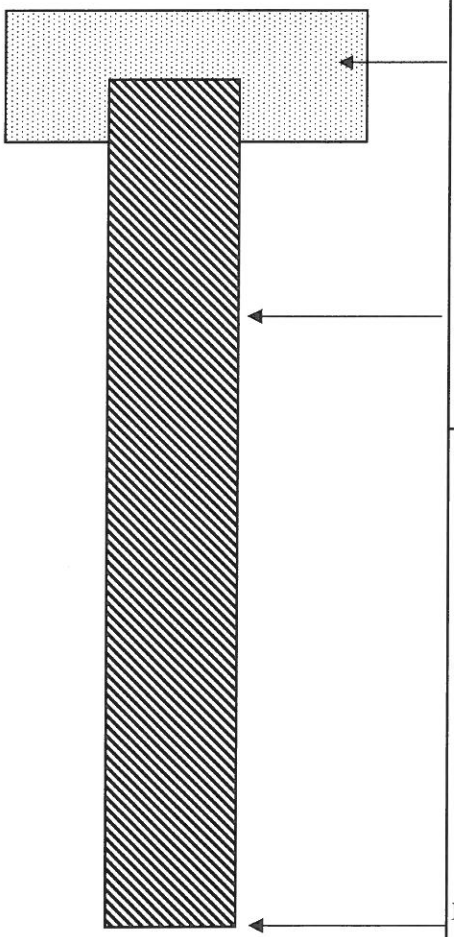
Cased or **Uncased** Diameter **2.25"** Static Level _____

Work/Decommission Start Date **3/20/2012**

If trainee, licensed driller's Signature and License No. _____

Work/Decommission Completed Date **3/20/2012**

Construction/Design



CONCRETE SURFACE SEAL **1** FT

BACKFILL **1 - 10** FT

DEPTH OF BORING **10** FT

Formation Description

0 - 1 FT
GRAVELS AND SANDS

1 - 10 FT
SANDY SILT

_____ FT

_____ FT

_____ FT

Scale 1" = _____

Page 1 of 1

ECY 050-12 (Rec=v 2/01)

GEOTECHNICAL BORING REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT
Notice of Intent No. AE16669

Construction/Decommission

P12076-6450

Type of Well

☐ Construction

☒ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* SE44816

☒ Geotechnical Soil Boring

Consulting Firm **MAUL FOSTER & ALONGI**

Property Owner **DENNIS BARANICK**

Site Address **1124 N PACIFIC AVENUE**

City **KELSO** County **COWLITZ**

Geotechnical Soil Boring

Hole # **GP1**

Location 1/4 **NE** 1/4 **NE** Sec **27** Twn **8N** R **2W** EWM or WWM

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

Lat/Long (s,t,r still Required) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____

Tax Parcel No. _____

☒ Driller ☐ Trainee Name (Print) **Marc Chalona**

Driller/Trainee Signature Marc Chalona

Driller/Trainee License No. 3000

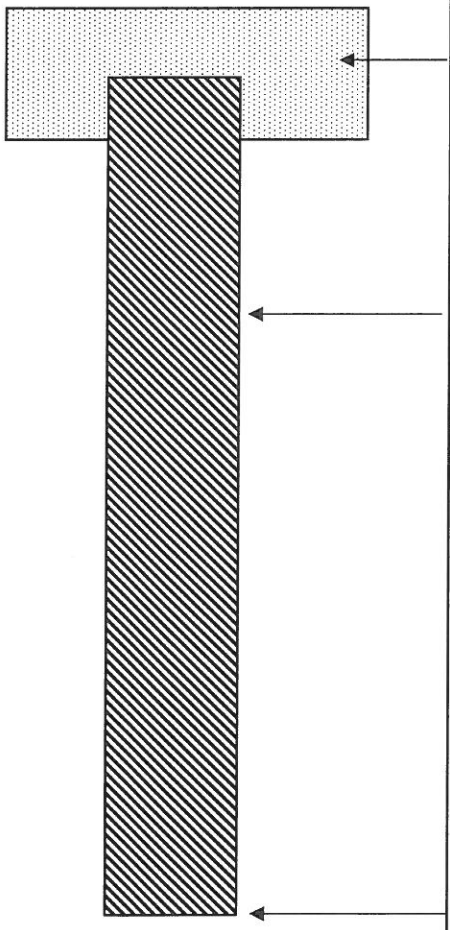
Cased or **Uncased** Diameter **2.25"** Static Level _____

If trainee, licensed driller's Signature and License No. _____

Work/Decommission Start Date **3/20/2012**

Work/Decommission Completed Date **3/20/2012**

Construction/Design



CONCRETE SURFACE SEAL 1 FT

BACKFILL 1 - 10 FT

DEPTH OF BORING 10 FT

Formation Description

0 - 1 FT
GRAVELS AND SANDS

1 - 10 FT
SANDY SILT

_____ FT

_____ FT

_____ FT

Scale 1" = _____

GEOTECHNICAL BORING REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT
Notice of Intent No. SE44816

Construction/Decommission

P12076-6450

Type of Well

[x] Construction

[ ] Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

[X] Geotechnical Soil Boring

Property Owner: **DENNIS BARANICK**

Site Address: **1124 N PACIFIC AVENUE**

Consulting Firm: **MAUL FOSTER & ALONGI**

City: **KELSO** County: **COWLITZ**

Geotechnical Soil Boring

Hole # **GP2**

Location 1/4 **NE** 1/4 **NE** Sec **27** Twn **8N** R **2W** EWM or WWM

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

Lat/Long (s,t,r still Required) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____

[X] Driller [ ] Trainee Name (Print) **Marc Chalona**

Driller/Trainee Signature *Marc Chalona*

Driller/Trainee License No. 3000

Tax Parcel No. **20476**

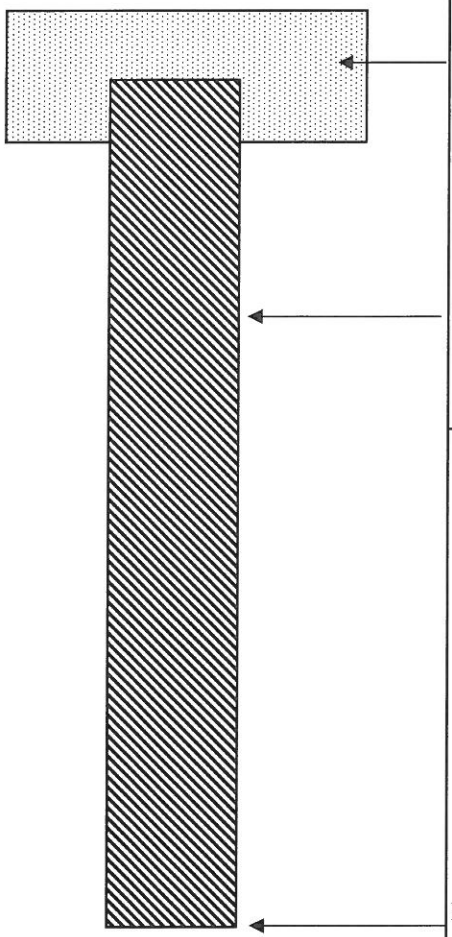
Cased or **Uncased** Diameter **2.25"** Static Level _____

Work/Decommission Start Date **3/20/2012**

If trainee, licensed driller's Signature and License No. _____

Work/Decommission Completed Date **3/20/2012**

Construction/Design



CONCRETE SURFACE SEAL 1 FT

BACKFILL 1 - 5 FT

DEPTH OF BORING 5 FT

Formation Description

0 - 1 FT GRAVELS AND SANDS

1 - 5 FT SANDY SILT

_____ FT

_____ FT

_____ FT

Scale 1" = _____

Page 1 of 1

ECY 050-12 (Rec=v 2/01)

GEOTECHNICAL BORING REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT
Notice of Intent No. AE16669

Construction/Decommission

P12076-6450

Type of Well

☐ Construction

☒ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* SE44816

☒ Geotechnical Soil Boring

Property Owner: DENNIS BARANICK
Site Address: 1124 N PACIFIC AVENUE
Consulting Firm: MAUL FOSTER & ALONGI
City: KELSO County: COWLITZ

Geotechnical Soil Boring
Hole # GP2

Location 1/4 NE 1/4 NE Sec 27 Twn 8N R 2W EWM or WWM

Lat/Long (s,t,r still Required) Lat Deg ____ Lat Min/Sec ____ Long Deg ____ Long Min/Sec ____

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

Tax Parcel No. ____

☒ Driller ☐ Trainee Name (Print) Marc Chalona

Driller/Trainee Signature Marc Chalona

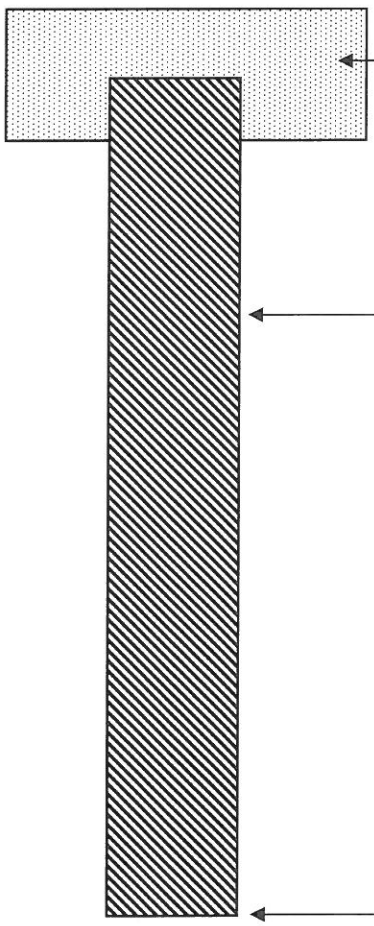
Driller/Trainee License No. 3000

Cased or **Uncased** Diameter 2.25" Static Level ____

Work/Decommission Start Date 3/20/2012

If trainee, licensed driller's Signature and License No. ____

Work/Decommission Completed Date 3/20/2012

Construction/Design		Formation Description
	CONCRETE SURFACE SEAL 1 FT	0 - 1 FT GRAVELS AND SANDS
	BACKFILL 1 - 5 FT	1 - 5 FT SANDY SILT
		FT
		FT
	DEPTH OF BORING 5 FT	FT

Scale 1" = ____

ECY 050-12 (Rec=v 2/01)

GEOTECHNICAL BORING REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT

Notice of Intent No. SE44816

Construction/Decommission

P12076-6450

Type of Well

[x] Construction

[ ] Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

[X] Geotechnical Soil Boring

Property Owner **DENNIS BARANICK**

Site Address **1124 N PACIFIC AVENUE**

Consulting Firm **MAUL FOSTER & ALONGI**

City **KELSO** County **COWLITZ**

Geotechnical Soil Boring

Hole # **GP3**

Location 1/4 **NE** 1/4 **NE** Sec **27** Twn **8N** R **2W** EWM or WWM

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards

Materials used and the information reported above are true to my best knowledge and belief

Lat/Long (s,t,r still Required) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____

Tax Parcel No. **20476**

[X] Driller [ ] Trainee Name (Print) **Marc Chalona**

Driller/Trainee Signature *Marc Chalona*

Driller/Trainee License No. 3000

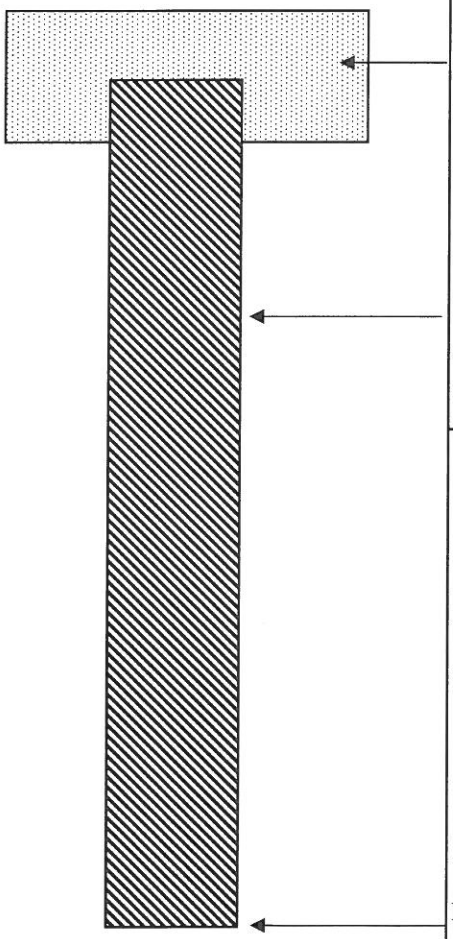
Cased or **Uncased** Diameter **2.25"** Static Level _____

Work/Decommission Start Date **3/20/2012**

If trainee, licensed driller's Signature and License No. _____

Work/Decommission Completed Date **3/20/2012**

Construction/Design



CONCRETE SURFACE SEAL **1** FT

BACKFILL **1 - 5** FT

DEPTH OF BORING **5** FT

Formation Description

0 - 1 FT
GRAVELS AND SANDS

1 - 5 FT
SANDY SILT

_____ FT

_____ FT

_____ FT

Scale 1" = _____

Page 1 of 1

ECY 050-12 (Rec=v 2/01)

GEOTECHNICAL BORING REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT
Notice of Intent No. AE16669

Construction/Decommission

P12076-6450

Type of Well

☐ Construction

☒ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* SE44816

☒ Geotechnical Soil Boring

Property Owner: DENNIS BARANICK
Site Address: 1124 N PACIFIC AVENUE
Consulting Firm: MAUL FOSTER & ALONGI
City: KELSO County: COWLITZ

Geotechnical Soil Boring
Hole # GP3

Location 1/4 NE 1/4 NE Sec 27 Twn 8N R 2W EWM or WWM

Lat/Long (s,t,r still Required) Lat Deg ____ Lat Min/Sec ____ Long Deg ____ Long Min/Sec ____

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

Tax Parcel No. ____

☒ Driller ☐ Trainee Name (Print) Marc Chalona

Driller/Trainee Signature Marc Chalona

Driller/Trainee License No. 3000

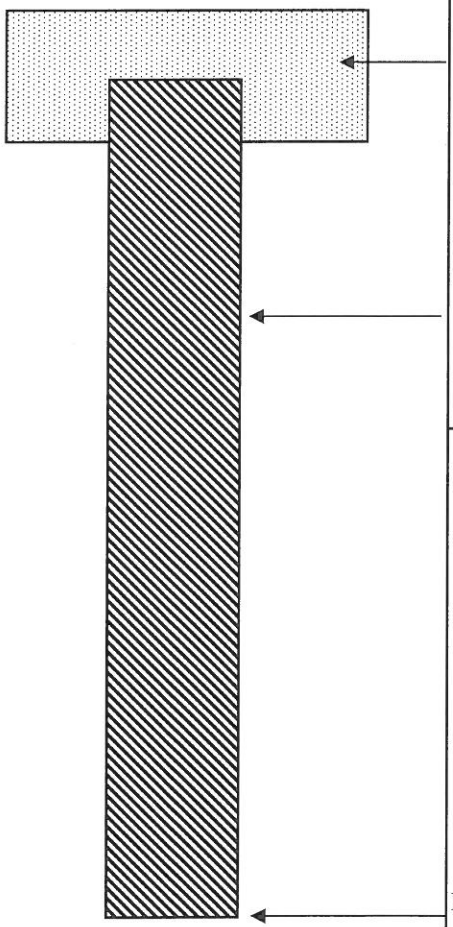
Cased or **Uncased** Diameter 2.25" Static Level ____

Work/Decommission Start Date 3/20/2012

If trainee, licensed driller's Signature and License No. ____

Work/Decommission Completed Date 3/20/2012

Construction/Design



CONCRETE SURFACE SEAL 1 FT

BACKFILL 1 - 5 FT

DEPTH OF BORING 5 FT

Formation Description

0 - 1 FT GRAVELS AND SANDS

1 - 5 FT SANDY SILT

____ FT

____ FT

____ FT

Scale 1" = ____

ECY 050-12 (Rec=v 2/01)

GEOTECHNICAL BORING REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT
Notice of Intent No. SE44816

Construction/Decommission

P12076-6450

Type of Well

[x] Construction

[ ] Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

[X] Geotechnical Soil Boring

Property Owner: **DENNIS BARANICK**

Site Address: **1124 N PACIFIC AVENUE**

Consulting Firm: **MAUL FOSTER & ALONGI**

City: **KELSO** County: **COWLITZ**

Geotechnical Soil Boring

Hole # **GP4**

Location 1/4 **NE** 1/4 **NE** Sec **27** Twn **8N** R **2W** EWM or WWM

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

Lat/Long (s,t,r still Required) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____

Tax Parcel No. **20476**

[X] Driller [ ] Trainee Name (Print) **Marc Chalona**

Driller/Trainee Signature *Marc Chalona*

Driller/Trainee License No. 3000

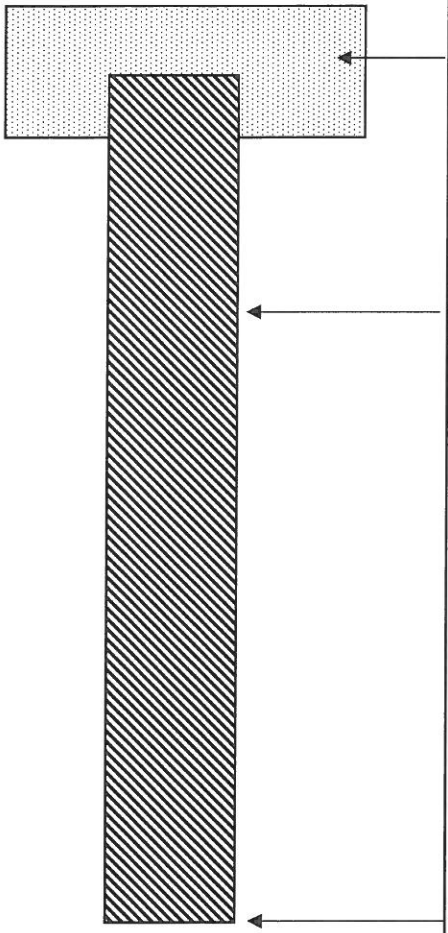
Cased or **Uncased** Diameter **2.25"** Static Level _____

Work/Decommission Start Date **3/20/2012**

If trainee, licensed driller's Signature and License No. _____

Work/Decommission Completed Date **3/20/2012**

Construction/Design



CONCRETE SURFACE SEAL 1 FT

BACKFILL 1 - 5 FT

DEPTH OF BORING 5 FT

Formation Description

0 - 1 FT
GRAVELS AND SANDS

1 - 5 FT
SANDY SILT

_____ FT

_____ FT

_____ FT

Scale 1" = _____

ECY 050-12 (Rec=v 2/01)

GEOTECHNICAL BORING REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT
Notice of Intent No. AE16669

Construction/Decommission

P12076-6450

Type of Well

☐ Construction

☒ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* SE44816

☒ Geotechnical Soil Boring

Property Owner: DENNIS BARANICK
Site Address: 1124 N PACIFIC AVENUE
Consulting Firm: MAUL FOSTER & ALONGI
City: KELSO County: COWLITZ

Geotechnical Soil Boring
Hole # GP4

Location 1/4 NE 1/4 NE Sec 27 Twn 8N R 2W EWM or WWM

Lat/Long (s,t,r still Required) Lat Deg ____ Lat Min/Sec ____ Long Deg ____ Long Min/Sec ____

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

Tax Parcel No. ____

☒ Driller ☐ Trainee Name (Print) Marc Chalona

Driller/Trainee Signature Marc Chalona

Driller/Trainee License No. 3000

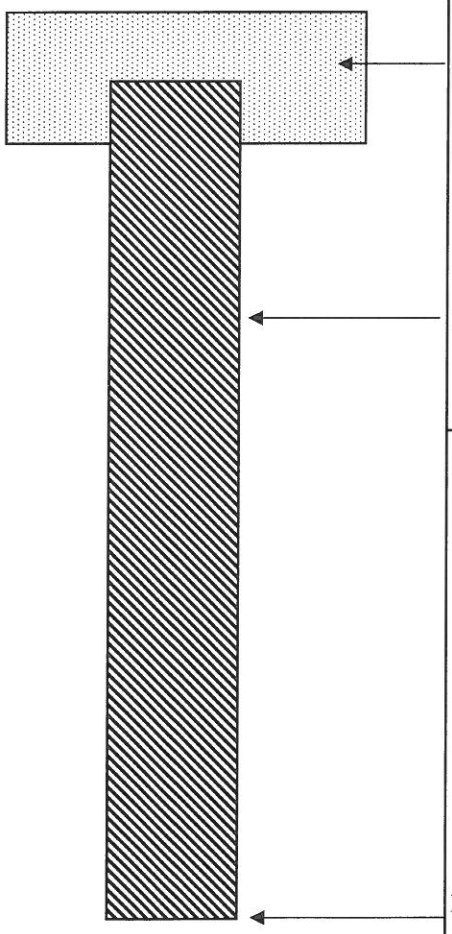
Cased or **Uncased** Diameter 2.25" Static Level ____

Work/Decommission Start Date 3/20/2012

If trainee, licensed driller's Signature and License No. ____

Work/Decommission Completed Date 3/20/2012

Construction/Design		Formation Description
CONCRETE SURFACE SEAL	1 FT	0 - 1 FT GRAVELS AND SANDS
BACKFILL	1 - 5 FT	1 - 5 FT SANDY SILT
		____ FT
		____ FT
DEPTH OF BORING	5 FT	____ FT



Scale 1" = ____

ECY 050-12 (Rec=v 2/01)

GEOTECHNICAL BORING REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT

Notice of Intent No. SE44816

Construction/Decommission

P12076-6450

Type of Well

[x] Construction

[ ] Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

[X] Geotechnical Soil Boring

Property Owner **DENNIS BARANICK**

Site Address **1124 N PACIFIC AVENUE**

Consulting Firm **MAUL FOSTER & ALONGI**

City **KELSO** County **COWLITZ**

Geotechnical Soil Boring

Hole # **GP5**

Location 1/4 **NE** 1/4 **NE** Sec **27** Twn **8N** R **2W** EWM or WWM

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards

Materials used and the information reported above are true to my best knowledge and belief

Lat/Long (s,t,r still Required) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____

Tax Parcel No. **20476**

[X] Driller [ ] Trainee Name (Print) **Marc Chalona**

Driller/Trainee Signature *Marc Chalona*

Driller/Trainee License No. 3000

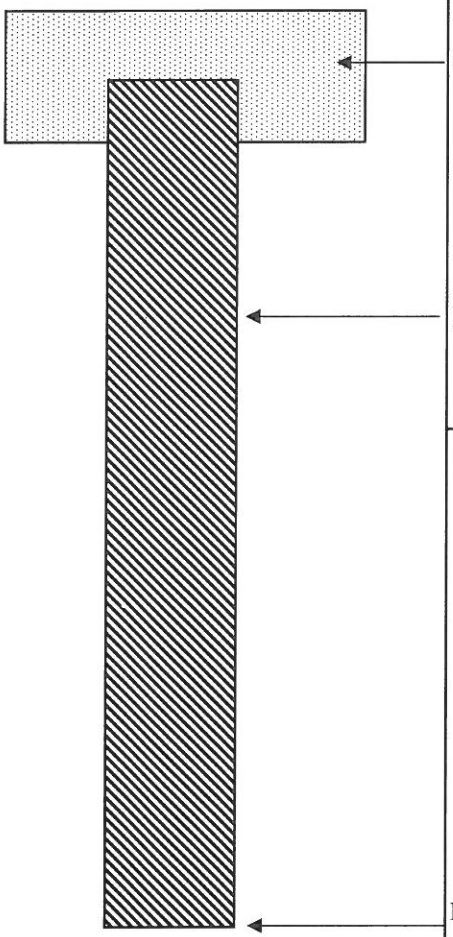
Cased or **Uncased** Diameter **2.25"** Static Level _____

Work/Decommission Start Date **3/20/2012**

If trainee, licensed driller's Signature and License No. _____

Work/Decommission Completed Date **3/20/2012**

Construction/Design



CONCRETE SURFACE SEAL 1 FT

BACKFILL 1 - 5 FT

DEPTH OF BORING 5 FT

Formation Description

0 - 1 FT
GRAVELS AND SANDS

1 - 5 FT
SANDY SILT

_____ FT

_____ FT

_____ FT

Scale 1" = _____

Page 1 of 1

ECY 050-12 (Rec=v 2/01)

GEOTECHNICAL BORING REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT
Notice of Intent No. AE16669

Construction/Decommission

P12076-6450

Type of Well

☐ Construction

☒ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* SE44816

☒ Geotechnical Soil Boring

Property Owner: DENNIS BARANICK
Site Address: 1124 N PACIFIC AVENUE
Consulting Firm: MAUL FOSTER & ALONGI
City: KELSO County: COWLITZ

Geotechnical Soil Boring
Hole # GP5

Location 1/4 NE 1/4 NE Sec 27 Twn 8N R 2W EWM or WWM

Lat/Long (s,t,r still Required) Lat Deg ____ Lat Min/Sec ____ Long Deg ____ Long Min/Sec ____

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

Tax Parcel No. ____

☒ Driller ☐ Trainee Name (Print) Marc Chalona

Driller/Trainee Signature Marc Chalona

Driller/Trainee License No. 3000

Cased or **Uncased** Diameter 2.25" Static Level ____

Work/Decommission Start Date 3/20/2012

If trainee, licensed driller's Signature and License No. ____

Work/Decommission Completed Date 3/20/2012

Construction/Design		Formation Description
CONCRETE SURFACE SEAL	1 FT	0 - 1 FT GRAVELS AND SANDS
BACKFILL	1 - 5 FT	1 - 5 FT SANDY SILT
		FT
		FT
		FT
DEPTH OF BORING	5 FT	

Scale 1" = ____

ECY 050-12 (Rev 2/01)

GEOTECHNICAL BORING REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT
Notice of Intent No. SE44816

Construction/Decommission

P12076-6450

Type of Well

[x] Construction

[ ] Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

[X] Geotechnical Soil Boring

Property Owner: **DENNIS BARANICK**

Site Address: **1124 N PACIFIC AVENUE**

Consulting Firm: **MAUL FOSTER & ALONGI**

City: **KELSO** County: **COWLITZ**

Geotechnical Soil Boring

Hole # **GP6**

Location 1/4 **NE** 1/4 **NE** Sec **27** Twn **8N** R **2W** EWM or WWM

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

Lat/Long (s,t,r still Required) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____

[X] Driller [ ] Trainee Name (Print) **Marc Chalona**

Driller/Trainee Signature *Marc Chalona*

Driller/Trainee License No. 3000

Tax Parcel No. **20476**

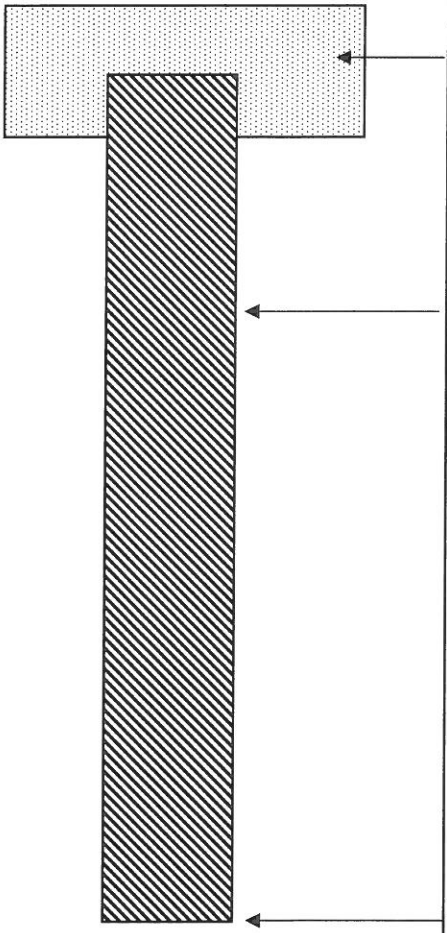
Cased or **Uncased** Diameter **2.25"** Static Level _____

Work/Decommission Start Date **3/20/2012**

If trainee, licensed driller's Signature and License No. _____

Work/Decommission Completed Date **3/20/2012**

Construction/Design



CONCRETE SURFACE SEAL 1 FT

BACKFILL 1 - 5 FT

DEPTH OF BORING 5 FT

Formation Description

0 - 1 FT
GRAVELS AND SANDS

1 - 5 FT
SANDY SILT

_____ FT

_____ FT

_____ FT

Scale 1" = _____

Page 1 of 1

ECY 050-12 (Rec=v 2/01)

GEOTECHNICAL BORING REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT
Notice of Intent No. AE16669

Construction/Decommission

P12076-6450

Type of Well

☐ Construction

☒ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* SE44816

☒ Geotechnical Soil Boring

Consulting Firm **MAUL FOSTER & ALONGI**

Property Owner **DENNIS BARANICK**

Site Address **1124 N PACIFIC AVENUE**

City **KELSO** County **COWLITZ**

Geotechnical Soil Boring

Hole # **GP6**

Location 1/4 **NE** 1/4 **NE** Sec **27** Twn **8N** R **2W** EWM or WWM

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

Lat/Long (s,t,r still Required) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____

Tax Parcel No. _____

☒ Driller ☐ Trainee Name (Print) **Marc Chalona**

Driller/Trainee Signature Marc Chalona

Driller/Trainee License No. 3000

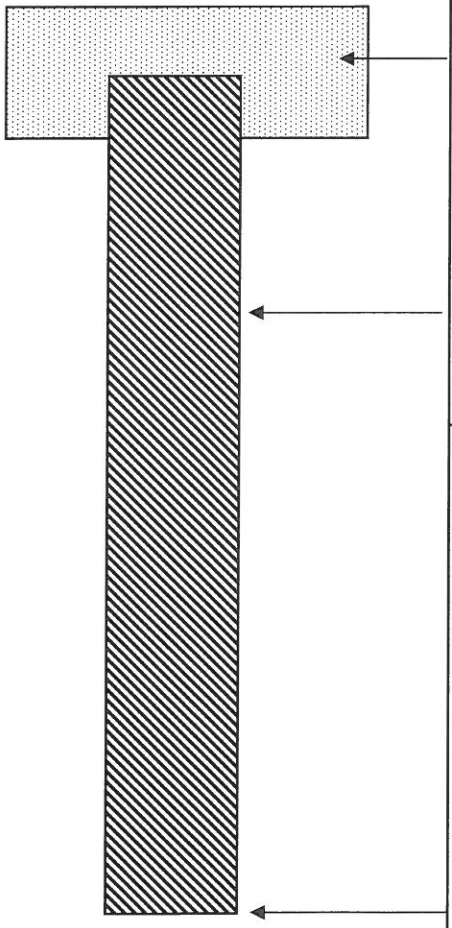
Cased or **Uncased** Diameter **2.25"** Static Level _____

If trainee, licensed driller's Signature and License No. _____

Work/Decommission Start Date **3/20/2012**

Work/Decommission Completed Date **3/20/2012**

Construction/Design



CONCRETE SURFACE SEAL 1 FT

BACKFILL 1 - 5 FT

DEPTH OF BORING 5 FT

Formation Description

0 - 1 FT
GRAVELS AND SANDS

1 - 5 FT
SANDY SILT

_____ FT

_____ FT

_____ FT

Scale 1" = _____

ECY 050-12 (Rec=v 2/01)

GEOTECHNICAL BORING REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT

Notice of Intent No. SE44816

Construction/Decommission

P12076-6450

Type of Well

[x] Construction

[ ] Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

[X] Geotechnical Soil Boring

Property Owner **DENNIS BARANICK**

Site Address **1124 N PACIFIC AVENUE**

Consulting Firm **MAUL FOSTER & ALONGI**

City **KELSO** County **COWLITZ**

Geotechnical Soil Boring

Hole # **GP7**

Location 1/4 **NE** 1/4 **NE** Sec **27** Twn **8N** R **2W** EWM or WWM

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

Lat/Long (s,t,r still Required) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____

Tax Parcel No. **20476**

[X] Driller [ ] Trainee Name (Print) **Marc Chalona**

Driller/Trainee Signature *Marc Chalona*

Driller/Trainee License No. 3000

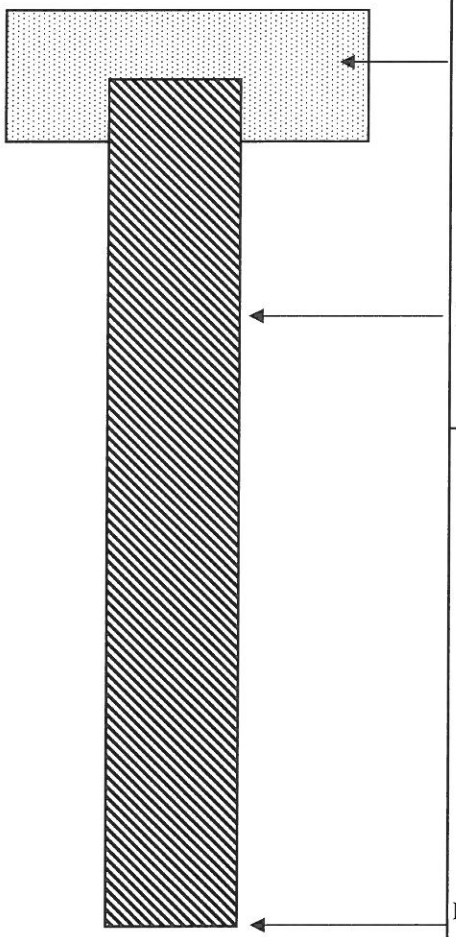
Cased or **Uncased** Diameter **2.25"** Static Level _____

Work/Decommission Start Date **3/20/2012**

If trainee, licensed driller's Signature and License No. _____

Work/Decommission Completed Date **3/20/2012**

Construction/Design



CONCRETE SURFACE SEAL 1 FT

BACKFILL 1 - 5 FT

DEPTH OF BORING 5 FT

Formation Description

0 - 1 FT
GRAVELS AND SANDS

1 - 5 FT
SANDY SILT

_____ FT

_____ FT

_____ FT

Scale 1" = _____

Page 1 of 1

ECY 050-12 (Rec=v 2/01)

GEOTECHNICAL BORING REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT
Notice of Intent No. AE16669

Construction/Decommission

P12076-6450

Type of Well

☐ Construction

☒ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* SE44816

☒ Geotechnical Soil Boring

Property Owner: DENNIS BARANICK
Site Address: 1124 N PACIFIC AVENUE
Consulting Firm: MAUL FOSTER & ALONGI
City: KELSO County: COWLITZ

Geotechnical Soil Boring
Hole # GP7

Location 1/4 NE 1/4 NE Sec 27 Twn 8N R 2W EWM or WWM

Lat/Long (s,t,r still Required) Lat Deg ____ Lat Min/Sec ____ Long Deg ____ Long Min/Sec ____

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

Tax Parcel No. ____

☒ Driller ☐ Trainee Name (Print) Marc Chalona

Driller/Trainee Signature Marc Chalona

Driller/Trainee License No. 3000

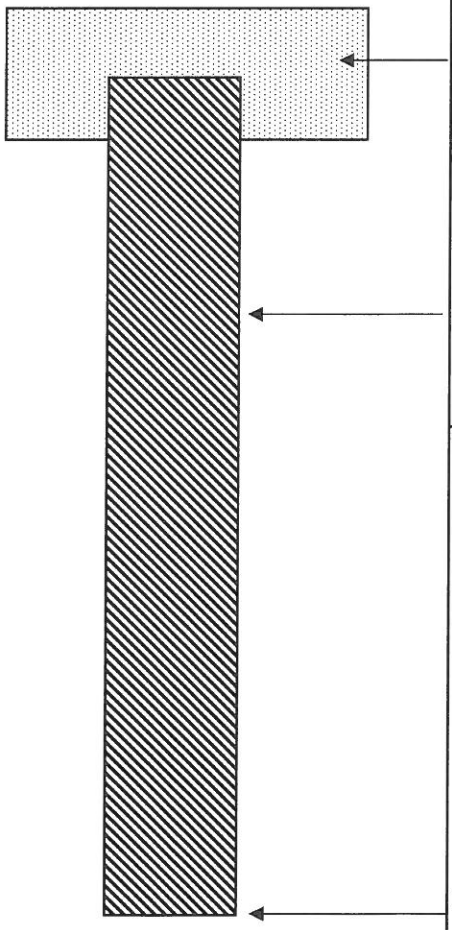
Cased or **Uncased** Diameter 2.25" Static Level ____

Work/Decommission Start Date 3/20/2012

If trainee, licensed driller's Signature and License No. ____

Work/Decommission Completed Date 3/20/2012

Construction/Design



CONCRETE SURFACE SEAL 1 FT

BACKFILL 1 - 5 FT

DEPTH OF BORING 5 FT

Formation Description

0 - 1 FT
GRAVELS AND SANDS

1 - 5 FT
SANDY SILT

____ FT

____ FT

____ FT

Scale 1" = ____

ECY 050-12 (Rec=v 2/01)

GEOTECHNICAL BORING REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT
Notice of Intent No. SE44816

Construction/Decommission

P12076-6450

Type of Well

[x] Construction

[ ] Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

[X] Geotechnical Soil Boring

Property Owner: **DENNIS BARANICK**

Site Address: **1124 N PACIFIC AVENUE**

Consulting Firm: **MAUL FOSTER & ALONGI**

City: **KELSO** County: **COWLITZ**

Geotechnical Soil Boring

Hole # **GP8**

Location 1/4 **NE** 1/4 **NE** Sec **27** Twn **8N** R **2W** EWM or WWM

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

Lat/Long (s,t,r still Required) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____

[X] Driller [ ] Trainee Name (Print) **Marc Chalona**

Driller/Trainee Signature *Marc Chalona*

Driller/Trainee License No. 3000

Tax Parcel No. **20476**

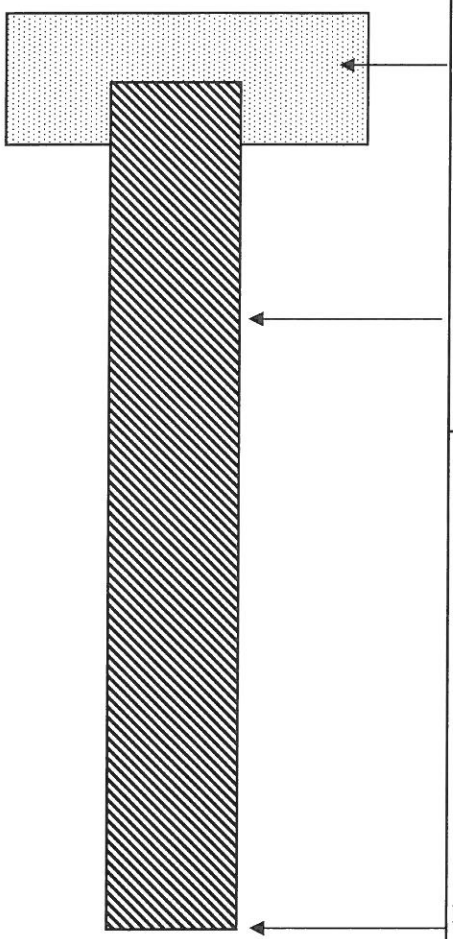
Cased or **Uncased** Diameter **2.25"** Static Level _____

Work/Decommission Start Date **3/20/2012**

If trainee, licensed driller's Signature and License No. _____

Work/Decommission Completed Date **3/20/2012**

Construction/Design



CONCRETE SURFACE SEAL 1 FT

BACKFILL 1 - 5 FT

DEPTH OF BORING 5 FT

Formation Description

0 - 1 FT
GRAVELS AND SANDS

1 - 5 FT
SANDY SILT

_____ FT

_____ FT

_____ FT

Scale 1" = _____

ECY 050-12 (Rec=v 2/01)

GEOTECHNICAL BORING REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT
Notice of Intent No. AE16669

Construction/Decommission

P12076-6450

Type of Well

☐ Construction

☒ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* SE44816

☒ Geotechnical Soil Boring

Property Owner: DENNIS BARANICK
Site Address: 1124 N PACIFIC AVENUE
Consulting Firm: MAUL FOSTER & ALONGI
City: KELSO County: COWLITZ

Geotechnical Soil Boring
Hole # GP8

Location 1/4 NE 1/4 NE Sec 27 Twn 8N R 2W EWM or WWM

Lat/Long (s,t,r still Required) Lat Deg ____ Lat Min/Sec ____ Long Deg ____ Long Min/Sec ____

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

Tax Parcel No. ____

☒ Driller ☐ Trainee Name (Print) Marc Chalona

Driller/Trainee Signature Marc Chalona

Driller/Trainee License No. 3000

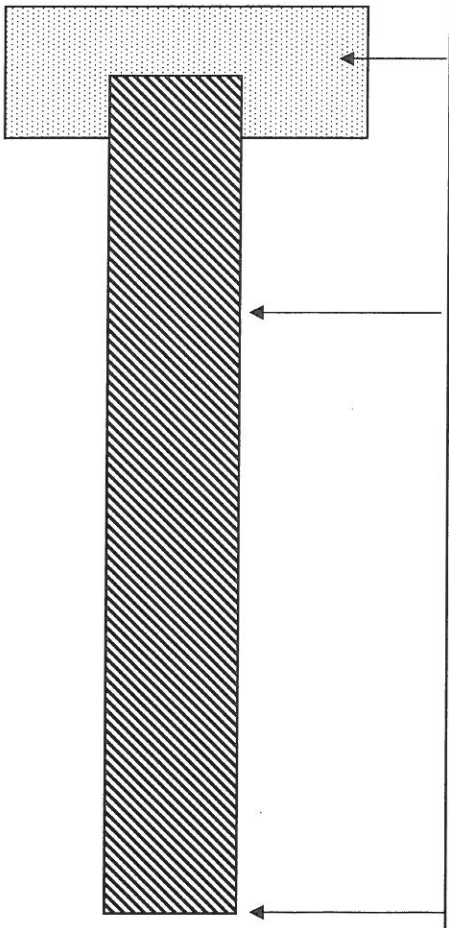
Cased or **Uncased** Diameter 2.25" Static Level ____

Work/Decommission Start Date 3/20/2012

If trainee, licensed driller's Signature and License No. ____

Work/Decommission Completed Date 3/20/2012

Construction/Design



CONCRETE SURFACE SEAL 1 FT

BACKFILL 1 - 5 FT

DEPTH OF BORING 5 FT

Formation Description

0 - 1 FT
GRAVELS AND SANDS

1 - 5 FT
SANDY SILT

FT

FT

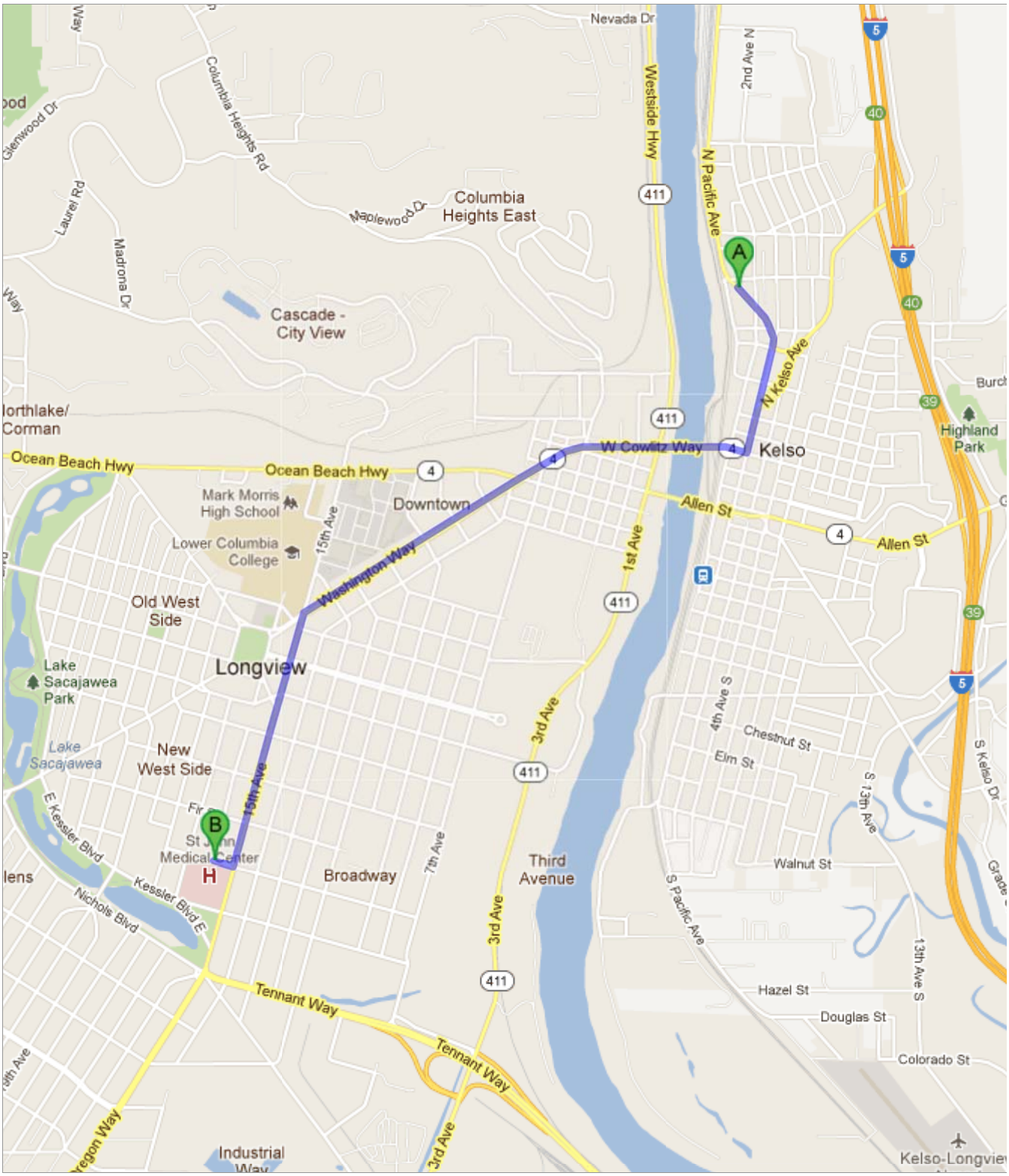
FT

Scale 1" = ____

APPENDIX C

HEALTH AND SAFETY PLAN

To see all the details that are visible on the screen, use the "Print" link next to the map.



HEALTH AND SAFETY PLAN

TERRY'S AUTO SALVAGE
1124 NORTH PACIFIC AVENUE
KELSO, WASHINGTON

Prepared for
CITY OF KELSO
May 29, 2013
Project No. 0443.02.02

Prepared by
Maul Foster & Alongi, Inc.
1329 N State Street, Suite 301, Bellingham WA 98225

MAUL
FOSTER
ALONGI

HEALTH AND SAFETY PLAN

TERRY'S AUTO SALVAGE
1124 NORTH PACIFIC AVENUE
KELSO, WASHINGTON

The material and data in this health and safety plan were prepared under the supervision and direction of the undersigned.

MAUL FOSTER & ALONGI, INC.

Heather Hirsch, LHG
Project Hydrogeologist

Justin Clary, PE
Principal Engineer

CONTENTS

1 NEAREST HOSPITAL/EMERGENCY MEDICAL CENTER

1.1 Nearest Hospital

PeaceHealth St. John Medical Center
1615 Delaware Street
Longview, WA 98632

Phone: (360) 414-2000

Distance: 2.6 miles

Travel Time: Seven minutes

1.2 Emergency Route to Hospital

See first page of document.

1.2.1 Driving Directions

1. Head southeast on N Pacific Ave toward 1st Ave N.
2. Turn right onto Cowlitz Way.
3. Continue onto Washington Way.
4. Turn left onto 15th Ave.
5. Turn right onto Delaware St.

1.3 Emergency Phone Numbers

Ambulance, Police, Fire	**Dial 911**
Michael Stringer Project Manager	Phone: (206) 389-1564 Cell: (206) 498-9147
Jim Darling Project Director	Phone: (360) 594-6252 Cell: (360) 739-1595
Bill Beadie Health and Safety Coordinator	Phone: (503) 501-5237 Cell: (503) 740-6847

2 PROJECT INFORMATION

Date: May 29, 2013

Project: Kelso Remedial Action

Site: Terry's Auto Salvage site (the Site), Washington State Department of Ecology (Ecology) Facility Site No. 74599527 and Cleanup Site No. 3111

Location: 1124 North Pacific Avenue, Kelso, WA 98626. Section 27 of township 8 north and range 2 west of the Willamette Meridian (the Property)

Project Manager: Michael Stringer

Prepared By: Heather Hirsch

3 KEY PROJECT PERSONNEL

3.1 Site Work Team

Name	Responsibility
Jim Darling	Project Director
Michael Stringer	Project Manager
David Knutson	Field Personnel
Connor Lamb	Field Personnel
Bill Beadie	Health and Safety Coordinator

3.2 Entry Briefing Date

First day of on-site work or if the scope of work changes.

3.3 Special Conditions (e.g., work schedule or limitations)

Any work performed at night must include lights mounted on stands (or equivalent) and use of the "buddy system."

Maul Foster & Alongi, Inc. (MFA) personnel are not allowed to perform site activities alone after dark.

3.4 Required Training

MFA employees as well as contractor employees assigned to perform field activities covered by this plan must be currently approved for hazardous-waste fieldwork, including:

- Current medical clearance to conduct hazardous-waste fieldwork and to wear a respirator
- Successful completion of a respirator fit test within the last 12 months for the make and model of the respirator assigned to that individual
- Completion of training as required by Title 29 Code of Federal Regulations (CFR) 1910.120(e), including:
  - Forty hours of hazardous-waste worker basic instruction within the last 12 months, or
  - Eight hours of hazardous-waste worker refresher training within the last 12 months, subsequent to completion of 40 hours of basic hazardous-waste worker training

3.5 Special Training

Copies of all required training certificates, current medical surveillance certificates, and respirator fit test records must be compiled before site entry. This information must also be provided to MFA by all subcontractors for their on-site personnel.

4 PROJECT DESCRIPTION

MFA has prepared this Health and Safety Plan (HASP) for the Site. The physical address of the Site is 1124 North Pacific Avenue, Kelso, Washington. This HASP has been prepared to instruct MFA personnel working on site. MFA will be overseeing remedial actions consisting of excavation and contaminated soil management on the Site. Any contractors or subcontractors involved in the scope of work for this HASP are responsible for developing their own HASPs to ensure that proper health and safety procedures are followed by their personnel.

The Site is located in section 27 of township 8 north and range 2 west of the Willamette Meridian.

The purpose of this HASP is to provide information to minimize the potential for adverse exposures or injuries while work is being conducted on the Site. A combination of personal protective equipment (PPE), engineering controls, and safe work practices will be used to minimize the risk of physical injuries and chemical exposures. All personnel are advised that this field project may result in exposure to chemical and physical hazards, and that this HASP must be followed to minimize or eliminate these risks.

The procedures and requirements contained in this HASP are intended for MFA personnel performing field activities. All MFA field personnel are responsible for understanding and adhering

to this HASP, and should also be alert to any unsafe conditions or practices that may affect their safety. Each day before beginning fieldwork, a site safety officer (SSO) who is familiar with health and safety procedures and the Site will be designated by the on-site MFA personnel. All subcontractors have the primary responsibility for the safety of their own personnel on the Site. Any safety deficiencies should be immediately communicated to the SSO and to the health and safety coordinator (HSC). If personnel safety is threatened, the SSO, project manager, or MFA HSC must be contacted immediately.

All personnel who will be working on site are required to read and understand this HASP. All personnel entering the work area must sign the Personnel Acknowledgment Sheet (Section 12), certifying that they have read and understand this HASP and agree to abide by it.

4.1 Scope of Work

The MFA scope of work for this project may include the following activities:

- Soil excavation oversight
- Field screening of contaminated soil
- Profiling of stockpiles for disposal purposes
- Sampling of environmental media
- Monitoring well decommissioning oversight
- Oversight of backfilling, including compacting and grading.

NOTE: This HASP must be reevaluated and updated annually or when there are changes in site conditions or scope of work.

5 FACILITY DESCRIPTION AND BACKGROUND

5.1 Type of Facility

The Site was formerly occupied by an auto salvage facility. The Site is currently a vacant lot.

5.2 Building/Structures

There are currently no structures on the Site.

5.3 Access

The Site is accessible from North Pacific Avenue, North 1st Avenue, and Redpath Street.

5.4 Topography

There is a slight downward slope from the road onto the Property, along North Pacific Avenue, but otherwise the Site is generally flat.

5.5 General Geologic/Hydrologic Setting

The site geology generally consists of an approximately 1-foot-thick surficial layer of gravel and gravelly sand with debris. Large debris was removed from the Property during the site demolition and clearing, but trace amounts of auto scrap debris remain scattered across the ground surface and within the first foot of soil, consisting of bits of wire, glass, plastic, and metal, and chunks of wood and tire. Underlying the surficial gravel and debris is a unit consisting of silt and sand, extending to approximately 17 feet below ground surface (bgs). During sampling, a layer of dark gray sand was encountered at 17 feet bgs, which generally coarsened with depth and extended to approximately 35 feet bgs. Gravel was encountered at 35 feet bgs. The soil types encountered at the Site are consistent with Quaternary alluvial deposits known to exist in the area, which likely were deposited by the Cowlitz River.

Groundwater was encountered between 0 and 6 feet bgs at the Site; the shallowest groundwater was encountered in the depression left by the removal of the auto salvage facility building. Soil was fully saturated from the top of the water table to the maximum depth explored (40 feet bgs), suggesting that there is one unconfined and continuous water-bearing zone extending from the ground surface to an unknown depth greater than 40 feet bgs. Groundwater levels measured in three monitoring wells screened from approximately 35 to 40 feet bgs indicate that groundwater in the deeper part of the water-bearing zone is flowing toward the south. Groundwater elevations measured in temporary boreholes suggest shallow flow toward the northeast; however, groundwater elevations from reconnaissance borings may be unreliable.

5.6 Site Status

The Site is vacant and is currently not in use.

5.7 Site History

The Site had been used as an auto salvage yard since the 1950s. The operations left the Site in a degraded condition, with stockpiles of old tires, scrap cars, and automotive parts. There is a history of complaints concerning improper handling of hazardous materials and waste on the Property. In response to complaints from neighbors in 1990 regarding spills of waste motor oil and other automobile fluids, Ecology conducted an initial investigation of the Site. Ecology staff instructed the property owner to clean up contaminated areas. Concerns with the Property continued, however, and Ecology received further complaints. This resulted in site visits in 1996, 1999, and 2002.

Ecology collected two surface soil samples from the backside of the Site during a second initial investigation in 2002. Lube oil was detected in both samples at concentrations orders of magnitude above the Model Toxics Control Act Method A cleanup level of 2,000 milligrams per kilogram. The

Site was subsequently listed on the Confirmed and Suspected Contaminated Sites list. A site hazard assessment was conducted in 2004, resulting in a hazard ranking of 2 (with 1 as the highest risk and 5 the lowest risk).

In recent years, operations at the Property ceased and the Site has been neglected. As part of the Neighborhood Stabilization Program, the city removed debris (e.g., tires, junk cars, car parts) and the derelict garage structure on the Property. The city is currently taking steps to acquire the Property through foreclosure.

The site characterization work completed by MFA in 2012 identified the following indicator hazardous substances in soil: total petroleum hydrocarbons, benzene, xylenes, polycyclic aromatic hydrocarbons, polychlorinated biphenyls, and metals (cadmium, lead, arsenic, and mercury). Soil impacts are generally restricted to above 2 feet bgs. No indicator hazardous substances were identified in groundwater.

Miscellaneous debris (e.g., bits of glass, plastic, wire, and metal, and chunks of wood and tire) were also identified in soil, and generally occur above 2 feet bgs, but may extend deeper in some areas (e.g., the central area of the northern parcel).

5.8 Special Conditions/Comments

Vehicular traffic poses a potential safety hazard. If the work area is located in a travel corridor, use triangle reflectors, traffic cones, and/or traffic barriers immediately upon beginning work at a sampling location.

6 WASTE TYPE(S)/CHARACTERISTICS

6.1 Hazardous Substances

Are hazardous substances known to have been stored/spilled on site?

_X_ YES _____ NO

6.2 Special Considerations/Comments

Before any site work, a copy of this HASP must be read and the Acknowledgment page signed. Before any underground exploration begins, make sure the following calls are made: One Call Utility Check, (800) 424-5555; on site—contact a private utility-locating company.

7 HAZARD EVALUATION

The following subsections describe the potential physical and chemical hazards associated with implementing this project. The control measures that field personnel must use to eliminate or minimize these hazards, such as air monitoring (form in Appendix A), PPE, and decontamination procedures, are detailed in subsequent sections of this plan.

7.1 Physical Hazards

Potential physical hazards in site operations include:

- Vehicular traffic
- Equipment and machinery
- Fire/explosion
- Falling objects/loads
- Uneven walking surfaces
- Noise

7.2 Electrical/Mechanical/Vapor Systems

MFA employees will not be working on electrical or mechanical systems. The contractor will be responsible for administering lockout/tagout procedures, as applicable.

7.3 Activity/Traffic/Pedestrian Control

Immediately upon moving to a new location, restrict access to the work area with vehicles, traffic cones or barriers, and barrier tape. Be alert for inattentive drivers at or near the job site. Wear high-visibility orange safety vests when near traffic areas. Keep all nonessential personnel out of the work areas.

If street closures are required, coordination with the City of Kelso Public Works Department is required. The contact is Van McKay.

7.4 Fires and Explosions

In the case of an emergency, fire safety is the responsibility of all persons on site. The following general precautions address sitewide operations:

- A fire extinguisher will be kept in the MFA field vehicle.
- Smoking is not allowed on site.
- Leaks and spills of flammable or combustible fluids must be cleaned up immediately.

See the air monitoring section for potential explosive-atmosphere precautions.

7.5 Uneven Walking Surfaces

Care should be used when walking in or out of large areas of excavations. A combination of steep grades and loose material can make walking or standing on these surfaces difficult and potentially hazardous.

7.6 Noise

In addition to interference with oral communication, job performance, and safety, the effects of noise on humans include physiological effects, particularly temporary and permanent hearing loss. The factors that affect the degree and extent of hearing loss are intensity or loudness of the noise, type of noise, period of exposure, and distance from the noise source. When working in close proximity to operating equipment or other loud noise sources, all MFA personnel will be required to use hearing protection.

7.7 MFA Vehicle Use

When operating vehicles on the Site, employees will adhere to the requirements in the MFA standard operating procedure (SOP) for vehicle safety operations (Appendix B). Any traffic incidents must be reported as indicated in the MFA incident report SOP (Appendix C).

7.8 Excavations

When working near excavations, MFA employees will adhere to the requirements in the MFA SOP for construction of trenches and other excavations (Appendix D).

7.9 Chemical Hazard Evaluation

The following potentially hazardous chemicals are known or suspected to be on site or may be brought on site by field personnel.

Chemical of Concern	OSHA PEL	OSHA STEL	OSHA IDLH	Odor Threshold	LEL (%)	IP(eV)	Other Hazard
Gasoline	NA	NA	NA	0.06–0.08 ppm	1.4	NA	C, E, F, P
Diesel (Naphthalene)	10 ppm	15 ppm	250 ppm	14.68-12.0 ppm	0.9	8.12	E, F, P
Benzene	1 ppm	5 ppm	500 ppm	12 ppm	1.2	9.24	F, C, P, R
Ethylbenzene	100 ppm	125 ppm	800 ppm	NA	0.8	8.76	F
Toluene	100 ppm	150 ppm	500 ppm	0.17–2.9 ppm	1.1	8.82	E, F, P, R
Xylenes	100 ppm	150 ppm	900 ppm	NA	1.1	8.56	F
Lead (leaded gasoline)	0.050 mg/m^3 (8-hr TWA)	0.050 mg/m^3	100 mg/m^3	NA	NA	NA	P, SC
As	0.5 mg/m^3 TWA (organic) 0.01 mg/m^3 TWA (inorganic)	NA	5 mg/m^3 (as As)	NA	NA	NA	None
Cadmium	0.0050 mg/m^3 TWA	NA	9 mg/m^3	NA	NA	NA	C

NOTES:

As — arsenic.
C — carcinogen.
E — explosivity.
F — flammable.
IDLH — immediately dangerous to life and health.
IP (eV) — ionization potential.
LEL — lower explosive limit.
mg/m^3 — milligrams per cubic meter.
NA — not available.
OSHA — Occupational Safety and Health Administration.
P — poison.
PEL — permissible exposure level.
ppm — parts per million.
R — reactive.
SC — suspected carcinogen.
STEL — short-term exposure level.
TWA — time-weighted average.

8 SAFETY EQUIPMENT AND PROCEDURES

8.1 Safety Equipment

The following safety equipment will be used as needed on the Site:

- Photoionization detector (PID), flame ionization detector (FID), and/or Dräger tubes (if necessary; see Section 9.1, Toxicity Action Levels).
- Combustible gas indicator (CGI) capable of measuring oxygen, methane, and hydrogen sulfide (if necessary, based on presence of organic or flammable vapors; see Sections 9.1 and 9.2, Toxicity Action Levels and Explosion Hazard Action Levels, respectively).
- Respirator—Half-face respirator with high-efficiency purified air (HEPA) and organic vapor (OV) cartridges. The selection, use, and maintenance of respiratory protective equipment shall meet the requirements of established MFA procedures, recognized consensus standards (i.e., American Industrial Hygiene Association [AIHA], American National Standards Institute [ANSI], and National Institute for Occupational Safety and Health [NIOSH]), and shall comply with the requirements set forth in 29 CFR 1910.134.
- Protective clothing—Tyvek or equivalent.
- Chemical protective gloves—nitrile.
- Decontamination equipment—soap and water.
- Steel-toed boots.
- Hearing protection.
- Safety glasses—safety glasses with side shields are required at all times during active site work. Use splash shields if performing activities where the potential exists for liquids to contact face or eyes.
- Hard hat.
- Caution tape, traffic cones, or barriers.
- High-visibility vest or clothing for working in or adjacent to any roadway.
- First-aid kit—located in the MFA field vehicle.
- Fire extinguisher—located in the MFA field vehicle.
- Drinking water and Gatorade or equivalent.

Each level of protection will incorporate the following equipment:

Level D: Workers performing general site activities where skin contact with contaminated materials is not likely will wear steel-toed leather or chemical-resistant work boots, work clothes or coveralls, hard hat, safety glasses, nitrile gloves, and hearing protection, as needed.

Modified D: Same as Level D (when performing activities in which inhalation of dust or volatile organic compounds [VOCs] is not of concern); chemical-resistant, steel-toed boots and Tyvek coveralls (if contaminated soil is encountered); and coated Tyvek or rain gear (if liquid contaminants are encountered).

Level C: Same as Modified Level D, plus half- or full-face air-purifying respirator with combination OV/HEPA filters (when performing activities in which inhalation of dust or VOCs is of concern).

Note: Project personnel are not permitted to deviate from the specified levels of protection without the prior approval of the SSO or the HSC.

8.2 Air Monitoring Equipment

An OV analyzer (PID or FID) may be needed on the Site, as well as Dräger tubes (if necessary; see Section 9.1, Toxicity Action Levels) and CGI (if necessary, based on presence of organic or flammable vapors; see Sections 9.1 and 9.2, Toxicity Action Levels and Explosion Hazard Action Levels, respectively).

8.3 Communications

A mobile phone will be available to MFA personnel. Field personnel are not permitted to carry mobile phones or pagers into a potentially flammable environment, as such instruments are not intrinsically safe.

8.4 Decontamination Procedures

Decontamination procedures are outlined below.

8.4.1 Partial Decontamination Procedure

Partial decontamination procedures will be followed when personnel are exiting the exclusion zone and will apply to items used in the exclusion zone.

- Wash and rinse boots and outer gloves in buckets in the contamination-reduction zone.
- Inspect Tyvek suit for stains, rips, or tears. If suit is contaminated or damaged, full decontamination will be performed as described in Section 8.4.2.
- Remove outer gloves. Inspect and, if gloves are ripped or damaged, discard in a container labeled for disposable clothing.
- Remove respirator, if worn, and clean with premoistened alcohol wipes. Deposit used cartridges in a plastic bag at the frequency directed by the SSO.
- Wash hands and face with soap and water.

8.4.2 Full Decontamination Procedures

Full decontamination procedures will be followed at the end of each work shift and will apply to all items used.

- Wash and rinse boots and outer gloves in buckets in the contamination-reduction zone.
- Remove outer gloves and Tyvek suit and deposit in a container labeled for disposable clothing.
- Remove respirator and place used cartridges in a plastic bag at the frequency directed by the SSO.
- If end of day, wash and rinse respirator in a special "respirators only" decon bucket.
- Remove inner gloves and deposit in a container labeled for disposable clothing.
- Remove work boots without touching exposed surfaces, and put on street shoes. Place work boots in a plastic bag for later reuse.
- Wash hands and face with soap and water.
- Shower as soon after work shift as practicable.

8.5 Emergency Equipment

A fire extinguisher will be kept in the MFA field vehicle. The extinguisher will be Type ABC, approved by the National Fire Prevention Association. The extinguisher will be inspected monthly and serviced yearly. A first-aid kit will be available in the MFA field vehicle.

9 AIR MONITORING

Personnel exposure monitoring should be performed as specified in this section to protect field personnel from hazardous concentrations of vapors. Monitoring must be performed by individuals familiar with the calibration, use, and care of the required instruments.

During site activities, air monitoring shall be conducted as appropriate in the worker's breathing zone, which is the area within a 1-foot radius of the worker's head. The frequency of air monitoring in the breathing zone shall be increased to at least every half hour if petroleum vapors are indicated by PID readings above ambient or olfactory observations. Respirators must be worn when meter readings in the breathing zone (sustained for two minutes) equal or exceed the action levels described below for upgrading to Level C PPE.

9.1 Toxicity Action Levels

The toxicity action levels given below are set to comply with OSHA PELs, American Conference of Governmental Industrial Hygienists Threshold Limit Values, and NIOSH recommendations for the chemicals that may be encountered on the Site. These action levels are also adjusted for the relative response of common PID or FID instruments to motor-fuel vapors.

The alarm on this instrument should be set to sound at the action level. If the instrument must be unattended, the detector inlet should be located as close to the worker's breathing zone as practicable.

Workers must be evacuated from the area when vapor concentrations exceeding respiratory equipment protection factors are encountered.

During site activities that generate airborne dust, MFA employees will remain upwind and outside of residual dust plumes. Dust monitoring will be undertaken at the discretion of the SSO. Engineering controls will be required of the contractor if the action level shown on the table below is exceeded. MFA workers must be evacuated until dust levels fall below the action level.

Air Monitoring Procedures and Toxicity Action Levels

Instrument	Action Level	Initial Action	Followup Action
Dräger tube test (benzene)	Over 1 ppm benzene sustained in breathing zone	After upgrade to Level C, continue to monitor breathing zone with Dräger tube. If 10 ppm or greater benzene, leave exclusion zone. Return only if levels decrease to below 10 ppm.	Ventilate area, always work upwind.
FID or PID[a]	Detection of 10 ppm (above ambient) in breathing zone and determined not to be benzene	Upgrade to Level C and continue to monitor breathing zone with Dräger tube. If 50 ppm, leave exclusion zone. Return only if levels decrease to below 50 ppm.	Ventilate area, always work upwind.
CGI[b]	At or above 10 percent of LEL	Cease activities. Turn off all potential sources of ignition. Evacuate.	Determine source of flammable vapors.
Dust meter	Measurements above 5 mg/m^3	Reinforce proper work practices and administer controls. If necessary, conduct dust suppression, e.g., misting.	Adjust operations.
Dräger tube test (benzene)	Over 1 ppm benzene sustained in breathing zone	After upgrade to Level C, continue to monitor breathing zone with Dräger tube. If 10 ppm or greater benzene, leave exclusion zone. Return only if levels decrease to below 10 ppm.	Ventilate area, always work upwind.

[a]Some PIDs or FIDs do not work in high (>90%) humidity or rainy weather. Under these atmospheric conditions, only meters certified for use in high humidity will be used.

[b]See Section 9.2 for complete explosion hazard action levels.

Respirator/Respirator Cartridge Information

Respirator Manufacturer	North (or equivalent)
Respirator Cartridge Selected for Use	HEPA/OV
Respirator Cartridge Change Schedule	DETERMINE USING CONTAMINANT TYPES AND LEVELS, PER NORTH WEB SITE http://www.northsafety.com

Note: Project personnel are not permitted to deviate from the specified levels of protection without the prior approval of the SSO or MFA HSC.

9.2 Explosion Hazard Action Levels

An explosive atmosphere at the Site is not anticipated. If there is evidence of free product, previously undiscovered underground storage tanks, or other site conditions that indicate the potential presence of an explosive atmosphere, work will cease until a CGI can be brought to the Site to monitor the atmosphere.

A CGI should be used when personnel are working in a potentially explosive atmosphere; the potential is determined based on the presence of flammable vapors. The explosivity action levels in the table above (> 10% LEL) are set to minimize risk due to flammable or explosive atmospheres. Measurements should be taken at all locations where flammable vapors may cause an explosive condition. American Petroleum Institute procedures shall be followed for measurements in tanks or piping.

The CGI alarm must be set to sound at the action level and calibrated to a methane standard. When measurements with a CGI indicate the presence of combustible gas levels equal to or exceeding the explosivity action level in the work area, the following action must be taken:

- Extinguish all possible ignition sources in the work area and shut down all powered equipment.
- Move personnel at least 100 feet away from the work area.
- Contact the MFA HSC.
- At the instruction of the MFA HSC and after waiting 15 minutes for OVs to dissipate, the SSO may use the CGI to, cautiously and with prudence, approach the worksite to determine the extent and concentration of organic emissions. The SSO shall not enter (or allow any personnel to enter) any area where CGI readings exceed the explosivity action level, nor shall the SSO make any approach if there is a possibility of fire or explosion.
- Personnel may reenter the work area only by clearance from the SSO after the cause of the emission has been determined and the source abated.

9.3 Instrument Calibrations

All instruments shall be calibrated both immediately before the day's fieldwork begins and after work ceases for the day. Calibration and monitoring data shall be recorded on an air monitoring record (Appendix A). Records shall be kept in the project file and provided to the HSC. Records shall include:

- Worker's name
- Date
- Time
- Location
- Temperature and humidity
- Calibration gas identity and concentration
- Exposure data (time, location, and concentration)

10 HEALTH AND SAFETY EQUIPMENT CHECKLIST

REQUIRED SAFETY EQUIPMENT:

Equipment	Requirements
Hard Hat	Required on all job sites.
Steel-Toed Boots	Required on all job sites.
Safety Glasses w/Side Shields	Required on all job sites.
Hearing Protection	Use when appropriate.
PID or FID	PID calibrated to 100 ppm isobutylene.
CGI	To be used when working in a potentially explosive atmosphere, determined based on site conditions that indicate the potential presence of an explosive atmosphere (see Section 9.2). Methane standard to be used for calibration.
Respirator	Half-face respirator with cartridges appropriate for contaminants of concern.
Protective Clothing	Tyvek suit when appropriate.
Chemical-Protective Gloves	Scorpio or Solvex gloves.
Decontamination Equipment	Bring soap and water to wash hands and face if no facilities are available.
Caution Tape, Traffic Cones, or Barriers	Use when working near traffic.
Emergency Eyewash	Located in the MFA field vehicle.
First-Aid Kit	Located in the MFA field vehicle.

Equipment	Requirements
Fire Extinguisher	Located in the MFA field vehicle.
Drinking Water	Located in the MFA field vehicle.

11 GENERAL SAFE WORK PRACTICES

Field operations for this project shall be conducted in accordance with the minimum safety practices described below, which are required for MFA employees.

11.1 Safety Practices for Field Personnel

1. Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand-to-mouth transfer and ingestion of materials is prohibited in any area where the possibility of contamination exists.
2. Field personnel must thoroughly wash hands when leaving a contaminated or suspected contaminated area before eating, drinking, or any other activities.
3. Contaminated protective equipment shall not be removed from the work area until it has been properly decontaminated or containerized on site.
4. Avoid activities that may cause dust. Removal of materials from protective clothing or equipment by blowing, shaking, or any means that may disperse materials into the air is prohibited.
5. Field personnel must use the buddy system when wearing any respiratory protective devices. Communications between members must be maintained at all times. Emergency communications shall be prearranged in case unexpected situations arise. Visual contact must be maintained between pairs on site, and team members should stay close enough to assist one another in the event of an emergency.
6. Personnel should be cautioned to inform one another of subjective symptoms of chemical exposure such as headache, dizziness, nausea, and irritation of the respiratory tract.
7. No excessive facial hair that interferes with the seal of the respirator to the face will be allowed on personnel required to wear respiratory protective equipment.
8. The selection, use, and maintenance of respiratory protective equipment shall meet the requirements of established MFA procedures and recognized consensus standards (AIHA, ANSI, NIOSH), and shall comply with the requirements set forth in 29 CFR 1910.134.

9. At sites with known or suspected contamination, appropriate work areas for field personnel support, contaminant reduction, and exclusion will be designated and maintained.
10. MFA field personnel are to be briefed thoroughly on the anticipated hazards, equipment requirements, safety practices, emergency procedures, and communications methods, both initially and in daily briefings.
11. All MFA field vehicles shall contain a first-aid kit and a multipurpose, portable fire extinguisher.
12. All field personnel will, whenever practicable, remain upwind of drilling rigs, open excavations, boreholes, etc.
13. Subsurface work shall not be performed at any location until the area has been confirmed by a utility-locator firm to be free of underground utilities or other obstructions.
14. Field personnel are specifically prohibited from entering excavations, trenches, or other confined spaces deeper than 4 feet. Unattended boreholes must be properly covered or otherwise protected.

12 ACKNOWLEDGMENT

MFA cannot guarantee the health or safety of any person entering this Site. Because of the potentially hazardous nature of visits to active sites, it is not possible to discover, evaluate, and provide protection for all possible hazards that may be encountered. Strict adherence to the health and safety guidelines set forth herein will reduce, but not eliminate, the potential for injury and illness at this Site. The health and safety guidelines in this plan were prepared specifically for this Site and should not be used on any other site without prior evaluation by trained health and safety personnel.

All MFA personnel are to read, understand, and agree to comply with the specific practices and guidelines as described in this HASP (including attachments for specific activities and the General Work Practices described below) regarding field safety and health hazards.

This HASP has been developed for the exclusive use of MFA personnel. MFA makes this plan available for review by contracted or subcontracted personnel for information only. This plan does not cover the activities performed by employees of any other employer on the Site. All contract or subcontracted personnel are responsible for generating and using their own plan, which must have requirements at least as stringent as those listed in this HASP.

I have read and I understand this HASP and all attachments, and agree to comply with the requirements described herein:

Name	Title	Date

APPENDIX A

AIR MONITORING RECORD

Maul Foster & Alongi, Inc.
AIR MONITORING RECORD

Project Title _____ Project No. _____

Site-Specific Name/Location _____ Date _____ Day _____

Weather: Temp _____ Wind Direction/Speed _____/_____ Humidity _____

	Instrument	S/N	Calibration date	Calibration gas/method	Calibration by
Organic vapors					
Particulates					
O_2					
Radiation					
Combustible gas					

Time	Location/Description	Organic vapor ppm	Particulates mg/m^3	O_2 %	H_2S ppm	CG % LEL

Notes: _____

_____

Data collected by _____
Print Name Signature

APPENDIX B

VEHICLE SAFETY STANDARD OPERATING PROCEDURE

VEHICLE SAFETY

This standard operating procedure applies to Maul Foster & Alongi, Inc. (MFA)-owned vehicles, vehicles leased or rented for MFA business, and personal vehicles when used on MFA business. In order to drive a vehicle on behalf of the company, you must have a valid driver's license as well as a driving record that is satisfactory to MFA and its insurance carriers.

Additional policies relating to vehicle use are provided in Part 2, Section 3 of the MFA Policies and Procedures Manual.

COMPANY-OWNED AND COMPANY-RENTED VEHICLES

Company vehicles are to be driven by authorized employees only, except in case of testing by a mechanic. An employee must be familiarized with the vehicle before it is driven. To avoid accidents because an accessory cannot be located during operation (e.g., windshield wipers), it is recommended that the driver locate the horn, windshield-wiper switch, lights, defroster, gauges, hood and gas fill door releases, and seat and mirror adjustments before the vehicle is started. Once the vehicle is started, fluid levels, wiper blades, and lights should be checked. The spare tire should be located, along with instructions and tools for changing a flat tire.

HAZARDOUS SUBSTANCES

Hazardous substances or potentially hazardous substances may not be transported in privately-owned vehicles. Hazardous substances include, but are not limited to, environmental-media samples, air-monitoring meters (photoionization detectors, four-gas meters) and associated calibration gases, investigation-derived waste, decontamination chemicals, fuel, and fuel products.

DRIVER SAFETY GUIDELINES

The use of a vehicle for company business while under the influence of intoxicants or other drugs that could impair driving ability is forbidden and is sufficient cause for disciplinary action, up to and including termination of employment.

Cell-phone use while driving is a major cause of accidents. Drivers should complete calls while the vehicle is parked and/or use the phone in a "hands free" mode via a headset or speaker. While driving, attention to the road and safety must always take precedence over conducting business over the phone.

No driver shall operate a vehicle on company business when his/her ability to do so safely has been impaired by illness, fatigue, injury, or prescription medication.

All drivers and passengers operating or riding in a company vehicle must wear seat belts, even if air bags are available.

No unauthorized personnel are allowed to ride in company vehicles.

Headlights shall be used starting two hours before sunset until two hours after sunrise, during inclement weather, and at any time when the area 500 feet ahead of the vehicle cannot be clearly seen.

Allot enough time for travel to avoid the need to hurry.

Be well rested and alert.

Notify someone of your destination and anticipated time of arrival.

DEFENSIVE-DRIVING GUIDELINES

Drivers are required to maintain a safe following distance at all times. Drivers should keep at least a two-second interval between their vehicle and the vehicle immediately ahead. During slippery road conditions, the following distance should be increased to at least four seconds.

Drivers must yield the right of way at all traffic control signals and signs requiring them to do so. Drivers should also be prepared to yield for safety's sake at any time. Pedestrians and bicycles in the roadway always have the right of way.

Drivers must honor posted speed limits. In adverse driving conditions, reduce speed to a safe operating speed that is consistent with the conditions of the road, weather, lighting, and volume of traffic.

Radar detectors are strictly prohibited in company vehicles. Drivers are to drive at the speed of traffic but are never to exceed the posted speed limit.

Turn signals must be used before every turn or lane change.

When passing or changing lanes, view the entire vehicle in your rearview mirror before pulling into that lane.

Be alert to other vehicles, pedestrians, and bicyclists when approaching intersections. Never speed through an intersection on a caution light. When the traffic light turns green, look both ways for oncoming traffic before proceeding.

When waiting to make left turns, keep your wheels facing straight ahead. If rear-ended, you will not be pushed into the path of oncoming traffic.

When stopping behind another vehicle, leave enough space so you can see the rear wheels of the car in front. This allows room to go around the vehicle, if necessary, and may prevent you from being pushed into the car in front of you if you are rear-ended.

Avoid backing where possible, but when necessary, keep the distance traveled to a minimum and be particularly careful. Check behind your vehicle before backing. Back the vehicle toward the driver's side. Do not back around a corner or into an area of no visibility.

ACCIDENT PROCEDURES

All accidents, in either company vehicles, rented vehicles, or personal vehicles (while on company business), must follow these same accident procedures.

In an attempt to minimize the results of an accident, the driver involved in the accident must prevent further damages or injuries and obtain all pertinent information and report it accurately. Call for medical aid, if necessary.

Record names and addresses of driver, witnesses, and occupants of the other vehicles and any medical personnel who may arrive at the scene. Complete the form located in the Vehicle Accident Packet. An employee who is involved in an accident when on MFA business must report it by completing an MFA Accident/Loss Report and submit it to the health and safety coordinator as soon as possible.

Pertinent information to obtain includes: license number of other drivers; insurance company names and policy numbers of other vehicles; make, model, and year of other vehicles; date and time of accident; and overall road and weather conditions. Provide the other party with your name, address, driver's license number, and insurance information. Do not discuss the accident with anyone at the scene except the police. Do not accept any responsibility for the accident. Do not argue with anyone.

All accidents, regardless of severity, must be reported to the police and also to the managing director or your group manager. Accidents are to be reported immediately (from the scene, during the same day, or as soon as practicable if immediate or same-day reporting is not possible). If the driver cannot get to a phone, he/she should write a note giving the location to a reliable-appearing motorist and ask him or her to notify the police. MFA may conduct a review of each accident to determine its cause and how it could have been prevented.

Accidents involving personal injury to an MFA employee must be reported to the Managing Director or your Group Manager so that a workers' compensation claim can be promptly filed and MFA's short-term-disability carrier can be notified, if applicable. Failing to stop after an accident and/or failure to report an accident may result in disciplinary action, up to and including termination of employment.

TRAFFIC VIOLATIONS

Driving motor vehicles is a serious responsibility and must be done safely and in accordance with all traffic laws. Vehicle accidents are costly to our company, but more importantly, they may result in injury to you or others. It is the driver's responsibility to operate the vehicle in a safe manner and to drive defensively to prevent injuries and property damage. MFA endorses all applicable state motor-vehicle regulations relating to driver responsibility and expects each driver to drive in a safe and courteous manner pursuant to the preceding safety rules. The attitude you take when behind the wheel is the single most important factor in driving safely. Please note that traffic or parking citations will not be reimbursed by MFA.

APPENDIX C

MFA INCIDENT REPORT

ACCIDENT/LOSS REPORT

******THIS REPORT MUST BE COMPLETED IN FULL AND SUBMITTED TO THE MFA MANAGING DIRECTOR******

Date of Accident:_____ Company:_____

Time Occurred:_____ Project Number:_____

Where Occurred:_____ Name and Location of Project:_____

PART I—PROPERTY DAMAGE/LOSS

Equipment Involved:_____

Names of Persons Involved:_____

Describe Incident/Damage:_____

_____

Estimated Cost of Damage:_____

***Copy of Police Report, if filed, must also be submitted.**

DRAW A DIAGRAM OF INCIDENT ON THE BACK OF THIS REPORT

PART II—PERSONAL INJURY *(fill out only if personal injury occurred)*

Name of employee injured:_____ Age:_____

Address:_____ Occupation:_____

What was employee doing when injured:_____

Exact location where injury occurred (station number or prominent landmark):_____

_____

Was place of accident or exposure on job site?:_____

Describe injury:_____

_____

How did injury occur?:_____

_____

Did employee see a doctor or go to the hospital?_____ If yes, give name, address, and phone number of Doctor and/or hospital:_____

_____

Employee Name (print):_____

Employee Signature: _____

Date of this report: _____

APPENDIX D

TRENCH CONSTRUCTION AND OTHER EXCAVATION STANDARD OPERATING PROCEDURE

TRENCH CONSTRUCTION AND OTHER EXCAVATING OPERATIONS

PURPOSE

This document contains an overview of the safety requirements for excavating and trenching operations. The requirements are consistent with standards established by the Occupational Safety and Health Administration (OSHA) and are described in Title 29 Code of Federal Regulations (CFR). The OSHA standard should be consulted by the excavation contractor before designing a shoring system, with questions regarding sloping options, or before working as a "competent person" on an excavation site. The term "competent person" is used in many OSHA standards and documents. As a general rule, the term is not specifically defined. In a broad sense, an OSHA competent person is an individual who, by way of training and/or experience, is knowledgeable of applicable standards, is capable of identifying workplace hazards relating to the specific operation, is designated by the employer, and has authority to take appropriate actions.

RESPONSIBILITY

The responsibility and authority for excavating and trenching safety must be well defined before project startup. In general, the contractor will assume responsibility for excavation safety, and Maul Foster & Alongi, Inc. (MFA) will maintain safety responsibility and authority only for MFA. MFA employees will not serve in the OSHA-defined role of competent person unless this is specifically defined in the project scope of work and approved by the project manager (PM) and health and safety coordinator. The PM shall ensure that the MFA field staff members clearly understand the limitation of their excavation-safety responsibilities and authorities.

APPLICABILITY

This procedure is applicable to all MFA projects in which trenching or other excavating operations, exclusive of borings, are entered by personnel employed by firms under a subcontract to MFA. The best approach for avoiding the detailed trenching requirements is to conduct sampling and other procedures without entry into excavations. Use of a backhoe to bring up samples, use of long-handled sampling devices, and similar techniques are recommended. During observation of excavation work, MFA should stay a safe distance from and upwind of the work area, if possible**.**

REQUIREMENTS

Preliminary Requirements

Certain government agencies require a permit to conduct excavation operations. Before digging, determine or have the client or excavation contractor determine if underground installations such as sewer, water, fuel, or electrical lines are to be encountered, and if so, determine the exact locations of the lines. Information can be obtained by contacting Underground Service Alert (consult local telephone directory for toll-free number), local utility companies, and the owner of the property on which excavating operations are planned. Also, trees, boulders, and other surface encumbrances that pose a potential hazard to employees must be removed or made safe before the operation begins.

Placement of Excavated Materials

Excavated materials must be placed at least 2 feet back from the edge of the excavation, and precautions must be taken to prevent the materials from falling into the excavation.

Working in Excavations

Shoring and Sloping

Except for solid rock, trenches in which personnel are required to work must be shored or sloped if the depth of the excavation is 5 feet or more. When a shoring system is used, it shall consist of hydraulic shores or the equivalent, with sheathing or sheet piling as needed. Trench boxes are also permitted. OSHA uses a soil-classification system to determine the allowable slopes for trenches. The shoring system must be properly designed and installed to sustain all existing and expected loads. For details on shoring and sloping requirements, consult Title 29 CFR.

Access

When work is to be performed in any excavation, safe access to the excavation must be provided by means of ladders, stairs, or soil ramps. Trenches 4 or more feet deep must have ladders spaced no less than 25 feet apart, and the ladders must extend at least 3 feet above grade.

Hazardous Atmospheres

At sites where oxygen deficiency or hazardous concentrations of flammable or toxic vapors or gases may be encountered in excavations, the atmospheres in the excavations must be tested by a qualified person before work in an excavation begins and at appropriate intervals afterward. Trenches may be classified as confined spaces and require an entry permit, as covered in the operating procedure (OP) for confined-space entry. Please note that any employee of MFA is prohibited from entering into a confined space.

Inspection of Excavation

Excavations must be observed daily by a competent person. If evidence for potential cave-ins or slides is apparent, all work in the excavation must be suspended until necessary steps have been taken to safeguard employees.

Operation of Vehicles near Excavations

When vehicles or heavy equipment must operate near an excavation, the sides of the excavation must be shored or braced as necessary to withstand forces exerted by the superimposed load and the earth pressure. Stop logs or other types of secure barriers must be installed at the edges of the excavations.

Barricades and Fences

Excavated areas must be completely guarded on all sides with barricades or fences, as appropriate. If barricades are used, they must be spaced no more than 20 feet apart and shall not be less than 35 inches high when erected. A yellow or yellow-and-black tape, at least 0.75-inch wide, shall be stretched between the barricades.

Backfilling

Excavated areas should be backfilled in accordance with a work plan as soon as practical after work is completed, and all associated equipment should be removed from the area.

EXCAVATIONS NEXT TO EXISTING STRUCTURES

A professional engineer will review all plans for excavations next to existing structures to avoid undermining the structures and possible collapse.

APPENDIX D

SAMPLING AND ANALYSIS PLAN

SAMPLING AND ANALYSIS PLAN

TERRY'S AUTO SALVAGE

Prepared for
CITY OF KELSO
KELSO, WA
May 29, 2013
Project No. 0443.02.02

Prepared by
Maul Foster & Alongi, Inc.
1329 North State Street, Suite 301
Bellingham, WA 98225

MAUL
FOSTER
ALONGI

SAMPLING AND ANALYSIS PLAN

TERRY'S AUTO SALVAGE

The material and data in this plan were prepared under the supervision and direction of the undersigned.

MAUL FOSTER & ALONGI, INC.

Heather Hirsch, LHG
Project Hydrogeologist

Justin Clary, PE
Principal Engineer

CONTENTS

ACRONYMS AND ABBREVIATIONS

CFR	Code of Federal Regulations
City	City of Kelso
CLP	Contract Laboratory Program
COC	chain of custody
cPAH	carcinogenic polycyclic aromatic hydrocarbon
Ecology	Washington State Department of Ecology
EIM	Environmental Information Management
FP-XRF	field-portable X-ray fluorescence
LCS	laboratory control sample
LCSD	laboratory control sample duplicate
MFA	Maul Foster & Alongi, Inc.
mg/kg	milligrams per kilogram
MS/MSD	matrix spike and matrix spike duplicate
NWTPH	Northwest Total Petroleum Hydrocarbon
PCB	polychlorinated biphenyl
Property	1124 North Pacific Avenue, Kelso, Washington
QA	quality assurance
QC	quality control
RA	remedial action
RAP	Remedial Action Plan and Engineering Design Report
RCRA	Resource Conservation and Recovery Act
SAP	sampling and analysis plan
Specialty	Specialty Analytical
SW	solid waste
TCLP	toxicity characteristic leaching procedure
USEPA	U.S. Environmental Protection Agency
WAC	Washington Administrative Code

1 INTRODUCTION

Maul Foster and Alongi, Inc. (MFA) has prepared this sampling and analysis plan (SAP), including quality assurance project plan elements, consistent with the requirements of the Washington Administrative Code (WAC) 173-340-820 for the City of Kelso (the City), to guide the collection of soil samples during the remedial action (RA) at 1124 North Pacific Avenue in Kelso, Washington (the Property). The Property historically was used by Terry's Auto Salvage as an automobile wrecking and salvage business.

The City received an Integrated Planning Grant from the Washington State Department of Ecology (Ecology) and a U.S. Environmental Protection Agency (USEPA) Brownfield Assessment Grant to support the environmental characterization, planning, and cleanup of the Property and its redevelopment into a revitalized asset for the community. The work described in this SAP is being conducted in support of the property cleanup. This SAP describes procedures for collection, preservation, and analysis of samples of environmental media, and will be used during the RA. The goals of the sampling are to (1) obtain reliable data about conditions at the site that will aid in waste characterization during cleanup and (2) document postremedy site conditions. This SAP is to be used in conjunction with the Remedial Action Plan and Engineering Design Report (RAP).

This SAP has been prepared consistent with the requirements of Ecology's Guidance on Sampling and Data Analysis Methods (Ecology, 1995), Guidance for Preparing Quality Assurance Project Plans for Environmental Studies (Ecology, 2004), and the Model Toxics Control Act (WAC Chapter 173-340).

1.1 Investigation Objectives

The primary objective of this SAP is to establish procedures for the collection of data of sufficient quality for their intended use. This SAP describes methods that will be used during the RA. Activities to be performed include soil excavation, treatment, and disposal.

During the RA, soil samples will be collected from excavated material for waste characterization and from soil remaining on site to confirm that concentrations are below cleanup levels or to inform future institutional control requirements, if needed. No institutional controls are currently planned for the Property.

The SAP is meant to ensure that reliable data about physical, environmental, and chemical conditions at the site are obtained in support of RA at the site. It provides a consistent set of procedures that will be used throughout the work identified in the RAP. If a phase of work or an unforeseen change in methodology requires modification to the SAP, an addendum may be prepared that describes the specific revision(s), or the revisions will be documented in the completion report. Procedures are provided that will be used to direct the investigation process so that the following conditions are met:

- Data collected are of high quality, representative, and verifiable.
- Use of resources is cost effective.
- Data can be obtained within a useful time frame, given the time constraints of the RA.

This SAP describes methods that will be used for sampling environmental media, decontaminating equipment, and characterizing waste for disposal. It also includes procedures for collecting, analyzing, evaluating, and reporting the data. This SAP includes all currently foreseen analytical methods that may be used for analyzing environmental samples. The document includes quality assurance (QA) procedures for field activities, sampling QA and quality control (QC) procedures, and data validation.

2 ACCESS AND SITE PREPARATION

2.1 Access

MFA personnel will be on the Property during all phases of the RA. Access to the Property will be in conjunction with construction activities and is allowed at all reasonable times for the purpose of overseeing work performed. Construction activity resulting in loud noises will generally be confined to the hours between 7 a.m. and 7 p.m.

2.2 Site Preparation and Coordination

Before the RA, field oversight, and sampling programs begin at the site, public and private utility-locating services and other information sources will be used to check for underground utilities or pipelines near each excavation location. MFA will also work with the City to identify locations of possible on-site utilities, piping, and other subsurface obstructions. Ecology will be notified a minimum of 48 hours before site activities begin.

3 SAMPLE PROGRAM DESIGN

The following sampling is anticipated during and after the RA:

1. Samples will be collected during excavation to identify soil that may require pretreatment prior to disposal because of lead concentrations and to screen excavation extents before confirmation sampling (on-site, field-portable X-ray fluorescence [FP-XRF] analyses; see Section 3.1).

2. Soil samples will be collected from the bottom and side walls of the excavation areas. The results of the initial excavation sampling will be compiled and reviewed with

Ecology to determine appropriate additional management prior to backfill. These could include removal, further evaluation of risk, and/or management through institutional controls.

3. Soil samples will be collected for toxicity characteristic leaching procedure (TCLP) lead analysis from the stockpiles identified for possible pretreatment, based on the FP-XRF results, to confirm the need for pretreatment.

4. Waste characterization samples will be collected from stockpiled soil that has undergone treatment. Specifically, TCLP results for lead will be used to confirm that soil may be disposed of at a subtitle D special waste landfill.

The methods for collecting, handling, and analyzing each type of sample are described below. For each of the four sampling efforts described below, the following procedures will be carried out, as applicable:

- Samplers will wear clean, disposable gloves while collecting samples. Gloves will be changed between sampling locations.
- Field activities, conditions, and sample descriptions will be recorded in a field notebook. Any deviations from the sampling protocol will be noted on field records and will be brought to the attention of the project manager. Observations of discoloration, odors, and organic-vapor concentrations will be recorded as well.
- Collected samples will be placed in the containers specified in Table D-1. Samples intended for laboratory analysis will be labeled, stored in iced shipping containers with chain-of-custody (COC) documentation, and transported to the contract laboratory.

3.1 FP-XRF Analysis Sampling

The RAP differentiates excavation areas, based on lead concentrations. Areas known to contain concentrations of lead that are likely to exceed characteristic levels (i.e., exceed 100 milligrams per kilogram [mg/kg] and that thus are expected to exceed the 5-milligrams-per-liter Resource Conservation and Recovery Act [RCRA] TCLP leachate criteria[1]) have been delineated (see the RAP). These areas will be excavated and stockpiled on site for potential treatment before disposal; however, the need for pretreatment will be determined based on TCLP-lead results for soil samples collected from the stockpiles. Areas that have historically had lead concentrations below levels considered characteristic for lead will be excavated and the soil transported directly to the landfill. As the excavation transitions from soil requiring pretreatment for lead to areas with lower concentrations, soil sampling will be conducted to confirm lead concentrations.

During excavation activities, material will be tested on site for lead in order to characterize its particular waste stream and in order to screen excavation extents before confirmation sampling. An FP-XRF instrument with a suitable detection limit will be used on site to efficiently characterize

[1] The results of the total metals analysis may be divided by 20 to convert the total results into the maximum leachable concentration (USEPA, 2012).

levels of lead. FP-XRF instruments are capable of producing near real-time results (i.e., results are available within a couple of hours of sample collection) that are comparable with Contract Laboratory Program (CLP) method results (USEPA, 2004). The USEPA Environmental Technology Verification program found that FP-XRF and CLP method lead concentrations in soil had correlations ranging from 0.85 to 0.97 (USEPA, 2004). In order to produce quantitative results, using FP-XRF, that are comparable to CLP methods, proper sample preparation is imperative (USEPA, 2004). The appropriate sample preparation method, consistent with USEPA Method 6200, is described below.

As noted above, FP-XRF results have been shown to be consistent with definitive laboratory results. However, because there is a range in correlations, a conservative threshold value was developed for decision making during RA activities. This threshold value was developed to avoid inadvertently transporting characteristic soil to the landfill. The threshold value was developed as follows: soil above 100 mg/kg lead is assumed to be characteristic (i.e., requiring pretreatment before disposal), based on the 20 times TCLP rule (USEPA, 2012). The lower end of correlation between the FP-XRF and definitive laboratory data identified by the USEPA is 0.85. This lower-end correlation is applied to the characteristic total lead concentrations of 100 mg/kg to provide an additional safety factor and derive a threshold value of 75 mg/kg lead.

All soil with FP-XRF lead results at or above 75 parts per million will be excavated and stockpiled for further testing as described below (Section 3.3, Pretreatment Stockpile Sampling). Soil with lead results below 75 parts per million will be sent to the landfill for disposal. Note that historical definitive laboratory results were used to identify material not requiring pretreatment, and thus the FP-XRF measurements are an additional precaution to ensure compliance with landfill requirements.

The following sample preparation procedure will be followed in order to achieve quality, ex situ FP-XRF data consistent with USEPA Method 6200 (USEPA, 1986). Following the procedure will generate FP-XRF results that are comparable to definitive laboratory method results.

- Collect samples from a 4-inch-by-4-inch square to a depth of 1 inch. The exact dimensions of the sampling area and the depth can be adjusted in order to achieve a homogeneous sample. Homogenize the soil volume and dry at a temperature no higher than 150 degrees Celsius.
- Grind the dried sample, using a mortar and pestle (glass, agate, or aluminum oxide), and sieve through a 60-mesh (nylon or stainless steel) sieve.
- Fill a 31.0-millimeter polyethylene cup one-half to three-quarters full with the sieved, dried sample and cover the cup with 2.5 micron Mylar film. Prepare a duplicate aliquot for every ten samples.
- Save the remaining dried, sieved sample volume for laboratory analysis if needed.
- Conduct FP-XRF sample analysis according to USEPA Method 6200 (USEPA, 1986).

3.2 Excavation Limits Soil Sampling

As discussed in the RAP, the RA includes soil excavation to a specified areal extent and vertical depth. Soil samples will be collected when the preestablished excavation boundaries have been reached, samples will be collected using hand-held equipment. The excavation bottom and side walls will be sampled at the excavation extents at the approximate locations identified in the RAP. These soil sample results will be used to confirm that soil remaining on site is below cleanup levels or to inform future institutional control requirements, if needed. No institutional controls are currently planned for the Property.

Soil samples and associated QC samples will be analyzed for the following:

- Diesel- and oil-range organics by Northwest Total Petroleum Hydrocarbon (NWTPH)-Dx
- Gasoline-range organics by NWTPH-Gx
- Benzene and xylenes by USEPA Method 8021B
- Carcinogenic polycyclic aromatic hydrocarbons (cPAHs) by USEPA Method 8270 selective ion monitoring
- Polychlorinated biphenyls (PCBs) by USEPA Method 8082
- Mercury by USEPA Solid Waste (SW) Method 7471
- Arsenic, cadmium, and lead by USEPA Method 6010

3.3 Pretreatment Stockpile Sampling

The soil in the pretreatment stockpile will be sampled and analyzed for TCLP-lead to determine if treatment is required:

- The stockpiles will be sectioned into 100-cubic-yard portions. A five-point composite sample will be obtained from each 100-cubic-yard stockpile. Five subsamples of approximately equal volume will be collected and composited. The uppermost layer of soil will be removed before each subsample is obtained.
- A standard stainless steel spoon or hand auger will be used to obtain the samples from various depths within the stockpile. The stockpile will be divided into five quadrants, with one subsample obtained from a random location within each quadrant from random depth intervals.
- The subsamples will be composited in a stainless steel bowl with a stainless steel spoon; a portion of the sample will be placed into the sample container. The stainless steel bowl and spoon and the auger will be decontaminated between sampling events. Rocks and debris will not be placed in the sample container.

- Samples will be labeled, stored in iced shipping containers with COC documentation, and transported to the contract laboratory.
- Soil samples and associated QC samples will be analyzed for TCLP-lead.

3.4 Posttreatment Stockpile Sampling

The soil determined by the procedures above to be lead characteristic will undergo treatment as described in the RAP to reduce leachable lead. Before treated stockpiles are transported to the landfill, soil will again be sampled following the same procedures outlined in Section 3.3 to confirm that TCLP-lead is below the 5 micrograms per liter criterion and thus is not RCRA-regulated waste.

3.5 Management of Miscellaneous Waste

Soil samples will be collected during the RA as described above. The FP-XRF samples will remain on site and will be returned to their source and managed (e.g., direct off-site disposal and treatment followed by off-site disposal). Equipment decontamination fluids will be mixed with the corresponding waste stream. Care will be taken to avoid creating pockets or areas of saturated soil.

3.6 Equipment Decontamination

The objective of decontamination is to reduce the likelihood of sample cross-contamination. It is anticipated that only disposable equipment will be used to collect samples. However, decontamination procedures are described below in the event that nondedicated sampling equipment is used.

Sampling equipment and reusable materials that contact the soil or water will be decontaminated on site and between sampling locations. Decontamination will consist of the following:

- Tap-water rinse (may consist of an equivalent high-pressure, hot-water rinse)
- Nonphosphate detergent wash, consisting of a dilute mixture of Liqui-Nox and tap water (visible soil to be removed by scrubbing)
- Ten percent nitric acid rinse
- Distilled-water rinse
- Methanol solution rinse (1:1 solution with distilled water)
- Final distilled-water rinse

The thoroughness of equipment decontamination will be verified by collection and analysis of equipment rinsate samples. Liquid generated by decontamination will be properly handled, according to procedures specified in Section 3.5.

3.7 Field Quality Assurance and Quality Control Samples

QC samples will be collected to ensure that field samples and quantitative field measurements are representative of the media collected. Field QA/QC samples and collection frequency are as follows:

- **Equipment Rinsate Blanks—**To ensure that decontamination procedures are sufficient, an equipment rinsate blank will be collected when nondedicated equipment is used. At least one equipment rinsate blank will be collected each day or for every 20 samples collected. Equipment rinsate blanks will be collected by passing laboratory-provided deionized/distilled water through or over sampling equipment.
- **Trip Blanks—**A trip blank monitors the potential of sample-to-sample cross-contamination during sample collection and transport. A trip blank consists of reagent-grade water in a new sample container, which is prepared at the same time as the sample containers. The trip blank will accompany the samples throughout collection, shipment, and storage. One trip blank will be included with each cooler in which samples for volatile organic compound analyses are stored.
- **Field Duplicates—**Field duplicates are collected to measure sampling and laboratory precision. For soil samples, when sufficient sample volume is available, an individual sample will be split into two separate sample containers and labeled as two different samples. Care will be taken when collecting duplicate soil samples to ensure that the same ratio of fine to coarse material is included in each sample. At least one duplicate sample will be collected for every 20 samples of each matrix type.

In addition to field QA/QC samples, extra volume will be collected for laboratory matrix spike/matrix spike duplicate (MS/MSD) samples at a rate of one per 20 samples per matrix.

3.8 Work Documentation

Field notes will be maintained during sampling. At a minimum, the following information will be included in the field notes:

- Sampler's name
- Weather conditions
- Sample name
- Sample location
- Sampling method, depth, date, and time
- Problems encountered with equipment or methods
- Physical description of soil samples
- FP-XRF sample results (as applicable)
- Other field observations

3.9 Sample Containers, Preservation, and Handling

Sample container, preservation, and handling requirements for each analysis are summarized in Table D-1. Soil samples for volatile organic compound (i.e., benzene and xylenes) analysis will be collected in volatile organic analysis vials, using the 5035A syringe method. All other soil samples will be collected in glass jars. The samples will be stored in iced coolers at 4° $\pm$ 2 Celsius. Sample containers will be supplied by the laboratory.

3.10 Sample Custody, Packaging, and Shipping

Sample custody will be tracked from point of origin through final analysis and disposal, using a COC form, which will be filled out with the appropriate sample and analytical information as soon as possible after samples are collected. For purposes of this work, custody will be defined as follows:

- In plain view of MFA field representatives
- Inside a cooler that is in plain view of MFA field representatives
- Inside any locked space such as a cooler, locker, car, or truck to which the MFA field representatives have the only available key(s)

After sample containers have been filled, they will be packed on ice in coolers, and then transported in iced shipping containers (with a custody seal affixed) to Specialty Analytical (Specialty) at 11711 SE Capps Road, Clackamas, OR 97015.

COC procedures will begin in the field and will track delivery of the samples to the laboratories. Specific procedures are as follows:

- Samples will be packaged and shipped in accordance with U.S. Department of Transportation regulations as specified in 49 Code of Federal Regulations (CFR) 173.6 and 49 CFR 173.24.
- Individual sample containers will be packed to prevent breakage.
- The coolers will be clearly labeled with sufficient information (name of project, time and date container was sealed, person sealing the cooler, and Specialty's name and address) to enable positive identification.
- A sealed envelope containing COC forms will be enclosed in a plastic bag inside the cooler.
- Signed and dated COC seals will be placed on all coolers before shipping.

Upon transfer of samples to Specialty, the COC form will be signed by the persons transferring custody of the coolers. Upon receipt of samples at the laboratory, the shipping container seal will be broken and the condition of the samples will be recorded by the receiver.

4 FIELD MEASUREMENTS, ANALYTICAL PROCEDURES, AND QUALITY CONTROL

Measurements will be collected in the field, using screening tools, and soil and groundwater samples will be collected and submitted for laboratory analyses. Field and laboratory methods are described below.

4.1 Field Instrumentation

Field instruments will be used during the investigations. The following field equipment will require calibration before use and periodically during sampling activities:

- FP-XRF
- Photoionization detector

Field instrument calibration and preventive maintenance will follow the manufacturers' guidelines, and any deviation from the established guidelines will be documented. Generally, field instruments will be calibrated daily before work begins. Field personnel may decide to calibrate more than once a day if inconsistent or unusual readings are received, or if conditions warrant more frequent calibration. Calibration activities will be recorded in instrument-specific logbooks or field notebooks.

4.1.1 Field Calibration

Calibration procedures, calibration frequency, and standards for measurement will be conducted according to manufacturers' guidelines. To ensure that field instruments are properly calibrated and remain operable, the following procedures will be used, at a minimum:

- Operation, maintenance, and calibration will be performed in accordance with the instrument manufacturers' specifications.
- All standards used to calibrate field instruments will meet the minimum requirements for source and purity recommended in the equipment operation manual. Standards will be used before any expiration dates that may be printed on the container.
- Acceptable criteria for calibration will be based on the limits set in the operations manual.
- All users of the equipment will be trained in the proper calibration and operation of the instrument.
- Operation and maintenance manuals for each field instrument will be brought to the site.
- Field instruments will be inspected before they are taken to the site.

- Field instruments will be calibrated at the start and end of each work period. Meters will be recalibrated, as necessary, during the work period.
- Calibration procedures (including time, standards used, and calibration results) will be recorded in a field notebook. Although not reviewed during routine QA/QC checks, the data will be available if problems are encountered.

4.1.2 Preventive Maintenance

Preventive maintenance of field instruments and equipment will follow the operations manuals. A schedule of preventive-maintenance activities will be followed to minimize downtime and ensure the accuracy of measurement systems. Maintenance will be documented in the field notebook.

4.2 Laboratory Test Methods and Reporting Limits

Soil will be analyzed for gasoline-, diesel-, and heavy-oil-range organics; benzene; xylenes; cPAHs; PCBs; arsenic; cadmium; lead; mercury; and TCLP-lead. Analytical procedures are described below. Test methods and reporting limits are summarized in Table D-2. Reporting limits are compared with cleanup levels to ensure that the analytical method is appropriate for the data use. Reporting limits shown in Table D-2 are achievable in clean matrices; reporting limits in environmental samples may be affected by soil moisture or matrix interference. The laboratory will use appropriate measures, such as cleanup procedures, to attain reporting limits below cleanup levels. The laboratory will appropriately document results with elevated reporting limits.

4.3 Laboratory Instrumentation

Specific laboratory instrument calibration procedures, frequency of calibration, and preparation of calibration standards will be according to the method requirements as developed by the USEPA, following procedures presented in SW-846 (USEPA, 1986), Analytical Methods for Petroleum Hydrocarbons (Ecology, 1997) and the specific method guidelines for each analysis requested.

4.3.1 Preventive Maintenance

Preventive maintenance of laboratory equipment will be the responsibility of the laboratory personnel and analysts. This maintenance includes routine care and cleaning of instruments and inspection and monitoring of carrier gases, solvents, and glassware used in analyses. The preventive-maintenance approach for specific equipment will follow the manufacturers' specifications and good laboratory practices.

Precision and accuracy data will be examined for trends and excursions beyond control limits to determine evidence of instrument malfunction. Maintenance will be performed when an instrument begins to change, as indicated by the degradation of peak resolution, shift in calibration curves, decrease in sensitivity, or failure to meet any of the QC criteria.

4.3.2 Laboratory QA/QC Checks

QC samples and procedures verify that the instrument is calibrated properly and remains in calibration throughout the analytical sequence, and that the sample preparation procedures have been effective and have not introduced contaminants into the samples. Additional QC samples are used to identify and quantify positive or negative interference caused by the sample matrix. The following laboratory QC procedures are required for most analytical procedures:

- **Calibration Verification—**Initial calibration of instruments will be performed at the start of the project or sample run, as required, and when any ongoing calibration does not meet control criteria. The number of points used in the initial calibration is defined in the analytical method. Continuing calibration will be performed as specified in the analytical method to track instrument performance. If a continuing calibration does not meet control limits, analysis of project samples will be suspended until the source of the control failure is either eliminated or reduced to within control specifications. Any project samples analyzed while the instrument was outside of control limits will be reanalyzed.
- **Method Blanks—**Method blanks are used to assess possible laboratory contamination of samples associated with all stages of preparation and analysis of samples and extracts. The laboratory will not apply blank corrections to the original data. A minimum of one method blank will be analyzed for every sample extraction group, or one for every 20 samples, whichever is more frequent.
- **MS/MSD Samples—**MS samples are analyzed to assess the matrix effects on the accuracy of analytical measurements. A minimum of one MS will be analyzed for each sample delivery group, or one for every 20 samples, whichever is more frequent. Because the spike is a duplicate sample, it measures the quality of laboratory preparatory techniques and the heterogeneity of the sample.
- **Surrogate Spike Compounds—**Surrogate spikes are used to evaluate the recovery of an analyte from individual samples. All project samples to be analyzed for organic compounds will be spiked with appropriate surrogate compounds as defined in the analysis method. Recoveries determined using these surrogate compounds will be reported by the laboratory; however, the laboratory will not correct sample results using these recoveries.
- **Laboratory Control Samples—**Analyses of laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs) will be performed by the laboratory at a frequency that satisfies the analytical methods requirements.

4.4 Data Reduction, Validation, and Reporting

The analytical laboratory will submit analytical data packages that include laboratory QA/QC results to permit independent and conclusive determination of data quality. Data quality will be determined by MFA, using the data evaluation procedures described in this section. The results of the MFA evaluation will be used to determine if the project data quality objectives have been met.

4.4.1 Field Data Reduction

Daily internal QC checks will be performed for field activities. Checks will consist of reviewing field notes and field activity memoranda to confirm that the specified measurements, calibrations, and procedures are being used. The need for corrective action will be assessed on an ongoing basis, in consultation with the project manager.

4.4.2 Laboratory Evaluation

Initial data reduction, evaluation, and reporting at the analytical laboratory will be carried out as described in USEPA SW-846 manuals for organic analyses (USEPA, 1986), as appropriate. Additional laboratory data qualifiers may be defined and reported to further explain the laboratory's QC concerns about a particular sample result. All additional data qualifiers will be defined in the laboratory's case narrative reports.

4.4.3 Data Deliverables

Laboratory data deliverables are listed below. Electronic deliverables will contain the same data that are presented in the hard-copy report.

- Transmittal cover letter
- Case narrative
- Analytical results
- COC
- Surrogate recoveries
- Method blank results
- LCS/LCSD results
- MS/MSD results
- Laboratory duplicate results

4.4.4 Data QA/QC Review

MFA will evaluate the laboratory data for precision, completeness, accuracy, and compliance with the analytical method. MFA will review data and assign data qualifiers to sample results, following applicable sections of the USEPA procedures for inorganics and organics data review (USEPA, 1986, 2010, 2008).

Data qualifiers, as defined by the USEPA, are used to classify sample data according to their conformance to QC requirements. The most common qualifiers are listed below:

- J—Estimate, qualitatively correct but quantitatively suspect.
- R—Reject, data not suitable for any purpose.
- U—Not detected at a specified reporting limit.

Poor surrogate recovery, blank contamination, or calibration problems, among other things, can cause the sample data to be qualified. Whenever sample data are qualified, the reasons for the qualification will be stated in the data evaluation report.

QC criteria not defined in the guidelines for evaluating analytical data are adopted, where appropriate, from the analytical method.

The following information will be reviewed during data evaluation, as applicable:

- Sampling locations and blind sample numbers
- Sampling dates
- Requested analysis
- COC documentation
- Sample preservation
- Holding times
- Method blanks
- Surrogate recoveries
- MS/MSD results
- Laboratory duplicates (if analyzed)
- Field duplicates
- Field blanks
- LCSs
- Method reporting limits above requested levels
- Any additional comments or difficulties reported by the laboratory
- Overall assessment

The results of the data evaluation review will be summarized for each data package. Data qualifiers will be assigned to sample results on the basis of USEPA guidelines, as applicable.

4.4.5 Data Management and Reduction

MFA uses EQuIS™ environmental data management software to manage all laboratory data. The laboratory will provide the analytical results in electronic EQuIS-deliverable format. Following data evaluation, data qualifiers and analytical results will be entered into the EQuIS database. Any data representing concentrations in the unexcavated subsurface will be entered into Ecology's Environmental Information Management (EIM) database in addition to MFA's EQuIS database. Data collected from excavated materials will not be entered into EIM.

Data may be reduced to summarize particular data sets and to aid interpretation of the results. Statistical analyses may also be applied to results. Data reduction QC checks will be performed on all hand-entered data, any calculations, and any data graphically displayed. Data may be further reduced and managed using one or more of the following computer software applications:

- Microsoft Excel (spreadsheet)
- EQuIS (database)
- Ecology's EIM (database)
- AutoCad and/or Arc GIS (graphics)
- USEPA ProUCL (statistical software)

5 REPORTING

After data collection, validation, evaluation, and reduction have been completed, the data will be incorporated into reports. Copies of the reports will be kept in MFA's main project files, submitted to the City for review, and then submitted to Ecology.

LIMITATIONS

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

Opinions and recommendations contained in this plan 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 plan.

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TABLES

Table D-1
Sample Handling Summary
City of Kelso
Sampling and Analysis Plan

Analyte	Method	Suggested Volume	Container	Number of Containers	Preservative	Storage Temperature	Holding Time from Collection
Total Petroleum Hydrocarbons—Diesel and Oil	NWTPH-Dx	4 ounces	Glass Jar	1	none	4 degrees C	14 days
Total Petroleum Hydrocarbons—Gasoline	NWTPH-Gx	5035 Sample Kit	VOA/Glass Jar	1 5035 Sample Kit	5035 Sample Kit	4 degrees C	14 days
Metals (As, Cd, Pb)	USEPA 6010	4 ounces	Glass Jar	1	none	4 degrees C	6 months
Mercury	USEPA SW7471	4 ounces	Glass Jar	1	none	4 degrees C	28 days
cPAHs	USEPA 8270 SIM	4 ounces	Glass Jar	1	none	4 degrees C	14 days
PCBs	USEPA 8082	4 ounces	Glass Jar	1	none	4 degrees C	7 days
Benzene and Xylenes	USEPA 8021	5035 Sample Kit	VOA/Glass Jar	1 5035 Sample Kit	5035 Sample Kit	4 degrees C	14 days
TCLP lead	USEPA 6010	8 ounces	Glass Jar	1	none	none	6 months

NOTES:

5035 Sample Kit = one prepared 40-milliliter VOA with 5 milliliters of sodium bisulfate, two prepared 40-milliliter VOAs with 5 milliliters of methanol, and one 2-ounce jar for moisture content determination.

As = arsenic.

C = Celsius.

Cd = cadmium.

cPAH = carcinogenic polycyclic aromatic hydrocarbon.

NWTPH = Northwest Total Petroleum Hydrocarbons.

Pb = lead.

PCB = polychlorinated biphenyl.

SIM = selective ion monitoring.

SW = solid waste.

TCLP = toxicity characteristic leaching procedure

USEPA = U.S. Environmental Protection Agency.

VOA = volatile organic analysis vial.

Table D-2
Analytical Methods
City of Kelso
Sampling and Analysis Plan

Analyte	Method	Method Reporting Limit (mg/kg)	Cleanup Levels (mg/kg)
Total Petroleum Hydrocarbons			
Gasoline-range organics	NWTPH-Gx	2.5	30
Diesel- and oil-range organics	NWTPH-Dx	15	2000
Metals			
Arsenic	USEPA 6010	2	20
Cadmium	USEPA 6010	0.1	2
Lead	USEPA 6010	2	250
Mercury	USEPA SW7471	0.0167	2
Volatile Organic Compounds			
Benzene	USEPA 8021/5035	0.025	0.03
Xylenes	USEPA 8021/5035	0.3	9
cPAHs			
Benzo(a)anthracene	USEPA 8270 SIM	0.00667	NV
Benzo(a)pyrene	USEPA 8270 SIM	0.00667	0.1*
Benzo(b)fluoranthene	USEPA 8270 SIM	0.00667	NV
Benzo(k)fluoranthene	USEPA 8270 SIM	0.00667	NV
Chrysene	USEPA 8270 SIM	0.00667	NV
Dibenzo(a,h)anthracene	USEPA 8270 SIM	0.00667	NV
Indeno(1,2,3-cd)pyrene	USEPA 8270 SIM	0.00667	NV
PCBs**			
Aroclor 1016	USEPA 8082	0.000333	NV
Aroclor 1221	USEPA 8082	0.000333	NV
Aroclor 1232	USEPA 8082	0.000333	NV
Aroclor 1242	USEPA 8082	0.000333	NV
Aroclor 1248	USEPA 8082	0.000333	NV
Aroclor 1254	USEPA 8082	0.000333	NV
Aroclor 1260	USEPA 8082	0.000333	NV
Aroclor 1262	USEPA 8082	0.000333	NV
Aroclor 1268	USEPA 8082	0.000333	NV

NOTES:

cPAH = carcinogenic polycyclic aromatic hydrocarbon

mg/kg = milligrams per kilogram (parts per million).

NV = no value.

NWTPH = Northwest Total Petroleum Hydrocarbons.

PCB = polychlorinated biphenyl.

SIM = selective ion monitoring.

SW = solid waste.

USEPA = U.S. Environmental Protection Agency.

*The cPAH toxic equivalency quotient will be compared to the benzo(a)pyrene cleanup level.

**A total PCB concentration will be calculated from the individual Aroclor results for comparison to the total PCBs cleanup level of 1 mg/kg.

APPENDIX E

SPECIFICATIONS

SECTION 02 41 00

DEMOLITION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Selective demolition of built site elements.

1.2 RELATED REQUIREMENTS

A. Section 01 10 00 - Summary: Limitations on CONTRACTOR's use of site and premises.

B. Section 01 50 00 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.

1.3 REFERENCE STANDARDS

A. 29 CFR 1926 - U.S. Occupational Safety and Health Standards; current edition.

B. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2009.

1.4 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Site Plan showing:
   1. Areas for temporary construction and field offices if applicable.
   2. Areas for temporary staging of removed materials.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.1 SCOPE

A. Remove all other paving within the site boundary indicated on drawings prior to completion.

B. Remove all concrete slabs on grade within site boundaries.

C. Fill excavations, open pits, and holes in ground areas generated as result of removals, using specified fill; compact fill as specified in Section 02 61 14.

3.2 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
   1. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
   2. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
   3. Do not close or obstruct roadways or sidewalks without permit.

B. Partial Removal of Paving and Curbs: Neatly saw cut at right angle to surface.

3.3 EXISTING UTILITIES

A. Coordinate work with utility companies; notify before starting work and comply with applicable requirements; obtain required permits prior to initiating associated work.

B. Protect existing utilities to remain from damage.

C. Do not disrupt public utilities without permit from authority having jurisdiction.

D. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.

E. Protect power poles on site as shown in the plans. Perform excavation such that the poles are not undermined.

3.4 SELECTIVE DEMOLITION FOR ALTERATIONS

A. Drawings showing existing construction and utilities are based on field observation and existing record documents only.
   1. Verify that construction and utility arrangements are as shown.
   2. Report discrepancies to ENGINEER before disturbing existing installation.
   3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.

B. Remove existing work as indicated and as required to accomplish new work.
   1. Remove items indicated on drawings.

C. Protect existing work to remain.
   1. Perform cutting to accomplish removals neatly and as specified for cutting new work.
   2. Repair adjacent construction and finishes damaged during removal work.

3.5 DEBRIS AND WASTE REMOVAL

A. Remove debris, junk, and trash from site as allowed by law.

B. Leave site in clean condition, ready for subsequent work.

C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

SECTION 02 61 14

EXCAVATION AND HANDLING OF IMPACTED SOILS

PART 1 GENERAL

1.1 SELECTION INCLUDES

A. This work includes excavation and handling of impacted soils, onsite stockpiling, off-site disposal, backfilling, and grading of selected excavation areas identified on the Contract Drawings.

1.2 Reference Standards

A. ASTM D698 – Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method; 2007.

B. ASTM D1557 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,799 kN m/m3)); 2012.

C. ASTM D6938 – Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth); 2010.

1.3 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
   1. Preconstruction Submittals
      a. Copies of licenses and certifications as required by all applicable jurisdictions to complete the specified work including all appropriate HAZWOPER certifications.
      b. Health and Safety Plan specific to CONTRACTOR operations.
      c. Materials Sources: Submit name of imported materials source and certification that imported materials are clean.
   2. Construction Submittals
      a. Disposal receipts from an approved disposal facility for all materials disposed off site.
      b. The CONTRACTOR shall furnish daily logs of all excavation, fill, and disposal quantities to the OWNER and ENGINEER on a weekly basis.
      c. Receipts for any materials recycled or salvaged at an off-site facility.
      d. State certification and approval for seed.
      e. Compaction Density Test Reports.
   3. Post Construction Submittals

a. One topographic survey stamped and certified by a licensed Surveyor in the State of Washington showing the final limits of excavation for each impacted area obtained prior to backfill and final surface elevations.1.4 DEFINITIONS

A. Qualified Personnel: Workers meeting the requirements as outlined by the Occupational Safety and Health Administration (OSHA) and Washington OSHA standards for work in which contact with hazardous materials during removal activities may occur.

B. Finish Grading: Establishment of final surface grades and contours to match final grade shown on Contract Drawings.

C. On-site Fill: Soils originating from the project site to be utilized as backfill of excavations at the direction of the ENGINEER.

D. Cleanup site: Terry’s Auto Salvage Site (as shown on the Contract Drawings) from which contaminated soils will be remediated or handled.

1.5 HEALTH AND SAFETY

A. QUALIFIED PERSONNEL
   1. All on-site activities in which workers may come in contact with soil not designated as clean fill must be conducted by qualified personnel.
   2. Qualified personnel shall be certified in an OSHA 40 hour approved hazardous waste operations and emergency response (HAZWOPER) training course before commencing work and have at least three days of field experience under a trained, experienced supervisor as well as refresher training obtained within the past year (if applicable).
   3. Managers and supervisors directly responsible for work shall have an additional eight hours of specialized training in hazardous waste management supervision.

B. PERSONAL PROTECTIVE EQUIPMENT (PPE) AND PERSONAL HYGIENE MEASURES
   1. Workers shall be equipped with PPE as described in the Contractor-prepared HASP.
   2. The CONTRACTOR shall provide personal hygiene measures as required for work in hazardous waste areas as described in the Contractor-prepared HASP.

C. MEASUREMENT AND PAYMENT
   1. Measurement and payment for Excavation and Handling of Contaminated Material shall be in accordance with Section 01 20 00 of these Technical Specifications.

PART 2 PRODUCTS

2.1 BACKFILL

A. The following materials shall be considered acceptable as backfill:
   1. Clean import from a local source that has been accepted by ENGINEER.
   2. Provide a written, notarized certification from the landowner of each proposed off-site soil borrow source stating that the borrow site has never been contaminated with hazardous or toxic materials and include detailed historical information on past borrow site use as well as analytical laboratory test data.

B. No other material shall be used as backfill without prior approval from the ENGINEER.

2.2 COMMON BORROW

A. Common Borrow for final ground cover shall consist of well graded clean soil and/or aggregate which is free of deleterious material and is not plastic.

B. Deleterious material includes wood, organic waste, coal, charcoal, or any other extraneous objectionable material.

C. The material shall be considered nonplastic if the percent by weight passing the No. 200 sieve cannot be rolled, at any moisture content, into a thread as prescribed in Section 4 of AASHTO Test Method T 90.

D. Top layer of soil should be suitable to support vegetative growth.

2.2 Grass Seed

A. Any substitutions of plant material shall be approved by the ENGINEER.

B. Seed mixture shall be provided in sealed containers clearly labeled to show the following:

1. Name and address of the supplier
2. Kind and variety of seed
3. Place of origin
4. Lot number
5. Percentage of weed seed (not to exceed 0.10%)
6. Percent and kind of other crop
7. Percent of inert (not to exceed 1.5%)
8. Guaranteed percent purity (85% minimum)
9. Guaranteed percent germination (80% minimum)
10. Year of production
11. Pure live seed gross weight
12. Date of test
13. Date packaged
14. Location packaged

C. This information shall be obtained from the supplier by the CONTRACTOR and submitted to the ENGINEER for review and acceptance. Each lot of seed shall be subject to inspection.

D. All seed furnished shall be free of non-native seeds such as Russian or Canada thistle, reed canary grass, European bindweed, and leafy spurge. Seed that has become set, moldy, or otherwise damaged in transit or storage is not acceptable. Seed in damaged packaging is not acceptable. Each lot of grass seed shall be labeled “Washington Certified Seed”.

PART 3 EXECUTION

3.1 EXISTING STRUCTURES AND UTILITIES

A. No excavation shall be performed until site utilities have been field located by the CONTRACTOR.

B. The CONTRACTOR shall take the necessary precautions to ensure that no damage occurs to existing active utilities, except those identified for demolition on the Contract Drawings.

C. Damage to existing structures and active utilities, not identified for demolition on the Contract Drawings, resulting from the CONTRACTOR’s operations shall be repaired at no additional cost to the OWNER.

3.2 PREPARATION

A. Prior to any excavation, the OWNER will establish minimum lateral extent of impacted soil excavations as shown on the Contract Drawings.

B. CONTRACTOR shall give ENGINEER 48-hours notice prior to commencing excavation.

3.3 CONTAMINATED MATERIAL EXCAVATION

A. Excavation shall be performed in a manner that will control dust generation, limit spills, and prevent contaminated material mixing with uncontaminated material.

B. Excavations shall be completed to the lateral extents and vertical depths shown on the Contract Drawings.

C. Excavation shall not be conducted without the presence of ENGINEER.

3.4 EXCAVATION

A. Once the lateral and vertical extents of all excavation areas have been reached, ENGINEER shall collect soil samples as discussed in Part 3.6 of this Section.

B. Excavations shall remain open, with safety measures in place, until ENGINEER informs CONTRACTOR that the excavation is complete. Adequate barriers shall be installed to protect against unauthorized entry while excavation is open. If warranted by the confirmation sampling analysis, the CONTRACTOR will excavate additional material as directed by the ENGINEER and the ENGINEER will collect additional confirmation samples.

C. SHORING:
   1. The CONTRACTOR shall be responsible for trench and excavation safety. Either shoring or a benched (where feasible) excavation approach may be used.

D. DEWATERING:
   1. Surface water shall be diverted away from all excavations.
   2. Excavation depths shall remain above the water table.

3.5 IMPACTED SOIL AREA EXCAVATION

A. Impacted soil excavation shall be performed to the depths and areal extents shown on the plans.

B. Impacted soil shall be kept separate from non-impacted soil and stockpiled in the primary stockpile area for further disposal characterization by ENGINEER.

C. Confirmation sampling at the extents of the impacted soil excavations shall define the final excavation extents.

3.6 POST EXCAVATION SAMPLING

A. ENGINEER will collect post excavation samples in accordance with the following requirements.

B. Impacted Soil EXCAVATION:
   1. A minimum of one sample for every 625 square feet of excavation floor shall be collected by the ENGINEER for onsite XRF analysis.
   2. A minimum of one sample for every 30 linear feet of excavation sidewall at depths within known impacts shall be collected by the ENGINEER for onsite XRF analysis.
   3. Impacted soil shall be kept separate from non-impacted soil and stockpiled in the primary stockpile area for further disposal characterization by the ENGINEER.
   4. The ENGINEER will inform the CONTRACTOR of the results and their implications to the excavation extents.

3.7 CONTAMINATED MATERIAL PLACEMENT AND DISPOSAL

A. All soil excavated from impacted soil areas shown on the Contract Drawings shall be assumed to be contaminated and handled in accordance with the plans and specifications. Impacted soils shall be temporarily placed in stockpiles in the designated stockpile area located on the Contract Drawings.

B. All soil excavated from impacted soil areas shall await waste profiling analytical results. The ENGINEER shall collect soil samples for waste disposal characterization once all impacted soil has been excavated. The ENGINEER shall provide analytical results indicating treatment/disposal requirements within 10 days of obtaining the

characterization sample. After characterization is complete, the ENGINEER will direct the CONTRACTOR to dispose of the excavated materials at an appropriate facility or to treat the soil using an approved subcontractor for soil stabilization services to reduce leachable lead characteristic to within acceptable non-hazardous levels.

C. Excavated impacted soil shall be placed in constructed stockpiles in accordance with Subpart 3.8. Additional area to accommodate stockpile material may be approved at the discretion of the ENGINEER.

D. CONTRACTOR shall take necessary precautions to prevent mixing of impacted soils with non-impacted soil.

3.8 STOCKPILE CONSTRUCTION

A. Stockpiles shall be constructed at the location indicated on the Contract Drawings.

B. Stockpiles placed over surfaces other than concrete or asphalt shall be underlain with 6-mil plastic sheeting or approved equal. Before placing liners, the CONTRACTOR shall clear the existing ground surface of debris and sharp objects.

C. Stockpiles shall be constructed to allow access to all portions of the Site.

D. Stockpiles shall not exceed 15 feet in height.

E. Stock piles shall be covered using liners meeting the following requirements:
   1. Stockpile cover materials shall be plastic sheeting.
   2. The cover liner shall be free of holes or other damage to prevent dust generation.
   3. The cover material shall be anchored and ballasted to prevent removal or damage by wind.

F. The CONTRACTOR shall cover stockpiles overnight, during high winds or precipitation events, or as directed by the ENGINEER.

G. Erosion control shall be constructed around stockpiles to prevent run-on and run-off.

3.9 CONTAMINATED MATERIAL TRANSPORT AND DISPOSAL

A. The CONTRACTOR shall transport all excavated soils to be disposed of to an appropriate Subtitle D landfill. The soil shall be transported by a properly licensed hauler operating in compliance with Washington State Department of Ecology Dangerous and Hazardous Waste Requirements, WAC 173-303 and USDOT hazardous and non-hazardous materials requirements.

B. Once a soil stockpile has been profiled for disposal, the CONTRACTOR shall load the stockpile onto trucks in a manner that prevents spilling or tracking of contaminated soil.

C. Loose material that falls onto the truck exterior during loading shall be removed before the truck leaves the loading area.

D. All truckloads of contaminated soil shall be tarped prior to exiting the site.

E. Any material collected on the ground surface in the loading area shall be placed back into the truck.

3.10 BACKFILL

A. Excavations shall remain open until the ENGINEER provides the CONTRACTOR approval to backfill. Excavation survey will be required prior to backfill approval.

B. The excavation extents shall be filled using approved, clean backfill material, Part 2.1.

C. Backfill shall be placed in maximum 12-inch lifts. Placed fill shall be moisture conditioned prior to compaction.

D. Once processed and moisture conditioned, each lift shall be compacted using a minimum of three passes of a Caterpillar 825 or equivalent. Compaction of backfill shall be witnessed by the ENGINEER.

E. Compaction shall be tested using ASTM D6938 at a frequency of every other lift or at 24-inch intervals.

F. All excavations shall be backfilled and finish graded to match final grade shown on the Contract Drawings.

3.11 Field Quality Control

A. See Section 01 40 00 – Quality Requirements, for general requirements for field inspection and testing.

B. Compaction density testing will be performed on compacted backfill in accordance with ASTM D6938. Compaction shall achieve 95-percent of maximum density described under ASTM D1557, “modified Proctor”.

C. Results will be evaluated in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D1557 (“modified Proctor”)

3.13 FINAL SURFACE

A. Final surface shall consist of compacted common borrow with cover suitable to allow for vegetative growth and with grass seed.

B. Moisture condition common borrow prior to compaction, as determined by the ENGINEER.

C. Common borrow will be placed to match grade shown on the Contract Drawings and compacted with a minimum of 3 passes with a vibratory smooth drum roller.

-- END OF SECTION --