FEASIBILITY STUDY ADDENDUM

NORTH CASCADE FORD PROPERTY
SEDRO-WOOLLEY, WASHINGTON

Prepared for
VSF PROPERTIES, LLC
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ACRONYMS AND ABBREVIATIONS

AOC	area of concern
ARAR	applicable or relevant and appropriate requirement
AST	aboveground storage tank
auto repair shop	automobile sales and service building
bgs	below ground surface
BNSF	Burlington Northern Santa Fe Railway Company
cPAH	carcinogenic polycyclic aromatic hydrocarbon
CSM	conceptual site model
CUL	cleanup level
DRO	diesel-range organics
Ecology	Washington State Department of Ecology
ESA	environmental site assessment
FS	feasibility study
GCW	groundwater circulating well
GeoTest	GeoTest Services, Inc.
GPR	ground-penetrating radar
GRO	gasoline-range organics
IHS	indicator hazardous substance
ISBR	in situ bioremediation
ISGS	in situ geochemical stabilization
MFA	Maul Foster & Alongi, Inc.
MNA	monitored natural attenuation
MTCA	Model Toxics Control Act
NAPL	nonaqueous-phase liquid
NFA	No Further Action
NPV	net present value
O&M	operation and maintenance
ORC-A	Advanced Oxygen Release Compound®
ORO	oil-range organics
PCB	polychlorinated biphenyl
PCS	petroleum-contaminated soil
POC	point of compliance
Property	North Cascade Ford property at 116 West Ferry Street, Sedro-Woolley, Washington
RCRA	Resource Conservation and Recovery Act
REC	recognized environmental condition
preliminary RI/FS	preliminary remedial investigation and feasibility study
Sanborn	Sanborn Fire Insurance Map
Site	North Cascade Ford Ecology cleanup site
TEE	terrestrial ecological evaluation
UST	underground storage tank
VSF	VSF Properties, LLC
WAC	Washington Administrative Code
Whatcom Environmental	Whatcom Environmental Services
ZGA	Zipper Geo Associates, LLC

1 INTRODUCTION

On behalf of VSF Properties, LLC (VSF), Maul Foster & Alongi, Inc. (MFA) has prepared this report as an addendum to a previously prepared preliminary feasibility study (FS [MFA, 2015]) for the North Cascade Ford property located at 116 West Ferry Street in Sedro-Woolley, Washington (the Property) (see Figure 1-1). The Property and an adjacent property owned by the Burlington Northern Santa Fe Railway Company (BNSF) are included in the North Cascade Ford Washington State Department of Ecology (Ecology) cleanup site (the Site) (facility site identification number 5813566, cleanup site identification number 12075).

A preliminary remedial investigation and feasibility study (preliminary RI/FS) was developed for the Site that synthesized existing site characterization findings, identified data gaps in the then current understanding of nature and extent of contamination, and identified preliminary remedial options (MFA, 2015). Additional activities include an underground storage tank (UST) and associated contaminated soil removal interim remedial action (MFA, 2016), data gap and supplemental data gap investigations (MFA, 2017a, b), and a hoist and associated contaminated soil removal interim remedial action (Zipper Geo Associates, LLC [ZGA], 2017).

Since issuance of the preliminary RI/FS, which presented cleanup alternatives that extended onto BNSF-owned property, MFA has engaged BNSF in pursuit of property access to allow for remedy implementation. Following significant efforts, MFA has been unable to gain BNSF assurance that it will grant access to its property for cleanup. Since both VSF and Ecology desire a timely remedy, following consultation with the Ecology site manager, remedial alternatives presented in this report reflect revisions that limit actions to within the boundaries of the Property.

The purpose of this report is to present revised cleanup alternatives that consider post-preliminary RI/FS actions, and that limit remedy to on-Property actions because of BNSF's refusal to grant access to its property. This report also provides a disproportionate-cost analysis of the revised cleanup alternatives that allows for identification of preferred cleanup actions.

1.1 Background

Property background information was obtained from Phase I environmental site assessments (ESAs) conducted by GeoEngineers, Inc., and Whatcom Environmental Services (Whatcom Environmental), included as Appendix A to the preliminary RI/FS (MFA, 2015). MFA also obtained background information through review of additional historical records, as discussed in Appendix B of the preliminary RI/FS.

1.1.1 Site Description

The Property's physical address is 116 West Ferry Street in Sedro-Woolley, Washington (see Figure 1-1). The Property comprises nine tax parcels and is bisected by West Ferry Street (see Figure 1-2); two of the parcels share the same parcel identification number (P109239), but are separate parcels that are divided by the West Ferry Street right-of-way. The Property is bordered by the BNSF rail line, Eastern Avenue, and commercial properties to the east. The parcels north of West Ferry Street are bordered by a rail line and an industrial property to the north, and a gasoline station and automobile parts store to the west. The parcels south of West Ferry Street are bordered by Rita Street to the west, Woodworth Street to the south, and an electrical substation and residential properties to the west and south. The Property is zoned for retail trade (automotive, marine craft, aircraft, and accessories) and is bordered by single- and multifamily housing, retail, and industrial land uses.

The Property is located in section 24 of township 35 north and range 4 east of the Willamette Meridian. The Property parcels cover approximately 3.5 acres. An automobile sales and service building ("auto repair shop") is located on the northern half of the Property and a small loan services building is located on the southern half of the Property.

1.1.2 Site History

Historical Sanborn fire insurance maps ("Sanborns") and aerial photographs associated with the Property were reviewed as part of the Phase I ESA reports prepared by others and MFA's historical records review (see appendices A and B, respectively, of the preliminary RI/FS [MFA, 2015]). The Sanborns, from as early as 1903, identify a variety of land-use activities on the Property. Former activities include residential use, a gasoline station, a hospital, a feed mill and storage facility, a hotel, railroad depots, a veterinary office, a fuel and transfer station, an electric plant, and an automobile dealership.

The Sanborns indicate that a building used for battery servicing and tire vulcanizing and containing "gas and oils" was located on the southern portion of parcel number P77410 from 1925 to 1953 (see Figure 1-2). This historical feature is referred to in this addendum as "the former gasoline station," consistent with references to this same feature in previous reports; however, that terminology is somewhat misleading, since the presence of gas and oils does not necessarily indicate that a gasoline station was present, and no information has been located that indicates that a gasoline station formerly operated at that location. The Whatcom Environmental Phase I ESA report indicates that, based on review of aerial photographs, a gasoline station may have been present on the Property until as late as the 1980s; however, the previous owners (Dan and Vern Sims of VSF) had worked at the Property since the mid-1960s, prior to Vern Sims's 1981 purchase of a portion of the Property, and have no recollection of a gasoline station in that area of the Property (MFA, 2015).

Railroad depots, with associated coal-storage sheds (former coal shed numbers 1 to 3; see Figure 1-2), were located on the two parcels numbered P109239 from approximately the early 1900s to the 1950s.

The 1907 Sanborn identifies an electric plant, powered by steam and fuel oil, on the northern portion of parcel number P77451, which was replaced by a woodshed and wood yard in the 1920s. In the 1950s, the wood yard was replaced by the original automobile dealership, which was expanded to its current size in the 1970s. From 1979 through the 1990s, the remaining Property parcels were converted to parking areas supporting the automobile dealership. The loan services building on parcel number P77493 was constructed in 2007.

1.2 Previous Environmental Investigations and Actions

The following subsections summarize previous environmental investigations and actions that have been conducted at the Site.

1.2.1 Phase II Environmental Site Assessment

In 2011, Whatcom Environmental conducted a Phase II ESA (Whatcom Environmental, 2011) on the Property to evaluate the presence or absence of environmental contamination associated with the recognized environmental conditions (RECs) identified in the Phase I ESA (see Figure 1-2). The Phase II ESA report is provided in Appendix A of the preliminary RI/FS (MFA, 2015). Elevated concentrations of chemicals were identified in the soil and groundwater sampled during the Phase II ESA.

1.2.1 2012-2014 Assessment Activities

In 2012, MFA completed a review of additional historical records for the Property to supplement the information provided in the Phase I and II ESAs, as discussed in Appendix B of the preliminary RI/FS. The Phase I and II ESAs and additional historical research identified several RECs associated with former operations at the Property. In 2012, MFA conducted two subsurface investigations on the Property for collection of soil, reconnaissance groundwater, and sub-slab soil vapor (MFA, 2012).

Two semiannual groundwater monitoring events were completed by MFA at three monitoring wells on the Property in May and October 2012. In 2014, MFA conducted four quarterly groundwater monitoring events at the Property at these monitoring wells (MFA, 2015).

1.2.2 Preliminary Remedial Investigation and Feasibility Study

In 2015, MFA prepared a preliminary RI/FS report that summarized the findings of previously completed environmental assessment activities, identified data gaps associated with site characterization, and identified preliminary remedial action options (MFA, 2015). Four separate and distinct areas were identified through the RI that have since been referred to as "areas of concern" (AOCs) and were discussed separately for purposes of evaluating cleanup options in the FS portion of that report. The AOCs defined in the preliminary RI/FS were:

- AOC 1: Auto Repair Shop. The auto repair shop AOC was defined by chemically impacted soil and groundwater at the north end of the auto repair shop and associated with a waste-oil spill, active waste-oil aboveground storage tank (AST), and former oil AST.
- AOC 2: Former USTs. The former USTs AOC was defined by chemically impacted groundwater southeast of the auto repair shop and associated with the former heating oil UST.
- AOC 3: Former Coal Storage Sheds. The former coal-storage sheds AOC was defined by chemically impacted, coal-containing soil along the eastern perimeter of the Property.

- AOC 4: Former Gasoline Station. The former gasoline station AOC was defined by chemically impacted groundwater at the westernmost end of the Property associated with this feature.

Following additional investigation of the Site discussed in Sections 1.2.4. and 1.2.5, contaminant concentrations in soil and groundwater in AOC 4 were determined to be below applicable cleanup standards. Therefore, no further action was considered for AOC 4 (see Appendix A). However, based on Ecology's Guidance for Remediation of Petroleum Contaminated Sites (Ecology, 2016), two additional quarterly groundwater sampling events at MW03 will be completed to confirm four quarters of compliance with Washington State Model Toxics Control Act (MTCA) Method A cleanup levels (CULs). Technical memorandums will be prepared summarizing the results from the two quarterly sampling events and submitted to Ecology. Further evaluation of AOC 4 will be completed at that time.

The preliminary RI/FS developed and evaluated the cleanup alternatives summarized in Section 2.2.1 of this report. However, based on a number of data gaps identified by the preliminary RI/FS, those alternatives were not considered final (MFA, 2015).

1.2.3 Underground Storage Tank Interim Remedial Action

In September and October 2016, an interim remedial action was completed in AOC 2. The interim remedial action included removal of two USTs (one 1,000-gallon leaded gasoline UST and one 1,000-gallon heating oil UST), excavation of petroleum-contaminated soil (PCS), and in situ treatment of petroleum-impacted groundwater (see Figure 1-2) (MFA, 2016). Regenesis' Advanced Oxygen Release Compound (ORC Advanced® [ORC-A]) pellets were added to groundwater in the excavation to accelerate bioremediation of remaining petroleum impacts.

To the extent feasible, PCS observed in the tank excavation was removed. Physical constraints, including the Property boundary, utilities, and the auto sales and service building, prevented complete removal of the contamination. The UST excavation was expanded to remove PCS from below and adjacent to the heating oil UST and along and outward from the heating oil tank supply line from approximately 5 to 15 feet below ground surface (bgs). PCS was left in place in the west and north sidewalls to preserve the structural integrity of the adjacent building foundation.

All constituents for which the soil confirmation samples were analyzed were either not detected or were detected at concentrations below MTCA Method A CULs, except for two sidewall samples, WSW02-S-7.5 and NSW02-S-7.5, which were collected from the final west and north sidewalls of the excavation, respectively. In these two samples, diesel-range organics (DRO) were detected above the MTCA Method A CUL, and total naphthalenes were above the MTCA Method A CUL. Staining and sheen were also observed in soil remaining in the northwest excavation sidewall.

A total of 601.2 tons of PCS was excavated and disposed of off-site. ORC-A, an in situ bioremediation (ISBR) product, was used as a backfill amendment in the excavation to treat remaining total petroleum hydrocarbons in the vadose zone and in groundwater.

MFA prepared the interim remedial action completion report describing the cleanup activities performed by Wyser Construction, Inc., with MFA oversight, from September 26 through October 11, 2016 (MFA, 2016). The completion report is provided in Appendix B.

1.2.4 Data Gap Investigation

In November 2016, MFA conducted a data gap investigation to further characterize the nature and extent of contamination in AOCs 1 through 3 (MFA, 2017a). Soil and reconnaissance groundwater samples on the BNSF property and the Property were collected from reconnaissance borings. In addition, existing monitoring wells were redeveloped and sampled. Borings were also used to collect additional soil samples in the former coal storage areas (MFA, 2017a).

During the data gap investigation, a concrete pad was identified under the asphalt paving in AOC 3, preventing drilling in that area. The asphalt in that area appeared to have been patched and was slightly elevated above the surrounding asphalt. Petroleum impacts were identified in soil and groundwater in adjacent areas. Ecology UST records indicate that an unleaded-gasoline UST may have been located in that area of the Property. Therefore, an abandoned UST was suspected as a source of the petroleum impacts identified in that area.

1.2.5 Supplemental Data Gap Investigation

In April and May 2017, a supplemental data gap investigation was conducted to assess data gaps remaining from the previous investigations associated with AOCs 1 through 3 (MFA, 2017a).

This investigation included the completion of temporary borings for collection of reconnaissance groundwater and/or soil; installation, development, and sampling of six groundwater monitoring wells (including a replacement well for a previously decommissioned monitoring well); and completion of a ground-penetrating radar (GPR) survey to assess the potential presence of an abandoned UST in AOC 3.

MFA recently completed a groundwater monitoring event at the Site. Included with this sampling event was a resurvey of monitoring well reference points. Ecology will be provided with the results of the most recent groundwater monitoring event, along with updated estimated potentiometric surface maps for the Site as soon as the laboratory and survey results become available.

On April 19, 2017, GeoTest Services, Inc. (GeoTest) of Bellingham, Washington, performed a GPR survey to assess the potential presence of an abandoned UST, as suspected based on the findings of the 2016 data gap investigation. During the GPR survey, GeoTest did not observe indications of an abandoned UST in the scanned area. GeoTest stated that they had been unable to observe conditions in the subsurface below approximately 5 feet bgs because of the presence of the groundwater table at that depth during the survey (see Appendix A of supplemental data gap investigation [MFA, 2017b]); however, it is unlikely that a UST would be present below this depth. GeoTest did observe significant amounts of fill in the scanned area but did not identify anomalies or a specific boundary or area of fill suggesting the presence of a UST.

1.2.6 Underground Hoist Interim Remedial Action

ZGA conducted an interim remedial action related to the removal of underground hoists at the Property in August 2017 (ZGA, 2017). Six underground hydraulic hoists, three hydraulic oil reservoir tanks, and associated conveyance piping were removed from the interior of the auto service building (see Figure 1-2). Field indications of releases of hydraulic oil were observed during excavation, and soil samples confirmed the presence of PCS exceeding MTCA CULs. Additional excavation was performed, and ORC-A pellets were placed in the excavation. PCS along the southern and southwestern sidewalls of the excavation could not be removed because of concerns regarding the structure's stability. The lateral and vertical extent of these remaining impacts is unknown (ZGA, 2017).

1.3 Conceptual Site Model and Terrestrial Ecological Evaluation

A conceptual site model (CSM) was presented in the preliminary RI/FS (MFA, 2015), based on information available at that time. Because additional information is now available as a result of the actions completed since then, the CSM has been updated to reflect current data. An updated terrestrial ecological evaluation (TEE) was also completed. The revised CSM (with updated TEE) is presented in Appendix C.

1.4 Indicator Hazardous Substances

Per Washington Administrative Code (WAC) 173-340-703, indicator hazardous substances (IHSs) are the subset of hazardous substances present at a site that require monitoring and analysis during any phase of remedial action for the purpose of characterizing a site or establishing cleanup requirements for that site. Consistent with WAC 173-340-703, when defining cleanup requirements at a site that is contaminated with a relatively large number of hazardous substances, Ecology may eliminate from consideration those that contribute a small percentage of the overall threat to human health and the environment. The remaining hazardous substances can then serve as IHSs for purposes of defining site cleanup requirements.

Contaminants that exceeded MTCA CULs (MTCA Method A or B) at least once were selected as IHSs, except for dissolved ferrous iron in groundwater. Dissolved ferrous iron was not selected as an IHS because it is likely a by-product of anaerobic biodegradation of petroleum compounds and is not associated with any features of environmental concern identified on the Property; therefore, characterization and cleanup of petroleum contamination likely will resolve any dissolved ferrous iron exceedances.

IHS selection for soil, groundwater, and soil vapor is presented in Tables 1-1 through 1-3. Selected IHSs include the following:

- **Soil:** DRO, oil-range organics (ORO), gasoline-range organics (GRO), carcinogenic polycyclic aromatic hydrocarbons (cPAHs), arsenic, cadmium, lead, total naphthalenes, polychlorinated biphenyls (PCBs), total xylenes, benzene, ethylbenzene, and methylene chloride

- **Groundwater:** DRO, ORO, GRO, benzene, total xylenes, 1,2,3-trichloropropane, 1-4-dichlorobenzene, chlorobenzene, and total naphthalenes
- Soil Vapor: None

Of those IHSs, the following subset was detected only on the BNSF property:

- **Groundwater:** 1,2,3-trichloropropane, 1,4-dichlorobenzene, and chlorobenzene

1.5 Cleanup Standards

According to MTCA, the cleanup standards for a particular site have two primary components: chemical-specific CULs and points of compliance (POCs). The CUL is the concentration of a chemical in a specific environmental medium that will not pose unacceptable risks to human health or the environment. The POC is the location where the CUL must be met.

MTCA provides three different options for establishing CULs for human health: Methods A, B, and C. MTCA Method A is designed for cleanups at relatively simple sites, such as small sites that have only a few hazardous substances. Method B can be used at any site. Method C is used primarily for industrial sites.

CULs were developed for screening purposes during the preliminary RI/FS (MFA, 2015) and have been redeveloped since the additional investigation and characterization of the identified impacts on the Property. The following sections describe the proposed final CULs for the Property.

1.5.1 Soil

Consistent with the preliminary RI/FS, relatively few contaminants have been detected in soil at the Property. Therefore, soil has been screened to MTCA Method A CULs for unrestricted land use. The Method A values are for protection of human health via the direct-contact or ingestion pathways and protection of groundwater via the leaching-to-groundwater pathway.

For certain constituents, MTCA Method A CULs are not available and Method B CULs have been applied. Method B CULs are calculated concentrations that are estimated to result in no acute or chronic toxic effects on human health for noncarcinogens, and concentrations for which the upper bound on the estimated excess cancer risk is less than or equal to one in one million (1×10^{-6}) for carcinogens.

Because conditions have not changed since issuance of the preliminary RI/FS, the Property has not become a substantial threat to potential ecological receptors, and therefore soil analytical results have not been compared to ecological screening values.

Soil CULs for the protection of potable groundwater (leaching-to-groundwater pathway) are not recommended as potential cleanup targets for soil on the Property. The leaching-to-groundwater criteria are helpful in providing an initial screening of soil data to assess the potential for impacts to groundwater; however, because empirical groundwater data are available, groundwater data are used to evaluate groundwater conditions. While some soil results did exceed their respective soil-to-groundwater leaching pathway screening criteria, groundwater data at those locations did not exceed direct-contact screening levels; therefore, elevated concentrations of those constituents in soil are not leaching to groundwater.

Soil CULs are presented in Table 1-4.

1.5.1.1 Point of Compliance in Soil

The soil POC is the depth at which soil CULs shall be attained. The standard POC in soil for human direct contact is from the ground surface to 15 feet bgs throughout the entire site. This standard POC is applied to soil on the Property.

1.5.2 Groundwater

Groundwater was screened to MTCA Method A CULs. Given that exposure pathways that include discharge of groundwater to surface water and/or sediment are considered insignificant (see the revised CSM presented in Appendix B), groundwater has not been screened to surface water CULs. For certain constituents, Method A CULs were not available and Method B CULs were used.

Groundwater CULs are presented in Table 1-4.

1.5.2.1 Point of Compliance in Groundwater

For groundwater, the POC is the point or points where the groundwater CULs must be attained for a site to comply with the cleanup standards. The standard POC is groundwater throughout the site from the uppermost level of the saturated zone extending vertically to the lowest depth that could potentially be affected by the site. Groundwater CULs shall be attained in all groundwater from the POC to the outer boundary of the hazardous-substance plume. A conditional POC may be established if it is not practicable to meet the CULs throughout the site within a reasonable restoration timeframe (WAC 173-340-720(8)(c)). Based on BNSF's refusal to provide access to portions of its property onto which the Site extends, a conditional POC at the Property boundary is proposed for this property-specific cleanup.

1.6 Indicator Hazardous Substances by AOC

The following IHSs exceed their respective CULs in each AOC (see Table 1-5):

AOC 1—AUTO REPAIR SHOP:

- Soil: DRO, ORO, GRO, methylene chloride, lead, cPAHs, total PCBs, and total naphthalenes
- Groundwater: DRO, ORO, GRO, 1,2,3-trichloropropane, 1,4-dichlorobenzene, and chlorobenzene

AOC 2—FORMER USTS:

- Soil: DRO and total naphthalenes
- Groundwater: DRO and total naphthalenes

AOC 3—FORMER COAL STORAGE SHEDS/POSSIBLE FILL AREA:

- Soil: arsenic, cadmium, lead, cPAHs, and total naphthalenes
- Groundwater: None

AOC 3—POSSIBLE FILL AREA:

- Soil: DRO, ORO, GRO, benzene, ethylbenzene, total xylenes, and total naphthalenes
- Groundwater: GRO, DRO, ORO, benzene, and total naphthalenes

1.7 Regulatory Framework

The Site is managed under Ecology's Voluntary Cleanup Program. This report was prepared consistent with guidance put forth in MTCA (WAC 173-340, specifically WAC 173-340-350(8)).

1.8 Applicable, Relevant, and Appropriate Requirements

In addition to CULs and POCs, cleanup standards must incorporate other state and federal regulatory requirements applicable to the cleanup action and/or its location, as appropriate. This section identifies applicable or relevant and appropriate requirements (ARARs) for implementing the remedial action for the Property. The ARARs focus on federal or state statutes, regulations, criteria, and guidelines. The specific types of ARARs for the preferred remediation alternative include contaminant-, location-, and action-specific ARARs, which are summarized in Table 1-6.

1.8.1 Contaminant-Specific ARARs

Contaminant-specific ARARs are usually health- or risk-based numerical values or methodologies that, when applied to site-specific conditions, result in the establishment of numerical contaminant values that are generally recognized by the regulatory agencies as allowable to protect human health and the environment.

1.8.2 Action-Specific ARARs

Action-specific ARARs are pertinent to particular remediation methods and technologies, and to actions conducted to support cleanup. Action-specific ARARs are requirements that may be pertinent to the performance of a specific remedial action because they prescribe how certain activities (e.g., disposal practices, media monitoring programs) must be conducted.

1.8.3 Location-Specific ARARs

Location-specific ARARs are restrictions placed on the concentration of hazardous substances or the conduct of activities solely because they are in a specific location. Some examples of special locations include floodplains, wetlands, historic sites, and sensitive ecosystems or habitats. Location-specific ARARs do not apply to the Site.

2 REMEDIAL ACTION ALTERNATIVES

2.1 Remedial Action Objectives

The primary remedial action objective is to substantially eliminate, reduce, and/or control unacceptable risks to human health and the environment posed by IHSs to the greatest extent practicable. The general remedial action objectives are summarized as follows:

- Prevent direct human contact with surface or subsurface soil and inhalation of dust from surface soil affected with IHSs at concentrations that exceed CULs, or reduce the risks associated with these exposure pathways to acceptable levels.
- Protect human receptors by reducing IHS concentrations in groundwater to CULs based on protection of drinking water.
- Attain, or otherwise comply with, the cleanup standards identified in Section 1.5.

2.2 Remedial Action Alternatives

Remedial action alternatives originally presented in the preliminary RI/FS (MFA, 2015) are summarized in Section 2.2.1. However, given the additional information gained through completion of data gap investigations and interim remedial actions (refer to Sections 1.2.3 through 1.2.6) and refinement of the remedial approach to on-Property action only, based on BNSF's refusal to grant access to its property, the remedial action alternatives have also been refined; these are presented in Section 2.2.2.

2.2.1 Preliminary RI/FS Remedial Action Alternatives

Cleanup alternatives that would achieve the remedial action objectives for the Site were developed during the preliminary RI/FS. Appropriate technologies were combined for soil and groundwater remediation in the development of cleanup options for each AOC. These cleanup options were developed to address IHSs in soil and groundwater on the Property and on a portion of the BNSF property (in AOC 1); they were based on the understanding of the nature and extent of contamination, as described in the RI.

The preliminary RI/FS evaluated a total of nine alternatives for the Property. Detailed descriptions and evaluation of these alternatives can be found in Section 11 of the preliminary RI/FS (MFA, 2015). In general, the alternatives evaluated were:

- AOC 1: Auto Repair Shop

  - Alternative 1.1: in situ geochemical stabilization (ISGS) and groundwater monitoring
  - Alternative 1.2: groundwater circulating wells (GCWs) and groundwater monitoring
  - Alternative 1.3: soil excavation, off-site disposal, and ISBR treatment (amended backfill and injections)
- AOC 2: Former USTs
  - Alternative 2.1: monitored natural attenuation (MNA), groundwater monitoring, and institutional controls
  - Alternative 2.2: soil excavation, off-site disposal, ISBR-amended backfill, and groundwater monitoring
- AOC 3: Former Coal Storage Sheds/Possible Fill Area
  - Alternative 3.1: groundwater monitoring, capping with institutional controls, and cap monitoring and maintenance
  - Alternative 3.2: limited excavation with off-site disposal
  - Alternative 3.3: excavation with off-site disposal

As described above, a fourth AOC, with two alternatives, was included in the preliminary RI/FS. However, following additional investigation and characterization of the Site, IHS concentrations in soil and groundwater were determined to be below applicable cleanup standards. Therefore, no further action is being considered for this AOC (see Appendix A).

2.2.2 Revised Remedial Action Alternatives

The alternatives for each AOC presented in the preliminary RI/FS remain relevant and appropriate even though additional investigation and interim action activities have been completed at the Site. However, some components of the preliminary RI/FS-defined preferred remedial action alternatives require modification to reflect the additional investigation findings and interim remedial actions that were completed in 2016 and 2017. Since March 2018, Ecology has provided clarification regarding remedial action expectations necessary to gain a No Further Action (NFA) opinion specific to the Property; in addition, BNSF has declined to provide access for conducting remedial action on the portion of AOC 1 that extends onto its property. Therefore, the remedial actions for each AOC have been modified to accommodate this additional information. Up-to-date summaries of the remedial action alternatives for each AOC are presented below.

2.2.2.1 AOC 1: Auto Repair Shop

The cleanup options considered for AOC 1 are ISGS, treatment via GCW technology, and soil excavation and off-site disposal with ISBR. All options also include groundwater monitoring.

Alternative 1.1: In Situ Geochemical Stabilization

In Situ Treatment. ISGS technology uses a permanganate-based solution to geochemically stabilize nonaqueous-phase liquid (NAPL) in the aquifer. Permanganate and other proprietary reagents are mixed into an aqueous solution that can be injected into the aquifer either through existing wells or by direct-push technology. As the solution migrates through the treatment area, it oxidizes contaminants, yielding partial mass removal. The ISGS solution also reacts with contaminants in the treated area, thereby coating NAPL surfaces with stable mineral precipitates that reduce mass flux. ISGS technology can be an effective and cost-efficient alternative to conventional cement stabilization, since the aqueous solution can be injected into an aquifer where it will follow preferred flow paths.

The treatment volume for ISGS was conservatively estimated in order to develop a cost estimate. The estimated treatment area is approximately 14,500 square feet (see Figure 2-1) and the treatment zone depth is assumed to be the saturated thickness, which is approximately 10 feet. Therefore, the treatment volume is approximately 5,370 cubic yards.

Groundwater Monitoring. Groundwater monitoring would be conducted to verify the performance of the ISGS treatment. Monitoring would be conducted at seven on-site monitoring wells (five existing and two new wells) during one post-treatment monitoring event to be conducted for a minimum of two months following treatment, with a minimum of four subsequent quarterly monitoring events to confirm attainment of CULs. Note that this designated number and frequency of groundwater monitoring events assumes that the treatment is effective, and that additional rounds of treatment and monitoring will not be required.

Cost. The net present value (NPV) for the total cost of implementing Alternative 1.1 is approximately $648,000. Cost estimates for each alternative associated with AOC 1 are presented in Table 2-1.

Alternative 1.2: Groundwater Circulating Wells

Groundwater Circulating Wells. GCWs provide subsurface remediation by creating a three-dimensional circulation pattern of the groundwater. GCWs treat groundwater and soil contaminated with hydrocarbons by pumping groundwater to the surface and aerating it, which removes most of the volatile vapors. The aerated groundwater is distributed over an area of contaminated soil and carries oxygen to the subsurface soil, promoting biodegradation. The combined process of biological treatment and physical extraction can reduce the time required to achieve remediation goals and lowers contaminant concentrations.

Treatment would consist of installation and operation of eight GCWs, as shown in Figure 2-2.

Groundwater Monitoring. Groundwater monitoring would be conducted to verify the performance of the GCW treatment and to demonstrate attainment of CULs. Monitoring would be conducted at seven on-site monitoring wells (five existing and two new wells) annually throughout operation of the GCW system to monitor the system performance. Following attainment of CULs and cessation of GCW operation, a minimum of four quarterly monitoring events would be conducted to confirm attainment of CULs. Note that this designated number and frequency of groundwater monitoring events assumes that the treatment is effective.

Cost. The NPV for the total cost of implementing Alternative 1.2 is approximately $1,097,000. Cost estimates for each alternative associated with AOC 1 are presented in Table 2-1.

Alternative 1.3: Soil Excavation, Off-site Disposal, and In Situ Bioremediation Treatment (Amended Backfill and Injections)

Limited Soil Excavation. The soil excavation option would remove the contaminated soil in the AOC to the north of the Property buildings and south of the BNSF property line. Because of existing building structures on the Property and denied access to the BNSF property, the amount of soil that can feasibly be removed is limited. As described below, shoring protection could be used to maximize the work area. Confirmational soil samples would be collected during the excavation to document the soil that will be left in place. This FS addendum assumes that, because of infrastructure and/or access constraints, it will not be feasible to remove all impacted soil through excavation. Therefore, the backfill material will be mixed with an ISBR product and placed near the base of the excavation (as described below).

The cost estimate includes the assumption that 10 feet of soil would be excavated at the identified area in the AOC (see Figure 2-3), which includes approximately 963 cubic yards of soil. Excavation and staging of the soil would be conducted using best management practices, including sedimentation-control and erosion-prevention practices, such as installing silt fences at the perimeter of the work area and using a stabilized construction entrance and exit. Additionally, dust-suppression measures (such as wetting soil) would be implemented during construction activities to minimize any airborne transport of contaminated soil particulates from the site.

Shoring Protection. Shoring protection likely will be required to maximize the footprint of the excavation area and prevent the sides from collapsing. This is necessary because of the close proximity of the existing buildings and BNSF property line; it will not be possible to excavate the depth necessary while sloping back to the maximum allowable slope. Shoring will act as the support system to prevent movement of soil and foundations. For the purposes of this FS addendum, it is assumed that some hydraulic shoring and sheeting will be required and that these will run for the length of the excavation adjacent to the BNSF property line and the building foundation.

Physical Barrier. Impacted material will be left in-place from a potential upgradient source (BNSF property). Therefore, following Ecology guidelines (Ecology, 2015), a physical barrier will be included to prevent potential recontamination from impacts on BNSF property. A high-density polyethylene (HDPE) geomembrane liner (60-mil) will be installed along the northern edge of the excavation footprint. The liner would be installed vertically from below the ground surface to the base of the excavation, covering the smear zone. It would run the length of the excavation on the north (upgradient) side only. The installed liner is not expected to cause any relevant hydraulic impacts to the aquifer (e.g., mounding effects).

Off-Site Disposal. The cost estimate includes the assumption that excavated contaminated soil will be disposed of as an F-listed waste.

ISBR Amended Backfill and Restoration. The area will be backfilled following excavation. Backfill material will be mixed with ISBR amendments to treat and reduce residual contamination beneath existing buildings and potentially beneath the BNSF property, or in the groundwater. This will allow treatment of residual contamination even after backfilling is complete. For the purposes of this FS addendum, it is assumed that an oxygen release compound will be mixed in with the clean backfill material in the smear zone of the AOC, and that only one application will be necessary to reduce any residual contaminants to below CULs.

Once excavation and backfilling have been completed, the Property will be restored. The AOC will be returned to a grade that is similar to current conditions, and the area will be paved with asphalt.

Since some impacted material will be left beneath the building, there is potential for some rebounding of contaminants in AOC 1. Therefore, for the purposes of this document, it is assumed that some follow-up ISBR treatment may be needed. Two follow-up treatment events (in the form of injections) are included in the cost estimate for Alternative 1.3.

Institutional Controls. A groundwater compliance monitoring plan will be developed, and an environmental covenant placed on the affected properties to prevent the withdrawal and use of contaminated groundwater.

Groundwater Monitoring. Groundwater monitoring would be conducted to verify the performance of the ISBR treatment. Monitoring would be conducted at seven on-site monitoring wells (five existing and two new wells) for a minimum of four quarters following ISBR treatment to confirm attainment of CULs. Because contamination will remain beneath the building and on BNSF property under this alternative, following attainment of CULs, the frequency of groundwater monitoring would be reduced to biannual for a period of ten years to demonstrate continued compliance with CULs. Note that this designated number and frequency of groundwater monitoring events assumes that the treatment is effective.

Cost. The NPV for the total cost of implementing Alternative 1.3 is approximately $650,000. Cost estimates for each alternative associated with AOC 1 are presented in Table 2-1.

2.2.2.2 AOC 2: Former USTs

The possible cleanup options for AOC 2 include in situ treatment, MNA, groundwater monitoring, and institutional controls.

Alternative 2.1: Monitored Natural Attenuation

MNA. MNA is a remediation methodology that employs naturally occurring physical, chemical, and biological processes that reduce the mobility and/or concentration of a contaminant. The purpose of monitoring is to verify that these processes are occurring. MNA is applicable in combination with other technologies in locations where groundwater contamination would remain in place, and is a relatively low-cost remedial option.

The implementation and reliability of MNA depend on several factors:

- Contaminant characteristics
- Site chemical and biological mechanisms
- Site hydrogeologic conditions
- Contaminant source control
- Restoration timeframe

Natural attenuation reduces the mobility and/or concentration of a contaminant through processes that destroy the contaminant or physically reduce contaminant concentration through hydrodynamic processes such as advection and diffusion. For these attenuation processes to be effective, the contaminant should have characteristics that allow it to degrade chemically (for example, through natural reductive or oxidative processes) or biologically (such as by microbial degradation), and site groundwater conditions supportive of these processes would be required.

Natural attenuation processes are typically slow, resulting in a long cleanup timeframe. Thus, implementing MNA alone likely would not be sufficient to satisfy cleanup objectives. However, MNA would be applicable in combination with remedial technologies that reduce or eliminate the contaminant source but leave residual contamination in groundwater.

Institutional Controls. A groundwater compliance monitoring plan will be developed, and an environmental covenant placed on the affected properties to prevent the withdrawal and use of contaminated groundwater.

Groundwater Monitoring. Groundwater monitoring would be conducted to verify that natural attenuation of contamination is occurring. Monitoring would be conducted at three monitoring wells (one new and two existing wells). Because no active remediation is proposed under this alternative, it is assumed that a minimum of 120 quarterly monitoring events (i.e., 30 years of monitoring) would be required to attain CULs.

Cost. The NPV for the total cost of implementing Alternative 2.1 (Figure 2-4) is approximately $751,000. Cost estimates for the two AOC 2 alternatives are presented in Table 2-2.

Alternative 2.2: Limited Soil Excavation, Off-site Disposal, in Situ Bioremediation

ISBR. In situ biotreatment can be used to treat residual petroleum hydrocarbons. This remedial option involves the injection (or addition) of biostimulant amendments to the subsurface environment in order to increase bacterial populations that will metabolize the target contaminants (petroleum hydrocarbons). Petroleum hydrocarbon plumes are typically depleted of oxygen, limiting the ability of naturally occurring microorganisms to degrade the petroleum hydrocarbons.

Excavation with off-site disposal and ISBR was completed as a component of the UST removal interim remedial action described in Section 1.2.3. The existing building and paving will act as a protective cap for remaining soil impacts that were inaccessible during previous interim action soil excavation activities. This alternative will also include a site management plan; environmental covenant; MNA with possible additional in situ treatment via injections beneath the auto repair shop building for remaining soil and groundwater impacts; and groundwater compliance monitoring.

Capping. This alternative will also utilize existing surfaces to prevent human exposure to contaminated soil. The existing buildings and pavement surfaces act as a cap and prevent direct contact with rainfall runoff and do not allow weathering or erosion of the contaminated soil beneath the cap.

Institutional Controls. A groundwater compliance monitoring plan will be developed and an environmental covenant placed on the affected properties to prevent the withdrawal and use of contaminated groundwater.

Groundwater Monitoring. Groundwater monitoring would be conducted to verify the performance of the ISBR treatment. Monitoring would be conducted at three on-site monitoring wells (one new and two existing wells) for a minimum of four quarters following ISBR treatment to confirm attainment of CULs. Because contamination will remain beneath the building under this alternative, following attainment of CULs, the frequency of groundwater monitoring would be reduced to biannual for a period of ten years to demonstrate continued compliance with CULs. Note that this designated number and frequency of groundwater monitoring events assumes that the treatment is effective.

Cost. The NPV for the total cost of implementing Alternative 2.2 (Figure 2-5) is approximately $847,000. Cost estimates for the two AOC 2 alternatives are presented in Table 2-2.

2.2.2.3 AOC 3: Former Coal-Storage Sheds/Possible Fill Area

The possible cleanup options for AOC 2 include in situ treatment, MNA, groundwater monitoring, and institutional controls.

Alternative 3.1: Capping

Capping. The capping option would prevent human exposure to contaminated soil and protect against or prevent direct contact with rainfall runoff, and would not allow weathering or erosion of the contaminated soil beneath the cap. It is assumed that no excavation of contaminated soil would be required under this cleanup option. This option also excludes areas outside the Property boundaries that would require additional access permissions (i.e., public right-of-way area).

This alternative would utilize existing surfaces to continue to prevent human exposure to contaminated soil. The existing pavement surfaces act as a cap that prevents direct contact with rainfall and does not allow weathering or erosion of the contaminated soil beneath the cap. Based on groundwater monitoring data, it is evident that the existing gravel-surfaced portions of the AOC also sufficiently protect the impacted soil beneath and should be considered a protective cap.

Cap Monitoring and Maintenance. Annual inspections would be conducted to monitor the integrity of the cap. A long-term monitoring plan would be used to document long-term effectiveness and would conform to the general requirements of MTCA regulations (WAC 173-340-410). Maintenance and/or repairs would be conducted as necessary (i.e., the necessity to be determined through the annual inspections) to maintain the integrity of the cap.

Institutional Controls. Because impacted soil would be left in place, institutional controls would be required under this option. As described in the MTCA regulations (WAC 173-340-440), institutional controls are intended to limit or prohibit activities that may interfere with the integrity of a cleanup action and that would result in risk of exposure to contaminated soil at the Property. These institutional controls may include on-site features (e.g., signs), educational programs (e.g., worker training and public notices), legal mechanisms (e.g., land use restrictions, environmental covenant, zoning designations, and building permit requirements), maintenance requirements for engineered controls (e.g., containment caps), and financial assurances.

Groundwater Monitoring. Groundwater monitoring would be conducted to monitor compliance with CULs. Monitoring would be conducted at five monitoring wells (one existing and four new wells). Because no active remediation is proposed under this alternative, it is assumed that a minimum of 120 quarterly monitoring events (i.e., 30 years of monitoring) would be required to attain CULs.

Cost. The NPV for the total cost of implementing Alternative 3.1 (Figure 2-6) is approximately $1,075,000. Cost estimates for each alternative associated with AOC 3 are presented in Table 2-3.

Alternative 3.2: Limited Soil Excavation and In Situ Bioremediation Amended Backfill, and Capping

ISBR. In situ biotreatment can be used to treat residual petroleum hydrocarbons. This remedial option involves addition of biostimulant amendments to the subsurface environment in order to increase bacterial populations that will metabolize the target contaminants (petroleum hydrocarbons). Petroleum hydrocarbon plumes are typically depleted of oxygen, limiting the ability of naturally occurring microorganisms to degrade the petroleum hydrocarbons.

Excavation with off-site disposal and ISBR would be completed in the Possible Fill Area, as shown on Figure 2-7. Following backfill of the excavation with clean soil amended with ISBR product, the excavation area would be restored with asphalt pavement to integrate with the existing pavement cap discussed below.

Off-Site Disposal. For cost-estimating purposes, it is assumed that 450 cubic yards of excavated contaminated soil would be disposed of in the Resource Conservation and Recovery Act (RCRA) Subtitle D landfill as nonhazardous waste.

Capping. Retaining the existing gravel and/or asphalt cap in areas outside the Possible Fill Area excavation would prevent human exposure to contaminated soil and protect against or prevent direct contact with rainfall runoff, and would not allow weathering or erosion of the contaminated soil beneath the cap. This option also excludes areas outside the Property boundaries that would require additional access permissions (i.e., public right-of-way area).

This alternative would utilize existing surfaces (i.e., gravel and pavement) to continue to prevent human exposure to contaminated soil. The pavement and gravel surfaces act as a cap that prevents direct contact with rainfall and does not allow weathering or erosion of the contaminated soil beneath the cap. As noted above, the excavation associated with the Possible Fill Area would be restored with asphalt pavement to integrate with the existing paved parking lot, which also acts as a cap. Based on groundwater monitoring data, it is evident that the gravel-surfaced portions of the AOC also sufficiently protect the impacted soil beneath and should be considered a protective cap.

Cap Monitoring and Maintenance. Annual inspections would be conducted to monitor the integrity of the cap. A long-term monitoring plan would be used to document long-term effectiveness and conform to the general requirements of MTCA regulations (WAC 173-340-410). Maintenance and/or repairs would be conducted as necessary (i.e., the necessity to be determined through the annual inspections) to maintain the integrity of the cap.

Institutional Controls. Because impacted soil would be left in place (coal impacts to surface soils), institutional controls would be required under this option. As described in the MTCA regulations (WAC 173-340-440), institutional controls are intended to limit or prohibit activities that may interfere with the integrity of a cleanup action and that would result in risk of exposure to contaminated soil at the Property. These institutional controls may include on-site features (e.g., signs), educational programs (e.g., worker training and public notices), legal mechanisms (e.g., land use restrictions, environmental covenant, zoning designations, and building permit requirements), maintenance requirements for engineered controls (e.g., containment caps), and financial assurances.

Groundwater Monitoring. Alternative 3.2 will remove the source associated with the two groundwater exceedances within the Possible Fill Area through excavation. The excavation will include ISBR-amended backfill to address any residual contamination (based on field observations and sample results). The remainder of the AOC leaves coal-impacted surface soils in place which have not resulted in impacts to shallow groundwater. As such, groundwater monitoring is not included under Alternative 3.2. Therefore, the FS addendum assumes that groundwater compliance monitoring will not be included.

Cost. The NPV for the total cost of implementing Alternative 3.2 (Figure 2-7) is approximately $179,000. Cost estimates for each alternative associated with AOC 3 are presented in Table 2-3.

Alternative 3.3: Excavation with Off-Site Disposal

Excavation. The soil excavation option would remove the contaminated soil in the portion of the AOC within the Property boundary (the top foot of soil across the AOC, to remove coal-impacted soil, with the exception of excavation in the Possible Fill Area, which would be completed to 10 feet bgs to remove PCS [see Figure 2-8]). This would result in the excavation and off-site disposal of approximately 3,500 cubic yards. Similar to the other two alternatives, this alternative excludes areas outside the Property boundaries that would require additional access permissions (i.e., public right-of-way area). Confirmational soil samples would be collected during the excavation to verify that all impacted soil is removed.

Excavation and staging of the soil would be conducted using best management practices, including sedimentation-control and erosion-prevention practices, such as installing silt fences at the perimeter of the work area and using a stabilized construction entrance and exit. Additionally, dust-suppression measures (such as wetting soil) will be implemented during construction activities to minimize any airborne transport of contaminated soil particulates from the site. Additional excavation, outside of what is included in this preliminary estimate, may be required. The need for additional excavation will be determined following additional characterization via confirmational soil sampling after or at the time of excavation. Following excavation, the area will be backfilled with clean fill material and subsequently repaved with asphalt.

Off-Site Disposal. For cost-estimating purposes, it was assumed that excavated contaminated soil would be disposed of in the RCRA Subtitle D landfill as nonhazardous waste.

Groundwater Monitoring. Groundwater monitoring would be conducted to verify the attainment of CULs following removal of source areas. Quarterly monitoring would be conducted at five monitoring wells (one existing and four existing wells) for a minimum of five years following excavation to confirm attainment of CULs. Note that this designated number and frequency of groundwater monitoring events assumes that the treatment is effective.

Cost. The NPV for the total cost of implementing Alternative 3.3 (Figure 2-8) is approximately $866,000. Cost estimates for each alternative associated with AOC 3 are presented in Table 2-3.

3 REMEDIAL ACTION ALTERNATIVE EVALUATION

3.1 Remedial Action Alternative Evaluation Criteria

The required criteria for evaluation of FS cleanup alternatives are defined in the MTCA regulation (WAC 173-340-360) and outlined below. The purpose of the evaluation is to identify the advantages and disadvantages of each alternative as part of the decision-making process. The specific criteria are all considered important, but they are grouped into three sets of criteria in the decision-making process:

- Threshold requirements:
  - Protect human health and the environment.
  - Comply with cleanup standards (WAC 173-340-700 through 173-340-760).
  - Comply with applicable state and federal laws (WAC 173-340-710).
  - Provide for compliance monitoring (WAC 173-340-410 and 173-340-720 through 173-340-760).
- Other requirements:
  - Use *permanent* solutions to the maximum practicable extent. If a disproportionate-cost analysis is used, then evaluate:
    - * Protectiveness
    - * Permanence
    - * Cost
    - * Effectiveness over the long term

        - Management of short-term risks
        - Technical and administrative implementability
    - Consideration of public concerns.
- Restoration timeframe

An alternative must meet the threshold criteria to be eligible for selection as a remedy. The expected performance of each alternative is assessed to identify its ability to comply with cleanup standards and applicable state and federal laws. If the alternative is deemed to comply, the subsequent evaluation of the alternative will be based on the remaining evaluation factors. The alternative that most closely satisfies these criteria will be the preferred alternative for the site.

3.1.1 Threshold Requirements

Overall Protection of Human Health and the Environment

This evaluation criterion (WAC 173-340-360(3)(f)(i)) assesses the degree to which existing risks are reduced, the time required to reduce risks at the site and attain cleanup standards, on- and off-site risks resulting from implementing the alternative, and improvement of overall environmental quality.

Comply with Cleanup Standards

The remediation alternatives presented in this analysis are assessed to determine whether they comply with MTCA cleanup standards (WAC 173-340-700 through WAC 173-340-760).

Comply with Applicable State and Federal Laws

The remediation alternatives presented herein are assessed to determine whether they comply with other applicable state and federal laws (WAC 173-340-710).

Provide for Compliance Monitoring

Compliance monitoring requirements are defined in WAC 173-340-410 and WAC 173-340-720 through WAC 173-340-760.

The institutional controls and long-term performance monitoring associated with each alternative vary slightly. Therefore, the cost associated with institutional controls and compliance monitoring is included in the conceptual-level cost estimate prepared for each alternative.

3.1.2 Other Requirements

Other requirements for remedial alternatives that must be evaluated once they meet threshold requirements are defined in WAC 173-340-360(2)(b) and include the use of permanent solutions to the maximum extent practicable (WAC 173-340-360(3)) and the provision of a reasonable restoration timeframe (WAC 173-340-360(4)).

The use of permanent solutions to the maximum extent practicable is a primary evaluation criterion for the remedial alternatives being considered for near-surface soil. The specific criteria that must be evaluated are provided in WAC 173-340-360(3)(f) and are discussed below.

Protectiveness. The overall protectiveness provided by the alternative to human health and the environment, including the degree to which existing risks are reduced, the time required to reduce risk at the site and attain cleanup standards, the on-site and off-site risks resulting from implementing the alternative, and the improvement of the overall environmental quality provided by the alternative, are evaluated by this criterion.

Permanence. This criterion evaluates the degree to which the alternative permanently reduces the toxicity, mobility, or volume of hazardous substances, including the adequacy of the alternative in destroying the hazardous substances, the reduction or elimination of hazardous-substance releases and sources of releases, the degree of irreversibility of waste-treatment processes, and the characteristics and quantity of treatment residuals generated.

Cost. This criterion evaluates the costs associated with the alternative, including direct capital costs (e.g., construction, equipment, land, services), indirect capital costs (e.g., engineering, supplies, contingency), long-term monitoring costs, operation and maintenance (O&M) costs, and periodic costs. To evaluate the relative cost for the remedial alternatives, various cost-estimating resources were used. This is necessary so that the relative cost of each alternative can be evaluated to help identify the most practicable cleanup alternative using the disproportionate-cost analysis procedures presented in WAC 173-340-360(3)(e) and summarized below.

One of the primary goals in developing cost estimates for alternative evaluation is to ensure that costing procedures and assumptions are consistent between alternatives to reduce the potential for bias in one alternative assumption compared to other alternative assumptions. This approach presents a level playing field in evaluating the relative costs of multiple alternatives. This cost-estimating approach is appropriate for cleanup alternative analysis costs. However, because of the conservative approach to estimating mass and area, the cost estimates are not appropriate for use in other applications. Cost estimates that are more accurate will be developed during remedial design as part of the bidding and contractor-selection process.

Effectiveness over the Long Term. Long-term effectiveness includes the degree of certainty that the alternative will be successful, the reliability of the alternative during the period of time that hazardous substances are expected to remain on site at concentrations that exceed CULs, the magnitude of residual risk with the alternative in place, and the effectiveness of controls required to manage treatment residues or remaining wastes. The following types of cleanup action components can be used as a guide, in descending order, when assessing the relative degree of long-term effectiveness: reuse or recycling; destruction or detoxification; immobilization or stabilization; on-site or off-site disposal in an engineered, lined, and monitored facility; on-site isolation or containment with attendant engineering controls; and institutional controls and monitoring.

Management of Short-Term Risks. This criterion evaluates the risk to human health and the environment associated with the alternative during construction, and the effectiveness of measures taken to manage such risks.

Technical and Administrative Implementability. This criterion assesses whether and how practically the alternative can be implemented, including consideration of whether the alternative is technically possible; availability of necessary off-site facilities, services, and materials; administrative and regulatory requirements; scheduling; size; complexity; monitoring requirements; access for construction operations and monitoring; and integration with existing site operations and other current or potential remedial actions.

The Disproportionate-Cost Analysis Procedure

Alternatives that meet threshold requirements for cleanup actions are assessed to determine which provide permanent solutions to the maximum extent practicable, consistent with WAC 173-340-360(3). This assessment is based on a disproportionate-cost analysis.

In the disproportionate-cost analysis, the alternatives are ranked from greatest to least degree of permanence. The cleanup action alternative that provides the greatest degree of permanence shall be the baseline cleanup action alternative (WAC 173-340-360(3)(e)(ii)(B)).

The alternatives are compared by evaluating the six cost/benefit criteria defined above: protectiveness; permanence; cost; effectiveness over the long term; management of short-term risks; and technical and administrative implementability. The regulation gives a general discussion of the types of factors to consider when evaluating each criterion.

When assessing whether a cleanup action uses permanent solutions to the maximum extent practicable, the following test is applied (WAC 173-340-360(3)(e)(i)):

> Costs are disproportionate to benefits if the incremental costs of the alternative over that of a lower cost alternative exceed the incremental degree of benefits achieved by the alternative over that of the other lower cost alternative.

As stated in WAC 173-340-360(3)(3)(ii)(C):

> The comparison of benefits and costs may be quantitative, but will often be qualitative and require the use of best professional judgment. In particular, the department has the discretion to favor or disfavor qualitative benefits and use that information in selecting a cleanup action. Where two or more alternatives are equal in benefits, the department shall select the less costly alternative provided the requirements of subsection (2) of this section are met.

Quantitative measures of costs and benefits, if performed, must be made in units that are common among the alternatives so that the comparison can be meaningful. It is best if the units of costs and the units of benefits can be the same, such as dollars. This is rarely possible at environmental cleanup sites. Costs are estimated in dollars, but quantitative measures of benefits are usually available only in terms of mass or volume of contaminant removed or some other physical, nonmonetary measure.

One quantitative measure of benefits that can be assessed is the number of IHS-receptor pathways that are present before and after a remedial alternative is implemented. Where benefits cannot be quantified in common units, they will be assessed qualitatively.

Table 3-1 provides a summary (by AOC) of each of the cleanup alternatives evaluated, with a brief description of the components. A cost-benefits evaluation table, that ranks the comparative benefits of each alternative (based on the following evaluation criteria), is presented in Table 3-2. The outcome of this evaluation is presented in Table 3-3.

3.1.3 Restoration Timeframe

Cleanup actions must provide for a reasonable restoration timeframe. The process used to determine whether an alternative provides for a reasonable restoration timeframe is outlined in WAC 173-340-360(4). The factors that are considered include:

- The potential risks posed by the site to human health and the environment
- The practicability of achieving a shorter restoration timeframe
- Current uses of the site and surrounding areas, and associated resources that are or may be affected by releases from the site
- Potential future uses of the site and surrounding areas, and associated resources that are or may be affected by releases from the site
- Availability of alternative water supplies
- Likely effectiveness and reliability of institutional controls
- Ability to control and monitor migration of hazardous substances from the site
- Toxicity of the hazardous substances
- Natural processes that reduce concentrations of hazardous substances and that have been documented as occurring at the site or under similar site conditions.

3.2 Remedial Action Alternative Evaluation

The following subsections evaluate each cleanup alternative presented in Section 2.2.2 in accordance with WAC 173-340-360. Descriptions of the evaluation criteria used to evaluate the alternatives are provided in Section 3.1. The cleanup alternatives for each AOC are evaluated through comparative analysis in this section. The comparative analysis assesses the relative capability of the alternatives, as applicable to the IHSs identified in the AOC, to meet threshold requirements, to use permanent solutions to the maximum extent practicable, and to provide a reasonable restoration timeframe. A disproportionate-cost analysis is used to determine whether the cleanup action uses permanent solutions to the maximum practicable extent. The procedure for disproportionate-cost analysis is summarized in Section 3.1.2. The factors assessed to determine whether the restoration timeframe is reasonable are summarized in Section 3.1.3.

3.2.1 AOC 1: Auto Repair Shop

The three cleanup alternatives considered in AOC 1 are evaluated per MTCA criteria in this section. Subsequent subsections present evaluations of the three cleanup alternatives as follows:

- Alternative 1.1—ISGS
- Alternative 1.2—GCW Treatment
- Alternative 1.3—Soil Excavation, Off-site Disposal, and ISBR treatment (amended backfill and injections)

3.2.1.1 Threshold Requirements

Protect Human Health and the Environment. Alternatives 1.1, 1.2, and 1.3 will eliminate or mitigate risk associated with site workers' and the public's direct contact with or incidental ingestion of IHSs in soil and groundwater. The alternatives reduce this risk by removing contaminated soil through excavation, physical treatment of soil and/or groundwater, and/or containment via use of existing buildings/pavement as a cap. Alternatives 1.1 and 1.2 do not include excavation of the contaminated soil, but rather rely on treatment and/or capping the AOC; however, all three alternatives are protective of human health and the environment.

The three alternatives will break the exposure pathways by which IHSs can reach human receptors. Based on the definition of a permanent cleanup action in WAC 073-340-200, Alternative 1.2 is judged to provide the greatest degree of theoretical permanence and a greater degree of protection of human health and the environment than the other two alternatives.

Comply with MTCA Cleanup Standards and Applicable State and Federal Laws. The CULs for the site are based on the requirements of MTCA Methods A and B. All three alternatives have been developed to attain applicable CULs; however, Alternatives 1.2 and 1.3 include physical removal of contaminants (removal of contaminated groundwater in Alternative 1.2 and excavation of contaminated soil in Alternative 1.3). All three alternatives will break the groundwater exposure pathway through treatment, and rely to varying degrees on existing building/pavement surfacing to prevent exposure to contaminated soils. Alternative 1.1 will stabilize groundwater contamination and rely on existing surfacing to contain soil contamination; Alternative 1.2 will treat both soil and groundwater; and Alternative 1.3 will remove contaminated soil and/or rely on existing building foundations to contain underlying contaminated soil and will treat groundwater contamination. Thus, the three alternatives comply with applicable laws.

3.2.1.2 Disproportionate-Cost Analysis

Protectiveness. Each alternative provides physical and/or administrative controls that will reduce the potential for human exposure to IHSs. All three provide varying degrees of physical treatment that break the direct-contact exposure pathways (Alternative 1.1 mitigates contaminant mobility, Alternative 1.2 removes and treats contamination, and Alternative 1.3 enhances biodegradation of contaminants). All three alternatives are protective. Alternative 1.2 is judged to provide greater protectiveness than the other alternatives because it removes contamination throughout the portion of the AOC on the Property. Alternative 1.3 provides greater protectiveness than Alternative 1.1 because is also reduces contamination concentrations in the AOC.

Permanence. Alternatives 1.2 and 1.3 will permanently reduce contaminant mass in the AOC through physical removal and biodegradation. On the other hand, Alternative 1.1 mitigates contaminant mobility, but does not permanently reduce contaminant concentrations in the subsurface. Therefore, Alternatives 1.2 and 1.3 are judged to provide a greater degree of theoretical permanence than Alternative 1.1, since they involve reduction in contaminant mass from the AOC.

Cost. The costs of implementing Alternatives 1.1, 1.2, and 1.3 are estimated to total approximately $648,000, $1,097,000, and $650,000, respectively, assuming a standard FS accuracy range of -35 to +50% (USEPA, 2000). Because Alternative 1.2 is technically the most permanent alternative, it serves as the baseline against which other alternatives are compared. The estimated cost of implementing Alternatives 1.1 and 1.3 are both approximately 1.7 times less expensive than Alternative 1.2. The components of these costs and the assumption used in the estimates are provided in Table 2-1. Alternatives 1.2 and 1.3 result in contaminant mass reduction in the AOC, while Alternative 1.1 immobilizes contaminants. All three alternatives prevent direct contaminant contact with receptors. However, Alternative 1.3 is judged the most cost-effective in that it results in contaminant reduction benefits similar to Alternative 1.2, but at a much lower cost.

Effectiveness over Long Term. Alternative 1.3 provides long-term IHS concentration reduction by permanently removing/degrading IHS mass in the subsurface. Alternative 1.2 also provides long-term IHS concentration reduction and permanently removes the majority of IHS mass in the subsurface; however, it will leave some impacted material beneath the existing building and rely on ISBR and MNA. Alternative 1.1 is judged to be effective as well but would not physically reduce IHS concentrations. Therefore, Alternative 1.3 is judged to be the most effective over the long term, followed by Alternative 1.2. Alternative 1.1 is judged to be less effective than the other two alternatives.

Management of Short-Term Risks. All three alternatives use existing technologies to implement the identified remedies. Short-term risks to construction workers and the public (allowing for ongoing operation of the existing business throughout remedy implementation) could be reduced by adherence to a health and safety plan prepared specifically for the planned work and expected conditions at the site. Applicable procedures contained in a health and safety plan have been shown to effectively manage the limited risk associated with the remedies. The remediation alternatives employ relatively common construction activities with similar short-term risks. However, handling and off-site transport of contaminated soil pose additional short-term risks, such as potential direct-contact exposure risk to the transport personnel and risk of cross-contamination in the event of material loss or spillage during transport. In addition, Alternative 1.3 relies on significant excavation shoring to allow for removal of the maximum mass of contamination and the maximum coverage of ISBR product possible, which creates additional short-term risks that the other alternatives do not. For these reasons, Alternative 1.3 is judged to have the greater short-term risk than the other two alternatives.

Technical and Administrative Implementability. The technologies employed by each of the alternatives are common to the environmental remediation industry, although ISGS employed under Alternative 1.1 is a relatively new technology with a shorter track record of success than the technologies employed by the other two alternatives. Alternative 1.2 requires long-term operation of the GCW system (assumed for ten years); long-term operation of a treatment system can impact the long-term implementability of an alternative if the system encounters operational issues or if the responsible operator fails to maintain the system appropriately. Regardless of alternative, controls to prevent worker exposure can be readily implemented. An active automobile dealership and repair shop operates on the Property; therefore, all three alternatives will require coordination with the business to ensure minimal impacts to operations. Nearby access to services, materials, supplies, and skilled labor should be readily available.

Alternative 1.3 may require staging to limit disruptions to the business and local infrastructure caused by excavation and hauling. Alternatives 1.1 and 1.2 would require significant coordination with the business during remedy implementation within the footprint of the existing building. Alternative 1.3 would require characterization and acceptance of the contaminated soil waste by the disposal facility. Alternatives 1.1 and 1.3 likely would require an environmental covenant based on the possibility that contamination will be left in the subsurface. All alternatives are judged to be administratively implementable; however, Alternative 1.3 is judged to be the most implementable, based on the short-term period needed to implement the active remedy and its use of the most proven remedial technology of the three alternatives.

Disproportionate-Cost Analysis Summary. The total costs to implement Alternatives 1.1, 1.2, and 1.3 are estimated at approximately $648,000, $1,097,000, and $650,000 (-35 to +50%), respectively. Cost estimate details are provided in Table 2-1.

Alternatives 1.2 and 1.3 are more expensive than Alternative 1.1; however, these alternatives provide greater reduction in contaminant mass, which in turn provides a greater reduction in exposure risk to receptors. All three alternatives break the exposure pathways by which IHSs can reach potential receptors.

Alternatives 1.2 and 1.3 are judged to provide greater permanence and long-term effectiveness than Alternative 1.1; however, Alternative 1.2 is judged to have the greatest short-term risk. The alternatives have relatively comparable overall implementability, although, as described above, Alternative 1.3 is judged to be more implementable than Alternatives 1.1 and 1.2. Therefore, Alternative 1.3's permanence and effectiveness relative to Alternative 1.2, when considered with its cost effectiveness (an incremental cost difference of $447,000) outweigh short-term risk. Thus, of the three cleanup alternatives evaluated, Alternative 1.3 uses permanent solutions to the greatest extent practicable.

3.2.1.3 Restoration Timeframe Evaluation

Remedial alternatives must provide for a reasonable restoration timeframe, consistent with WAC 173-340-360(2)(b)(ii), and a number of factors are considered in determining whether an alternative provides this (as summarized in Section 3.1.3). This section evaluates the restoration timeframes potentially achieved by Alternatives 1.1, 1.2, and 1.3.

The three remediation alternatives can successfully address the exposure risk posed by the IHSs in AOC 1, although Alternatives 1.2 and 1.3 provide more permanent remedies than Alternative 1.1, which provides no treatment of contamination, but simply stabilizes contamination in place.

The construction work associated with remedy implementation may disrupt site operations (active automobile dealership and repair shop). However, such disruptions would be limited to the short construction period needed to implement the cleanup alternatives. Best management practices would be employed during construction to control potential risks and disruptions associated with the work.

Active implementation of Alternatives 1.1 and 1.3 would be reasonably similar (less than a month to complete active remediation, followed by periodic groundwater compliance monitoring) and significantly shorter than the anticipated timeframe for active remediation of Alternative 1.2 (assumed that ten years of O&M of the GCW treatment system is needed to attain CULs).

3.2.2 AOC 2: Former USTs

The two cleanup alternatives considered in AOC 2 are evaluated per MTCA criteria in this section. Descriptions of the evaluation criteria used to evaluate the alternatives are provided in Section 3.1. Subsequent subsections present evaluations of the two cleanup alternatives as follows:

- Alternative 2.1—MNA
- Alternative 2.2—Limited Soil Excavation, Off-site Disposal, and ISBR-amended Backfill

3.2.2.1 Threshold Requirements

Protect Human Health and the Environment. Alternatives 2.1 and 2.2 will eliminate or mitigate risk associated with site workers' and the public's direct contact with or incidental ingestion of IHSs in soil and groundwater. The alternatives reduce this risk by removing contaminated soil through long-term contaminant degradation, excavation, physical treatment of groundwater, and/or containment via use of existing buildings/pavement as a cap. Alternative 2.1 does not include active remediation, but rather relies on long-term degradation of groundwater contaminants and capping the AOC; however, both alternatives are protective of human health and the environment.

The two alternatives will break the exposure pathways by which IHSs can reach human receptors. Based on the definition of a permanent cleanup action in WAC 073-340-200, Alternative 2.2 is judged to provide the greatest degree of theoretical permanence and a greater degree of protection of human health and the environment than Alternative 2.1.

Comply with MTCA Cleanup Standards and Applicable State and Federal Laws. The CULs for the site are based on the requirements of MTCA Methods A and B. Both alternatives have been developed to attain applicable CULs; however, Alternative 2.2 is the only alternative that includes physical removal of contaminants (via excavation). Both alternatives will break the groundwater exposure pathway through treatment (MNA is considered a form of "treatment" under MTCA), and rely to varying degrees on existing building/pavement surfacing to prevent exposure to contaminated soils. Both alternatives will rely on institutional controls to mitigate the risk from any residual contaminated soil. Thus, both alternatives comply with applicable laws.

3.2.2.2 Disproportionate-Cost Analysis

Protectiveness. Both alternatives provide physical and/or administrative controls that will reduce the potential for human exposure to IHSs. However, only Alternative 2.2 provides physical treatment that breaks the direct-contact exposure pathways (Alternative 2.1 relies on natural degradation of contaminants). With appropriate institutional controls, both alternatives are protective. Alternative 2.2 is judged to provide greater protectiveness than Alternative 2.1 because it physically removes contamination.

Permanence. Alternatives 2.1 and 2.2 will permanently reduce contaminant mass in the AOC through biodegradation and/or physical removal. However, Alternative 2.2 is judged to provide greater permanence in that it theoretically has higher potential for attaining CULs in a shorter period of time.

Cost. The costs of implementing Alternatives 2.1 and 2.2 are estimated to total approximately $751,000, and $847,000, respectively, assuming a standard FS accuracy range of -35 to +50% (USEPA, 2000). Because Alternative 2.2 is technically the most permanent alternative, it serves as the baseline against which the other alternative is compared. The estimated cost of implementing Alternatives 2.1 is 1.13 times less than Alternative 2.2. The components of these costs and the assumption used in the estimates are provided in Table 2-2. Both alternatives result in contaminant mass reduction in the AOC and prevent direct contaminant contact with receptors. However, Alternative 2.1 is judged the most cost-effective in that it results in contaminant reduction benefits similar to Alternative 2.2, but at a much lower cost.

Effectiveness over Long Term. Alternatives 2.1 and 2.2 provide long-term IHS concentration reduction by degrading/permanently removing IHS mass in the subsurface. Therefore, both alternatives are judged to be equally effective over the long term.

Management of Short-Term Risks. Both alternatives use existing approaches to implement the identified remedies. Short-term risks to construction workers and the public (allowing for ongoing operation of the existing business throughout remedy implementation) occur only under Alternative 2.2, but could be reduced by adherence to a health and safety plan prepared specifically for the planned work and expected conditions at the site. Applicable procedures contained in a health and safety plan have been shown to effectively manage the limited risk associated with the remedies. Also, Alternative 2.2 employs relatively common construction activities with similar short-term risks. However, handling and off-site transport of contaminated soil pose additional short-term risks, such as potential direct-contact exposure risk to the transport personnel and risk of cross-contamination in the event of material loss or spillage during transport. For these reasons, Alternative 2.2 is judged to have a greater short-term risk than Alternative 2.1.

Technical and Administrative Implementability. The technologies employed by the two alternatives are common to the environmental remediation industry. Alternative 2.1 requires a significantly longer period to attain CULs (assumed 30 years); groundwater performance monitoring for a significant period of time does pose risk to implementability of an alternative if the responsible operator fails to perform monitoring. Regardless of alternative, controls to prevent worker exposure can be readily implemented. An active automobile dealership and repair shop operates on the Property; therefore, both alternatives will require coordination with the business to ensure minimal impacts to operations. Nearby access to services, materials, supplies, and skilled labor should be readily available.

Alternative 2.2 may require staging to limit disruptions to the business and local infrastructure caused by excavation and hauling, and would require characterization and acceptance of the contaminated soil waste by the disposal facility. Both alternatives likely would require an environmental covenant based on the potential for residual contamination in the subsurface. Both alternatives are judged to be administratively implementable; however, Alternative 2.2 is judged to be more implementable than Alternative 2.1, based on the short-term period needed to implement the active remedy and its use of the more effective remedial technology.

Disproportionate-Cost Analysis Summary. The total costs to implement Alternatives 2.1 and 2.2 are estimated at approximately $751,000, and $847,000 (-35 to +50%), respectively. Cost estimate details are provided in Table 2-2.

Alternative 2.2 is more expensive than Alternative 2.1; however, this alternative provides greater reduction in contaminant mass, which in turn provides a greater reduction in exposure risk to receptors. Both alternatives break the exposure pathways by which IHSs can reach potential receptors.

Alternative 2.2 is judged to provide greater permanence and long-term effectiveness than Alternative 2.1; however, Alternative 2.2 is judged to have greater short-term risk. Alternative 2.1 is judged to be more implementable in the near term than Alternative 2.2 because there is significantly less active remediation; however, it is projected to take significantly longer to attain site closure. Therefore, Alternative 2.2's permanence and effectiveness relative to Alternative 2.1, when considered with its higher cost (an incremental cost difference of $96,000), outweigh short-term risk. Thus, of the two cleanup alternatives evaluated, Alternative 2.2 uses permanent solutions to the greatest extent practicable.

3.2.2.3 Restoration Timeframe Evaluation

Remedial alternatives must provide for a reasonable restoration timeframe, consistent with WAC 173-340-360(2)(b)(ii), and a number of factors are considered in determining whether an alternative provides this (as summarized in Section 3.1.3). This section evaluates the restoration timeframes potentially achieved by Alternatives 2.1 and 2.2.

Both remediation alternatives can successfully address the exposure risk posed by the IHSs in AOC 2, although Alternative 2.2 provides a more permanent remedy than Alternative 2.1, which provides no treatment of contamination but simply allows for natural degradation of contamination over time.

The construction work associated with remedy implementation may disrupt site operations (active automobile dealership and repair shop). However, such disruptions would be limited to the short construction period needed to implement the cleanup alternatives. Best management practices would be employed during construction to control potential risks and disruptions associated with the work.

With active implementation of Alternative 2.2, less than a month would be required to complete active remediation, while no active construction is associated with Alternative 2.1 (other than installation of one new groundwater monitoring well). However, the overall timeframe for attainment of CULs is much shorter for Alternative 2.2 (ten years) relative to Alternative 2.1 (30 years).

3.2.3 AOC 3: Former Coal-Storage Sheds/Possible Fill Area

The three cleanup alternatives considered in AOC 3 are evaluated per MTCA criteria in this section. Descriptions of the evaluation criteria used to evaluate the alternatives are provided in Section 3.1. Subsequent subsections present evaluations of the three cleanup alternatives as follows:

- Alternative 3.1—Capping
- Alternative 3.2—Soil Excavation, Off-site Disposal, ISBR-amended Backfill, and Capping
- Alternative 3.3—Soil Excavation and Off-site Disposal

3.2.3.1 Threshold Requirements

Protect Human Health and the Environment. Alternatives 3.1, 3.2, and 3.3 will eliminate or mitigate risk associated with site workers' and the public's direct contact with or incidental ingestion of IHSs in soil and groundwater. The alternatives reduce this risk by containment via use of existing pavement as a cap, removing contaminated soil through excavation, and use of ISBR. Alternative 3.1 does not include excavation of the contaminated soil, but rather relies solely on capping the AOC; however, all three alternatives are protective of human health and the environment.

The three alternatives will break the exposure pathways by which IHSs can reach human receptors. Based on the definition of a permanent cleanup action in WAC 073-340-200, Alternative 3.3 is judged to provide the greatest degree of theoretical permanence and a greater degree of protection of human health and the environment than the other two alternatives.

Comply with MTCA Cleanup Standards and Applicable State and Federal Laws. The CULs for the site are based on the requirements of MTCA Methods A and B. All three alternatives have been developed to attain applicable CULs; however, Alternative 3.1 relies on capping with institutional controls while Alternatives 3.2 and 3.3 include either partial or full physical removal of contaminants (via excavation). While all three alternatives will break the groundwater exposure pathway, Alternative 3.2 is the only alternative that provides for active treatment of groundwater. Although each alternative varies in approach, all comply with applicable laws.

3.2.3.2 Disproportionate-Cost Analysis

Protectiveness. Each alternative provides physical and/or administrative controls that will reduce the potential for human exposure to IHSs. All three provide barriers and/or physical treatment/removal that break the direct-contact exposure pathways (Alternative 3.1 solely relies on a physical barrier, Alternative 3.2 relies on a combination of contamination treatment/removal and a physical barrier, and Alternative 3.3 physically removes all contamination). All three alternatives are protective. Alternative 3.3 is judged to provide greater protectiveness than the other alternatives because it removes contamination throughout the portion of the AOC on the Property. Alternative

3.2 provides greater protectiveness than Alternative 3.1 because is also reduces contamination concentrations in the AOC, but is less protective than Alternative 3.3.

Permanence. Alternative 3.3 will permanently reduce soil contaminant mass in the AOC through physical removal but relies on degradation of groundwater contamination in the Possible Fill Area through removal of the overlying source. Alternative 3.2 will permanently reduce some contaminant mass in the AOC by excavating contaminated soil in the possible fill area and placing ISBR product in the backfill to treat underlying groundwater, but will leave coal-related impacts in shallow soil beneath the existing pavement cap. On the other hand, Alternative 3.1 leaves all contamination in place beneath the existing cap. Therefore, Alternative 3.3 is judged to provide a greater degree of theoretical permanence than the other alternatives because all contaminant mass in soil would be removed from the AOC.

Cost. The costs of implementing Alternatives 3.1, 3.2, and 3.3 are estimated to total approximately \$1,075,000, \$179,000, and \$866,000, respectively, assuming a standard FS accuracy range of -35 to +50% (USEPA, 2000). Because Alternative 3.3 is technically the most permanent alternative, it serves as the baseline against which other alternatives are compared. The estimated cost of implementing Alternative 3.1 is 0.8 times less than Alternative 3.3; the cost of implementing Alternative 3.2 is 4.8 times less than Alternative 3.3. The components of these costs and the assumption used in the estimates are provided in Table 2-3. Alternatives 3.2 and 3.3 result in contaminant mass reduction in the AOC, while Alternative 3.1 leaves all contamination in place and relies on a barrier to break exposure pathways. All three alternatives prevent direct contaminant contact with receptors. However, Alternative 3.2 is judged the most cost-effective in that it results in contaminant reduction benefits similar to Alternative 3.3, but at a much lower cost.

Effectiveness over Long Term. Alternatives 3.2 and 3.3 provide long-term IHS concentration reduction by degrading/permanently removing IHS mass in the subsurface; Alternative 3.1 is judged to be effective as well but would not physically reduce IHS concentrations. Therefore, Alternatives 3.2 and 3.3 are judged to be equally the most effective over the long term.

Management of Short-Term Risks. All three alternatives use existing technologies to implement the identified remedies. Short-term risks to construction workers and the public (allowing for ongoing operation of the existing business throughout remedy implementation) could be reduced by adherence to a health and safety plan prepared specifically for the planned work and expected conditions at the site. Applicable procedures contained in a health and safety plan have been shown to effectively manage the limited risk associated with the remedies. The remediation alternatives employ relatively common construction activities with similar short-term risks. However, handling and off-site transport of contaminated soil under Alternatives 3.2 and 3.3 pose additional short-term risks, such as potential direct-contact exposure risk to the transport personnel and risk of cross-contamination in the event of material loss or spillage during transport. Because the mass and overall excavation footprint would be significantly larger under Alternative 3.3 than 3.2, there are greater short-term risks in implementing Alternative 3.3. For these reasons, Alternative 3.3 is judged to have the greater short-term risk, and Alternative 3.1 the least.

Technical and Administrative Implementability. The technologies employed by each of the alternatives are common to the environmental remediation industry. Alternatives 3.1 and 3.2 require maintenance of a cap and adherence to institutional controls. Regardless of alternative, controls to prevent worker exposure can be readily implemented. An active automobile dealership and repair shop operates on the Property; therefore, all three alternatives will require coordination with the business to ensure minimal impacts to operations. Nearby access to services, materials, supplies, and skilled labor should be readily available.

Alternatives 3.2 and 3.3 may require staging to limit disruptions to the business and local infrastructure caused by excavation and hauling, as well as characterization and acceptance of the contaminated soil waste by the disposal facility. Based on excavation footprint, Alternative 3.3 would create the greatest challenge in integrating the remedial action with ongoing business activities. Alternatives 3.1 and 3.2 likely would require an environmental covenant based on the potential for residual contamination in the subsurface. All alternatives are judged to be administratively implementable; however, Alternative 3.2 is judged to be the most implementable, based on the short-term period needed to implement the active remedy.

Disproportionate-Cost Analysis Summary. The total costs to implement Alternatives 3.1, 3.2, and 3.3 are estimated at approximately $1,075,000, $179,000, and $866,000 (-35 to +50%), respectively. Cost estimate details are provided in Table 2-3.

Alternatives 3.2 and 3.3 are more expensive than Alternative 3.1; however, these alternatives provide greater reduction in contaminant mass, which in turn provides a greater reduction in exposure risk to receptors. All three alternative break the exposure pathways by which IHSs can reach potential receptors.

Alternatives 3.2 and 3.3 are judged to provide greater permanence and long-term effectiveness than Alternative 3.1; however, Alternative 3.3 is judged to have the greatest short-term risk. The alternatives have relatively comparable overall implementability, although, as described above, Alternative 3.1 is judged to be more implementable than Alternatives 3.2 and 3.3. Therefore, Alternative 3.2's permanence and effectiveness for addressing both soil and groundwater contamination, reduced comparative cost, and its lesser short-term risk relative to Alternative 3.3 outweigh the long-term need for cap maintenance. Thus, of the three cleanup alternatives evaluated, Alternative 3.2 uses permanent solutions to the greatest extent practicable.

3.2.3.3 Restoration Timeframe Evaluation

Remedial alternatives must provide for a reasonable restoration timeframe, consistent with WAC 173-340-360(2)(b)(ii), and a number of factors are considered in determining whether an alternative provides this (as summarized in Section 3.1.3). This section evaluates the restoration timeframes potentially achieved by Alternatives 3.1, 3.2, and 3.3.

The three remediation alternatives can successfully address the exposure risk posed by the IHSs in AOC 3, although Alternatives 3.2 and 3.3 provide more permanent remedies than Alternative 3.1, which provides no treatment of contamination, but simply contains contamination in place.

The construction work associated with remedy implementation may disrupt site operations (active automobile dealership and repair shop). However, such disruptions would be limited to the short construction period needed to implement the cleanup alternatives. Best management practices would be employed during construction to control potential risks and disruptions associated with the work.

Active implementation of Alternatives 3.2 and 3.3 would be reasonably similar (less than a month to complete active remediation followed by periodic groundwater compliance monitoring). Because Alternative 3.1 relies on existing surfacing, the timeframe for implementation would be negligible (no more than a few days to install necessary groundwater monitoring wells). However, when factoring in overall timeframes for AOC monitoring, Alternatives 3.1 and 3.2 would require significantly longer timeframes (30 years) for AOC monitoring, because of contamination left in place, than Alternative 3.3 (five years), which removes all contaminated soil (and source for underlying groundwater contamination).

4 REMEDY SELECTION

4.1 AOC 1: Auto Repair Shop

The cleanup alternative that most closely satisfies the threshold criteria and other MTCA requirements discussed in Section 3.1 is the preferred alternative for the AOC. Based on the evaluation of alternatives presented in Section 3.2.1, and the cost-benefit analysis summarized in Tables 3-2 and 3-3, the preferred alternative for AOC 1 is Alternative 1.3, which includes excavation with off-site disposal of soil, ISBR treatment (amended backfill and injections), groundwater compliance monitoring, and institutional controls.

4.2 AOC 2: Former USTs

The cleanup alternative that most closely satisfies the threshold criteria and other MTCA requirements discussed in Section 3.1 is the preferred alternative for the AOC. Based on the evaluation of alternatives presented in Section 3.2.2, and the cost-benefit analysis summarized in Tables 3-2 and 3-3, the preferred alternative for AOC 2 is Alternative 2.2, which includes excavation with off-site disposal of soil, ISBR-amended backfill, groundwater compliance monitoring, and institutional controls.

4.3 AOC 3: Former Coal-Storage Sheds/Possible Fill Area

The cleanup alternative that most closely satisfies the threshold criteria and other MTCA requirements discussed in Section 3.1 is the preferred alternative for the AOC. Based on the evaluation of alternatives presented in Section 3.2.3, and the cost-benefit analysis summarized in Tables 3-2 and 3-3, the preferred alternative for AOC 3 is Alternative 3.2, which includes excavation with off-site disposal of soil, ISBR-amended backfill, capping, (e.g., gravel or pavement) and institutional controls.

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, timeframes, 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.

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TABLES

Table 1-1
Soil Indicator Hazardous Substances
VSF Properties, LLC, North Cascade Ford Property
Sedro-Woolley, Washington

Detected Constituents	MDC (mg/kg)[a]	MDC Location[a]	MDC Depth (feet bgs)[a]	MDC Date[a]	CUL[b] (mg/kg)	MDC > CUL?	Select as an IHS?[c]	Rationale for IHS Selection
Metals (mg/kg)								
Arsenic	26.4	GP5-S-2 (GP05)	1.5 - 2.6	05/08/2012	20	YES	YES	MDC > CUL
Barium	681	GP5-S-2 (GP05)	1.5 - 2.6	05/08/2012	16000	NO	NO	MDC < CUL
Cadmium	3.3	GP24-S-0.8 (GP24)	0.3 - 1.2	12/03/2012	2	YES	YES	MDC > CUL
Chromium	50	GP61-S-1.5 (GP61)	1.3 - 1.7	11/17/2016	2000	NO	NO	MDC < CUL
Lead	520	B-1	5	11/15/2011	250	YES	YES	MDC > CUL
Mercury	0.39	GP5-S-2 (GP05)	1.5 - 2.6	05/08/2012	2	NO	NO	MDC < CUL
Nickel	39	GP37-S-11.0 (GP37)	10.8 - 11.2	11/14/2016	1600	NO	NO	MDC < CUL
Zinc	58	GP37-S-11.0 (GP37)	10.8 - 11.2	11/14/2016	24000	NO	NO	MDC < CUL
PCBs (mg/kg)								
Aroclor 1242	0.098	GP37-S-6.0 (GP37)	5.8 - 6.2	11/14/2016	NV	NV	NO	No CUL available
Aroclor 1248	0.46	GP1-S-2.5 (GP01)	1 - 3.4	05/06/2012	NV	NV	NO	No CUL available
Aroclor 1254	0.31	GP1-S-2.5 (GP01)	1 - 3.4	05/06/2012	0.5	NO	NO	MDC < CUL
Aroclor 1260	1.3	B-1	5	11/15/2011	0.5	YES	NO	Included in Total PCB calculation
VOCs (mg/kg)								
1,2,4-Trimethylbenzene	0.39	GP11-S-1.25 (GP11)	0.5 - 2	12/02/2012	NV	NV	NO	No CUL available
1,2-Dichlorobenzene	0.58 J	GP1-S-2.5 (GP01)	1 - 3.4	05/06/2012	7200	NO	NO	MDC < CUL
1,3,5-Trimethylbenzene	0.12	GP11-S-1.25 (GP11)	0.5 - 2	12/02/2012	800	NO	NO	MDC < CUL
1,3-Dichlorobenzene	0.7 J	GP1-S-2.5 (GP01)	1 - 3.4	05/06/2012	NV	NV	NO	No CUL available
1,4-Dichlorobenzene	12	GP1-S-2.5 (GP01)	1 - 3.4	05/06/2012	185	NO	NO	MDC < CUL
2-Butanone	0.071	GP37-S-11.0 (GP37)	10.8 - 11.2	11/14/2016	48000	NO	NO	MDC < CUL
4-Isopropyltoluene	1	GP37-S-6.0 (GP37)	5.8 - 6.2	11/14/2016	NV	NV	NO	No CUL available
Acetone	0.53 J	GP11-S-1.25 (GP11)	0.5 - 2	12/02/2012	72000	NO	NO	MDC < CUL
Benzene	7.7 J	GP51-S-3.0 (GP51)	2.7 - 3.0	11/16/2016	0.03	YES	YES	MDC > CUL
Bromomethane	0.087	GP11-S-1.25 (GP11)	0.5 - 2	12/02/2012	112	NO	NO	MDC < CUL
Chlorobenzene	2.9	GP1-S-2.5 (GP01)	1 - 3.4	05/06/2012	1600	NO	NO	MDC < CUL
Chloromethane	0.11	GP11-S-1.25 (GP11)	0.5 - 2	12/02/2012	NV	NV	NO	No CUL available

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Sedro-Woolley, Washington

Detected Constituents	MDC (mg/kg)[a]	MDC Location[a]	MDC Depth (feet bgs)[a]	MDC Date[a]	CUL[b] (mg/kg)	MDC > CUL?	Select as an IHS?[c]	Rationale for IHS Selection
Ethylbenzene	99 J	GP51-S-3.0 (GP51)	2.7 - 3.0	11/16/2016	6	YES	YES	MDC > CUL
Isopropylbenzene	0.36	GP37-S-6.0 (GP37)	5.8 - 6.2	11/14/2016	8000	NO	NO	MDC < CUL
m,p-Xylene	360 J	GP51-S-3.0 (GP51)	2.7 - 3.0	11/16/2016	NV	NV	NO	No CUL available
Methyl iodide	0.042 J	GP1-S-2.5 (GP01)	1 - 3.4	05/06/2012	NV	NV	NO	No CUL available
Methylene chloride	0.2	GP1-S-2.5 (GP01)	1 - 3.4	05/06/2012	0.02	YES	YES	MDC > CUL
n-Butylbenzene	0.51	GP1-S-2.5 (GP01)	1 - 3.4	05/06/2012	4000	NO	NO	MDC < CUL
n-Propylbenzene	1.3	GP37-S-6.0 (GP37)	5.8 - 6.2	11/14/2016	8000	NO	NO	MDC < CUL
o-Xylene	97 J	GP51-S-3.0 (GP51)	2.7 - 3.0	11/16/2016	16000	NO	NO	MDC < CUL
sec-Butylbenzene	1.4	GP37-S-6.0 (GP37)	5.8 - 6.2	11/14/2016	8000	NO	NO	MDC < CUL
tert-Butylbenzene	0.1	GP37-S-6.0 (GP37)	5.8 - 6.2	11/14/2016	8000	NO	NO	MDC < CUL
Toluene	0.16	GP11-S-1.25 (GP11)	0.5 - 2	12/02/2012	7	NO	NO	MDC < CUL
SVOCs (mg/kg)								
1-Methylnaphthalene	18	NSW02-S-7.5 (NSW02)	7.5	09/29/2016	35	NO	NO	MDC < CUL
2-Methylnaphthalene	27	NSW02-S-7.5 (NSW02)	7.5	09/29/2016	320	NO	NO	MDC < CUL
Acenaphthene	0.64	GP43-S-7.0 (GP43)	6.5 - 7.1	11/15/2016	4800	NO	NO	MDC < CUL
Acenaphthylene	1	GP24-S-0.8 (GP24)	0.3 - 1.2	12/03/2012	1	NO	NO	MDC < CUL
		GP58-S-1.5 (GP58)	0.7 - 1.7	11/17/2016				
Anthracene	1.1	GP5-S-2 (GP05)	1.5 - 2.6	05/08/2012	24000	NO	NO	MDC < CUL
Benzo(a)anthracene	7.4	GP5-S-2 (GP05)	1.5 - 2.6	05/08/2012	1.4	YES	NO	Included in cPAH TEQ calculation
Benzo(a)pyrene	8.7	GP5-S-2 (GP05)	1.5 - 2.6	05/08/2012	0.1	YES	NO	Included in cPAH TEQ calculation
Benzo(b)fluoranthene	2	GP58-S-1.5 (GP58)	0.7 - 1.7	11/17/2016	1.37	YES	NO	Included in cPAH TEQ calculation
Benzo(ghi)perylene	6.4	GP5-S-2 (GP05)	1.5 - 2.6	05/08/2012	NV	NV	NO	No CUL available
Benzo(j+k)fluoranthene	0.49	GP58-S-1.5 (GP58)	0.7 - 1.7	11/17/2016	13.7	NO	NO	MDC < CUL
Chrysene	7.7	GP5-S-2 (GP05)	1.5 - 2.6	05/08/2012	137	NO	NO	MDC < CUL

Table 1-1
Soil Indicator Hazardous Substances
VSF Properties, LLC, North Cascade Ford Property
Sedro-Woolley, Washington

Detected Constituents	MDC (mg/kg)[a]	MDC Location[a]	MDC Depth (feet bgs)[a]	MDC Date[a]	CUL[b] (mg/kg)	MDC > CUL?	Select as an IHS?[c]	Rationale for IHS Selection
Dibenzo(a,h)anthracene	1.5	GP5-S-2 (GP05)	1.5 - 2.6	05/08/2012	0.137	YES	NO	Included in cPAH TEQ calculation
Dibenzofuran	1.9	GP26-S-1.7 (GP26)	1.1 - 2.4	12/04/2012	80	NO	NO	MDC < CUL
Fluoranthene	16	GP5-S-2 (GP05)	1.5 - 2.6	05/08/2012	3200	NO	NO	MDC < CUL
Fluorene	2.8	GP43-S-7.0 (GP43)	6.5 - 7.1	11/15/2016	3200	NO	NO	MDC < CUL
Indeno(1,2,3-cd)pyrene	5.6	GP5-S-2 (GP05)	1.5 - 2.6	05/08/2012	1.37	YES	NO	Included in cPAH TEQ calculation
Naphthalene	8.2	NSW02-S-7.5 (NSW02)	7.5	09/29/2016	5	YES	NO	Included in total naphthalenes calculation
Phenanthrene	6.3	GP26-S-1.7 (GP26)	1.1 - 2.4	12/04/2012	NV	NV	NO	No CUL available
Pyrene	15	GP5-S-2 (GP05)	1.5 - 2.6	05/08/2012	2400	NO	NO	MDC < CUL
Total Benzofluoranthenes	14	GP5-S-2 (GP05)	1.5 - 2.6	05/08/2012	NV	NV	NO	No CUL available
Total Petroleum Hydrocarbons (mg/kg)								
Gasoline-Range Organics	5300 J	GP51-S-3.0 (GP51)	2.7 - 3.0	11/16/2016	30	YES	YES	MDC > CUL
Diesel-Range Organics	18000	H-1/3, RemEx, S-Side @6'	~~5~~ 6	08/15/2017	2000	YES	YES	MDC > CUL
Oil-Range Organics	32000	H-1/3, RemEx, S-Side @6'	~~5~~ 6	08/15/2017	2000	YES	YES	MDC > CUL
Calculated Totals (mg/kg)								
cPAH TEQ[d]	12	GP5-S-2 (GP05)	1.5 - 2.6	05/08/2012	0.1	YES	YES	MDC > CUL
Total Naphthalenes	53.2	NSW02-S-7.5 (NSW02)	7.5	09/29/2016	5	YES	YES	MDC > CUL
Total PCBs	2.8	B-1	5	11/15/2011	1	YES	YES	MDC > CUL
Total Xylenes	457 J	GP51-S-3.0 (GP51)	2.7 - 3.0	11/16/2016	9	YES	YES	MDC > CUL

Table 1-1
Soil Indicator Hazardous Substances
VSF Properties, LLC, North Cascade Ford Property
Sedro-Woolley, Washington

NOTES:

Highlighted row indicates the constituent was selected as an IHS.

bgs = below ground surface.

cPAH = carcinogenic polycyclic aromatic hydrocarbon.

CUL = cleanup level.

IHS = indicator hazardous substance.

J = estimated value.

MDC = maximum detected concentration.

mg/kg = milligrams per kilogram.

MTCA = Model Toxics Control Act.

NV = no value.

PCB = polychlorinated biphenyl.

SVOC = semivolatile organic compound.

TEQ = toxic equivalency quotient.

VOC = volatile organic compound.

[a] Obtained from 2017 data gap investigation report and supplemental data gap investigation report prepared by Maul Foster & Alongi, Inc., and remedial action report prepared by ZipperGeo Associates, LLC.

[b] Soil CULs are based on MTCA A, Unrestricted Land Use CULs, or MTCA B CULs if no MTCA A value was available.

[c] Constituents with no CULs were not selected as IHSs.

[d] The MDCs for cPAHs are based on the cPAH TEQ; therefore, concentrations for individual cPAHs are not applicable.

Table 1-2
Groundwater Indicator Hazardous Substances
VSF Properties, LLC, North Cascade Ford Property
Sedro-Woolley, Washington

Detected Constituents	MDC[a] (ug/L)	MDC Location	MDC Date	CUL[b] (ug/L)	MDC > CUL?	Selected IHS?	Rationale for IHS Selection
Dissolved Metals (ug/L)							
Arsenic	3.6	GP1-W-7.5 (GP1)	05/06/2012	5	NO	NO	MDC < CUL
Barium	137	GP1-W-7.5 (GP1)	05/06/2012	3200	NO	NO	MDC < CUL
Cadmium	0.1	GP5-W-10 (GP5)	05/08/2012	5	NO	NO	MDC < CUL
Chromium	1	MW01-FIELD DUPLICATE	05/15/2012	50	NO	NO	MDC < CUL
Lead	0.1	GP1-W-7.5 (GP1) GP2-W-10 (GP2)	05/06/2012	5	NO	NO	MDC < CUL
PCB Aroclors (ug/L)							
Aroclor 1248	0.009 J	GP1-W-7.5 (GP1)	05/06/2012	NV	NO	NO	No CUL available
VOCs (ug/L)							
1,2,3-Trichloropropane	0.4 J	GP1-W-7.5 (GP1)	05/06/2012	0.00146	YES	YES	MDC > CUL
1,2,4-Trimethylbenzene	3.9	GP37-W-10.0 (GP37)	11/14/2016	NV	NO	NO	No CUL available
1,2-Dichlorobenzene	1.7	GP1-W-7.5 (GP1)	05/06/2012	720	NO	NO	MDC < CUL
1,2-Dichloroethane	0.43	GP37-W-10.0 (GP37)	11/14/2016	5	NO	NO	MDC < CUL
1,2-Dichloropropane	0.29	GP37-W-10.0 (GP37)	11/14/2016	1.22	NO	NO	MDC < CUL
1,3,5-Trimethylbenzene	2.2	GP1-W-7.5 (GP1)	05/06/2012	80	NO	NO	MDC < CUL
1,3-Dichlorobenzene	3.4	GP1-W-7.5 (GP1)	05/06/2012	NV	NO	NO	No CUL available
1,4-Dichlorobenzene	50	GP1-W-7.5 (GP1)	05/06/2012	8.1	YES	YES	MDC > CUL
2-Chlorotoluene	0.8	GP1-W-7.5 (GP1)	05/06/2012	160	NO	NO	MDC < CUL
4-Isopropyltoluene	3.4	GP1-W-7.5 (GP1)	05/06/2012	NV	NO	NO	No CUL available
Acetone	4.6 J	GP1-W-7.5 (GP1)	05/06/2012	7200	NO	NO	MDC < CUL
Benzene	15 J	GP51-W-11.0 (GP51)	11/16/2016	5	YES	YES	MDC > CUL
Carbon disulfide	0.19 J	GP11-W-17.5 (GP11)	12/02/2012	800	NO	NO	MDC < CUL
Chlorobenzene	340	GP1-W-7.5 (GP1)	05/06/2012	160	YES	YES	MDC > CUL
cis-1,2-Dichloroethene	0.31	GP37-W-10.0 (GP37)	11/14/2016	16	NO	NO	MDC < CUL
Ethylbenzene	480 J	GP51-W-11.0 (GP51)	11/16/2016	700	NO	NO	MDC < CUL
Isopropylbenzene	6	GP1-W-7.5 (GP1)	05/06/2012	800	NO	NO	MDC < CUL

Table 1-2
Groundwater Indicator Hazardous Substances
VSF Properties, LLC, North Cascade Ford Property
Sedro-Woolley, Washington

Detected Constituents	MDC[a] (ug/L)	MDC Location	MDC Date	CUL[b] (ug/L)	MDC > CUL?	Selected IHS?	Rationale for IHS Selection
m,p-Xylene	920 J	GP51-W-11.0 (GP51)	11/16/2016	1000	NO	NO	MDC < CUL
Naphthalene	2.3 J	GP37-W-10.0 (GP37)	11/14/2016	160	NO	NO	MDC < CUL
n-Butylbenzene	2.8	GP1-W-7.5 (GP1)	05/06/2012	400	NO	NO	MDC < CUL
n-Hexane	76	GP76-W-10.0 (GP76)	04/25/2017	480	NO	NO	MDC < CUL
n-Propylbenzene	11	GP1-W-7.5 (GP1)	05/06/2012	800	NO	NO	MDC < CUL
o-Xylene	80 J	GP51-W-11.0 (GP51)	11/16/2016	1600	NO	NO	MDC < CUL
sec-Butylbenzene	4.9	GP1-W-7.5 (GP1)	05/06/2012	800	NO	NO	MDC < CUL
tert-Butylbenzene	0.6	GP1-W-7.5 (GP1)	05/06/2012	800	NO	NO	MDC < CUL
Toluene	6.1 J	GP51-W-11.0 (GP51)	11/16/2016	1000	NO	NO	MDC < CUL
SVOCs (ug/L)							
1-Methylnaphthalene	98	GP76-W-10.0 (GP76)	04/25/2017	160	NO	NO	MDC < CUL
2-Chlorophenol	2.6	GP1-W-7.5 (GP1)	05/06/2012	40	NO	NO	MDC < CUL
2-Methylnaphthalene	150	GP76-W-10.0 (GP76)	04/25/2017	160	NO	NO	MDC < CUL
Acenaphthene	0.99	GP1-W-7.5 (GP1)	05/06/2012	960	NO	NO	MDC < CUL
Anthracene	0.12	GP37-W-10.0 (GP37)	11/14/2016	4800	NO	NO	MDC < CUL
Dibenzofuran	0.28	GP1-W-7.5 (GP1)	05/06/2012	16	NO	NO	MDC < CUL
Diethyl phthalate	1	GP1-W-7.5 (GP1)	05/06/2012	12800	NO	NO	MDC < CUL
Fluorene	2.7	MW01-GW-20121009 (MW01)	10/09/2012	640	NO	NO	MDC < CUL
Naphthalene	180	GP76-W-10.0 (GP76)	04/25/2017	160	YES	NO	Included in total naphthalenes calculation
Phenanthrene	1.8	MW01-GW-20121009 (MW01)	10/09/2012	NV	NO	NO	No CUL available
Total Petroleum Hydrocarbons (ug/L)							
Gasoline-Range Organics	7400 J	GP51-W-11.0 (GP51)	11/16/2016	800	YES	YES	MDC > CUL
Diesel-Range Organics	13000	B2	11/15/2011	500	YES	YES	MDC > CUL
Oil-Range Organics	8600	B2	11/15/2011	500	YES	YES	MDC > CUL

Table 1-2
Groundwater Indicator Hazardous Substances
VSF Properties, LLC, North Cascade Ford Property
Sedro-Woolley, Washington

Detected Constituents	MDC[a] (ug/L)	MDC Location	MDC Date	CUL[b] (ug/L)	MDC > CUL?	Selected IHS?	Rationale for IHS Selection
Calculated Totals (ug/L)							
Total Naphthalenes	428	GP76-W-10.0 (GP76)	04/25/2017	160	YES	YES	MDC > CUL
Total PCBs	0.039	GP1-W-7.5 (GP1)	05/06/2012	0.1	NO	NO	MDC < CUL
Total Xylenes	1000 J	GP51-W-11.0 (GP51)	11/16/2016	1000	NO	YES	MDC = CUL and based on as estimated value

NOTES:

Highlighted row indicates that constituent was selected as an IHS.

bgs = below ground surface.

CUL = cleanup level.

IHS = indicator hazardous substance.

J = estimated value.

MDC = maximum detected concentration.

MTCA = Model Toxics Control Act.

NV = no value.

PCB = polychlorinated biphenyls.

SVOC = semivolatile organic compound.

ug/L = micrograms per liter.

VOC = volatile organic compound.

[a] Obtained from 2017 data gap investigation report and supplemental data gap investigation report prepared by Maul Foster & Alongi, Inc.

[b] Detected concentrations were compared to MTCA A CULs, or MTCA B CULs if no MTCA A value was available.

Table 1-3
Soil Vapor Indicator Hazardous Substances
VSF Properties, LLC, North Cascade Ford Property
Sedro-Woolley, Washington

Detected Constituents	MDC[a] (ug/m^3)	MDC Location	MDC Date	CUL[b] (ug/m^3)	MDC > CUL?	Selected IHS?	Rationale for IHS Selection
VOCs (ug/m^3)							
1,2,4-Trimethylbenzene	1.5	SV01-121204 (SV1)	12/04/2012	107	NO	NO	MDC < CUL
1,3,5-Trimethylbenzene	0.54 J	SV01-121204 (SV1)	12/04/2012	NV	NO	NO	No CUL available
2-Butanone	2.8	SV01-121204 (SV1)	12/04/2012	22900	NO	NO	MDC < CUL
Benzene	0.61	SV01-121204 (SV1)	12/04/2012	10.7	NO	NO	MDC < CUL
Carbon disulfide	0.55 J	SV01-121204 (SV1)	12/04/2012	10700	NO	NO	MDC < CUL
Chloromethane	0.28 J	SV01-121204 (SV1)	12/04/2012	1370	NO	NO	MDC < CUL
Ethylbenzene	1.4	SV01-121204 (SV1)	12/04/2012	15200	NO	NO	MDC < CUL
Isopropylbenzene	5.5	SV01-121204 (SV1)	12/04/2012	6100	NO	NO	MDC < CUL
m,p-Xylene	4.9	SV01-121204 (SV1)	12/04/2012	1520	NO	NO	MDC < CUL
Methylene chloride	0.31 J	SV01-121204 (SV1)	12/04/2012	8330	NO	NO	MDC < CUL
n-Propylbenzene	0.57 J	SV01-121204 (SV1)	12/04/2012	4570	NO	NO	MDC < CUL
o-Xylene	1.8	SV01-121204 (SV1)	12/04/2012	1520	NO	NO	MDC < CUL
Toluene	15	SV01-121204 (SV1)	12/04/2012	76200	NO	NO	MDC < CUL
Helium (%)							
Helium	0.13	SV01-121204 (SV1)	12/04/2012	NV	NO	NO	No CUL available

NOTES:

CUL = cleanup level.

IHS = indicator hazardous substance.

J = estimated value.

MDC = maximum detected concentration.

MTCA = Model Toxics Control Act.

NV = no value.

SLV = screening level value.

ug/m^3 = micrograms per cubic meter.

VOC = volatile organic compound.

[a] Obtained from 2015 remedial investigation and feasibility study prepared by Maul Foster & Alongi, Inc.

[b] Detected concentrations were compared to sub-slab soil vapor SLVs obtained from the Washington State Department of Ecology soil vapor guidance (updated on April 6, 2015), when available. The guidance did not provide SLVs for 2-butanone or p-xylene. The SLV for m-xylene was used for m- and p-xylene. The SLV for 2-butanone was calculated by dividing the MTCA B indoor air cleanup level by a vapor attenuation factor of 0.1.

Table 1-4
Soil and Groundwater Cleanup Levels
VSF Properties, LLC, North Cascade Ford Property
Sedro-Woolley, Washington

Indicator Hazardous Substance	Soil CUL (mg/kg)	Soil CUL Basis	Groundwater CUL (ug/L)	Groundwater CUL Basis
Arsenic	20	MTCA A	--	--
Cadmium	2	MTCA A	--	--
Lead	250	MTCA A	--	--
1,2,3-Trichloropropane	--	--	0.00146	MTCA B CAR
1,4-Dichlorobenzene	--	--	8.1	MTCA B CAR
Benzene	0.03	MTCA A	5	MTCA A
Chlorobenzene	--	--	160	MTCA B NCAR
Ethylbenzene	6	MTCA A	--	--
Methylene chloride	0.02	MTCA A	--	--
Gasoline-Range Organics	30	MTCA A	800	MTCA A
Diesel-Range Organics	2000	MTCA A	500	MTCA A
Oil-Range Organics	2000	MTCA A	500	MTCA A
cPAH TEQ	0.1	MTCA A	--	MTCA A
Total Naphthalenes	5	MTCA A	160	MTCA A
Total PCBs	1	MTCA A	--	--
Total Xylenes	9	MTCA A	1000	MTCA A

NOTES:

-- = not selected as an indicator hazardous substance for soil or groundwater.

cPAH TEQ = carcinogenic polycyclic aromatic hydrocarbon toxic equivalency quotient.

CUL = cleanup level.

mg/kg = milligrams per kilogram.

MTCA = Model Toxics Control Act.

MTCA A = MTCA Method A, Table Value, CUL.

MTCA B CAR = MTCA Method B, Standard Formula Value, CUL for carcinogenic compounds.

MTCA B NCAR = MTCA Method B Standard Formula Value, CUL for noncarcinogenic compounds.

PCB = polychlorinated biphenyl.

ug/L = micrograms per liter.

Table 1-5
Indicator Hazardous Substances by Area of Concern
VSF Properties, LLC, North Cascade Ford Property
Sedro-Woolley, Washington

AOC	IHS	Soil CUL (mg/kg)	Groundwater CUL (ug/L)
AOC 1: Auto Repair Shop	Lead	250	--
	1,2,3-Trichloropropane[a]	--	0.00146
	1,4-Dichlorobenzene[a]	--	8.1
	Chlorobenzene[a]	--	160
	Methylene chloride	0.02	--
	Gasoline-Range Organics	30	800
	Diesel-Range Organics	2000	500
	Oil-Range Organics	2000	500
	Total Naphthalenes	5	--
	cPAH TEQ	0.1	--
	Total PCBs	1	--
AOC 2: Former USTs	Diesel-Range Organics	2000	500
	Total Naphthalenes	5	160
AOC 3: Former Coal Storage Sheds	Arsenic	20	--
	Cadmium	2	--
	Lead	250	--
	cPAH TEQ	0.1	--
	Total Naphthalenes	5	160
AOC 3: Possible Fill Area	Benzene	0.03	5
	Ethylbenzene	6	--
	Gasoline-Range Organics	30	800
	Diesel-Range Organics	2000	500
	Oil-Range Organics	2000	500
	Total Naphthalenes	5	160
	Total Xylenes	9	--

NOTES:

IHSs were determined for an AOC when an IHS exceeded the applicable MTCA CUL for a specific medium in an AOC.

-- = not selected as an IHS for soil or groundwater.

AOC = area of concern.

cPAH TEQ = carcinogenic polycyclic aromatic hydrocarbon toxic equivalency quotient.

CUL = cleanup level.

IHS = indicator hazardous substance.

mg/kg = milligrams per kilogram.

MTCA = Model Toxics Control Act.

PCB = polychlorinated biphenyl.

ug/L = micrograms per liter.

UST = underground storage tank.

[a] IHS is for Burlington Northern Santa Fe Railway Company property only.

Table 1-6
Applicable or Relevant and Appropriate Requirements
VSF Properties, LLC, North Cascade Ford Property
Sedro-Woolley, Washington

Authority	Resource	Implementing Laws/Regulations	ARAR?	Applicability
Contaminant-Specific ARARs				
State	Soil	Washington State MTCA (RCW 70.105D; Chapter 173-340 WAC)	Yes	MTCA soil cleanup levels are applicable.
Action-Specific ARARs				
Federal / State	Surface Water	Federal Water Pollution Control Act—NPDES CWA; 33 USC § 1342, Section 402) and Implementing Regulations Washington State Construction Stormwater General Permit (RCW 90.48)	Yes	The NPDES program establishes requirements for point source discharges, including stormwater runoff. These requirements would be applicable for any point source discharge of stormwater during construction or following cleanup.
Federal	Surface Water	Federal Water Pollution Control Act—Water Quality Certification (CWA; 33 USC § 1341, Section 401) and Implementing Regulations	No	Section 401 of the CWA provides that applicants for a permit to conduct any activity involving potential discharges into waters or wetlands shall obtain certification from the state stating that discharges will comply with applicable water quality standards. These activities are not expected for the proposed alternatives.
State	Surface Water	Hydraulic Code (RCW 77.55; Chapter 220-110 WAC)	No	The Hydraulic Code requires any construction activity that uses, diverts, obstructs, or changes the bed or flow of state waters to be done under the terms of a Hydraulics Project Approval permit issued by the Washington State Department of Fish and Wildlife. These activities are not expected for the proposed alternatives.
Federal	Surface Water and Wetlands	Federal Water Pollution Control Act—Discharge of Dredge and Fill Materials (CWA; 33 USC § 1344, Section 404) and Implementing Regulations	No	Section 404 of the CWA establishes a program to regulate the discharge of dredged and fill materials into the waters of the United States, including wetlands. These activities are not expected for the proposed alternatives.
Federal / State	Solid Waste	Transportation of Hazardous Materials (49 CFR Parts 105 to 177) (Chapter 446-50 WAC)	Yes	Transportation of hazardous waste or materials is required to meet state and federal requirements. This requirement is potentially applicable to alternatives that involve the off-site transport of impacted soil.
Federal / State	Solid Waste	RCRA (42 USC § 6901 et seq.), Subtitle C—Hazardous Waste Management (40 CFR Parts 260 to 279) Dangerous Waste Regulations (Chapter 173-303 WAC)	No	Subtitle C of RCRA pertains to the management of hazardous waste. Impacted soil meeting hazardous waste criteria may require disposal at a Subtitle C landfill. The metals-impacted soil at the site does not meet hazardous waste criteria.
Federal	Solid Waste	RCRA (42 USC § 6901 et seq.), Subtitle D—Managing Municipal and Solid Waste (40 CFR Parts 257 and 258)	Yes	Subtitle D of RCRA establishes a framework for management of nonhazardous solid waste. These regulations establish guidelines and criteria from which states develop solid waste regulations. These requirements are applicable to the remediation alternatives that involve off-site disposal of impacted soil.

Table 1-6
Applicable or Relevant and Appropriate Requirements
VSF Properties, LLC, North Cascade Ford Property
Sedro-Woolley, Washington

Authority	Resource	Implementing Laws/Regulations	ARAR?	Applicability
State	Solid Waste	Washington State Solid Waste Handling Standards (RCW 70.95; Chapter 173-350 WAC)	Yes	Washington State Solid Waste Handling Standards apply to facilities and activities that manage solid waste. The regulations set minimum functional performance standards for proper handling and disposal of solid waste; describe responsibilities of various entities; and stipulate requirements for solid-waste-handling facility location, design, construction, operation, and closure. These requirements are applicable to remediation alternatives that involve off-site disposal of impacted soil.
Federal / State	Solid Waste	Land Disposal Restrictions (40 CFR Part 268) (Chapter 173-303-140 WAC)	No	Best management practices for waste disposal are required to meet state and federal requirements. There is hazardous-level waste currently on site. It is not anticipated that the remediation alternatives will generate waste that meets dangerous waste criteria as defined by WAC 173-303-140.
State	Air	Washington Clean Air Act and Implementing Regulations (Chapter 173-400-040[8] WAC)	Yes	These regulations require the owner or operator of a source of fugitive dust to take reasonable precautions to prevent fugitive dust from becoming airborne and to maintain and operate the source to minimize emissions. These regulations are applicable to all alternatives during construction.
State	Groundwater	Minimum Standards for Construction and Maintenance of Water Wells (RCW 18.104; Chapter 173-160 WAC)	Yes	Washington State has developed minimum standards for constructing water and monitoring wells and for the decommissioning of wells. Drilling or abandoning wells may be required in the alternatives.
Federal	Endangered Species, Critical Habitats	ESA (16 USC §§ 1531–1544) and Implementing Regulations	No	The ESA protects species of fish, wildlife, and plants that are listed as threatened and/or endangered. It also protects designated critical habitat for listed species. This is not applicable based on a terrestrial ecological evaluation performed at the site.
State	Remedy Construction	Washington Industrial Safety and Health Act (RCW 49.17; Chapter 296-24 WAC)	Yes	Site worker and visitor health and safety requirements established by the Washington Industrial Safety and Health Act are to be met during implementation of the remedial action.
Local	Remedy Construction	Local Ordinances	Yes	Implementation of the remedial action must meet appropriate requirements.
Location-Specific ARARs				
State	Aquatic Lands	Aquatic Lands Management—Washington State (RCW 79.90; Chapter 332-30 WAC)	No	The Aquatic Lands Management law develops criteria for managing state-owned aquatic lands. Aquatic lands are to be managed to promote uses and protect resources as specified in the regulations. The AOCs to which the remediation alternatives apply are not on state-owned aquatic lands.
State	Public Lands	Public Lands Management (RCW 79.02)	No	Activities on public lands are restricted, regulated, or proscribed. The site is owned by VSF and is not considered state-owned public land.
Federal / State	Historic Areas	Archaeological and Historic Preservation Act (16 USC § 469, 470 et seq.; 36 CFR Parts 65 and 800) (RCW 24.34, 27.44, 27.48, and 27.53; Chapters 25-46 and 25-48 WAC)	No	Actions must be taken to preserve and recover significant artifacts, preserve historic and archaeological properties and resources, and minimize harm to national landmarks. There are no known historic or archaeological sites in the vicinity of the AOCs.

Table 1-6
Applicable or Relevant and Appropriate Requirements
VSF Properties, LLC, North Cascade Ford Property
Sedro-Woolley, Washington

Authority	Resource	Implementing Laws/Regulations	ARAR?	Applicability
State	Shorelines and Surface Water	Shoreline Management Act of 1971 (RCW 90.58) and Implementing Regulations	No	Actions are prohibited within 200 feet of shorelines of statewide significance unless permitted. This is not applicable to the site.
State	Wetlands	Shoreline Management Act of 1971 (RCW 90.58) and Implementing Regulations	No	It is required that construction or management of property in wetlands minimize potential harm, avoid adverse effects, and preserve and enhance wetlands. The remediation alternatives are not located in delineated wetlands.
Local	Air Emissions	Regional Emission Standards for Toxic Air Pollutants, PSAPCA Regulation III	No	A source of toxic air contaminants requires a notice of construction. This is not applicable to the site.

NOTES:

ARAR = Applicable or relevant and appropriate requirement.

AOC = area of concern.

CFR = Code of Federal Regulations.

CWA = Clean Water Act.

ESA = Endangered Species Act.

MTCA = Model Toxics Control Act.

NPDES = National Pollutant Discharge Elimination System.

PSAPCA = Puget Sound Air Pollution Control Agency.

RCRA = Resource Conservation and Recovery Act.

RCW = Revised Code of Washington.

USC = United States Code.

VSF = VSF Properties, LLC.

WAC = Washington Administrative Code.

Table 2-1
Cost Estimate ñ AOC 1 Remedial Alternatives
VSF Properties, LLC, North Cascade Ford Property
Sedro-Woolley, Washington

ALTERNATIVE 1.1: IN SITU GEOCHEMICAL STABILIZATION

Remedy components involve treatment of contaminated groundwater and soil via ISGS product injections In AOC 1 (auto repair shop).

Assumptions
1) Does not include additional characterization of AOC.
2) Includes one round of injections.
3) One post-treatment and four quarterly confirmation groundwater monitoring events will be conducted.
4) Seven groundwater monitoring wells (two new and five existing) will be monitored.

Item	Quantity	Unit	Unit Cost	Cost
Capital Costs				
Planning Documents				
Implementation Work Plan	1	LS	$ 15,000	$ 15,000
Permitting (UIC permit application)	1	LS	$ 5,000	$ 5,000
GW Compliance Monitoring Plan	1	LS	$ 10,000	$ 10,000
ISGS Soil Amendment				
Total treatment cost (including subcontractor)	5,370	CY	$ 70	$ 375,926
Well Installation				
Drill rig and crew	1	LS	$ 8,000	$ 8,000
Well development and oversight	1	DA	$ 1,050	$ 1,050
Field equipment fees	1	LS	$ 1,000	$ 1,000
Well survey	1	LS	$ 1,000	$ 1,000
Professional / Technical Services				
Project management	8%	--	--	$ 32,474
Remedial design	15%	--	--	$ 60,889
Construction management	10%	--	--	$ 40,593
Subtotal				$ 550,931
Tax	8.5%			$ 46,829
Total Design, Permitting, Implementation				**$ 597,761**
Periodic Costs				
Remedial action completion reporting	1	EA	$ 5,000	$ 5,000
Compliance monitoring	1	EA	$ 9,000	$ 9,000
Groundwater sample event, analysis, and reporting				

PRESENT VALUE ANALYSIS, IN SITU GEOCHEMICAL STABILIZATION

Discount Rate	2.6%
Total Years	1

COST TYPE	**YEAR**	**TOTAL COST**	**TOTAL COST PER YEAR**	**DISCOUNT FACTOR**	**NET PRESENT VALUE**
Capital	0	$ 597,761	$ 597,761	1.000	$ 597,761
Periodic (one post-treatment monitoring event)	0	$ 9,000	$ 9,000	1.000	$ 9,000
Periodic (four quarterly monitoring events)	1	$ 36,000	$ 36,000	1.000	$ 36,000
Periodic	1	$ 5,000	$ 5,000	0.975	$ 4,874
		$ 647,761			$ 647,635
TOTAL NET PRESENT VALUE OF ISGS OPTION					**$ 648,000**

Table 2-1
Cost Estimate ñ AOC 1 Remedial Alternatives
VSF Properties, LLC, North Cascade Ford Property
Sedro-Woolley, Washington

ALTERNATIVE 1.2: GROUNDWATER CIRCULATING WELLS

Remedy components include treatment of contaminated groundwater and soil via circulating wells in AOC 1 (auto repair shop).

Assumptions
1) Eight circulating wells will be installed and operated for ten years.
2) Vapors that are stripped off will not require treatment before discharge to atmosphere.
3) Four quarterly confirmation groundwater monitoring events will be conducted.
4) Seven groundwater monitoring wells (two new and five existing) will be monitored.

Item	Quantity	Unit	Unit Cost	Cost
Capital Costs				
Planning Documents				
Implementation Work Plan and System Design	1	LS	$ 35,000	$ 35,000
GW Compliance Monitoring Plan	1	LS	$ 10,000	$ 10,000
System Installation				
Well Installation and development (includes drill rig and crew)	4	DA	$ 5,000	$ 20,000
Equipment and materials	1	LS	$ 128,000	$ 128,000
Labor	1	LS	$ 40,000	$ 40,000
Well Installation				
Drill rig and crew	1	LS	$ 8,000	$ 8,000
Well development and oversight	1	DA	$ 1,050	$ 1,050
Field equipment fees	1	LS	$ 1,000	$ 1,000
Well survey	1	LS	$ 1,000	$ 1,000
Professional / Technical Services				
Project management	8%	--	--	$ 17,840
Remedial design	15%	--	--	$ 33,450
Construction management	10%	--	--	$ 22,300
Subtotal				$ 317,640
Tax	8.5%			$ 26,999
Total Design, Permitting, Implementation				**$ 344,639**
Annual Operation & Maintenance				
System O&M	1	LS	$ 70,000	$ 70,000
Includes testing & startup, materials (buffer, nutrients, etc.)				
Utilities (electric)	1	LS	$ 5,000	$ 5,000
Performance Monitoring	1	EA	$ 9,000	$ 9,000
Annual groundwater monitoring (during system operation)				
Total Annual Operation & Maintenance				**$ 84,000**

Table 2-1
Cost Estimate ñ AOC 1 Remedial Alternatives
VSF Properties, LLC, North Cascade Ford Property
Sedro-Woolley, Washington

Periodic Costs

Remedial action completion reporting	1	EA	$ 5,000	$ 5,000
Compliance monitoring	1	EA	$ 9,000	$ 9,000
Groundwater sample event, analysis, and reporting				
Professional / Technical Services				
Five-year reviews and reporting	1	EA	$ 5,000	$ 5,000

PRESENT VALUE ANALYSIS, GROUNDWATER CIRCULATING WELLS

Discount Rate	3.1%
Total Years	10

COST TYPE	YEAR	TOTAL COST	TOTAL COST PER YEAR	DISCOUNT FACTOR	NET PRESENT VALUE
Capital	0	$ 344,639	$ 344,639	1.000	$ 344,639
Annual O&M	1 - 10	$ 840,000	$ 84,000	8.495	$ 713,620
Periodic (five-year report)	5	$ 5,000	$ 5,000	0.859	$ 4,296
Periodic (ten-year report)	10	$ 5,000	$ 5,000	0.738	$ 3,692
Periodic (four quarterly monitoring events)	10	$ 36,000	$ 36,000	0.738	$ 26,580
Periodic (remedial action report)	10	$ 5,000	$ 5,000	0.738	$ 3,692
		$ 1,235,639			$ 1,096,520
TOTAL NET PRESENT VALUE OF GROUNDWATER RECIRCULATING WELL OPTION					**$ 1,097,000**

ALTERNATIVE 1.3: EXCAVATION WITH OFF-SITE DISPOSAL AND IN SITU BIOREMEDIATION

Remedy components include excavation/off-site disposal of contaminated soil and backfilling with bioremediation-amended soil material In AOC 1 (auto repair shop).

Assumptions

1) Soil density of 1.5 tons per CY.

2) In situ bioremediation excavation area is 2,600 SF.

3) Two rounds of follow-up treatment (via injections) is sufficient to meet CULs (length of the remedy is assumed to be 10-years).

4) Three post-treatment and four quarterly confirmation groundwater monitoring events will be conducted. Biannual monitoring will also be conducted during the life of the remedy.

5) Seven groundwater monitoring wells (two new and five existing) will be monitored.

Table 2-1
Cost Estimate ñ AOC 1 Remedial Alternatives
VSF Properties, LLC, North Cascade Ford Property
Sedro-Woolley, Washington

Item	Quantity	Unit	Unit Cost	Cost
Capital Costs				
Planning Documents				
Implementation Work Plan and System Design	1	LS	$ 30,000	$ 30,000
GW Compliance Monitoring Plan	1	LS	$ 10,000	$ 10,000
Site Preparation				
Mobilization/demobilization	1	LS	$ 15,000	$ 15,000
Temp. erosion- and sedimentation-control measures	1	LS	$ 5,000	$ 5,000
Excavation and Disposal				
Excavation and loading	963	CY	$ 20	$ 19,259
Assumes 2,600-SF area with excavation depth of 10 ft bgs				
Shoring protection	1,010	SF	$ 11	$ 12,000
Off-site waste transportation and disposal	1,444	TON	$ 65	$ 93,889
Performance sampling and analysis	1	LS	$ 20,000	$ 20,000
Physical barrier to prevent recontamination	1	LS	$ 4,000	$ 4,000
HDPE liner (60-mil) placed on the northern edge of excavation				
Backfilling with In Situ Bioremediation Amendment and Repaving				
Bioremediation amendment	2,650	lbs	$ 9	$ 23,850
Assumes use of ORC-A pellets mixed with clean backfill material				
Backfilling	963	CY	$ 25	$ 24,074
Includes compaction in 12" layers				
Asphalt paving	289	SY	$ 20	$ 5,778
Binder course, 2" thick				
Well Installation				
Drill rig and crew	1	LS	$ 4,000	$ 4,000
Well development and oversight	1	DA	$ 1,050	$ 1,050
Field equipment fees	1	LS	$ 1,000	$ 1,000
Well survey	1	LS	$ 1,000	$ 1,000
Professional / Technical Services				
Project management	8%	--	--	$ 21,592
Remedial design	15%	--	--	$ 40,485
Construction management	10%	--	--	$ 26,990
Subtotal				$ 358,967
Tax	8.5%			$ 30,512
Total Design, Permitting, Construction				**$ 389,479**
Periodic Costs				
Remedial action completion reporting	1	EA	$ 5,000	$ 5,000
Compliance monitoring	1	EA	$ 9,000	$ 9,000
Groundwater sample event, analysis, and reporting				
Follow-up treatment	1	EA	$ 25,000	$ 25,000
In situ bioremediation injection event				
Professional/Technical Services				
Five-year reviews and reporting	1	EA	$ 5,000	$ 5,000

Table 2-1
Cost Estimate ñ AOC 1 Remedial Alternatives
VSF Properties, LLC, North Cascade Ford Property
Sedro-Woolley, Washington

PRESENT VALUE ANALYSIS, EXCAVATION WITH OFF-SITE DISPOSAL AND IN SITU BIOREMEDIATION

Discount rate	3.1%
Total years	10

COST TYPE	YEAR	TOTAL COST	TOTAL COST PER YEAR	DISCOUNT FACTOR	NET PRESENT VALUE
Capital	0	$ 389,479	$ 389,479	1.000	$ 389,479
Periodic (one post-treatment monitoring event)	1	$ 9,000	$ 9,000	0.970	$ 8,734
Periodic (biannual monitoring)	2-10	$ 18,000	$ 18,000	8.508	$ 153,153
Periodic (follow-up injection event)	3	$ 25,000	$ 25,000	0.914	$ 22,845
Periodic (one post-treatment monitoring event)	3	$ 9,000	$ 9,000	0.914	$ 8,224
Periodic (follow-up injection event)	5	$ 25,000	$ 25,000	0.861	$ 21,513
Periodic (one post-treatment monitoring event)	5	$ 9,000	$ 9,000	0.861	$ 7,745
Periodic (five-year report)	5	$ 5,000	$ 5,000	0.861	$ 4,303
Periodic (four quarterly monitoring events)	6	$ 36,000	$ 36,000	0.835	$ 30,062
Periodic (ten-year report)	10	$ 5,000	$ 5,000	0.740	$ 3,702
		$ 530,479			$ 649,759

TOTAL NET PRESENT VALUE OF EXCAVATION, OFF-SITE DISPOSAL, AND IN SITU BIOREMEDIATION OPTION **$ 650,000**

NOTES:

Present value analysis uses average discount rates for treasury notes from the week of Sept. 24, 2018. (http://www.federalreserve.gov/releases/h15/).

AOC = area of concern.

CUL = cleanup level.

CY = cubic yards.

DA = day.

EA = each.

ft bgs = feet below ground surface.

GW = groundwater.

ISGS = in situ geochemical stabilization.

LS = lump sum.

O&M = operation and maintenance.

ORC-A = advanced oxygen release compound.

SF = square feet.

SY = square yards.

UIC = underground injection control program.

Table 2-2
Cost Estimate ñ AOC 2 Remedial Alternatives
VSF Properties, LLC, North Cascade Ford Property
Sedro-Woolley, Washington

ALTERNATIVE 2.1: MONITORED NATURAL ATTENUATION

Remedy components involve containment of contaminated soil and monitored natural attenuation of groundwater in AOC 2 (former USTs).

Assumptions

1) This option assumes that an environmental covenant will be implemented.
2) This area will be monitored quarterly for the length of the remedy (30 years).
3) Three groundwater monitoring wells (one new and two existing) will be monitored.

Item	Quantity	Unit	Unit Cost	Cost
Capital Costs				
Planning Documents				
Compliance Monitoring Plan, Sampling and Analysis Plan, Health and Safety Plan	1	LS	$ 10,000	$ 10,000
Well Installation				
Drill rig and crew	1	LS	$ 4,000	$ 4,000
Well development and oversight	1	DA	$ 1,050	$ 1,050
Field equipment fees	1	LS	$ 1,000	$ 1,000
Well survey	1	LS	$ 1,000	$ 1,000
Institutional Controls				
Preparation of environmental covenant	1	LS	$ 10,000	$ 10,000
Protective signage	1	LS	$ 500	$ 500
Professional / Technical Services				
Project management	10%	--	--	$ 2,050
Subtotal				$ 29,600
Tax	8.5%			$ 2,516
Total Design, Permitting, Construction				**$ 32,116**
Annual Operation & Maintenance				
Additional compliance monitoring Groundwater sampling event, analysis, and reporting	1	EA	$ 9,000	$ 9,000
Periodic Costs				
Five-year reviews and reporting	1	EA	$ 9,000	$ 9,000

Table 2-2
Cost Estimate ñ AOC 2 Remedial Alternatives
VSF Properties, LLC, North Cascade Ford Property
Sedro-Woolley, Washington

PRESENT VALUE ANALYSIS, MONITORED NATURAL ATTENUATION

Discount rate 3.2%

Total years 30

COST TYPE	YEAR	TOTAL COST	TOTAL COST PER YEAR	DISCOUNT FACTOR	NET PRESENT VALUE
Capital	0	$ 32,116	$ 32,116	1.000	$ 32,116
Annual O&M	1 - 10	$ 1,080,000	$ 36,000	19.064	$ 686,315
Periodic (five-year report)	5	$ 9,000	$ 9,000	0.854	$ 7,683
Periodic (ten-year report)	10	$ 9,000	$ 9,000	0.729	$ 6,558
Periodic (15-year report)	15	$ 9,000	$ 9,000	0.622	$ 5,598
Periodic (20-year report)	20	$ 9,000	$ 9,000	0.531	$ 4,779
Periodic (25-year report)	25	$ 9,000	$ 9,000	0.453	$ 4,079
Periodic (30-year report)	30	$ 9,000	$ 9,000	0.387	$ 3,482
		$ 1,166,116			$ 750,610
TOTAL NET PRESENT VALUE OF MNA OPTION					**$ 751,000**

Table 2-2

Cost Estimate ñ AOC 2 Remedial Alternatives

VSF Properties, LLC, North Cascade Ford Property

Sedro-Woolley, Washington

ALTERNATIVE 2.2: EXCAVATION WITH OFF-SITE DISPOSAL AND IN SITU BIOREMEDIATION

Remedy components include excavation/off-site disposal of contaminated soil and backfilling with bioremediation-amended soil material In AOC 2 (former USTs).

Assumptions

1) One round of treatment is sufficient to meet CULs (length of the remedy is assumed to be one year).

2) This area will be monitored quarterly for the first year and semiannually for the following ten years.

3) Three groundwater monitoring wells (one new and two existing) will be monitored.

Item	Quantity	Unit	Unit Cost	Cost
Capital Costs				
Site Preparation				
Mobilization/demobilization	1	LS	$ 10,000	$ 10,000
Temp. erosion- and sedimentation-control measures	1	LS	$ 3,000	$ 3,000
In Situ Bioremediation				
Interim remedial action completed in 2016	1	LS	$ 464,300	$ 464,300
Well Installation				
Drill rig and crew	1	LS	$ 4,000	$ 4,000
Well development and oversight	1	DA	$ 1,050	$ 1,050
Field equipment fees	1	LS	$ 1,000	$ 1,000
Well survey	1	LS	$ 1,000	$ 1,000
Professional / Technical Services				
Project management	6%	--	--	$ 28,461
Remedial design	12%	--	--	$ 58,122
Construction management	8%	--	--	$ 38,748
Permitting	1	LS	$ 15,000	$ 15,000
Preapplication meeting, city permits, UIC permit				
Planning Documents	1	LS	$ 10,000	$ 10,000
Drainage / erosion-control plans, monitoring plan				
Subtotal				$ 634,681
Tax	8.5%	--	--	$ 53,948
Total Design, Permitting, Construction				**$ 688,629**
Annual Operation & Maintenance				
Additional compliance monitoring	1	EA	$ 9,000	$ 9,000
Groundwater sampling event, analysis, and reporting				
Periodic Costs				
Remedial Action Completion Report	1	EA	$ 5,000	$ 5,000

Table 2-2
Cost Estimate ñ AOC 2 Remedial Alternatives
VSF Properties, LLC, North Cascade Ford Property
Sedro-Woolley, Washington

PRESENT VALUE TOTAL, IN SITU BIOREMEDIATION OPTION

Discount rate	3.1%
Total years	10

COST TYPE	YEAR	TOTAL COST	TOTAL COST PER YEAR	DISCOUNT FACTOR	NET PRESENT VALUE
Capital	0	$ 688,629	$ 688,629	1.000	$ 688,629
Annual O&M	1 - 10	$ 180,000	$ 18,000	8.508	$ 153,153
Periodic	1	$ 5,000	$ 5,000	0.969	$ 4,844
		$ 873,629			$ 846,626
TOTAL NET PRESENT VALUE OF IN SITU BIOREMEDIATION OPTION					**$ 847,000**

NOTES:

Present value analysis uses average discount rates for treasury notes from the week of Sept. 24, 2018. (http://www.federalreserve.gov/releases/h15/).

AOC = area of concern.

CUL = cleanup level.

CY = cubic yards.

DA = day.

EA = each.

LS = lump sum.

MNA = monitored natural attenuation.

O&M = operation and maintenance.

UIC = underground injection control program.

UST = underground storage tank.

Table 2-3
Cost Estimate ñ AOC 3 Remedial Alternatives
VSF Properties, LLC, North Cascade Ford Property
Sedro-Woolley, Washington

ALTERNATIVE 3.1: CAPPING

Remedy components include containment of contaminated soil via existing asphalt cap and monitored natural attenuation in AOC 3 (former coal sheds/possible fill area).

Assumptions

1) This option assumes that an environmental covenant will be implemented.
2) The cap is approximately 52,400 SF. It will be monitored for the length of the remedy (30 years).
3) Quarterly monitoring of five (four new and one existing) groundwater monitoring wells.

Item	Quantity	Unit	Unit Cost	Cost
Capital				
Well Installation				
Drill rig and crew	1	LS	$ 4,000	$ 4,000
Well development and oversight	1	DA	$ 1,050	$ 1,050
Field equipment fees	1	LS	$ 1,000	$ 1,000
Well survey	1	LS	$ 1,000	$ 1,000
Institutional Controls				
Preparation of environmental covenant	1	LS	$ 10,000	$ 10,000
Protective signage	1	LS	$ 500	$ 500
Professional / Technical Services				
Project management	10%	--	--	$ 1,755
Remedial design	20%	--	--	$ 3,510
Construction management	15%	--	--	$ 2,633
Subtotal				$ 25,448
Tax	8.5%	--	--	$ 2,163
Total Design, Permitting, Construction				**$ 27,611**
Annual Operation & Maintenance				
Compliance monitoring	1	EA	$ 36,000	$ 36,000
Quarterly groundwater monitoring				
Site inspections and maintenance	1	LS	$ 10,000	$ 10,000
Includes cap inspection and repair				
Total Annual Operation & Maintenance				**$ 46,000**
Periodic Costs				
Site maintenance				
Cap replacement/repair	1	EA	$ 260,000	$ 260,000
Project management	10%	--	--	$ 26,000
Professional / technical services				
Five-year reviews and reporting	1	EA	$ 5,000	$ 5,000

Table 2-3
Cost Estimate ñ AOC 3 Remedial Alternatives
VSF Properties, LLC, North Cascade Ford Property
Sedro-Woolley, Washington

PRESENT VALUE ANALYSIS, CAPPING

Discount rate	3.2%	
Total years	30	

COST TYPE	YEAR		TOTAL COST		TOTAL COST PER YEAR	DISCOUNT FACTOR		NET PRESENT VALUE
Capital	0	$	27,611	$	27,611	1.000	$	27,611
Annual O&M	1 - 30	$	1,380,000	$	46,000	19.064	$	876,959
Periodic (five-year report)	5	$	5,000	$	5,000	0.854	$	4,268
Periodic (ten-year report)	10	$	5,000	$	5,000	0.729	$	3,643
Periodic (15-year report)	15	$	5,000	$	5,000	0.622	$	3,110
Periodic (cap replacement and report)	20	$	291,000		291,000	0.531	$	154,509
Periodic (25-year report)	25	$	5,000	$	5,000	0.453	$	2,266
Periodic (30-year report)	30	$	5,000	$	5,000	0.387	$	1,934
		$	1,723,611				$	1,074,300

TOTAL NET PRESENT VALUE OF CAPPING OPTION	**$**	**1,075,000**

ALTERNATIVE 3.2: CAPPING WITH EXCAVATION, OFF-SITE DISPOSAL, AND IN SITU BIOREMEDIATION OF POSSIBLE FILL AREA

Remedy components include containment of contaminated soil via existing asphalt cap, ISBR of Possible Fill Area, and institutional controls in AOC 3 (former coal sheds/possible fill area).

Assumptions

1) Soil density of 1.5 tons per CY.
2) AOC area is approximately 52,400 SF. Possible fill area to be excavated is approximately 1,000 SF.
3) The cap is approximately 52,400 SF. It will be monitored for the length of the remedy (30 years).
4) Groundwater monitoring will not be required for this alternative.

Table 2-3
Cost Estimate ñ AOC 3 Remedial Alternatives
VSF Properties, LLC, North Cascade Ford Property
Sedro-Woolley, Washington

Item	Quantity	Unit	Unit Cost	Cost
Capital Costs				
Site Preparation				
Mobilization/demobilization	1	LS	$ 15,000	$ 15,000
Temp. erosion- and sedimentation-control measures	1	LS	$ 5,000	$ 5,000
Clearing and grading	108	SY	$ 5	$ 542
Excavation and Disposal				
Excavation and loading	361	CY	$ 20	$ 7,222
Assumes excavation of 975 SF to 10 ft bgs.				
Excavation increase contingency (25%)	90	CY	$ 20	$ 1,806
Off-site waste transportation and disposal	542	TON	$ 65	$ 35,208
Performance sampling and analysis	1	LS	$ 20,000	$ 20,000
Backfilling with In Situ Bioremediation Amendment and Repaving				
Bioremediation amendment	1,000	lb	$ 9	$ 9,000
Assumes use of ORC-A pellets mixed with clean backfill material				
Backfilling	361	CY	$ 25	$ 9,028
Includes compaction in 12" layers				
Asphalt paving	108	SY	$ 20	$ 2,167
Binder course, 2" thick				
Professional / Technical Services				
Project management	8%	--	--	$ 8,398
Remedial design	15%	--	--	$ 15,746
Construction management	10%	--	--	$ 10,497
Subtotal				$ 139,613
Tax	8.5%			$ 11,867
Total Design, Permitting, Construction				**$ 151,480**
Annual Operation & Maintenance				
Cap inspection	1	EA	$ 500	$ 500
Periodic Costs				
Professional / technical services				
Five-year reviews and reporting	1	EA	$ 5,000	$ 5,000

Table 2-3
Cost Estimate ñ AOC 3 Remedial Alternatives
VSF Properties, LLC, North Cascade Ford Property
Sedro-Woolley, Washington

PRESENT VALUE ANALYSIS, CAPPING, EXCAVATION AND OFF-SITE DISPOSAL								
Discount rate	3.2%							
Total years	30							
COST TYPE	**YEAR**		**TOTAL COST**		**TOTAL COST PER YEAR**	**DISCOUNT FACTOR**		**NET PRESENT VALUE**
Capital	0	$	151,480	$	151,480	1.000	$	151,480
Annaul	1 - 30	$	15,000	$	500	19.064	$	9,532
Periodic (five-year report)	5	$	5,000	$	5,000	0.854	$	4,268
Periodic (ten-year report)	10	$	5,000	$	5,000	0.729	$	3,643
Periodic (15-year report)	15	$	5,000	$	5,000	0.622	$	3,110
Periodic (20-year report)	20	$	5,000	$	5,000	0.531	$	2,655
Periodic (25-year report)	25	$	5,000	$	5,000	0.453	$	2,266
Periodic (30-year report)	30	$	5,000	$	5,000	0.387	$	1,934
		$	196,480				$	178,889
TOTAL NET PRESENT VALUE OF CAPPING, EXCAVATION AND ISBR OPTION							**$**	**179,000**

Table 2-3
Cost Estimate ñ AOC 3 Remedial Alternatives
VSF Properties, LLC, North Cascade Ford Property
Sedro-Woolley, Washington

ALTERNATIVE 3.3: EXCAVATION AND OFF-SITE DISPOSAL

Remedy components include excavation and off-site disposal of contaminated soil in AOC 3 (former coal sheds/possible fill area).

Assumptions

1) Soil density of 1.5 tons per CY.

2) AOC area is approximately 52,400 SF.

3) Length of the remedy is assumed to be five years.

Item	Quantity	Unit	Unit Cost	Cost
Capital Costs				
Site Preparation				
Mobilization/demobilization	1	LS	$ 15,000	$ 15,000
Temp. erosion- and sedimentation-control measures	1	LS	$ 5,000	$ 5,000
Clearing and grading	5,818	SY	$ 5	$ 29,089
Excavation and Disposal				
Excavation and loading	2,264	CY	$ 35	$ 79,249
Assumes excavation of 52,400 SF to 1 ft bgs, and 975 SF to 10 ft bgs.				
Off-site waste transportation and disposal	3,396	TON	$ 65	$ 220,765
Performance sampling and analysis	1	LS	$ 35,000	$ 35,000
Backfilling and Repaving				
Backfilling	2,264	CY	$ 25	$ 56,606
Includes compaction in 12" layers				
Asphalt paving	5,818	SY	$ 20	$ 116,356
Binder course, 2" thick				
Well Installation				
Drill rig and crew	1	LS	$ 4,000	$ 4,000
Well development and oversight	1	DA	$ 1,050	$ 1,050
Field equipment fees	1	LS	$ 1,000	$ 1,000
Well survey	1	LS	$ 1,000	$ 1,000
Professional / Technical Services				
Project management	6%	--	--	$ 33,847
Remedial design	12%	--	--	$ 30,265
Construction management	8%	--	--	$ 20,177
Subtotal				$ 641,354
Tax	8.5%			$ 54,515
Total Design, Permitting, Construction				**$ 695,870**
Periodic Costs				
Compliance monitoring	1	EA	$ 36,000	$ 36,000
Quarterly groundwater monitoring				
Professional / technical services				
Five-year reviews and reporting	1	EA	$ 5,000	$ 5,000

Table 2-3
Cost Estimate ñ AOC 3 Remedial Alternatives
VSF Properties, LLC, North Cascade Ford Property
Sedro-Woolley, Washington

PRESENT VALUE ANALYSIS, EXCAVATION AND OFF-SITE DISPOSAL

Discount rate	3.0%
Total years	5

COST TYPE	YEAR	TOTAL COST	TOTAL COST PER YEAR	DISCOUNT FACTOR	NET PRESENT VALUE
Capital	0	$ 695,870	$ 695,870	1.000	$ 695,870
Periodic (groundwater monitoring/reporting)	1 - 5	$ 180,000	$ 36,000	4.584	$ 165,039
Periodic (five-year report)	5	$ 5,000	$ 5,000	0.864	$ 4,321
		$ 880,870			$ 865,229
TOTAL NET PRESENT VALUE OF EXCAVATION AND OFF-SITE DISPOSAL OPTION					**$ 866,000**

NOTES:

Present value analysis uses average discount rates for treasury notes from the week of Sept. 24, 2018. (http://www.federalreserve.gov/releases/h15/).

AOC = area of concern.

CY = cubic yards.

DA = day.

EA = each.

ft bgs = feet below ground surface.

ISBR = in situ bioremediation.

lb = pound(s).

LS = lump sum.

ORC-A = oxygen release compound-advanced.

SF = square feet.

SY = square yards.

Table 3-1
Summary of Remedial Alternatives by Area of Concern
North Cascade Ford Property
Sedro-Woolley, Washington

Alternative	Area of Concern 1: Auto Repair Shop
1	**Alternative 1.1: In situ Geochemical Stabilization** This alternative includes in situ geochemical stabilization (ISGS) technology that uses a permanganate-based solution to geochemically stabilize nonaqueous-phase liquid in the aquifer. The treatment volume for ISGS was conservatively estimated in order to develop a cost estimate. The estimated treatment area is approximately 14,500 square feet and the treatment zone depth is assumed to be the saturated thickness, which is approximately 10 feet. Therefore, the treatment volume is approximately 5,370 cubic yards. To verify the performance of the ISGS treatment, groundwater monitoring would be performed at seven on-site monitoring wells (five existing and two new wells) during one post-treatment monitoring event to be conducted for a minimum of two months following treatment, with a minimum of four subsequent quarterly monitoring events to confirm attainment of cleanup levels (CULs). The net present value (NPV) for the total cost of implementing Alternative 1.1 is approximately $648,000.
2	**Alternative 1.2: Groundwater Circulating Wells and Groundwater Monitoring** Groundwater circulating wells (GCWs) would provide subsurface remediation by creating a three-dimensional circulation pattern of the groundwater. GCWs treat groundwater and soil contaminated with hydrocarbons by pumping groundwater to the surface and aerating it, removing most of the volatile vapors. The aerated groundwater is distributed over an area of contaminated soil and carries oxygen to the subsurface soil, promoting biodegradation. The combined process of biological treatment and physical extraction can reduce the time required to achieve remediation goals and lowers contaminant concentrations. Treatment would consist of installation and operation of eight GCWs. To verify the performance of the GCW treatment and to demonstrate attainment of CULs, groundwater monitoring would be conducted at seven on-site monitoring wells (five existing and two new wells) annually throughout operation of the GCW system to monitor the system performance. Following attainment of CULs and cessation of GCW operation, a minimum of four quarterly monitoring events would be conducted to confirm attainment of CULs. The NPV for the total cost of implementing Alternative 1.2 is approximately $1,097,000.
3	**Alternative 1.3: Soil Excavation, Off-site Disposal, and ISBR Treatment (amended backfill and injections)** The soil excavation option would remove the contaminated soil in the AOC to the north of the Property buildings and south of the BNSF property line. The amount of soil that can be removed is limited (i.e., it will not be feasible to remove all impacted soil through excavation because of infrastructure and access constraints). Therefore, shoring protection will be used to maximize the work area, and the backfill material will be mixed with an ISBR product and placed near the base of the excavation. Confirmational soil samples will be collected during the excavation to document the condition of soil that will be left in place. The FS assumes that 10 feet of soil would be excavated at the identified area in the AOC, which includes approximately 963 cubic yards of soil. Excavated material will be properly disposed of off site. Excavation and staging of the soil would be conducted using best management practices, including sedimentation-control and erosion-prevention practices. A physical barrier (60-mil HDPE liner) will be installed along the northern wall of the excavation to prevent potential recontamination (from BNSF property) of the AOC. The ISBR amendment will allow treatment of residual contamination even after backfilling is complete. For the purposes of this FS addendum, it is assumed that one application of ISBR-amended backfill and two followup injection events will be necessary to reduce any residual contaminants to below CULs. A groundwater compliance monitoring plan will be developed and an environmental covenant placed on the affected properties to prevent the withdrawal and use of contaminated groundwater. To verify the performance of the ISBR treatment, groundwater monitoring would be conducted at seven on-site monitoring wells (five existing and two new wells) for a minimum of four quarters following ISBR treatment to confirm attainment of CULs. Because contamination will remain beneath the building and on BNSF property under this alternative, following attainment of CULs, the frequency of groundwater monitoring would be reduced to biannual for a period of ten years to demonstrate continued compliance with CULs. The NPV for the total cost of implementing Alternative 1.3 is approximately $650,000.

Table 3-1
Summary of Remedial Alternatives by Area of Concern
North Cascade Ford Property
Sedro-Woolley, Washington

Alternative	Area of Concern 2: Former Underground Storage Tanks
1	**Alternative 2.1: Monitored Natural Attenuation, Groundwater Monitoring, and Institutional Controls** Monitored natural attenuation (MNA) is a remediation methodology that employs naturally occurring physical, chemical, and biological processes that reduce the mobility and/or concentration of a contaminant. The purpose of monitoring is to verify that these processes are occurring. MNA is applicable in combination with other technologies in locations where groundwater contamination would remain in place, and is a relatively low-cost remedial option. A groundwater compliance monitoring plan will be developed and an environmental covenant placed on the affected properties to prevent the withdrawal and use of contaminated groundwater. Groundwater monitoring would be conducted to verify that natural attenuation of contamination is occurring. Monitoring would be conducted at three monitoring wells (one new and two existing wells). Because no active remediation is proposed under this alternative, it is assumed that a minimum of 120 quarterly monitoring events (i.e., 30 years of monitoring) would be required to attain CULs. The NPV for the total cost of implementing Alternative 2.1 is approximately $751,000.
2	**Alternative 2.2: Soil Excavation, Off-site Disposal, ISBR-amended Backfill, and Groundwater Monitoring** Excavation with off-site disposal and in situ bioremediation (ISBR) was completed as a component of the underground storage tank removal interim remedial action described in Section 1.2.3 of the FS Addendum. The existing building and paving will act as a protective cap for remaining soil impacts that were inaccessible during previous interim action soil excavation activities. This alternative will include a site management plan; environmental covenant; MNA with possible additional in situ treatment via injections beneath the auto repair shop building for remaining soil and groundwater impacts; and groundwater compliance monitoring. This alternative will also utilize existing surfaces to prevent human exposure to contaminated soil. The existing buildings and pavement surfaces act as a cap and prevent direct contact with rainfall runoff, in addition to preventing weathering or erosion of the contaminated soil beneath the cap. A groundwater compliance monitoring plan will be developed and an environmental covenant placed on the affected properties to prevent the withdrawal and use of contaminated groundwater. To verify the performance of the ISBR treatment, groundwater monitoring would be conducted at three on-site monitoring wells (one new and two existing wells) for a minimum of four quarters following ISBR treatment to confirm attainment of CULs. Because contamination will remain beneath the building under this alternative, following attainment of CULs, the frequency of groundwater monitoring would be reduced to biannual for a period of ten years to demonstrate continued compliance with CULs. Note that this designated number and frequency of groundwater monitoring events assumes that the treatment is effective. The NPV for the total cost of implementing Alternative 2.2 is approximately $847,000.
3	None.

Table 3-1
Summary of Remedial Alternatives by Area of Concern
North Cascade Ford Property
Sedro-Woolley, Washington

Alternative	Area of Concern 3: Former Coal Storage Sheds / Possible Fill Area
1	**Alternative 3.1: Capping** The capping option would prevent human exposure to contaminated soil and protect against or prevent direct contact with rainfall runoff, in addition to preventing weathering or erosion of the contaminated soil beneath the cap. It is assumed that no excavation of contaminated soil would be required under this cleanup option. This option also excludes areas outside the Property boundaries that would require additional access permissions (i.e., public right-of-way area). Prevention of human exposure to contaminated soil would continue under this alternative by the utilization of existing surfaces. The existing pavement surfaces act as a cap that prevents direct contact with rainfall and does not allow weathering or erosion of the contaminated soil beneath the cap. Based on groundwater monitoring data, it is evident that the existing gravel-surfaced portions of the AOC also sufficiently protect the impacted soil beneath and should be considered a protective cap. Annual inspections would be conducted to monitor the integrity of the cap. A long-term monitoring plan would be used to document long-term effectiveness and would conform to the general requirements of MTCA regulations (WAC 173-340-410). Maintenance and/or repairs would be conducted as necessary (i.e., the necessity to be determined through the annual inspections) to maintain the integrity of the cap. Institutional controls would be required under this option, since impacted soil would be left in place. These institutional controls may include on-site features (e.g., signs), educational programs (e.g., worker training and public notices), legal mechanisms (e.g., land use restrictions, environmental covenant, zoning designations, and building permit requirements), maintenance requirements for engineered controls (e.g., containment caps), and financial assurances. Groundwater monitoring would be conducted to monitor compliance with CULs. Monitoring would be conducted at five monitoring wells (one existing and four new wells). Because no active remediation is proposed under this alternative, it is assumed that a minimum of 120 quarterly monitoring events (i.e., 30 years of monitoring) would be required to attain CULs. The NPV for the total cost of implementing Alternative 3.1 is approximately $1,075,000.

Table 3-1
Summary of Remedial Alternatives by Area of Concern
North Cascade Ford Property
Sedro-Woolley, Washington

Alternative	Area of Concern 3: Former Coal Storage Sheds / Possible Fill Area
2	**Alternative 3.2: Limited Excavation with Off-site Disposal** A targeted excavation with off-site disposal and ISBR would be completed in the Possible Fill Area. Excavated material would be properly disposed of off-site. Following backfill of the excavation with clean soil amended with ISBR product, the excavation area would be restored with asphalt pavement; this would integrate with the existing paved parking lot, which also acts as a protective cap. Retaining the existing gravel and/or asphalt cap in areas outside the Possible Fill Area excavation would prevent human exposure to contaminated soil and protect against or prevent direct contact with rainfall runoff while preventing weathering or erosion of the contaminated soil beneath the cap. This option excludes areas outside the Property boundaries that would require additional access permissions (i.e., public right-of-way area). Prevention of human exposure to contaminated soil would continue under this alternative by the utilization of existing surfaces (i.e., gravel and pavement). The pavement and gravel surfaces act as a cap that prevents direct contact with rainfall in addition to preventing weathering or erosion of the contaminated soil beneath the cap. Based on groundwater monitoring data, it is evident that the gravel-surfaced portions of the AOC also sufficiently protect the impacted soil beneath and should be considered a protective cap. Annual inspections would be conducted to monitor the integrity of the cap. A long-term monitoring plan would be used to document long-term effectiveness and conform to the general requirements of MTCA regulations (WAC 173-340-410). Maintenance and/or repairs would be conducted as necessary (i.e., the necessity to be determined through the annual inspections) to maintain the integrity of the cap. Institutional controls would be required under this option, since impacted soil would be left in place. These institutional controls may include on-site features (e.g., signs), educational programs (e.g., worker training and public notices), legal mechanisms (e.g., land use restrictions, environmental covenant, zoning designations, and building permit requirements), maintenance requirements for engineered controls (e.g., containment caps), and financial assurances. This alternative will remove the source associated with the two groundwater exceedances in the Possible Fill Area through excavation. The excavation will include ISBR-amended backfill to address any residual contamination (based on field observations and sample results). Because the remainder of the AOC leaves in place those coal-impacted surface soils that have not resulted in impacts to shallow groundwater; therefore, groundwater monitoring is not included under Alternative 3.2. The FS addendum assumes that groundwater compliance monitoring will not be included. The NPV for the total cost of implementing Alternative 3.2 is approximately $179,000.
3	**Alternative 3.3: Excavation with Off-site Disposal** The complete soil excavation option would remove the contaminated soil in the portion of the AOC within the Property boundary (the top foot of soil across the AOC, to remove coal-impacted soil, with the exception of excavation in the Possible Fill Area, which would be completed to 10 feet below ground surface to remove petroleum-contaminated soil. Excavated material would be properly disposed of off site. Following excavation, the area would be backfilled with clean fill material and subsequently repaved with asphalt. Groundwater monitoring would be conducted to verify the attainment of CULs following removal of source areas. Quarterly monitoring would be conducted at five monitoring wells (one existing and four existing wells) for a minimum of five years following excavation to confirm attainment of CULs. The NPV for the total cost of implementing Alternative 3.3 (Figure 2-8) is approximately $866,000.

Table 3-2
Cost-Benefit Evaluation
North Cascade Ford Property
Sedro-Woolley, Washington

Criteria	Alternative 1.1	Alternative 1.2	Alternative 1.3	Alternative 2.1	Alternative 2.2	Alternative 3.1	Alternative 3.2	Alternative 3.3
Protectiveness (5=high protectiveness)								
Protective of Human Health and the Environment	3	5	4	3	5	3	4	5
Subtotal	3.0	5.0	4.0	3.0	5.0	3.0	4.0	5.0
Permanence (5=high permanence removal)								
Reduction of Toxicity	4	5	4	2	4	1	3	5
Reduction of Mobility	4	5	4	2	4	1	3	5
Reduction of Volume	1	5	4	2	4	1	3	5
Subtotal	3.0	5.0	4.0	2.0	4.0	1.0	3.0	5.0
Effectiveness over the long term (5=high effectiveness)								
Effectively and reliably maintains treatment levels over the long term	3	5	4	3	4	2	5	5
Subtotal	3.0	5.0	4.0	3.0	4.0	2.0	5.0	5.0
Short-term risk management (5=low risk)								
Effectively mitigates short term risk	3	4	2	5	2	5	4	3
Subtotal	3.0	4.0	2.0	5.0	2.0	5.0	4.0	3.0
Implementability (5=high implementability)								
Availability of services and materials	3	3	5	5	5	5	5	5
Technical and Administrative Implementability	4	4	4	3	4	3	4	3
Subtotal	3.5	3.5	4.5	4.0	4.5	4.0	4.5	4.0
Consideration of public concerns (5=highly considerate)								
State acceptance	3	5	4	2	4	2	4	5
Community acceptance	3	5	4	2	4	2	4	5
Subtotal	3.0	5.0	4.0	2.0	4.0	2.0	4.0	5.0
Cost (5=low cost)								
Present worth cost	4	2	5	4	3	1	5	2
Subtotal	4.0	2.0	5.0	4.0	3.0	1.0	5.0	2.0
TOTAL	23	30	28	23	27	18	30	29

NOTES:

Evaluation criteria include effectiveness, implementability, and cost. All alternatives are rated numerically/qualitatively, based on the following scale:

1. least acceptable of all alternatives evaluated and compared
2. acceptable, yet satisfies/fulfills few elements of evaluation criterion
3. acceptable and satisfies/fulfills a moderate number of the elements of evaluation criterion
4. acceptable and satisfies/fulfills a substantial number of the elements of evaluation criterion
5. most acceptable of all alternatives evaluated and compared

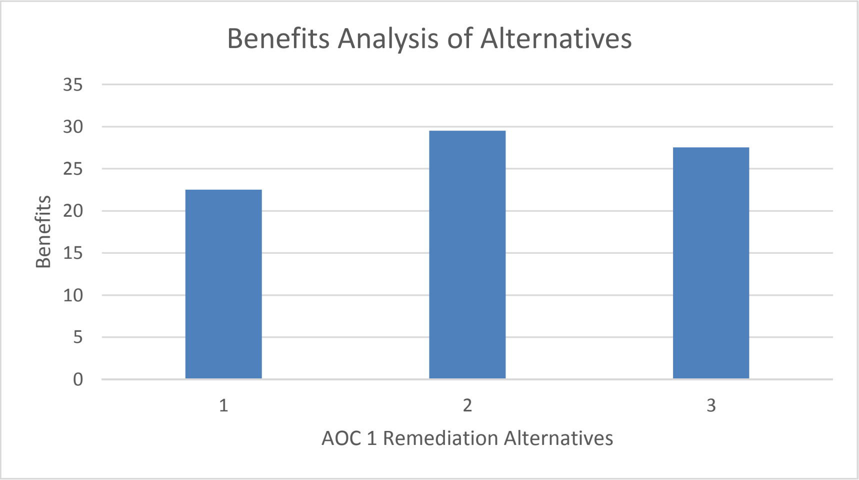
Table 3-3
Cost-Benefit Analysis for each Area of Concern
North Cascade Ford Property
Sedro-Woolley, Washington

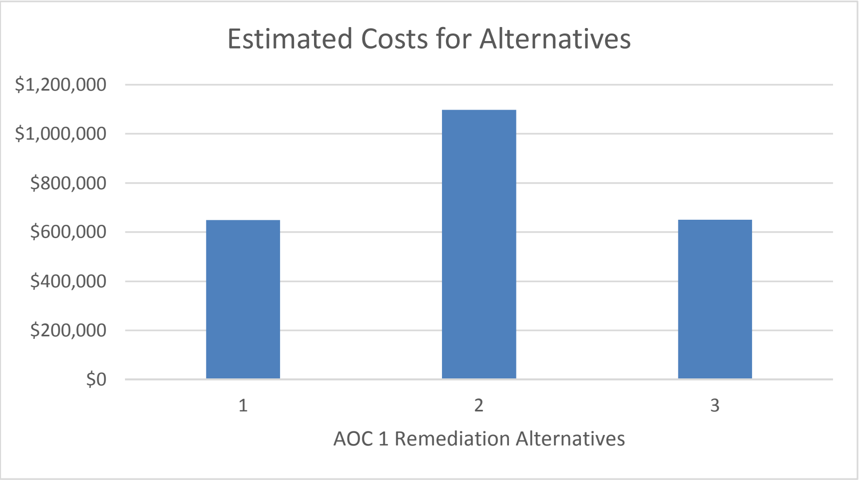
Area of Concern 1: Auto Repair Shop

Alternative 1.1: In situ geochemical stabilization and groundwater monitoring

Alternative 1.2: Groundwater circulating wells and groundwater monitoring

Alternative 1.3: Soil excavation, off-site disposal, and in situ bioremediation (ISBR) treatment (amended backfill and injections)





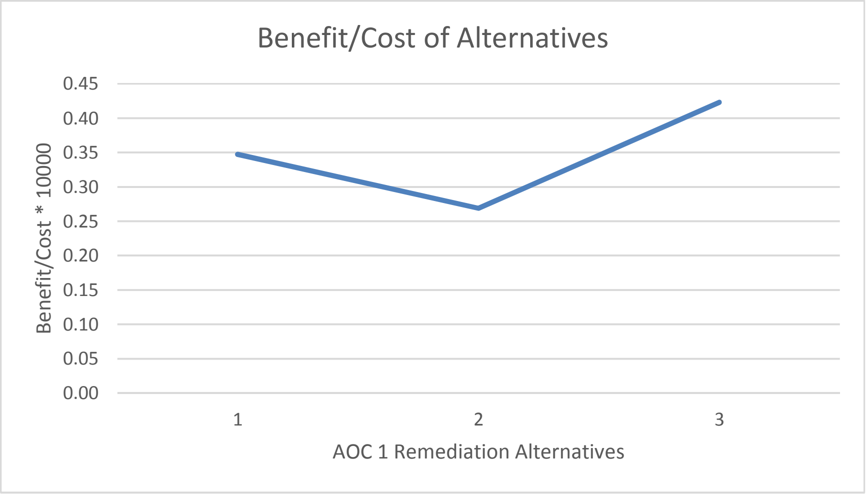
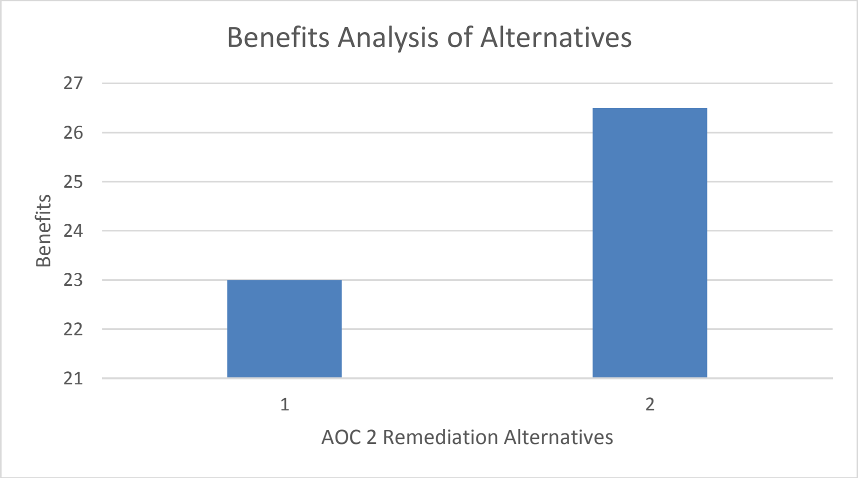


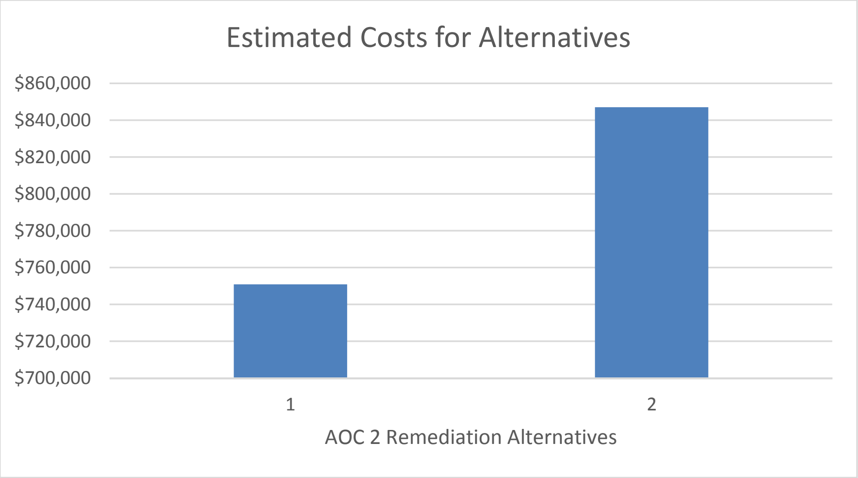
Table 3-3
Cost-Benefit Analysis for each Area of Concern
North Cascade Ford Property
Sedro-Woolley, Washington

Area of Concern 2: Former Underground Storage Tanks

Alternative 2.1: Monitored natural attenuation, groundwater monitoring, and institutional controls

Alternative 2.2: Soil excavation, off-site disposal, ISBR-amended backfill, and groundwater monitoring





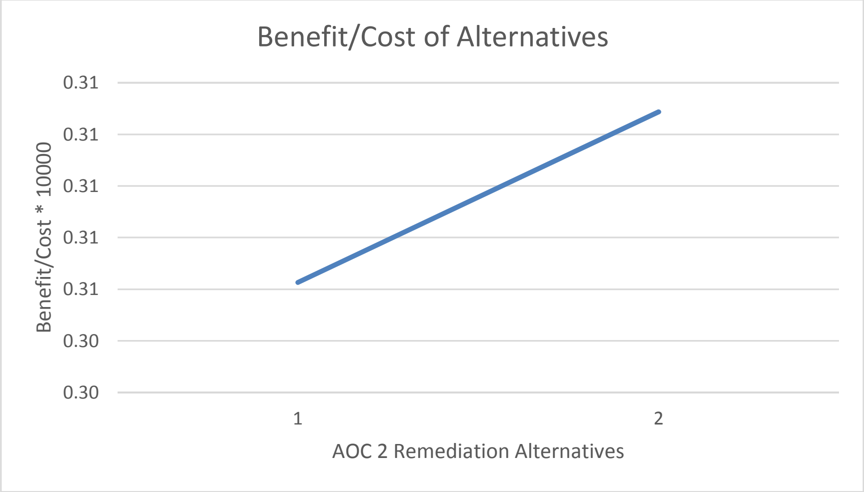
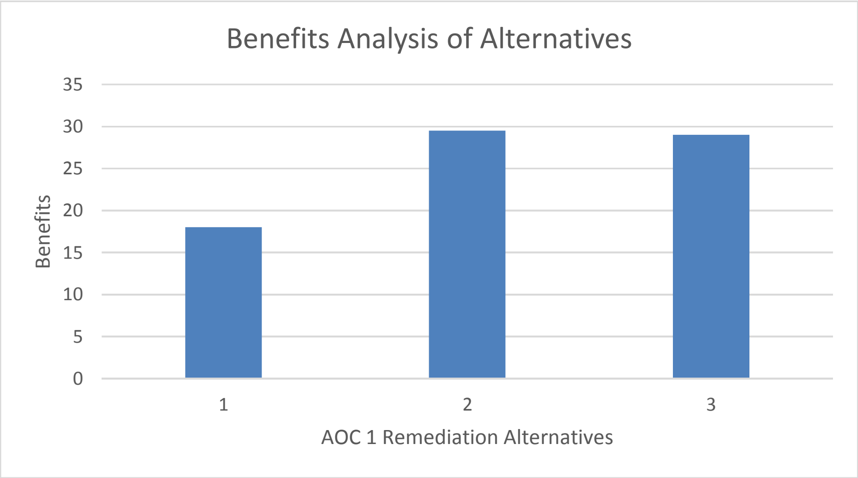
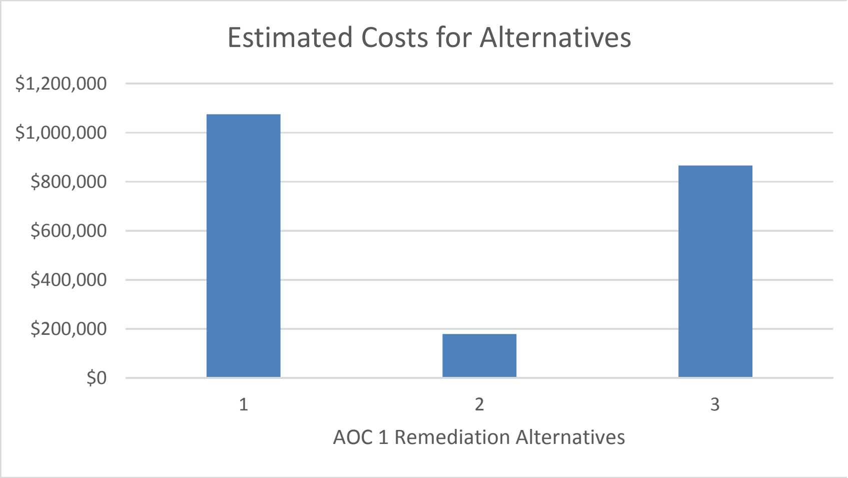


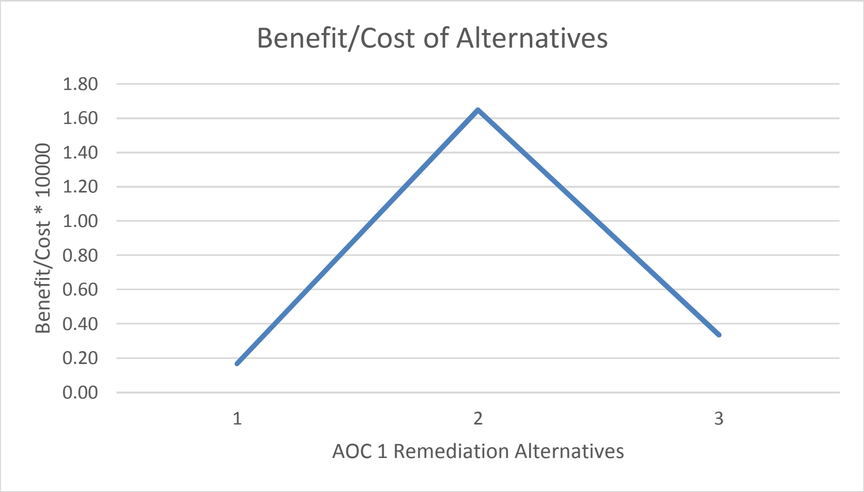
Table 3-3
Cost-Benefit Analysis for each Area of Concern
North Cascade Ford Property
Sedro-Woolley, Washington

Area of Concern 3: Former Coal Storage Sheds / Possible Fill Area

Alternative 3.1: Groundwater monitoring, capping with institutional controls, and cap monitoring and maintenance
Alternative 3.2: Limited excavation with off-site disposal
Alternative 3.3: Excavation with off-site disposal







FIGURES

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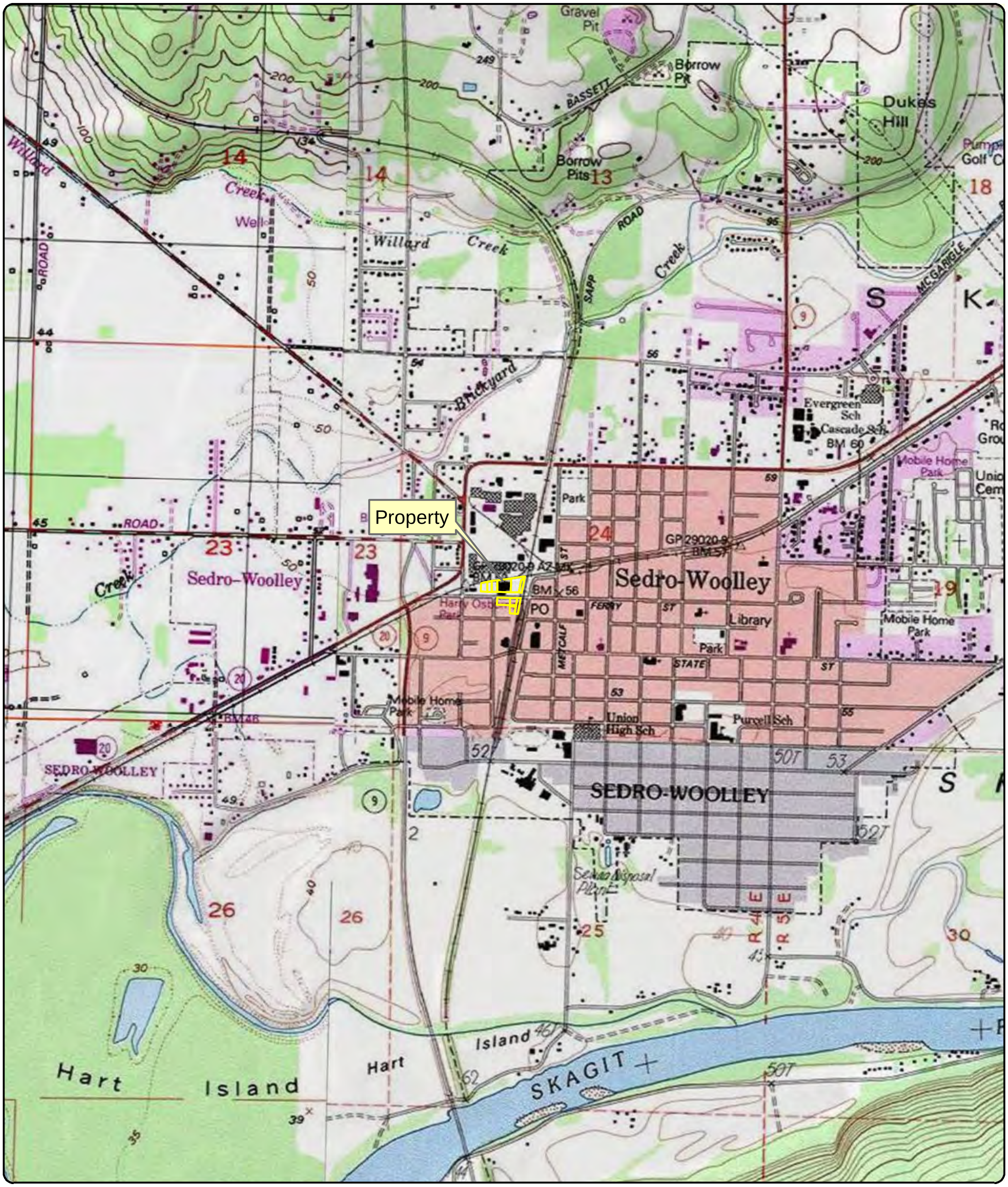
Print Date: 9/27/2018

Approved By: H. Good

Produced By: mjosef

Project: 0747.01.06



Property Address: 116 W Ferry Street, Sedro-Woolley, Washington
Source: US Geological Survey (1990) 7.5-minute
topographic quadrangle: Sedro-Woolley North
Section 24, Township 35 North, Range 4 East

Legend

☐ Property Parcel

Figure 1-1
Property Location

VSF Properties, LLC
North Cascade Ford Property
Sedro-Woolley, Washington

0 1,000 2,000
Feet

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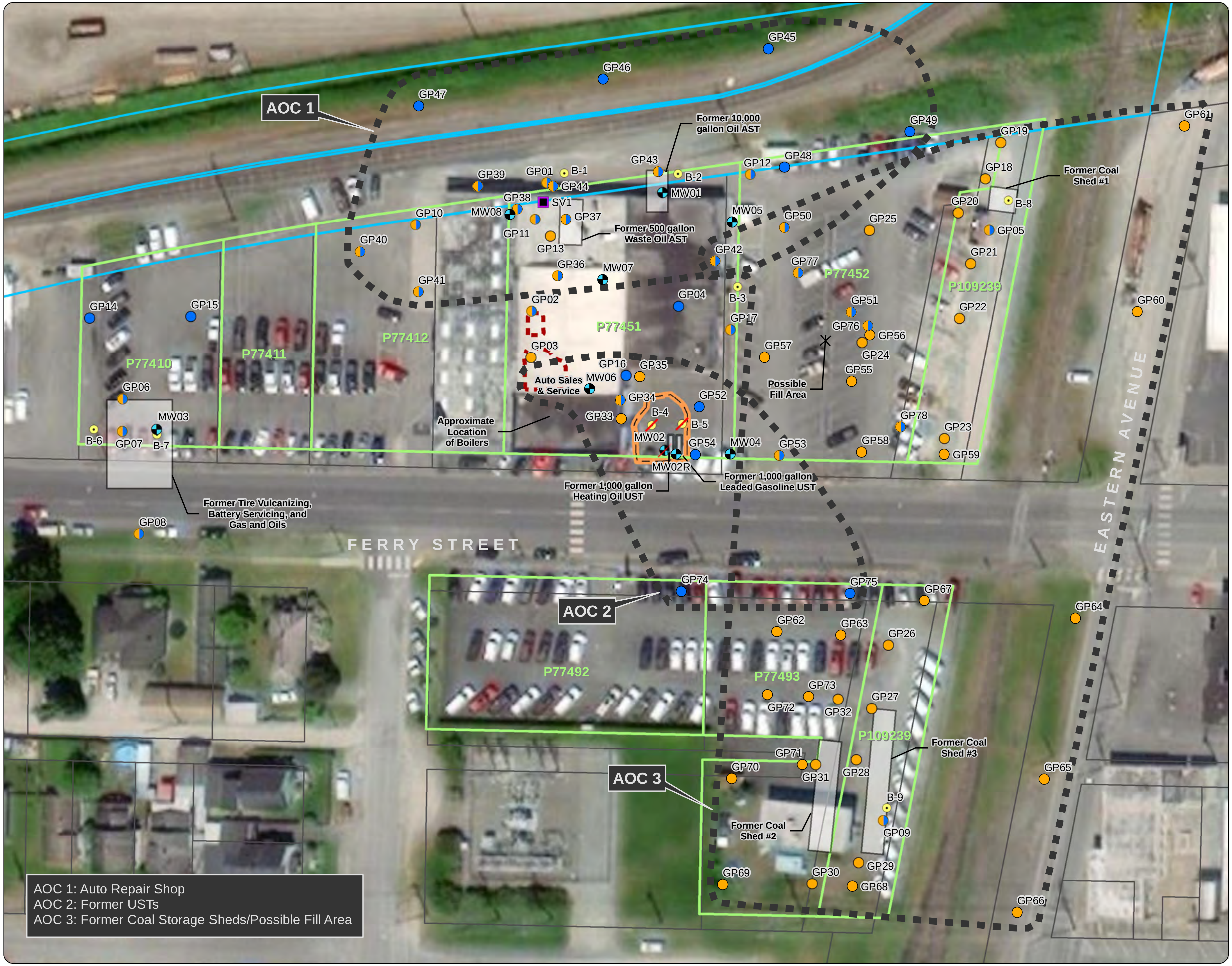
Figure 1-2
Site Features and Areas of Concern

VSF Properties, LLC
North Cascade Ford Property
Sedro-Woolley, Washington



Legend

- UST Removal Excavation Area
- Hoist Removal Excavation Area
- 🟩 Property Parcel
- BNSF-owned Parcel
- ■ Sub-slab Soil Vapor Probe
- ● Monitoring Well Location
- Monitoring Well Location (decommissioned)
- ⊙ Phase II ESA Boring Location
- Phase II ESA Boring Location (soil removed)
- ● MFA Boring, Groundwater
- ● MFA Boring, Soil
- ● MFA Boring, Soil and Groundwater

NOTES:
AOC boundaries represent the extent of investigation locations included in the assessment of environmental impacts associated with potential releases within each AOC and are not necessarily representative of the extent of contamination associated with each AOC.
The surveyed Property parcel boundaries do not coincide with the adjacent parcel boundaries obtained from Skagit County; therefore, there is an overlap between the Property and BNSF parcels.
AOC = area of concern.
AST = aboveground storage tank.
BNSF = Burlington Northern Santa Fe Railway.
ESA = environmental site assessment.
MFA = Maul Foster & Alongi, Inc.
Property = North Cascade Ford Property
UST = underground storage tank.

0 31.5 63
Feet

Source: Aerial photograph obtained from ArcGIS Online. Property parcel boundaries surveyed by Wilson Engineering, LLC. Adjacent parcel boundaries obtained from Skagit County.

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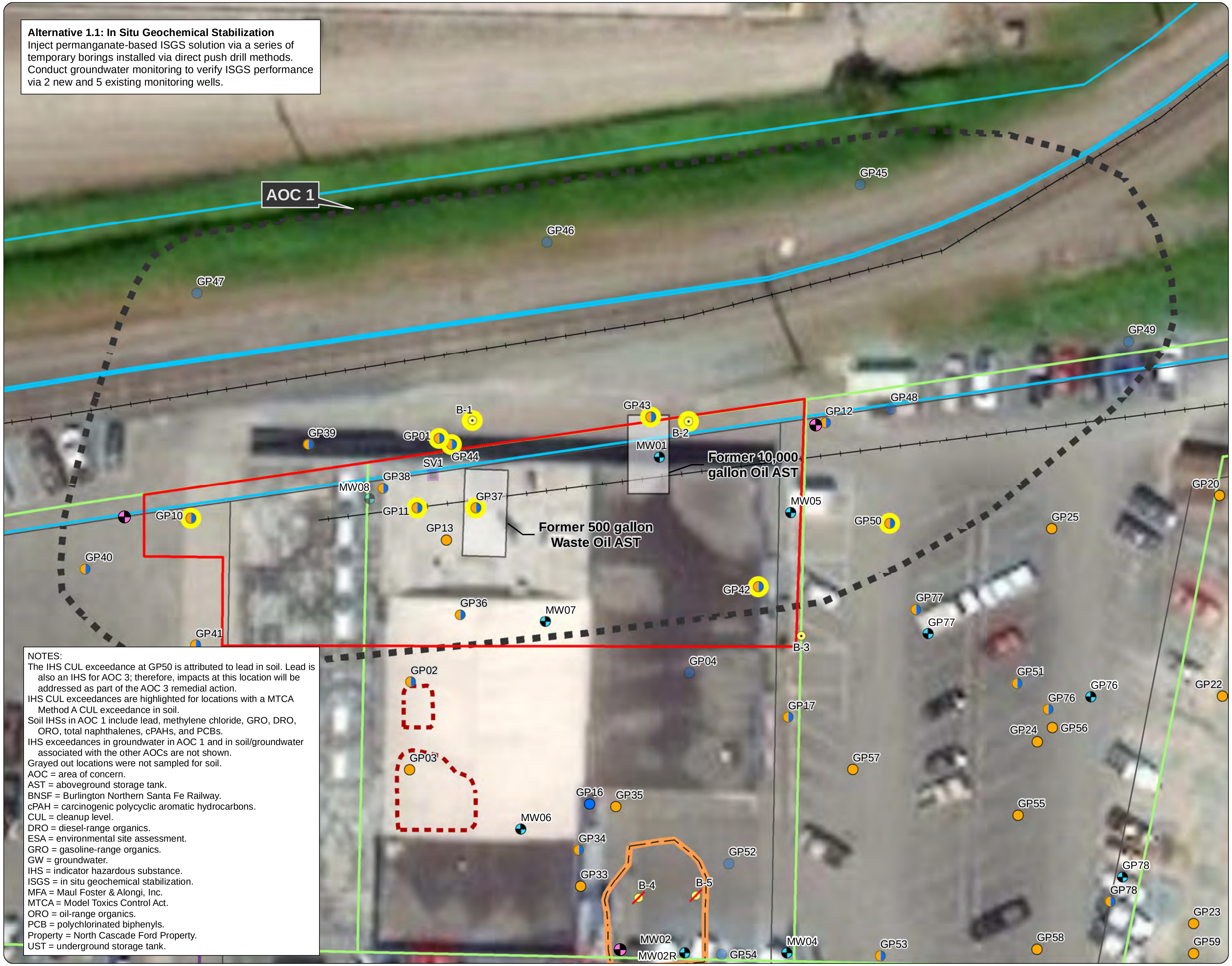
Path: X:\0747.01\Projects\09\Fig2-1_Site Features and Sample Locations.mxd
Print Date: 10/30/2018
Approved By: H. Good
Produced By: mjosef
Project: 0747.01.07

Figure 2-1
AOC 1 - Alternative 1.1

VSF Properties, LLC
North Cascade Ford Property
Sedro-Woolley, Washington

Alternative 1.1: In Situ Geochemical Stabilization
Inject permanganate-based ISGS solution via a series of temporary borings installed via direct push drill methods. Conduct groundwater monitoring to verify ISGS performance via 2 new and 5 existing monitoring wells.



NOTES:
The IHS CUL exceedance at GP50 is attributed to lead in soil. Lead is also an IHS for AOC 3; therefore, impacts at this location will be addressed as part of the AOC 3 remedial action.
IHS CUL exceedances are highlighted for locations with a MTCA Method A CUL exceedance in soil.
Soil IHSs in AOC 1 include lead, methylene chloride, GRO, DRO, ORO, total naphthalenes, cPAHs, and PCBs.
IHS exceedances in groundwater in AOC 1 and in soil/groundwater associated with the other AOCs are not shown.
Grayed out locations were not sampled for soil.
AOC = area of concern.
AST = aboveground storage tank.
BNSF = Burlington Northern Santa Fe Railway.
cPAH = carcinogenic polycyclic aromatic hydrocarbons.
CUL = cleanup level.
DRO = diesel-range organics.
ESA = environmental site assessment.
GRO = gasoline-range organics.
GW = groundwater.
IHS = indicator hazardous substance.
ISGS = in situ geochemical stabilization.
MFA = Maul Foster & Alongi, Inc.
MTCA = Model Toxics Control Act.
ORO = oil-range organics.
PCB = polychlorinated biphenyls.
Property = North Cascade Ford Property.
UST = underground storage tank.

Legend

●	Proposed Monitoring Well Location
🟥	ISGS Treatment Area
🟧	UST Removal Excavation Area
▨	Hoist Removal Excavation Area
🟩	Property Parcel
🟦	BNSF-owned Parcels
☐	Skagit County Parcels
■	Sub-slab Soil Vapor Probe
●	Monitoring Well Location
⊙	Phase II ESA Boring Location
●	MFA Boring, GW
●	MFA Boring, Soil
◐	MFA Boring, Soil and GW
●	Soil IHS CUL Exceedance
—+—	Railroad

0 16.5 33
Feet

Source: Aerial photograph obtained from ArcGIS online. Property parcel boundaries surveyed by Wilson Engineering, LLC. Adjacent parcel boundaries obtained from Skagit County.

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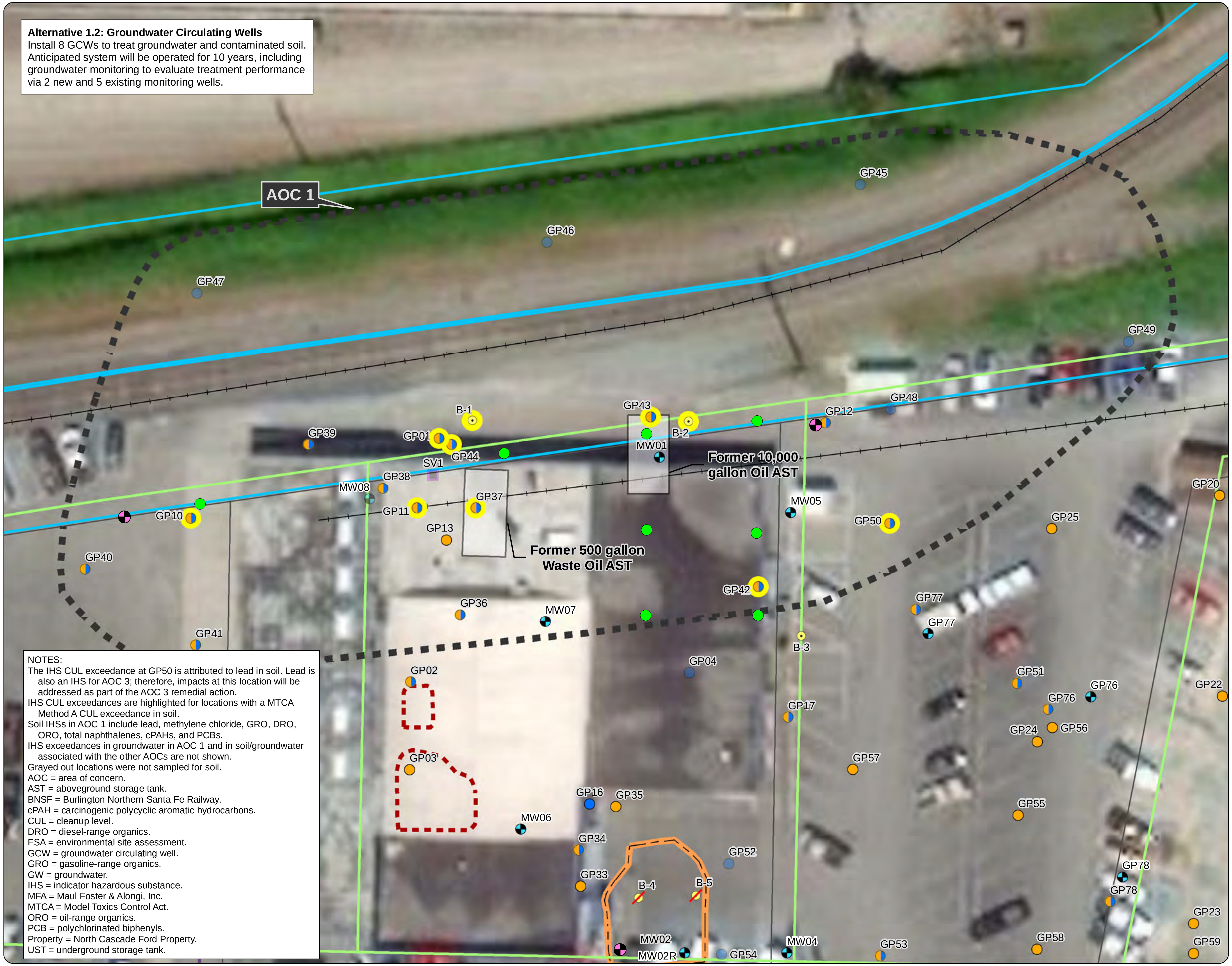
Path: X:\0747.01\Projects\08\Fig2-1_AOC 1_Selected_Remedy_update_alt11.mxd

Print Date: 10/30/2018
Approved By: H. Good
Produced By: mjosef
Project: 0747.01.08

Figure 2-2
AOC 1 - Alternative 1.2

VSF Properties, LLC
North Cascade Ford Property
Sedro-Woolley, Washington



Alternative 1.2: Groundwater Circulating Wells
Install 8 GCWs to treat groundwater and contaminated soil. Anticipated system will be operated for 10 years, including groundwater monitoring to evaluate treatment performance via 2 new and 5 existing monitoring wells.

NOTES:
The IHS CUL exceedance at GP50 is attributed to lead in soil. Lead is also an IHS for AOC 3; therefore, impacts at this location will be addressed as part of the AOC 3 remedial action.
IHS CUL exceedances are highlighted for locations with a MTCA Method A CUL exceedance in soil.
Soil IHSs in AOC 1 include lead, methylene chloride, GRO, DRO, ORO, total naphthalenes, cPAHs, and PCBs.
IHS exceedances in groundwater in AOC 1 and in soil/groundwater associated with the other AOCs are not shown.
Grayed out locations were not sampled for soil.
AOC = area of concern.
AST = aboveground storage tank.
BNSF = Burlington Northern Santa Fe Railway.
cPAH = carcinogenic polycyclic aromatic hydrocarbons.
CUL = cleanup level.
DRO = diesel-range organics.
ESA = environmental site assessment.
GCW = groundwater circulating well.
GRO = gasoline-range organics.
GW = groundwater.
IHS = indicator hazardous substance.
MFA = Maul Foster & Alongi, Inc.
MTCA = Model Toxics Control Act.
ORO = oil-range organics.
PCB = polychlorinated biphenyls.
Property = North Cascade Ford Property.
UST = underground storage tank.

Legend

- ● Proposed GCW Location
- ● Proposed Monitoring Well Location
- ▭ UST Removal Excavation Area
- ▭ Hoist Removal Excavation Area
- ▭ Property Parcel
- ▭ BNSF-owned Parcels
- ▭ Skagit County Parcels
- ■ Sub-slab Soil Vapor Probe
- ● Monitoring Well Location
- ⊙ Phase II ESA Boring Location
- ● MFA Boring, GW
- ● MFA Boring, Soil
- ● MFA Boring, Soil and GW
- ● Soil IHS CUL Exceedance
- ┼ Railroad

0 16.5 33
Feet

Source: Aerial photograph obtained from ArcGIS online. Property parcel boundaries surveyed by Wilson Engineering, LLC. Adjacent parcel boundaries obtained from Skagit County.

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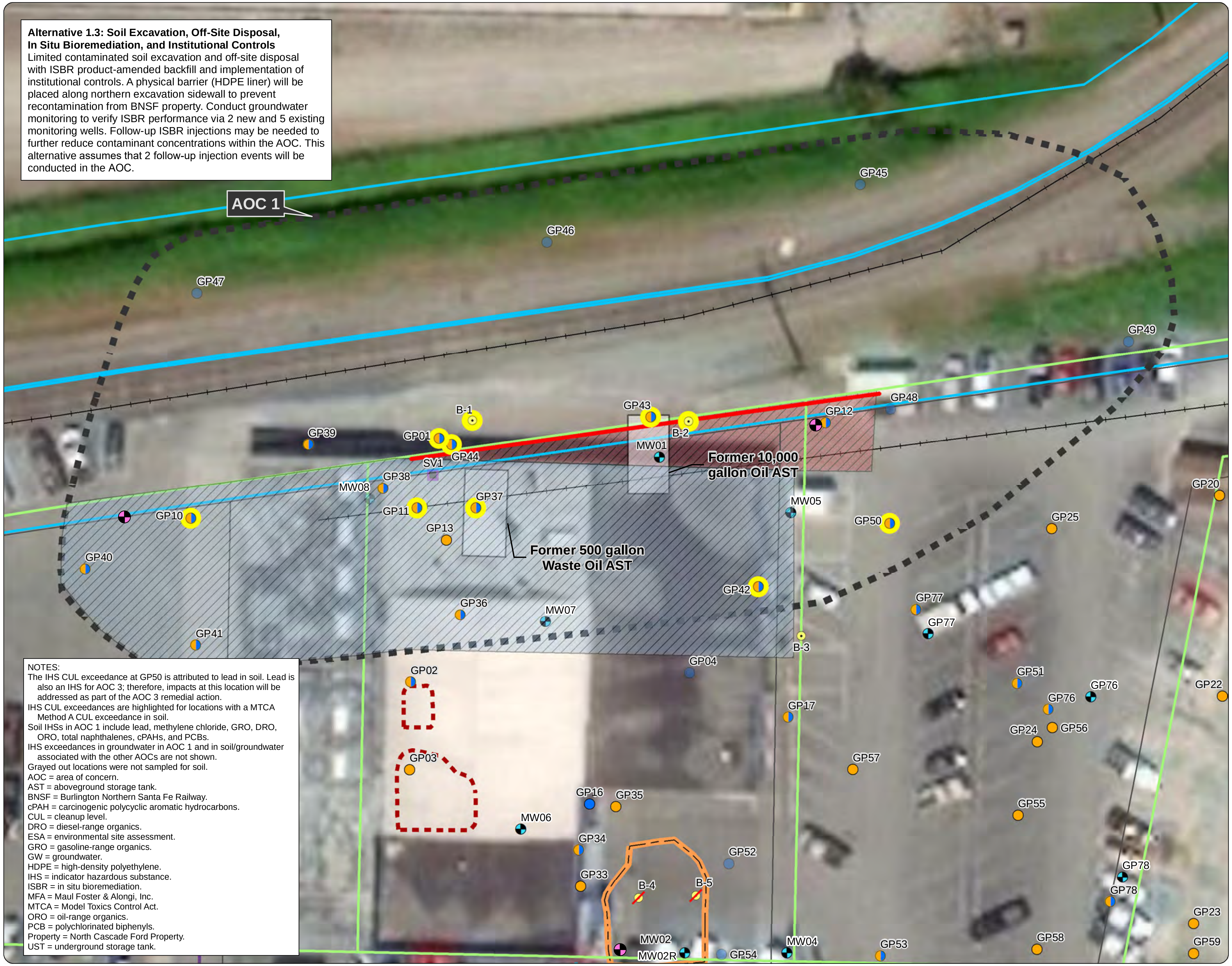
Produced By: mjosef

Project: 0747.01.08

Figure 2-3
AOC 1 - Alternative 1.3

VSF Properties, LLC
North Cascade Ford Property
Sedro-Woolley, Washington



Alternative 1.3: Soil Excavation, Off-Site Disposal, In Situ Bioremediation, and Institutional Controls

Limited contaminated soil excavation and off-site disposal with ISBR product-amended backfill and implementation of institutional controls. A physical barrier (HDPE liner) will be placed along northern excavation sidewall to prevent recontamination from BNSF property. Conduct groundwater monitoring to verify ISBR performance via 2 new and 5 existing monitoring wells. Follow-up ISBR injections may be needed to further reduce contaminant concentrations within the AOC. This alternative assumes that 2 follow-up injection events will be conducted in the AOC.

NOTES:

The IHS CUL exceedance at GP50 is attributed to lead in soil. Lead is also an IHS for AOC 3; therefore, impacts at this location will be addressed as part of the AOC 3 remedial action.

IHS CUL exceedances are highlighted for locations with a MTCA Method A CUL exceedance in soil.

Soil IHSs in AOC 1 include lead, methylene chloride, GRO, DRO, ORO, total naphthalenes, cPAHs, and PCBs.

IHS exceedances in groundwater in AOC 1 and in soil/groundwater associated with the other AOCs are not shown.

Grayed out locations were not sampled for soil.

AOC = area of concern.
AST = aboveground storage tank.
BNSF = Burlington Northern Santa Fe Railway.
cPAH = carcinogenic polycyclic aromatic hydrocarbons.
CUL = cleanup level.
DRO = diesel-range organics.
ESA = environmental site assessment.
GRO = gasoline-range organics.
GW = groundwater.
HDPE = high-density polyethylene.
IHS = indicator hazardous substance.
ISBR = in situ bioremediation.
MFA = Maul Foster & Alongi, Inc.
MTCA = Model Toxics Control Act.
ORO = oil-range organics.
PCB = polychlorinated biphenyls.
Property = North Cascade Ford Property.
UST = underground storage tank.

Legend

- ● Proposed Monitoring Well Location
- ▭ UST Removal Excavation Area
- ▭ Hoist Removal Excavation Area
- ▨ Soil Protective Cap (monitor and maintain)
- ▨ Proposed Excavation and ISBR-amended backfill
- ― Proposed HDPE Geomembrane (60-mil)
- ▭ Property Parcel
- ▭ BNSF-owned Parcels
- ▭ Skagit County Parcels
- ■ Sub-slab Soil Vapor Probe
- ● Monitoring Well Location
- ⊙ Phase II ESA Boring Location
- ● MFA Boring, GW
- ● MFA Boring, Soil
- ◐ MFA Boring, Soil and GW
- ● Soil IHS CUL Exceedance
- ┼ Railroad

0 16.5 33
Feet

Source: Aerial photograph obtained from ArcGIS online. Property parcel boundaries surveyed by Wilson Engineering, LLC. Adjacent parcel boundaries obtained from Skagit County.

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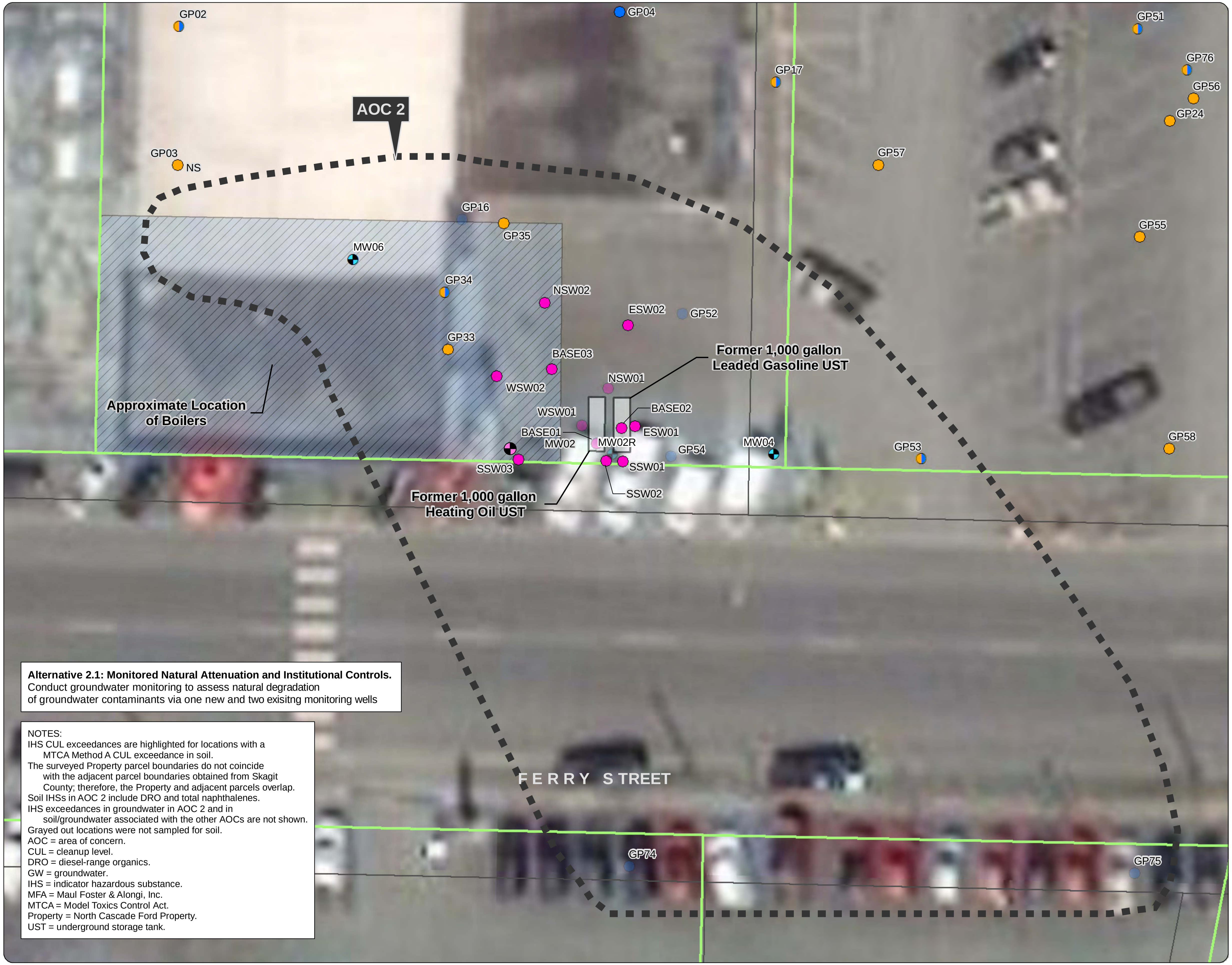
Produced By: mjosef
Project: 0747.01.08

Figure 2-4
AOC 2 - Alternative 2.1

VSF Properties, LLC
North Cascade Ford Property
Sedro-Woolley, Washington



Alternative 2.1: Monitored Natural Attenuation and Institutional Controls.
Conduct groundwater monitoring to assess natural degradation
of groundwater contaminants via one new and two exisitng monitoring wells

NOTES:
IHS CUL exceedances are highlighted for locations with a MTCA Method A CUL exceedance in soil.
The surveyed Property parcel boundaries do not coincide with the adjacent parcel boundaries obtained from Skagit County; therefore, the Property and adjacent parcels overlap.
Soil IHSs in AOC 2 include DRO and total naphthalenes.
IHS exceedances in groundwater in AOC 2 and in soil/groundwater associated with the other AOCs are not shown.
Grayed out locations were not sampled for soil.
AOC = area of concern.
CUL = cleanup level.
DRO = diesel-range organics.
GW = groundwater.
IHS = indicator hazardous substance.
MFA = Maul Foster & Alongi, Inc.
MTCA = Model Toxics Control Act.
Property = North Cascade Ford Property.
UST = underground storage tank.

Legend

●	Proposed Monitoring Well Location
▨	Soil Protective Cap (monitor and maintain)
🟩	Property Parcel
☐	Skagit County Parcel
●	Monitoring Well
●	MFA Boring, GW
●	MFA Boring, Soil
●	MFA Boring, Soil and GW
●	Confirmation Sample Location

0 10.5 21
Feet

Source: Aerial photograph obtained from ArcGIS Online. Parcels obtained from survey. Property parcel boundaries surveyed by Wilson Engineering, LLC. Adjacent parcel boundaries obtained from Skagit County.

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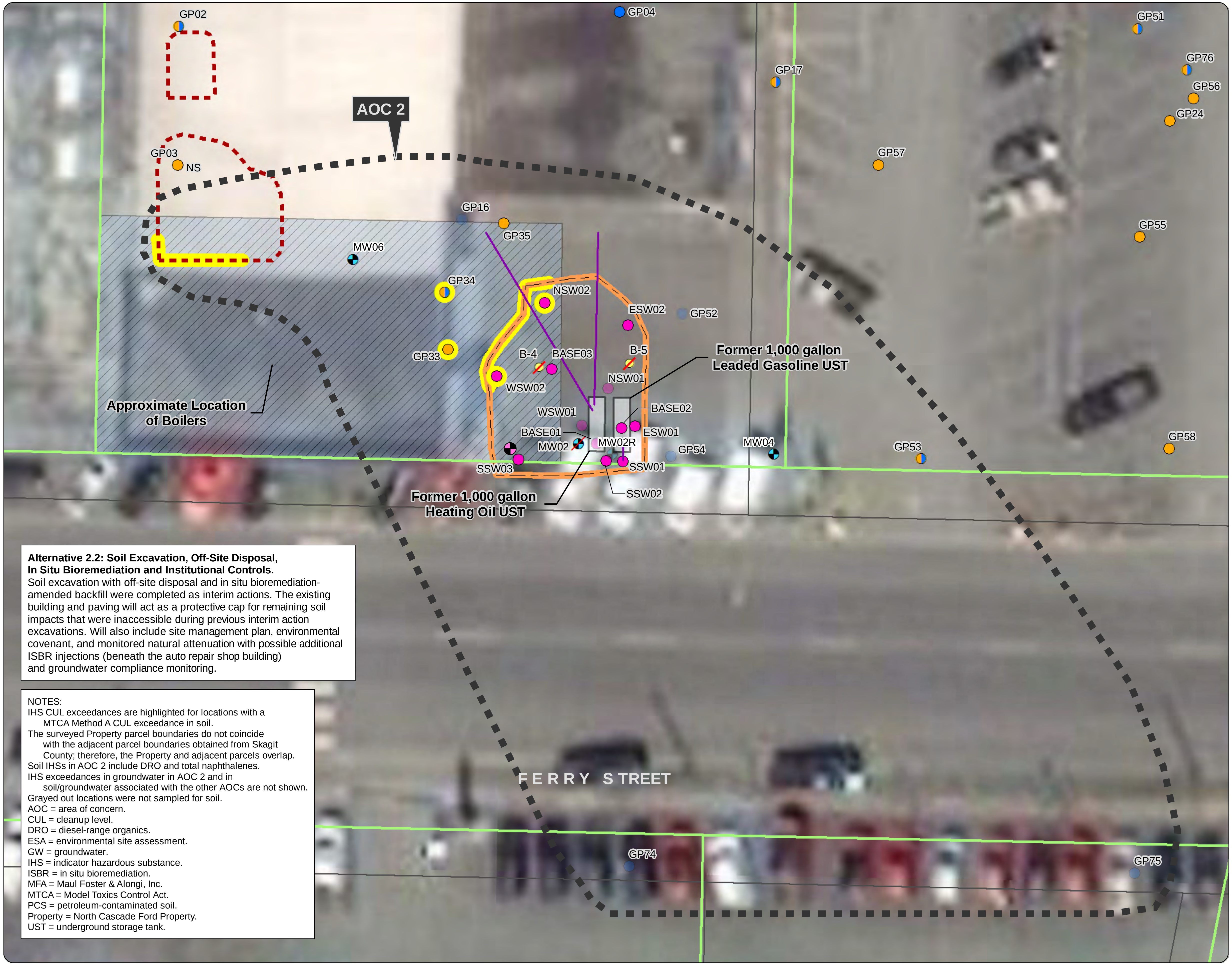
Figure 2-5
AOC 2 - Alternative 2.2

VSF Properties, LLC
North Cascade Ford Property
Sedro-Woolley, Washington



Alternative 2.2: Soil Excavation, Off-Site Disposal, In Situ Bioremediation and Institutional Controls.
Soil excavation with off-site disposal and in situ bioremediation-amended backfill were completed as interim actions. The existing building and paving will act as a protective cap for remaining soil impacts that were inaccessible during previous interim action excavations. Will also include site management plan, environmental covenant, and monitored natural attenuation with possible additional ISBR injections (beneath the auto repair shop building) and groundwater compliance monitoring.

NOTES:
IHS CUL exceedances are highlighted for locations with a MTCA Method A CUL exceedance in soil.
The surveyed Property parcel boundaries do not coincide with the adjacent parcel boundaries obtained from Skagit County; therefore, the Property and adjacent parcels overlap.
Soil IHSs in AOC 2 include DRO and total naphthalenes.
IHS exceedances in groundwater in AOC 2 and in soil/groundwater associated with the other AOCs are not shown.
Grayed out locations were not sampled for soil.
AOC = area of concern.
CUL = cleanup level.
DRO = diesel-range organics.
ESA = environmental site assessment.
GW = groundwater.
IHS = indicator hazardous substance.
ISBR = in situ bioremediation.
MFA = Maul Foster & Alongi, Inc.
MTCA = Model Toxics Control Act.
PCS = petroleum-contaminated soil.
Property = North Cascade Ford Property.
UST = underground storage tank.

Legend

- Proposed Monitoring Well Location
- UST Removal Excavation Area
- Hoist Removal Excavation Area
- ▨ Soil Protective Cap (monitor and maintain)
- 🟩 Property Parcel
- ☐ Skagit County Parcel
- Former Product Line
- Monitoring Well
- Monitoring Well (Decommissioned)
- Phase II ESA Boring Location (soil removed)
- ● MFA Boring, GW
- ● MFA Boring, Soil
- ● MFA Boring, Soil and GW
- ● Confirmation Sample Location
- ● Soil IHS CUL Exceedance
- PCS remaining in situ

0 10.5 21
Feet

Source: Aerial photograph obtained from ArcGIS Online. Parcels obtained from survey. Property parcel boundaries surveyed by Wilson Engineering, LLC. Adjacent parcel boundaries obtained from Skagit County.

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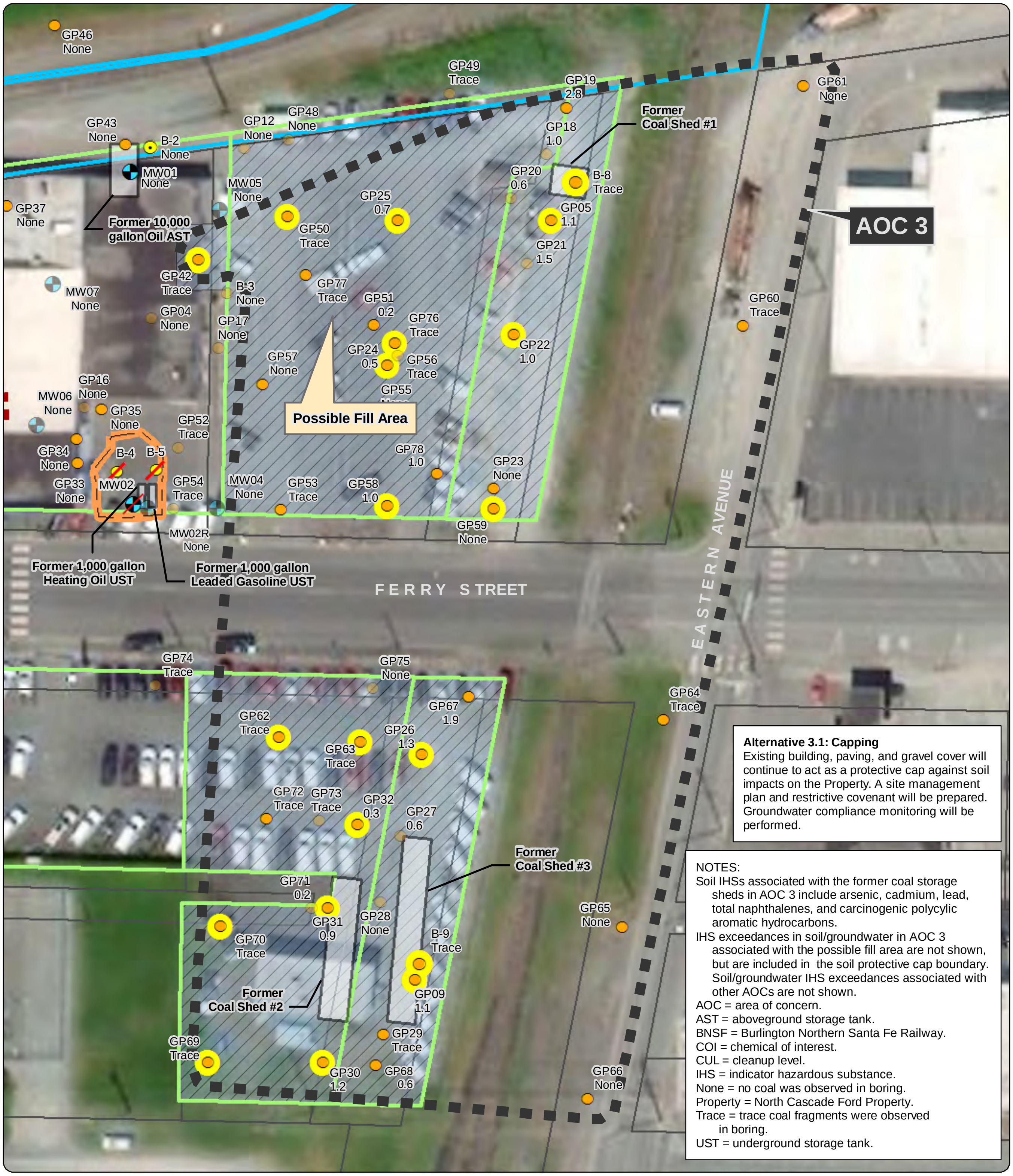

Alternative 3.1: Capping
Existing building, paving, and gravel cover will continue to act as a protective cap against soil impacts on the Property. A site management plan and restrictive covenant will be prepared. Groundwater compliance monitoring will be performed.

NOTES:
Soil IHSs associated with the former coal storage sheds in AOC 3 include arsenic, cadmium, lead, total naphthalenes, and carcinogenic polycyclic aromatic hydrocarbons.
IHS exceedances in soil/groundwater in AOC 3 associated with the possible fill area are not shown, but are included in the soil protective cap boundary. Soil/groundwater IHS exceedances associated with other AOCs are not shown.
AOC = area of concern.
AST = aboveground storage tank.
BNSF = Burlington Northern Santa Fe Railway.
COI = chemical of interest.
CUL = cleanup level.
IHS = indicator hazardous substance.
None = no coal was observed in boring.
Property = North Cascade Ford Property.
Trace = trace coal fragments were observed in boring.
UST = underground storage tank.

Source: Aerial photograph (2015) obtained from ArcGIS Online. Property parcel boundaries surveyed by Wilson Engineering, LLC. Adjacent parcel boundaries obtained from Skagit County.

Legend

GP27
0.6
● Boring Location (with location ID and coal thickness in feet)
● Boring Location (not sampled for coal-related COIs)
Boring Location (soil removed)
● CUL Exceedance of Coal-related IHS
Monitoring Well Location
Monitoring Well Location (decommissioned)
UST Removal Area Excavation Extent
▨ Soil Protective Cap (monitor and maintain)
🟩 Property Parcel
🟦 Property Parcel BNSF-owned Parcels
☐ Skagit County Parcels

0 36 72
Feet

Figure 2-6
AOC 3 - Alternative 3.1

VSF Properties, LLC
North Cascade Ford Property
Sedro-Woolley, Washington

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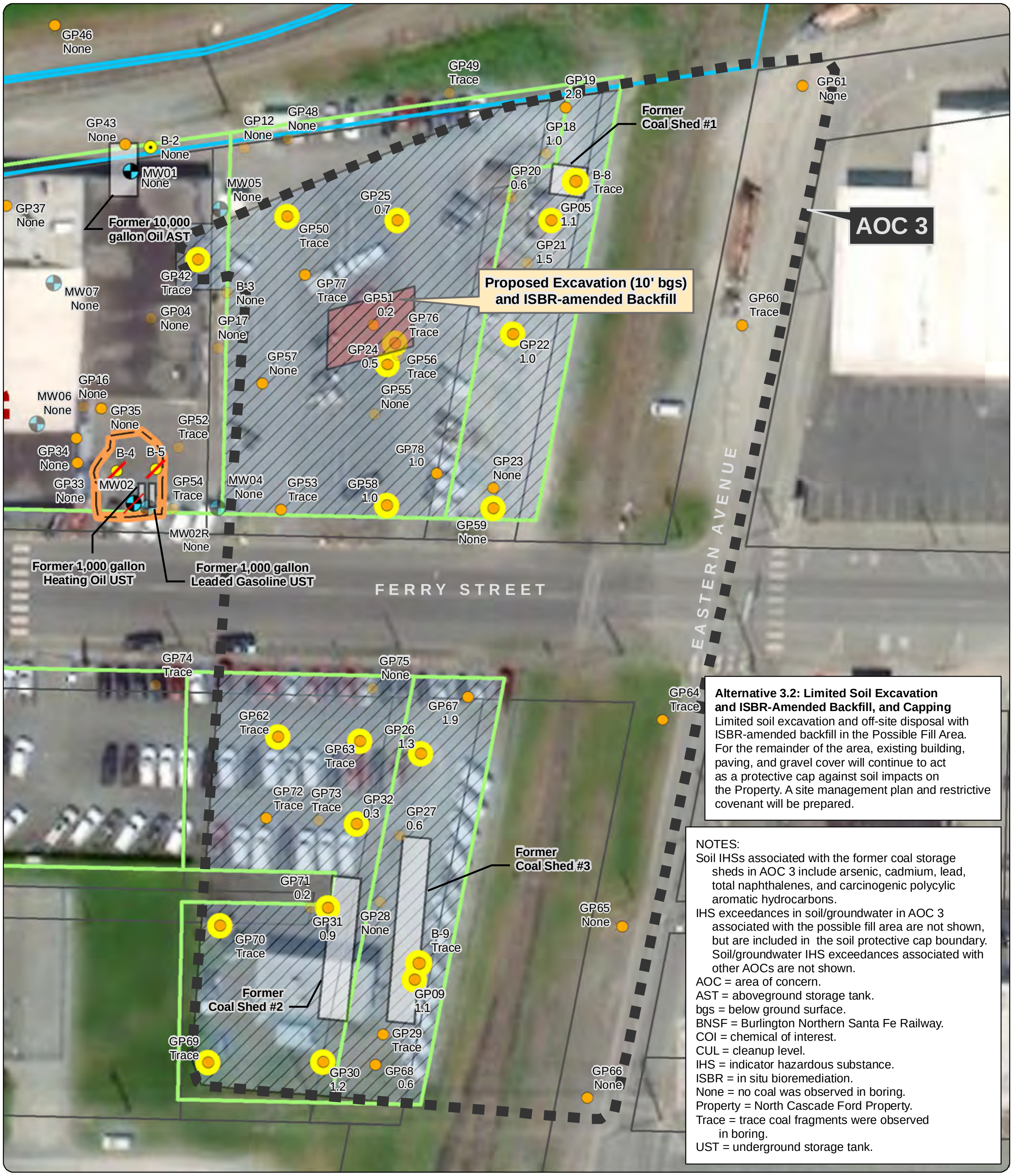

Alternative 3.2: Limited Soil Excavation and ISBR-Amended Backfill, and Capping
Limited soil excavation and off-site disposal with ISBR-amended backfill in the Possible Fill Area. For the remainder of the area, existing building, paving, and gravel cover will continue to act as a protective cap against soil impacts on the Property. A site management plan and restrictive covenant will be prepared.

NOTES:
Soil IHSs associated with the former coal storage sheds in AOC 3 include arsenic, cadmium, lead, total naphthalenes, and carcinogenic polycyclic aromatic hydrocarbons.
IHS exceedances in soil/groundwater in AOC 3 associated with the possible fill area are not shown, but are included in the soil protective cap boundary. Soil/groundwater IHS exceedances associated with other AOCs are not shown.
AOC = area of concern.
AST = aboveground storage tank.
bgs = below ground surface.
BNSF = Burlington Northern Santa Fe Railway.
COI = chemical of interest.
CUL = cleanup level.
IHS = indicator hazardous substance.
ISBR = in situ bioremediation.
None = no coal was observed in boring.
Property = North Cascade Ford Property.
Trace = trace coal fragments were observed in boring.
UST = underground storage tank.

Source: Aerial photograph (2015) obtained from ArcGIS Online. Property parcel boundaries surveyed by Wilson Engineering, LLC. Adjacent parcel boundaries obtained from Skagit County.

Legend

GP27
0.6
● Boring Location (with location ID and coal thickness in feet)
● Boring Location (not sampled for coal-related COIs)
● Boring Location (soil removed)
● CUL Exceedance of Coal-related IHS
● Monitoring Well Location
● Monitoring Well Location (decommissioned)
▭ UST Removal Area Excavation Extent
▨ Proposed Excavation and ISBR-Amended Backfill
▨ Soil Protective Cap (monitor and maintain)
🟩 Property Parcel
▭ BNSF-owned Parcels
▭ Skagit County Parcels

Figure 2-7
AOC 3 - Alternative 3.2

VSF Properties, LLC
North Cascade Ford Property
Sedro-Woolley, Washington

0 36 72
Feet

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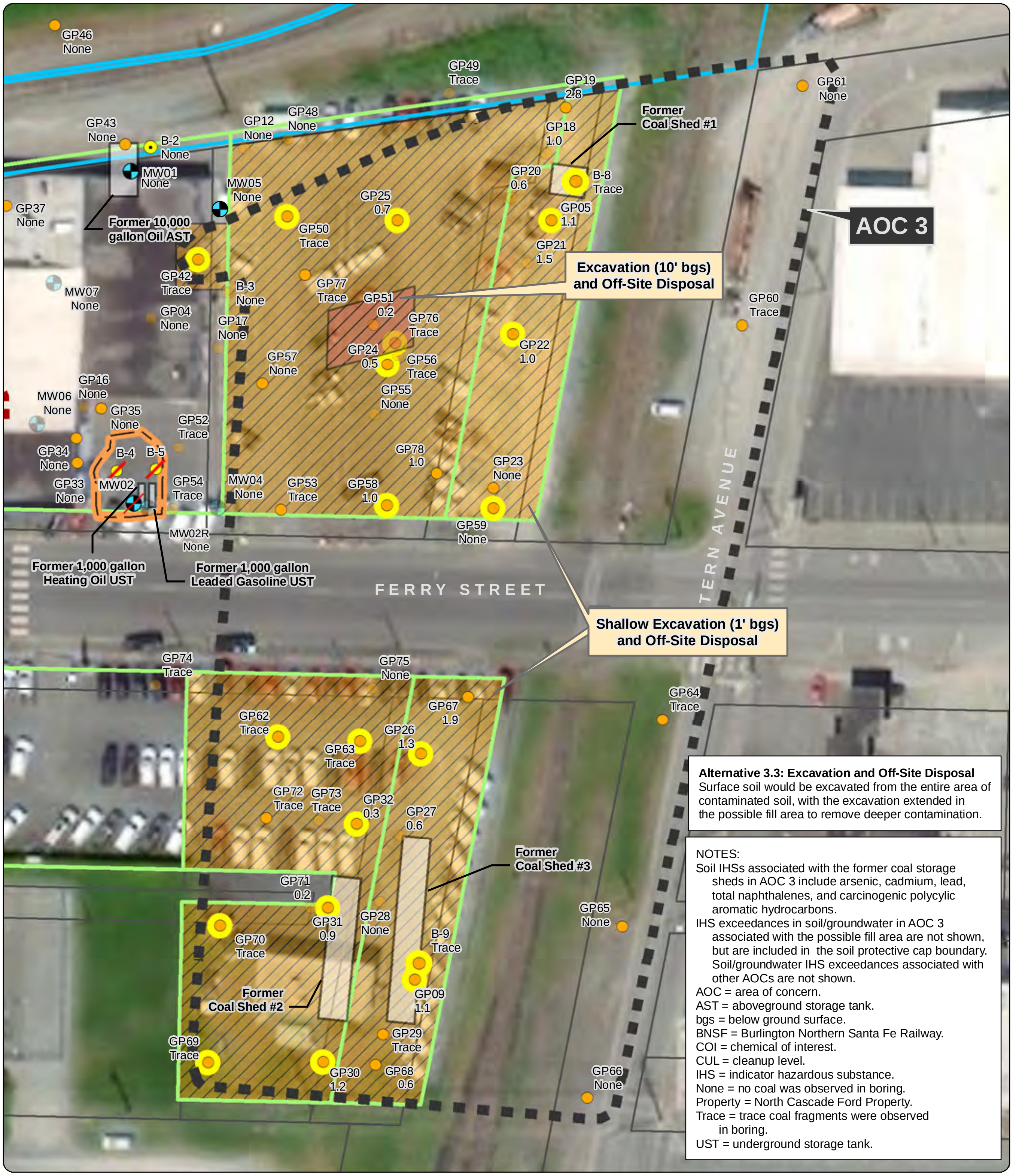

Alternative 3.3: Excavation and Off-Site Disposal
Surface soil would be excavated from the entire area of contaminated soil, with the excavation extended in the possible fill area to remove deeper contamination.

NOTES:
Soil IHSs associated with the former coal storage sheds in AOC 3 include arsenic, cadmium, lead, total naphthalenes, and carcinogenic polycyclic aromatic hydrocarbons.
IHS exceedances in soil/groundwater in AOC 3 associated with the possible fill area are not shown, but are included in the soil protective cap boundary. Soil/groundwater IHS exceedances associated with other AOCs are not shown.
AOC = area of concern.
AST = aboveground storage tank.
bgs = below ground surface.
BNSF = Burlington Northern Santa Fe Railway.
COI = chemical of interest.
CUL = cleanup level.
IHS = indicator hazardous substance.
None = no coal was observed in boring.
Property = North Cascade Ford Property.
Trace = trace coal fragments were observed in boring.
UST = underground storage tank.

Source: Aerial photograph (2015) obtained from ArcGIS Online. Property parcel boundaries surveyed by Wilson Engineering, LLC. Adjacent parcel boundaries obtained from Skagit County.

Legend

GP27
0.6
● Boring Location (with location ID and coal thickness in feet)

● Boring Location (not sampled for coal-related COIs)

● Boring Location (soil removed)

● CUL Exceedance of Coal-related IHS

● Monitoring Well Location

● Monitoring Well Location (decommissioned)

▨ UST Removal Area Excavation Extent

▨ Proposed Excavation and ISBR-Amended Backfill

▨ Shallow Surface Soil Excavation and Backfill

☐ Property Parcel

☐ BNSF-owned Parcels

☐ Skagit County Parcels

Figure 2-8
AOC 3 - Alternative 3.3

VSF Properties, LLC
North Cascade Ford Property
Sedro-Woolley, Washington

0 36 72
Feet

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Print Date: 10/30/2018
Approved By: H. Good
Produced By: mjosef
Project: 0747.01.07

APPENDIX A

AREA OF CONCERN NUMBER 4 NO FURTHER ACTION JUSTIFICATION

MAUL FOSTER ALONGI

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August 17, 2018
Project No. 0747.01.09

Michael Warfel
Washington State Department of Ecology
Northwest Regional Office
3190 160th Avenue SE
Bellevue, Washington 98008-5452

Re: Request for Opinion – No Further Action in Area of Concern 4
North Cascade Ford site, 116 West Ferry Street, Sedro-Woolley, Washington
Facility Site ID: 58313566, Cleanup Site ID: 12075, VCP No. NW3031

Dear Mr. Warfel:

On behalf of VSF Properties, LLC (VSF), Maul Foster & Alongi, Inc. (MFA) requests an opinion on the sufficiency of completed investigation activities to demonstrate compliance with Washington State Model Toxics Control Act (MTCA) cleanup standards for a portion of the North Cascade Ford site (the Site) referred to as the "former auto services area of concern (AOC) 4" (AOC 4). Results of investigations completed in AOC 4 demonstrate that chemical impacts associated with historical releases comply with applicable and appropriate MTCA standards; therefore, MFA recommends that no further action (NFA) is needed in AOC 4.

This letter provides background information and supporting documentation for Ecology's review.

BACKGROUND

AOC 4 is shown relative to the Site in Figure 1 (attached). AOC 4 includes Skagit County parcel number P77410, which is part of the North Cascade Ford property (the Property), and a portion of the adjoining West Ferry Street right-of-way (ROW). Subsurface investigation was conducted in AOC 4 as part of remedial investigation (RI) activities and prior Property due diligence activities to evaluate the potential for environmental impacts associated with historical operations. A former gasoline service station was identified in AOC 4 during a Phase I Environmental Site Assessment (ESA) conducted in 2011 by Whatcom Environmental Services (Whatcom Environmental, 2011a) (included as an appendix to MFA's 2015 preliminary RI and feasibility study [FS] report [MFA, 2015]). Whatcom Environmental identified the former gasoline service station, located on the southern portion of parcel number P77410, as a recognized environmental condition based on Sanborn fire insurance maps (SFIMs) from 1925, 1944, and 1953. MFA's review of those SFIMs indicates the former presence of a battery service station, tire vulcanizing operations, and gas and oil storage and/or distribution in that area, but no evidence of a gasoline service station.

In their Phase I ESA, Whatcom Environmental indicated that the former gasoline service station may have operated from approximately the 1920s to at least the 1950s, and possibly as late as the 1980s, based on their review of historical aerial photographs that show structures in the same area that they identified as a gasoline service station based on the SFIMs.

Following Whatcom Environmental's Phase I ESA, MFA conducted pre-RI environmental due diligence investigations at the Property to further evaluate the potential presence of a former gasoline station and possible underground storage tanks (USTs) associated with its operation in AOC 4. MFA's environmental due diligence activities are discussed in the preliminary RI/FS report (MFA, 2015). As part of the due diligence activities, MFA reviewed a chain of title report, environmental database records, and city directories; and conducted interviews with previous Property owners (Dan and Vern Sims of VSF); Vern Sims started working at the dealership shortly after it opened in 1949 and purchased it in approximately 1965. MFA's environmental due diligence reviews and interviews did not identify evidence that a gasoline service station had operated on that portion of the Property.

Originally, AOC 4 was referred to as the "former gasoline station" AOC. Based on the due diligence findings, AOC 4 is now referred to as the "former auto services" AOC.

PREVIOUS INVESTIGATIONS

Previous investigations were conducted at the Property to evaluate the potential presence or absence of environmental impacts associated with historical operations in AOC 4. Soil and groundwater analytical results from previous investigations are summarized in Tables 1 and 2, respectively (attached). Boring and well logs are provided as Attachment A. Original lab reports and data validation results were provided in the preliminary RI/FS (MFA, 2015).

Whatcom Environmental conducted a subsurface investigation in AOC 4 in 2011 as part of a Phase II ESA (boring locations B-6 and B-7; see Figure 1) to evaluate the potential for petroleum-related impacts in soil and groundwater associated with what was identified in their Phase I ESA as former gasoline service station operations (Whatcom Environmental, 2011b; included as an appendix to MFA's 2015 preliminary RI/FS). During the investigation, benzene in soil, and gasoline-range organics (GRO) in soil and a reconnaissance groundwater sample, were detected above MTCA Method A cleanup levels (CULs) for unrestricted land use in samples collected from boring B-7 (see Tables 1 and 2).

MFA conducted subsurface investigations in AOC 4 in May and December 2012 to evaluate the potential presence of environmental contamination associated with features of concern identified during due diligence activities, including the potential for on-Property migration of dissolved phase petroleum-related contamination in groundwater associated with nearby, off-Property cleanup sites (MFA, 2015). MFA's 2012 investigations also focused on further evaluation of the benzene and GRO CUL exceedances identified during Whatcom

Environmental's Phase II ESA. MFA advanced borings for collection of soil and/or groundwater samples in locations GP06, GP07, GP08, GP14, and GP15, and installed monitoring well MW03 (see Figure 1). MFA also conducted a groundwater monitoring event in October 2012 and quarterly groundwater monitoring events in 2014 at MW03.

Benzene and GRO were not detected in any soil samples collected in AOC 4 during MFA's May 2012 investigation, including soil collected from monitoring well MW03, which was co-located with Whatcom Environmental's previous boring location (B-7) where benzene and GRO exceedances were previously identified in soil (see Table 1 and Figure 1). Soil samples collected during MFA's investigation were of unsaturated soil above the top of the water table (from approximately 1.5 to 3.7 feet below ground surface [bgs]; the water table was identified at approximately 5 to 5.5 feet bgs at the time of sample collection) whereas the soil sample collected during Whatcom Environmental's investigation was of saturated soil from below the top of the water table (at approximately 11 feet bgs; the water table was identified at approximately 5.5 feet bgs)(see boring logs, Attachment A). The saturated soil sample collected by Whatcom Environmental from boring B-7 is therefore considered representative of a combination of both soil and groundwater (i.e., dissolved phase) impacts which would likely result in higher chemical concentrations and is considered representative of both soil and groundwater exposure risks and therefore, not directly comparable to MTCA Method A CULs for soil. The unsaturated soil samples collected during MFA's investigation are considered representative of potential soil exposure risks and are directly comparable to MTCA Method A CULs for soil. No chemicals detected in soil samples collected from the unsaturated zone during MFA's investigation exceeded MTCA Method A CULs for soil; therefore, soil exposure pathways are considered incomplete in AOC 4.

Groundwater samples were collected during MFA's 2012 investigations from borings advanced within and near the footprint of the former automotive services operations (GP06, GP07, and GP08), and a monitoring well (MW03) installed in the approximate same location as Whatcom Environmental's previous boring location (B-7) where a GRO exceedance was previously identified in groundwater (see Figure 1). The screen interval across which Whatcom Environmental's reconnaissance groundwater sample was collected from boring B-7 was not identified in their Phase II ESA report, but it is assumed that the screen was located from approximately the top of the water table, which was identified at approximately 5.5 feet bgs at the time of sample collection and may have spanned five to ten feet of the total boring depth to 15 feet bgs (see boring log included in Attachment A). For comparison, MFA's borings and monitoring well were screened from four to seven feet bgs at the top of the screens to 10 to 14 feet bgs at the bottom of the screens (see Attachment A). Therefore, MFA's groundwater samples were likely collected from across the same approximate depth interval and geologic units as the Whatcom Environmental's boring B-7. GRO was not detected in any of the reconnaissance and monitoring well groundwater samples collected by MFA, which indicates that groundwater in AOC 4 is not impacted with GRO (see Table 2).

Other chemicals of interest (COIs) associated with historical operations in AOC 4 were analyzed in soil and groundwater samples collected during the Whatcom Environmental and MFA investigations, including metals, a full suite of volatile organic compounds (VOCs), total petroleum hydrocarbons (TPH), and volatile petroleum hydrocarbons in soil; and lead, polychlorinated biphenyls, full suite of VOCs, semi-volatile organic compounds, TPH, and extractable petroleum hydrocarbons in groundwater (see Tables 1 and 2). Aside from the benzene and GRO CUL exceedances identified in Whatcom Environmental boring B-7, no other chemical detections in soil or groundwater exceed MTCA Method A CULs. As discussed above, the benzene and GRO exceedances at B-7 are not considered representative of soil and groundwater conditions in AOC 4 as determined by the results of investigations conducted by MFA.

Motor-oil-range organics (ORO) and diesel-range organics (DRO) were analyzed in the soil samples collected from Whatcom Environmental's Phase II ESA borings B-6 (at approximately 6 feet bgs) and B-7 (at approximately 11 feet bgs) and the groundwater sample collected from boring B-7; the borings are located within the footprint of the former automotive services operations (see Figure 1). Neither ORO or DRO were detected in the soil samples (see Table 1). DRO was detected in the groundwater sample from B-7 at a concentration below the MTCA Method A CUL (see Table 2). Based on these Phase II ESA results, DRO and ORO were no longer determined to be COIs in AOC 4 and MFA did not analyze soil or groundwater samples collected during its May 2012 investigation for DRO or ORO. However, following the identification of sheen and a petroleum-like odor in groundwater collected from monitoring well MW03, and given that GRO was not detected in that groundwater sample, a subsequent sampling event was conducted at MW03 in October 2012 to analyze for DRO and ORO. DRO and ORO were detected in that groundwater sample at concentrations below their respective MTCA Method A CULs. Additional reconnaissance groundwater borings were advanced to the north of MW03 during the December 2012 investigation (GP14 and GP15) to further evaluate the extent of DRO and ORO in groundwater and quarterly monitoring events were conducted at MW03 in 2014 to evaluate DRO and ORO concentration trends. DRO and ORO were not detected in GP14 or GP15; concentrations of DRO and ORO at MW03 in 2014 were consistently below the MTCA Method A CUL and appear to be stable or decreasing.

In the 2015 preliminary RI/FS, DRO and ORO groundwater results were summed as "heavy oils" for comparison to the MTCA Method A CUL of 500 micrograms per liter (ug/L) (MFA, 2015). The heavy oils concentration in groundwater at MW03 exceeded the CUL in four out of six monitoring events during which DRO and ORO were analyzed (i.e., October 2012 and the four quarters of monitoring in 2014); the maximum heavy oils concentration detected was 710 ug/L. Following issuance of the preliminary RI/FS, MFA reviewed a chromatogram for the MW03 sample with the highest detected DRO and ORO results (collected on April 10, 2014) to determine if the petroleum fractions present in the sample were indicative of two distinctive product types (i.e., DRO and ORO) and hence, comparable as separate product types to the MTCA Method A CULs as opposed to summing the concentrations as heavy oils. The chromatogram for that sample shows distinct and separate peaks for the difference carbon fractions, which indicate different petroleum hydrocarbon products (the sample chromatogram is included as Attachment B). Overlapping peaks would indicate that there is no clear separation of product types in the sample and therefore, the DRO and ORO concentrations could be representative of the same product and need to be summed. Therefore, the chromatogram supports separating the DRO and ORO product concentrations for comparison individually to their respective CULs. As discussed above, the DRO and ORO concentrations detected in groundwater in AOC 4 are below their MTCA Method A CULs.

In addition to the subsurface investigation work described above, MFA also conducted a ground penetrating radar (GPR) survey of the former automotive services operation areas in AOC 4 on June 21, 2016 to evaluate the possible presence of USTs. The GPR survey report was included as an attachment to MFA's 2016 interim remedial action completion report (MFA, 2016). The survey identified an anomaly interpreted as uncontrolled fill with buried debris, but no USTs were located (see survey location number 1 in the GPR survey report [MFA, 2016]).

SUMMARY AND RECOMMENDATIONS

Several subsurface investigations and groundwater monitoring events have been conducted in AOC 4 to evaluate the potential for environmental impacts associated with former automotive services operations. COIs identified in association with former operations were analyzed in soil and groundwater and detections were below MTCA Method A CULs, with the exception of benzene and gasoline detected during a 2011 Phase II ESA by Whatcom Environmental. However, the Phase II ESA results were reviewed, and the areas resampled by MFA and were determined not to be representative of soil and groundwater conditions in AOC 4.

MFA's DRO and ORO sample results were previously presented as heavy oils, which exceed the MTCA Method A CUL. However, review of a sample chromatogram indicates it is not appropriate to sum DRO and ORO concentrations for comparison to their CULs within AOC 4. When evaluated individually, concentrations do not exceed their respective MTCA Method A CULs.

A GPR survey was conducted to evaluate the potential presence of an abandoned UST within AOC 4; no USTs were identified. Other potential features of concern identified in AOC 4 associated with historical operations were evaluated as part of previous subsurface investigations. Sample analytical results indicate that COI concentrations in AOC 4 comply with MTCA Method A CULs.

Based on the findings of previous investigations conducted in AOC 4, MFA recommends no further action be required in AOC 4.

Sincerely,

Maul Foster & Alongi, Inc.

Justin L. Clary, PE
Principal Engineer

James J. Maul, LHG
Principal Hydrogeologist

Attachments: Limitations
References
Tables
Figure
A – Boring and Well Logs
B – MW03 Chromatogram

cc: Larry Setchell, Helsell Fetterman, LLP
Frank Chmelik and Holly Stafford; Chmelik, Sitkin & Davis, PS

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.

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Whatcom Environmental. 2011a. Phase I environmental site assessment, North Cascade Ford. Whatcom Environmental, Bellingham, Washington. July 15.

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TABLES

Table 1
AOC 4 Soil Analytical Results
VSF Properties, LLC, North Cascade Ford Property Investigation
Sedro-Woolley, Washington

Location			B-6	B-7	GP06	GP07	GP08	MW03
Sample Name			B-6	B-7	GP6-S-2.9	GP7-S-2.9	GP8-S-2.8	MW3-S-1.9
Sample Date			11/15/2011	11/15/2011	05/08/2012	05/08/2012	05/08/2012	05/07/2012
Sample Depth Interval (ft bgs)			6	11	2.3-3.6	2.2-3.7	2.1-3.5	1.5-2.3
Analyte	Soil CUL (mg/kg)	CUL Source						
Metals (mg/kg)								
Arsenic	20	MTCA A	--	**1.4**	--	--	--	--
Cadmium	2	MTCA A	--	1 U	--	--	--	--
Chromium	2000	MTCA A	--	**7.5**	--	--	--	--
Lead	250	MTCA A	--	**1.7**	**2.1**	**0.9**	**1.1**	**3.5**
Mercury	2	MTCA A	--	0.02 U	--	--	--	--
VOCs (mg/kg)								
1,1,1,2-Tetrachloroethane	38	MTCA B CAR	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
1,1,1-Trichloroethane	2	MTCA A	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
1,1,2,2-Tetrachloroethane	5	MTCA B CAR	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
1,1,2-Trichloroethane	18	MTCA B CAR	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
1,1-Dichloroethane	16000	B NCAR	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
1,1-Dichloroethene	4000	B NCAR	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
1,1-Dichloropropene	NV	NV	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
1,2,3-Trichlorobenzene	NV	NV	--	--	0.0056 U	0.0054 U	0.0063 U	0.0057 U
1,2,3-Trichloropropane	0.033	MTCA B CAR	--	--	0.0022 U	0.0022 U	0.0025 U	0.0023 U
1,2,4-Trichlorobenzene	35	MTCA B CAR	--	--	0.0056 U	0.0054 U	0.0063 U	0.0057 U
1,2,4-Trimethylbenzene	NV	NV	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
1,2-Dibromo-3-chloropropane	1.3	MTCA B CAR	--	--	0.0056 U	0.0054 U	0.0063 U	0.0057 U
1,2-Dibromoethane	0.005	MTCA A	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
1,2-Dichlorobenzene	7200	B NCAR	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
1,2-Dichloroethane	11	MTCA B CAR	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
1,2-Dichloropropane	NV	NV	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
1,3,5-Trimethylbenzene	800	MTCA B NCAR	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U

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VSF Properties, LLC, North Cascade Ford Property Investigation
Sedro-Woolley, Washington

Location			B-6	B-7	GP06	GP07	GP08	MW03
Sample Name			B-6	B-7	GP6-S-2.9	GP7-S-2.9	GP8-S-2.8	MW3-S-1.9
Sample Date			11/15/2011	11/15/2011	05/08/2012	05/08/2012	05/08/2012	05/07/2012
Sample Depth Interval (ft bgs)			6	11	2.3-3.6	2.2-3.7	2.1-3.5	1.5-2.3
Analyte	Soil CUL (mg/kg)	CUL Source						
1,3-Dichlorobenzene	NV	NV	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
1,3-Dichloropropane	NV	NV	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
1,4-Dichlorobenzene	NV	NV	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
2,2-Dichloropropane	NV	NV	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
2-Butanone	48000	MTCA B NCAR	--	--	0.0056 U	0.0054 U	0.0063 U	0.0057 U
2-Chloroethylvinyl ether	NV	NV	--	--	0.0056 U	0.0054 U	0.0063 U	0.0057 U
2-Chlorotoluene	1600	B NCAR	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
2-Hexanone	NV	NV	--	--	0.0056 U	0.0054 U	0.0063 U	0.0057 U
4-Chlorotoluene	NV	NV	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
4-Isopropyltoluene	NV	NV	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
4-Methyl-2-pentanone	6400	MTCA B NCAR	--	--	0.0056 U	0.0054 U	0.0063 U	0.0057 U
Acetone	72000	B NCAR	--	--	**0.037**	**0.082**	**0.045**	**0.1**
Acrolein	40	B NCAR	--	--	0.056 U	0.054 U	0.063 U	0.057 U
Acrylonitrile	1.9	MTCA B CAR	--	--	0.0056 U	0.0054 U	0.0063 U	0.0057 U
Benzene	0.03	MTCA A	0.03 U	**0.62**	0.0011 U	0.0011 U	0.0013 U	0.0011 U
Bromobenzene	NV	NV	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
Bromodichloromethane	16	MTCA B CAR	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
bromoethane	NV	NV	--	--	0.0022 U	0.0022 U	0.0025 U	0.0023 U
Bromoform	130	MTCA B CAR	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
Bromomethane	110	B NCAR	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
Carbon disulfide	8000	B NCAR	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
Carbon tetrachloride	14	MTCA B CAR	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
Chlorobenzene	1600	B NCAR	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
Chlorobromomethane	NV	NV	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U

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AOC 4 Soil Analytical Results
VSF Properties, LLC, North Cascade Ford Property Investigation
Sedro-Woolley, Washington

Location			B-6	B-7	GP06	GP07	GP08	MW03
Sample Name			B-6	B-7	GP6-S-2.9	GP7-S-2.9	GP8-S-2.8	MW3-S-1.9
Sample Date			11/15/2011	11/15/2011	05/08/2012	05/08/2012	05/08/2012	05/07/2012
Sample Depth Interval (ft bgs)			6	11	2.3-3.6	2.2-3.7	2.1-3.5	1.5-2.3
Analyte	Soil CUL (mg/kg)	CUL Source						
Chloroethane	NV	NV	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
Chloroform	800	B NCAR	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
Chloromethane	NV	NV	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
cis-1,2-Dichloroethene	160	B NCAR	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
cis-1,3-Dichloropropene	NV	NV	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
Dibromochloromethane	12	MTCA B CAR	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
Dibromomethane	800	MTCA B NCAR	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
Ethylbenzene	6	MTCA A	0.05 U	**2.3**	0.0011 U	0.0011 U	0.0013 U	0.0011 U
Freon 113	2400000	MTCA B NCAR	--	--	0.0022 U	0.0022 U	0.0025 U	0.0023 U
Hexachlorobutadiene	13	MTCA B CAR	--	--	0.0056 U	0.0054 U	0.0063 U	0.0057 U
Isopropylbenzene	8000	B NCAR	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
m,p-Xylene	9	MTCA A	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
Methyl iodide	NV	NV	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
Methylene chloride	0.02	MTCA A	--	--	**0.0042**	**0.0032**	**0.0036**	**0.0033**
Naphthalene	5	MTCA A	--	--	0.0056 U	0.0054 U	0.0063 U	0.0057 U
n-Butylbenzene	NV	NV	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
n-Propylbenzene	8000	MTCA B NCAR	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
o-Xylene	16000	MTCA B NCAR	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
sec-Butylbenzene	NV	NV	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
Styrene	16000	MTCA B NCAR	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
tert-Butylbenzene	NV	NV	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
Tetrachloroethene	0.05	MTCA A	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
Toluene	7	MTCA A	0.05 U	**2.7**	**0.0008** J	0.0011 U	**0.001** J	**0.0006** J
trans-1,2-dichloroethene	1600	B NCAR	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U

Table 1
AOC 4 Soil Analytical Results
VSF Properties, LLC, North Cascade Ford Property Investigation
Sedro-Woolley, Washington

		Location	B-6	B-7	GP06	GP07	GP08	MW03
		Sample Name	B-6	B-7	GP6-S-2.9	GP7-S-2.9	GP8-S-2.8	MW3-S-1.9
		Sample Date	11/15/2011	11/15/2011	05/08/2012	05/08/2012	05/08/2012	05/07/2012
		Sample Depth Interval (ft bgs)	6	11	2.3-3.6	2.2-3.7	2.1-3.5	1.5-2.3
Analyte	Soil CUL (mg/kg)	CUL Source						
trans-1,3-Dichloropropene	NV	NV	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
trans-1,4-Dichloro-2-butene	NV	NV	--	--	0.0056 U	0.0054 U	0.0063 U	0.0057 U
Trichloroethene	0.03	MTCA A	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
Trichlorofluoromethane	NV	NV	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
Vinyl Acetate	80000	MTCA B NCAR	--	--	0.0056 U	0.0054 U	0.0063 U	0.0057 U
Vinyl chloride	0.67	MTCA B CAR	--	--	0.0011 U	0.0011 U	0.0013 U	0.0011 U
Xylenes, total	9	MTCA A	0.2 U	--	--	--	--	--
TPH (mg/kg)								
Diesel-Range Organics	2000	MTCA A	25 U	25 U	--	--	--	--
Motor-Oil-Range Organics	2000	MTCA A	50 U	50 U	--	--	--	--
Gasoline-Range Organics	30	MTCA A	3 U	**2,000**	12 U	8.1 U	8.3 U	8.6 U
Calculated Totals[a] (mg/kg)								
Total Xylenes	9	MTCA A	--	**2.6**	ND	ND	ND	ND
VPH (mg/kg)								
Aliphatic C5-C6	NV	NV	--	--	16 U	14 U	15 U	15 U
Aliphatic >C6-C8	NV	NV	--	--	16 U	14 U	15 U	15 U
Aliphatic >C8-C10	NV	NV	--	--	16 U	14 U	15 U	15 U
Aliphatic >C10-C12	NV	NV	--	--	16 U	14 U	15 U	15 U
Aromatic >C8-C10	NV	NV	--	--	16 U	14 U	15 U	15 U
Aromatic >C10-C12	NV	NV	--	--	16 U	14 U	15 U	15 U
Aromatic >C12-C13	NV	NV	--	--	16 U	14 U	15 U	15 U
Benzene	NV	NV	--	--	1.6 U	1.4 U	1.5 U	1.5 U
Ethylbenzene	NV	NV	--	--	1.6 U	1.4 U	1.5 U	1.5 U
m,p-Xylene	NV	NV	--	--	3.2 U	2.8 U	3 U	2.9 U

Table 1
AOC 4 Soil Analytical Results
VSF Properties, LLC, North Cascade Ford Property Investigation
Sedro-Woolley, Washington

		Location	B-6	B-7	GP06	GP07	GP08	MW03
		Sample Name	B-6	B-7	GP6-S-2.9	GP7-S-2.9	GP8-S-2.8	MW3-S-1.9
		Sample Date	11/15/2011	11/15/2011	05/08/2012	05/08/2012	05/08/2012	05/07/2012
		Sample Depth Interval (ft bgs)	6	11	2.3-3.6	2.2-3.7	2.1-3.5	1.5-2.3
Analyte	Soil CUL (mg/kg)	CUL Source						
Methyl tert-butyl ether	NV	NV	--	--	1.6 U	1.4 U	1.5 U	1.5 U
n-Decane	NV	NV	--	--	1.6 U	1.4 U	1.5 U	1.5 U
n-Dodecane	NV	NV	--	--	1.6 U	1.4 U	1.5 U	1.5 U
n-Hexane	NV	NV	--	--	1.6 U	1.4 U	1.5 U	1.5 U
n-Octane	NV	NV	--	--	1.6 U	1.4 U	1.5 U	1.5 U
n-Pentane	NV	NV	--	--	1.6 U	1.4 U	1.5 U	1.5 U
o-Xylene	NV	NV	--	--	1.6 U	1.4 U	1.5 U	1.5 U
Toluene	NV	NV	--	--	1.6 U	1.4 U	1.5 U	1.5 U

Table 1
AOC 4 Soil Analytical Results
VSF Properties, LLC, North Cascade Ford Property Investigation
Sedro-Woolley, Washington

NOTES:

Detections in **bold**.

Detected concentrations were compared to MTCA A, Unrestricted Land Use, CULs or MTCA B CULs if no MTCA A value was available.

Exceedances highlighted.

-- = not analyzed.

AOC = area of concern.

cPAH TEQ = carcinogenic polycyclic aromatic hydrocarbon toxic equivalency quotient.

CUL = cleanup level.

ft bgs = feet below ground surface.

J = Result is an estimated value.

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

MTCA = Model Toxics Control Act.

MTCA A = MTCA Method A, Unrestricted Land Use Table Value, CUL.

MTCA B CAR = MTCA Method B, Standard Formula Value, CUL for carcinogenic compounds.

MTCA B NCAR = MTCA Method B, Standard Formula Value, CUL for noncarcinogenic compounds.

ND = not detected.

NV = no value.

TPH = total petroleum hydrocarbons.

U = Analyte not detected at or above method detection limit.

VOC = volatile organic compound.

VPH = volatile petroleum hydrocarbons.

[a] Total concentrations were calculated using one-half the method reporting limit for non-detects. Where all components were non-detect, the calculated total is "ND."

Table 2
AOC 4 Groundwater Analytical Results
VSF Properties, LLC, North Cascade Ford Property Investigation
Sedro-Woolley, Washington

Location:			B-7	GP06	GP07	GP08	GP14	GP15	MW03	MW03	MW03	MW03
Sample Name:			B-7	GP6-W-9	GP7-W-8	GP8-W-8	GP14-W-7.5	GP15-W-7.5	MW3-W-9	MW03-GW-20121009	FD-GW-20121009	MW03
Collection Date:			11/15/2011	05/08/2012	05/08/2012	05/08/2012	12/03/2012	12/03/2012	05/15/2012	10/09/2012	10/09/2012	04/10/2014
Collection Depth (ft bgs):			5-15[a]	7-11	6-10	6-10	5-10	5-10	4-14	4-14	4-14	4-14
	CUL (ug/L)	**CUL Source**										
Dissolved Metals (ug/L)												
Lead	1.50E+01	MTCA A	--	0.1 U	0.1 U	0.1 U	--	--	0.1 U	--	--	--
PCB Aroclors (ug/L)												
Aroclor 1016	1.25E+00	MTCA B CAR	--	--	--	--	--	--	--	--	--	0.1 U
Aroclor 1221	NV	NV	--	--	--	--	--	--	--	--	--	0.1 U
Aroclor 1232	NV	NV	--	--	--	--	--	--	--	--	--	0.1 U
Aroclor 1242	NV	NV	--	--	--	--	--	--	--	--	--	0.1 U
Aroclor 1248	NV	NV	--	--	--	--	--	--	--	--	--	0.1 U
Aroclor 1254	4.38E-02	MTCA B CAR	--	--	--	--	--	--	--	--	--	0.1 U
Aroclor 1260	4.38E-02	MTCA B CAR	--	--	--	--	--	--	--	--	--	0.1 U
VOCs (ug/L)												
1,1,1,2-Tetrachloroethane	1.68E+00	MTCA B CAR	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
1,1,1-Trichloroethane	2.00E+02	MTCA A	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
1,1,2,2-Tetrachloroethane	2.19E-01	MTCA B CAR	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
1,1,2-Trichloroethane	7.68E-01	MTCA B CAR	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
1,1-Dichloroethane	7.68E+00	MTCA B CAR	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
1,1-Dichloroethene	4.00E+02	MTCA B NCAR	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
1,1-Dichloropropene	NV	NV	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
1,2,3-Trichlorobenzene	NV	NV	--	0.5 U	0.5 U	0.5 U	--	--	0.5 U	0.5 U	0.5 U	--
1,2,3-Trichloropropane	1.46E-03	MTCA B CAR	--	0.5 U	0.5 U	0.5 U	--	--	0.5 U	0.5 U	0.5 U	--
1,2,4-Trichlorobenzene	1.51E+00	MTCA B CAR	--	0.5 U	0.5 U	0.5 U	--	--	0.5 U	0.5 U	0.5 U	--
1,2,4-Trimethylbenzene	NV	NV	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	**0.11** J	0.2 U	--
1,2-Dibromo-3-chloropropane	5.47E-02	MTCA B CAR	--	0.5 U	0.5 U	0.5 U	--	--	0.5 U	0.5 U	0.5 U	--
1,2-Dibromoethane	1.00E-02	MTCA A	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
1,2-Dichlorobenzene	7.20E+02	MTCA B NCAR	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
1,2-Dichloroethane	5.00E+00	MTCA A	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
1,2-Dichloropropane	1.22E+00	MTCA B CAR	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
1,3,5-Trimethylbenzene	8.00E+01	MTCA B NCAR	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
1,3-Dichlorobenzene	NV	NV	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
1,3-Dichloropropane	NV	NV	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
1,4-Dichlorobenzene	8.10E+00	MTCA B CAR	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
2,2-Dichloropropane	NV	NV	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
2-Butanone	4.80E+03	MTCA B NCAR	--	5 U	5 U	5 U	--	--	5 U	5 U	5 U	--
2-Chloroethylvinyl ether	NV	NV	--	1 U	1 U	1 U	--	--	1 U	1 U	1 U	--
2-Chlorotoluene	1.60E+02	MTCA B NCAR	--	0.2 U	0.2 U	0.2 U	--	--	**0.2**	**0.13** J	**0.14** J	--
2-Hexanone	NV	NV	--	5 U	5 U	5 U	--	--	5 U	5 U	5 U	--

Table 2
AOC 4 Groundwater Analytical Results
VSF Properties, LLC, North Cascade Ford Property Investigation
Sedro-Woolley, Washington

Location:			B-7	GP06	GP07	GP08	GP14	GP15	MW03	MW03	MW03	MW03
Sample Name:			B-7	GP6-W-9	GP7-W-8	GP8-W-8	GP14-W-7.5	GP15-W-7.5	MW3-W-9	MW03-GW-20121009	FD-GW-20121009	MW03
Collection Date:			11/15/2011	05/08/2012	05/08/2012	05/08/2012	12/03/2012	12/03/2012	05/15/2012	10/09/2012	10/09/2012	04/10/2014
Collection Depth (ft bgs):			5-15[a]	7-11	6-10	6-10	5-10	5-10	4-14	4-14	4-14	4-14
	CUL (ug/L)	**CUL Source**										
4-Chlorotoluene	NV	NV	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
4-Isopropyltoluene	NV	NV	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	**0.13** J	**0.13** J	--
4-Methyl-2-pentanone	6.40E+02	MTCA B NCAR	--	5 U	5 U	5 U	--	--	5 U	5 U	5 U	--
Acetone	7.20E+03	MTCA B NCAR	--	**2.6** J	**2.3** J	**2.9** J	--	--	5 U	5 U	5 U	--
Acrolein	4.00E+00	MTCA B NCAR	--	5 U	5 U	5 U	--	--	5 U	5 U	5 U	--
Acrylonitrile	8.10E-02	MTCA B CAR	--	1 U	1 U	1 U	--	--	1 U	1 U	1 U	--
Benzene	5.00E+00	MTCA A	1 U	0.2 U	0.2 U	0.2 U	--	--	0.2 U	**0.19** J	**0.2**	--
Bromobenzene	NV	NV	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
Bromodichloromethane	7.06E-01	MTCA B CAR	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
Bromoethane	NV	NV	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
Bromoform	5.54E+00	MTCA B CAR	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
Bromomethane	1.12E+01	MTCA B NCAR	--	1 U	1 U	1 U	--	--	1 U	1 U	1 U	--
Carbon disulfide	8.00E+02	MTCA B NCAR	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
Carbon tetrachloride	6.25E-01	MTCA B CAR	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
Chlorobenzene	1.60E+02	MTCA B NCAR	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	**0.1** J	**0.1** J	--
Chlorobromomethane	NV	NV	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
Chloroethane	NV	NV	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
Chloroform	1.41E+00	MTCA B CAR	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
Chloromethane	NV	NV	--	0.5 U	0.5 U	0.5 U	--	--	0.5 U	0.5 U	0.5 U	--
cis-1,2-Dichloroethene	1.60E+01	MTCA B NCAR	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
cis-1,3-Dichloropropene	NV	NV	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
Dibromochloromethane	5.21E-01	MTCA B CAR	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
Dibromomethane	8.00E+01	MTCA B NCAR	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
Ethylbenzene	7.00E+02	MTCA A	**22**	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
Freon 113	2.40E+05	MTCA B NCAR	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
Hexachlorobutadiene	5.61E-01	MTCA B CAR	--	0.5 U	0.5 U	0.5 U	--	--	0.5 U	0.5 U	0.5 U	--
Isopropylbenzene	8.00E+02	MTCA B NCAR	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	**0.31**	**0.28**	--
m,p-Xylene	1.00E+03	MTCA A	--	0.4 U	0.4 U	0.4 U	--	--	0.4 U	0.4 U	0.4 U	--
Methyl iodide	NV	NV	--	1 U	1 U	1 U	--	--	1 U	1 U	1 U	--
Methylene chloride	5.00E+00	MTCA A	--	1 U	1 U	1 U	--	--	1 U	1 U	1 U	--
Naphthalene	1.60E+02	MTCA A	--	0.5 U	0.5 U	0.5 U	--	--	0.5 U	0.5 U	0.5 U	--
n-Butylbenzene	4.00E+02	MTCA B NCAR	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
n-Propylbenzene	8.00E+02	MTCA B NCAR	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	**0.24**	**0.21**	--
o-Xylene	1.60E+03	MTCA B NCAR	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
sec-Butylbenzene	8.00E+02	MTCA B NCAR	--	0.2 U	0.2 U	0.2 U	--	--	**0.4**	0.2 U	0.2 U	--
Styrene	1.60E+03	MTCA B NCAR	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--

Table 2
AOC 4 Groundwater Analytical Results
VSF Properties, LLC, North Cascade Ford Property Investigation
Sedro-Woolley, Washington

Location:			B-7	GP06	GP07	GP08	GP14	GP15	MW03	MW03	MW03	MW03
Sample Name:			B-7	GP6-W-9	GP7-W-8	GP8-W-8	GP14-W-7.5	GP15-W-7.5	MW3-W-9	MW03-GW-20121009	FD-GW-20121009	MW03
Collection Date:			11/15/2011	05/08/2012	05/08/2012	05/08/2012	12/03/2012	12/03/2012	05/15/2012	10/09/2012	10/09/2012	04/10/2014
Collection Depth (ft bgs):			5-15[a]	7-11	6-10	6-10	5-10	5-10	4-14	4-14	4-14	4-14
	CUL (ug/L)	**CUL Source**										
tert-Butylbenzene	8.00E+02	MTCA B NCAR	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
Tetrachloroethene	5.00E+00	MTCA A	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
Toluene	1.00E+03	MTCA A	1 U	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
trans-1,2-dichloroethene	1.60E+02	MTCA B NCAR	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
trans-1,3-Dichloropropene	NV	NV	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
trans-1,4-Dichloro-2-butene	NV	NV	--	1 U	1 U	1 U	--	--	1 U	1 U	1 U	--
Trichloroethene	5.00E+00	MTCA A	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
Trichlorofluoromethane	2.40E+03	MTCA B NCAR	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
Vinyl Acetate	8.00E+03	MTCA B NCAR	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
Vinyl chloride	2.00E-01	MTCA A	--	0.2 U	0.2 U	0.2 U	--	--	0.2 U	0.2 U	0.2 U	--
Xylenes, Total	1.00E+03	MTCA A	**25**	--	--	--	--	--	--	--	--	--
SVOCs (ug/L)												
1-Methylnaphthalene	1.60E+02	MTCA A	--	--	--	--	--	--	--	**0.15**	**0.09** J	--
2-Methylnaphthalene	1.60E+02	MTCA A	--	--	--	--	--	--	--	0.1 U	0.1 U	--
Acenaphthene	9.60E+02	MTCA B NCAR	--	--	--	--	--	--	--	0.1 U	0.1 U	--
Acenaphthylene	NV	NV	--	--	--	--	--	--	--	0.1 U	0.1 U	--
Anthracene	4.80E+03	MTCA B NCAR	--	--	--	--	--	--	--	0.1 U	0.1 U	--
Benzo(a)anthracene	1.20E-01	MTCA B CAR	--	--	--	--	--	--	--	0.1 U	0.1 U	--
Benzo(a)pyrene	1.00E-01	MTCA A	--	--	--	--	--	--	--	0.1 U	0.1 U	--
Benzo(ghi)perylene	NV	NV	--	--	--	--	--	--	--	0.1 U	0.1 U	--
Chrysene	1.20E+01	MTCA B CAR	--	--	--	--	--	--	--	0.1 U	0.1 U	--
Dibenzo(a,h)anthracene	1.20E-02	MTCA B CAR	--	--	--	--	--	--	--	0.1 U	0.1 U	--
Dibenzofuran	1.60E+01	MTCA B NCAR	--	--	--	--	--	--	--	0.1 U	0.1 U	--
Fluoranthene	6.40E+02	MTCA B NCAR	--	--	--	--	--	--	--	0.1 U	0.1 U	--
Fluorene	6.40E+02	MTCA B NCAR	--	--	--	--	--	--	--	0.1 U	0.1 U	--
Indeno(1,2,3-cd)pyrene	1.20E-01	MTCA B CAR	--	--	--	--	--	--	--	0.1 U	0.1 U	--
Naphthalene	1.60E+02	MTCA A	--	--	--	--	--	--	--	**0.06** J	**0.06** J	--
Phenanthrene	NV	NV	--	--	--	--	--	--	--	0.1 U	0.1 U	--
Pyrene	4.80E+02	MTCA B NCAR	--	--	--	--	--	--	--	0.1 U	0.1 U	--
Total Benzofluoranthenes	1.20E-01	MTCA B CAR	--	--	--	--	--	--	--	0.2 U	0.2 U	--
TPH (ug/L)												
Gasoline-Range Organics	8.00E+02	MTCA A	**3,500**	250 U	250 U	250 U	--	--	250 U	250 U	250 U	--
Diesel-Range Organics	5.00E+02	MTCA A	**380**	--	--	--	110 U	110 U	--	**360**	**310**	**340**
Motor-Oil-Range Organics	5.00E+02	MTCA A	250 U	--	--	--	220 U	220 U	--	**260**	**200**	**370**
EPH (ug/L)												
Aliphatic C8-C10	NV	NV	--	--	--	--	--	--	--	--	--	40 U

Table 2
AOC 4 Groundwater Analytical Results
VSF Properties, LLC, North Cascade Ford Property Investigation
Sedro-Woolley, Washington

		Location:	B-7	GP06	GP07	GP08	GP14	GP15	MW03	MW03	MW03	MW03
		Sample Name:	B-7	GP6-W-9	GP7-W-8	GP8-W-8	GP14-W-7.5	GP15-W-7.5	MW3-W-9	MW03-GW-20121009	FD-GW-20121009	MW03
		Collection Date:	11/15/2011	05/08/2012	05/08/2012	05/08/2012	12/03/2012	12/03/2012	05/15/2012	10/09/2012	10/09/2012	04/10/2014
		Collection Depth (ft bgs):	5-15[a]	7-11	6-10	6-10	5-10	5-10	4-14	4-14	4-14	4-14
	CUL (ug/L)	**CUL Source**										
Aliphatic C10-C12	NV	NV	--	--	--	--	--	--	--	--	--	40 U
Aliphatic C12-C16	NV	NV	--	--	--	--	--	--	--	--	--	40 U
Aliphatic C16-C21	NV	NV	--	--	--	--	--	--	--	--	--	40 U
Aliphatic C21-C34	NV	NV	--	--	--	--	--	--	--	--	--	40 U
Aromatic C8-C10	NV	NV	--	--	--	--	--	--	--	--	--	40 U
Aromatic C10-C12	NV	NV	--	--	--	--	--	--	--	--	--	40 U
Aromatic C12-C16	NV	NV	--	--	--	--	--	--	--	--	--	40 U
Aromatic C16-C21	NV	NV	--	--	--	--	--	--	--	--	--	40 U
Aromatic C21-C34	NV	NV	--	--	--	--	--	--	--	--	--	40 U
Calculated Totals[b]												
cPAH TEQ	1.00E-01	MTCA A	--	--	--	--	--	--	--	ND	ND	--
Total naphthalenes	1.60E+02	MTCA A	--	--	--	--	--	--	--	**0.26** J	**0.2** J	--
Total PCBs	1.00E-01	MTCA A	--	--	--	--	--	--	--	--	--	ND
Total Xylenes	1.00E+03	MTCA A	--	ND	ND	ND	--	--	ND	ND	ND	--

Table 2
AOC 4 Groundwater Analytical Results
VSF Properties, LLC, North Cascade Ford Property Investigation
Sedro-Woolley, Washington

		Location:	MW03	MW03	MW03
		Sample Name:	MW03-GW-140618	MW03-GW-091014	MW03-GW-121014
		Collection Date:	06/18/2014	09/10/2014	12/10/2014
		Collection Depth (ft bgs):	4-14	4-14	4-14
	CUL (ug/L)	**CUL Source**			
Dissolved Metals (ug/L)					
Lead	1.50E+01	MTCA A	--	--	--
PCB Aroclors (ug/L)					
Aroclor 1016	1.25E+00	MTCA B CAR	--	--	--
Aroclor 1221	NV	NV	--	--	--
Aroclor 1232	NV	NV	--	--	--
Aroclor 1242	NV	NV	--	--	--
Aroclor 1248	NV	NV	--	--	--
Aroclor 1254	4.38E-02	MTCA B CAR	--	--	--
Aroclor 1260	4.38E-02	MTCA B CAR	--	--	--
VOCs (ug/L)					
1,1,1,2-Tetrachloroethane	1.68E+00	MTCA B CAR	--	--	--
1,1,1-Trichloroethane	2.00E+02	MTCA A	--	--	--
1,1,2,2-Tetrachloroethane	2.19E-01	MTCA B CAR	--	--	--
1,1,2-Trichloroethane	7.68E-01	MTCA B CAR	--	--	--
1,1-Dichloroethane	7.68E+00	MTCA B CAR	--	--	--
1,1-Dichloroethene	4.00E+02	MTCA B NCAR	--	--	--
1,1-Dichloropropene	NV	NV	--	--	--
1,2,3-Trichlorobenzene	NV	NV	--	--	--
1,2,3-Trichloropropane	1.46E-03	MTCA B CAR	--	--	--
1,2,4-Trichlorobenzene	1.51E+00	MTCA B CAR	--	--	--
1,2,4-Trimethylbenzene	NV	NV	--	--	--
1,2-Dibromo-3-chloropropane	5.47E-02	MTCA B CAR	--	--	--
1,2-Dibromoethane	1.00E-02	MTCA A	--	--	--
1,2-Dichlorobenzene	7.20E+02	MTCA B NCAR	--	--	--
1,2-Dichloroethane	5.00E+00	MTCA A	--	--	--
1,2-Dichloropropane	1.22E+00	MTCA B CAR	--	--	--
1,3,5-Trimethylbenzene	8.00E+01	MTCA B NCAR	--	--	--
1,3-Dichlorobenzene	NV	NV	--	--	--
1,3-Dichloropropane	NV	NV	--	--	--
1,4-Dichlorobenzene	8.10E+00	MTCA B CAR	--	--	--
2,2-Dichloropropane	NV	NV	--	--	--
2-Butanone	4.80E+03	MTCA B NCAR	--	--	--
2-Chloroethylvinyl ether	NV	NV	--	--	--
2-Chlorotoluene	1.60E+02	MTCA B NCAR	--	--	--
2-Hexanone	NV	NV	--	--	--

Table 2
AOC 4 Groundwater Analytical Results
VSF Properties, LLC, North Cascade Ford Property Investigation
Sedro-Woolley, Washington

		Location:	MW03	MW03	MW03
		Sample Name:	MW03-GW-140618	MW03-GW-091014	MW03-GW-121014
		Collection Date:	06/18/2014	09/10/2014	12/10/2014
		Collection Depth (ft bgs):	4-14	4-14	4-14
	CUL (ug/L)	**CUL Source**			
4-Chlorotoluene	NV	NV	--	--	--
4-Isopropyltoluene	NV	NV	--	--	--
4-Methyl-2-pentanone	6.40E+02	MTCA B NCAR	--	--	--
Acetone	7.20E+03	MTCA B NCAR	--	--	--
Acrolein	4.00E+00	MTCA B NCAR	--	--	--
Acrylonitrile	8.10E-02	MTCA B CAR	--	--	--
Benzene	5.00E+00	MTCA A	--	--	--
Bromobenzene	NV	NV	--	--	--
Bromodichloromethane	7.06E-01	MTCA B CAR	--	--	--
Bromoethane	NV	NV	--	--	--
Bromoform	5.54E+00	MTCA B CAR	--	--	--
Bromomethane	1.12E+01	MTCA B NCAR	--	--	--
Carbon disulfide	8.00E+02	MTCA B NCAR	--	--	--
Carbon tetrachloride	6.25E-01	MTCA B CAR	--	--	--
Chlorobenzene	1.60E+02	MTCA B NCAR	--	--	--
Chlorobromomethane	NV	NV	--	--	--
Chloroethane	NV	NV	--	--	--
Chloroform	1.41E+00	MTCA B CAR	--	--	--
Chloromethane	NV	NV	--	--	--
cis-1,2-Dichloroethene	1.60E+01	MTCA B NCAR	--	--	--
cis-1,3-Dichloropropene	NV	NV	--	--	--
Dibromochloromethane	5.21E-01	MTCA B CAR	--	--	--
Dibromomethane	8.00E+01	MTCA B NCAR	--	--	--
Ethylbenzene	7.00E+02	MTCA A	--	--	--
Freon 113	2.40E+05	MTCA B NCAR	--	--	--
Hexachlorobutadiene	5.61E-01	MTCA B CAR	--	--	--
Isopropylbenzene	8.00E+02	MTCA B NCAR	--	--	--
m,p-Xylene	1.00E+03	MTCA A	--	--	--
Methyl iodide	NV	NV	--	--	--
Methylene chloride	5.00E+00	MTCA A	--	--	--
Naphthalene	1.60E+02	MTCA A	--	--	--
n-Butylbenzene	4.00E+02	MTCA B NCAR	--	--	--
n-Propylbenzene	8.00E+02	MTCA B NCAR	--	--	--
o-Xylene	1.60E+03	MTCA B NCAR	--	--	--
sec-Butylbenzene	8.00E+02	MTCA B NCAR	--	--	--
Styrene	1.60E+03	MTCA B NCAR	--	--	--

Table 2
AOC 4 Groundwater Analytical Results
VSF Properties, LLC, North Cascade Ford Property Investigation
Sedro-Woolley, Washington

		Location:	MW03	MW03	MW03
		Sample Name:	MW03-GW-140618	MW03-GW-091014	MW03-GW-121014
		Collection Date:	06/18/2014	09/10/2014	12/10/2014
		Collection Depth (ft bgs):	4-14	4-14	4-14
	CUL (ug/L)	**CUL Source**			
tert-Butylbenzene	8.00E+02	MTCA B NCAR	--	--	--
Tetrachloroethene	5.00E+00	MTCA A	--	--	--
Toluene	1.00E+03	MTCA A	--	--	--
trans-1,2-dichloroethene	1.60E+02	MTCA B NCAR	--	--	--
trans-1,3-Dichloropropene	NV	NV	--	--	--
trans-1,4-Dichloro-2-butene	NV	NV	--	--	--
Trichloroethene	5.00E+00	MTCA A	--	--	--
Trichlorofluoromethane	2.40E+03	MTCA B NCAR	--	--	--
Vinyl Acetate	8.00E+03	MTCA B NCAR	--	--	--
Vinyl chloride	2.00E-01	MTCA A	--	--	--
Xylenes, Total	1.00E+03	MTCA A	--	--	--
SVOCs (ug/L)					
1-Methylnaphthalene	1.60E+02	MTCA A	--	--	--
2-Methylnaphthalene	1.60E+02	MTCA A	--	--	--
Acenaphthene	9.60E+02	MTCA B NCAR	--	--	--
Acenaphthylene	NV	NV	--	--	--
Anthracene	4.80E+03	MTCA B NCAR	--	--	--
Benzo(a)anthracene	1.20E-01	MTCA B CAR	--	--	--
Benzo(a)pyrene	1.00E-01	MTCA A	--	--	--
Benzo(ghi)perylene	NV	NV	--	--	--
Chrysene	1.20E+01	MTCA B CAR	--	--	--
Dibenzo(a,h)anthracene	1.20E-02	MTCA B CAR	--	--	--
Dibenzofuran	1.60E+01	MTCA B NCAR	--	--	--
Fluoranthene	6.40E+02	MTCA B NCAR	--	--	--
Fluorene	6.40E+02	MTCA B NCAR	--	--	--
Indeno(1,2,3-cd)pyrene	1.20E-01	MTCA B CAR	--	--	--
Naphthalene	1.60E+02	MTCA A	--	--	--
Phenanthrene	NV	NV	--	--	--
Pyrene	4.80E+02	MTCA B NCAR	--	--	--
Total Benzofluoranthenes	1.20E-01	MTCA B CAR	--	--	--
TPH (ug/L)					
Gasoline-Range Organics	8.00E+02	MTCA A	--	--	--
Diesel-Range Organics	5.00E+02	MTCA A	**320**	**210**	**210**
Motor-Oil-Range Organics	5.00E+02	MTCA A	200 U	200 U	**300**
EPH (ug/L)					
Aliphatic C8-C10	NV	NV	--	--	--

Table 2
AOC 4 Groundwater Analytical Results
VSF Properties, LLC, North Cascade Ford Property Investigation
Sedro-Woolley, Washington

Location:			MW03	MW03	MW03
Sample Name:			MW03-GW-140618	MW03-GW-091014	MW03-GW-121014
Collection Date:			06/18/2014	09/10/2014	12/10/2014
Collection Depth (ft bgs):			4-14	4-14	4-14
	CUL (ug/L)	**CUL Source**			
Aliphatic C10-C12	NV	NV	--	--	--
Aliphatic C12-C16	NV	NV	--	--	--
Aliphatic C16-C21	NV	NV	--	--	--
Aliphatic C21-C34	NV	NV	--	--	--
Aromatic C8-C10	NV	NV	--	--	--
Aromatic C10-C12	NV	NV	--	--	--
Aromatic C12-C16	NV	NV	--	--	--
Aromatic C16-C21	NV	NV	--	--	--
Aromatic C21-C34	NV	NV	--	--	--
Calculated Totals[b]					
cPAH TEQ	1.00E-01	MTCA A	--	--	--
Total naphthalenes	1.60E+02	MTCA A	--	--	--
Total PCBs	1.00E-01	MTCA A	--	--	--
Total Xylenes	1.00E+03	MTCA A	--	--	--

NOTES:
Detections in **bold.**
Detected concentrations were compared to MTCA A CULs or MTCA B CULs if no MTCA A value was available.
Exceedances highlighted.
-- = not analyzed.
AOC = area of concern.
cPAH TEQ = carcinogenic polycyclic aromatic hydrocarbon toxic equivalency quotient.
CUL = cleanup level.
EPH = extractable petroleum hydrocarbons.
ft bgs = feet below ground surface.
J = Result is an estimated value.
MTCA = Model Toxics and Control Act.
MTCA A = MTCA Method A, Table Value, CUL.
MTCA B CAR = MTCA Method B, Standard Formula Value, CUL for carcinogenic compounds.
MTCA B NCAR = MTCA Method B Standard Formula Value, CUL for non-carcinogenic compounds.
ND = not detected.
NV = no value.
PCB = polychlorinated biphenyl.
SVOC = semivolatile organic compound.
TPH = total petroleum hydrocarbons.
U = Analyte not detected.
ug/L = micrograms per liter (parts per billion.)
UR = Result is non-detect and rejected.
VOC = volatile organic compound.

[a] A groundwater sample collection depth was not indicated in Whatcom Environmental Service's Phase II Environmental Site Assessment (2011) but was estimated based on the depth to water and total boring depth identified in their boring log for this sample location.

[b] Total concentrations were calculated using one-half the method reporting limit for non-detects. Where all components were non-detect, the calculated total is "ND."

FIGURE

Path: X:\0747.01\Projects\06\Data Gaps Report\Fig1_Areas_of_Concern_and_Sample_Locations.mxd
Print Date: 7/2/2018
Approved By: H. Good
Produced By: rroberts
Project: 0747.01.07

Figure 1
Areas of Concern and Sample Locations

North Cascade Ford Property
116 West Ferry Street
Sedro-Woolley, Washington

AOC 1: Auto Repair Shop
AOC 2: Former USTs
AOC 3: Former Coal Storage Sheds/Possible Buried Object
AOC 4: Former Auto Services

Legend

- ▢ Excavation Extent
- 🟩 Property Parcel
- ▭ BNSF-owned Parcel
- ■ Sub-slab Soil Vapor Probe
- ● Monitoring Well Location
- ● Monitoring Well Location (Decommissioned)
- ⊙ Phase II ESA Boring Location
- ⊙ Phase II ESA Boring Location (no longer representative)
- ● MFA Boring, Groundwater
- ● MFA Boring, Soil
- ● MFA Boring, Soil and Groundwater

Notes:
1. AOC = area of concern.
2. AOC boundaries represent the extent of investigation locations included in the assessment of environmental impacts associated with potential releases within each AOC and are not necessarily representative of the extent of contamination associated with each AOC.
3. AOC 4 was formerly referred to as the "Former Gasoline Station."
4. AST = aboveground storage tank.
5. BNSF = Burlington Northern Santa Fe Railway.
6. ESA = environmental site assessment.
7. MFA = Maul Foster & Alongi, Inc.
8. The surveyed Property parcel boundaries do not coincide with the adjacent parcel boundaries obtained from Skagit County; therefore, there is an overlap between the Property and BNSF parcels.
9. UST = underground storage tank.

0 40 80
Feet

Source: Aerial photograph (2015) obtained from Skagit County iMap. Property parcel boundaries surveyed by Wilson Engineering, LLC. Adjacent parcel boundaries obtained from Skagit County.

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ATTACHMENT A

BORING AND WELL LOGS

Boring Log

Project: North Cascade Ford
Client: Travis Coulter
Boring Number: **B-6**
Location: Former gas station (west boring)
Date Completed: 11/15/11

Sheet: 1 of 1
Drilled by: Cascade Drilling
Logged by: Harold Cashman
First Encountered Water: ~ 5.5 feet
Total Depth: 15 feet

Depth/Description		Blow Count	PID (ppm)	Sheen	Sample
0-2"	Asphalt				
2"-1.0'	Silty gravel, light brown, firm, dry		0.0	NS ✓	
1.0'-2.0'	Sandy gravel, dark brown to black, loose, moist		0.0	NS ✓	
2.0'-3.0'	Silty fine sand, dark brown, firm, dry		0.0	NS ✓	
3.0'-5.5'	Silty fine sand, brown, firm, dry		0.0	NS ✓	
5.5'-6.0'	Silty fine sand, brown, firm, moist		0.0	NS ✓	
6.0'-8.0'	Fine to medium sand, brown, loose, moist		0.0	NS ✓	6 ft
8.0'-12.0'	Coarse sand, brown, loose, wet		0.0	NS ✓	
12.0'-15.0'	Silt, gray, plastic, wet		0.0	NS ✓	

WHATCOM ENVIRONMENTAL SERVICES INC.

www.whatcomenvironmental.com

NS = No Sheen; VSS = Very Slight Sheen; SS = Slight Sheen; MS = Moderate Sheen; HS = Heavy Sheen

Boring Log

Project: North Cascade Ford
Client: Travis Coulter
Boring Number: **B-7**
Location: Former gas station (east boring)
Date Completed: 11/15/11

Sheet: 1 of 1
Drilled by: Cascade Drilling
Logged by: Harold Cashman
First Encountered Water: ~ 5.5 feet
Total Depth: 15 feet

Depth/Description	Blow Count	PID (ppm)	Sheen	Sample
0-2" Asphalt				
2"-2.5' Silty gravel, brown, firm, dry		0.0	NS ✓	
2.5'-5.5' Silty fine sand, brown with minor orange mottling, firm, dry		0.0	NS ✓	
5.5'-6.0' Silty fine sand, brown with minor orange mottling, firm, wet		0.0	NS ✓	
6.0'-9.5' Silt, gray, plastic, wet		105-257	MS ✓	
9.5'-13.0' Medium to coarse sand, gray, loose, wet		467	MS	11 ft
13.0'-15.0' Silt, olive gray, plastic, wet, with woody debris at 15 feet PID=0 ppm at 15 feet		36-0	NS ✓	
WATER SAMPLE COLLECTED				

WHATCOM ENVIRONMENTAL SERVICES INC.

www.whatcomenvironmental.com

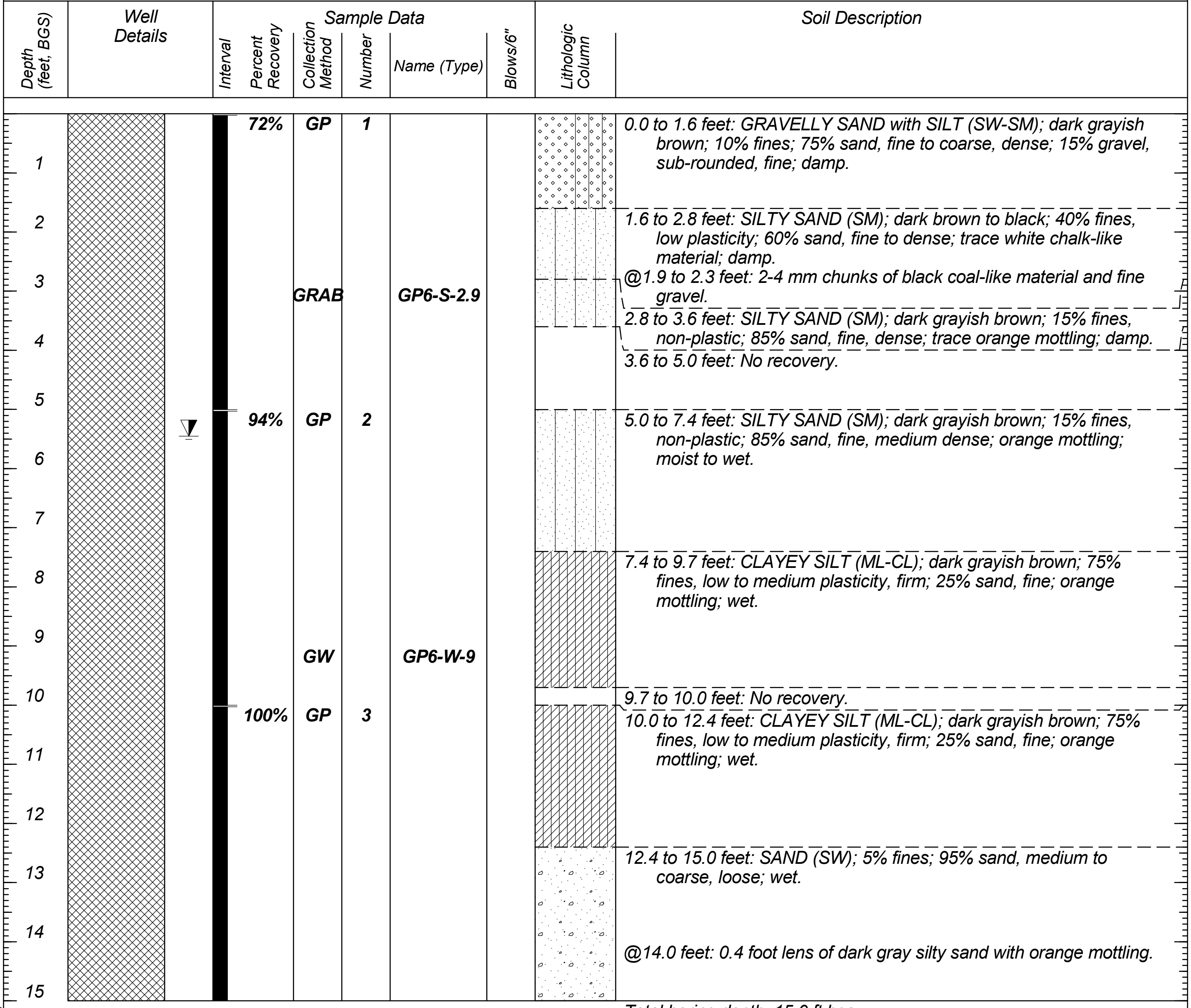
NS = No Sheen; VSS = Very Slight Sheen; SS = Slight Sheen; MS = Moderate Sheen; HS = Heavy Sheen

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
0747.01.01	**GP06**	**1 of 1**

Project Name	**VSF Properties, LLC - North Cascade Ford**	TOC Elevation (feet)	
Project Location	**116 W. Ferry St., Sedro-Woolley, WA**	Surface Elevation (feet)	
Start/End Date	**5/8/12 to 5/8/12**	Northing	
Driller/Equipment	**Cascade Drilling, LP/Geoprobe**	Easting	
Geologist/Engineer	**H. Hirsch**	Hole Depth	**15.0-feet**
Sample Method		Outer Hole Diam	**2-inch**



Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Soil Description
72%	GP	1			0.0 to 1.6 feet: GRAVELLY SAND with SILT (SW-SM); dark grayish brown; 10% fines; 75% sand, fine to coarse, dense; 15% gravel, sub-rounded, fine; damp.
					1.6 to 2.8 feet: SILTY SAND (SM); dark brown to black; 40% fines, low plasticity; 60% sand, fine to dense; trace white chalk-like material; damp. @1.9 to 2.3 feet: 2-4 mm chunks of black coal-like material and fine gravel.
	GRAB		GP6-S-2.9		2.8 to 3.6 feet: SILTY SAND (SM); dark grayish brown; 15% fines, non-plastic; 85% sand, fine, dense; trace orange mottling; damp.
					3.6 to 5.0 feet: No recovery.
94%	GP	2			5.0 to 7.4 feet: SILTY SAND (SM); dark grayish brown; 15% fines, non-plastic; 85% sand, fine, medium dense; orange mottling; moist to wet.
					7.4 to 9.7 feet: CLAYEY SILT (ML-CL); dark grayish brown; 75% fines, low to medium plasticity, firm; 25% sand, fine; orange mottling; wet.
	GW		GP6-W-9		
					9.7 to 10.0 feet: No recovery.
100%	GP	3			10.0 to 12.4 feet: CLAYEY SILT (ML-CL); dark grayish brown; 75% fines, low to medium plasticity, firm; 25% sand, fine; orange mottling; wet.
					12.4 to 15.0 feet: SAND (SW); 5% fines; 95% sand, medium to coarse, loose; wet. @14.0 feet: 0.4 foot lens of dark gray silty sand with orange mottling.

Total boring depth: 15.0 ft bgs.

NOTES: 1) ft bgs = feet below ground surface.
2) Collected groundwater from 7 to 11 ft bgs using a temporary 4-foot-long, 1-inch-diameter stainless steel screen.
3) Borehole back-filled with bentonite chips hydrated with potable water.
4) Soil grab sample interval from 2.3 to 3.6 ft bgs.

▽ **Water level 5.45 ft bgs with screened interval from 7 to 11 ft bgs.**

Maul Foster & Alongi, Inc.	**Geologic Borehole Log/Well Construction**		
	Project Number **0747.01.01**	Well Number **GP07**	Sheet **1 of 1**

Project Name	**VSF Properties, LLC - North Cascade Ford**	TOC Elevation (feet)	
Project Location	**116 W. Ferry St., Sedro-Woolley, WA**	Surface Elevation (feet)	
Start/End Date	**5/8/12 to 5/8/12**	Northing	
Driller/Equipment	**Cascade Drilling, LP/Geoprobe**	Easting	
Geologist/Engineer	**H. Hirsch**	Hole Depth	**10.0-feet**
Sample Method		Outer Hole Diam	**2-inch**

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
1 2	▨	■	**74%**	**GP**	**1**				0.0 to 2.1 feet: GRAVELLY SAND with SILT (SW-SM); very dark gray; 10% fines; 75% sand, medium to coarse, loose; 15% gravel, fine to medium, sub-angular to sub-rounded; trace white chalk-like material; black staining from 1.7 to 2.1; dry to damp.
3	▨	■		**GRAB**		**GP7-S-2.9**			2.1 to 3.7 feet: SILTY SAND (SM); dark reddish brown to dark grayish brown; 15% fines, non-plastic; 85% sand, fine, dense; orange mottling; damp to moist.
4 5	▨ ▼	■							3.7 to 5.0 feet: No recovery.
6	▨	■	**92%**	**GP**	**2**				5.0 to 6.7 feet: CLAYEY SILT (ML-CL); dark grayish brown; 75% fines, low to medium plasticity, firm; 25% sand, fine; orange mottling; wet. @6.0 feet: 0.1-foot lens of fine, micaceous sand.
7 8 9	▨	■		**GW**		**GP7-W-8**			6.7 to 9.6 feet: SAND (SW); 5% fines; 95% sand, medium to coarse, loose; orange staining, petroleum-like odor in stained area; wet.
10	▨	■							9.6 to 10.0 feet: No recovery.

Total boring depth: 10.0 ft bgs.

NOTES:
1) ft bgs = feet below ground surface.
2) Collected groundwater from 6 to 10 ft bgs using a temporary 4-foot-long, 1-inch-diameter stainless steel screen.
3) Borehole back-filled with bentonite chips hydrated with potable water.
4) Soil grab sample interval from 2.2 to 3.7 ft bgs.

▼ **Water level 5.03 ft bgs with screened interval from 6 to 10 ft bgs.**

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
0747.01.01	**GP08**	**1 of 1**

Project Name	**VSF Properties, LLC - North Cascade Ford**	TOC Elevation (feet)	
Project Location	**116 W. Ferry St., Sedro-Woolley, WA**	Surface Elevation (feet)	
Start/End Date	**5/8/12 to 5/8/12**	Northing	
Driller/Equipment	**Cascade Drilling, LP/Geoprobe**	Easting	
Geologist/Engineer	**H. Hirsch**	Hole Depth	**10.0-feet**
Sample Method		Outer Hole Diam	**2-inch**

Depth (feet, BGS)	Well Details	Sample Data						Lithologic Column	Soil Description
		Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"		
1			70%	GP	1				0.0 to 1.1 feet: GRAVELLY SAND with SILT (SW-SM); very dark gray; 15% fines; 65% sand, medium to coarse, dense; 20% gravel, fine to medium; dry to damp.
2 3				GRAB		PID = 1.3 ppm GP8-S-2.8			1.1 to 3.5 feet: SILTY SAND (SM); dark reddish brown to dark grayish brown; 15% fines, non-plastic; 85% sand, fine, dense; trace orange mottling; damp to moist. @1.3 feet: black staining. @2.0 feet: black, fine-grained material.
4 5	▼								3.5 to 5.0 feet: No recovery.
6			92%	GP	2				5.0 to 6.2 feet: SILTY SAND (SM); dark reddish brown to dark grayish brown; 15% fines, non-plastic; 85% sand, fine, dense; trace orange mottling; damp to moist.
7 8				GW		GP8-W-8			6.2 to 8.6 feet: SAND (SW); 5% fines; 95% sand, medium to coarse, loose; orange staining from 6.8 to 8.6 feet; wet.
9									8.6 to 9.6 feet: SILTY CLAYEY SAND (SC); dark gray; 20% fines, medium plasticity; 80% sand, fine, medium dense; clay content decreases with depth; wet.
10									9.6 to 10.0 feet: No recovery.

Total boring depth: 10.0 ft bgs.

NOTES:
1) ft bgs = feet below ground surface.
2) Collected groundwater from 6 to 10 ft bgs using a temporary 4-foot-long, 1-inch-diameter stainless steel screen.
3) Borehole back-filled with bentonite chips hydrated with potable water.
4) Soil grab sample interval from 2.1 to 3.5 ft bgs.

▼ **Water level 4.86 ft bgs with screened interval from 6 to 10 ft bgs.**

Geologic Borehole Log/Well Construction

Maul Foster & Alongi, Inc.

Project Number	Well Number	Sheet
0747.01.02	**GP14**	**1 of 1**

Project Name **VSF Properties, LLC - North Cascade Ford**
Project Location **116 W. Ferry St., Sedro-Woolley, WA**
Start/End Date **12/3/12 to 12/3/12**
Driller/Equipment **Cascade Drilling, LP/Geoprobe 6600**
Geologist/Engineer **H. Hirsch**
Sample Method

TOC Elevation (feet)
Surface Elevation (feet)
Northing
Easting
Hole Depth **10.0-feet**
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
			72%	GP	1				0.0 to 2.3 feet: GRAVELLY SAND (SW); dark brown; 5% fines; 80% sand, fine to medium, medium dense; 15% gravel; trace organic matter; damp.
1									
2									@ 1.9 to 2.3 feet: black staining.
3									2.3 to 3.6 feet: SILTY SAND (SM); dark brown; 20% fines, non-plastic; 80% sand, fine, dense; trace orange mottles; moist.
4									3.6 to 5.0 feet: No recovery.
5	▼		38%	GP	2				5.0 to 6.7 feet: SILTY SAND (SM); dark brown; 20% fines, non-plastic; 80% sand, fine, dense; trace orange mottles; wet.
6									
7									6.7 to 6.9 feet: CLAY with SAND (CL); dark brown; 80% fines, high plasticity, soft; 20% sand, fine; wet.
8				GW		GP14-W-7.5			6.9 to 10.0 feet: No recovery.
9									
10									

Total boring depth: 10.0 ft bgs.

NOTES: 1) ft bgs = feet below ground surface.
2) Borehole back-filled with bentonite chips hydrated with potable water.
3) Collected groundwater from 5 to 10 ft bgs using a temporary 5-foot-long, 1-inch-diameter PVC (polyvinyl chloride) screen.

▼ **Water level 5.18 ft bgs with screened interval from 5 to 10 ft bgs.**

GBLWC W:\GINT\GINTW\PROJECTS\0747.01.01\GP10 TO GP32.GPJ 8/26/15

Maul Foster & Alongi, Inc.	**Geologic Borehole Log/Well Construction**		
	Project Number	*Well Number*	*Sheet*
	0747.01.02	***GP15***	***1 of 1***

Project Name	***VSF Properties, LLC - North Cascade Ford***	*TOC Elevation (feet)*	
Project Location	***116 W. Ferry St., Sedro-Woolley, WA***	*Surface Elevation (feet)*	
Start/End Date	***12/3/12 to 12/3/12***	*Northing*	
Driller/Equipment	***Cascade Drilling, LP/Geoprobe 6600***	*Easting*	
Geologist/Engineer	***H. Hirsch***	*Hole Depth*	***10.0-feet***
Sample Method		*Outer Hole Diam*	***2-inch***

Depth (feet, BGS)	*Well Details*	*Sample Data*						*Lithologic Column*	*Soil Description*
		Interval	*Percent Recovery*	*Collection Method*	*Number*	*Name (Type)*	*Blows/6"*		
	▨	■	***76%***	***GP***	***1***				*0.0 to 2.5 feet: GRAVELLY SAND (SW); dark brown; 5% fines; 80% sand, fine to medium, dense; 15% gravel, sub-rounded, fine to coarse; damp.*
1	▨	■							
2	▨	■							*@ 1.4 to 1.5 feet: sandy silt, dark brown, stiff.* *@ 1.5 to 2.5 feet: dark reddish-brown staining.*
3	▨	■							*@ 2.4 to 2.5 feet: sandy silt, dark brown, stiff.* *2.5 to 3.8 feet: SAND with SILT (SP-SM); dark brown; 10% fines; 90% sand, fine, dense; trace orange staining; moist.*
4	▨	■							*3.8 to 5.0 feet: No recovery.*
5	▨	■	***82%***	***GP***	***2***				*5.0 to 7.2 feet: SAND with SILT (SP-SM); dark brown; 10% fines; 90% sand, fine, dense; trace orange staining; wet.*
6	▨ ▽	■							
7	▨	■							
8	▨	■		***GW***		***GP15-W-7.5***			*7.2 to 9.1 feet: SAND with SILT (SP-SM); dark gray; 10% fines; 90% sand, medium, loose; wet.*
9	▨	■							*@ 8.4 to 8.5 feet: reddish-brown staining.* *9.1 to 10.0 feet: No recovery.*
10	▨	■							

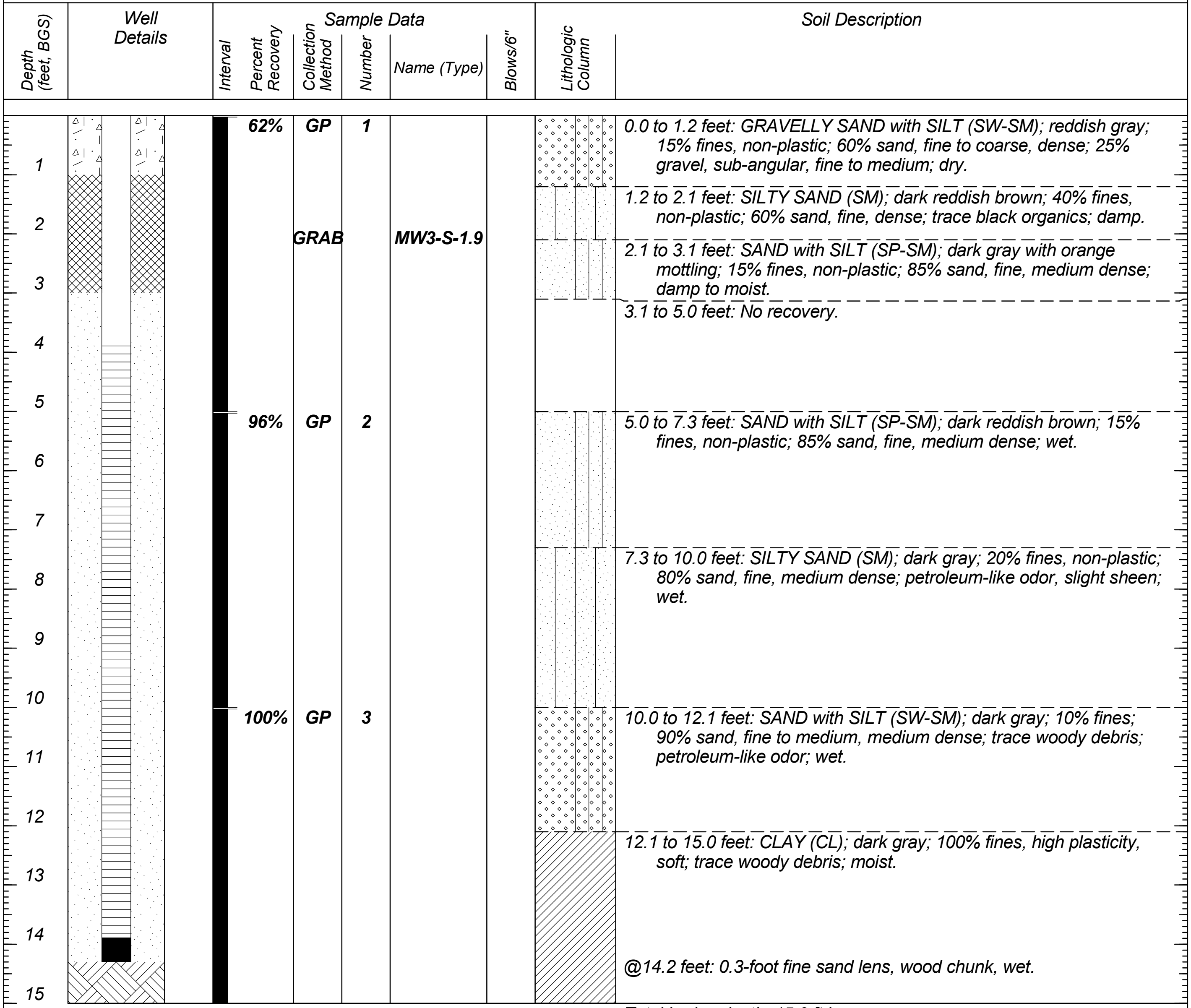
Total boring depth: 10.0 ft bgs.

NOTES: *1) ft bgs = feet below ground surface.*
2) Borehole back-filled with bentonite chips hydrated with potable water.
3) Collected groundwater from 5 to 10 ft bgs using a temporary 5-foot-long, 1-inch-diameter PVC (polyvinyl chloride) screen.

▽ ***Water level 5.88 ft bgs with screened interval from 5 to 10 ft bgs.***

Maul Foster & Alongi, Inc.	**Geologic Borehole Log/Well Construction**		
	Project Number	*Well Number*	*Sheet*
	0747.01.01	***MW03***	***1 of 1***

Project Name	***VSF Properties, LLC - North Cascade Ford***	*TOC Elevation (feet)*	
Project Location	***116 W. Ferry St., Sedro-Woolley, WA***	*Surface Elevation (feet)*	
Start/End Date	***5/7/12 to 5/7/12***	*Northing*	
Driller/Equipment	***Cascade Drilling, LP/Geoprobe***	*Easting*	
Geologist/Engineer	***H. Hirsch***	*Hole Depth*	***15.0-feet***
Sample Method		*Outer Hole Diam*	***3.5-inch***



Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"
	62%	***GP***	***1***		
		GRAB		***MW3-S-1.9***	
	96%	***GP***	***2***		
	100%	***GP***	***3***		

Soil Description

0.0 to 1.2 feet: GRAVELLY SAND with SILT (SW-SM); reddish gray; 15% fines, non-plastic; 60% sand, fine to coarse, dense; 25% gravel, sub-angular, fine to medium; dry.

1.2 to 2.1 feet: SILTY SAND (SM); dark reddish brown; 40% fines, non-plastic; 60% sand, fine, dense; trace black organics; damp.

2.1 to 3.1 feet: SAND with SILT (SP-SM); dark gray with orange mottling; 15% fines, non-plastic; 85% sand, fine, medium dense; damp to moist.

3.1 to 5.0 feet: No recovery.

5.0 to 7.3 feet: SAND with SILT (SP-SM); dark reddish brown; 15% fines, non-plastic; 85% sand, fine, medium dense; wet.

7.3 to 10.0 feet: SILTY SAND (SM); dark gray; 20% fines, non-plastic; 80% sand, fine, medium dense; petroleum-like odor, slight sheen; wet.

10.0 to 12.1 feet: SAND with SILT (SW-SM); dark gray; 10% fines; 90% sand, fine to medium, medium dense; trace woody debris; petroleum-like odor; wet.

12.1 to 15.0 feet: CLAY (CL); dark gray; 100% fines, high plasticity, soft; trace woody debris; moist.

@14.2 feet: 0.3-foot fine sand lens, wood chunk, wet.

Total boring depth: 15.0 ft bgs.
Borehole Completion Details
0.0 to 15.0 feet bgs: 3.5-inch borehole.
0.0 to 1.0 feet bgs: Concrete.
1.0 to 3.0 feet bgs: Bentonite chips hydrated with potable water.
3.0 to 14.0 feet bgs: Filter pack sand.
14.0 to 15.0 feet bgs: Slough.
Well Completion Details
0.0 to 1.0 feet bgs: Flush monument.
0.0 to 3.89 feet bgs: 2-inch-diameter, PVC, schedule 40, flush threaded, blank riser.
3.89 to 13.89 feet bgs: 2-inch-diameter, PVC, schedule 40, flush threaded, 0.010-inch machine slotted, pre-pack well screen.
13.89 to 14.0 feet bgs: 2-inch-diameter, PVC, schedule 40, flush threaded, end cap.

NOTES: *1) ft bgs = feet below ground surface.*
2) Soil grab sample interval from 1.5 to 2.3 ft bgs.
3) Two boring attempts. First attempt resulted in no recovery; second attempt located within one foot.
4) PVC = polyvinyl chloride.

ATTACHMENT B

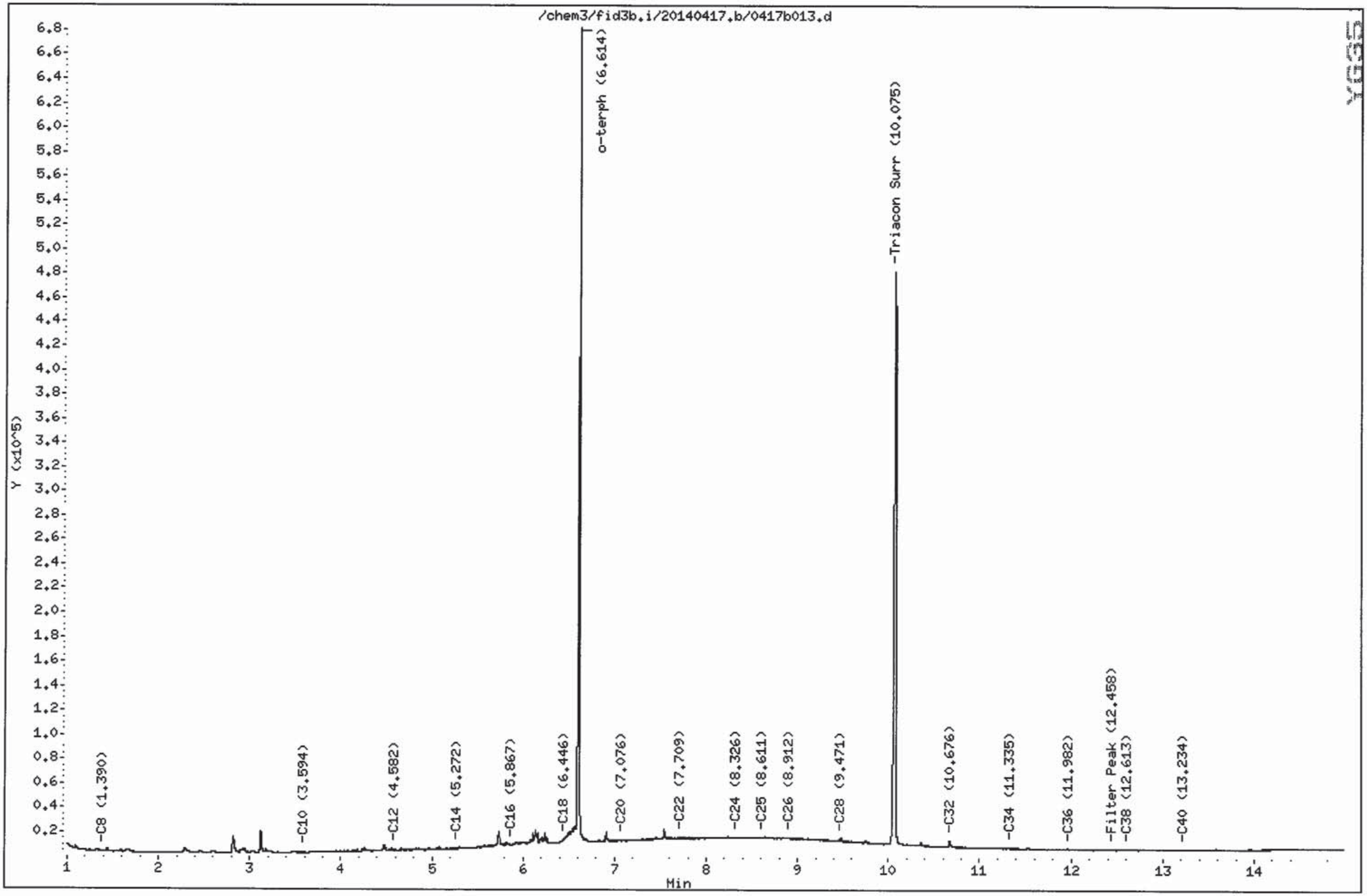
MW03 CHROMATOGRAM

Data File: /chem3/fid3b.i/20140417.b/0417b013.d
Date : 17-APR-2014 19:02
Client ID: MW03
Sample Info: YG35D

Column phase: RTX-1

Instrument: fid3b.i

Operator: JW
Column diameter: 0.25



APPENDIX B

INTERIM REMEDIAL ACTION COMPLETION REPORT

INTERIM REMEDIAL ACTION COMPLETION REPORT

NORTH CASCADE FORD PROPERTY
SEDRO-WOOLLEY, WASHINGTON

Prepared for

VSF PROPERTIES, LLC

November 8, 2016
Project No. 0747.01.06

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

MAUL
FOSTER
ALONGI

INTERIM REMEDIAL ACTION COMPLETION REPORT

NORTH CASCADE FORD PROPERTY
SEDRO-WOOLLEY, WASHINGTON

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

MAUL FOSTER & ALONGI, INC.

H Good

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CONTENTS

TABLES AND ILLUSTRATIONS

FOLLOWING REPORT:

TABLES

FIGURES

ACRONYMS AND ABBREVIATIONS

AOC	area of concern
bgs	below ground surface
BNSF	Burlington Northern Santa Fe Railway
BTEX	benzene, toluene, ethylbenzene, and xylene
CLARC	Cleanup Levels and Risk Calculation database
COC	chemical of concern
Coulter	Coulter Properties, LLC
CUL	cleanup level
DRO	diesel-range organics
Ecology	Department of Ecology (Washington)
ESA	environmental site assessment
GAC	granular reactivated carbon
GPR	ground penetrating radar
GRO	gasoline-range organics
ISBR	in situ bioremediation
Kingworks	Kingworks Consulting Engineers, PLLC
Marvac	Marine Vacuum Service, Inc.
MFA	Maul Foster & Alongi, Inc.
MTBE	methyl-tert-butylether
MTC	Materials Testing & Consulting, Inc.
MTCA	Model Toxics Control Act
NFA	no further action
NWTPH	Northwest Total Petroleum Hydrocarbon
OnSite	OnSite Environmental, Inc.
ORC-A	Oxygen Release Compound Advanced®
ORO	heavy oil-range organics
OWTS	on-site water treatment system
PCS	petroleum contaminated soil
PID	photoionization detector
ppm	parts per million
the Property	116 West Ferry Street in Sedro-Woolley, Washington
RI	remedial investigation
RI/FS	remedial investigation and feasibility study
SIM	selective ion monitoring
the Site	North Cascade Ford Ecology cleanup site
USEPA	U.S. Environmental Protection Agency
UST	underground storage tank
VCP	Voluntary Cleanup Program
VSF	VSF Properties, LLC
WAC	Washington Administrative Code
Wilson	Wilson Engineering
WWTP	Waste Water Treatment Plan (City of Sedro-Woolley)

ACRONYMS AND ABBREVIATIONS (CONTINUED)

Wyser	Wyser Construction, Inc.

1 INTRODUCTION

On behalf of VSF Properties, LLC (VSF), Maul Foster & Alongi, Inc. (MFA) has prepared this report describing an interim remedial action completed at the North Cascade Ford property, located at 116 West Ferry Street in Sedro-Woolley, Washington (the Property) (see Figure 1-1). The Property is part of the North Cascade Ford site (the Site), Washington State Department of Ecology (Ecology) Facility Site No. 58313566, Cleanup Site No. 12075.

The interim action was performed by Wyser Construction, Inc. (Wyser) with MFA oversight from September 26 through October 11, 2016. Interim action activities included decommissioning and removal of two underground storage tanks (USTs), excavation and disposal of petroleum-contaminated soil (PCS), dewatering of the excavation, placement of clean backfill amended with an in situ bioremediation (ISBR) product, and compaction and restoration of the Property to grade. The interim action was completed at the request of representatives of the insurance carriers funding the work and as part of cleanup activities being conducted in pursuit of a Property-specific no further action (NFA) determination through Ecology's Voluntary Cleanup Program (VCP).

This report meets the site assessment reporting requirements for permanent closure of the two USTs removed during the interim action. The site assessment was performed by a certified site assessor consistent with the UST regulations put forth in Washington Administrative Code (WAC) 173-360 and the Ecology's Guidance for Site Checks and Assessments for Underground Storage Tanks (Ecology, 2003).

2 BACKGROUND

The potential for closed-in-place or abandoned USTs to be present on the Property was identified in the preliminary remedial investigation (RI) report (MFA, 2015b). USTs may contribute to environmental contamination if not properly closed or decommissioned; therefore, steps were taken to further assess USTs on the Property, including conducting a ground penetrating radar (GPR) survey.

A GPR survey was performed by Materials Testing & Consulting, Inc. (MTC) of Burlington, Washington, on June 21, 2016 and included portions of areas of concern (AOCs) 1, 2, and 4 (see Figure 2-1). The GPR survey report is included as Appendix A. During the GPR survey, two or possibly three USTs were identified on the Property, to the southeast of the Auto Sales and Service building, in AOC 2. Only two USTs were encountered during the interim action, which is consistent with the Property history, as described below. MFA had proposed additional investigation to address data gaps at the Property in its data gap investigation work plan (MFA, 2015a), including further assessment of a potential UST release(s) in AOC 2 (MFA, 2015a). However, the carrier group requested that an interim action be conducted to decommission and remove the USTs and address associated impacts in AOC 2 before conducting the data gap investigation.

This report summarizes completed action and UST site assessment activities and will be submitted to Ecology for review as part of the Property cleanup and to fulfill UST closure reporting requirements. Soil and groundwater conditions identified during the interim action, as discussed in this report, were incorporated into an amended data gap investigation work plan (MFA, 2016).

2.1 Property Location

The physical address for the Property is 116 West Ferry Street in Sedro-Woolley, Washington (see Figure 1-1). The Property covers approximately 3.5 acres, comprises nine tax parcels, and is bisected by West Ferry Street (see Figure 2-1); two of the parcels share the same parcel identification number (P109239), but are separate parcels that are divided by the West Ferry Street right-of-way. The parcels north of West Ferry Street are bordered by an active Burlington Northern Santa Fe Railway Company (BNSF) rail line and an industrial property to the north, and a gasoline station and automobile parts store to the west. The parcels south of West Ferry Street are bordered by Rita Street to the west, Woodworth Street to the south, and an electrical substation and residential properties to the west and south. Parcels north and south of West Ferry Street are bordered by an inactive rail line, Eastern Avenue, and commercial properties to the east. The Property is zoned for retail trade (automotive, marine craft, aircraft, and accessories) and is located in section 24 of township 35 north and range 4 east of the Willamette Meridian.

An automobile sales and service building ("auto sales & service") is located on the northern half of the Property (see Figure 2-1) and a small loan services building is located on the southern half of the Property.

2.2 Property History

The Property had a variety of historical uses before being converted, in the 1950s, to its current use as an automobile dealership and repair shop. Former activities include residential use, a gasoline station, a hospital, a feed mill and storage facility, a hotel, railroad depots, a veterinary office, a fuel and transfer station, and an electric plant (MFA, 2015b). A building used for battery servicing and tire vulcanizing was located on parcel number P77410 from as early as 1925 to as late as 1953 (see Figure 2-1). Coal storage sheds associated with the railroad depots were located on parcel number P109239 from approximately the early 1900s to the 1950s. The electric plant operated on parcel number P77451 as early as 1907 and was replaced by a wood shed and wood yard in the 1920s. The wood yard was replaced by the original automobile dealership in the 1950s, which in the 1970s expanded to its current size. A heating oil UST and a leaded gasoline UST associated with the automobile dealership, and formerly located to the southeast of the auto sales and service building, were closed in place in the 1960s. From 1979 through the 1990s, the remaining Property parcels were converted to parking areas supporting the automobile dealership. The loan services building on was constructed in 2007.

Phase I environmental site assessments (ESAs) were conducted on the Property as part of property transfer evaluations in 2001 (GeoEngineers, Inc., 2001) and 2011 (Whatcom Environmental Services, 2011a). Based on recognized environmental conditions identified during the Phase I ESAs, a Phase II ESA was conducted in 2011 (Whatcom Environmental Services, 2011b), an RI began in 2012 (MFA, 2015b), and the Site was entered into the VCP in 2015. The RI/feasibility study (FS), and the interim action documented in this report, are in support of an independent Property cleanup that is being conducted under the VCP.

2.3 Physical Setting

The Property is located in a relatively flat alluvial plain between the nearby Skagit River and Lyman Hill to the northeast. The Property is mostly flat, graded, and covered by buildings or pavement; the ground surface elevation is approximately 56 feet above sea level. The rail lines on the adjacent BNSF property to the north and the property to the east are built on slightly raised berms.

Brickyard Creek is approximately 2,800 feet north of the Property and flows from the northeast toward the southwest. The Skagit River is approximately 7,000 feet south of the Property and flows toward the west (see Figure 1-1).

Subsurface geology was observed during excavation activities conducted as part of the interim remedial action activities, as discussed in Section 5. The following discussion is based on those observations. Underlying an approximately 1- to 2-foot thick unit of nonnative surficial cover and fill is a geologic unit consisting of generally brown to gray sand, with varying amounts of silt, extending to approximately 10 feet below ground surface (bgs). At approximately 10 feet bgs, a layer of well-sorted, medium sand, with trace woody debris, extending down to the maximum excavation depth of 15 feet bgs was encountered. During excavation activities, groundwater was typically encountered between approximately 10 and 11 feet bgs.

Additional information on the geology, hydrogeology, and surface water of the Property and surrounding area is included in the preliminary RI/FS (MFA, 2015b). Previous soil and groundwater data collected from the Property and information regarding nearby private and public drinking water wells are included in the preliminary RI/FS (MFA, 2015b).

2.4 Environmental Conditions

Historical subsurface investigations conducted as part of the 2011 Phase II ESA (Whatcom Environmental Services, 2011b) and the preliminary RI (MFA, 2015b) identified soil and groundwater impacts on the Property and the adjoining BNSF property to the north. Impacted areas of the Property are divided into AOCs (see Figure 2-1). The interim remedial action addressed impacts in AOC 2.

A GPR survey conducted at the Property identified two, or possibly three, USTs in AOC 2. Two USTs, a heating oil UST and a leaded gasoline UST located in AOC 2, were identified in the Phase I ESAs (GeoEngineers, Inc., 2001 and Whatcom Environmental Services, 2011a).

The following chemicals of concern (COCs) were identified in soil and groundwater during previous investigations in AOC 2:

- Diesel-range organics (DRO)
- Heavy oil-range organics (ORO)
- Gasoline-range organics (GRO)

COCs in soil and groundwater in AOC 2 were attributed to a potential UST release(s) and Ecology had requested additional investigation of the leaded gasoline UST (MFA, 2016). The interim remedial action was designed to remove the USTs and associated impacted soil and also treat groundwater impacts in situ.

3 PRE-INTERIM REMEDIAL ACTION

3.1 Monitoring Well Decommissioning

A groundwater monitoring well (MW02) was located within the extent of the proposed excavation; therefore, the well was decommissioned before the interim action. Holt Services, Inc., a driller licensed in Washington State, decommissioned the well consistent with Washington State standards (WAC 173-160-381). The well decommissioning log is included as Appendix B.

3.2 Building Structural Assessment

Due to the proximity of the USTs to the auto sales and service existing building, a structural assessment of the building was conducted before the interim action to identify recommended excavation offset distances to protect the building foundation. On September 12, 2016, a Washington State–licensed structural engineer with Kingworks Consulting Engineers, PLLC (Kingworks) performed a structural assessment of the auto sales and service building and developed offset recommendations based on the findings. Kingworks' structural assessment report is included as Appendix C. Based on the construction of the building, Kingworks recommended excavating no closer than five feet from the face of the building at grade, and that the excavation be sloped down and away from the building at a minimum of 1 horizontal unit per every 1 unit of depth (i.e., 1:1 slope).

3.3 Property Survey

The interim action was conducted in support of a Property cleanup; therefore, cleanup activities were to be conducted on only the Property. The Property boundaries were surveyed before the interim action to define the limits of excavation. On September 21, 2016, Wilson Engineering (Wilson) surveyed the Property and staked the Property lines in the vicinity of the proposed excavation. The Property survey map is included as Appendix D.

3.4 Site Preparation and Layout

Before excavation, the general excavation limits were laid out by Wyser and approved by MFA. Underground utilities at the Site were identified by a private utility locating company. Catch basin inserts were installed to protect all storm sewer inlets from debris.

4 UNDERGROUND STORAGE TANK DECOMMISSIONING

MFA conducted a site assessment in support of the permanent closure and removal of two USTs at the Property. The former UST locations are shown in Figure 4-1. Photographs of the UST removal, soil excavation, and groundwater treatment activities are included in Appendix E. The site assessment was performed by Carolyn Wise of MFA, a certified site assessor (Site Assessor No. 8277112), consistent with the UST regulations put forth in WAC 173-360 and Ecology Guidance for Site Checks and Site Assessments for Underground Storage Tanks (Ecology, 2003). Wyser removed and decommissioned the USTs. A UST Closure and Site Assessment form, a Site Assessment Checklist, and other related UST-decommissioning documentation are included as Appendix F.

One 1,000-gallon leaded gasoline UST and one 1,000-gallon heating oil UST were decommissioned and removed from the Property on September 27, 2016. The GPR survey report had indicated that a possible third UST may have been nested between and below the two USTs, but only two USTs were encountered.

The Property, and therefore the USTs, were formerly owned by VSF, but the current landowner is Coulter Properties, LLC (Coulter). Coulter leases the Property to the current dealership owner, Dwayne Lane's Auto Family. Installation and closure dates were provided in Ecology's UST database (provided in Appendix F); however, based on discussion with Ecology during the UST removal, those dates are not reliable and the actual dates are unknown. MFA was unable to locate any records pertaining to compliance and/or performance of the USTs.

Sound Testing of Seattle, Washington inerted the USTs with carbon dioxide. Once the USTs were inerted, Sound Testing considered them safe for removal and transport. Marine Vacuum Service, Inc. (Marvac) of Seattle, Washington emptied the USTs of residual materials and triple-rinsed them. Approximately 300 gallons of emulsified fuel and water were removed from the leaded gasoline UST, and approximately 500 gallons of pea gravel were removed from the heating oil UST and transported to Marvac's facility for processing. The presence of pea gravel in the heating oil tank suggests that the tank was closed in place, which is consistent with information obtained during interviews conducted as part of the 2001 Phase I ESA (GeoEngineers, Inc., 2001). The Phase I ESA report indicates that the tanks were closed in place in the 1960s.

The two USTs were single-walled, coated steel tanks, 4 feet in diameter and 12 feet in length, with no secondary containment structures. At least three pea-size holes were visible at the base of the removed heating oil UST, which appeared to be the result of corrosion. Underground product and ventilation piping associated with the USTs were also present and were removed as part of tank closure activities. A product line with a pipe coupling was encountered, extending from the heating oil UST north to the auto sales and service building, and was cut off at the northern limit of the excavation. The remaining section of pipe likely extends under the auto sales and service building. A supply line from the leaded gasoline UST was encountered, extending from the south end of the UST toward the south and off the Property. The pipe was cut off at the southern limit of the excavation, at the Property boundary. However, during excavation activities, the pipe was no longer present, suggesting it may have formerly been cut at a point south of the Property boundary; the remaining section of pipe may have come loose from the sidewall. A corroded steel plate was observed on the leaded gasoline tank that appeared to read "Chevron Gasoline." No identifying markings were observed on the heating oil tank. The emptied and cleaned tanks were disposed of as scrap metal at Skagit River Steel & Recycling in Burlington, Washington (see Appendix F).

It appeared that native soil was used as backfill when the USTs were installed as there was no discernible soil-backfill interface. No groundwater was encountered in the excavation during UST and equipment removal.

5 EXCAVATION OF CONTAMINATED SOIL

5.1 Excavation

During the UST removal and soil excavation, soil was continuously evaluated for impacts using field screening methods, including visual and olfactory observations and organic vapors monitoring using a photoionization detector (PID). PID measurements from soil collected within the PCS excavation ranged between 0.0 and 2,050 parts per million (ppm). Based on field observations, shallow soil above the USTs, from ground surface to approximately 5 feet bgs, did not appear to be impacted; therefore, this overburden soil was segregated and stockpiled on the Property for characterization to determine eligibility for reuse as backfill (see Section 5.1.2).

During excavation activities, PCS was observed beneath the pipe coupling on the product line extending from the heating oil UST north to the auto sales and service building. Stained soil with strong odors was observed beneath the coupling from approximately 6 feet to 15 feet bgs. The location of impacts relative to the coupling suggests that heating oil was released from the coupling during the tank's operation. A slight odor and discoloration were also observed in the soil immediately beneath the heating oil UST, below the holes that were observed in the bottom of the tank, as discussed above. These observations suggest fuel had been present in the tank at some point after the holes were present, resulting in a release from the bottom of the tank. No soil impacts were observed beneath the leaded gasoline UST or its supply line.

PCS observed in the tank excavation was removed—to the extent feasible, given the physical constraints present—including the Property boundary limitation, utilities, and the auto sales and service building. The UST excavation was expanded to remove PCS from below and adjacent to the heating oil UST and along and outward from the heating oil tank supply line from between approximately 5 and 15 feet bgs. Excavated PCS was temporarily stored on the Property until it could be loaded into trucks and transported off-site for disposal (See Section 5.1.3).

PCS was identified along the west and north sidewalls of the final excavation extents (see Figure 4-1) from approximately 7 to 15 feet bgs; PID measurements recorded along the west and north sidewalls were 900.8 and 358.8 ppm, respectively. PCS was left in place in the west and north sidewalls because it was not feasible to excavate any closer to the building in that depth range. The excavation was offset a minimum of 15 feet away from the building foundation, with a vertical sidewall slope. Based on the building structural assessment (see Section 3.2), Kingworks recommended excavating no closer than five feet to the building, with a 1:1 sidewall slope to protect the structural integrity of the building. It may have been feasible to excavate shallower material closer to the building (up to five feet away), but it was not feasible to excavate at the depth PCS was observed. In addition, significant sloughing was observed along the sidewalls of the excavation due to the type of soils present in the excavation and the depth of groundwater (see Photos No. 6 through No. 8 in Appendix E).

No groundwater was encountered in the excavation during UST and equipment removal, but groundwater was encountered during PCS excavation at approximately 10 to 11 feet bgs. A sheen was initially observed in the excavation, but decreased during dewatering efforts and as the excavation footprint expanded. Groundwater management, treatment, and sampling activities are discussed in Section 5.2.

5.1.1 Soil Confirmation Sampling

During the UST removal and decommissioning, soil confirmation sampling was conducted consistent with UST regulations put forth in WAC 173-360, Ecology UST site assessor guidance (Ecology, 2003), and Ecology's Guidance for Remediation of Petroleum Contaminated Sites (Ecology, 2016).

Confirmation samples were collected from the initial UST excavation in the following locations and analyzed as discussed below (see Figure 4-1):

- Beneath underground product piping extending south from the leaded gasoline UST (SSW01-S-3.0).
- Each of the four sidewalls (ESW01-S-6.0, SSW02-S-6.0, WSW01-S-6.0, NWS01-S-6.0).
- Below the leaded gasoline UST, at the base of the excavation in that area (BASE02-S-10.0).
- Beneath the heating oil UST (BASE01-S-10.0), although this sample was not analyzed due to visible evidence of contamination, including staining and strong odors in soil and an elevated PID reading of 110.3 ppm, suggesting a release had occurred.

As discussed in the previous section, excavation was extended to remove PCS associated with the heating oil tank and piping, as identified by field screening. Confirmation samples were collected from the base (BASE03-S-15.0) and sidewalls (ESW02-S-7.5, NSW02-S-7.5, WSW02-S-7.5, and SSW03-S-7.5) of the extended excavation. Sidewall samples were collected within the capillary zone and in areas with the darkest soil staining and strongest odors, at approximately 7.5 feet bgs. A base sample was collected at approximately 15 feet bgs in the excavation, the maximum excavation depth and standard point of compliance for soil.

A backhoe was used to obtain soil from the excavation at desired locations and depths for sample collection. Soil samples were collected from the middle of the backhoe bucket, away from the surface and metal sides to avoid cross-contamination, using a stainless-steel spoon or a U.S. Environmental Protection Agency (USEPA) Method 5035 sampling kit. The stainless-steel spoon was decontaminated between sample locations. Soil was placed in laboratory-supplied containers appropriate for the selected analyses. A PID was used to measure organic vapor concentrations for each soil sample.

Soil samples were analyzed by OnSite Environmental, Inc. (OnSite), located in Redmond, Washington. A rush 24-hour laboratory turnaround time was requested for the confirmation samples to evaluate whether over-excavation of PCS was required.

Confirmation samples were analyzed consistent with the required testing for petroleum releases put forth in Model Toxics Control Act (MTCA) (WAC 173-340) Table 830-1 for releases of DRO and GRO, as follows:

- GRO by the Northwest Total Petroleum Hydrocarbon (NWTPH)-Gx Method
- DRO and ORO by the NWTPH-Dx Method
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX) by USEPA Method 8260B
- n-Hexane by USEPA Method 8015M
- Methyl t-Butyl Ether (MTBE) by USEPA Method 8260C
- Ethylene dichloride (EDC) by USEPA Method 8260C
- Ethylene dibromide by USEPA Method 8260C
- Napthalenes (including naphthalene, 1-methylnapthalene and 2-methylnapthalene) by USEPA Method 8270 selective ion monitoring (SIM)
- Total Lead by USEPA Method 6010C

Laboratory reports are included as Appendix G. Analytical results for the soil confirmation samples are summarized in Table 5-1. Analytical data and the laboratory's internal quality assurance and quality control data were reviewed to assess whether they met data quality objectives, consistent with USEPA procedures for evaluating laboratory analytical data (USEPA, 2014a, 2014b). A memorandum summarizing data validation procedures, data usability, and deviations from specific field and/or laboratory methods is presented as Appendix H. All analytical results were deemed usable for their intended use with the assigned qualifiers. Analytical results will be uploaded to Ecology's Environmental Information Management database following completion of the RI.

Confirmation sample results were compared to MTCA Method A cleanup levels (CULs) for unrestricted land use and default soil concentrations protective of groundwater (WAC 173-340-747), as provided in Ecology's Cleanup Levels and Risk Calculation (CLARC) database. Separate soil protective of groundwater screening levels were used for soil collected from the vadose and saturated zones, as provided in CLARC. Where no Method A CULs were available, the Method B standard table values for soil direct contact were used.

All constituents analyzed in the soil confirmation samples were either not detected or were detected at concentrations below MTCA Method A CULs, with the exception of two sidewall samples: WSW02-S-7.5 and NSW02-S-7.5, which were collected from the final west and north sidewalls of the excavation, respectively. In these two samples, DRO was detected above the MTCA Method A CUL, and naphthalenes were detected above the MTCA Method A CUL and the soil concentrations protective of groundwater. As discussed in the previous section, it was not feasible to excavate further to remove PCS in those locations.

5.1.2 Soil Stockpile Sampling

Overburden soil from the initial tank excavation (Stockpile 1) and from the expanded PCS removal excavation (Stockpile 2) were segregated and stockpiled for characterization for potential reuse as backfill consistent with Ecology's Guidance for Remediation of Petroleum Contaminated Sites (Ecology, 2016). The soil stockpiles were stored securely on the Property and covered with plastic sheeting when not being handled or tested. The volume of soil in the stockpiles was estimated to be approximately 40 cubic yards in Stockpile 1 and 150 cubic yards in Stockpile 2. Discrete soil samples were collected from the stockpiles at the frequency required under Ecology's UST regulations based on the stockpile volumes (Ecology, 2003). Three samples were collected from Stockpile 1 (ST01-1 to ST01-3) and five samples were collected from Stockpile 2 (ST02-1 to ST02-5).

Soil samples were analyzed by OnSite. A rush two-day laboratory turnaround time was requested to evaluate the soil for reuse or off-site disposal within the project timeline.

Stockpile samples were analyzed for the following:

- GRO by the NWTPH-Gx Method
- DRO and ORO by the NWTPH-Dx Method
- BTEX by USEPA Method 8260B
- Polychlorinated biphenyls by USEPA Method 8082A
- MTBE by USEPA Method 8021B
- Napthalenes by USEPA Method 8270 SIM
- Carcinogenic polycyclic aromatic hydrocarbons by USEPA Method 8270 SIM
- Total Lead by USEPA Method 6010C

Laboratory reports are included as Appendix G. Analytical results for the soil stockpile samples are summarized in Table 5-2. Analytical data and the laboratory's internal quality assurance and quality control data were reviewed to assess whether they met data quality objectives, consistent with USEPA procedures for evaluating laboratory analytical data (USEPA, 2014a, 2014b). A memorandum summarizing data validation procedures, data usability, and deviations from specific field and/or laboratory methods is presented as Appendix H. All analytical results were deemed usable for their intended use with the assigned qualifiers.

Stockpile sample results were compared to Category 1 and 2 criteria for reuse anywhere the use is allowed under other regulations, or for use as backfill above the water table, respectively (Ecology, 2016). Both stockpiles had detections of at least one constituent above Category 1 and Category 2 reuse criteria, primarily DRO. Therefore, the stockpiled soil was deemed unusable for use as backfill on the Property. Stockpiled soil was disposed of off-Property, as described in the next section.

5.1.3 PCS Disposal

PCS was loaded into haul trucks and transported to CEMEX in Everett, Washington. Loose soil was brushed off truck trailers before the vehicles left the Property to prevent soil from falling off the truck during transit. A total of 601.21 tons of PCS were excavated and disposed of offsite. A summary ticket for all trucks and associated tonnages of PCS is provided in Appendix I.

5.2 Excavation Dewatering

During excavation and before backfilling, groundwater accumulating in the excavation was removed using pumps and treated using an on-site water treatment system (OWTS) provided by Wyser. The treated groundwater was tested for compliance with discharge quality maximum concentration levels, and then discharged to the sanitary sewer consistent with a project-specific special waste discharge agreement with the City of Sedro-Woolley's Wastewater Treatment Plant (WWTP). All groundwater removed from the excavation was treated and tested prior to discharge.

5.2.1 On-Site Water Treatment System

The OWTS was a multi-unit system, including two storage tanks (one 21,000-gallon tank and one 18,000-gallon tank), particulate filter units, and granular activated carbon (GAC) vessels connected in series. The groundwater was first pumped into the 18,000-gallon storage tank, which was temporarily located in the southeast corner of the Property. The water was then pumped through a sediment filter and through two GAC vessels (connected in series) and into a 21,000-gallon storage tank to be sampled prior to discharge to the sanitary sewer.

The storage tanks were equipped with over weirs and under weirs for removal of settleable solids and separated-phase hydrocarbons (i.e., free product), as well as a sorbent boom at the inlet to remove any floating free product.

The filter unit was comprised of one bag filter and two cartridge filters capable of removing particulates as small as 5 microns: fine suspended solids that could clog the GAC vessels in the water treatment process. A pump was installed at the inlet of the filter unit in the event that gravity flow was not sufficient to maintain a steady flow through the unit.

The two in-line GAC vessels provided for removal of dissolved-phase chemicals. The vessels were configured with two sets of 2,000-pound GAC units in an interchangeable lead-lag formation (i.e., in series). The influent water entered the first GAC vessel (the lead), which treated the influent to the discharge criteria. The secondary GAC vessel, the lag, also assisted in this process. The system was piped and valved in such a way that the two vessels could be switched if contaminant breakthrough occurred in one of the vessels.

MFA collected a post-treatment water sample from the 21,000-gallon storage tank (BTPOST-WS-901) and submitted the sample to OnSite to be analyzed for the chemicals specified in the special waste discharge agreement with WWTP. A rush same-day laboratory turnaround time was requested to evaluate the water for discharge within the project timeline.

Laboratory reports are included as Appendix G. Analytical results for the post-treatment water sample are summarized in Table 5-3. Analytical data and the laboratory's internal quality assurance and quality control data were reviewed to assess whether they met data quality objectives, consistent with USEPA procedures for evaluating laboratory analytical data (USEPA, 2014a, 2014b). A memorandum summarizing data validation procedures, data usability, and deviations from specific field and/or laboratory methods is presented as Appendix H. All analytical results were deemed usable for their intended use with the assigned qualifiers.

Lead was the only constituent detected in the water sample. All chemical concentrations were reviewed for compliance with the discharge quality maximum concentration levels specified in the WWTP discharge agreement and submitted to WWTP for approval to discharge.

5.2.2 Sanitary Sewer Discharge

Following WWTP approval, groundwater was discharged to the sanitary sewer consistent with the WWTP special waste discharge agreement. All groundwater extracted during the interim action was discharged to the sanitary sewer on October 10, 2016; the total volume discharged was 18,218 gallons (see Appendix J).

5.3 Backfill

After completion of excavation activities, the excavation was backfilled using clean import materials obtained from Skagit Aggregates State Pit No. M272. A total of 61.03 tons of 2 ½-inch by ¾-inch gravel, 607.19 tons of pit run, and 61.79 tons of 1 ¼-inch rock were used to backfill the excavation. A summary of materials imported and exported during the interim action with associated tonnages and backfill material testing results are provided in Appendix K.

The bottom 1 to 2 feet of the excavation footprint was backfilled with the clean, imported ¾- to 2-inch gravel. A temporary well point was installed in the excavation to extract water from the excavation during backfilling activities. The extracted water was pumped into the OWTS.

Backfilling above the ¾- to 2-inch gravel layer was completed as 1- to 2-foot lifts of clean pit run material mixed with an ISBR product (Oxygen Release Compound Advanced® [ORC-A]). The ORC-A product and application details are provided in detail below in Section 6. Amended backfill mixed with ORC-A was placed in lifts up to the maximum water table height, based on historical observations (i.e., approximately 6 feet bgs).

On top of the amended backfill, the excavation footprint was backfilled with clean import pit run and compacted. Approximately 61.79 tons of crushed surfacing base course were placed across the top of the pit run prior to asphalting. The final grade was completed with asphalt to match the surrounding grade.

Compaction tests were performed by MTC to ensure that a compaction of at least 95 percent was met throughout the excavation. The compaction reports are included as Appendix L.

5.4 As-Built

The final limits of the excavation were surveyed by Wilson before the excavation was backfilled. The excavation survey is included in Appendix D.

6 IN SITU BIOREMEDIATION

ORC-A, an ISBR product, was used as a backfill amendment in the excavation to treat remaining total petroleum hydrocarbons in the vadose zone and in groundwater. ORC-A product specifications are included in Appendix M. ORC-A accelerates the naturally occurring microbial degradation of petroleum hydrocarbons in saturated soil and groundwater by enhancing aerobic biodegradation processes. ORC-A provides a controlled-release supplemental source of oxygen, which enables the indigenous microorganisms to expedite the biodegradation process. The ORC-A product will, when hydrated (with groundwater), produce a controlled release of oxygen for up to 12 months on a single application, which will assist in accelerating aerobic contaminant biodegradation in groundwater and saturated soils.

ORC-A was received from the manufacturer in the form of dry pellets, which were mixed directly with clean overburden and placed in 1- to 2-foot lifts from approximately 6 to 15 feet bgs, from the bottom of the excavation, throughout the saturated zone, and into the vadose zone. This application depth will allow the product to be in contact with groundwater throughout the saturated zone and in the capillary zone as water levels fluctuate.

7 FINAL INSPECTION

A final inspection of the excavation work was completed on October 28, 2016. The paved asphalt cover was observed to be slightly uneven with minor pooling of water. MFA confirmed that Wyser will repair the asphalt to even out the grade. Striping of the asphalt may be required after it is repaired. No other unresolved issues or work items remained at that time.

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.

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TABLES

Table 5-1
Soil Confirmation Sample Analytical Results
North Cascade Ford
VSF Properties, LLC
Sedro-Woolley, Washington

			Location:	BASE02	ESW01	NSW01	SSW01	SSW02	WSW01	BASE03	ESW02	NSW02	SSW03	WSW02
			Collection Date:	9/27/2016	9/27/2016	9/27/2016	9/27/2016	9/27/2016	9/27/2016	9/29/2016	9/30/2016	9/29/2016	9/29/2016	9/29/2016
			Collection Depth (ft bgs):	10	6	6	3	6	6	15	7.5	7.5	7.5	7.5
	MTCA A/B	MTCA Protective of Groundwater, Saturated[b]	MTCA Protective of Groundwater, Vadose at 13°C[b]											
Metals (mg/kg)														
Lead	250	150	3000	6.6 U	6.6 U	6.1 U	**6.8**	**13**	6.1 U	7.9 U	6.7 U	7.1 U	5.6 U	6.8 U
VOCs (mg/kg)														
1,2-Dibromoethane	0.005	NV	NV	0.0015 U	0.0014 U	0.0013 U	0.0017 U	0.0013 U	0.0012 U	0.0023 U	0.0015 U	0.093 U	0.0017 U	0.081 U
1,2-Dichloroethane	11	0.00156	0.0231	0.0015 U	0.0014 U	0.0013 U	0.0017 U	0.0013 U	0.0012 U	0.0023 U	0.0015 U	0.0016 U	0.0017 U	0.0017 U
Benzene	0.03	0.00174	0.0274	0.0015 U	0.0014 U	0.0013 U	0.0017 U	0.0013 U	0.0012 U	0.0023 U	0.0015 U	0.0016 U	0.0017 U	0.0017 U
Ethylbenzene	6	0.343	NV	0.0015 U	0.0014 U	0.0013 U	0.0017 U	0.0013 U	0.0012 U	0.0023 U	0.0015 U	**0.41**	0.0017 U	**0.22**
m,p-Xylene	9	0.831	NV	0.003 U	0.0028 U	0.0026 U	0.0035 U	0.0027 U	0.0023 U	0.0046 U	0.003 U	**0.92**	0.0033 U	**0.35**
Methyl tert-butyl ether	0.1	0.00723	0.103	0.0015 U	0.0014 U	0.0013 U	0.0017 U	0.0013 U	0.0012 U	0.0023 U	0.0015 U	0.0016 U	0.0017 U	0.0017 U
n-Hexane	4800	1.77	68.9	0.083 U	0.088 U	0.079 U	0.095 U	0.075 U	0.077 U	0.11 U	0.082 U	0.95 U	0.066 U	0.84 U
o-Xylene	16000	0.844	14.4	0.0015 U	0.0014 U	0.0013 U	0.0017 U	0.0013 U	0.0012 U	0.0023 U	0.0015 U	0.093 U	0.0017 U	0.081 U
Toluene	7	0.273	4.52	0.0076 U	0.007 U	0.0064 U	0.0087 U	0.0067 U	0.0058 U	0.011 U	0.0074 U	0.46 U	0.0083 U	0.4 U
SVOCs (mg/kg)														
1-Methylnaphthalene	34.5	NV	NV	0.0088 U	0.0088 U	**0.1**	**0.027**	0.0074 U	0.0081 U	**0.017**	**0.075**	**18**	0.0075 U	**10**
2-Methylnaphthalene	320	NV	NV	0.0088 U	0.0088 U	**0.16**	**0.0094**	0.0074 U	0.0081 U	**0.02**	**0.016**	**27**	0.0075 U	**15**
Naphthalene	5	0.236	4.45	0.0088 U	0.0088 U	**0.13**	**0.0084**	0.0074 U	0.0081 U	0.011 U	**0.047**	**8.2**	0.0075 U	**2.4**
Calculated Total Napthalenes	5	0.236	4.45	0.0264 U	0.0264 U	**0.39**	**0.0448**	0.0222 U	0.0243 U	**0.048**	**0.138**	**53.2**	0.0225 U	**27.4**
TPH (mg/kg)														
Gasoline Range Hydrocarbons	100[a]	NV	NV	8.3 U	8.8 U	7.9 U	9.5 U	7.5 U	7.7 U	11 U	8.2 U	95 U	6.6 U	84 U
Diesel Range Hydrocarbons	2000	NV	NV	33 U	33 U	31 U	28 U	**820**	30 U	40 U	**270**	**14,000**	28 U	**9,600**
Lube Oil Range Hydrocarbons	2000	NV	NV	66 U	66 U	61 U	56 U	400 U	61 U	79 U	68 U	430 U	56 U	370 U

NOTES:

Result values in **bold** font indicate a detection. Only detected concentrations are compared to CULs.

Detections that exceed a MTCA A/B CUL are shaded gray.

Detections that exceed both a MTCA A/B CUL and soil concentrations protective of groundwater are shaded green.

°C = degrees Celsius.

CUL = cleanup level.

ft bgs = feet below ground surface.

J = Result is an estimated value.

mg/kg = milligrams per kilogram.

MTCA = Model Toxics Control Act (Washington Administrative Code 173-340).

MTCA A/B = MTCA Method A CUL for unrestricted land use applied when available; when a Method A CUL is not available, a MTCA Method B standard table value for soil direct contact is applied.

NV = no value.

SVOC = semivolatile organic compound.

TPH = total petroleum hydrocarbon.

U = result is not detected at or above the method reporting limit.

VOC = volatile organic compound.

[a] CUL is for gasoline range hydrocarbons with no detectable benzene.

[b] The following samples were collected from the saturated zone and compared to "MTCA Protective of Groundwater, Saturated" values : BASE02 and BASE03. All other soil samples were collected from the vadose zone and are compared to "MTCA Protective of Groundwater, Vadose at 13 °C" values.

Table 5-2
Soil Stockpile Sample Analytical Results
North Cascade Ford
VSF Properties, LLC
Sedro-Woolley, Washington

		Location:	STOCKPILE-01			STOCKPILE-02				
		Sample Name: Collection Date:	ST01-1 9/27/2016	ST01-2 9/27/2016	ST01-3 9/27/2016	ST02-1 9/30/2016	ST02-2 9/30/2016	ST02-3 9/30/2016	ST02-4 9/30/2016	ST02-5 9/30/2016
	Soil Category 1 Reuse Criteria, No detectable Petroleum Components	Soil Category 2 Reuse Criteria, Commercial Fill Above Water Table								
Metals (mg/kg)										
Lead	<17	17 - 50	**15**	5.6 U	**18**	**38**	5.4 U	**14**	**11**	**16**
PCB Aroclors (mg/kg)										
Aroclor 1016	NV	NV	0.054 U	0.056 U	0.055 U	0.057 U	0.054 U	0.06 U	0.058 U	0.056 U
Aroclor 1221	NV	NV	0.054 U	0.056 U	0.055 U	0.057 U	0.054 U	0.06 U	0.058 U	0.056 U
Aroclor 1232	NV	NV	0.054 U	0.056 U	0.055 U	0.057 U	0.054 U	0.06 U	0.058 U	0.056 U
Aroclor 1242	NV	NV	0.054 U	0.056 U	0.055 U	0.057 U	0.054 U	0.06 U	0.058 U	0.056 U
Aroclor 1248	NV	NV	0.054 U	0.056 U	0.055 U	0.057 U	0.054 U	0.06 U	0.058 U	0.056 U
Aroclor 1254	NV	NV	0.054 U	0.056 U	0.055 U	0.057 U	0.054 U	0.06 U	0.058 U	0.056 U
Aroclor 1260	NV	NV	0.054 U	0.056 U	0.055 U	0.057 U	0.054 U	0.06 U	0.058 U	0.056 U
Total Aroclors	<0.04	<0.04	0.054 U	0.056 U	0.055 U	0.057 U	0.054 U	0.06 U	0.058 U	0.056 U
VOCs (mg/kg)										
Benzene	<0.005	0.005 - 0.03	0.02 U	0.02 U	**0.026**	0.02 U	0.096 U	0.02 U	0.02 U	0.1 U
Ethylbenzene	<0.005	0.005 - 6	0.046 U	0.059 U	**0.056**	0.069 U	0.48 U	0.08 U	0.074 U	0.52 U
Methyl tert-butyl ether	<0.005	0.005 - 0.1	0.046 U	0.059 U	0.055 U	0.069 U	0.48 U	0.08 U	0.074 U	0.52 U
m,p-Xylene	NV	NV	**0.051**	0.059 U	**0.18**	0.069 U	0.48 U	0.08 U	0.074 U	**0.79**
o-Xylene	NV	NV	0.046 U	0.059 U	**0.086**	0.069 U	0.48 U	0.08 U	0.074 U	0.52 U
Toluene	<0.005	0.005 - 7	0.046 U	0.059 U	0.055 U	0.069 U	0.48 U	0.08 U	0.074 U	0.52 U
Total Xylenes	<0.015	0.015 - 9	**0.074**	0.059 U	**0.266**	0.069 U	0.48 U	0.08 U	0.074 U	**1.05**
SVOCs (mg/kg)										
1-Methylnaphthalene	NV	NV	**0.017**	0.0074 U	**0.024**	**0.058**	**0.5**	**0.1**	**0.042**	**0.22**
2-Methylnaphthalene	NV	NV	**0.016**	0.0074 U	**0.026**	**0.06**	**0.37**	**0.1**	**0.045**	**0.24**
Benzo(a)anthracene	NV	NV	**0.0079**	0.0074 U	**0.03**	**0.053**	**0.014**	**0.032**	**0.026**	**0.039**
Benzo(a)pyrene	NV	NV	**0.0092**	0.0074 U	**0.039**	**0.075**	**0.016**	**0.032**	**0.028**	**0.049**
Benzo(b)fluoranthene	NV	NV	**0.014**	0.0074 U	**0.044**	**0.09**	**0.023**	**0.037**	**0.033**	**0.063**
Benzo(j+k)fluoranthene	NV	NV	0.0072 U	0.0074 U	**0.016**	0.038 U	**0.0073**	**0.0099**	**0.0092**	0.038 U
Chrysene	NV	NV	**0.012**	0.0074 U	**0.037**	**0.073**	**0.057**	**0.039**	**0.037**	**0.19**
Dibenzo(a,h)anthracene	NV	NV	0.0072 U	0.0074 U	0.0073 U	0.038 U	0.0072 U	0.008 U	0.0077 U	0.038 U
Indeno(1,2,3-cd)pyrene	NV	NV	**0.0078**	0.0074 U	**0.025**	**0.045**	**0.012**	**0.016**	**0.017**	**0.041**
Naphthalene	NV	NV	**0.012**	0.0074 U	**0.021**	**0.046**	**0.11**	**0.057**	**0.032**	**0.24**
Total Naphthalenes	<0.05	0.05 - 5	**0.045**	0.0074 U	**0.071**	**0.164**	**0.98**	**0.257**	**0.119**	**0.7**
cPAH TEQ	<0.05	0.05 - 0.1	**0.013**	0.0074 U	**0.051**	**0.098**	**0.023**	**0.042**	**0.037**	**0.069**
TPH (mg/kg)										
Gasoline Range Hydrocarbons	<5	5 - 30	4.6 U	5.9 U	5.5 U	6.9 U	48 U	8 U	7.4 U	52 U
Diesel Range Hydrocarbons	<25	25 - 200	27 U	28 U	43 U	**560**	**9800**	**210**	**880**	**32000**
Lube Oil Range Hydrocarbons	<100	100 - 200	**120**	56 U	**320**	**160**	580 U	60 U	**150**	1400 U

NOTES:
Result values in bold font indicate a detection.
Detections that exceed soil reuse criteria are shaded. Non-detect results are not evaluated against reuse criteria.
Soil reuse criteria were obtained from Ecology's Guidance for Remediation of Petroleum Contaminated Sites, Publication No. 10-09-057, Table 12.1.
mg/kg = milligrams per kilogram.
NV = no value.
PCB = polychlorinated biphenyls.
SVOC = semivolatile organic compound.
Total Aroclors = sum of all PCB Aroclors.
Total Naphthalenes = sum of 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene.
Total Xylenes = sum of m,p-xylene and o-xylene.
TPH = total petroleum hydrocarbon.
U = Result is not detected at or above method reporting limit.
VOC = volatile organic compound.

Table 5-3
Post-Treatment Water Sample Analytical Results
North Cascade Ford
VSF Properties, LLC
Sedro-Woolley, Washington

Location:	BAKER TANK
Sample Name:	BTPOST-WS-01
Collection Date:	10/5/2016
Total Metals (ug/L)	
Lead	**1.1**
VOCs (ug/L)	
Benzene	1 U
Ethylbenzene	1 U
o-Xylene	1 U
Toluene	1 U
Xylene, m-,p-	1 U
TPH (mg/L)	
Diesel Range Organics	0.26 U
Residual Oil Range Organics	0.41 U
Gasoline Range Organics	100 U
Chemical Parameters (s.u.)	
pH	**9.6**

NOTES:

Result values in bold font indicate a detection.

mg/L = milligrams per liter.

s.u. = standard pH units.

TPH = total petroleum hydrocarbon.

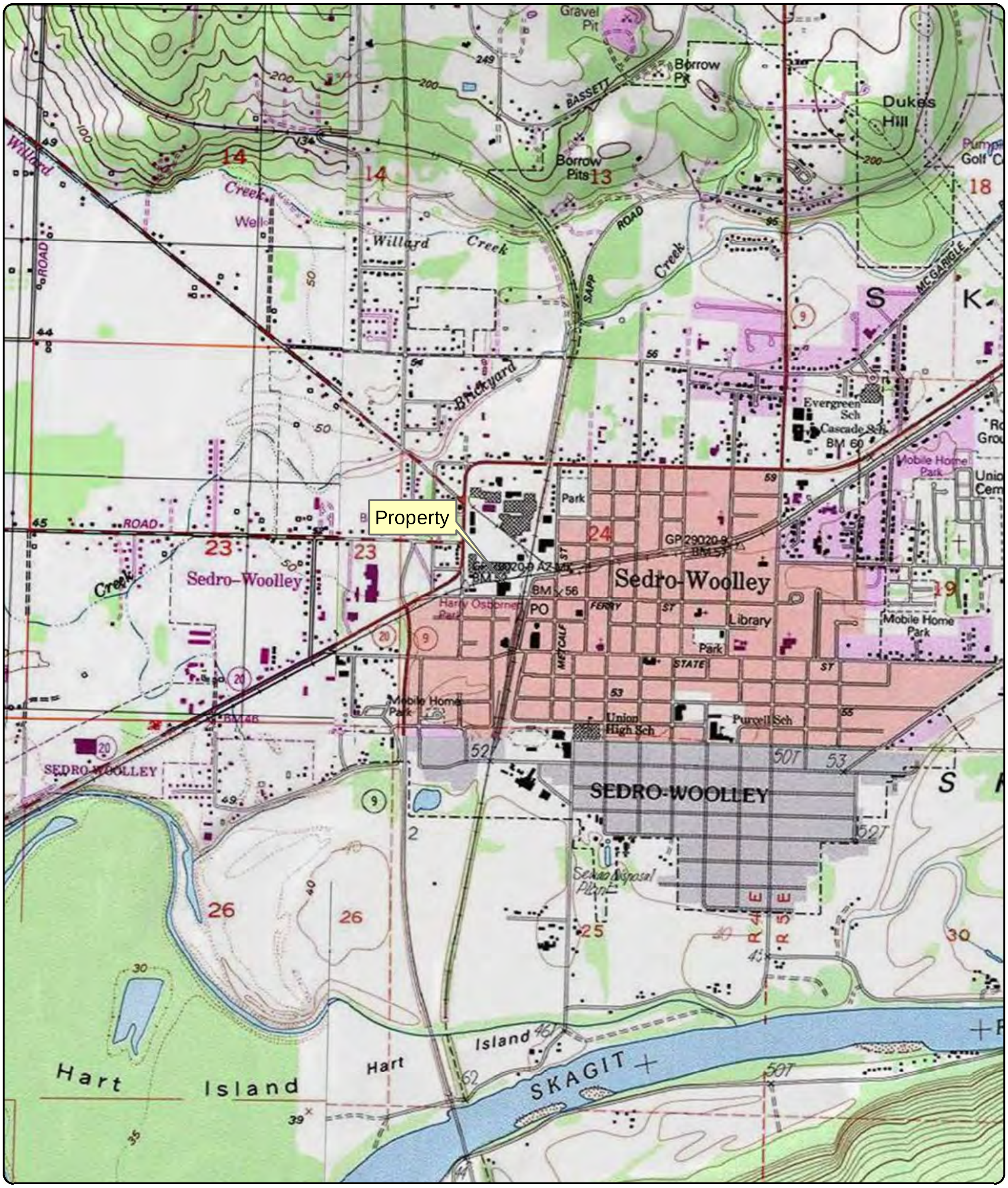
U = Result is not detected at or above method reporting limit.

ug/L = micrograms per liter.

VOC = volatile organic compound.

FIGURES

Path: X:\0747.01\Projects\04 Historical Data Memo\Fig1_Property Location.mxd
Print Date: 11/30/2015
Approved By: H. Good
Produced By: cwise
Project: 0747.01.05



Site Address: 116 W Ferry Street, Sedro-Woolley, Washington
Source: US Geological Survey (1990) 7.5-minute
topographic quadrangle: Sedro-Woolley North
Section 24, Township 35 North, Range 4 East

Figure 1-1
Property Location

North Cascade Ford Property
Sedro-Woolley, Washington

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0 750 1,500
Feet

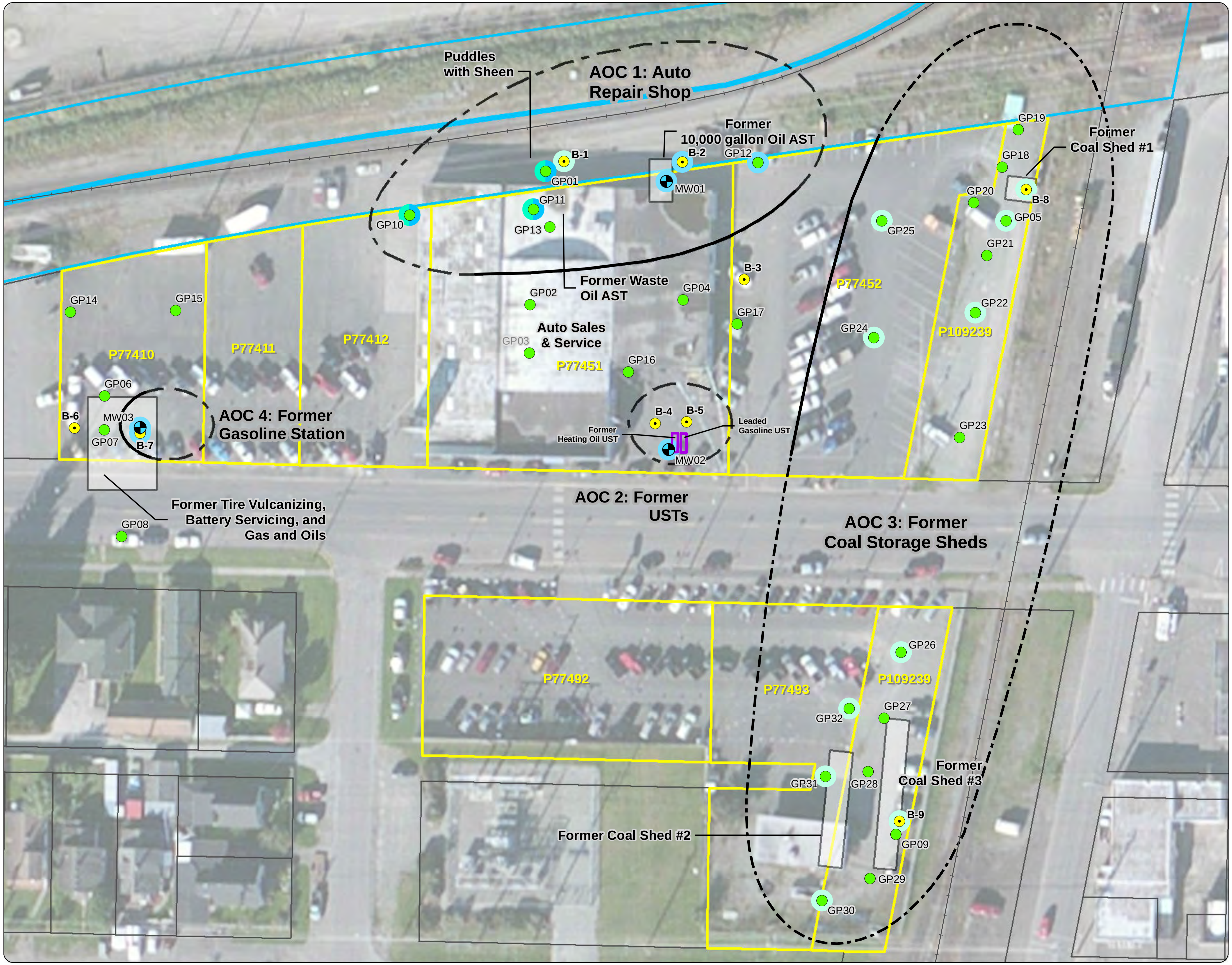

Figure 2-1
Site Features and Areas of Concern

North Cascade Ford Property
Sedro-Woolley, Washington

Legend

- ● Boring Location
- ● Monitoring Well
- ● Phase II ESA Boring Location
- ● Soil Exceedance*
- ● Groundwater Exceedance*
- ● Soil and Groundwater Exceedance*
- AOC Boundary (dashed where inferred)
- ▭ Former USTs
- ▭ Property Parcel and Parcel Number
- ▭ BNSF-owned Parcels
- ▭ Skagit County Parcels

Notes:
1. All historical feature locations are approximate and shown for relative location reference only.
2. Chemical detections in soil samples that were collected below the water table during the 2011 Phase II ESA were not compared to soil cleanup levels.
3. AOC = area of concern.
4. AST = aboveground storage tank.
5. BNSF = Burlington Northern Santa Fe Railway Company.
6. ESA = environmental site assessment.
7. UST = underground storage tank.

*Model Toxics Control Act Method A cleanup level exceedance detected.

0 30 60
Feet

Source: Aerial photograph obtained from Esri, ArcGIS Online; parcels obtained from Skagit County GIS Department.

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Figure 4-1
Interim Remedial Action Excavation and Sample Locations

North Cascade Ford Property
Sedro-Woolley, Washington

Legend

- ● Confirmation Sample Location
- ⊗ Monitoring Well Location (Decommissioned)
- ● MFA Boring Location (Historical)
- ● Phase II ESA Boring Location
- — Former Vent Line
- — Former Product Line
- - - Sewer Line
- - - Gas Line
- - - Water Line
- ☐ Former USTs
- ☐ Excavation Extent
- ☐ Property Parcel

Notes:
1. ESA = environmental site assessment.
2. UST = underground storage tank.
3. MFA = Maul Foster & Alongi, Inc.
4. Location of remaining petroleum-contaminated soil along sidewalls as observed during excavation.

0 5 10
Feet

Source: Aerial photograph (2015) obtained from Skagit County iMap. Parcels obtained from survey.

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Path: X:\0747.01\Projects\06\Fig5-1_Interim Remedial Action Excavation and Sample Locations.mxd

Print Date: 11/8/2016

Approved By: C. Wise

Produced By: estrandhagen

Project: 0747.01.06

APPENDIX A

GPR SURVEY REPORT

Materials Testing & Consulting, Inc.
Geotechnical Engineering & Consulting • Special Inspection • Materials Testing • Environmental Consulting

June 22, 2016

Heather Good, L.H.G.
Maul Foster & Alongi, Inc.
1329 North State Street, Suite 301
Bellingham, WA 98225

Subject: **Ground Penetrating Radar Underground Storage Tank Survey**
North Cascades Ford Dealership – 116 West Ferry Street
Sedro Woolley, Washington

MTC Project No.: **16B119**

Dear Heather:

At your request, Materials Testing & Consulting, Inc. (MTC) has completed a limited-scope non-destructive subsurface survey at the address listed above.

MTC understands this exploration is requested by the client with the goal of identifying and mapping underground storage tanks and other observable utilities within the three predetermined locations at the property located at 116 West Ferry Street, Sedro Woolley, WA. The three predetermined locations specified by the client resided in three separate parcels labeled as P77410, P109239 and P77451 which are referred to herein as Location 1, Location 2, and Location 3 respectively.

P77452

Site Investigation Methodology:

On June 21, 2016, an MTC Senior GPR Technician and Staff Geologist visited the site to establish a surveying grid and perform nondestructive subsurface imaging. All locations of interest were observed to be graded and asphalt paved parking areas with the exception of the east side of Location 2 which was a graded gravel lot abutting an existing low concrete wall. A representative of the client met with MTC on site to assist in establishing perimeters for each survey location. A non-permanent 'hub' marker was placed in the southeast corner of each survey location as a reference point for located items and for grid layout. The markers consist of yellow ribbon flagging nailed into the existing asphalt (see photo 1.) Locations of identified possible UST's were recorded in reference to gridlines set by MTC in the field and to the markers in the southeast corner of each location as well.

Corporate • 777 Chrysler Drive • Burlington, WA 98233 • Phone 360.755.1990 • Fax 360.755.1980
NW Region • 805 Dupont St, Suite 5 • Bellingham, WA 98226 • Phone 360.647.6061 • Fax 360.647.8111
SW Region • 2118 Black Lake Blvd. S.W.• Olympia, WA 98512 • Phone 360.534.9777 • Fax 360.534.9779
Kitsap Region • 5451 N.W. Newberry Hill Road, Suite 101 • Silverdale, WA 98383 • Phone/Fax 360.698.6787
Visit our website: www.mtc-inc.net

Gridlines were established in each location on a 10.0' by 10.0' grid. Subsurface imaging was performed using a 400hz frequency Ground Penetrating Radar (GPR) antenna with images taken at depths of 16.0' as full cross sections of each location along each established gridline. Representative signals of scans containing anomalies analogous with typical utility lines and USTs were marked with non-permanent marking in the field on the asphalt and on an aerial map of each location with gridlines overlain as seen below.

Site Observations and Interpretations:

Location 1:

At Location 1, the total area scanned stretched 105.0' north to south and 115.0' east to west. Subsurface conditions at Location 1 were observed to be significantly variable in comparison to Location 2 and Location 3, resulting in rendering images with significant irregular anomalies at varying depths and locations (Image C). The anomalies were generally observed to be non-continuous and are interpreted to be attributed to a heterogeneous mixture of subsurface materials.

One utility line was observed to reside in the vicinity of grids C.2/1-11, stretching continuously from south to north for the extent of the area scanned. The utility was interpreted to be approximately 24" below the existing grade.

Signals indicative of a similar unknown utility were sporadically observed along grid line D running parallel with the observed line at grid C.2 (Image A). However, these signals could not be found to be continuous and may be attributed to the existing concrete curb which extends along grid line C.8 across the entire length of the scanned area Location 1.

Anomalies of a relatively variable nature interpreted as likely buried concrete or debris were commonly observed in an roughly 200 sq.-ft. area located in the vicinity of gridlines F.5-G.5/6-8. The objects represented by these signals were observed to be at a depth range of 18" to 40" below the existing grade (Image B).

Location 2:

At Location 2, the total area scanned stretched 230.0' north to south and approximately 85.0' east to west, increasing to approximately 150.0' east to west for the northernmost 60.0' of Location 2. Signals of underground features where observed were generally interpreted as various existing utility lines (electrical and storm – active or abandoned).

At Location 2, three separate continuous signals were observed and interpreted as active electric lines each at a depth of approximately 24.0" below the existing grade. One line was interpreted to extend from gridline E.2/1 to gridline B.8/21.5. This was the longest observed utility line on site and was observed to run parallel, offset several feet to the west, of the row of existing light posts in Location 2 (Image E).

Signals interpreted as a second electric utility line were observed to extend along gridlines E-G/2 from the base of the southernmost light post in Location 2 extending beyond the Location 2 west boundary (Image F). Signals interpreted as the third electric utility line observed in Location 2 were found to begin on the west face of the existing sheds at gridlines E/19 extending beyond the Location 2 west boundary past grid lines M/19.2 (Image D).

At Location 2, two separate continuous signals were observed and interpreted as 6” to 8” diameter storm sewer lines at a depth of approximately 18” below existing grade. Both continuous signals were chased through the perimeters of location 2 to the site west and south. Both signals terminated within location 2 at a catch basin which was observed in the vicinity of grid lines F/17. Signals interpreted as one storm sewer line were found to begin in the vicinity of G.5/1 (Image H). Signals interpreted as a second storm sewer line were found to begin in the vicinity of gridlines M/20 (Image G).

Within Location 2, in the vicinity of gridlines A-B.5/8.7-10 (noted on grid map), a strong discontinuous signal was observed at a depth of around 24” to 30”. The signal was associated with a zone of disturbance, but was relatively confined and was interpreted as an approximately 24-inch diameter metal pipe or other similar obstruction (Image I).

At grid lines D-E/20.5-22 of Location 2, irregular signals or anomalies were observed. The inconsistent shape and disruptive pattern indicates the signal is unlikely to be an intact pipe or body such as a tank. Interpreted to represent debris and/or abandoned disrupted utility lines.

Location 3:

At Location 3, the total area scanned stretched 75.0’ north to south and approximately 75.0’ east to west.

Two nested signals were observed and interpreted as likely USTs in the vicinity of gridlines D.8-F/2.8-4 (Image M). The tanks were interpreted to be oriented north-south at a depth of approximately 28.0” below existing grade. Signals indicate that a third possible tank may exist at an approximate depth of 4.0’ positioned between the two tanks at a more shallow level.

At Location 3, one continuous signal was observed and interpreted as an approximately 1.0” diameter waterline. The signal was followed from the existing water meter as shown on the map in Appendix 3 from gridline H-F/2.3-8 (Image N).

At Location 3, two unknown utility lines were mapped from gridline H/4.5 to the western border of the UST area. These utility lines are visible on the eastern wall of the existing building and are continuous from the building to the tank area where signals terminated and were not observed on the eastern side of the mapped UST area (Image K). A third signal interpreted as a possible unknown utility line was observed in the vicinity of F/6 and oriented along grid line F, toward the interpreted UST area (Image L).

At Location 3, one continuous signal interpreted to be an approximately 6” storm sewer line was observed to run parallel with gridline A offset several feet to the east of the gridline (Image J).

Conclusions:

MTC has completed a subsurface scan of the pre-selected areas at the subject site in accordance with the approved project scope for the primary purpose of identifying likely underground storage tanks (USTs), and secondary purpose of noting other observed anomalies commonly associated with active and abandoned utilities, buried objects or debris. Significant signals interpreted as a likely UST nest were encountered at Location 3, grid lines D.8-F/2.8-4. No other locations encountered on site during our grid scanning expressed signals similar to that of the interpreted tank nest of Location 3. At Location 1 and 2, several areas were noted as displaying discontinuous signals not clearly associated with utilities. However, the signals at these spots were relatively disrupted and irregular in shape, and therefore interpreted as unlikely to represent a buried UST. These locations appeared to contain buried uncontrolled fill, concrete bodies or debris, or disrupted abandoned utility remnants.

Upon acceptance and use of this report and its interpretations, the client and users of this report shall understand that, due to the nature of subsurface scanning as a non-destructive and non-invasive procedure, the statements and conclusions presented herein are interpretive in nature. The findings herein are not intended to represent a definitive answer or guarantee of actual conditions, which can only be assured from direct exploration or observation.

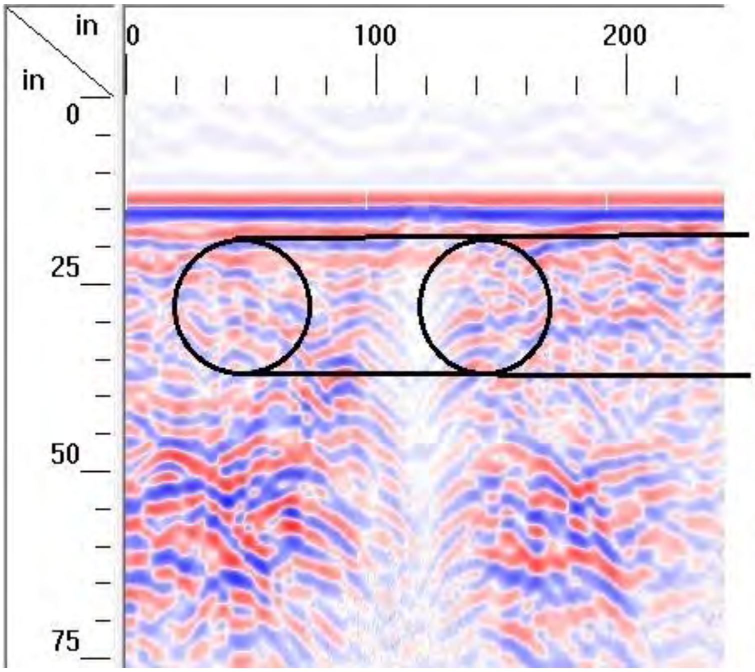
Ms. Good, we trust this report presents the information you require. If you have questions, please do not hesitate to call.

Respectfully Submitted;
MATERIALS TESTING & CONSULTING, INC.

Michael Vaughan
Senior GPR Technician

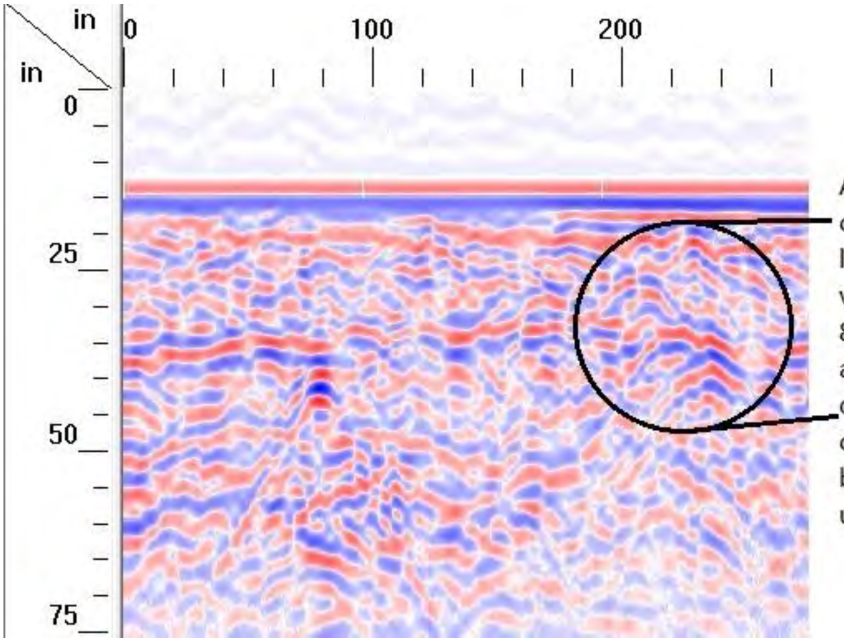
Attached: *Appendix A. GPR Images of Mapped Objects*
Appendix B. Site Photos of Existing Conditions
Appendix C. Location Maps and Gridlines

Appendix A. GPR Images of Mapped Objects



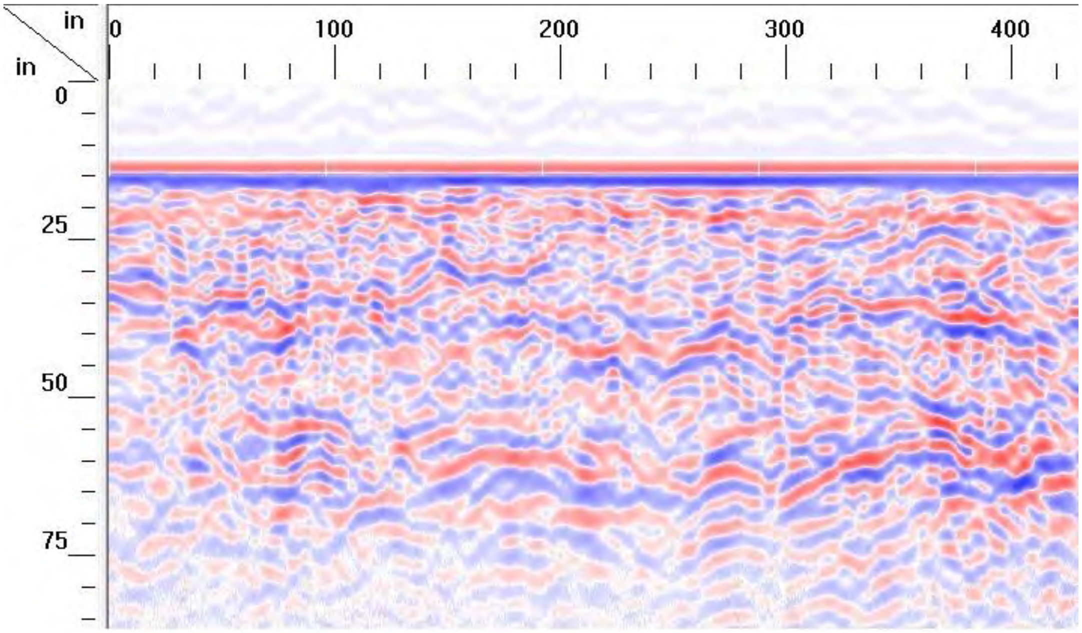
Anomoly (left) observed of a likely utility line oriented north-south near gridline C.5. Anomoly (right) interpreted as a apossible terminated utility oriented north-south near grid line D; signals of the (right) anomoly could not be consistently chased across loc. 1.

Image A: GPR scans from Location 1



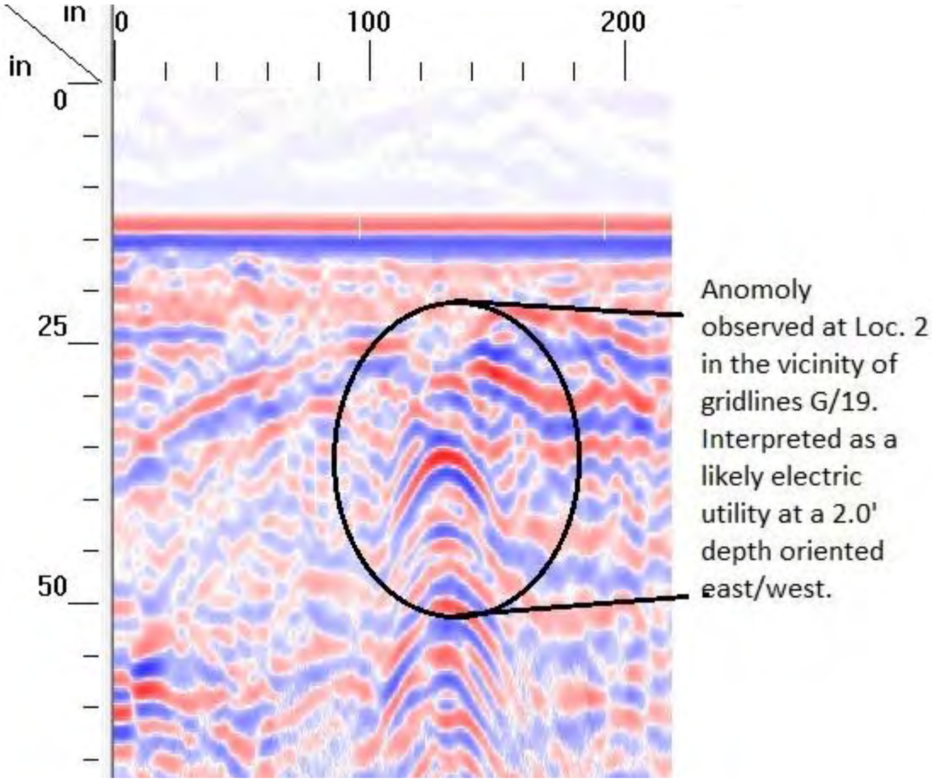
Anomolies observed at loc. 1 in the vicinity G-F/6-8. Interpreted as possible concrete vault or abandond broken utilities.

Image B: GPR scans from Location 1



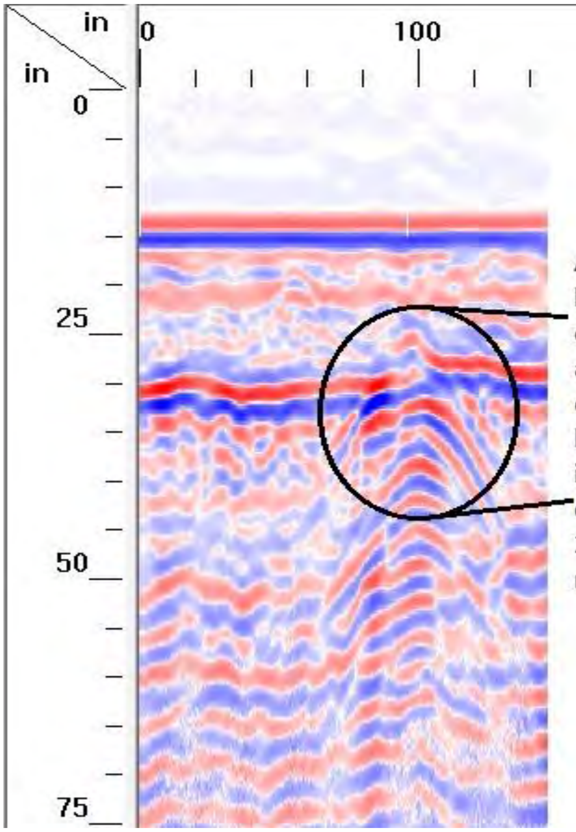
Subsurface conditions observed across location 1 were highly variable with increased amounts of varying anamolies.

Image C: GPR scans from Location 1



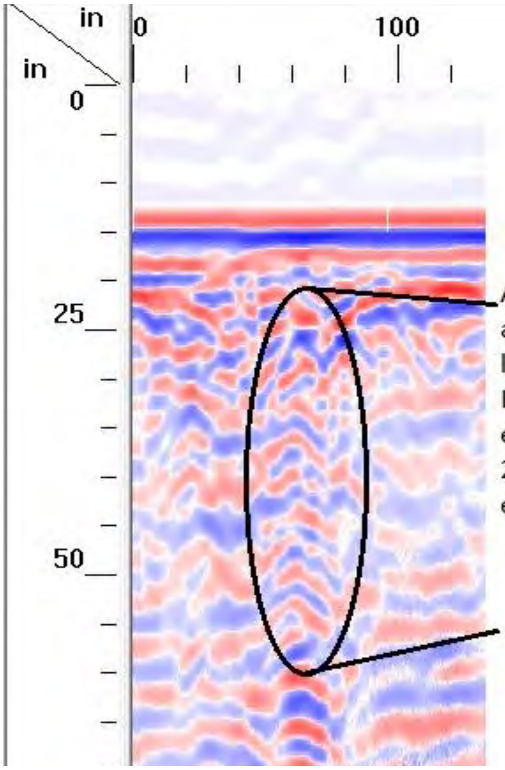
Anomoly observed at Loc. 2 in the vicinity of gridlines G/19. Interpreted as a likely electric utility at a 2.0' depth oriented east/west.

Image D: GPR scans from Location 2



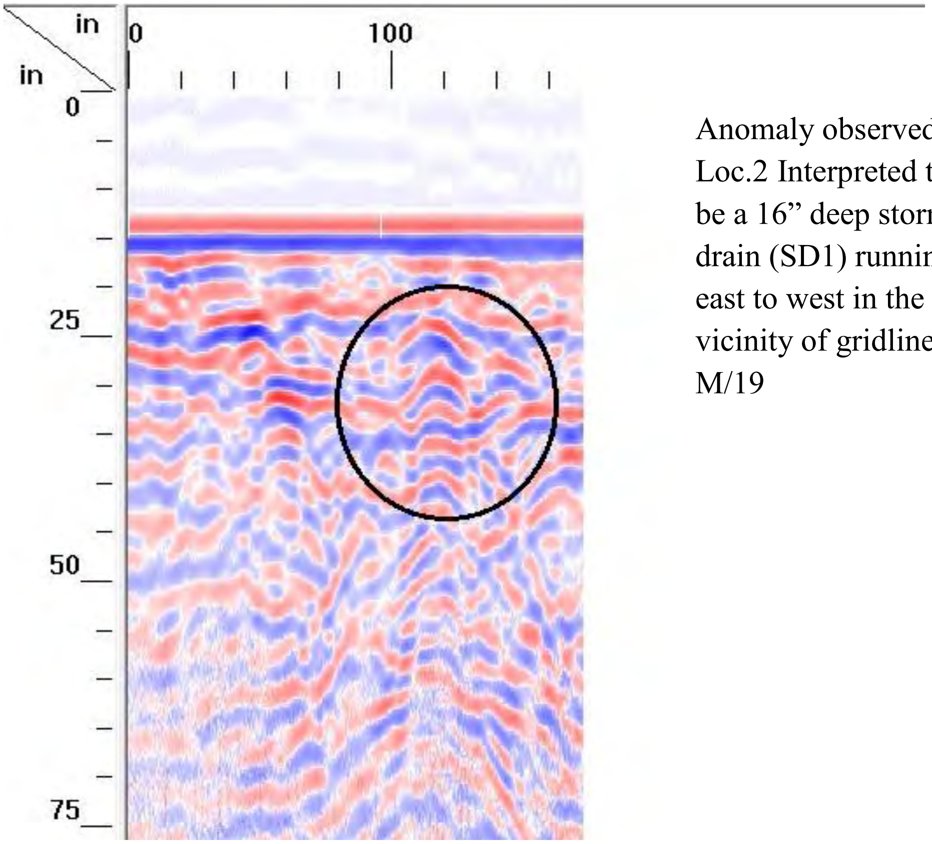
Anomoly observed at loc. 2 in the vicinity of gridlines E/4. This anomoly was observed over 180 linear ft. and is intrepreted to be electric utility at a 2.0' depth oriented north-south.

Image E: GPR scans from Location 2



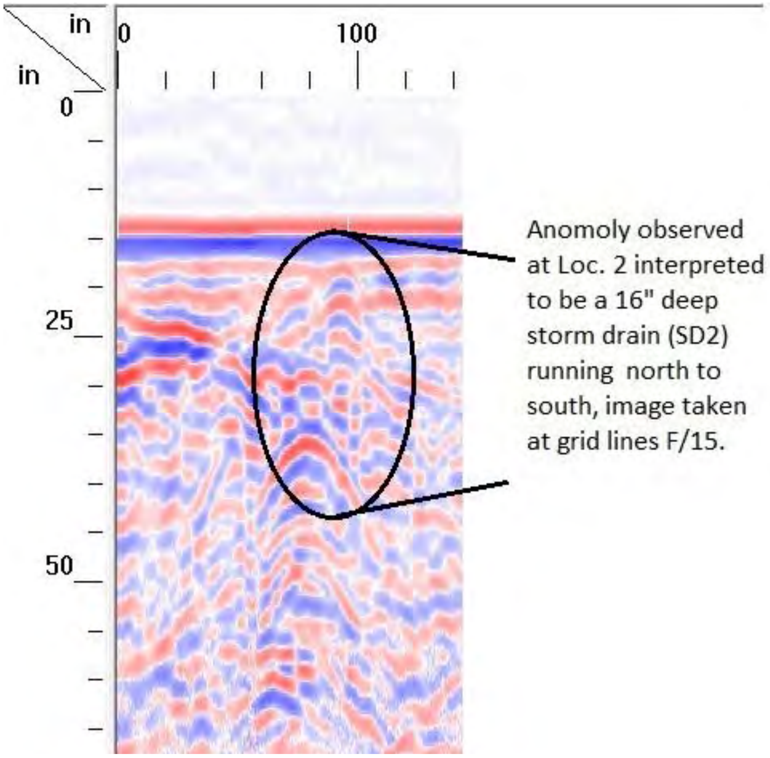
Anomoly observed at loc. 2 near grid lines F/1.8. Interpreted as likely electric utility with a 2.0' depth oriented east-west.

Image F: GPR scans from Location 2



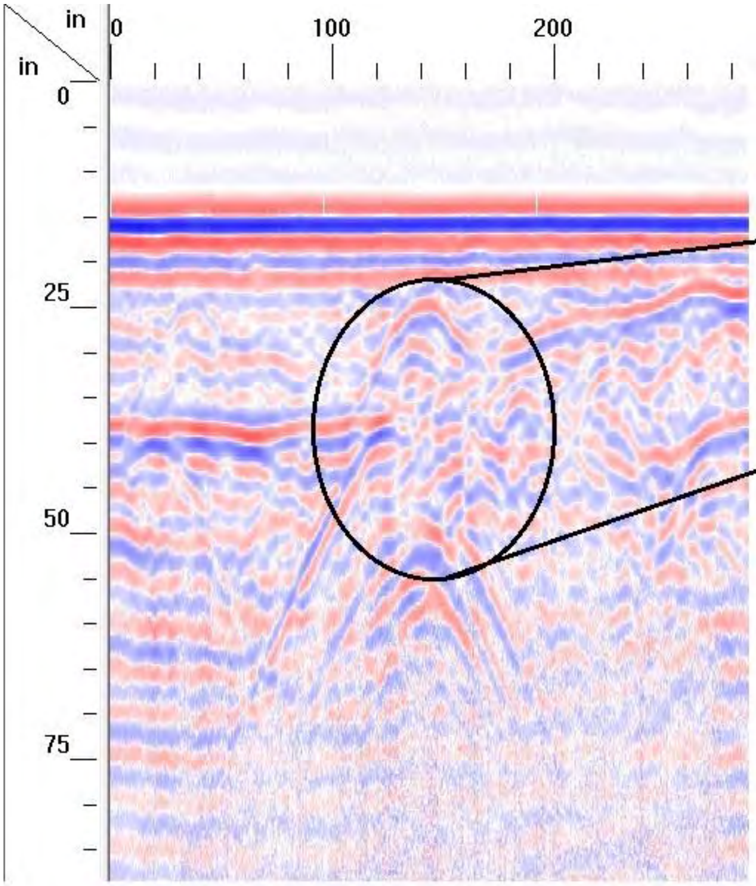
Anomaly observed at Loc.2 Interpreted to be a 16" deep storm drain (SD1) running east to west in the vicinity of gridlines M/19

Image G: GPR scans from Location 2



Anomoly observed at Loc. 2 interpreted to be a 16" deep storm drain (SD2) running north to south, image taken at grid lines F/15.

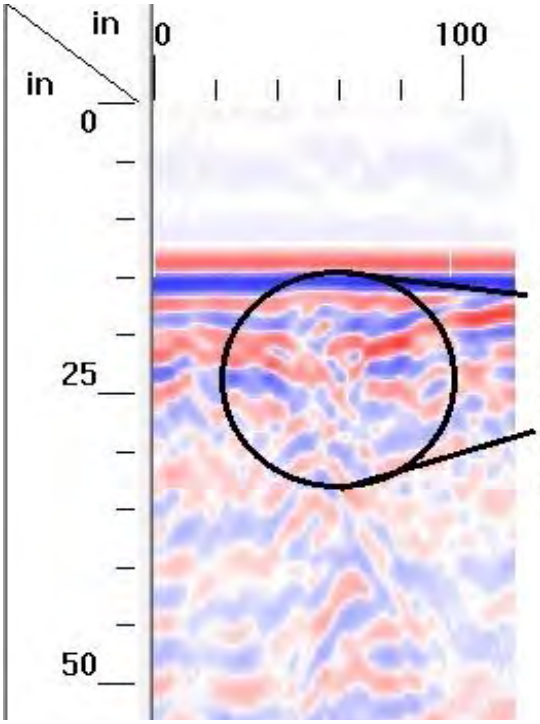
Image H: GPR scans from Location 2



Anomoly observed at location 2 near grid lines A-B/9.6. Interpreted as

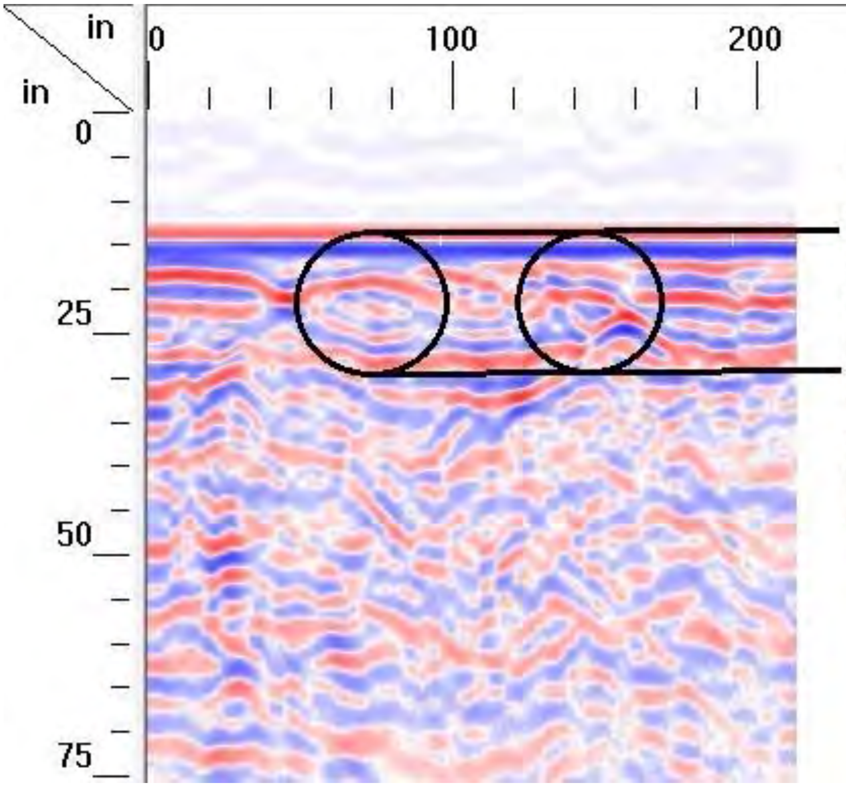
abandoned 24" metallic pipe.

Image I: GPR scans from Location 2



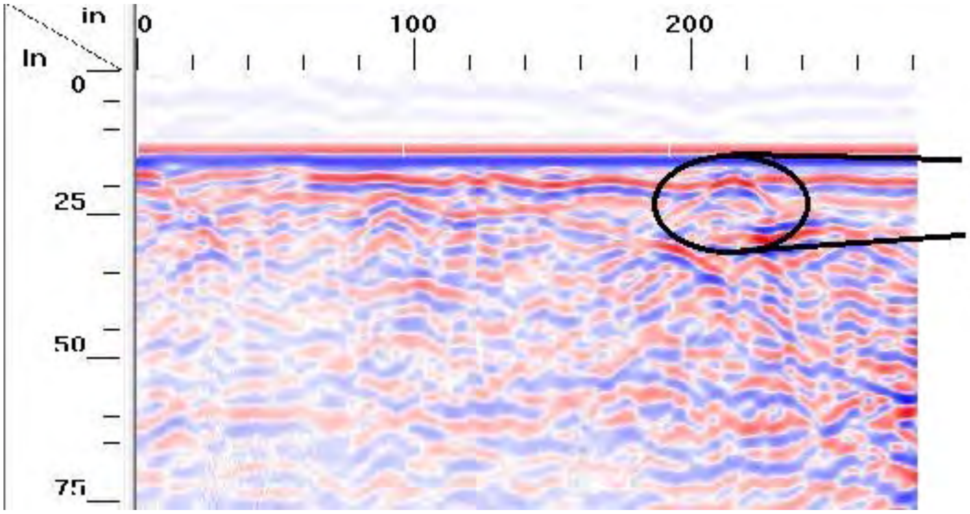
Anomoly observed at loc.3 near grid lines A/3. Interpreted as a storm drain running north-south.

Image J: GPR scans from Location 3



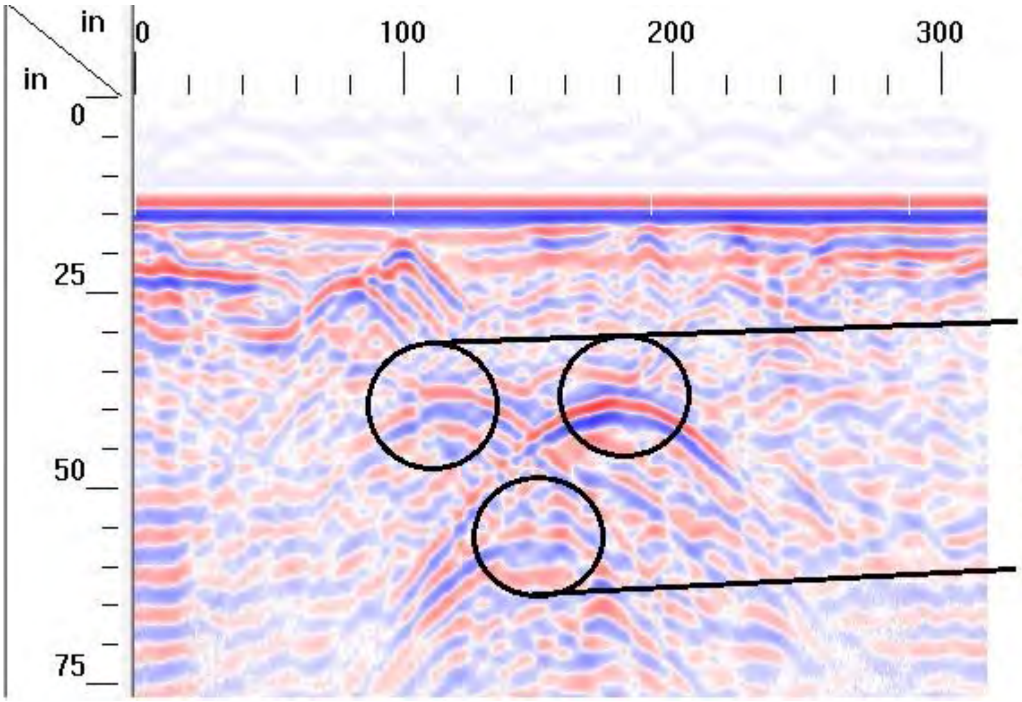
Anomalies observed in the vicinity of gridlines G/3.5 and G/4.5. Signals were intereppted as 2 uknown utility lines which where chased from existing pipes on the east face of the existing building and terminated in the vicinity of the identified USTs.

Image K: GPR scans from Location 3



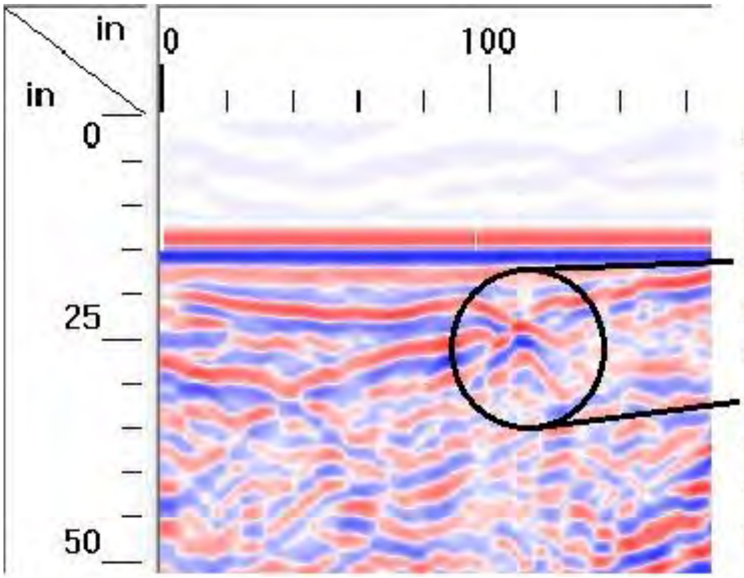
Anomoly observed at loc. 3 interpreted as an unkown utility line/pipe in the vicinity of gridlines F/6.

Image L: GPR scans from Location 3



Anomalies observed at loc. 3 at grid lines E-F/2.5-4. Intepreted as two UST's at an approximate depth of 2.5' with a possible third UST nested in between the two observed tanks at a depth of 4.0'. Tanks were observed to be oriented north-south.

Image M: GPR scans from Location 3



Anomaly observed at location 3 in the vicinity of gridlines F.5/6. Interpreted as an existing waterline at an appx. 1.5'-2.0' depth, signal was chased from existing water meter to existing building.

Image N: GPR scans from Location 3

Appendix B. Site Photos of Existing Conditions

Photo A: Location 1 from Northwest corner

Photo B: Location 1 looking east toward area of marked possible border concrete debris

Photo C: Location 1 Southeast corner

Photo D: Location 1 looking north along mapped utility line

Photo F: Location 2 looking north from area of anomaly at A-B/9-10.

Photo G: Location 2 looking south from middle of area.

Photo H: Location 2 looking west from middle of area.

Photo I: Location 2 looking southeast from north end

Photo J: Location 3 from southeast looking west

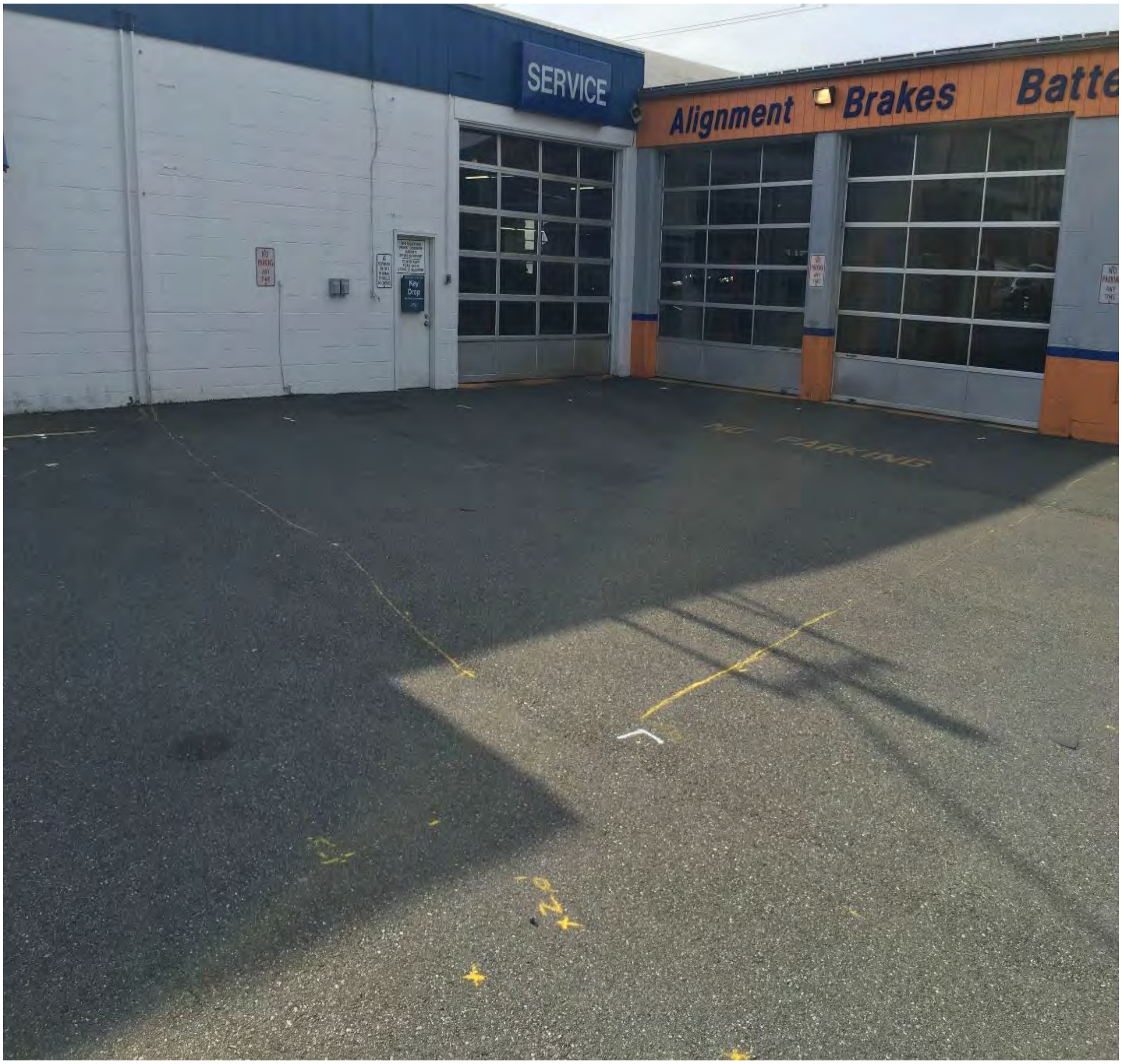
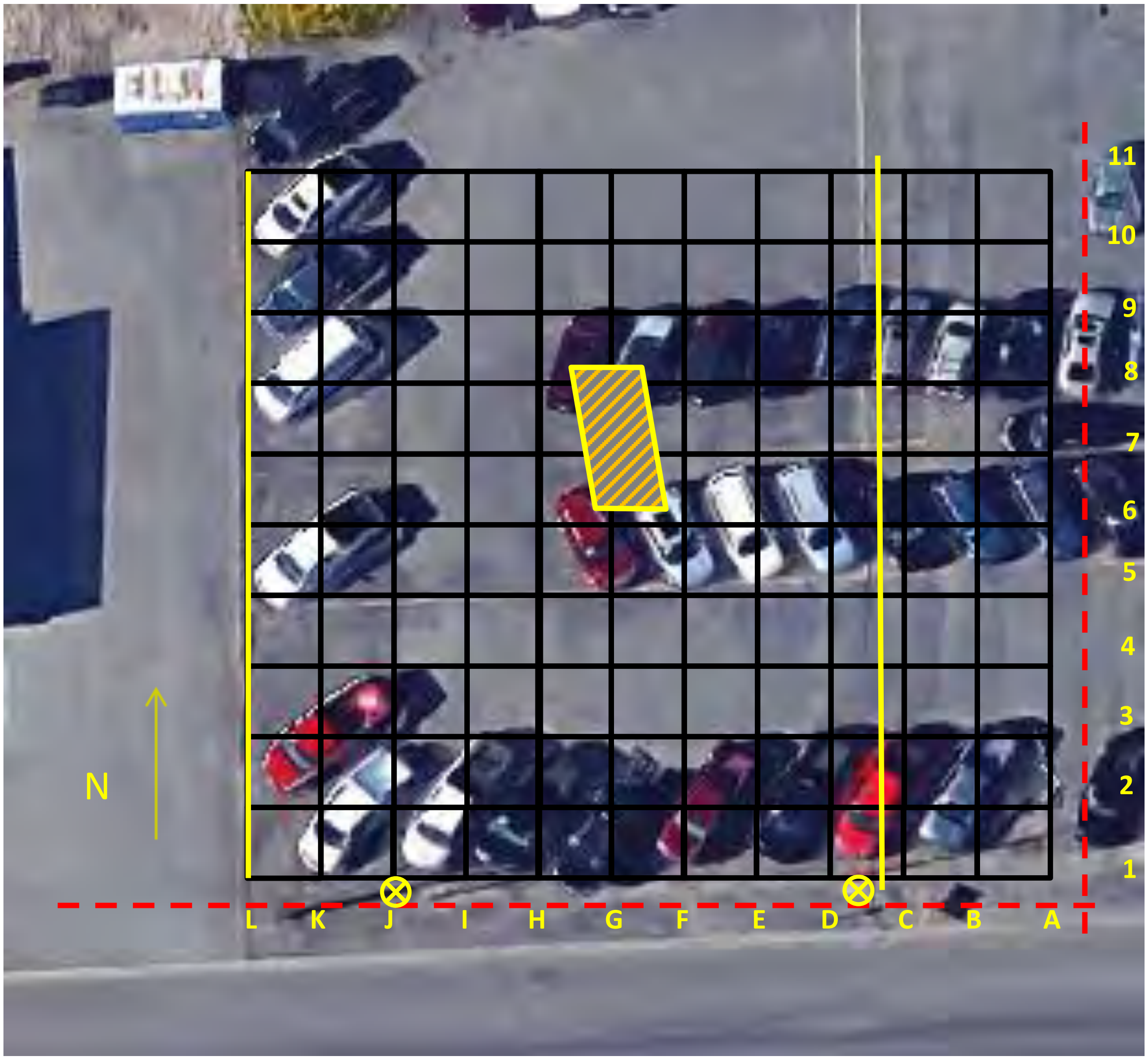


Photo K: Location 3 mapped utility lines

Photo L: Location 3 looking south at the area of mapped USTs

Photo M: Example of markers nailed in asphalt to mark the southeast corner of each location scanned, markers were set 5.0’ south and 5.0’ east of gridlines A/1 at each location.

Appendix C. Location Maps and Gridlines



Location 1: West side of existing building. Yellow box is unknown anomaly, possible uncontrolled fill with buried debris. Interpreted as not likely a UST. Center of box located at 68' N, 56' W of intersecting red border lines. Box dimensions are 17' N-S, 4' E-W. In the field, a temporary marker was placed with nail and flagging in asphalt, located roughly at intersection of red border lines.

⊗ Light post/Utility poles

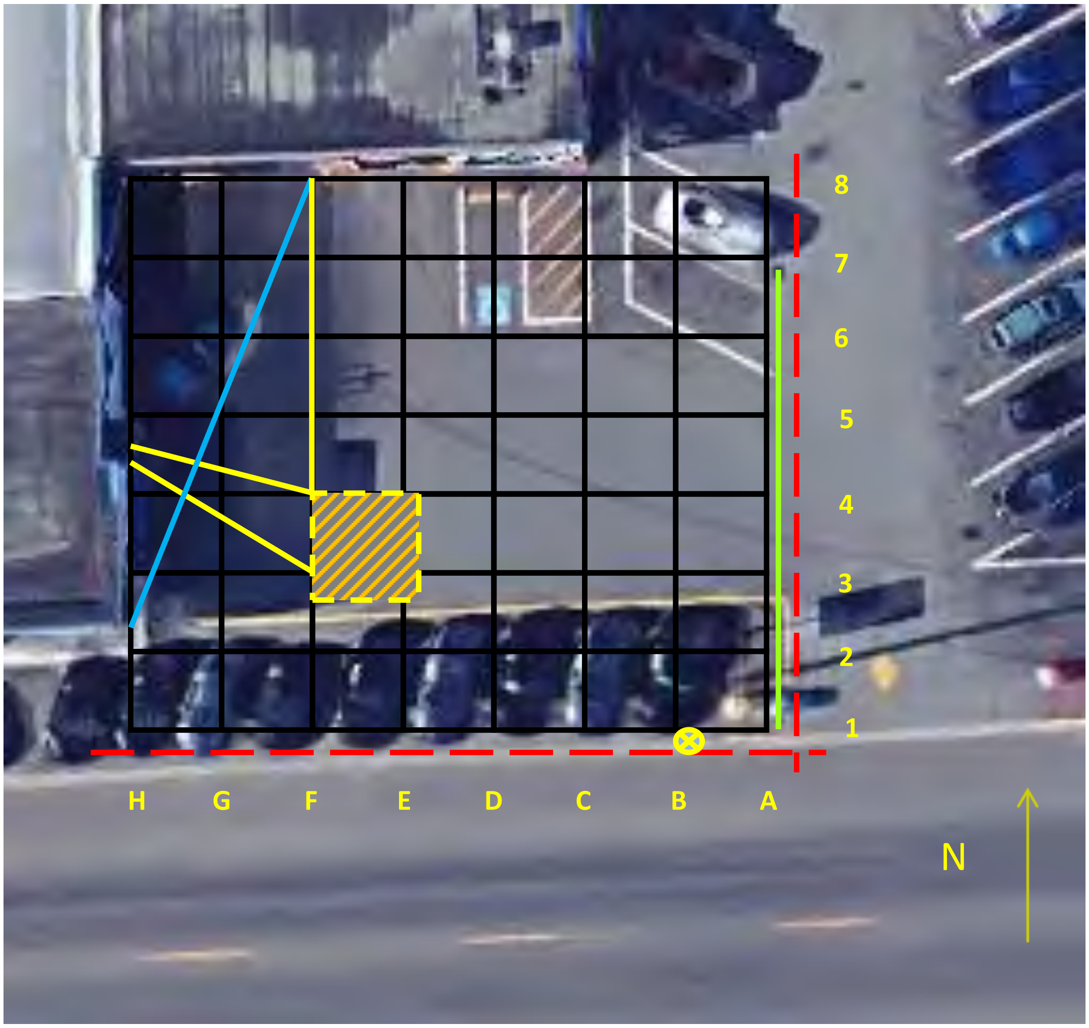
Gridline Border

Utility Line

Storm Drain

▨ Underground Anomaly

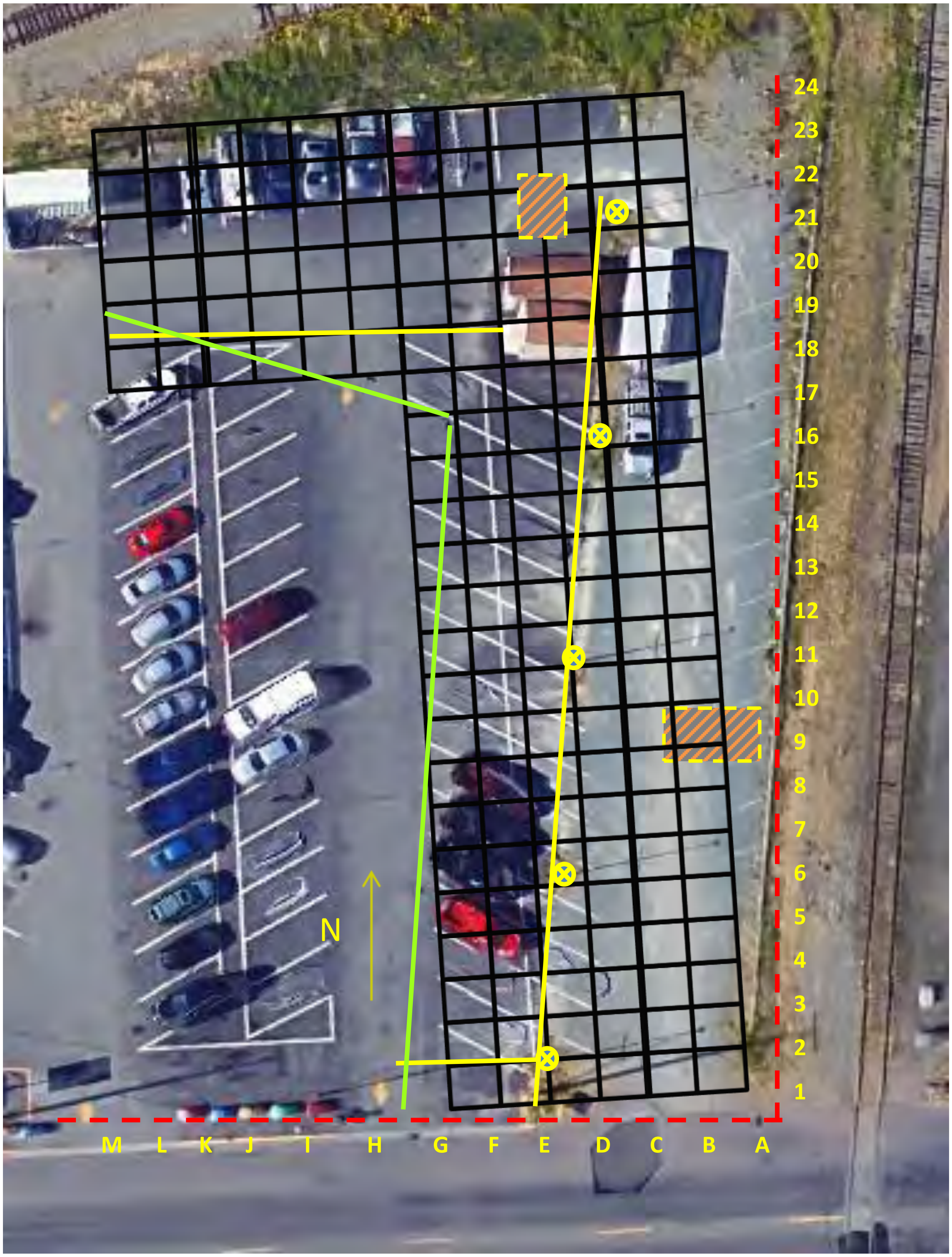
Water Line



Location 3: East side of existing building. Yellow box is two tanks with possible third tank in between. Center of boxed area located 30' N, 45' W of intersecting red border lines. Dimensions of tank area are 8' E-W by 16' N-S. In the field, a temporary marker was placed with nail and flagging in asphalt, located roughly at intersection of red border lines. In-field marker located 11' E, 6' S of utility pole (yellow x-circle).

Materials Testing & Consulting, Inc.

Geotechnical Engineering & Consulting ● Special Inspection ● Materials Testing ● Environmental Consulting



Location 2: East side of lot. Yellow boxes are two areas of unidentified anomalies. Center of south box located at 91.5’ N, 8’ W of intersecting red border lines. Center of north box located at 205’ N, 48’ W of intersecting red border lines. Dimensions of north box are 6’ (S) x 11’ (E) x 9’ (N) x 12’ (W). In the field, a temporary marker was placed with nail and flagging in asphalt, located roughly at intersection of red border lines. In-field marker located 43’ E, 14’ S of southern-most light post (yellow x-circle).

APPENDIX B
DECOMMISSIONED WELL LOG

Please print, sign and return by mail to Department of Ecology

RESOURCE PROTECTION WELL REPORT

CURRENT Notice of Intent No. AE39269

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission *(select one)*

☐ Construction

☒ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* RE07052

Consulting Firm Maul Foster Alongi

Unique Ecology Well ID Tag No. MW-02 BHL 191

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

☒ Driller ☐ Engineer ☐ Trainee Name (Print)

Driller/Engineer /Trainee Signature

Driller or Trainee License No. 2861

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

Type of Well *(select one)*

☒ Resource Protection

☐ Geotech Soil Boring

Property Owner NORTH CASCADE FORD Dealership

Site Address 116 W. Ferry ST.

City Sedro Woolley County Skagit

Location NE 1/4-1/4 SW 1/4 Sec 24 Twn 35N R 4E Select One ☒ EWM ☐ WWM

Lat/Long (s, t, r still REQUIRED) Lat Deg ______ Lat Min/Sec ______ Long Deg ______ Long Min/Sec ______

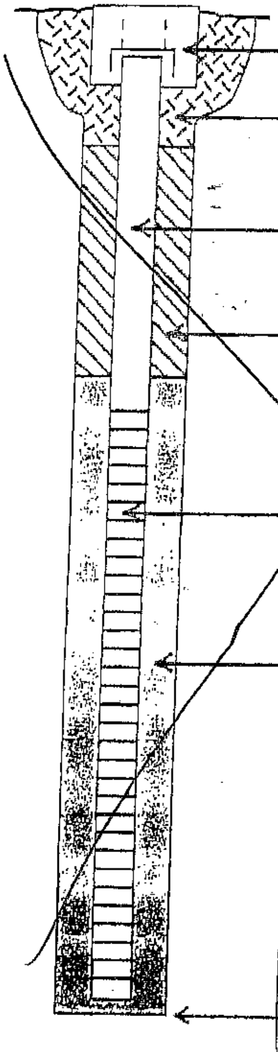
Tax Parcel No. ______

Cased or Uncased Diameter 2'' Static Level 5'

Work/Decommission Start Date 9-9-16

Work/Decommission Completed Date 9-9-16

Construction/Design | Well Data | Formation Description



MONUMENT TYPE: ______

CONCRETE SURFACE SEAL ______ ft.

PVC BLANK 2 "x ______ '

BACKFILL ______ ft.

TYPE: ______

PVC SCREEN ______ "x ______ '

SLOT SIZE: ______

TYPE: ______

GRAVEL PACK ______ ft.

MATERIAL: ______

WELL DEPTH 14.5 '

0 - ft.

- ft.

- ft.

- ft.

- ft.

REMARKS

CHIP IN PLACE / Fill CASING WITH 3/8" BENTONITE CHIPS.

APPENDIX C

STRUCTURAL BUILDING ASSESSMENT

kingworks
CONSULTING ENGINEERS

Memorandum

PROJECT **N Cascade Ford UST Removal Structural Assessment**
ADDRESS 116 W Ferry St, Sedro-Woolley WA

KW PROJECT # 16094

DATE September 14, 2016

CLIENT Maul Foster & Alongi, Inc
1329 North State Street, Suite 301
Bellingham, WA 98225

CLIENT CONTACT Carolyn Wise

FROM John R (Jack) King, SE
Kingworks Consulting Engineers, PLLC
600 Dupont St * Suite B
Bellingham, WA 98225

Per your request, this memo is intended to comment on the observed construction and condition of the existing building adjacent to the site of an underground storage tank (UST) that is planned to be removed, and to recommend excavation limits appropriate for protection of the building. The approximate UST location is shown on Exhibit 1. Our observations were mostly focused on the building elements closest to this area.

Based on this scope description, neither exhaustive condition survey, nor structural analysis has been undertaken at this time. During a site visit on 9/12/16, from approximately 8:30 AM to 9:45 AM, the engineer walked the site, interior and exterior of the building structure, and made visual observations. Key structural elements, all of the exterior walls, and some cracks of the floor slabs in the vicinity of the anticipated excavation were photographed.

This report includes:

- This memo with the building structure description and condition, and stating recommendations for excavations limits
- A plan sketch keying the different building areas and the photographs (Exhibit 1)
- An aerial photo showing the approximate building plan dimensions (Exhibit 2)
- Exterior photos of the perimeter of the building (Exhibits 3 - 7)
- Photos of slab cracking in the vicinity of the excavation (Exhibits 8 - 9)
- A sketch showing the recommended excavation limits adjacent to the building (SSK-1)

Building Description

The subject building is approximately 28,000 square feet. It is a single story structure with wood framed roof framing members, some wood and steel columns, and concrete masonry interior and exterior bearing walls. The footings are assumed to be conventional, spread foundations constructed with concrete. The floor is a concrete slab supported on grade. The building was constructed in approximately the mid 1900's. At least one area ('Quick Lane' waiting room and about 1/3 of the adjacent shop area) appears to have been constructed as a later addition, based on joints in the slab and changes in masonry style. Based on the era of construction the masonry walls and foundations may be unreinforced or only lightly reinforced (when compared to modern masonry practice).

The following descriptions are provided by area. Refer to Exhibit 1 for the lettered area locations.

A) Showroom: The roof structure is concealed by finishes but is assumed to be wood framed rafters running n/s with supporting beam lines along the south exterior wall and one interior column line. The interior columns are wrapped with brick, but this may be non-structural wrap around wood or steel columns. The floor is covered with an adhered aggregate finish which would likely conceal cracks if any are present.
B) Service Bay: The roof structure consists of rafters running n/s over timber bow string trusses spaced approximately 15 feet on center and running e/w.
C) Quick Service Bay: The roof structure is concealed by finished but is assumed to be wood rafters running n/s
D) 'Quick Lane' Waiting Room: A continuation of the C. The floor is concealed with tile so cracks are likely concealed if any are present.
E) Body Shop Bay: The roof structure is concealed by finished but is assumed to be wood rafters
F) Truck Service Bay: The roof area was not observed because it is distant from the UST removal area but it is assumed to consist of wood rafters over beam/column lines

Observations

The masonry walls appear to be in good condition, with only limited minor cracking visible. . A finish material covers the top portion of the wall. Also, there appeared to be multiple coats of paint. So it is possible that more cracking is present than can be seen. Many close-up photographs were taken along the walls closest to the UST. These will be kept on file for comparison if needed.

The floor slab in the areas B and C had some visible cracking in the vicinity of the UST removal. Photos were taken, with the most descriptive are included in exhibits 8 and 9.

The concrete stem below the windows along the south wall of the building has multiple vertical cracks visible along its length. These cracks have at least one coat of paint over them. The cracks are probably a result stresses from thermal expansion and contraction.

Recommendations

Because the walls are masonry, and likely only lightly reinforced or unreinforced, we recommend that the excavation for the UST and soil removal be kept a minimum of 5 feet from the face of the building at grade and that the excavation be sloped down and away from the building a minimum of 1 horizontal unit per every 1 unit of depth. The attached detail (SSK-1) graphically shows these recommended limits.

Feel free to contact us if you have any questions or other concerns.

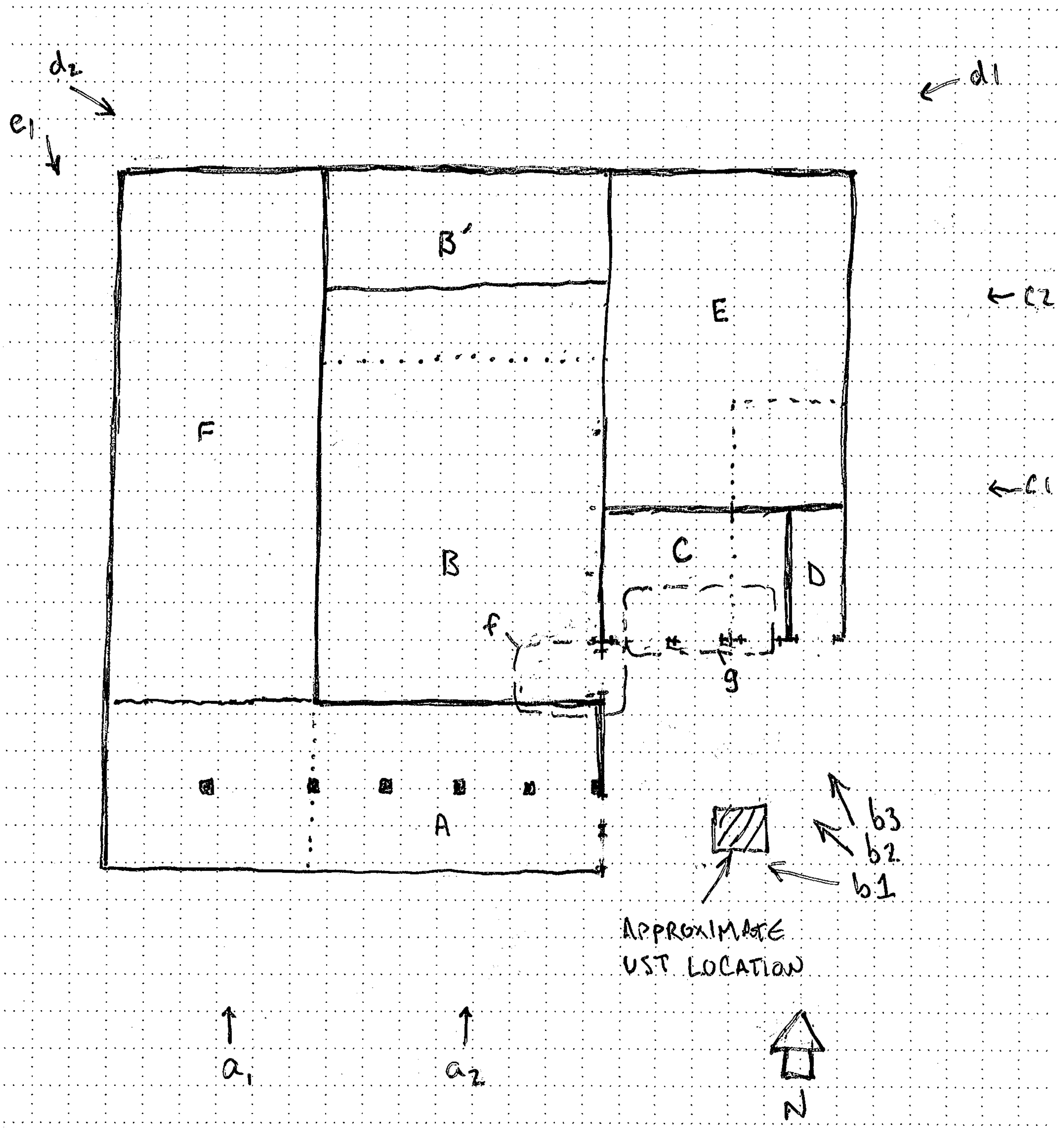
Sincerely

JOHN R. KING
37388

John R King, SE
Principal

Attachments:
Exhibits 1 through 9
SSK-1

EXHIBIT 1 BUILDING KEY PLAN



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600 DUPONT STREET, SUITE B
BELLINGHAM, WA 98225
360-714-8260
www.king-works.com

BUILDING KEY PLAN SHOWING PHOTO & AREA KEY

MSA N CASCADE FORD UST REMOVAL ASSESSMENT

Project number	16094	EXHIBIT 1
Date	9/13/16	
Drawn by	J KING	
Checked by	J KING	Scale NTS

EXHIBIT 2 APPROXIMATE BUILDING DIMENSIONS

EXHIBIT 3 SOUTH ELEVATION PHOTOS

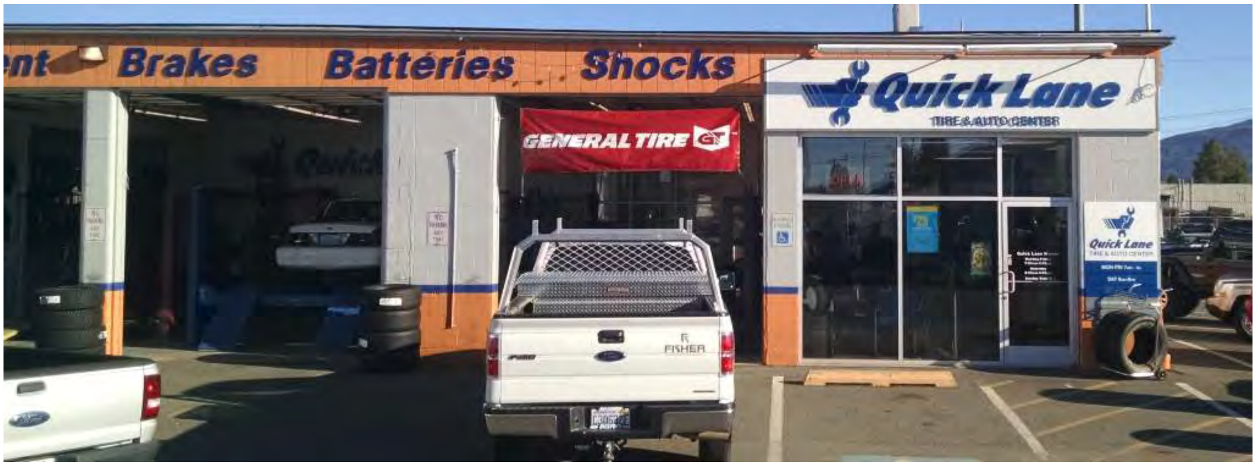
a1

a2

EXHIBIT 4 SOUTH AND EAST ELEVATION PHOTOS AT REENTRANT CORNER

b1

b2



b3

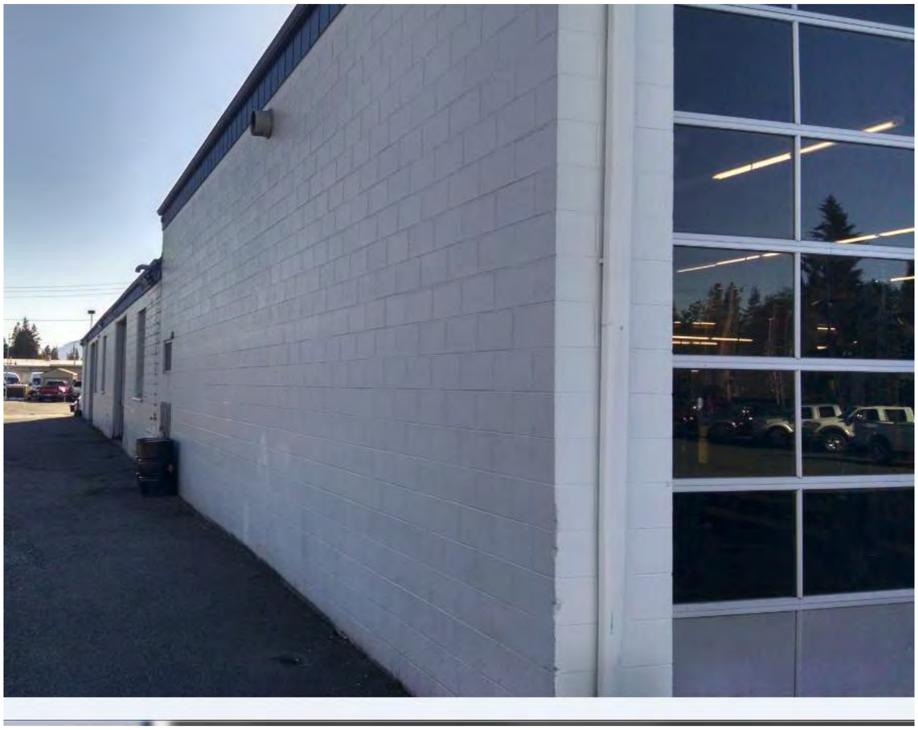
EXHIBIT 5 EAST ELEVATION PHOTOS

c1

c2

EXHIBIT 6 NORTH ELEVATION PHOTOS

d1



d2

EXHIBIT 7 WEST ELEVATION PHOTO

e1

EXHIBIT 8 AREA f FLOOR SLAB CRACKS

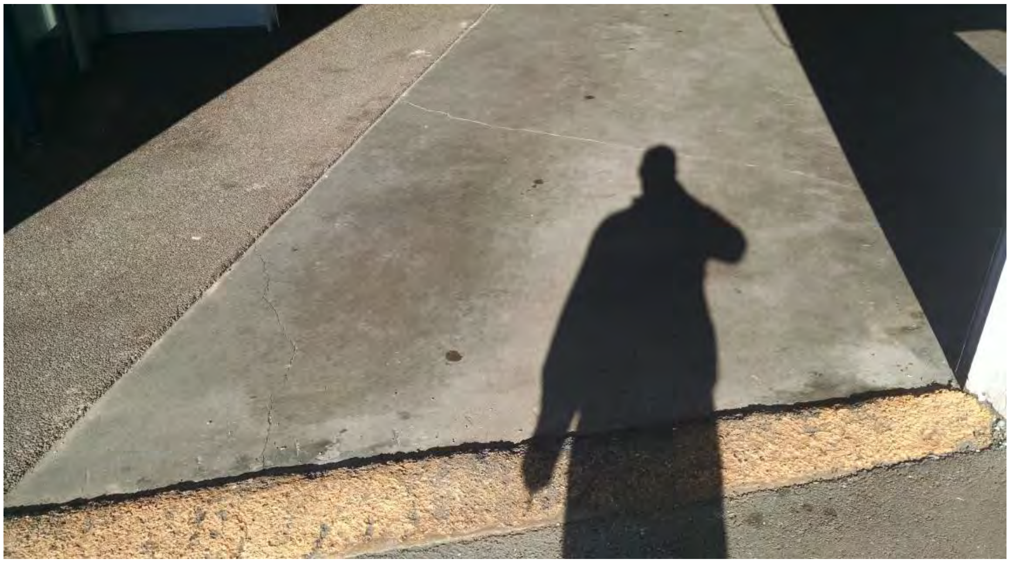
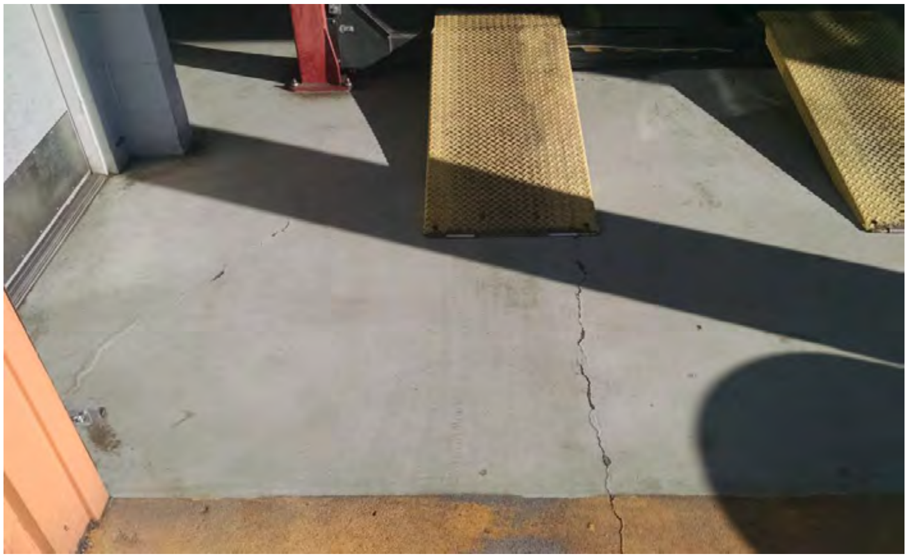
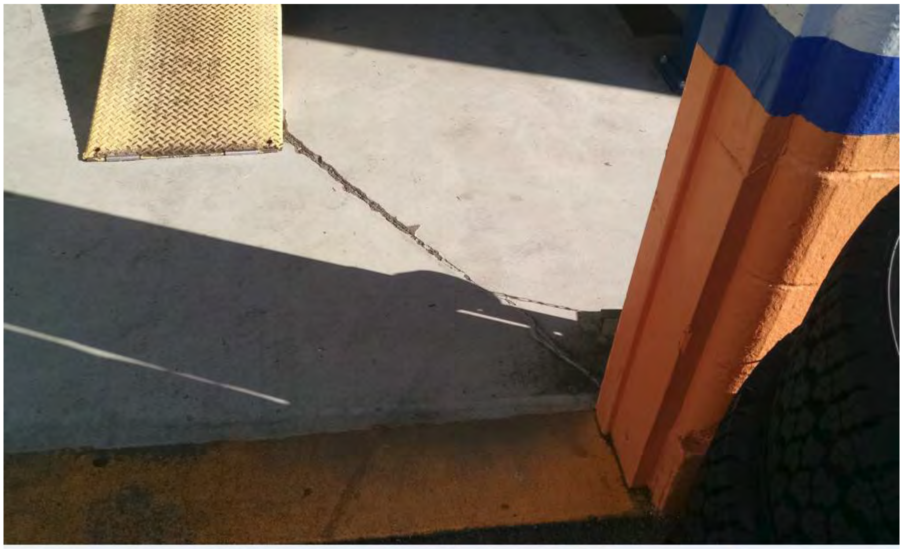
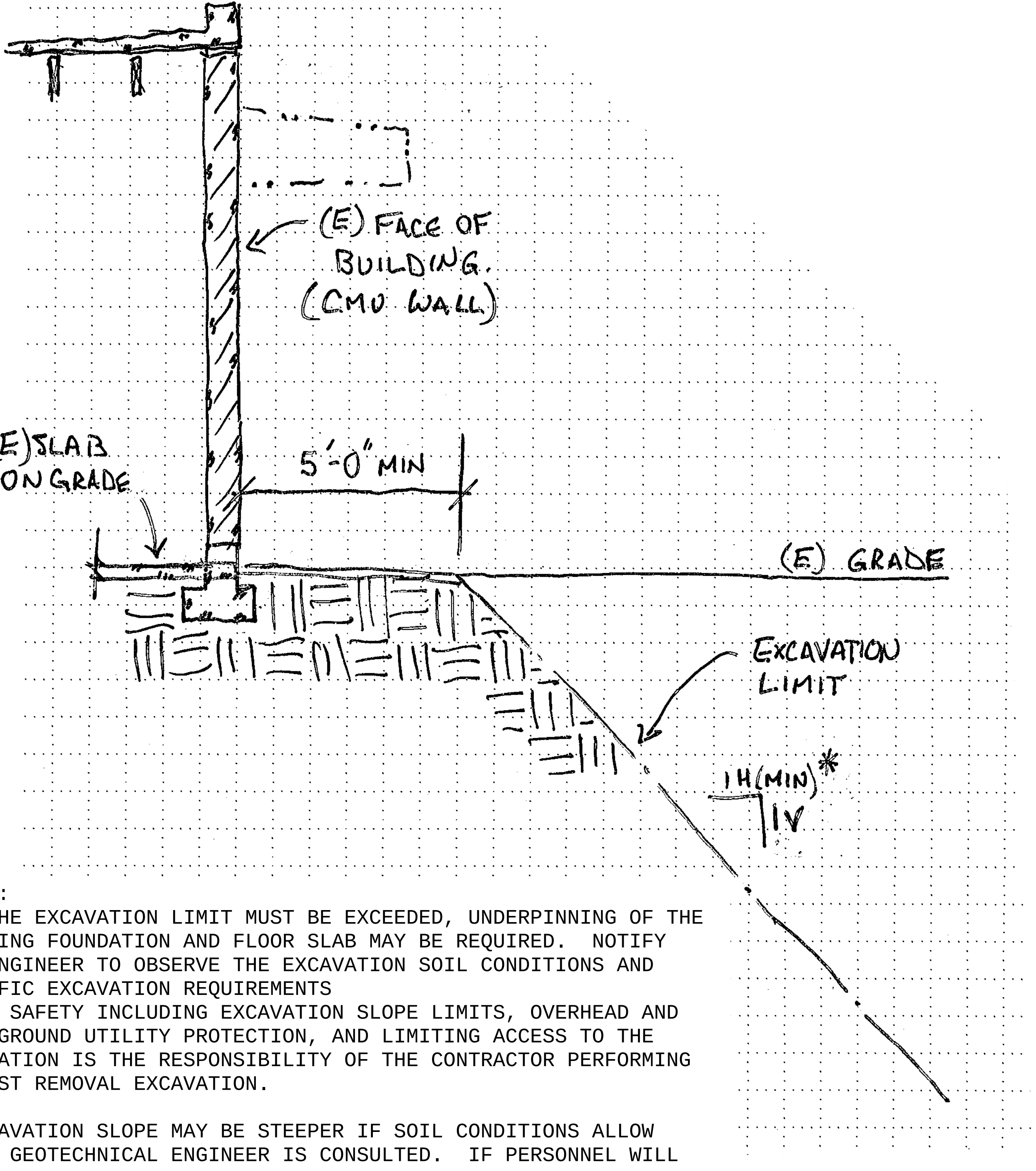


EXHIBIT 9 AREA g FLOOR SLAB CRACKS







NOTES:
-IF THE EXCAVATION LIMIT MUST BE EXCEEDED, UNDERPINNING OF THE BUILDING FOUNDATION AND FLOOR SLAB MAY BE REQUIRED. NOTIFY THE ENGINEER TO OBSERVE THE EXCAVATION SOIL CONDITIONS AND SPECIFIC EXCAVATION REQUIREMENTS
-SITE SAFETY INCLUDING EXCAVATION SLOPE LIMITS, OVERHEAD AND UNDERGROUND UTILITY PROTECTION, AND LIMITING ACCESS TO THE EXCAVATION IS THE RESPONSIBILITY OF THE CONTRACTOR PERFORMING THE UST REMOVAL EXCAVATION.

* EXCAVATION SLOPE MAY BE STEEPER IF SOIL CONDITIONS ALLOW AND A GEOTECHNICAL ENGINEER IS CONSULTED. IF PERSONNEL WILL BE IN THE EXCAVATION, THE CONTRACTOR SHOULD LIMIT THE SLOPE TO 1.5H TO 1V UNLESS ONE OF THE OPTIONS DETAILED IN WAC 296-155-657 IS UTILIZED.

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www.king-works.com

EXCAVATION LIMIT AT FACE OF BUILDING

MSA N CASCADE FORD UST REMOVAL ASSESSMENT

Project number	16094	SSK-1
Date	9/12/16	
Drawn by	J KING	
Checked by	J KING	Scale 1/4"=1'-0"

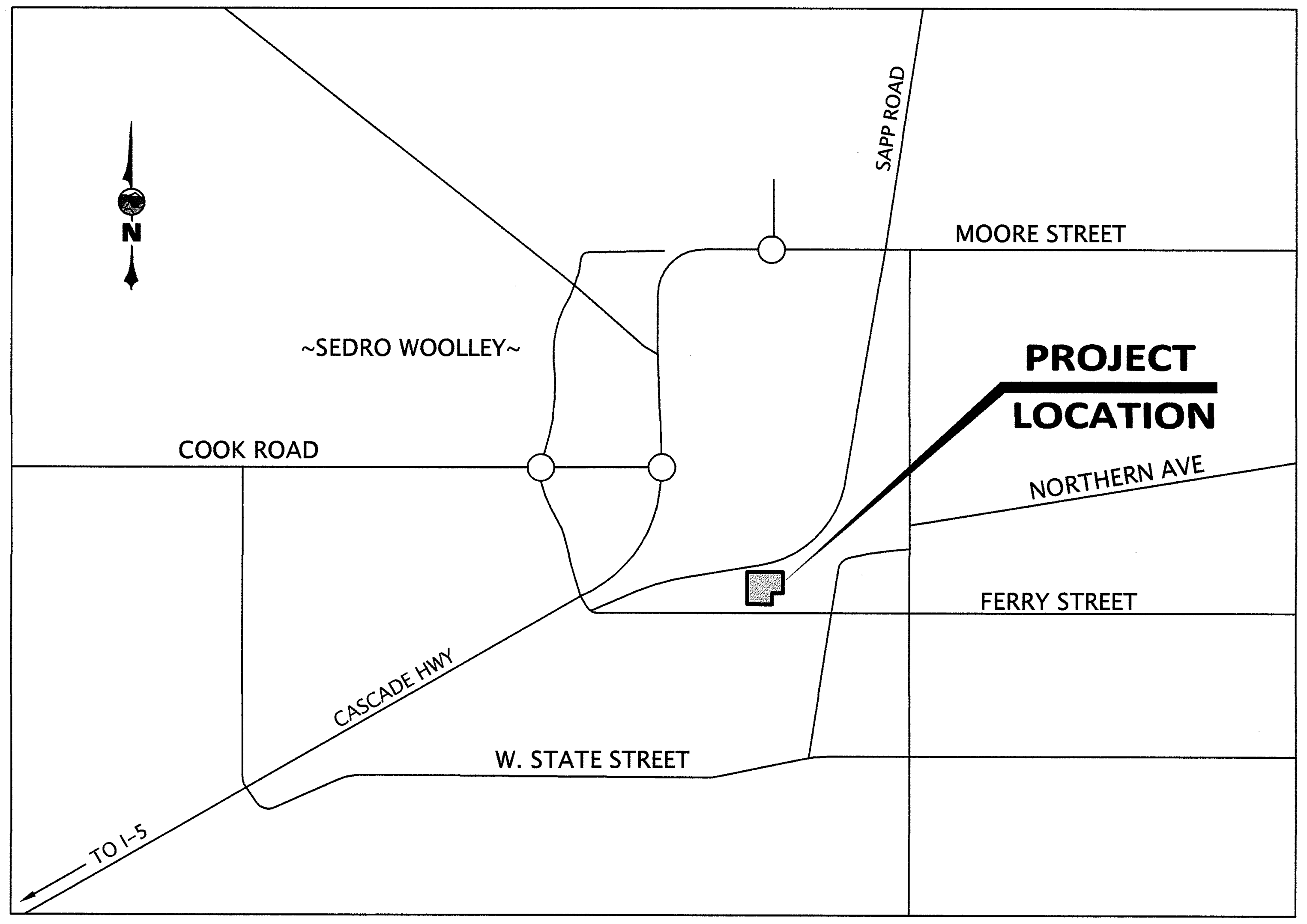
APPENDIX D

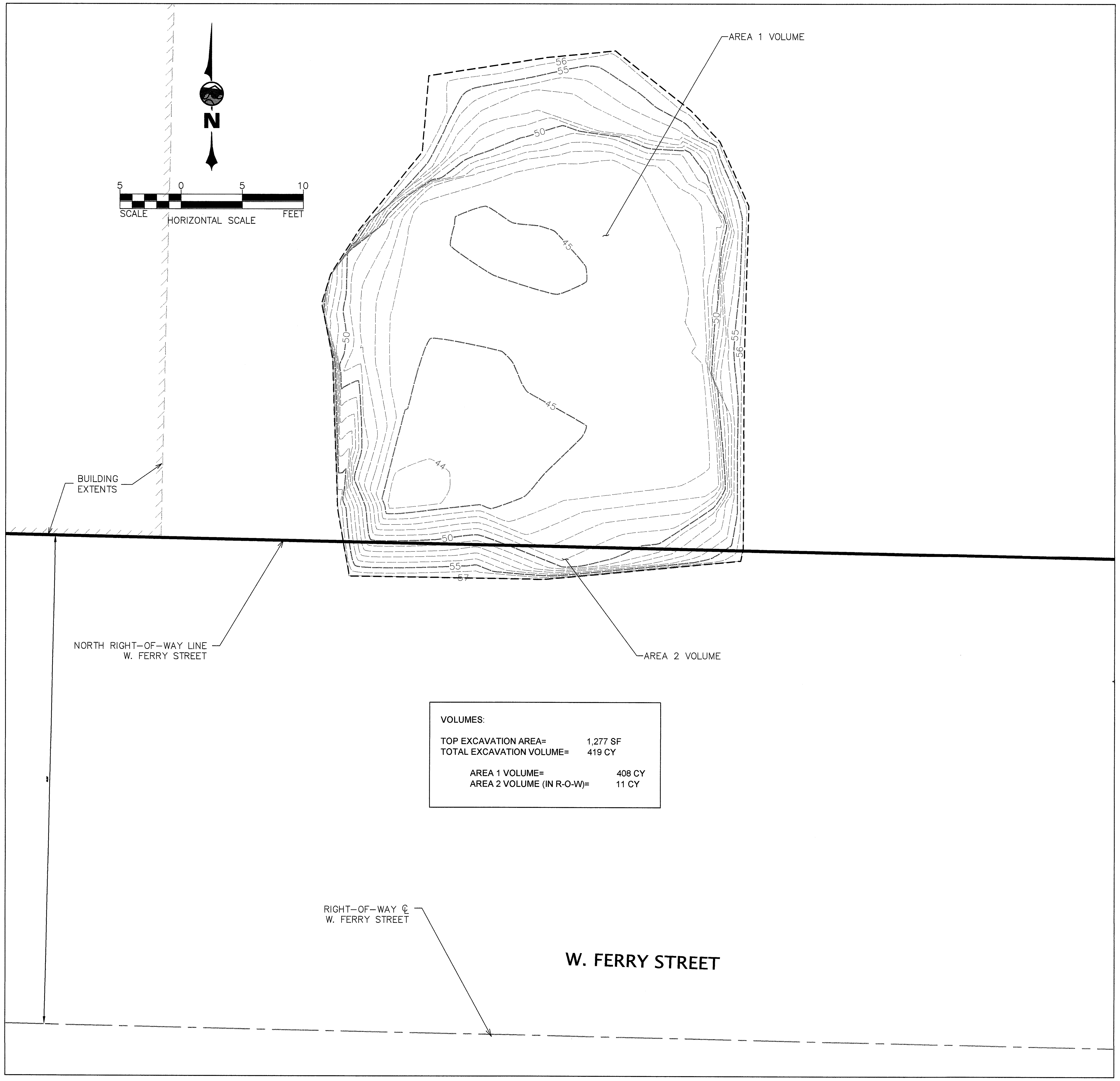
PROPERTY AND EXCAVATION SURVEY

MAUL FOSTER ALONGI

VERN SIMS FORD - 116 W. FERRY ST. PARCEL

VICINITY MAP - NOT TO SCALE





VOLUMES:

TOP EXCAVATION AREA=	1,277 SF
TOTAL EXCAVATION VOLUME=	419 CY
AREA 1 VOLUME=	408 CY
AREA 2 VOLUME (IN R-O-W)=	11 CY

CONTROL NOTES

1. COORDINATES ARE A GROUND-VALUE APPROXIMATION OF NAD83(2011) WASHINGTON STATE PLANE (NORTH ZONE) COORDINATES BASED UPON NETWORKED REAL-TIME KINEMATIC GPS SOLUTIONS.

2. ELEVATIONS ARE IN THE NAVD88 DATUM, BASED UPON THE PUBLISHED NAVD88 ELEVATION OF 56.05 (US FT) AT W.S.D.O.T. SURVEY MONUMENT GP29020-9 AZ. CONTROL ELEVATIONS WERE ESTABLISHED FROM THIS BENCHMARK BY CLOSED DIFFERENTIAL LEVEL LOOP.

811 Call 811 two business days before you dig

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT I AM A LICENSED LAND SURVEYOR IN THE STATE OF WASHINGTON, THAT THIS MAP IS BASED ON AN ACTUAL FIELD SURVEY DONE BY ME OR UNDER MY DIRECT SUPERVISION AND THAT ALL DATA SHOWN HEREON ACTUALLY EXISTS IN THE LOCATIONS SHOWN AT THE TIME OF THIS SURVEY. THIS TOPOGRAPHIC MAP WAS DONE AT THE REQUEST OF MAUL FOSTER ALONGI IN 2016.

44335
10-20-2016

J. THOMAS BREWSTER, P.L.S. NO. 44335 DATE 10-20-2016

WILSON ENGINEERING, LLC
805 DUPONT STREET
BELLINGHAM, WA 98225
(360) 733-6100 • FAX (360) 647-9061
www.wilsonengineering.com

Wilson
SURVEY/ENGINEERING

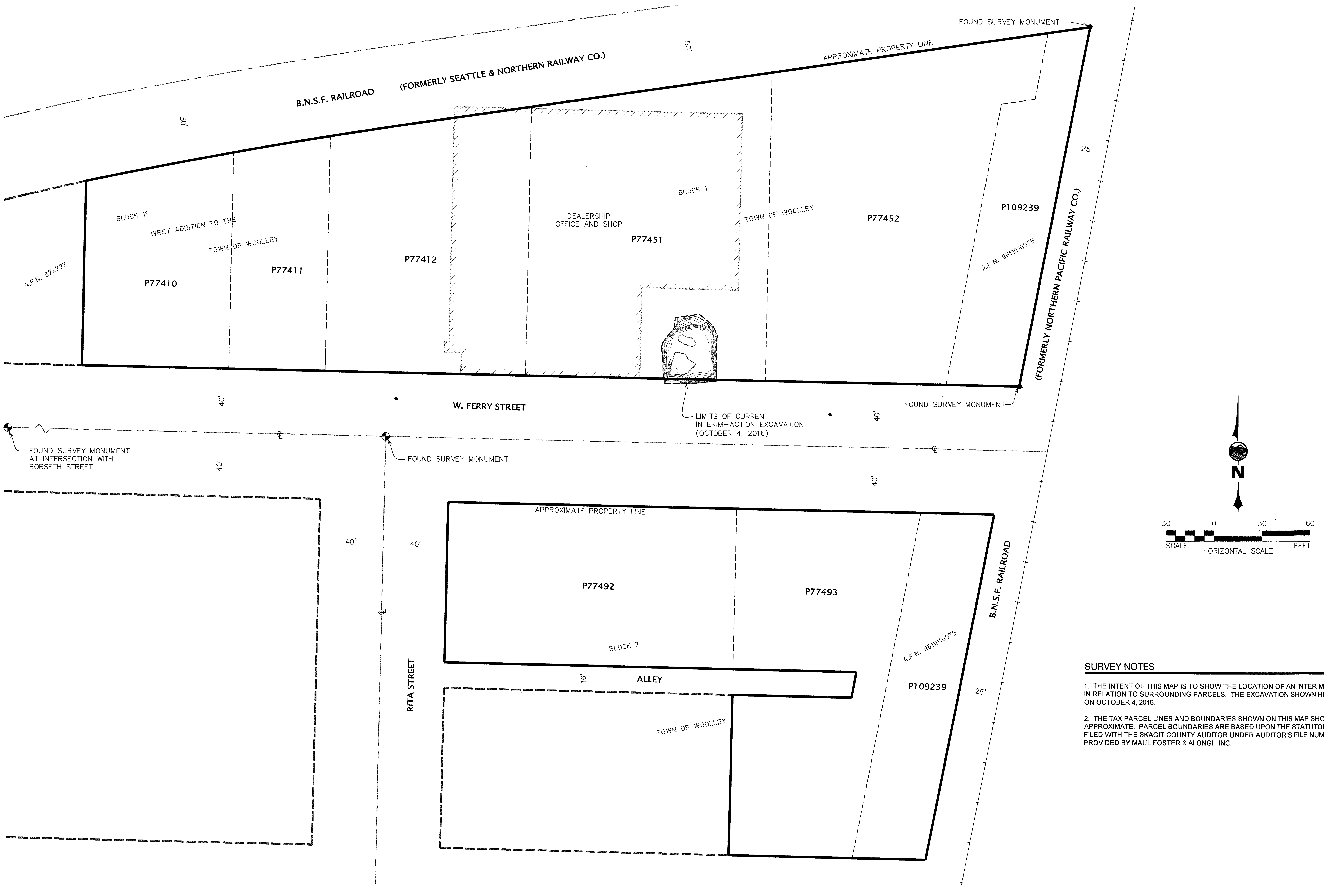
DESIGNED BY
DRAWN BY JGS
CHECKED BY JTB

MAUL FOSTER ALONGI
SEDRO WOOLLEY WASHINGTON
VERN SIMS FORD - 116 W. FERRY ST. PARCEL
INTERIM-ACTION EXCAVATION

DATE 10-20-2016
SCALE AS SHOWN
JOB NUMBER 2016-111
SHEET 1
PAGE 2

MAUL FOSTER ALONGI

VERN SIMS FORD - 116 W. FERRY STREET



SURVEY NOTES

1. THE INTENT OF THIS MAP IS TO SHOW THE LOCATION OF AN INTERIM-ACTION EXCAVATION IN RELATION TO SURROUNDING PARCELS. THE EXCAVATION SHOWN HEREON WAS MAPPED ON OCTOBER 4, 2016.

2. THE TAX PARCEL LINES AND BOUNDARIES SHOWN ON THIS MAP SHOULD BE CONSIDERED APPROXIMATE. PARCEL BOUNDARIES ARE BASED UPON THE STATUTORY WARRANTY DEED FILED WITH THE SKAGIT COUNTY AUDITOR UNDER AUDITOR'S FILE NUMBER 200304170009 PROVIDED BY MAUL FOSTER & ALONGI , INC.

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Wilson
SURVEY/ENGINEERING

DESIGNED BY
DRAWN BY AKM
CHECKED BY JTB

MAUL FOSTER ALONGI
SEDRO WOOLLEY WASHINGTON
VERN SIMS FORD - 116 W. FERRY STREET
INTERIM-ACTION EXCAVATION

DATE 10-20-2016
SCALE AS SHOWN
JOB NUMBER 2016-111
SHEET 2
PAGE 2

APPENDIX E

SITE PHOTOGRAPHS

PHOTOGRAPHS

Project Name:	North Cascade Ford Interim Remedial Action
Project Number:	0747.01.06
Location:	116 West Ferry Street Sedro-Woolley, Washington

Photo No.
1

Description
Looking southwest at underground storage tanks (leaded gasoline tank to east and heating oil tank to west).
September 26, 2016

Photo No.
2

Description
Looking northeast at removal of leaded gasoline tank; green sewer line visible in photo.
September 27, 2016

Photo No.
3

Description
Looking southeast at heating oil tank supply line (north-south trending pipe) and sewer line (green). Former vent line is shown in the foreground.
September 28, 2016

Photo No.
4

Description
Looking north at former vent lines from the two underground storage tanks.
September 28, 2016

PHOTOGRAPHS

Project Name:	North Cascade Ford Interim Remedial Action
Project Number:	0747.01.06
Location:	116 West Ferry Street Sedro-Woolley, Washington

Photo No.
5

Description
Looking north at base of excavation.
September 29, 2016

Photo No.
6

Description
Looking south at sloughing excavation sidewalls.
October 3, 2016

Photo No.
7

Description
Looking southwest at sloughing excavation sidewalls (pre-dewatering) and soil staining.
October 3, 2016 AM

Photo No.
8

Description
Looking southwest at sloughing excavation sidewalls (post-dewatering).
October 3, 2016 PM

Photo No.
9

Description
Looking north at base of excavation with gravel sub-base, lift of gravel borrow, and temporary well point.
October 4, 2016

Photo No.
10

Description
Looking northwest at lift of gravel borrow mixed with ORC-A® amendment.
October 4, 2016

Photo No.
11

Description
On site water treatment system.
October 3, 2016

APPENDIX F

UST DECOMMISSIONING DOCUMENTATION

DEPARTMENT OF ECOLOGY State of Washington

UST Site / Tank Data Summary

8/6/2015

Facility Name: VERN SIMS FORD INC Tag(s):

SITE INFORMATION

VERN SIMS FORD INC	**RESP UNIT:** NORTHWEST	**COUNTY:** SKAGIT
116 WEST FERRY ST	**UBI:**	**LAT:** 48.5057489100374
SEDRO-WOOLLEY, WA	**PHONE:** (206) 855-1551	**LONG:** -122.241757388268

SITE IDs:
UST: 9030
FS: 58313566

TANK INFORMATION

TANK NAME: 1

STATUS: Closed in Place	**STATUS DT:** 08/06/1996	**PERMANENTLY CLOSED DT:**
INSTALL DT: 12/31/1964	**UPGRADE DT:**	**PERMIT EXPIRATION DT:**

TANK		PIPING	
MATERIAL:	Steel	**MATERIAL:**	Steel
CONSTRUCTION:		**CONSTRUCTION:**	
CORROSION PROT:		**CORROSION PROT:**	
MANIFOLDED TANK:		**SFC* at TANK:**	
RELEASE DETECT:		**SFC* at DISP/PUMP:**	
TIGHTNESS TEST:		**1ST REL DETECT:**	
SPILL PREVENTION:		**2ND REL DETECT:**	
OVERFILL PREVENT:		**PUMPING SYSTEM:**	
ACTUAL CAPACITY:			
CAPACITY RANGE:			

** SFC = Steel Flex Connector*

COMPARTMENT #	SUBSTANCE STORED	SUBSTANCE USED	CAPACITY
1	A Leaded Gasoline		

TANK NAME: 2

STATUS: Closed in Place	**STATUS DT:** 08/06/1996	**PERMANENTLY CLOSED DT:**
INSTALL DT: 12/31/1964	**UPGRADE DT:**	**PERMIT EXPIRATION DT:**

TANK		PIPING	
MATERIAL:	Steel	**MATERIAL:**	Steel
CONSTRUCTION:		**CONSTRUCTION:**	
CORROSION PROT:		**CORROSION PROT:**	
MANIFOLDED TANK:		**SFC* at TANK:**	
RELEASE DETECT:		**SFC* at DISP/PUMP:**	
TIGHTNESS TEST:		**1ST REL DETECT:**	
SPILL PREVENTION:		**2ND REL DETECT:**	
OVERFILL PREVENT:		**PUMPING SYSTEM:**	
ACTUAL CAPACITY:			
CAPACITY RANGE:	111 TO 1,100 Gallons		

** SFC = Steel Flex Connector*

COMPARTMENT #	SUBSTANCE STORED	SUBSTANCE USED	CAPACITY
1	H Heating Fuel		

UST_SiteTankDataSmry2014

DEPARTMENT OF
ECOLOGY
State of Washington

30-DAY NOTICE
FOR UNDERGROUND STORAGE TANKS

UST ID #: 9030

County: Skagit

RECEIVED

AUG 12 2016

Department of Ecology
Toxics Cleanup Program

This form provides Ecology 30-days' advanced notice for the following projects, as required by Chapter 173-360 WAC. Instructions are found on the back page.

Please ✓ the appropriate box: ☐ Intent to Install ☒ Intent to Close ☐ Change-in-Service

I. SITE INFORMATION

Tag or UBI # (if applicable):

UST ID # (if applicable):

Site Name: **North Cascade Ford**

Site Address: **116 West Ferry Street**

City: Sedro-Woolley

Phone: 360-855-1551

II. OWNER/OPERATOR INFORMATION

Owner/Operator Name: Dwayne Lane's

Business Name: North Cascade Ford

Mailing Address: 116 West Ferry Street

City: Sedro-Woolley State: WA Zip: 98284

Phone: 855-869-8603

Email: tlane@dwaynelane.com

III. CERTIFIED SERVICE PROVIDER(S)

Check the appropriate boxes. If more than one service provider is required for this project, fill out both sections.

Note: Individuals performing UST services MUST be ICC-certified or have passed another qualifying exam approved by the Department of Ecology.

1) ☐ Installer ☒ Decommissioner ☐ Site Assessor

Company Name: **WYSER Construction Co., Inc.**

Certification Type: **UST Decommissioning**

Service Provider Name: **Mike Redford**

Cert. No.: **ICC00061806** Exp. Date: **3/14/2017**

Provider Phone: **425.742.0898**

Provider Email: **darren@wyserdirt.com**

2) ☐ Installer ☐ Decommissioner ☒ Site Assessor

Company Name: **Maul Foster & Alongi, Inc.**

Certification Type: UST Site Assessor

Service Provider Name: Carolyn Wise

Cert. No.: 231213 Exp. Date: 9/13/2016

Provider Phone: 360.594.6255

Provider Email: cwise@maulfoster.com

IV. TANK INFORMATION

TANK ID	SUBSTANCE STORED	TANK CAPACITY	DATE PROJECT IS EXPECTED TO BEGIN	COMMENTS
1	Leaded Gasoline		09/12/2016	
2	Heating Fuel	111 to 1,100 Gal	09/12/2016	

J[illegible]PY
MUST R[illegible] AND MADE
AVAIL[illegible] INSPECTION

CITY OF
SEDRO-WOOLLEY
GATEWAY TO THE NORTH CASCADES

3-tanks

COMMERCIAL INSPECTION RECORD

24-HOUR INSPECTION REQUEST LINE: 360-855-0139 EXT. # 1

When you call for an inspection, please have the following information ready:

- **Permit number (on other side of this card)**
- **Type of inspection**
- **Site address**

PERMIT NO. 2016-026

JOB ADDRESS: 116 W Ferry St

Address must be posted and plainly visible on-site prior to inspections

Required Building Setback	Front		Ft.
	Side		Ft.
	Rear		Ft.
Special Conditions			
Critical Areas			

A COPY OF THE APPROVED BUILDING PERMIT /APPROVED DRAWINGS ALONG WITH ALL ENGINEERING MUST BE ON-SITE AND MADE AVAILABLE DURING INSPECTIONS

NO CONCRETE SHALL BE PLACED OR REINFORCING STEEL COVERED WITHOUT APPROVAL

ENGINEERING DEPARTMENT

Inspection Request 360-855-0139 ext. 2

Civil	Date	Initials
Erosion control		
Clear limits flagged		
Grading		
Access		
Right-of-Way		
Sidewalks		
Fire turnaround		
Pipe zone bedding		
Road sub-grade		
Backfill compaction		

BUILDING DEPARTMENT

Footings	Date	Initials
Setbacks		
Reinforcement		
Under-slab insulation		
Below grade plumb.		

Foundation Wall	Date	Initials
Reinforcement		
Vents		
Foundation drains		

Floodplain	Date	Initials
Sub-floor Elevation Certificate		
Final sub-floor Elevation Certificate		

Plumbing	Date	Initials
Drains/Waste		
Water supply		
Mechanical	**Date**	**Initials**
Fuel gas piping		
Mech. equip.		
Ducts/Vents		
Shearwalls	**Date**	**Initials**
Ext. hold downs		
Exterior nailing		
Interior nailing		
Framing	**Date**	**Initials**
Framing		
Sub-floor		
Sp. Insp. Rprt.		
Masonry	**Date**	**Initials**
Veneer/Walls		
Chimney reinf.		
Insulation	**Date**	**Initials**
Walls		
Ceiling-Vaulted		
Ceiling-Flat		
Floors		
Drywall	**Date**	**Initials**
Drywall nailing		

CORRECTIONS

YES / NO If yes, refer to your Correction Notice(s)

CITY OCCUPANCY REQUIREMENTS

BUILDING DEPT.

FINAL	Date	Initials
Building		
City address sign		

FIRE DEPT.

FINAL	Date	Initials
Sprinklers/Test		
Alarm		
Building		
Other: Tank Removal	10/13/16	[illegible]

ENGINEERING DEPT.

FINAL	Date	Initials
Side-Sewer		
Stormwater Drainage		
Site (frontage, driveways etc)		
ULID Waiver		

REINSPECTIONS ARE SUBJECT TO A REINSPECTION FEE AFTER 1st REINSPECTION FOR SAME ITEM
(SWMC 15.04.040 Exhibit B)

Reinspection fees must be paid prior to 2ND reinspection

THIS CARD IS TO REMAIN ON SITE AND MADE AVAILABLE TO THE CITY INSPECTOR AT THE TIME OF INSPECTION. FAILURE TO HAVE THE INSPECTION CARD ON SITE AND AVAILABLE WILL RESULT IN AN AUTOMATIC REINSPECTION CHARGE OF $50.00

REINSPECTION FEES MUST BE PAID PRIOR TO REINSPECTION

City of Sedro-Woolley
325 Metcalf Street
Sedro-Woolley WA 98284
Permit Inspection Line 855-0139
"Call before you dig" 1-800-424-5555 or "811"

JOB COPY
MUST REMAIN ON SITE AND MADE AVAILABLE FOR INSPECTION

Fire Permit

Permit Number: 2016226

Applicant

Approval Date: 9/15/2016

Name: Dwayne Layne's North Cascade Ford-WYSER Construction Co Inc

Address: 116 West Ferry Street
Sedro-Woolley, WA 98284

Phone:

PERMIT APPROVED AND ISSUED VIA FACSIMILE / MAIL
PERMIT NOT VALID UNLESS SIGNED BY CITY OFFICIAL

Parcel

Parcel Number: P77451

Zoning: CBD

Address: 116 W. Ferry St.
Sedro-Woolley, WA 98284

Section: 24 **Township:** 35 **Range:** 04

Addition: **Block:** **Lot(s):**

Legal Description: TOWN OF WOOLLEY PTN VAC NORTHERN AVE & ALLEY ADJ & LTS 1 TO 6

Owners

Name: Coulter Properties LLC

Phone:

Address: 116 W. Ferry St.
Sedro-Woolley, WA 98284

Cellular:

Contractors

Name: Wyser Construction

Phone:

Address: 19015 109th Ave SE
Snohomish, WA 98296

State License: 601735231

Local License: 601735231

Fees and Receipts

322.10.04.000 001	Fire Dept. - Above/Underground Fuel Tank/Removal
322.10.03.000 001	Fire Dept. - Administrative Fee

Total Receipts: **$0.00**

Description

Project Description: Removal of 3 tanks and perform interim cleanup action

Conditions

Date: 9-15-16

Status: Approved

Condition Description:

1. **Install per manufacture's specifications.**
2. **Call for final inspection. 360 855-2252.**

PERMIT APPROVED AND
ISSUED VIA FACSIMILE / MAIL
PERMIT NOT VALID UNLESS SIGNED BY CITY OFFICIAL

Applicant Signature

Date

Fire Department Signature

9/16/16
Date

Marine Vacuum Service, Inc.
GENERAL CONTRACTOR
CONTRACTORS LICENSE # MARINVS097JA

P0. Box 24263 Seattle, Washington 98124
Telephone (206) 762-0240
FAX (206) 763-8084
1-800-540-7491

AST/UST STORAGE TANK PUMP & RINSE CERTIFICATE

Tank Size: 1,000 gallons

Last Contents Leaded Gasoline

Tank Location: 116 W Ferry St-
Sedro-Woolley, WA 98284

Marine Vacuum Service, Inc. certifies that the above mentioned tank(s) have been triple rinsed in accordance with the industry standard as outlined in 40 CFR PART 280.70, WAC 173-360-380(I), API 1604, API 2015 and that all residual product and rinsate has been disposed of in accordance with Federal, State and Local regulations. Tanks listed above are **NOT GAS FREE** or **NOT SAFE FOR HOT WORK**

Tank Owner: North Cascade Ford
116 W Ferry St
Sedro Woolley WA

Contractor: Wyser Construction

M.V.S. Representative:

Date: 9 27 16

Notes:

DBE # D4M1302341

EPA # WAD980974521

A MINORITY BUSINESS ENTERPRISE ID # D4M1302341

Marine Vacuum Service, Inc.
GENERAL CONTRACTOR
CONTRACTORS LICENSE # MARINVS097JA

P0. Box 24263 Seattle, Washington 98124
Telephone (206) 762-0240
FAX (206) 763-8084
1-800-540-7491

AST/UST STORAGE TANK PUMP & RINSE CERTIFICATE

Tank Size: 1,000 gallons

Last Contents Heating Oil

Tank Location: 116 W Ferry St.
Sedro-Woolley, WA 98284

Marine Vacuum Service, Inc. certifies that the above mentioned tank(s) have been triple rinsed in accordance with the industry standard as outlined in 40 CFR PART 280.70, WAC 173-360-380(I), API 1604, API 2015 and that all residual product and rinsate has been disposed of in accordance with Federal, State and Local regulations. Tanks listed above are **NOT GAS FREE** or **NOT SAFE FOR HOT WORK**

Tank Owner: North Cascade Ford
116 W Ferry St
Sedro Woolley, WA 98284

Contractor: Wyser Construction

M.V.S. Representative:

Date: 9 22 16

Notes:

This Shipping Order must be legibly filled in, in Ink indelible Pencil, or in Carbon, and retained by the agent

Shipper No. 13170

Carrier No. ______

Page ______ of ______

Marine Vacuum Service Inc.
(Name of carrier) (SCAC)

Date 9 27 16

On Collect on Delivery shipments, the letters "COD" must appear before consignee's name or as otherwise provided in Item 430, Sec.1.

TO:
Consignee Marine Vacuum Service Inc.
Street 1516 South Graham Street
City Seattle State WA Zip Code 98108

FROM:
Shipper WYSER CONST
Street 116 W FERRY ST
City SEDRO State WA Zip Code
24 hr. Emergency Contact Tel. No. ChemTel 1-800-255-3924 Contract MIS3627926

Route

Vehicle Number

No. of Units & Container Type	HM	BASIC DESCRIPTION UN or NA Number, Proper Shipping Name, Hazard Class, Packing Group	TOTAL QUANTITY (Weight, Volume, Gallons, etc.)	WEIGHT (Subject to Correction)	RATE	CHARGES (For Carrier Use Only)
1 TT	X	(DOT Spec Tank Required) UN1863 Fuel, Aviation, Turbin Engine, Class 3, PG I				
1 TT	X	(DOT Spec Tank Required) UN1203 Gasoline, Mixture Class 3, PG II				
1 TT	X	(DOT Spec Tank Required) UN1203 Gasoline, Class 3, PG II				
1 TT	X	NA1993 Diesel Mixture, Class 3, PG III				
1 TT	X	NA1993 Diesel, Class 3, PG III				
1 TT	X	NA1270 Petroleum Oil, Class 3, PG I				
1 TT	X	NA1270 Petroleum Oil, Mixture, Class 3, PG I				
1 TT		Oily Waste Water Non Reg by DOT				
1 TT		Waste Water Non Reg by DOT	300	Gals		
1 TT		Marine Vessel Sewage Non Reg by DOT				
1 TT		Street Waste Storm Pipe Cleaning Non Reg by DOT				
		SOLIDS	500	Gals		

PLACARDS TENDERED: YES ☐ NO ☐

Note — (1) Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property, as follows: "The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding ______ per ______."
(2) Where the applicable tariff provisions specify a limitation of the carrier's liability absent a release or a value declaration by the shipper and the shipper does not release the carrier's liability or declare a value, the carrier's liability shall be limited to the extent provided by such provisions. See NMFC Item 172.
(3) Commodities requiring special or additional care or attention in handling or stowing must be so marked and packaged as to ensure safe transportation. See Section 2(e) of item 360, Bills of Lading, Freight Bills and Statements of Charges and Section 1(a) of the Contract Terms and Conditions for a list of such articles.

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

______ Signature

REMIT C.O.D. TO: ADDRESS

COD Amt: $

C.O.D. FEE:
PREPAID ☐
COLLECT ☐ $

Subject to Section 7 of the conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

______
(Signature of Consignor)

TOTAL CHARGES $

FREIGHT CHARGES
FREIGHT PREPAID except when box at right is checked
Check box if charges are to be collect ☐

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of, said property over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the bill of lading terms and conditions in the governing classification on the date of shipment.

Shipper hereby certifies that he is familiar with all the lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

SHIPPER

PER

9 27 16

Permanent post-office address of shipper.

CARRIER MAR-VAC

PER

DATE 9 27 16

2

SOUND TESTING, INC.

P.O. BOX 16204 SEATTLE, WA 98116
(206) 932-0206 FAX (206) 937-3848
WWW.SOUNDTESTINGINC.COM

MARINE CHEMIST CERTIFICATE

SERIAL № **46727**

Survey Requested by: WYSER
Vessel Owner or Agent: NW CASCADE FORD
Date: 26 SEP 16

Vessel: UST
Type of Vessel: UST
Specific Location of Vessel: 116 W FERRY ST, SEDRO WOOLL

Last Three (3) Loadings: (GASOLINE & DIESEL) X3
Tests Performed: VISUAL, CO2
Time Survey Completed: 1505

1615

1000 GAL DIESEL UST

1000 GAL GASOLINE UST

INERTED WITH CO2 (O2<5.0%)

SAFE FOR LIMITED HOT WORK

LIMITATIONS:
① MARINE CHEMIST WILL MONITOR
② MAY USE CHOP SAW TO CUT ACCESS HOLES
③ HOT WORK COMPLETE AT 1505
(CUT)

SAFE FOR EXCAVATION

SAFE FOR TRANSPORTATION

In the event of changes adversely affecting conditions in the above spaces, or if in any doubt, immediately stop all work and contact the undersigned Marine Chemist.

Qualifications: Manipulation of valves or devices tending to alter conditions in pipe lines or tanks noted above, unless specifically approved in this certificate, will require re-inspection and a new Certificate for spaces so affected. All piping, heating coils, pumps and floating roof gaskets attached to or contained within spaces listed above shall be considered "NOT SAFE" unless otherwise specifically designated.

STANDARD SAFETY DESIGNATIONS

(These detail the minimum conditions for Safe Entry and Hot Work.) The Marine Chemist may request additional measures if workplace conditions so dictate.

ATMOSPHERE SAFE FOR WORKERS means that in a space (a) the oxygen content is between 19.5% and 22% by volume, and (b) combustible gas is less than 10% of the Lower Explosive Limit, and (c) airborne toxic materials are within permissible concentrations as listed in OSHA's Subpart Z or in ACGIH's current list of Threshold Limit Values.

SAFE FOR HOT WORK means that (a) oxygen within the space is less than 22% by volume; and (b) the combustible gas is less than 10% of the Lower Explosive Limit; and (c) cargo residues within the space will not combust during hot work; and (d) pipes that can deliver hazardous materials to the workspace have been separated, blanked, or locked out, and nearby hazardous spaces have been evaluated and noted on the certificate.

NOT SAFE FOR HOT WORK: In the compartment or space so designated, hot work is not permitted.

"The undersigned acknowledges receipt of this Certificate and understands conditions and limitations under which it was issued."

Signed / WYSER 26 SEP 16
Name Company Date

POSTING

This Certificate is based on conditions existing at the time the inspection herein set forth was completed and is issued subject to compliance with all qualifications and instructions.

Signed #088
Marine Chemist Certificate No.

CRAIG 206-313-6933

Skagit River
Steel & Recycling, Inc.
Serving You Since 1958
1265 South Anacortes Street
P.O. Box 376
Burlington, WA 98233-0376
(360) 757-6096, FAX (360) 757-8820

Material Purchase Ticket

Ticket # **344953**

MFA-16-1474

Customer ID - 56301

WYSER CONSTRUCTION

Date: 9/27/2016 11:50:08AM
Scale: RomBigScale1
Weighmaster Ric Gonzalez

Page 1 of 1

Driver's License Number:
Vehicle Tag:

Item	Gross	Tare	Net	UM	Price	Total
#2 UNPREPARED STEEL	14,380.00 s	13,400.00 s	**980.00**	Ton		

Total Payment (Cash)
Check Paid

I, the under signed, affirm under penalty of law that the property that is subject to this transaction is not to the best of knowledge stolen property.

Signature of Seller

Date

Signature of Buyer or Witness

(scrap metal)

EDITED TICKET 9/27/16 12:03 pm Ric Gonzalez

Skagit River
Steel & Recycling, Inc.
Serving You Since 1958
1265 South Anacortes Street
P.O. Box 376
Burlington, WA 98233-0376
(360) 757-6096, FAX (360) 757-8820

Material Purchase Ticket

Ticket # **344957**

MFA-16-1474

Customer ID - 56301

WYSER CONSTRUCTION

Date: 9/27/2016 12:58:36PM
Scale: RomBigScale1
Weighmaster Ric Gonzalez

Page 1 of 1

Driver's License Number:
Vehicle Tag:

Item	Gross	Tare	Net	UM	Price	Total
#2 UNPREPARED STEEL	14,540.00 s	13,420.00 s	**1,120.00**	Ton		

Total Payment (Cash)

Check Paid

I, the under signed, affirm under penalty of law that the property that is subject to this transaction is not to the best of knowledge stolen property.

Signature of Seller

Date

Signature of Buyer or Witness

Scrap metal

RECYCLING TODAY FOR TOMORROW'S FUTURE
8 TO 4:30 MONDAY THROUGH FRIDAY

DEPARTMENT OF
ECOLOGY
State of Washington

PERMANENT CLOSURE NOTICE
FOR UNDERGROUND STORAGE TANKS

UST ID #: 9030
County: Skagit

This notice certifies that permanent closure activities were performed and conducted in accordance with Chapter 173-360 WAC. Instructions are found on the back page.

I. UST FACILITY

Facility Compliance Tag #:
UST ID #:
Site Name: North Cascade Ford
Site Address: 116 West Ferry Street
City: Sedro Woolley
Phone: 360.855.1551

II. OWNER/OPERATOR INFORMATION

Owner/Operator Name: Dwayne Lane's
Business Name: North Cascade Ford
Address: 116 West Ferry Street
City: Sedro Woolley State: WA Zip: 98284
Phone: 855.869.8603
Email: tlane@dwaynelane.com

III. CERTIFIED UST DECOMMISSIONER

Company Name: Wyser Construction Co., Inc.
Service Provider Name: Mike Redford
Address: 19015 109th Ave SE
Certification Type: ICC UST Decommissioning
City: Snohomish State: WA Zip: 98296
Cert. No.: ICC00061806 Exp. Date: 3/14/17
Provider Phone: 425.742.0898
Provider Email: darren@wyserdirt.com
Provider Signature:
Date: 10/13/16

IV. TANK INFORMATION

TANK ID	TANK CAPACITY	LAST SUBSTANCE STORED	CLOSURE METHOD removal	 closed-in-place	 change-in-service	CLOSURE DATE
1	1,000-gallon	Leaded Gasoline	☒	☐	☐	
2	1,000-gallon	Heating Oil	☒	☐	☐	
			☐	☐	☐	
			☐	☐	☐	
			☐	☐	☐	
			☐	☐	☐	

V. REQUIRED SIGNATURE

Signature acknowledges UST(s) comply with UST regulation WAC 173-360-380 Permanent Closure Requirements.

Date
Signature of Tank Owner/Operator or Authorized Representative
Print or Type Name

UST ID #: _9030_____

County: _Skagit____

DEPARTMENT OF
ECOLOGY
State of Washington

SITE CHECK/SITE ASSESSMENT CHECKLIST
FOR UNDERGROUND STORAGE TANKS

This checklist certifies that site check or site assessment activities were performed in accordance with Chapter 173-360 WAC. Instructions are found on the last page.

I. UST FACILITY	II. OWNER/OPERATOR INFORMATION
Facility Compliance Tag #: N/A	Owner/Operator Name: Dwayne Lane's
UST ID #: 9030	Business Name: North Cascade Ford
Site Name: North Cascade Ford	Address: 116 West Ferry Street
Site Address: 116 West Ferry Street	City: Sedro-Woolley State: WA Zip: 98284
City: Sedro-Woolley	Phone: 855-869-8603
Phone: 360-855-1551	Email: tlane@dwaynelane.com

III. CERTIFIED SITE ASSESSOR

Service Provider Name: Carolyn Wise		Company Name: Maul Foster & Alongi, Inc.		
Cell Phone: (360)690-5982	Email: cwise@maulfoster.com	Address: 1329 North State Street, Suite 301		
Certification #: ICC00231213	Exp. Date: 8/16/2018	City: Bellingham	State: WA	Zip: 98225

IV. TANK INFORMATION

TANK ID	TANK CAPACITY	LAST SUBSTANCE STORED	DATE SITE CHECK OR ASSESSMENT CONDUCTED
1	1,000	Leaded Gasoline	9/27/2016
2	1,000	Heating Fuel	9/27/2016

V. REASON FOR CONDUCTING SITE CHECK/SITE ASSESSMENT (check one)

☒ Release investigation following permanent UST system closure (i.e. tank removal or closure-in-place).

☐ Release investigation following a failed tank and/or line tightness test.

☐ Release investigation following discovery of contaminated soil and/or groundwater.

☐ Release investigation directed by Ecology to determine if the UST system is the source of offsite impacts.

☐ UST system is undergoing a "change-in-service", which is changing from storing a regulated substance (e.g. gasoline) to storing a non-regulated substance (e.g. water).

☐ Directed by Ecology for UST system permanently closed or abandoned before 12/22/1988.

☐ Other (describe):

VI. CHECKLIST

The site assessor must check each of the following items and include it in the report. Sections referenced below can be found in the Ecology publication *Guidance for Site Checks and Site Assessments for Underground Storage Tanks.*	YES	NO
1. The location of the UST site is shown on a vicinity map.	☒	☐
2. A brief summary of information obtained during the site inspection is provided (Section 3.2)	☒	☐
3. A summary of UST system data is provided (Section 3.1)	☒	☐
4. The soils characteristics at the UST site are described. (Section 5.2)	☒	☐
5. Is there any apparent groundwater in the tank excavation?	☐	☒
6. A brief description of the surrounding land use is provided. (Section 3.1)	☒	☐
7. The name and address of the laboratory used to perform analyses is provided. The methods used to collect and analyze the samples, including the number and types of samples collected, are also documented in the report. The data from the laboratory is appended to the report.	☒	☐
8. The following items are provided in one or more sketches:		
• Location and ID number for all field samples collected	☒	☐
• If applicable, groundwater samples are distinguished from soil samples	☒	☐
• Location of samples collected from stockpiled excavated soil	☐	☒
• Tank and piping locations and limits of excavation pit	☒	☐
• Adjacent structures and streets	☒	☐
• Approximate locations of any on-site and nearby utilities	☒	☐
9. If sampling procedures are different from those specified in the guidance, has justification for using these alternative sampling procedures been provided? (Section 3.4)	☐	☐
10. A table is provided showing laboratory results for each sample collected including; sample ID number, constituents analyzed for and corresponding concentration, analytical method, and detection limit for that method. Any sample exceeding MTCA Method A cleanup standards are highlighted or bolded.	☒	☐
11. Any factors that may have compromised the quality of the data or validity of the results are described.	☒	☐
12. The results of this site check/site assessment indicate that a confirmed release of a regulated substance has occurred. The requirements for reporting confirmed releases can be found in WAC 173-360-372.	☒	☐

VII. REQUIRED SIGNATURES

Signature acknowledges the Site Check or Site Assessment complies with UST regulations WAC 173-360-360 through -395.

Carolyn Wise	Carolyn Wise	10/17/16
Print or Type Name	Signature of Certified Site Assessor	Date

SITE CHECK/SITE ASSESSMENT CHECKLIST

FOR UNDERGROUND STORAGE TANKS

INSTRUCTIONS

This checklist must accompany the results of a Site Check Report, which is performed if a release of petroleum or other regulated substance is suspected. It is also required to accompany a Site Assessment Report, which is required following the permanent closure or "change-in-service" of an underground storage tank system. This form is required to be filled out whether or not contamination is found. This checklist is to be completed by the Site Assessor and submitted **within thirty days of completing** these activities to the following address:

Dept. of Ecology
UST Section
PO Box 47655
Olympia, WA 98504-7655

I./II. UST Facility and Owner/Operator Information: Fill out these sections completely. If you do not know your UST ID number, include the facility compliance tag number.

III. Service Provider Information: It is the responsibility of the ICC-certified Site Assessor to ensure that sampling and documentation procedures are completed in accordance with Ecology's *Guidance for Site Checks and Site Assessment for Underground Storage Tanks*.

IV. Tank Information: Use the same Tank identification numbers listed on the facility's Business License which is based on the most recent UST Addendum on file with Ecology. List the last substance stored in each tank, the tank sizes and the date the site check or site assessment was completed.

V. Required Signature: The Site Assessor signature certifies these procedures were followed.

All confirmed releases must be reported to Ecology by the owner within 24 hours and by service providers within 72 hours of discovery. A Site Characterization Report must be submitted to Ecology within 90 days after confirming a release.

Further questions? *Please contact your regional office below and ask for a tank inspector to assist you.*

Regional Office	**Counties Served**
Central (509) 575-2490	Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, Yakima
Eastern (509) 329-3400	Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman
HQ (360) 407-7170	Federal facilities in Western Washington
Northwest (425) 649-7000	Island, King, Kitsap, San Juan, Skagit, Snohomish, Whatcom
Southwest (360) 407-6300	Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Lewis, Mason, Pacific, Pierce, Skamania, Thurston, Wahkiakum

or find a complete list of UST inspectors at:
www.ecy.wa.gov/programs/tcp/ust-lust/people.html

APPENDIX G

ANALYTICAL LABORATORY REPORTS

OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 28, 2016

Heather Good
Maul Foster & Alongi, Inc.
Bay Vista Tower
2815 2nd Avenue, Suite 540
Seattle, WA 98121

Re: Analytical Data for Project 0747.01.06-6.3
Laboratory Reference No. 1609-344

Dear Heather:

Enclosed are the analytical results and associated quality control data for samples submitted on September 27, 2016.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 28, 2016
Samples Submitted: September 27, 2016
Laboratory Reference: 1609-344
Project: 0747.01.06-6.3

Case Narrative

Samples were collected on September 27, 2016 and received by the laboratory on September 27, 2016. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

NWTPH Gx + n-Hexane and Volatiles EPA 8260C Analysis

Per EPA Method 5035A, samples were received by the laboratory in pre-weighed 40 mL VOA vials within 48 hours of sample collection. They were stored in a freezer at between -7°C and -20°C until extraction or analysis.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 28, 2016
Samples Submitted: September 27, 2016
Laboratory Reference: 1609-344
Project: 0747.01.06-6.3

NWTPH-Gx + n-HEXANE

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**WSW01-S-6.0**					
Laboratory ID:	09-344-01					
n-Hexane	**ND**	0.077	EPA 8015M	9-27-16	9-27-16	
Gasoline	**ND**	7.7	NWTPH-Gx	9-27-16	9-27-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*108*	*68-129*				
Client ID:	**NSW01--S-6.0**					
Laboratory ID:	09-344-02					
n-Hexane	**ND**	0.079	EPA 8015M	9-27-16	9-27-16	
Gasoline	**ND**	7.9	NWTPH-Gx	9-27-16	9-27-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*103*	*68-129*				
Client ID:	**ESW01--S-6.0**					
Laboratory ID:	09-344-03					
n-Hexane	**ND**	0.088	EPA 8015M	9-27-16	9-27-16	
Gasoline	**ND**	8.8	NWTPH-Gx	9-27-16	9-27-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*101*	*68-129*				
Client ID:	**SSW01-S-3.0**					
Laboratory ID:	09-344-04					
n-Hexane	**ND**	0.095	EPA 8015M	9-27-16	9-27-16	
Gasoline	**ND**	9.5	NWTPH-Gx	9-27-16	9-27-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*101*	*68-129*				
Client ID:	**SSW02--S-6.0**					
Laboratory ID:	09-344-05					
n-Hexane	**ND**	0.075	EPA 8015M	9-27-16	9-27-16	
Gasoline	**ND**	7.5	NWTPH-Gx	9-27-16	9-27-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*100*	*68-129*				

Date of Report: September 28, 2016
Samples Submitted: September 27, 2016
Laboratory Reference: 1609-344
Project: 0747.01.06-6.3

NWTPH-Gx + n-HEXANE

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BASE02--S-10.0**					
Laboratory ID:	09-344-07					
n-Hexane	**ND**	0.083	EPA 8015M	9-27-16	9-27-16	
Gasoline	**ND**	8.3	NWTPH-Gx	9-27-16	9-27-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*105*	*68-129*				

Date of Report: September 28, 2016
Samples Submitted: September 27, 2016
Laboratory Reference: 1609-344
Project: 0747.01.06-6.3

NWTPH-Gx + n-HEXANE
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0927S1					
n-Hexane	**ND**	0.050	EPA 8015M	9-27-16	9-27-16	
Gasoline	**ND**	5.0	NWTPH-Gx	9-27-16	9-27-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*99*	*68-129*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	09-344-04										
	ORIG	DUP									
n-Hexane	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*101*	*101*	*68-129*			
SPIKE BLANKS											
Laboratory ID:	SB0927S1										
	SB	SBD	SB	SBD		SB	SBD				
n-Hexane	**0.880**	**0.868**	1.00	1.00		**88**	**87**	70-130	1	20	
Surrogate:											
Fluorobenzene						*103*	*102*	*68-129*			

Date of Report: September 28, 2016
Samples Submitted: September 27, 2016
Laboratory Reference: 1609-344
Project: 0747.01.06-6.3

NWTPH-Gx
CONTINUING CALIBRATION SUMMARY

Lab ID	True Value (ppm)	Calc. Value	Percent Difference	Control Limits
CCVD0927G-1	5.00	4.63	7	+/- 20%
CCVD0927G-2	5.00	4.53	9	+/- 20%

Date of Report: September 28, 2016
Samples Submitted: September 27, 2016
Laboratory Reference: 1609-344
Project: 0747.01.06-6.3

n-HEXANE
EPA 8015M
CONTINUING CALIBRATION SUMMARY

Analyte	Lab ID	True Value (ppm)	Calc. Value	Percent Difference	Control Limits
n-Hexane	CCVD0927B-1	50.0	50.4	-1	+/- 15%
n-Hexane	CCVD0927B-2	50.0	48.0	4	+/- 15%
n-Hexane	CCVD0927B-3	50.0	48.2	4	+/- 15%

Date of Report: September 28, 2016
Samples Submitted: September 27, 2016
Laboratory Reference: 1609-344
Project: 0747.01.06-6.3

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**WSW01-S-6.0**					
Laboratory ID:	09-344-01					
Diesel Range Organics	**ND**	30	NWTPH-Dx	9-27-16	9-27-16	
Lube Oil Range Organics	**ND**	61	NWTPH-Dx	9-27-16	9-27-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*86*	*50-150*				
Client ID:	**NSW01-S-6.0**					
Laboratory ID:	09-344-02					
Diesel Range Organics	**ND**	31	NWTPH-Dx	9-27-16	9-27-16	
Lube Oil Range Organics	**ND**	61	NWTPH-Dx	9-27-16	9-27-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*83*	*50-150*				
Client ID:	**ESW01-S-6.0**					
Laboratory ID:	09-344-03					
Diesel Range Organics	**ND**	33	NWTPH-Dx	9-27-16	9-27-16	
Lube Oil Range Organics	**ND**	66	NWTPH-Dx	9-27-16	9-27-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*73*	*50-150*				
Client ID:	**SSW01-S-3.0**					
Laboratory ID:	09-344-04					
Diesel Range Organics	**ND**	28	NWTPH-Dx	9-27-16	9-27-16	
Lube Oil Range Organics	**ND**	56	NWTPH-Dx	9-27-16	9-27-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*94*	*50-150*				
Client ID:	**SSW02-S-6.0**					
Laboratory ID:	09-344-05					
Diesel Range Organics	**820**	28	NWTPH-Dx	9-27-16	9-27-16	
Lube Oil Range Organics	**ND**	400	NWTPH-Dx	9-27-16	9-27-16	U1
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*115*	*50-150*				
Client ID:	**BASE02-S-10.0**					
Laboratory ID:	09-344-07					
Diesel Range Organics	**ND**	33	NWTPH-Dx	9-27-16	9-27-16	
Lube Oil Range Organics	**ND**	66	NWTPH-Dx	9-27-16	9-27-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*91*	*50-150*				

Date of Report: September 28, 2016
Samples Submitted: September 27, 2016
Laboratory Reference: 1609-344
Project: 0747.01.06-6.3

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0927S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	9-27-16	9-27-16	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	9-27-16	9-27-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*93*	*50-150*				

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	09-333-01								
	ORIG	DUP							
Diesel Fuel #2	**11800**	**9050**	NA	NA	NA	NA	26	NA	
Lube Oil Range	**ND**	**ND**	NA	NA	NA	NA	NA	NA	U1
Surrogate:									
o-Terphenyl					--- ---	*50-150*			F
SPIKE BLANK									
Laboratory ID:	SB0927S1								
Diesel Fuel #2	**85.3**		100	NA	**85**	61-130	NA	NA	
Surrogate:									
o-Terphenyl					*99*	*50-150*			

Date of Report: September 28, 2016
Samples Submitted: September 27, 2016
Laboratory Reference: 1609-344
Project: 0747.01.06-6.3

NWTPH-Dx
CONTINUING CALIBRATION SUMMARY

Lab ID	True Value (ppm)	Calc. Value	Percent Difference	Control Limits
CCV0927F-T1	100	98.4	1.6	+/-15%
CCV0927F-T2	100	95.8	4.2	+/-15%
CCV0927F-T3	100	98.6	1.4	+/-15%
CCV0927R-T1	100	101	-1.0	+/-15%
CCV0927R-T2	100	101	-0.5	+/-15%
CCV0927R-T3	100	100	-0.4	+/-15%

Date of Report: September 28, 2016
Samples Submitted: September 27, 2016
Laboratory Reference: 1609-344
Project: 0747.01.06-6.3

VOLATILES EPA 8260C
page 1 of 2

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**WSW01-S-6.0**					
Laboratory ID:	09-344-01					
Dichlorodifluoromethane	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
Chloromethane	ND	0.0058	EPA 8260C	9-27-16	9-27-16	
Vinyl Chloride	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
Bromomethane	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
Chloroethane	ND	0.0058	EPA 8260C	9-27-16	9-27-16	
Trichlorofluoromethane	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
1,1-Dichloroethene	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
Acetone	0.011	0.0058	EPA 8260C	9-27-16	9-27-16	Y
Iodomethane	ND	0.0079	EPA 8260C	9-27-16	9-27-16	
Carbon Disulfide	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
Methylene Chloride	ND	0.0058	EPA 8260C	9-27-16	9-27-16	
(trans) 1,2-Dichloroethene	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
Methyl t-Butyl Ether	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
1,1-Dichloroethane	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
Vinyl Acetate	ND	0.0058	EPA 8260C	9-27-16	9-27-16	
2,2-Dichloropropane	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
(cis) 1,2-Dichloroethene	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
2-Butanone	ND	0.0058	EPA 8260C	9-27-16	9-27-16	
Bromochloromethane	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
Chloroform	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
1,1,1-Trichloroethane	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
Carbon Tetrachloride	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
1,1-Dichloropropene	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
Benzene	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
1,2-Dichloroethane	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
Trichloroethene	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
1,2-Dichloropropane	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
Dibromomethane	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
Bromodichloromethane	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
2-Chloroethyl Vinyl Ether	ND	0.0058	EPA 8260C	9-27-16	9-27-16	
(cis) 1,3-Dichloropropene	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
Methyl Isobutyl Ketone	ND	0.0058	EPA 8260C	9-27-16	9-27-16	
Toluene	ND	0.0058	EPA 8260C	9-27-16	9-27-16	
(trans) 1,3-Dichloropropene	ND	0.0012	EPA 8260C	9-27-16	9-27-16	

Date of Report: September 28, 2016
Samples Submitted: September 27, 2016
Laboratory Reference: 1609-344
Project: 0747.01.06-6.3

VOLATILES EPA 8260C
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**WSW01-S-6.0**					
Laboratory ID:	09-344-01					
1,1,2-Trichloroethane	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
Tetrachloroethene	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
1,3-Dichloropropane	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
2-Hexanone	ND	0.0058	EPA 8260C	9-27-16	9-27-16	
Dibromochloromethane	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
1,2-Dibromoethane	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
Chlorobenzene	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
1,1,1,2-Tetrachloroethane	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
Ethylbenzene	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
m,p-Xylene	ND	0.0023	EPA 8260C	9-27-16	9-27-16	
o-Xylene	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
Styrene	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
Bromoform	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
Isopropylbenzene	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
Bromobenzene	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
1,1,2,2-Tetrachloroethane	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
1,2,3-Trichloropropane	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
n-Propylbenzene	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
2-Chlorotoluene	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
4-Chlorotoluene	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
1,3,5-Trimethylbenzene	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
tert-Butylbenzene	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
1,2,4-Trimethylbenzene	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
sec-Butylbenzene	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
1,3-Dichlorobenzene	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
p-Isopropyltoluene	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
1,4-Dichlorobenzene	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
1,2-Dichlorobenzene	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
n-Butylbenzene	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
1,2-Dibromo-3-chloropropane	ND	0.0058	EPA 8260C	9-27-16	9-27-16	
1,2,4-Trichlorobenzene	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
Hexachlorobutadiene	ND	0.0058	EPA 8260C	9-27-16	9-27-16	
Naphthalene	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
1,2,3-Trichlorobenzene	ND	0.0012	EPA 8260C	9-27-16	9-27-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*116*	*76-131*				
Toluene-d8	*121*	*80-126*				
4-Bromofluorobenzene	*119*	*60-146*				

Date of Report: September 28, 2016
Samples Submitted: September 27, 2016
Laboratory Reference: 1609-344
Project: 0747.01.06-6.3

VOLATILES EPA 8260C
page 1 of 2

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**NSW01-S-6.0**					
Laboratory ID:	09-344-02					
Dichlorodifluoromethane	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
Chloromethane	ND	0.0064	EPA 8260C	9-27-16	9-27-16	
Vinyl Chloride	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
Bromomethane	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
Chloroethane	ND	0.0064	EPA 8260C	9-27-16	9-27-16	
Trichlorofluoromethane	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
1,1-Dichloroethene	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
Acetone	0.0095	0.0064	EPA 8260C	9-27-16	9-27-16	Y
Iodomethane	ND	0.0087	EPA 8260C	9-27-16	9-27-16	
Carbon Disulfide	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
Methylene Chloride	ND	0.0064	EPA 8260C	9-27-16	9-27-16	
(trans) 1,2-Dichloroethene	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
Methyl t-Butyl Ether	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
1,1-Dichloroethane	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
Vinyl Acetate	ND	0.0064	EPA 8260C	9-27-16	9-27-16	
2,2-Dichloropropane	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
(cis) 1,2-Dichloroethene	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
2-Butanone	ND	0.0064	EPA 8260C	9-27-16	9-27-16	
Bromochloromethane	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
Chloroform	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
1,1,1-Trichloroethane	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
Carbon Tetrachloride	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
1,1-Dichloropropene	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
Benzene	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
1,2-Dichloroethane	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
Trichloroethene	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
1,2-Dichloropropane	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
Dibromomethane	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
Bromodichloromethane	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
2-Chloroethyl Vinyl Ether	ND	0.0064	EPA 8260C	9-27-16	9-27-16	
(cis) 1,3-Dichloropropene	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
Methyl Isobutyl Ketone	ND	0.0064	EPA 8260C	9-27-16	9-27-16	
Toluene	ND	0.0064	EPA 8260C	9-27-16	9-27-16	
(trans) 1,3-Dichloropropene	ND	0.0013	EPA 8260C	9-27-16	9-27-16	

Date of Report: September 28, 2016
Samples Submitted: September 27, 2016
Laboratory Reference: 1609-344
Project: 0747.01.06-6.3

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**NSW01-S-6.0**					
Laboratory ID:	09-344-02					
1,1,2-Trichloroethane	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
Tetrachloroethene	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
1,3-Dichloropropane	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
2-Hexanone	ND	0.0064	EPA 8260C	9-27-16	9-27-16	
Dibromochloromethane	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
1,2-Dibromoethane	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
Chlorobenzene	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
1,1,1,2-Tetrachloroethane	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
Ethylbenzene	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
m,p-Xylene	ND	0.0026	EPA 8260C	9-27-16	9-27-16	
o-Xylene	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
Styrene	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
Bromoform	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
Isopropylbenzene	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
Bromobenzene	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
1,1,2,2-Tetrachloroethane	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
1,2,3-Trichloropropane	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
n-Propylbenzene	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
2-Chlorotoluene	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
4-Chlorotoluene	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
1,3,5-Trimethylbenzene	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
tert-Butylbenzene	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
1,2,4-Trimethylbenzene	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
sec-Butylbenzene	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
1,3-Dichlorobenzene	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
p-Isopropyltoluene	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
1,4-Dichlorobenzene	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
1,2-Dichlorobenzene	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
n-Butylbenzene	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
1,2-Dibromo-3-chloropropane	ND	0.0064	EPA 8260C	9-27-16	9-27-16	
1,2,4-Trichlorobenzene	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
Hexachlorobutadiene	ND	0.0064	EPA 8260C	9-27-16	9-27-16	
Naphthalene	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
1,2,3-Trichlorobenzene	ND	0.0013	EPA 8260C	9-27-16	9-27-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*116*	*76-131*				
Toluene-d8	*122*	*80-126*				
4-Bromofluorobenzene	*118*	*60-146*				

Date of Report: September 28, 2016
Samples Submitted: September 27, 2016
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Project: 0747.01.06-6.3

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Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ESW01-S-6.0**					
Laboratory ID:	09-344-03					
Dichlorodifluoromethane	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
Chloromethane	ND	0.0070	EPA 8260C	9-27-16	9-27-16	
Vinyl Chloride	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
Bromomethane	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
Chloroethane	ND	0.0070	EPA 8260C	9-27-16	9-27-16	
Trichlorofluoromethane	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
1,1-Dichloroethene	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
Acetone	0.015	0.0070	EPA 8260C	9-27-16	9-27-16	Y
Iodomethane	ND	0.0095	EPA 8260C	9-27-16	9-27-16	
Carbon Disulfide	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
Methylene Chloride	ND	0.0070	EPA 8260C	9-27-16	9-27-16	
(trans) 1,2-Dichloroethene	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
Methyl t-Butyl Ether	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
1,1-Dichloroethane	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
Vinyl Acetate	ND	0.0070	EPA 8260C	9-27-16	9-27-16	
2,2-Dichloropropane	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
(cis) 1,2-Dichloroethene	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
2-Butanone	ND	0.0070	EPA 8260C	9-27-16	9-27-16	
Bromochloromethane	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
Chloroform	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
1,1,1-Trichloroethane	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
Carbon Tetrachloride	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
1,1-Dichloropropene	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
Benzene	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
1,2-Dichloroethane	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
Trichloroethene	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
1,2-Dichloropropane	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
Dibromomethane	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
Bromodichloromethane	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
2-Chloroethyl Vinyl Ether	ND	0.0070	EPA 8260C	9-27-16	9-27-16	
(cis) 1,3-Dichloropropene	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
Methyl Isobutyl Ketone	ND	0.0070	EPA 8260C	9-27-16	9-27-16	
Toluene	ND	0.0070	EPA 8260C	9-27-16	9-27-16	
(trans) 1,3-Dichloropropene	ND	0.0014	EPA 8260C	9-27-16	9-27-16	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ESW01-S-6.0**					
Laboratory ID:	09-344-03					
1,1,2-Trichloroethane	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
Tetrachloroethene	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
1,3-Dichloropropane	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
2-Hexanone	ND	0.0070	EPA 8260C	9-27-16	9-27-16	
Dibromochloromethane	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
1,2-Dibromoethane	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
Chlorobenzene	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
1,1,1,2-Tetrachloroethane	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
Ethylbenzene	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
m,p-Xylene	ND	0.0028	EPA 8260C	9-27-16	9-27-16	
o-Xylene	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
Styrene	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
Bromoform	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
Isopropylbenzene	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
Bromobenzene	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
1,1,2,2-Tetrachloroethane	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
1,2,3-Trichloropropane	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
n-Propylbenzene	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
2-Chlorotoluene	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
4-Chlorotoluene	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
1,3,5-Trimethylbenzene	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
tert-Butylbenzene	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
1,2,4-Trimethylbenzene	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
sec-Butylbenzene	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
1,3-Dichlorobenzene	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
p-Isopropyltoluene	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
1,4-Dichlorobenzene	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
1,2-Dichlorobenzene	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
n-Butylbenzene	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
1,2-Dibromo-3-chloropropane	ND	0.0070	EPA 8260C	9-27-16	9-27-16	
1,2,4-Trichlorobenzene	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
Hexachlorobutadiene	ND	0.0070	EPA 8260C	9-27-16	9-27-16	
Naphthalene	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
1,2,3-Trichlorobenzene	ND	0.0014	EPA 8260C	9-27-16	9-27-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*99*	*76-131*				
Toluene-d8	*107*	*80-126*				
4-Bromofluorobenzene	*104*	*60-146*				

Date of Report: September 28, 2016
Samples Submitted: September 27, 2016
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Project: 0747.01.06-6.3

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Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SSW01-S-3.0**					
Laboratory ID:	09-344-04					
Dichlorodifluoromethane	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
Chloromethane	ND	0.0087	EPA 8260C	9-27-16	9-27-16	
Vinyl Chloride	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
Bromomethane	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
Chloroethane	ND	0.0087	EPA 8260C	9-27-16	9-27-16	
Trichlorofluoromethane	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
1,1-Dichloroethene	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
Acetone	0.020	0.0087	EPA 8260C	9-27-16	9-27-16	Y
Iodomethane	ND	0.012	EPA 8260C	9-27-16	9-27-16	
Carbon Disulfide	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
Methylene Chloride	ND	0.0087	EPA 8260C	9-27-16	9-27-16	
(trans) 1,2-Dichloroethene	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
Methyl t-Butyl Ether	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
1,1-Dichloroethane	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
Vinyl Acetate	ND	0.0087	EPA 8260C	9-27-16	9-27-16	
2,2-Dichloropropane	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
(cis) 1,2-Dichloroethene	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
2-Butanone	ND	0.0087	EPA 8260C	9-27-16	9-27-16	
Bromochloromethane	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
Chloroform	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
1,1,1-Trichloroethane	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
Carbon Tetrachloride	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
1,1-Dichloropropene	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
Benzene	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
1,2-Dichloroethane	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
Trichloroethene	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
1,2-Dichloropropane	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
Dibromomethane	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
Bromodichloromethane	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
2-Chloroethyl Vinyl Ether	ND	0.0087	EPA 8260C	9-27-16	9-27-16	
(cis) 1,3-Dichloropropene	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
Methyl Isobutyl Ketone	ND	0.0087	EPA 8260C	9-27-16	9-27-16	
Toluene	ND	0.0087	EPA 8260C	9-27-16	9-27-16	
(trans) 1,3-Dichloropropene	ND	0.0017	EPA 8260C	9-27-16	9-27-16	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SSW01-S-3.0**					
Laboratory ID:	09-344-04					
1,1,2-Trichloroethane	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
Tetrachloroethene	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
1,3-Dichloropropane	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
2-Hexanone	ND	0.0087	EPA 8260C	9-27-16	9-27-16	
Dibromochloromethane	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
1,2-Dibromoethane	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
Chlorobenzene	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
1,1,1,2-Tetrachloroethane	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
Ethylbenzene	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
m,p-Xylene	ND	0.0035	EPA 8260C	9-27-16	9-27-16	
o-Xylene	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
Styrene	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
Bromoform	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
Isopropylbenzene	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
Bromobenzene	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
1,1,2,2-Tetrachloroethane	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
1,2,3-Trichloropropane	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
n-Propylbenzene	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
2-Chlorotoluene	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
4-Chlorotoluene	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
1,3,5-Trimethylbenzene	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
tert-Butylbenzene	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
1,2,4-Trimethylbenzene	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
sec-Butylbenzene	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
1,3-Dichlorobenzene	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
p-Isopropyltoluene	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
1,4-Dichlorobenzene	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
1,2-Dichlorobenzene	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
n-Butylbenzene	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
1,2-Dibromo-3-chloropropane	ND	0.0087	EPA 8260C	9-27-16	9-27-16	
1,2,4-Trichlorobenzene	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
Hexachlorobutadiene	ND	0.0087	EPA 8260C	9-27-16	9-27-16	
Naphthalene	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
1,2,3-Trichlorobenzene	ND	0.0017	EPA 8260C	9-27-16	9-27-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*108*	*76-131*				
Toluene-d8	*119*	*80-126*				
4-Bromofluorobenzene	*114*	*60-146*				

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Samples Submitted: September 27, 2016
Laboratory Reference: 1609-344
Project: 0747.01.06-6.3

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Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SSW02-S-6.0**					
Laboratory ID:	09-344-05					
Dichlorodifluoromethane	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
Chloromethane	ND	0.0067	EPA 8260C	9-28-16	9-28-16	
Vinyl Chloride	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
Bromomethane	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
Chloroethane	ND	0.0067	EPA 8260C	9-28-16	9-28-16	
Trichlorofluoromethane	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
1,1-Dichloroethene	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
Acetone	ND	0.0067	EPA 8260C	9-28-16	9-28-16	
Iodomethane	ND	0.0067	EPA 8260C	9-28-16	9-28-16	
Carbon Disulfide	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
Methylene Chloride	ND	0.0067	EPA 8260C	9-28-16	9-28-16	
(trans) 1,2-Dichloroethene	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
Methyl t-Butyl Ether	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
1,1-Dichloroethane	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
Vinyl Acetate	ND	0.0067	EPA 8260C	9-28-16	9-28-16	
2,2-Dichloropropane	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
(cis) 1,2-Dichloroethene	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
2-Butanone	ND	0.0067	EPA 8260C	9-28-16	9-28-16	
Bromochloromethane	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
Chloroform	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
1,1,1-Trichloroethane	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
Carbon Tetrachloride	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
1,1-Dichloropropene	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
Benzene	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
1,2-Dichloroethane	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
Trichloroethene	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
1,2-Dichloropropane	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
Dibromomethane	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
Bromodichloromethane	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
2-Chloroethyl Vinyl Ether	ND	0.0067	EPA 8260C	9-28-16	9-28-16	
(cis) 1,3-Dichloropropene	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
Methyl Isobutyl Ketone	ND	0.0067	EPA 8260C	9-28-16	9-28-16	
Toluene	ND	0.0067	EPA 8260C	9-28-16	9-28-16	
(trans) 1,3-Dichloropropene	ND	0.0013	EPA 8260C	9-28-16	9-28-16	

Date of Report: September 28, 2016
Samples Submitted: September 27, 2016
Laboratory Reference: 1609-344
Project: 0747.01.06-6.3

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SSW02-S-6.0**					
Laboratory ID:	09-344-05					
1,1,2-Trichloroethane	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
Tetrachloroethene	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
1,3-Dichloropropane	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
2-Hexanone	ND	0.0067	EPA 8260C	9-28-16	9-28-16	
Dibromochloromethane	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
1,2-Dibromoethane	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
Chlorobenzene	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
1,1,1,2-Tetrachloroethane	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
Ethylbenzene	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
m,p-Xylene	ND	0.0027	EPA 8260C	9-28-16	9-28-16	
o-Xylene	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
Styrene	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
Bromoform	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
Isopropylbenzene	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
Bromobenzene	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
1,1,2,2-Tetrachloroethane	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
1,2,3-Trichloropropane	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
n-Propylbenzene	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
2-Chlorotoluene	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
4-Chlorotoluene	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
1,3,5-Trimethylbenzene	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
tert-Butylbenzene	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
1,2,4-Trimethylbenzene	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
sec-Butylbenzene	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
1,3-Dichlorobenzene	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
p-Isopropyltoluene	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
1,4-Dichlorobenzene	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
1,2-Dichlorobenzene	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
n-Butylbenzene	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
1,2-Dibromo-3-chloropropane	ND	0.0067	EPA 8260C	9-28-16	9-28-16	
1,2,4-Trichlorobenzene	ND	0.0019	EPA 8260C	9-28-16	9-28-16	
Hexachlorobutadiene	ND	0.0067	EPA 8260C	9-28-16	9-28-16	
Naphthalene	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
1,2,3-Trichlorobenzene	ND	0.0013	EPA 8260C	9-28-16	9-28-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*99*	*76-131*				
Toluene-d8	*100*	*80-126*				
4-Bromofluorobenzene	*96*	*60-146*				

Date of Report: September 28, 2016
Samples Submitted: September 27, 2016
Laboratory Reference: 1609-344
Project: 0747.01.06-6.3

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Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BASE02-S-10.0**					
Laboratory ID:	09-344-07					
Dichlorodifluoromethane	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
Chloromethane	ND	0.0076	EPA 8260C	9-27-16	9-27-16	
Vinyl Chloride	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
Bromomethane	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
Chloroethane	ND	0.0076	EPA 8260C	9-27-16	9-27-16	
Trichlorofluoromethane	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
1,1-Dichloroethene	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
Acetone	0.019	0.0076	EPA 8260C	9-27-16	9-27-16	Y
Iodomethane	ND	0.010	EPA 8260C	9-27-16	9-27-16	
Carbon Disulfide	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
Methylene Chloride	ND	0.0076	EPA 8260C	9-27-16	9-27-16	
(trans) 1,2-Dichloroethene	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
Methyl t-Butyl Ether	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
1,1-Dichloroethane	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
Vinyl Acetate	ND	0.0076	EPA 8260C	9-27-16	9-27-16	
2,2-Dichloropropane	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
(cis) 1,2-Dichloroethene	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
2-Butanone	ND	0.0076	EPA 8260C	9-27-16	9-27-16	
Bromochloromethane	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
Chloroform	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
1,1,1-Trichloroethane	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
Carbon Tetrachloride	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
1,1-Dichloropropene	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
Benzene	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
1,2-Dichloroethane	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
Trichloroethene	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
1,2-Dichloropropane	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
Dibromomethane	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
Bromodichloromethane	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
2-Chloroethyl Vinyl Ether	ND	0.0076	EPA 8260C	9-27-16	9-27-16	
(cis) 1,3-Dichloropropene	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
Methyl Isobutyl Ketone	ND	0.0076	EPA 8260C	9-27-16	9-27-16	
Toluene	ND	0.0076	EPA 8260C	9-27-16	9-27-16	
(trans) 1,3-Dichloropropene	ND	0.0015	EPA 8260C	9-27-16	9-27-16	

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Samples Submitted: September 27, 2016
Laboratory Reference: 1609-344
Project: 0747.01.06-6.3

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BASE02-S-10.0**					
Laboratory ID:	09-344-07					
1,1,2-Trichloroethane	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
Tetrachloroethene	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
1,3-Dichloropropane	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
2-Hexanone	ND	0.0076	EPA 8260C	9-27-16	9-27-16	
Dibromochloromethane	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
1,2-Dibromoethane	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
Chlorobenzene	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
1,1,1,2-Tetrachloroethane	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
Ethylbenzene	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
m,p-Xylene	ND	0.0030	EPA 8260C	9-27-16	9-27-16	
o-Xylene	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
Styrene	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
Bromoform	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
Isopropylbenzene	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
Bromobenzene	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
1,1,2,2-Tetrachloroethane	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
1,2,3-Trichloropropane	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
n-Propylbenzene	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
2-Chlorotoluene	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
4-Chlorotoluene	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
1,3,5-Trimethylbenzene	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
tert-Butylbenzene	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
1,2,4-Trimethylbenzene	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
sec-Butylbenzene	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
1,3-Dichlorobenzene	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
p-Isopropyltoluene	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
1,4-Dichlorobenzene	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
1,2-Dichlorobenzene	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
n-Butylbenzene	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
1,2-Dibromo-3-chloropropane	ND	0.0076	EPA 8260C	9-27-16	9-27-16	
1,2,4-Trichlorobenzene	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
Hexachlorobutadiene	ND	0.0076	EPA 8260C	9-27-16	9-27-16	
Naphthalene	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
1,2,3-Trichlorobenzene	ND	0.0015	EPA 8260C	9-27-16	9-27-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*102*	*76-131*				
Toluene-d8	*111*	*80-126*				
4-Bromofluorobenzene	*107*	*60-146*				

Date of Report: September 28, 2016
Samples Submitted: September 27, 2016
Laboratory Reference: 1609-344
Project: 0747.01.06-6.3

VOLATILES by EPA 8260C
METHOD BLANK QUALITY CONTROL
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Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0927S1					
Dichlorodifluoromethane	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
Chloromethane	ND	0.0050	EPA 8260C	9-27-16	9-27-16	
Vinyl Chloride	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
Bromomethane	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
Chloroethane	ND	0.0050	EPA 8260C	9-27-16	9-27-16	
Trichlorofluoromethane	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
1,1-Dichloroethene	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
Acetone	ND	0.0050	EPA 8260C	9-27-16	9-27-16	
Iodomethane	ND	0.0068	EPA 8260C	9-27-16	9-27-16	
Carbon Disulfide	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
Methylene Chloride	ND	0.0050	EPA 8260C	9-27-16	9-27-16	
(trans) 1,2-Dichloroethene	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
Methyl t-Butyl Ether	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
1,1-Dichloroethane	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
Vinyl Acetate	ND	0.0050	EPA 8260C	9-27-16	9-27-16	
2,2-Dichloropropane	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
(cis) 1,2-Dichloroethene	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
2-Butanone	ND	0.0050	EPA 8260C	9-27-16	9-27-16	
Bromochloromethane	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
Chloroform	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
1,1,1-Trichloroethane	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
Carbon Tetrachloride	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
1,1-Dichloropropene	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
Benzene	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
1,2-Dichloroethane	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
Trichloroethene	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
1,2-Dichloropropane	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
Dibromomethane	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
Bromodichloromethane	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
2-Chloroethyl Vinyl Ether	ND	0.0050	EPA 8260C	9-27-16	9-27-16	
(cis) 1,3-Dichloropropene	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
Methyl Isobutyl Ketone	ND	0.0050	EPA 8260C	9-27-16	9-27-16	
Toluene	ND	0.0050	EPA 8260C	9-27-16	9-27-16	
(trans) 1,3-Dichloropropene	ND	0.0010	EPA 8260C	9-27-16	9-27-16	

VOLATILES by EPA 8260C
METHOD BLANK QUALITY CONTROL
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0927S1					
1,1,2-Trichloroethane	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
Tetrachloroethene	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
1,3-Dichloropropane	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
2-Hexanone	ND	0.0050	EPA 8260C	9-27-16	9-27-16	
Dibromochloromethane	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
1,2-Dibromoethane	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
Chlorobenzene	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
1,1,1,2-Tetrachloroethane	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
Ethylbenzene	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
m,p-Xylene	ND	0.0020	EPA 8260C	9-27-16	9-27-16	
o-Xylene	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
Styrene	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
Bromoform	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
Isopropylbenzene	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
Bromobenzene	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
1,1,2,2-Tetrachloroethane	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
1,2,3-Trichloropropane	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
n-Propylbenzene	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
2-Chlorotoluene	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
4-Chlorotoluene	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
1,3,5-Trimethylbenzene	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
tert-Butylbenzene	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
1,2,4-Trimethylbenzene	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
sec-Butylbenzene	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
1,3-Dichlorobenzene	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
p-Isopropyltoluene	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
1,4-Dichlorobenzene	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
1,2-Dichlorobenzene	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
n-Butylbenzene	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
1,2-Dibromo-3-chloropropane	ND	0.0050	EPA 8260C	9-27-16	9-27-16	
1,2,4-Trichlorobenzene	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
Hexachlorobutadiene	ND	0.0050	EPA 8260C	9-27-16	9-27-16	
Naphthalene	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
1,2,3-Trichlorobenzene	ND	0.0010	EPA 8260C	9-27-16	9-27-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*113*	*76-131*				
Toluene-d8	*117*	*80-126*				
4-Bromofluorobenzene	*115*	*60-146*				

Date of Report: September 28, 2016
Samples Submitted: September 27, 2016
Laboratory Reference: 1609-344
Project: 0747.01.06-6.3

VOLATILES by EPA 8260C
METHOD BLANK QUALITY CONTROL
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Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0928S1					
Dichlorodifluoromethane	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
Chloromethane	ND	0.0050	EPA 8260C	9-28-16	9-28-16	
Vinyl Chloride	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
Bromomethane	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
Chloroethane	ND	0.0050	EPA 8260C	9-28-16	9-28-16	
Trichlorofluoromethane	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
1,1-Dichloroethene	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
Acetone	ND	0.0050	EPA 8260C	9-28-16	9-28-16	
Iodomethane	ND	0.0050	EPA 8260C	9-28-16	9-28-16	
Carbon Disulfide	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
Methylene Chloride	ND	0.0050	EPA 8260C	9-28-16	9-28-16	
(trans) 1,2-Dichloroethene	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
Methyl t-Butyl Ether	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
1,1-Dichloroethane	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
Vinyl Acetate	ND	0.0050	EPA 8260C	9-28-16	9-28-16	
2,2-Dichloropropane	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
(cis) 1,2-Dichloroethene	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
2-Butanone	ND	0.0050	EPA 8260C	9-28-16	9-28-16	
Bromochloromethane	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
Chloroform	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
1,1,1-Trichloroethane	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
Carbon Tetrachloride	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
1,1-Dichloropropene	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
Benzene	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
1,2-Dichloroethane	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
Trichloroethene	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
1,2-Dichloropropane	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
Dibromomethane	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
Bromodichloromethane	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
2-Chloroethyl Vinyl Ether	ND	0.0050	EPA 8260C	9-28-16	9-28-16	
(cis) 1,3-Dichloropropene	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
Methyl Isobutyl Ketone	ND	0.0050	EPA 8260C	9-28-16	9-28-16	
Toluene	ND	0.0050	EPA 8260C	9-28-16	9-28-16	
(trans) 1,3-Dichloropropene	ND	0.0010	EPA 8260C	9-28-16	9-28-16	

Date of Report: September 28, 2016
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Project: 0747.01.06-6.3

VOLATILES by EPA 8260C
METHOD BLANK QUALITY CONTROL
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0928S1					
1,1,2-Trichloroethane	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
Tetrachloroethene	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
1,3-Dichloropropane	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
2-Hexanone	ND	0.0050	EPA 8260C	9-28-16	9-28-16	
Dibromochloromethane	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
1,2-Dibromoethane	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
Chlorobenzene	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
1,1,1,2-Tetrachloroethane	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
Ethylbenzene	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
m,p-Xylene	ND	0.0020	EPA 8260C	9-28-16	9-28-16	
o-Xylene	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
Styrene	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
Bromoform	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
Isopropylbenzene	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
Bromobenzene	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
1,1,2,2-Tetrachloroethane	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
1,2,3-Trichloropropane	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
n-Propylbenzene	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
2-Chlorotoluene	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
4-Chlorotoluene	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
1,3,5-Trimethylbenzene	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
tert-Butylbenzene	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
1,2,4-Trimethylbenzene	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
sec-Butylbenzene	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
1,3-Dichlorobenzene	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
p-Isopropyltoluene	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
1,4-Dichlorobenzene	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
1,2-Dichlorobenzene	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
n-Butylbenzene	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
1,2-Dibromo-3-chloropropane	ND	0.0050	EPA 8260C	9-28-16	9-28-16	
1,2,4-Trichlorobenzene	ND	0.0014	EPA 8260C	9-28-16	9-28-16	
Hexachlorobutadiene	ND	0.0050	EPA 8260C	9-28-16	9-28-16	
Naphthalene	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
1,2,3-Trichlorobenzene	ND	0.0010	EPA 8260C	9-28-16	9-28-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*104*	*76-131*				
Toluene-d8	*106*	*80-126*				
4-Bromofluorobenzene	*108*	*60-146*				

VOLATILES by EPA 8260C
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0927S1									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**0.0499**	**0.0503**	0.0500	0.0500	100	101	68-126	1	15	
Benzene	**0.0503**	**0.0510**	0.0500	0.0500	101	102	70-121	1	15	
Trichloroethene	**0.0461**	**0.0472**	0.0500	0.0500	92	94	75-120	2	15	
Toluene	**0.0486**	**0.0492**	0.0500	0.0500	97	98	80-120	1	15	
Chlorobenzene	**0.0474**	**0.0484**	0.0500	0.0500	95	97	76-120	2	15	
Surrogate:										
Dibromofluoromethane					*101*	*102*	*76-131*			
Toluene-d8					*106*	*106*	*80-126*			
4-Bromofluorobenzene					*102*	*106*	*60-146*			

Date of Report: September 28, 2016
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Laboratory Reference: 1609-344
Project: 0747.01.06-6.3

VOLATILES by EPA 8260C
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0928S1									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**0.0479**	**0.0503**	0.0500	0.0500	96	101	68-126	5	15	
Benzene	**0.0508**	**0.0511**	0.0500	0.0500	102	102	70-121	1	15	
Trichloroethene	**0.0439**	**0.0468**	0.0500	0.0500	88	94	75-120	6	15	
Toluene	**0.0502**	**0.0516**	0.0500	0.0500	100	103	80-120	3	15	
Chlorobenzene	**0.0478**	**0.0492**	0.0500	0.0500	96	98	76-120	3	15	
Surrogate:										
Dibromofluoromethane					*100*	*105*	*76-131*			
Toluene-d8					*99*	*103*	*80-126*			
4-Bromofluorobenzene					*96*	*104*	*60-146*			

Date of Report: September 28, 2016
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Laboratory Reference: 1609-344
Project: 0747.01.06-6.3

NAPHTHALENES EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**WSW01-S-6.0**					
Laboratory ID:	09-344-01					
Naphthalene	**ND**	0.0081	EPA 8270D/SIM	9-27-16	9-28-16	
2-Methylnaphthalene	**ND**	0.0081	EPA 8270D/SIM	9-27-16	9-28-16	
1-Methylnaphthalene	**ND**	0.0081	EPA 8270D/SIM	9-27-16	9-28-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*56*	*32 - 115*				
Pyrene-d10	*72*	*30 - 124*				
Terphenyl-d14	*91*	*30 - 117*				

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NAPHTHALENES EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**NSW01-S-6.0**					
Laboratory ID:	09-344-02					
Naphthalene	**0.13**	0.0082	EPA 8270D/SIM	9-27-16	9-28-16	
2-Methylnaphthalene	**0.16**	0.0082	EPA 8270D/SIM	9-27-16	9-28-16	
1-Methylnaphthalene	**0.10**	0.0082	EPA 8270D/SIM	9-27-16	9-28-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*51*	*32 - 115*				
Pyrene-d10	*63*	*30 - 124*				
Terphenyl-d14	*80*	*30 - 117*				

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NAPHTHALENES EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**ESW01-S-6.0**					
Laboratory ID:	09-344-03					
Naphthalene	**ND**	0.0088	EPA 8270D/SIM	9-27-16	9-28-16	
2-Methylnaphthalene	**ND**	0.0088	EPA 8270D/SIM	9-27-16	9-28-16	
1-Methylnaphthalene	**ND**	0.0088	EPA 8270D/SIM	9-27-16	9-28-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*48*	*32 - 115*				
Pyrene-d10	*52*	*30 - 124*				
Terphenyl-d14	*65*	*30 - 117*				

NAPHTHALENES EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**SSW01-S-3.0**					
Laboratory ID:	09-344-04					
Naphthalene	**0.0084**	0.0075	EPA 8270D/SIM	9-27-16	9-28-16	
2-Methylnaphthalene	**0.0094**	0.0075	EPA 8270D/SIM	9-27-16	9-28-16	
1-Methylnaphthalene	**0.027**	0.0075	EPA 8270D/SIM	9-27-16	9-28-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*64*	*32 - 115*				
Pyrene-d10	*69*	*30 - 124*				
Terphenyl-d14	*90*	*30 - 117*				

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NAPHTHALENES EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**SSW02-S-6.0**					
Laboratory ID:	09-344-05					
Naphthalene	**ND**	0.0074	EPA 8270D/SIM	9-27-16	9-28-16	
2-Methylnaphthalene	**ND**	0.0074	EPA 8270D/SIM	9-27-16	9-28-16	
1-Methylnaphthalene	**ND**	0.0074	EPA 8270D/SIM	9-27-16	9-28-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*49*	*32 - 115*				
Pyrene-d10	*46*	*30 - 124*				
Terphenyl-d14	*75*	*30 - 117*				

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NAPHTHALENES EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BASE02-S-10.0**					
Laboratory ID:	09-344-07					
Naphthalene	**ND**	0.0088	EPA 8270D/SIM	9-27-16	9-28-16	
2-Methylnaphthalene	**ND**	0.0088	EPA 8270D/SIM	9-27-16	9-28-16	
1-Methylnaphthalene	**ND**	0.0088	EPA 8270D/SIM	9-27-16	9-28-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*48*	*32 - 115*				
Pyrene-d10	*59*	*30 - 124*				
Terphenyl-d14	*75*	*30 - 117*				

Date of Report: September 28, 2016
Samples Submitted: September 27, 2016
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Project: 0747.01.06-6.3

NAPHTHALENES EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Laboratory ID:	MB0927S1					
Naphthalene	**ND**	0.0067	EPA 8270D/SIM	9-27-16	9-27-16	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270D/SIM	9-27-16	9-27-16	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270D/SIM	9-27-16	9-27-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*83*	*32 - 115*				
Pyrene-d10	*85*	*30 - 124*				
Terphenyl-d14	*99*	*30 - 117*				

Date of Report: September 28, 2016
Samples Submitted: September 27, 2016
Laboratory Reference: 1609-344
Project: 0747.01.06-6.3

NAPHTHALENES EPA 8270D/SIM
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	**Result**		**Spike Level**		**Percent Recovery**		**Recovery Limits**	**RPD**	**RPD Limit**	**Flags**
SPIKE BLANKS										
Laboratory ID:	SB0927S1									
	SB	SBD	SB	SBD	SB	SBD				
Naphthalene	**0.0660**	**0.0666**	0.0833	0.0833	79	80	61 - 112	1	15	
Acenaphthylene	**0.0717**	**0.0692**	0.0833	0.0833	86	83	65 - 116	4	15	
Acenaphthene	**0.0722**	**0.0683**	0.0833	0.0833	87	82	62 - 116	6	13	
Surrogate:										
2-Fluorobiphenyl					*81*	*76*	*32 - 115*			
Pyrene-d10					*88*	*86*	*30 - 124*			
Terphenyl-d14					*99*	*97*	*30 - 117*			

Date of Report: September 28, 2016
Samples Submitted: September 27, 2016
Laboratory Reference: 1609-344
Project: 0747.01.06-6.3

TOTAL LEAD
EPA 6010C

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-344-01					
Client ID:	**WSW01-S-6.0**					
Lead	**ND**	6.1	6010C	9-27-16	9-27-16	
Lab ID:	09-344-02					
Client ID:	**NSW01-S-6.0**					
Lead	**ND**	6.1	6010C	9-27-16	9-27-16	
Lab ID:	09-344-03					
Client ID:	**ESW01-S-6.0**					
Lead	**ND**	6.6	6010C	9-27-16	9-27-16	
Lab ID:	09-344-04					
Client ID:	**SSW01-S-3.0**					
Lead	**6.8**	5.6	6010C	9-27-16	9-27-16	
Lab ID:	09-344-05					
Client ID:	**SSW02-S-6.0**					
Lead	**13**	5.6	6010C	9-27-16	9-27-16	
Lab ID:	09-344-07					
Client ID:	**BASE02-S-10.0**					
Lead	**ND**	6.6	6010C	9-27-16	9-27-16	

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TOTAL LEAD
EPA 6010C
METHOD BLANK QUALITY CONTROL

Date Extracted:	9-27-16
Date Analyzed:	9-27-16
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0927SM1

Analyte	Method	Result	PQL
Lead	6010C	**ND**	5.0

Date of Report: September 28, 2016
Samples Submitted: September 27, 2016
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Project: 0747.01.06-6.3

TOTAL LEAD
EPA 6010C
DUPLICATE QUALITY CONTROL

Date Extracted:	9-27-16
Date Analyzed:	9-27-16
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	09-318-02

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Lead	**ND**	**ND**	NA	5.0	

Date of Report: September 28, 2016
Samples Submitted: September 27, 2016
Laboratory Reference: 1609-344
Project: 0747.01.06-6.3

TOTAL LEAD
EPA 6010C
MS/MSD QUALITY CONTROL

Date Extracted:	9-27-16
Date Analyzed:	9-27-16
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	09-318-02

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Lead	250	**234**	93	**237**	95	2	

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Project: 0747.01.06-6.3

TOTAL LEAD
EPA 6010C
SPIKE BLANK QUALITY CONTROL

Date Extracted: 9-27-16
Date Analyzed: 9-27-16

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: SB0927SM1

Analyte	Method	Spike Level	Spike Result	Percent Recovery
Lead	6010C	250	**245**	98

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Samples Submitted: September 27, 2016
Laboratory Reference: 1609-344
Project: 0747.01.06-6.3

TOTAL LEAD
EPA 6010C
CONTINUING CALIBRATION SUMMARY

Analyte	Lab ID	True Value (ppm)	Calc. Value	Percent Difference	Control Limits
Lead	ICV092716P	1.00	1.03	-3.0	+/- 10%
Lead	LLICV1092716P	0.100	0.103	-3.0	+/- 30%
Lead	CCV1092716P	10.0	9.97	0.30	+/- 10%
Lead	CCV2092716P	10.0	10.2	-2.0	+/- 10%
Lead	LLCCV2092716P	0.100	0.104	-4.0	+/- 30%
Lead	CCV3092716P	10.0	10.1	-1.0	+/- 10%
Lead	LLCCV3092716P	0.100	0.0954	4.6	+/- 30%
Lead	CCV4092716P	10.0	10.2	-2.0	+/- 10%
Lead	LLCCV4092716P	0.100	0.100	0	+/- 30%
Lead	CCV5092716P	10.0	9.98	0.20	+/- 10%
Lead	LLCCV5092716P	0.100	0.111	-11	+/- 30%
Lead	CCV6092716P	10.0	10.0	0	+/- 10%
Lead	LLCCV6092716P	0.100	0.115	-15	+/- 30%
Lead	CCV7092716P	10.0	9.92	0.80	+/- 10%
Lead	LLCCV7092716P	0.100	0.112	-12	+/- 30%
Lead	CCV8092716P	10.0	9.90	1.0	+/- 10%
Lead	LLCCV8092716P	0.100	0.0864	14	+/- 30%
Lead	CCV9092716P	10.0	9.86	1.4	+/- 10%
Lead	LLCCV9092716P	0.100	0.101	-1.0	+/- 30%

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Samples Submitted: September 27, 2016
Laboratory Reference: 1609-344
Project: 0747.01.06-6.3

% MOISTURE

Date Analyzed: 9-27-16

Client ID	Lab ID	% Moisture
WSW01-S-6.0	09-344-01	18
NSW01-S-6.0	09-344-02	18
ESW01-S-6.0	09-344-03	24
SSW01-S-3.0	09-344-04	11
SSW02-S-6.0	09-344-05	10
BASE02-S-10.0	09-344-07	24

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

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Chain of Custody

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Laboratory Number: 09-344

Company: Maul Foster Alongi
Project Number: 0747.01.06-6.3
Project Name: North Cascade Ford
Project Manager: Heather Good
Sampled by: Carolyn Wise

Turnaround Request (in working days)
(Check One)
☒ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days) (TPH analysis 5 Days)
☐ ______ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx + n-hexane	NWTPH-Dx	Volatiles 8260C *	Halogenated Volatiles 8260C	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level) Naphthalenes only	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals/ MTCA Metals (circle one)	TCLP Metals	HEM (oil and grease) 1664A	Total lead	HOLD				% Moisture
1	WSW01-S-6.0	9/27	1050	S	5			X	X	X			X								X					X
2	NSW01-S-6.0		1100	S				X	X	X			X								X					X
3	ESW01-S-6.0		1110	S				X	X	X			X								X					X
4	SSW01-S-3.0		1115	S				X	X	X			X								X					X
5	SSW02-S-6.0		1120	S				X	X	X			X								X					X
6	BASE01-S-10.0		1220	S				X	X	X			X								X	X				X
7	BASE02-S-10.0		1230	S				X	X	X			X								X					X

	Signature	Company	Date	Time
Relinquished		MFA	9/27/16	1230
Received		ALPHA	9-27-16	12:42
Relinquished		ALPHA	9-27-16	2:17
Received		OSE	9/27/16	1417
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
*EDB reporting limit below MTCA A value

Chromatograms with final report ☐

Data Package: ☒ Standard Level III ☐ Level IV ☐

Electronic Data Deliverables (EDDs) ☒ Equis

Sample/Cooler Receipt and Acceptance Checklist

Client: MFA

Client Project Name/Number: 0747.01.06-6.3

OnSite Project Number: 09-344

Initiated by: MV

Date Initiated: 9/27/16

1.0 Cooler Verification

1.1 Were there custody seals on the outside of the cooler?	Yes	No	[✓ N/A]	1 2 3 4	
1.2 Were the custody seals intact?	Yes	No	[✓ N/A]	1 2 3 4	
1.3 Were the custody seals signed and dated by last custodian?	Yes	No	[✓ N/A]	1 2 3 4	
1.4 Were the samples delivered on ice or blue ice?	[✓ Yes]	No		1 2 3 4	
1.5 Were samples received between 0-6 degrees Celsius?	[✓ Yes]	No	Temperature: 5		
1.6 Have shipping bills (if any) been attached to the back of this form?	Yes	[✓ N/A]			
1.7 How were the samples delivered?	Client	[✓ Courier]	UPS/FedEx	OSE Pickup	Other

2.0 Chain of Custody Verification

2.1 Was a Chain of Custody submitted with the samples?	[✓ Yes]	No	1 2 3 4
2.2 Was the COC legible and written in permanent ink?	[✓ Yes]	No	1 2 3 4
2.3 Have samples been relinquished and accepted by each custodian?	[✓ Yes]	No	1 2 3 4
2.4 Did the sample labels (ID, date, time, preservative) agree with COC?	[✓ Yes]	No	1 2 3 4
2.5 Were all of the samples listed on the COC submitted?	[✓ Yes]	No	1 2 3 4
2.6 Were any of the samples submitted omitted from the COC?	Yes	[✓ No]	1 2 3 4

3.0 Sample Verification

3.1 Were any sample containers broken or compromised?	Yes	[✓ No]		1 2 3 4
3.2 Were any sample labels missing or illegible?	Yes	[✓ No]		1 2 3 4
3.3 Have the correct containers been used for each analysis requested?	[✓ Yes]	No		1 2 3 4
3.4 Have the samples been correctly preserved?	Yes	No	[✓ N/A]	1 2 3 4
3.5 Are volatiles samples free from headspace and bubbles greater than 6mm?	Yes	No	[✓ N/A]	1 2 3 4
3.6 Is there sufficient sample submitted to perform requested analyses?	[✓ Yes]	No		1 2 3 4
3.7 Have any holding times already expired or will expire in 24 hours?	Yes	[✓ No]		1 2 3 4
3.8 Was method 5035A used?	[✓ Yes]	No	N/A	1 2 3 4
3.9 If 5035A was used, which sampling option was used (#1, 2, or 3).	#	1	N/A	1 2 3 4

Explain any discrepancies:

1 - Discuss issue in Case Narrative

2 - Process Sample As-is

3 - Client contacted to discuss problem

4 - Sample cannot be analyzed or client does not wish to proceed

OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

October 5, 2016

Heather Good
Maul Foster & Alongi, Inc.
Bay Vista Tower
2815 2nd Avenue, Suite 540
Seattle, WA 98121

Re: Analytical Data for Project 0747.01.06-6.3
Laboratory Reference No. 1609-345

Dear Heather:

Enclosed are the analytical results and associated quality control data for samples submitted on September 27, 2016.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: October 5, 2016
Samples Submitted: September 27, 2016
Laboratory Reference: 1609-345
Project: 0747.01.06-6.3

Case Narrative

Samples were collected on September 27, 2016 and received by the laboratory on September 27, 2016. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

NWTPH Gx/BTEX + MTBE Analysis

Per EPA Method 5035A, samples were received by the laboratory in pre-weighed 40 mL VOA vials within 48 hours of sample collection. They were stored in a freezer at between -7°C and -20°C until extraction or analysis.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: October 5, 2016
Samples Submitted: September 27, 2016
Laboratory Reference: 1609-345
Project: 0747.01.06-6.3

NWTPH-Gx/BTEX + MTBE

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ST01-1**					
Laboratory ID:	09-345-01					
MTBE	**ND**	0.046	EPA 8021B	9-28-16	9-29-16	
Benzene	**ND**	0.020	EPA 8021B	9-28-16	9-29-16	
Toluene	**ND**	0.046	EPA 8021B	9-28-16	9-29-16	
Ethyl Benzene	**ND**	0.046	EPA 8021B	9-28-16	9-29-16	
m,p-Xylene	**0.051**	0.046	EPA 8021B	9-28-16	9-29-16	
o-Xylene	**ND**	0.046	EPA 8021B	9-28-16	9-29-16	
Gasoline	**ND**	4.6	NWTPH-Gx	9-28-16	9-29-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*92*	*68-129*				
Client ID:	**ST01-2**					
Laboratory ID:	09-345-02					
MTBE	**ND**	0.059	EPA 8021B	9-28-16	9-29-16	
Benzene	**ND**	0.020	EPA 8021B	9-28-16	9-29-16	
Toluene	**ND**	0.059	EPA 8021B	9-28-16	9-29-16	
Ethyl Benzene	**ND**	0.059	EPA 8021B	9-28-16	9-29-16	
m,p-Xylene	**ND**	0.059	EPA 8021B	9-28-16	9-29-16	
o-Xylene	**ND**	0.059	EPA 8021B	9-28-16	9-29-16	
Gasoline	**ND**	5.9	NWTPH-Gx	9-28-16	9-29-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*95*	*68-129*				
Client ID:	**ST01-3**					
Laboratory ID:	09-345-03					
MTBE	**ND**	0.055	EPA 8021B	9-28-16	9-29-16	
Benzene	**0.026**	0.020	EPA 8021B	9-28-16	9-29-16	
Toluene	**ND**	0.055	EPA 8021B	9-28-16	9-29-16	
Ethyl Benzene	**0.056**	0.055	EPA 8021B	9-28-16	9-29-16	
m,p-Xylene	**0.18**	0.055	EPA 8021B	9-28-16	9-29-16	
o-Xylene	**0.086**	0.055	EPA 8021B	9-28-16	9-29-16	
Gasoline	**ND**	5.5	NWTPH-Gx	9-28-16	9-29-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*101*	*68-129*				

Date of Report: October 5, 2016
Samples Submitted: September 27, 2016
Laboratory Reference: 1609-345
Project: 0747.01.06-6.3

NWTPH-Gx/BTEX + MTBE
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
METHOD BLANK						
Laboratory ID:	MB0928S1					
MTBE	**ND**	0.050	EPA 8021B	9-28-16	9-29-16	
Benzene	**ND**	0.020	EPA 8021B	9-28-16	9-29-16	
Toluene	**ND**	0.050	EPA 8021B	9-28-16	9-29-16	
Ethyl Benzene	**ND**	0.050	EPA 8021B	9-28-16	9-29-16	
m,p-Xylene	**ND**	0.050	EPA 8021B	9-28-16	9-29-16	
o-Xylene	**ND**	0.050	EPA 8021B	9-28-16	9-29-16	
Gasoline	**ND**	5.0	NWTPH-Gx	9-28-16	9-29-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*97*	*68-129*				

Analyte	**Result**		**Spike Level**		**Source Result**	**Percent Recovery**		**Recovery Limits**	**RPD**	**RPD Limit**	**Flags**
DUPLICATE											
Laboratory ID:	09-345-03										
	ORIG	DUP									
MTBE	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Benzene	**0.0243**	**0.0241**	NA	NA		NA		NA	1	30	
Toluene	**ND**	**0.0511**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**0.0518**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**0.162**	**0.159**	NA	NA		NA		NA	2	30	
o-Xylene	**0.0787**	**0.0752**	NA	NA		NA		NA	5	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*101*	*100*	*68-129*			
SPIKE BLANKS											
Laboratory ID:	SB0928S1										
	SB	SBD	SB	SBD		SB	SBD				
MTBE	**1.11**	**1.13**	1.00	1.00		**111**	**113**	70-130	2	20	
Benzene	**0.964**	**0.990**	1.00	1.00		**96**	**99**	76-124	3	17	
Toluene	**0.972**	**0.994**	1.00	1.00		**97**	**99**	78-124	2	16	
Ethyl Benzene	**0.999**	**1.02**	1.00	1.00		**100**	**102**	77-123	2	17	
m,p-Xylene	**0.953**	**0.978**	1.00	1.00		**95**	**98**	78-124	3	17	
o-Xylene	**0.984**	**1.01**	1.00	1.00		**98**	**101**	76-123	3	18	
Surrogate:											
Fluorobenzene						*99*	*99*	*68-129*			

Date of Report: October 5, 2016
Samples Submitted: September 27, 2016
Laboratory Reference: 1609-345
Project: 0747.01.06-6.3

NWTPH-Gx
CONTINUING CALIBRATION SUMMARY

Lab ID	True Value (ppm)	Calc. Value	Percent Difference	Control Limits
CCVD0929G-1	5.00	4.58	9	+/- 20%
CCVD0929G-2	5.00	4.36	13	+/- 20%

BTEX + MTBE
EPA 8021B
CONTINUING CALIBRATION SUMMARY

Analyte	Lab ID	True Value (ppm)	Calc. Value	Percent Difference	Control Limits
Benzene	CCVD0929B-1	50.0	48.1	4	+/- 15%
Toluene	CCVD0929B-1	50.0	49.2	2	+/- 15%
Ethyl Benzene	CCVD0929B-1	50.0	51.1	-2	+/- 15%
m,p-Xylene	CCVD0929B-1	50.0	48.7	3	+/- 15%
o-Xylene	CCVD0929B-1	50.0	50.6	-1	+/- 15%
MTBE	CCVD0929B-1	50.0	54.0	-8	+/- 15%
Benzene	CCVD0929B-2	50.0	50.8	-2	+/- 15%
Toluene	CCVD0929B-2	50.0	51.2	-2	+/- 15%
Ethyl Benzene	CCVD0929B-2	50.0	52.9	-6	+/- 15%
m,p-Xylene	CCVD0929B-2	50.0	49.6	1	+/- 15%
o-Xylene	CCVD0929B-2	50.0	51.4	-3	+/- 15%
MTBE	CCVD0929B-2	50.0	55.9	-12	+/- 15%

Date of Report: October 5, 2016
Samples Submitted: September 27, 2016
Laboratory Reference: 1609-345
Project: 0747.01.06-6.3

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ST01-1**					
Laboratory ID:	09-345-01					
Diesel Range Organics	**ND**	27	NWTPH-Dx	9-29-16	9-29-16	
Lube Oil	**120**	54	NWTPH-Dx	9-29-16	9-29-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*99*	*50-150*				
Client ID:	**ST01-2**					
Laboratory ID:	09-345-02					
Diesel Range Organics	**ND**	28	NWTPH-Dx	9-29-16	9-29-16	
Lube Oil Range Organics	**ND**	56	NWTPH-Dx	9-29-16	9-29-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*103*	*50-150*				
Client ID:	**ST01-3**					
Laboratory ID:	09-345-03					
Diesel Range Organics	**ND**	43	NWTPH-Dx	9-29-16	9-29-16	U1
Lube Oil	**320**	55	NWTPH-Dx	9-29-16	9-29-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*134*	*50-150*				

Date of Report: October 5, 2016
Samples Submitted: September 27, 2016
Laboratory Reference: 1609-345
Project: 0747.01.06-6.3

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0929S2					
Diesel Range Organics	**ND**	25	NWTPH-Dx	9-29-16	9-29-16	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	9-29-16	9-29-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*90*	*50-150*				

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	09-345-03								
	ORIG	DUP							
Diesel Range	**ND**	**ND**	NA	NA	NA	NA	NA	NA	U1
Lube Oil	**291**	**229**	NA	NA	NA	NA	24	NA	
Surrogate:									
o-Terphenyl					*134 126*	*50-150*			
SPIKE BLANK									
Laboratory ID:	SB0929S2								
Diesel Fuel #2	**100**		100	NA	**100**	61-130	NA	NA	
Surrogate:									
o-Terphenyl					*100*	*50-150*			

Date of Report: October 5, 2016
Samples Submitted: September 27, 2016
Laboratory Reference: 1609-345
Project: 0747.01.06-6.3

NWTPH-Dx
CONTINUING CALIBRATION SUMMARY

Lab ID	True Value (ppm)	Calc. Value	Percent Difference	Control Limits
CCV0929F-T2	100	103	-3.1	+/-15%
CCV0929F-T3	100	98.0	2.0	+/-15%
CCV0929R-T2	100	106	-6.2	+/-15%
CCV0929R-T3	100	103	-3.4	+/-15%

Date of Report: October 5, 2016
Samples Submitted: September 27, 2016
Laboratory Reference: 1609-345
Project: 0747.01.06-6.3

PAHs EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ST01-1**					
Laboratory ID:	09-345-01					
Naphthalene	**0.012**	0.0072	EPA 8270D/SIM	9-29-16	9-30-16	
2-Methylnaphthalene	**0.016**	0.0072	EPA 8270D/SIM	9-29-16	9-30-16	
1-Methylnaphthalene	**0.017**	0.0072	EPA 8270D/SIM	9-29-16	9-30-16	
Benzo[a]anthracene	**0.0079**	0.0072	EPA 8270D/SIM	9-29-16	9-30-16	
Chrysene	**0.012**	0.0072	EPA 8270D/SIM	9-29-16	9-30-16	
Benzo[b]fluoranthene	**0.014**	0.0072	EPA 8270D/SIM	9-29-16	9-30-16	
Benzo(j,k)fluoranthene	**ND**	0.0072	EPA 8270D/SIM	9-29-16	9-30-16	
Benzo[a]pyrene	**0.0092**	0.0072	EPA 8270D/SIM	9-29-16	9-30-16	
Indeno(1,2,3-c,d)pyrene	**0.0078**	0.0072	EPA 8270D/SIM	9-29-16	9-30-16	
Dibenz[a,h]anthracene	**ND**	0.0072	EPA 8270D/SIM	9-29-16	9-30-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*72*	*32 - 115*				
Pyrene-d10	*81*	*30 - 124*				
Terphenyl-d14	*91*	*30 - 117*				

Date of Report: October 5, 2016
Samples Submitted: September 27, 2016
Laboratory Reference: 1609-345
Project: 0747.01.06-6.3

PAHs EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ST01-2**					
Laboratory ID:	09-345-02					
Naphthalene	**ND**	0.0074	EPA 8270D/SIM	9-29-16	9-30-16	
2-Methylnaphthalene	**ND**	0.0074	EPA 8270D/SIM	9-29-16	9-30-16	
1-Methylnaphthalene	**ND**	0.0074	EPA 8270D/SIM	9-29-16	9-30-16	
Benzo[a]anthracene	**ND**	0.0074	EPA 8270D/SIM	9-29-16	9-30-16	
Chrysene	**ND**	0.0074	EPA 8270D/SIM	9-29-16	9-30-16	
Benzo[b]fluoranthene	**ND**	0.0074	EPA 8270D/SIM	9-29-16	9-30-16	
Benzo(j,k)fluoranthene	**ND**	0.0074	EPA 8270D/SIM	9-29-16	9-30-16	
Benzo[a]pyrene	**ND**	0.0074	EPA 8270D/SIM	9-29-16	9-30-16	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0074	EPA 8270D/SIM	9-29-16	9-30-16	
Dibenz[a,h]anthracene	**ND**	0.0074	EPA 8270D/SIM	9-29-16	9-30-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*71*	*32 - 115*				
Pyrene-d10	*71*	*30 - 124*				
Terphenyl-d14	*78*	*30 - 117*				

Date of Report: October 5, 2016
Samples Submitted: September 27, 2016
Laboratory Reference: 1609-345
Project: 0747.01.06-6.3

PAHs EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**ST01-3**					
Laboratory ID:	09-345-03					
Naphthalene	**0.021**	0.0073	EPA 8270D/SIM	9-29-16	9-30-16	
2-Methylnaphthalene	**0.026**	0.0073	EPA 8270D/SIM	9-29-16	9-30-16	
1-Methylnaphthalene	**0.024**	0.0073	EPA 8270D/SIM	9-29-16	9-30-16	
Benzo[a]anthracene	**0.030**	0.0073	EPA 8270D/SIM	9-29-16	9-30-16	
Chrysene	**0.037**	0.0073	EPA 8270D/SIM	9-29-16	9-30-16	
Benzo[b]fluoranthene	**0.044**	0.0073	EPA 8270D/SIM	9-29-16	9-30-16	
Benzo(j,k)fluoranthene	**0.016**	0.0073	EPA 8270D/SIM	9-29-16	9-30-16	
Benzo[a]pyrene	**0.039**	0.0073	EPA 8270D/SIM	9-29-16	9-30-16	
Indeno(1,2,3-c,d)pyrene	**0.025**	0.0073	EPA 8270D/SIM	9-29-16	9-30-16	
Dibenz[a,h]anthracene	**ND**	0.0073	EPA 8270D/SIM	9-29-16	9-30-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*69*	*32 - 115*				
Pyrene-d10	*78*	*30 - 124*				
Terphenyl-d14	*86*	*30 - 117*				

Date of Report: October 5, 2016
Samples Submitted: September 27, 2016
Laboratory Reference: 1609-345
Project: 0747.01.06-6.3

PAHs EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Laboratory ID:	MB0929S2					
Naphthalene	**ND**	0.0067	EPA 8270D/SIM	9-29-16	9-30-16	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270D/SIM	9-29-16	9-30-16	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270D/SIM	9-29-16	9-30-16	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270D/SIM	9-29-16	9-30-16	
Chrysene	**ND**	0.0067	EPA 8270D/SIM	9-29-16	9-30-16	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270D/SIM	9-29-16	9-30-16	
Benzo(j,k)fluoranthene	**ND**	0.0067	EPA 8270D/SIM	9-29-16	9-30-16	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270D/SIM	9-29-16	9-30-16	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270D/SIM	9-29-16	9-30-16	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270D/SIM	9-29-16	9-30-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*76*	*32 - 115*				
Pyrene-d10	*81*	*30 - 124*				
Terphenyl-d14	*92*	*30 - 117*				

Date of Report: October 5, 2016
Samples Submitted: September 27, 2016
Laboratory Reference: 1609-345
Project: 0747.01.06-6.3

PAHs EPA 8270D/SIM
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0929S2									
	SB	SBD	SB	SBD	SB	SBD				
Naphthalene	**0.0715**	**0.0734**	0.0833	0.0833	86	88	61 - 112	3	15	
Benzo[a]anthracene	**0.0837**	**0.0847**	0.0833	0.0833	100	102	59 - 129	1	15	
Chrysene	**0.0742**	**0.0759**	0.0833	0.0833	89	91	60 - 122	2	15	
Benzo[b]fluoranthene	**0.0736**	**0.0722**	0.0833	0.0833	88	87	53 - 124	2	17	
Benzo(j,k)fluoranthene	**0.0744**	**0.0782**	0.0833	0.0833	89	94	58 - 124	5	16	
Benzo[a]pyrene	**0.0800**	**0.0811**	0.0833	0.0833	96	97	62 - 127	1	15	
Indeno(1,2,3-c,d)pyrene	**0.0805**	**0.0816**	0.0833	0.0833	97	98	60 - 120	1	15	
Dibenz[a,h]anthracene	**0.0778**	**0.0794**	0.0833	0.0833	93	95	60 - 117	2	15	
Surrogate:										
2-Fluorobiphenyl					*81*	*83*	*32 - 115*			
Pyrene-d10					*80*	*80*	*30 - 124*			
Terphenyl-d14					*90*	*90*	*30 - 117*			

Date of Report: October 5, 2016
Samples Submitted: September 27, 2016
Laboratory Reference: 1609-345
Project: 0747.01.06-6.3

PCBs
EPA 8082A

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ST01-1**					
Laboratory ID:	09-345-01					
Aroclor 1016	**ND**	0.054	EPA 8082A	10-3-16	10-3-16	
Aroclor 1221	**ND**	0.054	EPA 8082A	10-3-16	10-3-16	
Aroclor 1232	**ND**	0.054	EPA 8082A	10-3-16	10-3-16	
Aroclor 1242	**ND**	0.054	EPA 8082A	10-3-16	10-3-16	
Aroclor 1248	**ND**	0.054	EPA 8082A	10-3-16	10-3-16	
Aroclor 1254	**ND**	0.054	EPA 8082A	10-3-16	10-3-16	
Aroclor 1260	**ND**	0.054	EPA 8082A	10-3-16	10-3-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*97*	*50-139*				
Client ID:	**ST01-2**					
Laboratory ID:	09-345-02					
Aroclor 1016	**ND**	0.056	EPA 8082A	10-3-16	10-3-16	
Aroclor 1221	**ND**	0.056	EPA 8082A	10-3-16	10-3-16	
Aroclor 1232	**ND**	0.056	EPA 8082A	10-3-16	10-3-16	
Aroclor 1242	**ND**	0.056	EPA 8082A	10-3-16	10-3-16	
Aroclor 1248	**ND**	0.056	EPA 8082A	10-3-16	10-3-16	
Aroclor 1254	**ND**	0.056	EPA 8082A	10-3-16	10-3-16	
Aroclor 1260	**ND**	0.056	EPA 8082A	10-3-16	10-3-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*92*	*50-139*				
Client ID:	**ST01-3**					
Laboratory ID:	09-345-03					
Aroclor 1016	**ND**	0.055	EPA 8082A	10-3-16	10-3-16	
Aroclor 1221	**ND**	0.055	EPA 8082A	10-3-16	10-3-16	
Aroclor 1232	**ND**	0.055	EPA 8082A	10-3-16	10-3-16	
Aroclor 1242	**ND**	0.055	EPA 8082A	10-3-16	10-3-16	
Aroclor 1248	**ND**	0.055	EPA 8082A	10-3-16	10-3-16	
Aroclor 1254	**ND**	0.055	EPA 8082A	10-3-16	10-3-16	
Aroclor 1260	**ND**	0.055	EPA 8082A	10-3-16	10-3-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*95*	*50-139*				

Date of Report: October 5, 2016
Samples Submitted: September 27, 2016
Laboratory Reference: 1609-345
Project: 0747.01.06-6.3

PCBs EPA 8082A
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1003S1					
Aroclor 1016	**ND**	0.050	EPA 8082A	10-3-16	10-3-16	
Aroclor 1221	**ND**	0.050	EPA 8082A	10-3-16	10-3-16	
Aroclor 1232	**ND**	0.050	EPA 8082A	10-3-16	10-3-16	
Aroclor 1242	**ND**	0.050	EPA 8082A	10-3-16	10-3-16	
Aroclor 1248	**ND**	0.050	EPA 8082A	10-3-16	10-3-16	
Aroclor 1254	**ND**	0.050	EPA 8082A	10-3-16	10-3-16	
Aroclor 1260	**ND**	0.050	EPA 8082A	10-3-16	10-3-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*108*	*50-139*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS											
Laboratory ID:	SB1003S1										
	SB	SBD	SB	SBD		SB	SBD				
Aroclor 1260	**0.486**	**0.476**	0.500	0.500	N/A	**97**	**95**	61-135	2	11	
Surrogate:											
DCB						*85*	*85*	*50-139*			

Date of Report: October 5, 2016
Samples Submitted: September 27, 2016
Laboratory Reference: 1609-345
Project: 0747.01.06-6.3

PCB's EPA 8082A
CONTINUING CALIBRATION SUMMARY

Lab ID	Analyte	True Value (ppb)	Calc. Value	Percent Difference	Control Limits
Column 1					
PCBCCV 1003-2	Aroclor 1016	500	473	5.4	+/- 15%
PCBCCV 1003-2	Aroclor 1260	500	483	3.4	+/- 15%
Column 2					
PCBCCV 1003-2	Aroclor 1016	500	495	1.0	+/- 15%
PCBCCV 1003-2	Aroclor 1260	500	444	11	+/- 15%
Column 1					
PCBCCV 1003-3	Aroclor 1016	500	487	2.6	+/- 15%
PCBCCV 1003-3	Aroclor 1260	500	488	2.4	+/- 15%
Column 2					
PCBCCV 1003-3	Aroclor 1016	500	482	3.6	+/- 15%
PCBCCV 1003-3	Aroclor 1260	500	426	15	+/- 15%
Column 1					
PCBCCV 1003-4	Aroclor 1016	500	483	3.4	+/- 15%
PCBCCV 1003-4	Aroclor 1260	500	480	4.0	+/- 15%
Column 2					
PCBCCV 1003-4	Aroclor 1016	500	477	4.6	+/- 15%
PCBCCV 1003-4	Aroclor 1260	500	418	16	+/- 15%
Column 1					
PCBCCV 1003-5	Aroclor 1016	500	572	-14	+/- 15%
PCBCCV 1003-5	Aroclor 1260	500	579	-16	+/- 15%
Column 2					
PCBCCV 1003-5	Aroclor 1016	500	595	-19	+/- 15%
PCBCCV 1003-5	Aroclor 1260	500	502	-0.40	+/- 15%

Date of Report: October 5, 2016
Samples Submitted: September 27, 2016
Laboratory Reference: 1609-345
Project: 0747.01.06-6.3

TOTAL LEAD
EPA 6010C

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-345-01					
Client ID:	**ST01-1**					
Lead	**15**	5.4	6010C	9-30-16	9-30-16	
Lab ID:	09-345-02					
Client ID:	**ST01-2**					
Lead	**ND**	5.6	6010C	9-30-16	9-30-16	
Lab ID:	09-345-03					
Client ID:	**ST01-3**					
Lead	**18**	5.5	6010C	9-30-16	9-30-16	

Date of Report: October 5, 2016
Samples Submitted: September 27, 2016
Laboratory Reference: 1609-345
Project: 0747.01.06-6.3

TOTAL LEAD
EPA 6010C
METHOD BLANK QUALITY CONTROL

Date Extracted:	9-30-16
Date Analyzed:	9-30-16
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0930SM3

Analyte	Method	Result	PQL
Lead	6010C	**ND**	5.0

Date of Report: October 5, 2016
Samples Submitted: September 27, 2016
Laboratory Reference: 1609-345
Project: 0747.01.06-6.3

TOTAL LEAD
EPA 6010C
DUPLICATE QUALITY CONTROL

Date Extracted:	9-30-16
Date Analyzed:	9-30-16
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	09-399-04

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Lead	**9.75**	**11.4**	16	5.0	

Date of Report: October 5, 2016
Samples Submitted: September 27, 2016
Laboratory Reference: 1609-345
Project: 0747.01.06-6.3

TOTAL LEAD
EPA 6010C
MS/MSD QUALITY CONTROL

Date Extracted: 9-30-16
Date Analyzed: 9-30-16

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-399-04

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Lead	250	**240**	92	**245**	94	2	

Date of Report: October 5, 2016
Samples Submitted: September 27, 2016
Laboratory Reference: 1609-345
Project: 0747.01.06-6.3

TOTAL LEAD
EPA 6010C
SPIKE BLANK QUALITY CONTROL

Date Extracted: 9-30-16
Date Analyzed: 9-30-16

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: SB0930SM3

Analyte	Method	Spike Level	Spike Result	Percent Recovery
Lead	6010C	250	**234**	93

TOTAL LEAD
EPA 6010C
CONTINUING CALIBRATION SUMMARY

Analyte	Lab ID	True Value (ppm)	Calc. Value	Percent Difference	Control Limits
Lead	ICV093016P	1.00	1.02	-2.0	+/- 10%
Lead	LLICV1093016P	0.100	0.0941	5.9	+/- 30%
Lead	CCV1093016P	10.0	9.79	2.1	+/- 10%
Lead	CCV2093016P	10.0	9.65	3.5	+/- 10%
Lead	LLCCV2093016P	0.100	0.0841	16	+/- 30%
Lead	CCV3093016P	10.0	9.82	1.8	+/- 10%
Lead	LLCCV3093016P	0.100	0.105	-5.0	+/- 30%
Lead	CCV4093016P	10.0	9.82	1.8	+/- 10%
Lead	LLCCV4093016P	0.100	0.0824	18	+/- 30%
Lead	CCV5093016P	10.0	9.78	2.2	+/- 10%
Lead	LLCCV5093016P	0.100	0.104	-4.0	+/- 30%
Lead	CCV6093016P	10.0	9.74	2.6	+/- 10%
Lead	LLCCV6093016P	0.100	0.104	-4.0	+/- 30%
Lead	CCV7093016P	10.0	9.67	3.3	+/- 10%
Lead	LLCCV7093016P	0.100	0.102	-2.0	+/- 30%
Lead	CCV8093016P	10.0	9.63	3.7	+/- 10%
Lead	LLCCV8093016P	0.100	0.0810	19	+/- 30%

Date of Report: October 5, 2016
Samples Submitted: September 27, 2016
Laboratory Reference: 1609-345
Project: 0747.01.06-6.3

% MOISTURE

Date Analyzed: 9-28-16

Client ID	Lab ID	% Moisture
ST01-1	09-345-01	7
ST01-2	09-345-02	10
ST01-3	09-345-03	8

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Page 1 of 1

Company: Maul Foster Alongi
Project Number: 0747.01.06-6.~~2~~3
Project Name: North Cascade Ford
Project Manager: Heather Good
Sampled by: Carolyn Wise

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days) (TPH analysis 5 Days)
☐ ________ (other)

Laboratory Number: 09-345

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level) *only cPAHs	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	MTBE ~~8260B~~ 8021B	Pb 6010A	Naphthalenes ~~8260B~~ 8270D/SIM		% Moisture
1	ST01-1	9/27	~~[illegible]~~ 745	S	5		X		X					X	X								X	X	X		X
2	ST01-2	↓	750	S	5		X		X					X	X								X	X	X		X
3	ST01-3		755	S	5		X		X					X	X								X	X	X		X

	Signature	Company	Date	Time
Relinquished		MFA	9/27/16	1230
Received		ALPHA	9-27-16	12:47
Relinquished		ALPHA	9-27-16	2:17
Received		OSE	9/27/16	1417
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Data Package: Standard ☒ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☒

Equis 4

Sample/Cooler Receipt and Acceptance Checklist

Client: MFA

Client Project Name/Number: 0747.01.06-6.3

OnSite Project Number: 09-345

Initiated by: MV

Date Initiated: 9/27/16

1.0 Cooler Verification

1.1 Were there custody seals on the outside of the cooler?	Yes	No	[✓ N/A]	1 2 3 4	
1.2 Were the custody seals intact?	Yes	No	[✓ N/A]	1 2 3 4	
1.3 Were the custody seals signed and dated by last custodian?	Yes	No	[✓ N/A]	1 2 3 4	
1.4 Were the samples delivered on ice or blue ice?	[✓ Yes]	No		1 2 3 4	
1.5 Were samples received between 0-6 degrees Celsius?	[✓ Yes]	No	Temperature: 5		
1.6 Have shipping bills (if any) been attached to the back of this form?	Yes	[✓ N/A]			
1.7 How were the samples delivered?	Client	[✓ Courier]	UPS/FedEx	OSE Pickup	Other

2.0 Chain of Custody Verification

2.1 Was a Chain of Custody submitted with the samples?	[✓ Yes]	No	1 2 3 4
2.2 Was the COC legible and written in permanent ink?	[✓ Yes]	No	1 2 3 4
2.3 Have samples been relinquished and accepted by each custodian?	[✓ Yes]	No	1 2 3 4
2.4 Did the sample labels (ID, date, time, preservative) agree with COC?	[✓ Yes]	No	1 2 3 4
2.5 Were all of the samples listed on the COC submitted?	[✓ Yes]	No	1 2 3 4
2.6 Were any of the samples submitted omitted from the COC?	Yes	[✓ No]	1 2 3 4

3.0 Sample Verification

3.1 Were any sample containers broken or compromised?	Yes	[✓ No]		1 2 3 4
3.2 Were any sample labels missing or illegible?	Yes	[✓ No]		1 2 3 4
3.3 Have the correct containers been used for each analysis requested?	[✓ Yes]	No		1 2 3 4
3.4 Have the samples been correctly preserved?	Yes	No	[✓ N/A]	1 2 3 4
3.5 Are volatiles samples free from headspace and bubbles greater than 6mm?	Yes	No	[✓ N/A]	1 2 3 4
3.6 Is there sufficient sample submitted to perform requested analyses?	[✓ Yes]	No		1 2 3 4
3.7 Have any holding times already expired or will expire in 24 hours?	Yes	[✓ No]		1 2 3 4
3.8 Was method 5035A used?	[✓ Yes]	No	N/A	1 2 3 4
3.9 If 5035A was used, which sampling option was used (#1, 2, or 3).	#	1	N/A	1 2 3 4

Explain any discrepancies:

1 - Discuss issue in Case Narrative

2 - Process Sample As-is

3 - Client contacted to discuss problem

4 - Sample cannot be analyzed or client does not wish to proceed

//SERVER\OSE\Administration\forms\cooler_checklist.xls

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

October 4, 2016

Heather Good
Maul Foster & Alongi, Inc.
Bay Vista Tower
2815 2nd Avenue, Suite 540
Seattle, WA 98121

Re: Analytical Data for Project 0747.01.06-6.3
Laboratory Reference No. 1609-398

Dear Heather:

Enclosed are the analytical results and associated quality control data for samples submitted on September 30, 2016.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: October 4, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-398
Project: 0747.01.06-6.3

Case Narrative

Samples were collected on September 29 and 30, 2016 and received by the laboratory on September 30, 2016. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

NWTPH Gx + n-Hexane Analysis

Per EPA Method 5035A, samples were received by the laboratory in pre-weighed 40 mL VOA vials within 48 hours of sample collection. They were stored in a freezer at between -7°C and -20°C until extraction or analysis.

Volatiles EPA 8260C Analysis

The last two internal standards did not meet acceptance criteria for samples WSW02-S-7.5 and NSW02-S-7.5 due to co-eluting non-target analytes. The samples were re-extracted and re-analyzed with similar results. The samples were therefore re-analyzed for a third time at the lowest possible dilution allowed by Method 5035A. Since the last two internal standards passed for both samples at the dilution, this is the data that was included in the report. Consequently, the MTCA Method A clean-up level of 0.005-ppm for 1,2-Dibromoethane is not achievable.

Naphthalenes EPA 8270D/SIM Analysis

Sample NSW02-S-7.5 had one surrogate recovery out of control limits. This is within allowance of our standard operating procedure as long as the recovery is above 10%.

Please note that any other QA/QC issues associated with these extractions and analyses will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: October 4, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-398
Project: 0747.01.06-6.3

NWTPH-Gx + n-HEXANE

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BASE03-S-15.0**					
Laboratory ID:	09-398-03					
n-Hexane	**ND**	0.11	EPA 8015M	9-30-16	9-30-16	
Gasoline	**ND**	11	NWTPH-Gx	9-30-16	9-30-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***112***	***68-129***				
Client ID:	**SSW03-S-7.5**					
Laboratory ID:	09-398-04					
n-Hexane	**ND**	0.066	EPA 8015M	9-30-16	9-30-16	
Gasoline	**ND**	6.6	NWTPH-Gx	9-30-16	9-30-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***105***	***68-129***				

Date of Report: October 4, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-398
Project: 0747.01.06-6.3

NWTPH-Gx + n-HEXANE
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0930S1					
n-Hexane	**ND**	0.050	EPA 8015M	9-30-16	9-30-16	
Gasoline	**ND**	5.0	NWTPH-Gx	9-30-16	9-30-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***94***	***68-129***				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	09-398-04										
	ORIG	DUP									
n-Hexane	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						***105***	***103***	***68-129***			
SPIKE BLANKS											
Laboratory ID:	SB0930S1										
	SB	SBD	SB	SBD		SB	SBD				
n-Hexane	**0.87**	**0.822**	1.00	1.00		**87**	**82**	70-130	5	20	
Surrogate:											
Fluorobenzene						***87***	***82***	***68-129***			

Date of Report: October 4, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-398
Project: 0747.01.06-6.3

NWTPH-Gx
CONTINUING CALIBRATION SUMMARY

Lab ID	Gasoline True Value (ppm)	Calc. Value	Percent Difference	Control Limits
CCVD0930G-1	5.00	4.32	14	+/- 20%
CCVD0930G-2	5.00	4.22	16	+/- 20%

Date of Report: October 4, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-398
Project: 0747.01.06-6.3

n-HEXANE
EPA 8015M
CONTINUING CALIBRATION SUMMARY

Lab ID	n-Hexane True Value (ppb)	Calc. Value	Percent Difference	Control Limits
CCVD0930B-1	50.0	44.8	10	+/- 20%
CCVD0930B-2	50.0	43.3	13	+/- 20%
CCVD0930B-3	50.0	41.1	18	+/- 20%

Date of Report: October 4, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-398
Project: 0747.01.06-6.3

NWTPH-Gx + n-HEXANE

Matrix: Soil
Units: mg/kg (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**WSW02-S-7.5**					
Laboratory ID:	09-398-01					
n-Hexane	**ND**	0.84	EPA 8015M	9-30-16	9-30-16	
Gasoline	**ND**	84	NWTPH-Gx	9-30-16	9-30-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***88***	***68-129***				
Client ID:	**NSW02-S-7.5**					
Laboratory ID:	09-398-02					
n-Hexane	**ND**	0.95	EPA 8015M	9-30-16	9-30-16	
Gasoline	**ND**	95	NWTPH-Gx	9-30-16	9-30-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***90***	***68-129***				
Client ID:	**ESW02-S-7.5**					
Laboratory ID:	09-398-05					
n-Hexane	**ND**	0.082	EPA 8015M	9-30-16	10-3-16	
Gasoline	**ND**	8.2	NWTPH-Gx	9-30-16	10-3-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***85***	***68-129***				

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Project: 0747.01.06-6.3

NWTPH-Gx + n-HEXANE
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
METHOD BLANK						
Laboratory ID:	MB0930S1					
n-Hexane	**ND**	0.050	EPA 8015M	9-30-16	9-30-16	
Gasoline	**ND**	5.0	NWTPH-Gx	9-30-16	9-30-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***94***	***68-129***				

Analyte	**Result**		**Spike Level**		**Source Result**	**Percent Recovery**		**Recovery Limits**	**RPD**	**RPD Limit**	**Flags**
DUPLICATE											
Laboratory ID:	09-398-04										
	ORIG	DUP									
n-Hexane	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						***105***	***103***	***68-129***			
SPIKE BLANKS											
Laboratory ID:	SB0930S1										
	SB	SBD	SB	SBD		SB	SBD				
n-Hexane	**1.02**	**0.969**	1.00	1.00		**102**	**97**	70-130	5	20	
Surrogate:											
Fluorobenzene						***87***	***82***	***68-129***			

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NWTPH-Gx
CONTINUING CALIBRATION SUMMARY

Lab ID	Gasoline True Value (ppm)	Calc. Value	Percent Difference	Control Limits
CCVD0930G-1	5.00	4.32	14	+/- 20%
CCVD0930G-2	5.00	4.22	16	+/- 20%
CCVD0930G-3	5.00	4.46	11	+/- 20%
CCVD1003G-1	5.00	4.45	11	+/- 20%
CCVD1003G-2	5.00	4.60	8	+/- 20%

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n-HEXANE
EPA 8015M
CONTINUING CALIBRATION SUMMARY

Lab ID	n-Hexane True Value (ppm)	Calc. Value	Percent Difference	Control Limits
CCVD0930B-1	50.0	44.8	10	+/- 20%
CCVD0930B-2	50.0	43.3	13	+/- 20%
CCVD0930B-3	50.0	41.1	18	+/- 20%
CCVD1003B-1	50.0	45.4	9	+/- 20%
CCVD1003B-2	50.0	45.4	9	+/- 20%

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NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BASE03-S-15.0**					
Laboratory ID:	09-398-03					
Diesel Range Organics	**ND**	40	NWTPH-Dx	9-30-16	9-30-16	
Lube Oil Range Organics	**ND**	79	NWTPH-Dx	9-30-16	9-30-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***56***	***50-150***				
Client ID:	**SSW03-S-7.5**					
Laboratory ID:	09-398-04					
Diesel Range Organics	**ND**	28	NWTPH-Dx	9-30-16	9-30-16	
Lube Oil Range Organics	**ND**	56	NWTPH-Dx	9-30-16	9-30-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***88***	***50-150***				
Client ID:	**ESW02-S-7.5**					
Laboratory ID:	09-398-05					
Diesel Fuel #2	**270**	34	NWTPH-Dx	9-30-16	9-30-16	
Lube Oil Range Organics	**ND**	68	NWTPH-Dx	9-30-16	9-30-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***66***	***50-150***				

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NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0930S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	9-30-16	9-30-16	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	9-30-16	9-30-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***105***	***50-150***				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	09-384-03										
	ORIG	DUP									
Diesel Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Lube Oil Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Surrogate:											
o-Terphenyl						***87***	***89***	***50-150***			
SPIKE BLANK											
Laboratory ID:	SB0930S1										
Diesel Fuel #2	**118**		100		NA	**118**		61-130	NA	NA	
Surrogate:											
o-Terphenyl						***119***		***50-150***			

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NWTPH-Dx
CONTINUING CALIBRATION SUMMARY

Lab ID	True Value (ppm)	Calc. Value	Percent Difference	Control Limits
CCV0930F-V1	100	105	-4.8	+/-15%
CCV0930F-V2	100	104	-4.1	+/-15%
CCV0930R-V1	100	100	-0.3	+/-15%
CCV0930R-V2	100	98.2	1.8	+/-15%
CCV0930R-T1	100	103	-3.2	+/-15%
CCV0930R-T2	100	102	-2.4	+/-15%

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Project: 0747.01.06-6.3

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**WSW02-S-7.5**					
Laboratory ID:	09-398-01					
Diesel Fuel #2	**9600**	170	NWTPH-Dx	9-30-16	10-3-16	
Lube Oil Range Organics	**ND**	370	NWTPH-Dx	9-30-16	10-3-16	U1
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***105***	***50-150***				
Client ID:	**NSW02-S-7.5**					
Laboratory ID:	09-398-02					
Diesel Fuel #2	**14000**	180	NWTPH-Dx	9-30-16	10-3-16	
Lube Oil Range Organics	**ND**	430	NWTPH-Dx	9-30-16	10-3-16	U1
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***122***	***50-150***				

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NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0930S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	9-30-16	9-30-16	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	9-30-16	9-30-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***105***	***50-150***				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	09-384-03										
	ORIG	DUP									
Diesel Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Lube Oil Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Surrogate:											
o-Terphenyl						***87***	***89***	***50-150***			
SPIKE BLANK											
Laboratory ID:	SB0930S1										
Diesel Fuel #2	**118**		100		NA	**118**		61-130	NA	NA	
Surrogate:											
o-Terphenyl						***119***		***50-150***			

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NWTPH-Dx
CONTINUING CALIBRATION SUMMARY

Lab ID	True Value (ppm)	Calc. Value	Percent Difference	Control Limits
CCV0930F-V1	100	105	-4.8	+/-15%
CCV0930F-V2	100	104	-4.1	+/-15%
CCV0930R-T1	100	103	-3.2	+/-15%
CCV0930R-T2	100	102	-2.4	+/-15%
CCV1003F-T1	100	95.3	4.7	+/-15%
CCV1003F-T2	100	94.4	5.6	+/-15%
CCV1003R-T1	100	102	-2.0	+/-15%
CCV1003R-T2	100	101	-0.8	+/-15%

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VOLATILES EPA 8260C

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BASE03-S-15.0**					
Laboratory ID:	09-398-03					
Methyl t-Butyl Ether	ND	0.0023	EPA 8260C	9-30-16	9-30-16	
Benzene	ND	0.0023	EPA 8260C	9-30-16	9-30-16	
1,2-Dichloroethane	ND	0.0023	EPA 8260C	9-30-16	9-30-16	
Toluene	ND	0.011	EPA 8260C	9-30-16	9-30-16	
1,2-Dibromoethane	ND	0.0023	EPA 8260C	9-30-16	9-30-16	
Ethylbenzene	ND	0.0023	EPA 8260C	9-30-16	9-30-16	
m,p-Xylene	ND	0.0046	EPA 8260C	9-30-16	9-30-16	
o-Xylene	ND	0.0023	EPA 8260C	9-30-16	9-30-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
Dibromofluoromethane	***101***	***76-131***				
Toluene-d8	***99***	***80-126***				
4-Bromofluorobenzene	***95***	***60-146***				

VOLATILES EPA 8260C

Matrix: Soil
Units: mg/kg

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**SSW03-S-7.5**					
Laboratory ID:	09-398-04					
Methyl t-Butyl Ether	ND	0.0017	EPA 8260C	9-30-16	9-30-16	
Benzene	ND	0.0017	EPA 8260C	9-30-16	9-30-16	
1,2-Dichloroethane	ND	0.0017	EPA 8260C	9-30-16	9-30-16	
Toluene	ND	0.0083	EPA 8260C	9-30-16	9-30-16	
1,2-Dibromoethane	ND	0.0017	EPA 8260C	9-30-16	9-30-16	
Ethylbenzene	ND	0.0017	EPA 8260C	9-30-16	9-30-16	
m,p-Xylene	ND	0.0033	EPA 8260C	9-30-16	9-30-16	
o-Xylene	ND	0.0017	EPA 8260C	9-30-16	9-30-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
Dibromofluoromethane	***104***	***76-131***				
Toluene-d8	***107***	***80-126***				
4-Bromofluorobenzene	***104***	***60-146***				

VOLATILES by EPA 8260C
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/kg

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Laboratory ID:	MB0930S1					
Methyl t-Butyl Ether	ND	0.0010	EPA 8260C	9-30-16	9-30-16	
Benzene	ND	0.0010	EPA 8260C	9-30-16	9-30-16	
1,2-Dichloroethane	ND	0.0010	EPA 8260C	9-30-16	9-30-16	
Toluene	ND	0.0050	EPA 8260C	9-30-16	9-30-16	
1,2-Dibromoethane	ND	0.0010	EPA 8260C	9-30-16	9-30-16	
Ethylbenzene	ND	0.0010	EPA 8260C	9-30-16	9-30-16	
m,p-Xylene	ND	0.0020	EPA 8260C	9-30-16	9-30-16	
o-Xylene	ND	0.0010	EPA 8260C	9-30-16	9-30-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
Dibromofluoromethane	***102***	***76-131***				
Toluene-d8	***109***	***80-126***				
4-Bromofluorobenzene	***105***	***60-146***				

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VOLATILES by EPA 8260C
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0930S1									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**0.0435**	**0.0449**	0.0500	0.0500	87	90	68-126	3	15	
Benzene	**0.0464**	**0.0475**	0.0500	0.0500	93	95	70-121	2	15	
Trichloroethene	**0.0460**	**0.0471**	0.0500	0.0500	92	94	75-120	2	15	
Toluene	**0.0490**	**0.0507**	0.0500	0.0500	98	101	80-120	3	15	
Chlorobenzene	**0.0498**	**0.0503**	0.0500	0.0500	100	101	76-120	1	15	
Surrogate:										
Dibromofluoromethane					***98***	***94***	***76-131***			
Toluene-d8					***99***	***97***	***80-126***			
4-Bromofluorobenzene					***99***	***95***	***60-146***			

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VOLATILES EPA 8260C

Matrix: Soil
Units: mg/kg

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**ESW02-S-7.5**					
Laboratory ID:	09-398-05					
Methyl t-Butyl Ether	ND	0.0015	EPA 8260C	10-3-16	10-3-16	
Benzene	ND	0.0015	EPA 8260C	10-3-16	10-3-16	
1,2-Dichloroethane	ND	0.0015	EPA 8260C	10-3-16	10-3-16	
Toluene	ND	0.0074	EPA 8260C	10-3-16	10-3-16	
1,2-Dibromoethane	ND	0.0015	EPA 8260C	10-3-16	10-3-16	
Ethylbenzene	ND	0.0015	EPA 8260C	10-3-16	10-3-16	
m,p-Xylene	ND	0.0030	EPA 8260C	10-3-16	10-3-16	
o-Xylene	ND	0.0015	EPA 8260C	10-3-16	10-3-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
Dibromofluoromethane	***109***	***76-131***				
Toluene-d8	***105***	***80-126***				
4-Bromofluorobenzene	***104***	***60-146***				

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VOLATILES by EPA 8260C
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB1003S1					
Methyl t-Butyl Ether	ND	0.0010	EPA 8260C	10-3-16	10-3-16	
Benzene	ND	0.0010	EPA 8260C	10-3-16	10-3-16	
1,2-Dichloroethane	ND	0.0010	EPA 8260C	10-3-16	10-3-16	
Toluene	ND	0.0050	EPA 8260C	10-3-16	10-3-16	
1,2-Dibromoethane	ND	0.0010	EPA 8260C	10-3-16	10-3-16	
Ethylbenzene	ND	0.0010	EPA 8260C	10-3-16	10-3-16	
m,p-Xylene	ND	0.0020	EPA 8260C	10-3-16	10-3-16	
o-Xylene	ND	0.0010	EPA 8260C	10-3-16	10-3-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
Dibromofluoromethane	***110***	***76-131***				
Toluene-d8	***110***	***80-126***				
4-Bromofluorobenzene	***108***	***60-146***				

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Laboratory Reference: 1609-398
Project: 0747.01.06-6.3

VOLATILES by EPA 8260C
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB1003S1									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**0.0489**	**0.0467**	0.0500	0.0500	98	93	68-126	5	15	
Benzene	**0.0488**	**0.0509**	0.0500	0.0500	98	102	70-121	4	15	
Trichloroethene	**0.0444**	**0.0479**	0.0500	0.0500	89	96	75-120	8	15	
Toluene	**0.0506**	**0.0533**	0.0500	0.0500	101	107	80-120	5	15	
Chlorobenzene	**0.0494**	**0.0505**	0.0500	0.0500	99	101	76-120	2	15	
Surrogate:										
Dibromofluoromethane					***107***	***102***	***76-131***			
Toluene-d8					***104***	***103***	***80-126***			
4-Bromofluorobenzene					***105***	***101***	***60-146***			

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Samples Submitted: September 30, 2016
Laboratory Reference: 1609-398
Project: 0747.01.06-6.3

VOLATILES EPA 8260C

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**WSW02-S-7.5**					
Laboratory ID:	09-398-01					
Methyl t-Butyl Ether	ND	0.0017	EPA 8260C	10-3-16	10-3-16	
Benzene	ND	0.0017	EPA 8260C	10-3-16	10-3-16	
1,2-Dichloroethane	ND	0.0017	EPA 8260C	10-3-16	10-3-16	
Toluene	ND	0.40	EPA 8260C	10-3-16	10-3-16	
1,2-Dibromoethane	ND	0.081	EPA 8260C	10-3-16	10-3-16	
Ethylbenzene	0.22	0.081	EPA 8260C	10-3-16	10-3-16	
m,p-Xylene	0.35	0.16	EPA 8260C	10-3-16	10-3-16	
o-Xylene	ND	0.081	EPA 8260C	10-3-16	10-3-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
Dibromofluoromethane	***126***	***76-131***				
Toluene-d8	***101***	***80-126***				
4-Bromofluorobenzene	***99***	***60-146***				

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VOLATILES EPA 8260C

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**NSW02-S-7.5**					
Laboratory ID:	09-398-02					
Methyl t-Butyl Ether	ND	0.0016	EPA 8260C	10-3-16	10-3-16	
Benzene	ND	0.0016	EPA 8260C	10-3-16	10-3-16	
1,2-Dichloroethane	ND	0.0016	EPA 8260C	10-3-16	10-3-16	
Toluene	ND	0.46	EPA 8260C	10-3-16	10-3-16	
1,2-Dibromoethane	ND	0.093	EPA 8260C	10-3-16	10-3-16	
Ethylbenzene	0.41	0.093	EPA 8260C	10-3-16	10-3-16	
m,p-Xylene	0.92	0.19	EPA 8260C	10-3-16	10-3-16	
o-Xylene	ND	0.093	EPA 8260C	10-3-16	10-3-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
Dibromofluoromethane	***113***	***76-131***				
Toluene-d8	***90***	***80-126***				
4-Bromofluorobenzene	***99***	***60-146***				

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Samples Submitted: September 30, 2016
Laboratory Reference: 1609-398
Project: 0747.01.06-6.3

VOLATILES by EPA 8260C
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB1003S1					
Methyl t-Butyl Ether	ND	0.0010	EPA 8260C	10-3-16	10-3-16	
Benzene	ND	0.0010	EPA 8260C	10-3-16	10-3-16	
1,2-Dichloroethane	ND	0.0010	EPA 8260C	10-3-16	10-3-16	
Toluene	ND	0.0050	EPA 8260C	10-3-16	10-3-16	
1,2-Dibromoethane	ND	0.0010	EPA 8260C	10-3-16	10-3-16	
Ethylbenzene	ND	0.0010	EPA 8260C	10-3-16	10-3-16	
m,p-Xylene	ND	0.0020	EPA 8260C	10-3-16	10-3-16	
o-Xylene	ND	0.0010	EPA 8260C	10-3-16	10-3-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
Dibromofluoromethane	***110***	***76-131***				
Toluene-d8	***110***	***80-126***				
4-Bromofluorobenzene	***108***	***60-146***				

Date of Report: October 4, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-398
Project: 0747.01.06-6.3

VOLATILES by EPA 8260C
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB1003S1									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**0.0489**	**0.0467**	0.0500	0.0500	98	93	68-126	5	15	
Benzene	**0.0488**	**0.0509**	0.0500	0.0500	98	102	70-121	4	15	
Trichloroethene	**0.0444**	**0.0479**	0.0500	0.0500	89	96	75-120	8	15	
Toluene	**0.0506**	**0.0533**	0.0500	0.0500	101	107	80-120	5	15	
Chlorobenzene	**0.0494**	**0.0505**	0.0500	0.0500	99	101	76-120	2	15	
Surrogate:										
Dibromofluoromethane					***107***	***102***	***76-131***			
Toluene-d8					***104***	***103***	***80-126***			
4-Bromofluorobenzene					***105***	***101***	***60-146***			

Date of Report: October 4, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-398
Project: 0747.01.06-6.3

NAPHTHALENES EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**WSW02-S-7.5**					
Laboratory ID:	09-398-01					
Naphthalene	**2.4**	0.90	EPA 8270D/SIM	9-30-16	10-4-16	
2-Methylnaphthalene	**15**	0.90	EPA 8270D/SIM	9-30-16	10-4-16	
1-Methylnaphthalene	**10**	0.90	EPA 8270D/SIM	9-30-16	10-4-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***47***	***32 - 115***				
Pyrene-d10	***94***	***30 - 124***				
Terphenyl-d14	***94***	***30 - 117***				

Date of Report: October 4, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-398
Project: 0747.01.06-6.3

NAPHTHALENES EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**NSW02-S-7.5**					
Laboratory ID:	09-398-02					
Naphthalene	**8.2**	0.94	EPA 8270D/SIM	9-30-16	10-4-16	
2-Methylnaphthalene	**27**	0.94	EPA 8270D/SIM	9-30-16	10-4-16	
1-Methylnaphthalene	**18**	0.94	EPA 8270D/SIM	9-30-16	10-4-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***101***	***32 - 115***				
Pyrene-d10	***103***	***30 - 124***				
Terphenyl-d14	***133***	***30 - 117***				Q

Date of Report: October 4, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-398
Project: 0747.01.06-6.3

NAPHTHALENES EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**BASE03-S-15.0**					
Laboratory ID:	09-398-03					
Naphthalene	**ND**	0.011	EPA 8270D/SIM	9-30-16	9-30-16	
2-Methylnaphthalene	**0.020**	0.011	EPA 8270D/SIM	9-30-16	9-30-16	
1-Methylnaphthalene	**0.017**	0.011	EPA 8270D/SIM	9-30-16	9-30-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***65***	***32 - 115***				
Pyrene-d10	***71***	***30 - 124***				
Terphenyl-d14	***79***	***30 - 117***				

Date of Report: October 4, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-398
Project: 0747.01.06-6.3

NAPHTHALENES EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SSW03-S-7.5**					
Laboratory ID:	09-398-04					
Naphthalene	**ND**	0.0075	EPA 8270D/SIM	9-30-16	9-30-16	
2-Methylnaphthalene	**ND**	0.0075	EPA 8270D/SIM	9-30-16	9-30-16	
1-Methylnaphthalene	**ND**	0.0075	EPA 8270D/SIM	9-30-16	9-30-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***78***	***32 - 115***				
Pyrene-d10	***78***	***30 - 124***				
Terphenyl-d14	***88***	***30 - 117***				

Date of Report: October 4, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-398
Project: 0747.01.06-6.3

NAPHTHALENES EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ESW02-S-7.5**					
Laboratory ID:	09-398-05					
Naphthalene	**0.047**	0.0090	EPA 8270D/SIM	9-30-16	10-3-16	
2-Methylnaphthalene	**0.016**	0.0090	EPA 8270D/SIM	9-30-16	10-3-16	
1-Methylnaphthalene	**0.075**	0.0090	EPA 8270D/SIM	9-30-16	10-3-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***62***	***32 - 115***				
Pyrene-d10	***67***	***30 - 124***				
Terphenyl-d14	***67***	***30 - 117***				

Date of Report: October 4, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-398
Project: 0747.01.06-6.3

NAPHTHALENES EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0930S1					
Naphthalene	**ND**	0.0067	EPA 8270D/SIM	9-30-16	9-30-16	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270D/SIM	9-30-16	9-30-16	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270D/SIM	9-30-16	9-30-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***88***	***32 - 115***				
Pyrene-d10	***87***	***30 - 124***				
Terphenyl-d14	***97***	***30 - 117***				

NAPHTHALENES EPA 8270D/SIM
MS/MSD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	**Result**		**Spike Level**		**Source Result**	**Percent Recovery**		**Recovery Limits**	**RPD**	**RPD Limit**	**Flags**
MATRIX SPIKES											
Laboratory ID:	09-398-04										
	MS	MSD	MS	MSD		MS	MSD				
Naphthalene	**0.0679**	**0.0700**	0.0833	0.0833	ND	82	84	35 - 114	3	28	
Acenaphthylene	**0.0713**	**0.0714**	0.0833	0.0833	ND	86	86	42 - 116	0	32	
Acenaphthene	**0.0682**	**0.0686**	0.0833	0.0833	ND	82	82	39 - 113	1	30	
Surrogate:											
2-Fluorobiphenyl						***77***	***76***	***32 - 115***			
Pyrene-d10						***76***	***75***	***30 - 124***			
Terphenyl-d14						***84***	***84***	***30 - 117***			

Date of Report: October 4, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-398
Project: 0747.01.06-6.3

NAPHTHALENES EPA 8270D/SIM
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0930S1									
	SB	SBD	SB	SBD	SB	SBD				
Naphthalene	**0.0747**	**0.0759**	0.0833	0.0833	90	91	61 - 112	2	15	
Acenaphthylene	**0.0808**	**0.0795**	0.0833	0.0833	97	95	65 - 116	2	15	
Acenaphthene	**0.0759**	**0.0750**	0.0833	0.0833	91	90	62 - 116	1	13	
Surrogate:										
2-Fluorobiphenyl					***84***	***75***	***32 - 115***			
Pyrene-d10					***85***	***85***	***30 - 124***			
Terphenyl-d14					***93***	***93***	***30 - 117***			

TOTAL LEAD
EPA 6010C

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-398-03					
Client ID:	**BASE03-S-15.0**					
Lead	**ND**	7.9	6010C	9-30-16	9-30-16	
Lab ID:	09-398-04					
Client ID:	**SSW03-S-7.5**					
Lead	**ND**	5.6	6010C	9-30-16	9-30-16	
Lab ID:	09-398-05					
Client ID:	**ESW02-S-7.5**					
Lead	**ND**	6.7	6010C	9-30-16	9-30-16	

Date of Report: October 4, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-398
Project: 0747.01.06-6.3

TOTAL LEAD
EPA 6010C
METHOD BLANK QUALITY CONTROL

Date Extracted:	9-30-16
Date Analyzed:	9-30-16
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0930SM3

Analyte	Method	Result	PQL
Lead	6010C	**ND**	5.0

Date of Report: October 4, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-398
Project: 0747.01.06-6.3

TOTAL LEAD
EPA 6010C
DUPLICATE QUALITY CONTROL

Date Extracted:	9-30-16
Date Analyzed:	9-30-16
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	09-399-04

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Lead	**9.75**	**11.4**	16	5.0	

TOTAL LEAD
EPA 6010C
MS/MSD QUALITY CONTROL

Date Extracted:	9-30-16
Date Analyzed:	9-30-16
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	09-399-04

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Lead	250	**240**	92	**245**	94	2	

Date of Report: October 4, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-398
Project: 0747.01.06-6.3

TOTAL LEAD
EPA 6010C
SPIKE BLANK QUALITY CONTROL

Date Extracted:	9-30-16
Date Analyzed:	9-30-16
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	SB0930SM3

Analyte	Method	Spike Level	Spike Result	Percent Recovery
Lead	6010C	250	**234**	93

Date of Report: October 4, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-398
Project: 0747.01.06-6.3

TOTAL LEAD
EPA 6010C
CONTINUING CALIBRATION SUMMARY

Analyte	Lab ID	True Value (ppm)	Calc. Value	Percent Difference	Control Limits
Lead	ICV093016P	1.00	1.02	-2.0	+/- 10%
Lead	LLICV1093016P	0.100	0.0941	5.9	+/- 30%
Lead	CCV1093016P	10.0	9.79	2.1	+/- 10%
Lead	CCV2093016P	10.0	9.65	3.5	+/- 10%
Lead	LLCCV2093016P	0.100	0.0841	16	+/- 30%
Lead	CCV3093016P	10.0	9.82	1.8	+/- 10%
Lead	LLCCV3093016P	0.100	0.105	-5.0	+/- 30%
Lead	CCV4093016P	10.0	9.82	1.8	+/- 10%
Lead	LLCCV4093016P	0.100	0.0824	18	+/- 30%
Lead	CCV5093016P	10.0	9.78	2.2	+/- 10%
Lead	LLCCV5093016P	0.100	0.104	-4.0	+/- 30%
Lead	CCV6093016P	10.0	9.74	2.6	+/- 10%
Lead	LLCCV6093016P	0.100	0.104	-4.0	+/- 30%
Lead	CCV7093016P	10.0	9.67	3.3	+/- 10%
Lead	LLCCV7093016P	0.100	0.102	-2.0	+/- 30%
Lead	CCV8093016P	10.0	9.63	3.7	+/- 10%
Lead	LLCCV8093016P	0.100	0.0810	19	+/- 30%

Date of Report: October 4, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-398
Project: 0747.01.06-6.3

TOTAL LEAD
EPA 6010C

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-398-01					
Client ID:	**WSW02-S-7.5**					
Lead	**ND**	6.8	6010C	10-3-16	10-3-16	
Lab ID:	09-398-02					
Client ID:	**NSW02-S-7.5**					
Lead	**ND**	7.1	6010C	10-3-16	10-3-16	

Date of Report: October 4, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-398
Project: 0747.01.06-6.3

TOTAL LEAD
EPA 6010C
METHOD BLANK QUALITY CONTROL

Date Extracted:	10-3-16
Date Analyzed:	10-3-16
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB1003SM2

Analyte	Method	Result	PQL
Lead	6010C	**ND**	5.0

Date of Report: October 4, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-398
Project: 0747.01.06-6.3

TOTAL LEAD
EPA 6010C
DUPLICATE QUALITY CONTROL

Date Extracted: 10-3-16
Date Analyzed: 10-3-16

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-388-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Lead	**29.6**	**27.9**	6	5.0	

TOTAL LEAD
EPA 6010C
MS/MSD QUALITY CONTROL

Date Extracted:	10-3-16
Date Analyzed:	10-3-16
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	09-388-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Lead	250	**278**	99	**275**	98	1	

Date of Report: October 4, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-398
Project: 0747.01.06-6.3

TOTAL LEAD
EPA 6010C
SPIKE BLANK QUALITY CONTROL

Date Extracted: 10-3-16
Date Analyzed: 10-3-16

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: SB1003SM2

Analyte	Method	Spike Level	Spike Result	Percent Recovery
Lead	6010C	250	**261**	104

Date of Report: October 4, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-398
Project: 0747.01.06-6.3

TOTAL LEAD
EPA 6010C
CONTINUING CALIBRATION SUMMARY

Analyte	Lab ID	True Value (ppm)	Calc. Value	Percent Difference	Control Limits
Lead	ICV100316P	1.00	1.01	-1.0	+/- 10%
Lead	LLICV100316P	0.100	0.111	-11	+/- 30%
Lead	CCV110316P	10.0	9.94	0.60	+/- 10%
Lead	CCV2100316P	10.0	10.0	0	+/- 10%
Lead	LLCCV2100316P	0.100	0.108	-8.0	+/- 30%
Lead	CCV3100316P	10.0	9.92	0.80	+/- 10%
Lead	LLCCV3100316P	0.100	0.081	19	+/- 30%
Lead	CCV4100316P	10.0	9.78	2.2	+/- 10%
Lead	LLCCV4100316P	0.100	0.0866	13	+/- 30%
Lead	CCV4100316P	10.0	9.62	3.8	+/- 10%
Lead	LLCCV4100316P	0.100	0.119	-19	+/- 30%

Date of Report: October 4, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-398
Project: 0747.01.06-6.3

% MOISTURE

Date Analyzed: 9-30-16

Client ID	Lab ID	% Moisture
WSW02-S-7.5	09-398-01	26
NSW02-S-7.5	09-398-02	29
BASE03-S-15.0	09-398-03	37
SSW03-S-7.5	09-398-04	11
ESW02-S-7.5	09-398-05	26

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Page 1 of 1

Company: Maul Foster Alongi
Project Number: 0747.01.06-6.3
Project Name: North Cascade Ford
Project Manager: Heather Good
Sampled by: Carolyn Wise

Turnaround Request (in working days)
(Check One)
☒ Same Day (Dx #5) ☒ 1 Day (remainder
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days) (TPH analysis 5 Days)
☐ ______ (other)

Laboratory Number: 09-398

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx + n-hexane	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C * BTEX EDB, EDC, MTBE	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level) Napthalenes only	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	Total Lead	Hold			% Moisture
1	WSW02-S-7.5	9/29	900	S	5			⊗	⊗	⊗				⊗									⊗	~~X~~ NO			⊗
2	NSW02-S-7.5	9/29	1340	S	5			⊗	⊗	⊗				⊗									⊗	~~X~~ NO			⊗
3	BASE03-S-15.0	9/29	1200	S	5			X	X	X				X									X				X
4	SSW03-S-7.5	9/30	915	S	5			X	X	X				X									X				X
5	ESW02-S-7.5**	9/30	1030	S	5			⊗	X	⊗				⊗									⊗				~~⊗~~

	Signature	Company	Date	Time
Relinquished	Carolyn Wise	MFA	9/30/16	1100
Received		Alphs	9-30-16	11:00
Relinquished		alphs	9-30-16	12:20
Received			9/30/16	1220
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

*EDB reporting limit below MTCA A value

○ - Hold pending Dx results

** - Priority sample! Results ASAP please

Data Package: Standard ☒ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☒

⊗ Added 10/3/16. DB (Same day)

Ⓧ Added 9/30/16. DB (SAME DAY) Equis 4

Sample/Cooler Receipt and Acceptance Checklist

Client: MFA

Client Project Name/Number: 0747.01.06-63

OnSite Project Number: 09-398

Initiated by: Blair Goodrow

Date Initiated: 9/30/16

1.0 Cooler Verification

1.1 Were there custody seals on the outside of the cooler? Yes [✓ No] N/A 1 2 3 4
1.2 Were the custody seals intact? Yes No [✓ N/A] 1 2 3 4
1.3 Were the custody seals signed and dated by last custodian? Yes No [✓ N/A] 1 2 3 4
1.4 Were the samples delivered on ice or blue ice? [✓ Yes] No 1 2 3 4
1.5 Were samples received between 0-6 degrees Celsius? [✓ Yes] No Temperature: 4°C
1.6 Have shipping bills (if any) been attached to the back of this form? Yes [✓ N/A]
1.7 How were the samples delivered? Client [✓ Courier] UPS/FedEx OSE Pickup Other

2.0 Chain of Custody Verification

2.1 Was a Chain of Custody submitted with the samples? [✓ Yes] No 1 2 3 4
2.2 Was the COC legible and written in permanent ink? [✓ Yes] No 1 2 3 4
2.3 Have samples been relinquished and accepted by each custodian? [✓ Yes] No 1 2 3 4
2.4 Did the sample labels (ID, date, time, preservative) agree with COC? [✓ Yes] No 1 2 3 4
2.5 Were all of the samples listed on the COC submitted? [✓ Yes] No 1 2 3 4
2.6 Were any of the samples submitted omitted from the COC? Yes [✓ No] 1 2 3 4

3.0 Sample Verification

3.1 Were any sample containers broken or compromised? Yes [✓ No] 1 2 3 4
3.2 Were any sample labels missing or illegible? Yes [✓ No] 1 2 3 4
3.3 Have the correct containers been used for each analysis requested? [✓ Yes] No 1 2 3 4
3.4 Have the samples been correctly preserved? Yes No [✓ N/A] 1 2 3 4
3.5 Are volatiles samples free from headspace and bubbles greater than 6mm? Yes No [✓ N/A] 1 2 3 4
3.6 Is there sufficient sample submitted to perform requested analyses? [✓ Yes] No 1 2 3 4
3.7 Have any holding times already expired or will expire in 24 hours? Yes [✓ No] 1 2 3 4
3.8 Was method 5035A used? [✓ Yes] No N/A 1 2 3 4
3.9 If 5035A was used, which sampling option was used (#1, 2, or 3). # 1 N/A 1 2 3 4

Explain any discrepancies:

1 - Discuss issue in Case Narrative
2 - Process Sample As-is
3 - Client contacted to discuss problem
4 - Sample cannot be analyzed or client does not wish to proceed

OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

October 5, 2016

Heather Good
Maul Foster & Alongi, Inc.
Bay Vista Tower
2815 2nd Avenue, Suite 540
Seattle, WA 98121

Re: Analytical Data for Project 0747.01.06-6.3
Laboratory Reference No. 1609-399

Dear Heather:

Enclosed are the analytical results and associated quality control data for samples submitted on September 30, 2016.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: October 5, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-399
Project: 0747.01.06-6.3

Case Narrative

Samples were collected on September 30, 2016 and received by the laboratory on September 30, 2016. They were maintained at the laboratory at a temperature of 2^oC to 6^oC.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

NWTPH Gx/BTEX + MTBE Analysis

Per EPA Method 5035A, samples were received by the laboratory in pre-weighed 40 mL VOA vials within 48 hours of sample collection. They were stored in a freezer at between -7^oC and -20^oC until extraction or analysis.

PAHs EPA 8270D/SIM Analysis

Sample ST02-2 had one surrogate recovery out of control limits. This is within allowance of our standard operating procedure as long as the recovery is above 10%.

Please note that any other QA/QC issues associated with these extractions and analyses will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: October 5, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-399
Project: 0747.01.06-6.3

NWTPH-Gx/BTEX + MTBE

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ST02-1**					
Laboratory ID:	09-399-01					
MTBE	**ND**	0.069	EPA 8021B	9-30-16	9-30-16	
Benzene	**ND**	0.020	EPA 8021B	9-30-16	9-30-16	
Toluene	**ND**	0.069	EPA 8021B	9-30-16	9-30-16	
Ethyl Benzene	**ND**	0.069	EPA 8021B	9-30-16	9-30-16	
m,p-Xylene	**ND**	0.069	EPA 8021B	9-30-16	9-30-16	
o-Xylene	**ND**	0.069	EPA 8021B	9-30-16	9-30-16	
Gasoline	**ND**	6.9	NWTPH-Gx	9-30-16	9-30-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***92***	***68-129***				
Client ID:	**ST02-2**					
Laboratory ID:	09-399-02					
MTBE	**ND**	0.48	EPA 8021B	9-30-16	10-3-16	
Benzene	**ND**	0.096	EPA 8021B	9-30-16	10-3-16	
Toluene	**ND**	0.48	EPA 8021B	9-30-16	10-3-16	
Ethyl Benzene	**ND**	0.48	EPA 8021B	9-30-16	10-3-16	
m,p-Xylene	**ND**	0.48	EPA 8021B	9-30-16	10-3-16	
o-Xylene	**ND**	0.48	EPA 8021B	9-30-16	10-3-16	
Gasoline	**ND**	48	NWTPH-Gx	9-30-16	10-3-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***94***	***68-129***				
Client ID:	**ST02-3**					
Laboratory ID:	09-399-03					
MTBE	**ND**	0.080	EPA 8021B	9-30-16	9-30-16	
Benzene	**ND**	0.020	EPA 8021B	9-30-16	9-30-16	
Toluene	**ND**	0.080	EPA 8021B	9-30-16	9-30-16	
Ethyl Benzene	**ND**	0.080	EPA 8021B	9-30-16	9-30-16	
m,p-Xylene	**ND**	0.080	EPA 8021B	9-30-16	9-30-16	
o-Xylene	**ND**	0.080	EPA 8021B	9-30-16	9-30-16	
Gasoline	**ND**	8.0	NWTPH-Gx	9-30-16	9-30-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***98***	***68-129***				

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Project: 0747.01.06-6.3

NWTPH-Gx/BTEX + MTBE

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ST02-4**					
Laboratory ID:	09-399-04					
MTBE	**ND**	0.074	EPA 8021B	9-30-16	9-30-16	
Benzene	**ND**	0.020	EPA 8021B	9-30-16	9-30-16	
Toluene	**ND**	0.074	EPA 8021B	9-30-16	9-30-16	
Ethyl Benzene	**ND**	0.074	EPA 8021B	9-30-16	9-30-16	
m,p-Xylene	**ND**	0.074	EPA 8021B	9-30-16	9-30-16	
o-Xylene	**ND**	0.074	EPA 8021B	9-30-16	9-30-16	
Gasoline	**ND**	7.4	NWTPH-Gx	9-30-16	9-30-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***95***	***68-129***				
Client ID:	**ST02-5**					
Laboratory ID:	09-399-05					
MTBE	**ND**	0.52	EPA 8021B	9-30-16	10-3-16	
Benzene	**ND**	0.10	EPA 8021B	9-30-16	10-3-16	
Toluene	**ND**	0.52	EPA 8021B	9-30-16	10-3-16	
Ethyl Benzene	**ND**	0.52	EPA 8021B	9-30-16	10-3-16	
m,p-Xylene	**0.79**	0.52	EPA 8021B	9-30-16	10-3-16	
o-Xylene	**ND**	0.52	EPA 8021B	9-30-16	10-3-16	
Gasoline	**ND**	52	NWTPH-Gx	9-30-16	10-3-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***91***	***68-129***				

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NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0930S1					
MTBE	**ND**	0.050	EPA 8021B	9-30-16	9-30-16	
Benzene	**ND**	0.020	EPA 8021B	9-30-16	9-30-16	
Toluene	**ND**	0.050	EPA 8021B	9-30-16	9-30-16	
Ethyl Benzene	**ND**	0.050	EPA 8021B	9-30-16	9-30-16	
m,p-Xylene	**ND**	0.050	EPA 8021B	9-30-16	9-30-16	
o-Xylene	**ND**	0.050	EPA 8021B	9-30-16	9-30-16	
Gasoline	**ND**	5.0	NWTPH-Gx	9-30-16	9-30-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***94***	***68-129***				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	09-398-04										
	ORIG	DUP									
MTBE	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						***105***	***103***	***68-129***			
SPIKE BLANKS											
Laboratory ID:	SB0930S1										
	SB	SBD	SB	SBD		SB	SBD				
MTBE	**1.15**	**1.12**	1.00	1.00		**115**	**112**	70-130	3	20	
Benzene	**1.00**	**0.952**	1.00	1.00		**100**	**95**	76-124	5	17	
Toluene	**1.01**	**0.959**	1.00	1.00		**101**	**96**	78-124	5	16	
Ethyl Benzene	**1.04**	**0.986**	1.00	1.00		**104**	**99**	77-123	5	17	
m,p-Xylene	**0.989**	**0.931**	1.00	1.00		**99**	**93**	78-124	6	17	
o-Xylene	**1.02**	**0.969**	1.00	1.00		**102**	**97**	76-123	5	18	
n-Hexane	**1.02**	**0.969**	1.00	1.00		**102**	**97**	70-130	5	20	
Surrogate:											
Fluorobenzene						***87***	***82***	***68-129***			

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Project: 0747.01.06-6.3

NWTPH-Gx
CONTINUING CALIBRATION SUMMARY

Lab ID	True Value (ppm)	Calc. Value	Percent Difference	Control Limits
CCVD0930G-1	5.00	4.32	14	+/- 20%
CCVD0930G-2	5.00	4.22	16	+/- 20%
CCVD1003G-1	5.00	4.45	11	+/- 20%
CCVD1003G-2	5.00	4.60	8	+/- 20%

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BTEX + MTBE
EPA 8021B
CONTINUING CALIBRATION SUMMARY

Analyte	Lab ID	True Value (ppm)	Calc. Value	Percent Difference	Control Limits
Benzene	CCVD0930B-1	50.0	47.5	5	+/- 15%
Toluene	CCVD0930B-1	50.0	48.5	3	+/- 15%
Ethyl Benzene	CCVD0930B-1	50.0	49.8	0	+/- 15%
m,p-Xylene	CCVD0930B-1	50.0	48.0	4	+/- 15%
o-Xylene	CCVD0930B-1	50.0	48.8	2	+/- 15%
MTBE	CCVD0930B-1	50.0	55.0	-10	+/- 15%
Benzene	CCVD0930B-2	50.0	46.0	8	+/- 15%
Toluene	CCVD0930B-2	50.0	46.4	7	+/- 15%
Ethyl Benzene	CCVD0930B-2	50.0	47.9	4	+/- 15%
m,p-Xylene	CCVD0930B-2	50.0	45.0	10	+/- 15%
o-Xylene	CCVD0930B-2	50.0	46.5	7	+/- 15%
MTBE	CCVD0930B-2	50.0	51.1	-2	+/- 15%
Benzene	CCVD0930B-3	50.0	43.0	14	+/- 15%
Toluene	CCVD0930B-3	50.0	44.2	12	+/- 15%
Ethyl Benzene	CCVD0930B-3	50.0	45.0	10	+/- 15%
m,p-Xylene	CCVD0930B-3	50.0	43.0	14	+/- 15%
o-Xylene	CCVD0930B-3	50.0	44.7	11	+/- 15%
MTBE	CCVD0930B-3	50.0	49.2	2	+/- 15%
Benzene	CCVD1003B-1	50.0	48.3	3	+/- 15%
Toluene	CCVD1003B-1	50.0	49.1	2	+/- 15%
Ethyl Benzene	CCVD1003B-1	50.0	50.5	-1	+/- 15%
m,p-Xylene	CCVD1003B-1	50.0	48.1	4	+/- 15%
o-Xylene	CCVD1003B-1	50.0	49.2	2	+/- 15%
MTBE	CCVD1003B-1	50.0	45.8	8	+/- 15%
Benzene	CCVD1003B-2	50.0	45.2	10	+/- 15%
Toluene	CCVD1003B-2	50.0	46.6	7	+/- 15%
Ethyl Benzene	CCVD1003B-2	50.0	48.0	4	+/- 15%
m,p-Xylene	CCVD1003B-2	50.0	46.3	7	+/- 15%
o-Xylene	CCVD1003B-2	50.0	47.7	5	+/- 15%
MTBE	CCVD1003B-2	50.0	46.2	8	+/- 15%

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NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ST02-1**					
Laboratory ID:	09-399-01					
Diesel Fuel #2	**560**	29	NWTPH-Dx	10-3-16	10-3-16	
Lube Oil	**160**	57	NWTPH-Dx	10-3-16	10-3-16	N1
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***83***	***50-150***				
Client ID:	**ST02-2**					
Laboratory ID:	09-399-02					
Diesel Fuel #2	**9800**	140	NWTPH-Dx	10-3-16	10-4-16	
Lube Oil Range Organics	**ND**	580	NWTPH-Dx	10-3-16	10-4-16	U1
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***112***	***50-150***				
Client ID:	**ST02-3**					
Laboratory ID:	09-399-03					
Diesel Fuel #2	**210**	30	NWTPH-Dx	10-3-16	10-3-16	
Lube Oil Range Organics	**ND**	60	NWTPH-Dx	10-3-16	10-3-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***90***	***50-150***				
Client ID:	**ST02-4**					
Laboratory ID:	09-399-04					
Diesel Fuel #2	**880**	29	NWTPH-Dx	10-3-16	10-3-16	
Lube Oil	**150**	58	NWTPH-Dx	10-3-16	10-3-16	N1
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***83***	***50-150***				
Client ID:	**ST02-5**					
Laboratory ID:	09-399-05					
Diesel Fuel #2	**32000**	280	NWTPH-Dx	10-3-16	10-4-16	
Lube Oil Range Organics	**ND**	1400	NWTPH-Dx	10-3-16	10-4-16	U1
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***---***	***50-150***				S

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Project: 0747.01.06-6.3

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1003S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	10-3-16	10-3-16	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	10-3-16	10-3-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***106***	***50-150***				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	09-368-03										
	ORIG	DUP									
Diesel Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	X1
Lube Oil Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	X1
Surrogate:											
o-Terphenyl						***105***	***119***	***50-150***			
SPIKE BLANK											
Laboratory ID:	SB1003S1										
Diesel Fuel #2	**94.2**		100		NA	**94**		61-130	NA	NA	
Surrogate:											
o-Terphenyl						***94***		***50-150***			

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NWTPH-Dx
CONTINUING CALIBRATION SUMMARY

Lab ID	True Value (ppm)	Calc. Value	Percent Difference	Control Limits
CCV1003F-V1	100	97.5	2.5	+/-15%
CCV1003F-V2	100	103	-2.8	+/-15%
CCV1003F-V3	100	108	-8.3	+/-15%
CCV1003F-V4	100	114	-14	+/-15%
CCV1004F-T1	100	97.4	2.6	+/-15%
CCV1004F-T2	100	96.3	3.7	+/-15%

PAHs EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ST02-1**					
Laboratory ID:	09-399-01					
Naphthalene	**0.046**	0.038	EPA 8270D/SIM	9-30-16	10-4-16	
2-Methylnaphthalene	**0.060**	0.038	EPA 8270D/SIM	9-30-16	10-4-16	
1-Methylnaphthalene	**0.058**	0.038	EPA 8270D/SIM	9-30-16	10-4-16	
Benzo[a]anthracene	**0.053**	0.038	EPA 8270D/SIM	9-30-16	10-4-16	
Chrysene	**0.073**	0.038	EPA 8270D/SIM	9-30-16	10-4-16	
Benzo[b]fluoranthene	**0.090**	0.038	EPA 8270D/SIM	9-30-16	10-4-16	
Benzo(j,k)fluoranthene	**ND**	0.038	EPA 8270D/SIM	9-30-16	10-4-16	
Benzo[a]pyrene	**0.075**	0.038	EPA 8270D/SIM	9-30-16	10-4-16	
Indeno(1,2,3-c,d)pyrene	**0.045**	0.038	EPA 8270D/SIM	9-30-16	10-4-16	
Dibenz[a,h]anthracene	**ND**	0.038	EPA 8270D/SIM	9-30-16	10-4-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***55***	***32 - 115***				
Pyrene-d10	***65***	***30 - 124***				
Terphenyl-d14	***67***	***30 - 117***				

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PAHs EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**ST02-2**					
Laboratory ID:	09-399-02					
Naphthalene	**0.11**	0.0072	EPA 8270D/SIM	9-30-16	10-4-16	
2-Methylnaphthalene	**0.37**	0.0072	EPA 8270D/SIM	9-30-16	10-4-16	
1-Methylnaphthalene	**0.50**	0.0072	EPA 8270D/SIM	9-30-16	10-4-16	
Benzo[a]anthracene	**0.014**	0.0072	EPA 8270D/SIM	9-30-16	10-4-16	
Chrysene	**0.057**	0.0072	EPA 8270D/SIM	9-30-16	10-4-16	
Benzo[b]fluoranthene	**0.023**	0.0072	EPA 8270D/SIM	9-30-16	10-4-16	
Benzo(j,k)fluoranthene	**0.0073**	0.0072	EPA 8270D/SIM	9-30-16	10-4-16	
Benzo[a]pyrene	**0.016**	0.0072	EPA 8270D/SIM	9-30-16	10-4-16	
Indeno(1,2,3-c,d)pyrene	**0.012**	0.0072	EPA 8270D/SIM	9-30-16	10-4-16	
Dibenz[a,h]anthracene	**ND**	0.0072	EPA 8270D/SIM	9-30-16	10-4-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***40***	***32 - 115***				
Pyrene-d10	***236***	***30 - 124***				Q
Terphenyl-d14	***94***	***30 - 117***				

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PAHs EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ST02-3**					
Laboratory ID:	09-399-03					
Naphthalene	**0.057**	0.0080	EPA 8270D/SIM	9-30-16	10-4-16	
2-Methylnaphthalene	**0.10**	0.0080	EPA 8270D/SIM	9-30-16	10-4-16	
1-Methylnaphthalene	**0.10**	0.0080	EPA 8270D/SIM	9-30-16	10-4-16	
Benzo[a]anthracene	**0.032**	0.0080	EPA 8270D/SIM	9-30-16	10-4-16	
Chrysene	**0.039**	0.0080	EPA 8270D/SIM	9-30-16	10-4-16	
Benzo[b]fluoranthene	**0.037**	0.0080	EPA 8270D/SIM	9-30-16	10-4-16	
Benzo(j,k)fluoranthene	**0.0099**	0.0080	EPA 8270D/SIM	9-30-16	10-4-16	
Benzo[a]pyrene	**0.032**	0.0080	EPA 8270D/SIM	9-30-16	10-4-16	
Indeno(1,2,3-c,d)pyrene	**0.016**	0.0080	EPA 8270D/SIM	9-30-16	10-4-16	
Dibenz[a,h]anthracene	**ND**	0.0080	EPA 8270D/SIM	9-30-16	10-4-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***54***	***32 - 115***				
Pyrene-d10	***61***	***30 - 124***				
Terphenyl-d14	***61***	***30 - 117***				

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PAHs EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ST02-4**					
Laboratory ID:	09-399-04					
Naphthalene	**0.032**	0.0077	EPA 8270D/SIM	9-30-16	10-4-16	
2-Methylnaphthalene	**0.045**	0.0077	EPA 8270D/SIM	9-30-16	10-4-16	
1-Methylnaphthalene	**0.042**	0.0077	EPA 8270D/SIM	9-30-16	10-4-16	
Benzo[a]anthracene	**0.026**	0.0077	EPA 8270D/SIM	9-30-16	10-4-16	
Chrysene	**0.037**	0.0077	EPA 8270D/SIM	9-30-16	10-4-16	
Benzo[b]fluoranthene	**0.033**	0.0077	EPA 8270D/SIM	9-30-16	10-4-16	
Benzo(j,k)fluoranthene	**0.0092**	0.0077	EPA 8270D/SIM	9-30-16	10-4-16	
Benzo[a]pyrene	**0.028**	0.0077	EPA 8270D/SIM	9-30-16	10-4-16	
Indeno(1,2,3-c,d)pyrene	**0.017**	0.0077	EPA 8270D/SIM	9-30-16	10-4-16	
Dibenz[a,h]anthracene	**ND**	0.0077	EPA 8270D/SIM	9-30-16	10-4-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***58***	***32 - 115***				
Pyrene-d10	***60***	***30 - 124***				
Terphenyl-d14	***67***	***30 - 117***				

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Project: 0747.01.06-6.3

PAHs EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ST02-5**					
Laboratory ID:	09-399-05					
Naphthalene	**0.24**	0.038	EPA 8270D/SIM	9-30-16	10-4-16	
2-Methylnaphthalene	**0.24**	0.038	EPA 8270D/SIM	9-30-16	10-4-16	
1-Methylnaphthalene	**0.22**	0.038	EPA 8270D/SIM	9-30-16	10-4-16	
Benzo[a]anthracene	**0.039**	0.038	EPA 8270D/SIM	9-30-16	10-4-16	
Chrysene	**0.19**	0.038	EPA 8270D/SIM	9-30-16	10-4-16	
Benzo[b]fluoranthene	**0.063**	0.038	EPA 8270D/SIM	9-30-16	10-4-16	
Benzo(j,k)fluoranthene	**ND**	0.038	EPA 8270D/SIM	9-30-16	10-4-16	
Benzo[a]pyrene	**0.049**	0.038	EPA 8270D/SIM	9-30-16	10-4-16	
Indeno(1,2,3-c,d)pyrene	**0.041**	0.038	EPA 8270D/SIM	9-30-16	10-4-16	
Dibenz[a,h]anthracene	**ND**	0.038	EPA 8270D/SIM	9-30-16	10-4-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***38***	***32 - 115***				
Pyrene-d10	***112***	***30 - 124***				
Terphenyl-d14	***82***	***30 - 117***				

PAHs EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Laboratory ID:	MB0930S1					
Naphthalene	**ND**	0.0067	EPA 8270D/SIM	9-30-16	9-30-16	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270D/SIM	9-30-16	9-30-16	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270D/SIM	9-30-16	9-30-16	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270D/SIM	9-30-16	9-30-16	
Chrysene	**ND**	0.0067	EPA 8270D/SIM	9-30-16	9-30-16	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270D/SIM	9-30-16	9-30-16	
Benzo(j,k)fluoranthene	**ND**	0.0067	EPA 8270D/SIM	9-30-16	9-30-16	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270D/SIM	9-30-16	9-30-16	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270D/SIM	9-30-16	9-30-16	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270D/SIM	9-30-16	9-30-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***88***	***32 - 115***				
Pyrene-d10	***87***	***30 - 124***				
Terphenyl-d14	***97***	***30 - 117***				

Date of Report: October 5, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-399
Project: 0747.01.06-6.3

PAHs EPA 8270D/SIM
MS/MSD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	09-398-04										
	MS	MSD	MS	MSD		MS	MSD				
Naphthalene	**0.0679**	**0.0700**	0.0833	0.0833	ND	82	84	35 - 114	3	28	
Acenaphthylene	**0.0713**	**0.0714**	0.0833	0.0833	ND	86	86	42 - 116	0	32	
Acenaphthene	**0.0682**	**0.0686**	0.0833	0.0833	ND	82	82	39 - 113	1	30	
Benzo[a]anthracene	**0.0762**	**0.0769**	0.0833	0.0833	ND	91	92	28 - 133	1	31	
Chrysene	**0.0701**	**0.0698**	0.0833	0.0833	ND	84	84	27 - 124	0	31	
Benzo[b]fluoranthene	**0.0685**	**0.0676**	0.0833	0.0833	ND	82	81	30 - 122	1	33	
Benzo(j,k)fluoranthene	**0.0719**	**0.0722**	0.0833	0.0833	ND	86	87	26 - 122	0	31	
Benzo[a]pyrene	**0.0743**	**0.0735**	0.0833	0.0833	ND	89	88	32 - 128	1	34	
Indeno(1,2,3-c,d)pyrene	**0.0761**	**0.0765**	0.0833	0.0833	ND	91	92	30 - 118	1	30	
Dibenz[a,h]anthracene	**0.0722**	**0.0720**	0.0833	0.0833	ND	87	86	35 - 115	0	33	
Surrogate:											
2-Fluorobiphenyl						***77***	***76***	***32 - 115***			
Pyrene-d10						***76***	***75***	***30 - 124***			
Terphenyl-d14						***84***	***84***	***30 - 117***			

Date of Report: October 5, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-399
Project: 0747.01.06-6.3

PAHs EPA 8270D/SIM
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0930S1									
	SB	SBD	SB	SBD	SB	SBD				
Naphthalene	**0.0747**	**0.0759**	0.0833	0.0833	90	91	61 - 112	2	15	
Acenaphthylene	**0.0808**	**0.0795**	0.0833	0.0833	97	95	65 - 116	2	15	
Acenaphthene	**0.0759**	**0.0750**	0.0833	0.0833	91	90	62 - 116	1	13	
Benzo[a]anthracene	**0.0862**	**0.0861**	0.0833	0.0833	103	103	59 - 129	0	15	
Chrysene	**0.0767**	**0.0779**	0.0833	0.0833	92	94	60 - 122	2	15	
Benzo[b]fluoranthene	**0.0744**	**0.0743**	0.0833	0.0833	89	89	53 - 124	0	17	
Benzo(j,k)fluoranthene	**0.0831**	**0.0831**	0.0833	0.0833	100	100	58 - 124	0	16	
Benzo[a]pyrene	**0.0841**	**0.0840**	0.0833	0.0833	101	101	62 - 127	0	15	
Indeno(1,2,3-c,d)pyrene	**0.0862**	**0.0876**	0.0833	0.0833	103	105	60 - 120	2	15	
Dibenz[a,h]anthracene	**0.0822**	**0.0827**	0.0833	0.0833	99	99	60 - 117	1	15	
Surrogate:										
2-Fluorobiphenyl					***84***	***75***	***32 - 115***			
Pyrene-d10					***85***	***85***	***30 - 124***			
Terphenyl-d14					***93***	***93***	***30 - 117***			

Date of Report: October 5, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-399
Project: 0747.01.06-6.3

PCBs EPA 8082A

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ST02-1**					
Laboratory ID:	09-399-01					
Aroclor 1016	**ND**	0.057	EPA 8082A	10-4-16	10-5-16	
Aroclor 1221	**ND**	0.057	EPA 8082A	10-4-16	10-5-16	
Aroclor 1232	**ND**	0.057	EPA 8082A	10-4-16	10-5-16	
Aroclor 1242	**ND**	0.057	EPA 8082A	10-4-16	10-5-16	
Aroclor 1248	**ND**	0.057	EPA 8082A	10-4-16	10-5-16	
Aroclor 1254	**ND**	0.057	EPA 8082A	10-4-16	10-5-16	
Aroclor 1260	**ND**	0.057	EPA 8082A	10-4-16	10-5-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***74***	***50-139***				
Client ID:	**ST02-2**					
Laboratory ID:	09-399-02					
Aroclor 1016	**ND**	0.054	EPA 8082A	10-4-16	10-5-16	
Aroclor 1221	**ND**	0.054	EPA 8082A	10-4-16	10-5-16	
Aroclor 1232	**ND**	0.054	EPA 8082A	10-4-16	10-5-16	
Aroclor 1242	**ND**	0.054	EPA 8082A	10-4-16	10-5-16	
Aroclor 1248	**ND**	0.054	EPA 8082A	10-4-16	10-5-16	
Aroclor 1254	**ND**	0.054	EPA 8082A	10-4-16	10-5-16	
Aroclor 1260	**ND**	0.054	EPA 8082A	10-4-16	10-5-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***71***	***50-139***				
Client ID:	**ST02-3**					
Laboratory ID:	09-399-03					
Aroclor 1016	**ND**	0.060	EPA 8082A	10-4-16	10-5-16	
Aroclor 1221	**ND**	0.060	EPA 8082A	10-4-16	10-5-16	
Aroclor 1232	**ND**	0.060	EPA 8082A	10-4-16	10-5-16	
Aroclor 1242	**ND**	0.060	EPA 8082A	10-4-16	10-5-16	
Aroclor 1248	**ND**	0.060	EPA 8082A	10-4-16	10-5-16	
Aroclor 1254	**ND**	0.060	EPA 8082A	10-4-16	10-5-16	
Aroclor 1260	**ND**	0.060	EPA 8082A	10-4-16	10-5-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***71***	***50-139***				

PCBs EPA 8082A

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ST02-4**					
Laboratory ID:	09-399-04					
Aroclor 1016	**ND**	0.058	EPA 8082A	10-4-16	10-5-16	
Aroclor 1221	**ND**	0.058	EPA 8082A	10-4-16	10-5-16	
Aroclor 1232	**ND**	0.058	EPA 8082A	10-4-16	10-5-16	
Aroclor 1242	**ND**	0.058	EPA 8082A	10-4-16	10-5-16	
Aroclor 1248	**ND**	0.058	EPA 8082A	10-4-16	10-5-16	
Aroclor 1254	**ND**	0.058	EPA 8082A	10-4-16	10-5-16	
Aroclor 1260	**ND**	0.058	EPA 8082A	10-4-16	10-5-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***75***	***50-139***				
Client ID:	**ST02-5**					
Laboratory ID:	09-399-05					
Aroclor 1016	**ND**	0.056	EPA 8082A	10-4-16	10-5-16	
Aroclor 1221	**ND**	0.056	EPA 8082A	10-4-16	10-5-16	
Aroclor 1232	**ND**	0.056	EPA 8082A	10-4-16	10-5-16	
Aroclor 1242	**ND**	0.056	EPA 8082A	10-4-16	10-5-16	
Aroclor 1248	**ND**	0.056	EPA 8082A	10-4-16	10-5-16	
Aroclor 1254	**ND**	0.056	EPA 8082A	10-4-16	10-5-16	
Aroclor 1260	**ND**	0.056	EPA 8082A	10-4-16	10-5-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***75***	***50-139***				

Date of Report: October 5, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-399
Project: 0747.01.06-6.3

PCBs EPA 8082A
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
METHOD BLANK						
Laboratory ID:	MB1004S2					
Aroclor 1016	**ND**	0.050	EPA 8082A	10-4-16	10-5-16	
Aroclor 1221	**ND**	0.050	EPA 8082A	10-4-16	10-5-16	
Aroclor 1232	**ND**	0.050	EPA 8082A	10-4-16	10-5-16	
Aroclor 1242	**ND**	0.050	EPA 8082A	10-4-16	10-5-16	
Aroclor 1248	**ND**	0.050	EPA 8082A	10-4-16	10-5-16	
Aroclor 1254	**ND**	0.050	EPA 8082A	10-4-16	10-5-16	
Aroclor 1260	**ND**	0.050	EPA 8082A	10-4-16	10-5-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***87***	***50-139***				

Analyte	**Result**		**Spike Level**		**Source Result**	**Percent Recovery**		**Recovery Limits**	**RPD**	**RPD Limit**	**Flags**
MATRIX SPIKES											
Laboratory ID:	09-399-01										
	MS	MSD	MS	MSD		MS	MSD				
Aroclor 1260	**0.427**	**0.398**	0.500	0.500	ND	**85**	**80**	49-133	7	17	
Surrogate:											
DCB						***82***	***77***	***50-139***			

Date of Report: October 5, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-399
Project: 0747.01.06-6.3

PCB's EPA 8082A
CONTINUING CALIBRATION SUMMARY

Lab ID	Analyte	True Value (ppb)	Calc. Value	Percent Difference	Control Limits
Column 1					
PCBCCV 1005-1	Aroclor 1016	500	533	-6.6	+/- 15%
PCBCCV 1005-1	Aroclor 1260	500	550	-10	+/- 15%
Column 2					
PCBCCV 1005-1	Aroclor 1016	500	575	-15	+/- 15%
PCBCCV 1005-1	Aroclor 1260	500	487	2.6	+/- 15%
Column 1					
PCBCCV 1005-2	Aroclor 1016	500	510	-2.0	+/- 15%
PCBCCV 1005-2	Aroclor 1260	500	541	-8.2	+/- 15%
Column 2					
PCBCCV 1005-2	Aroclor 1016	500	515	-3.0	+/- 15%
PCBCCV 1005-2	Aroclor 1260	500	481	3.8	+/- 15%
Column 1					
PCBCCV 1005-3	Aroclor 1016	500	517	-3.4	+/- 15%
PCBCCV 1005-3	Aroclor 1260	500	538	-7.6	+/- 15%
Column 2					
PCBCCV 1005-3	Aroclor 1016	500	506	-1.2	+/- 15%
PCBCCV 1005-3	Aroclor 1260	500	467	6.6	+/- 15%

Date of Report: October 5, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-399
Project: 0747.01.06-6.3

TOTAL LEAD
EPA 6010C

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	09-399-01					
Client ID:	**ST02-1**					
Lead	**38**	5.7	6010C	9-30-16	9-30-16	
Lab ID:	09-399-02					
Client ID:	**ST02-2**					
Lead	**ND**	5.4	6010C	9-30-16	9-30-16	
Lab ID:	09-399-03					
Client ID:	**ST02-3**					
Lead	**14**	6.0	6010C	9-30-16	9-30-16	
Lab ID:	09-399-04					
Client ID:	**ST02-4**					
Lead	**11**	5.8	6010C	9-30-16	9-30-16	
Lab ID:	09-399-05					
Client ID:	**ST02-5**					
Lead	**16**	5.6	6010C	9-30-16	9-30-16	

Date of Report: October 5, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-399
Project: 0747.01.06-6.3

TOTAL LEAD
EPA 6010C
METHOD BLANK QUALITY CONTROL

Date Extracted:	9-30-16
Date Analyzed:	9-30-16
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0930SM3

Analyte	Method	Result	PQL
Lead	6010C	**ND**	5.0

TOTAL LEAD
EPA 6010C
DUPLICATE QUALITY CONTROL

Date Extracted: 9-30-16
Date Analyzed: 9-30-16

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-399-04

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Lead	**9.75**	**11.4**	16	5.0	

Date of Report: October 5, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-399
Project: 0747.01.06-6.3

TOTAL LEAD
EPA 6010C
MS/MSD QUALITY CONTROL

Date Extracted: 9-30-16
Date Analyzed: 9-30-16

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 09-399-04

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Lead	250	**240**	92	**245**	94	2	

Date of Report: October 5, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-399
Project: 0747.01.06-6.3

TOTAL LEAD
EPA 6010C
SPIKE BLANK QUALITY CONTROL

Date Extracted:	9-30-16
Date Analyzed:	9-30-16
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	SB0930SM3

Analyte	Method	Spike Level	Spike Result	Percent Recovery
Lead	6010C	250	**234**	93

Date of Report: October 5, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-399
Project: 0747.01.06-6.3

TOTAL LEAD
EPA 6010C
CONTINUING CALIBRATION SUMMARY

Analyte	Lab ID	True Value (ppm)	Calc. Value	Percent Difference	Control Limits
Lead	ICV093016P	1.00	1.02	-2.0	+/- 10%
Lead	LLICV1093016P	0.100	0.0941	5.9	+/- 30%
Lead	CCV1093016P	10.0	9.79	2.1	+/- 10%
Lead	CCV2093016P	10.0	9.65	3.5	+/- 10%
Lead	LLCCV2093016P	0.100	0.0841	16	+/- 30%
Lead	CCV3093016P	10.0	9.82	1.8	+/- 10%
Lead	LLCCV3093016P	0.100	0.105	-5.0	+/- 30%
Lead	CCV4093016P	10.0	9.82	1.8	+/- 10%
Lead	LLCCV4093016P	0.100	0.0824	18	+/- 30%
Lead	CCV5093016P	10.0	9.78	2.2	+/- 10%
Lead	LLCCV5093016P	0.100	0.104	-4.0	+/- 30%
Lead	CCV6093016P	10.0	9.74	2.6	+/- 10%
Lead	LLCCV6093016P	0.100	0.104	-4.0	+/- 30%
Lead	CCV7093016P	10.0	9.67	3.3	+/- 10%
Lead	LLCCV7093016P	0.100	0.102	-2.0	+/- 30%
Lead	CCV8093016P	10.0	9.63	3.7	+/- 10%
Lead	LLCCV8093016P	0.100	0.0810	19	+/- 30%

Date of Report: October 5, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-399
Project: 0747.01.06-6.3

% MOISTURE

Date Analyzed: 9-30-16

Client ID	Lab ID	% Moisture
ST02-1	09-399-01	13
ST02-2	09-399-02	8
ST02-3	09-399-03	16
ST02-4	09-399-04	14
ST02-5	09-399-05	11

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Page 1 of 1

Laboratory Number: 09-399

Company: Maul Foster Alongi
Project Number: 0747.01.06-6.3
Project Name: North Cascade Ford
Project Manager: Heather Good
Sampled by: Carolyn Wise

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☒ 2 Days ☐ 3 Days
☐ Standard (7 Days) (TPH analysis 5 Days)
☐ ________ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level) * only cPAHS	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	MTBE 8021	Pb 6010	Napthalenes 8270SIM		% Moisture
1	ST02-1	9/30	730	S	5		X		X					X	X								X	X	X		X
2	ST02-2		735	S	5		X		X					X	X								X	X	X		X
3	ST02-3		740	S	5		X		X					X	X								X	X	X		X
4	ST02-4		745	S	5		X		X					X	X								X	X	X		X
5	ST02-5		750	S	5		X		X					X	X								X	X	X		X

	Signature	Company	Date	Time
Relinquished		MFA	9/30/16	1100
Received		alpha	9-30-16	1100
Relinquished		alpha	9-30-16	12:20
Received		OnSite Env	9/30/16	1220
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Data Package: Standard ☒ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☒

Equis 4

Sample/Cooler Receipt and Acceptance Checklist

Client: MFA

Client Project Name/Number 0747.01.00-63

OnSite Project Number: 09-399

Initiated by:

Date Initiated: 9/30/16

1.0 Cooler Verification

1.1 Were there custody seals on the outside of the cooler?	Yes	[✓ No]	N/A	1 2 3 4
1.2 Were the custody seals intact?	Yes	No	[✓ N/A]	1 2 3 4
1.3 Were the custody seals signed and dated by last custodian?	Yes	No	[✓ N/A]	1 2 3 4
1.4 Were the samples delivered on ice or blue ice?	[✓ Yes]	No		1 2 3 4
1.5 Were samples received between 0-6 degrees Celsius?	[✓ Yes]	No	Temperature: 4°C	
1.6 Have shipping bills (if any) been attached to the back of this form?	Yes	[✓ N/A]		
1.7 How were the samples delivered?	Client	[✓ Courier]	UPS/FedEx	OSE Pickup Other

2.0 Chain of Custody Verification

2.1 Was a Chain of Custody submitted with the samples?	[✓ Yes]	No	1 2 3 4
2.2 Was the COC legible and written in permanent ink?	[✓ Yes]	No	1 2 3 4
2.3 Have samples been relinquished and accepted by each custodian?	[✓ Yes]	No	1 2 3 4
2.4 Did the sample labels (ID, date, time, preservative) agree with COC?	[✓ Yes]	No	1 2 3 4
2.5 Were all of the samples listed on the COC submitted?	[✓ Yes]	No	1 2 3 4
2.6 Were any of the samples submitted omitted from the COC?	Yes	[✓ No]	1 2 3 4

3.0 Sample Verification

3.1 Were any sample containers broken or compromised?	Yes	[✓ No]		1 2 3 4
3.2 Were any sample labels missing or illegible?	Yes	[✓ No]		1 2 3 4
3.3 Have the correct containers been used for each analysis requested?	[✓ Yes]	No		1 2 3 4
3.4 Have the samples been correctly preserved?	Yes	No	[✓ N/A]	1 2 3 4
3.5 Are volatiles samples free from headspace and bubbles greater than 6mm?	Yes	No	[✓ N/A]	1 2 3 4
3.6 Is there sufficient sample submitted to perform requested analyses?	[✓ Yes]	No		1 2 3 4
3.7 Have any holding times already expired or will expire in 24 hours?	Yes	[✓ No]		1 2 3 4
3.8 Was method 5035A used?	[✓ Yes]	No	N/A	1 2 3 4
3.9 If 5035A was used, which sampling option was used (#1, 2, or 3).	# 1		N/A	1 2 3 4

Explain any discrepancies:

1 - Discuss issue in Case Narrative

2 - Process Sample As-is

3 - Client contacted to discuss problem

4 - Sample cannot be analyzed or client does not wish to proceed

OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

October 6, 2016

Heather Good
Maul Foster & Alongi, Inc.
Bay Vista Tower
2815 2nd Avenue, Suite 540
Seattle, WA 98121

Re: Analytical Data for Project 0747.01.06-6.3
Laboratory Reference No. 1610-044

Dear Heather:

Enclosed are the analytical results and associated quality control data for samples submitted on October 5, 2016.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: October 6, 2016
Samples Submitted: October 5, 2016
Laboratory Reference: 1610-044
Project: 0747.01.06-6.3

Case Narrative

Samples were collected on October 5, 2016 and received by the laboratory on October 5, 2016. They were maintained at the laboratory at a temperature of 2^{o}C to 6^{o}C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: October 6, 2016
Samples Submitted: October 5, 2016
Laboratory Reference: 1610-044
Project: 0747.01.06-6.3

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BTPOST-WS-01**					
Laboratory ID:	10-044-01					
Benzene	**ND**	1.0	EPA 8021B	10-5-16	10-5-16	
Toluene	**ND**	1.0	EPA 8021B	10-5-16	10-5-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	10-5-16	10-5-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	10-5-16	10-5-16	
o-Xylene	**ND**	1.0	EPA 8021B	10-5-16	10-5-16	
Gasoline	**ND**	100	NWTPH-Gx	10-5-16	10-5-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***98***	***71-111***				

Date of Report: October 6, 2016
Samples Submitted: October 5, 2016
Laboratory Reference: 1610-044
Project: 0747.01.06-6.3

NWTPH-Gx/BTEX
METHOD BLANK QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB1005W1					
Benzene	**ND**	1.0	EPA 8021B	10-5-16	10-5-16	
Toluene	**ND**	1.0	EPA 8021B	10-5-16	10-5-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	10-5-16	10-5-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	10-5-16	10-5-16	
o-Xylene	**ND**	1.0	EPA 8021B	10-5-16	10-5-16	
Gasoline	**ND**	100	NWTPH-Gx	10-5-16	10-5-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***96***	***71-111***				

Date of Report: October 6, 2016
Samples Submitted: October 5, 2016
Laboratory Reference: 1610-044
Project: 0747.01.06-6.3

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	10-009-01										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						***94***	***96***	***71-111***			
MATRIX SPIKES											
Laboratory ID:	10-009-01										
	MS	MSD	MS	MSD		MS	MSD				
Benzene	**46.5**	**46.0**	50.0	50.0	ND	**93**	**92**	83-123	1	15	
Toluene	**47.1**	**46.6**	50.0	50.0	ND	**94**	**93**	83-124	1	16	
Ethyl Benzene	**48.8**	**48.1**	50.0	50.0	ND	**98**	**96**	82-123	1	15	
m,p-Xylene	**45.7**	**44.9**	50.0	50.0	ND	**91**	**90**	81-125	2	17	
o-Xylene	**47.4**	**47.0**	50.0	50.0	ND	**95**	**94**	82-123	1	15	
Surrogate:											
Fluorobenzene						***89***	***93***	***71-111***			
SPIKE BLANKS											
Laboratory ID:	SB1005W2										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**47.9**	**46.2**	50.0	50.0		**96**	**92**	83-119	4	13	
Toluene	**49.2**	**46.9**	50.0	50.0		**98**	**94**	83-120	5	13	
Ethyl Benzene	**50.1**	**48.6**	50.0	50.0		**100**	**97**	82-120	3	12	
m,p-Xylene	**47.4**	**45.6**	50.0	50.0		**95**	**91**	80-122	4	13	
o-Xylene	**48.7**	**47.4**	50.0	50.0		**97**	**95**	80-120	3	10	
Surrogate:											
Fluorobenzene						***88***	***91***	***71-111***			

Date of Report: October 6, 2016
Samples Submitted: October 5, 2016
Laboratory Reference: 1610-044
Project: 0747.01.06-6.3

NWTPH-Gx
CONTINUING CALIBRATION SUMMARY

Lab ID	True Value (ppm)	Calc. Value	Percent Difference	Control Limits
CCVH1005G-1	5.00	4.84	3	+/- 20%
CCVH1005G-2	5.00	4.72	6	+/- 20%
CCVH1005G-3	5.00	4.69	6	+/- 20%
CCVD1005G-1	5.00	4.39	12	+/- 20%
CCVD1005G-2	5.00	4.30	14	+/- 20%

Date of Report: October 6, 2016
Samples Submitted: October 5, 2016
Laboratory Reference: 1610-044
Project: 0747.01.06-6.3

BTEX by
EPA 8021B
CONTINUING CALIBRATION SUMMARY

Analyte	Lab ID	True Value (ppm)	Calc. Value	Percent Difference	Control Limits
Benzene	CCVH1005B-1	50.0	47.0	6	+/- 15%
Toluene	CCVH1005B-1	50.0	50.5	-1	+/- 15%
Ethyl Benzene	CCVH1005B-1	50.0	49.3	1	+/- 15%
m,p-Xylene	CCVH1005B-1	50.0	50.3	-1	+/- 15%
o-Xylene	CCVH1005B-1	50.0	48.8	2	+/- 15%
Benzene	CCVH1005B-2	50.0	46.5	7	+/- 15%
Toluene	CCVH1005B-2	50.0	49.2	2	+/- 15%
Ethyl Benzene	CCVH1005B-2	50.0	48.7	3	+/- 15%
m,p-Xylene	CCVH1005B-2	50.0	49.1	2	+/- 15%
o-Xylene	CCVH1005B-2	50.0	48.3	3	+/- 15%
Benzene	CCVH1005B-3	50.0	45.5	9	+/- 15%
Toluene	CCVH1005B-3	50.0	47.1	6	+/- 15%
Ethyl Benzene	CCVH1005B-3	50.0	47.2	6	+/- 15%
m,p-Xylene	CCVH1005B-3	50.0	46.9	6	+/- 15%
o-Xylene	CCVH1005B-3	50.0	46.5	7	+/- 15%
Benzene	CCVD1005B-1	50.0	48.9	2	+/- 15%
Toluene	CCVD1005B-1	50.0	50.4	-1	+/- 15%
Ethyl Benzene	CCVD1005B-1	50.0	51.3	-3	+/- 15%
m,p-Xylene	CCVD1005B-1	50.0	49.4	1	+/- 15%
o-Xylene	CCVD1005B-1	50.0	50.3	-1	+/- 15%
Benzene	CCVD1005B-2	50.0	49.2	2	+/- 15%
Toluene	CCVD1005B-2	50.0	49.8	0	+/- 15%
Ethyl Benzene	CCVD1005B-2	50.0	51.4	-3	+/- 15%
m,p-Xylene	CCVD1005B-2	50.0	48.2	4	+/- 15%
o-Xylene	CCVD1005B-2	50.0	50.0	0	+/- 15%
Benzene	CCVD1005B-3	50.0	43.3	13	+/- 15%
Toluene	CCVD1005B-3	50.0	44.3	11	+/- 15%
Ethyl Benzene	CCVD1005B-3	50.0	45.6	9	+/- 15%
m,p-Xylene	CCVD1005B-3	50.0	43.1	14	+/- 15%
o-Xylene	CCVD1005B-3	50.0	44.8	10	+/- 15%

Date of Report: October 6, 2016
Samples Submitted: October 5, 2016
Laboratory Reference: 1610-044
Project: 0747.01.06-6.3

NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BTPOST-WS-01**					
Laboratory ID:	10-044-01					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	10-5-16	10-5-16	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	10-5-16	10-5-16	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***93***	***50-150***				

Date of Report: October 6, 2016
Samples Submitted: October 5, 2016
Laboratory Reference: 1610-044
Project: 0747.01.06-6.3

NWTPH-Dx
QUALITY CONTROL

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1005W1					
Diesel Range Organics	**ND**	0.25	NWTPH-Dx	10-5-16	10-5-16	
Lube Oil Range Organics	**ND**	0.40	NWTPH-Dx	10-5-16	10-5-16	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	92					

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	10-020-02										
	ORIG	DUP									
Diesel Range Organics	**0.528**	**0.427**	NA	NA		NA		NA	21	NA	
Lube Oil	**1.12**	**0.920**	NA	NA		NA		NA	20	NA	
Surrogate:											
o-Terphenyl						***92***	***81***	***50-150***			
SPIKE BLANK											
Laboratory ID:	SB1005W1										
Diesel Fuel #2	**0.779**		1.00		NA	**78**		62-113	NA	NA	
Surrogate:											
o-Terphenyl						***84***		***50-150***			

Date of Report: October 6, 2016
Samples Submitted: October 5, 2016
Laboratory Reference: 1610-044
Project: 0747.01.06-6.3

NWTPH-Dx
CONTINUING CALIBRATION SUMMARY

Lab ID	True Value (ppm)	Calc. Value	Percent Difference	Control Limits
CCV1005R-T2	100	102	-2.1	+/-15%
CCV1005R-T3	100	103	-2.6	+/-15%
CCV1005F-T2	100	96.7	3.3	+/-15%
CCV1005F-T3	100	98.3	1.7	+/-15%

Date of Report: October 6, 2016
Samples Submitted: October 5, 2016
Laboratory Reference: 1610-044
Project: 0747.01.06-6.3

pH
SM 4500-H B

Matrix: Water
Units: pH (@ 25ºC)

Analyte	Result	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**BTPOST-WS-01**				
Laboratory ID:	10-044-01				
pH	**9.6**	SM 4500-H B	10-5-16	10-5-16	

Date of Report: October 6, 2016
Samples Submitted: October 5, 2016
Laboratory Reference: 1610-044
Project: 0747.01.06-6.3

TOTAL LEAD
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	10-044-01					
Client ID:	**BTPOST-WS-01**					
Lead	**1.1**	1.1	200.8	10-5-16	10-5-16	

Date of Report: October 6, 2016
Samples Submitted: October 5, 2016
Laboratory Reference: 1610-044
Project: 0747.01.06-6.3

TOTAL LEAD
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted:	10-5-16
Date Analyzed:	10-5-16
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB1005WM1

Analyte	Method	Result	PQL
Lead	200.8	**ND**	1.1

Date of Report: October 6, 2016
Samples Submitted: October 5, 2016
Laboratory Reference: 1610-044
Project: 0747.01.06-6.3

TOTAL LEAD
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted:	10-5-16
Date Analyzed:	10-5-16
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	10-044-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Lead	**1.13**	**1.16**	2	1.1	

Date of Report: October 6, 2016
Samples Submitted: October 5, 2016
Laboratory Reference: 1610-044
Project: 0747.01.06-6.3

TOTAL LEAD
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted:	10-5-16
Date Analyzed:	10-5-16
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	10-044-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Lead	111	**110**	98	**111**	99	1	

Date of Report: October 6, 2016
Samples Submitted: October 5, 2016
Laboratory Reference: 1610-044
Project: 0747.01.06-6.3

TOTAL LEAD
EPA 200.8
SPIKE BLANK QUALITY CONTROL

Date Extracted: 10-5-16
Date Analyzed: 10-5-16

Matrix: Water
Units: ug/L (ppb)

Lab ID: SB1005WM1

Analyte	Method	Spike Level	Result	Percent Recovery
Lead	200.8	111	**118**	106

Date of Report: October 6, 2016
Samples Submitted: October 5, 2016
Laboratory Reference: 1610-044
Project: 0747.01.06-6.3

TOTAL LEAD
EPA 200.8
CONTINUING CALIBRATION SUMMARY

Analyte	Lab ID	True Value (ppb)	Calc. Value	Percent Difference	Control Limits
Lead	ICV100516X	50.0	48.3	3.4	+/- 10%
Lead	CCV1100516X	40.0	38.7	3.2	+/- 10%
Lead	CCV1100516X	20.0	19.5	2.8	+/- 10%
Lead	CCV2100516X	40.0	38.5	3.8	+/- 10%
Lead	CCV2100516X	20.0	19.0	5.0	+/- 10%

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Page 1 of 1

Laboratory Number: 10-044

Company: Maul Foster Alongi
Project Number: 0747.01.06-6.3
Project Name: North Cascade Ford
Project Manager: Heather Good
Sampled by: Carolyn Wise

Turnaround Request (in working days)
(Check One)
☒ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days) (TPH analysis 5 Days)
☐ ________ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	pH (9 oz. jar)	Total Pb			% Moisture
1	BTPOST-WS-01	10/5/16	1300	W	8		X		X														X	X			

	Signature	Company	Date	Time
Relinquished	Carolyn W	MFA	10/5/16	1325
Received			10/5/16	1525
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Data Package: Standard ☒ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☒

Sample/Cooler Receipt and Acceptance Checklist

Client: MFA

Client Project Name/Number: 0747.01.06-63

OnSite Project Number: 10-044

Initiated by: Blair Goodrow

Date Initiated: 10/5/10

1.0 Cooler Verification

1.1 Were there custody seals on the outside of the cooler?	Yes	[✓ No]	N/A	1 2 3 4	
1.2 Were the custody seals intact?	Yes	No	[✓ N/A]	1 2 3 4	
1.3 Were the custody seals signed and dated by last custodian?	Yes	No	[✓ N/A]	1 2 3 4	
1.4 Were the samples delivered on ice or blue ice?	[✓ Yes]	No		1 2 3 4	
1.5 Were samples received between 0-6 degrees Celsius?	Yes	[✓ No]	Temperature: 8 °C		
1.6 Have shipping bills (if any) been attached to the back of this form?	Yes	[✓ N/A]			
1.7 How were the samples delivered?	Client	[✓ Courier]	UPS/FedEx	OSE Pickup	Other

2.0 Chain of Custody Verification

2.1 Was a Chain of Custody submitted with the samples?	[✓ Yes]	No	1 2 3 4
2.2 Was the COC legible and written in permanent ink?	[✓ Yes]	No	1 2 3 4
2.3 Have samples been relinquished and accepted by each custodian?	[✓ Yes]	No	1 2 3 4
2.4 Did the sample labels (ID, date, time, preservative) agree with COC?	[✓ Yes]	No	1 2 3 4
2.5 Were all of the samples listed on the COC submitted?	[✓ Yes]	No	1 2 3 4
2.6 Were any of the samples submitted omitted from the COC?	Yes	[✓ No]	1 2 3 4

3.0 Sample Verification

3.1 Were any sample containers broken or compromised?	Yes	[✓ No]		1 2 3 4
3.2 Were any sample labels missing or illegible?	Yes	[✓ No]		1 2 3 4
3.3 Have the correct containers been used for each analysis requested?	[✓ Yes]	No		1 2 3 4
3.4 Have the samples been correctly preserved?	[✓ Yes]	No	N/A	1 2 3 4
3.5 Are volatiles samples free from headspace and bubbles greater than 6mm?	[✓ Yes]	No	N/A	1 2 3 4
3.6 Is there sufficient sample submitted to perform requested analyses?	[✓ Yes]	No		1 2 3 4
3.7 Have any holding times already expired or will expire in 24 hours?	Yes	[✓ No]		1 2 3 4
3.8 Was method 5035A used?	Yes	No	[✓ N/A]	1 2 3 4
3.9 If 5035A was used, which sampling option was used (#1, 2, or 3).	#		[✓ N/A]	1 2 3 4

Explain any discrepancies:

1 - Discuss issue in Case Narrative

2 - Process Sample As-is

3 - Client contacted to discuss problem

4 - Sample cannot be analyzed or client does not wish to proceed

APPENDIX H

DATA VALIDATION MEMORANDUM

DATA QUALITY ASSURANCE/QUALITY CONTROL REVIEW

PROJECT NO. 0747.01.06-6.3 | NOVEMBER 8, 2016 | VSF PROPERTIES, LLC

Maul Foster & Alongi, Inc. (MFA) conducted an independent review of the quality of analytical results for excavation confirmation and stockpile soil samples collected at the North Cascade Ford property in Sedro-Woolley, Washington. The samples were collected in September and October, 2016.

Onsite Environmental, Inc. (OnSite) performed the analyses. OnSite report number 1609-344, 1609-345, 1609-398, 1609-399, and 1610-044 were reviewed. The analyses performed and samples analyzed are listed below. In report 1609-344, one sample was put on hold after receipt by the laboratory, and the hold status is indicated below.

Analysis	Reference
BTEX and MTBE	USEPA 8021B
Diesel- and Lube Oil-Range Organics	NWTPH-Dx
Gasoline	NWTPH-Gx
n-Hexane	USEPA 8015 Modified
Naphthalenes	USEPA 8270D SIM
pH	SM 4500H-B
Polychlorinated Biphenyls (PCBs)	USEPA 8082A
Polycyclic Aromatic Hydrocarbons (PAHs)	USEPA 8270D SIM
Total Metals	USEPA 6010C/200.8
Volatile Organic Compounds (VOCs)	USEPA 8260C

BTEX = benzene, toluene, ethylbenzene, and xylenes.
MTBE = methyl tert-butyl ether.
NWTPH = Northwest Total Petroleum Hydrocarbons.
SIM = selected ion monitoring.
SM = Standard Methods for the Examination of Water and Wastewater.
USEPA = U.S. Environmental Protection Agency.

Samples Analyzed				
Report 1609-344	**Report 1609-345**	**Report 1609-398**	**Report 1609-399**	**Report 1610-044**
WSW01-S-6.0	ST01-1	WSW02-S-7.5	ST02-1	BTPOST-WS-01
NSW01-S-6.0	ST01-2	NSW02-S-7.5	ST02-2	-
ESW01-S-6.0	ST01-3	BASE03-S-15.0	ST02-3	-
SSW01-S-3.0	-	SSW03-S-7.5	ST02-4	-
SSW02-S-6.0	-	ESW02-S-7.5	ST02-5	-
BASE01-S-10.0 (hold)	-	-	-	-
BASE02-S-10.0	-	-	-	-

DATA QUALIFICATIONS

Analytical results were evaluated according to applicable sections of USEPA procedures (USEPA, 2014a,b) and appropriate laboratory and method-specific guidelines (OnSite, 2015; USEPA, 1986).

Data validation procedures were modified, as appropriate, to accommodate quality-control requirements for methods not specifically addressed by the USEPA procedures (i.e., NWTPH-Dx and NWTPH-Gx analyses).

In report 1609-399, the NWTPH-Dx lube oil results for samples ST02-1 and ST02-4 were flagged by OnSite due to impacts from high concentrations of diesel fuel #2 results. The reviewer confirmed that the lube oil results were appropriately reported based on the NWTPH-Dx method; thus, no qualification was required.

The data are considered acceptable for their intended use, with the appropriate data qualifiers assigned.

HOLDING TIMES, PRESERVATION, AND SAMPLE STORAGE

Holding Times

Extractions and analyses were performed within the recommended holding time criteria.

Preservation and Sample Storage

In report 1610-044, OnSite indicated that the sample was received by the laboratory at 8 degrees Celsius (°C), which is outside of the recommended temperature range of 0 to 6°C. The sample was submitted to the laboratory 25 minutes after collection. The recorded temperature demonstrates sufficient cooling between collection and receipt by the laboratory; thus, no results were qualified by the reviewer.

The remaining samples were preserved and stored appropriately.

BLANKS

Method Blanks

Laboratory method blank analyses were performed at the required frequencies. For purposes of data qualification, the method blanks were associated with all samples prepared in the analytical batch. All method blank results were non-detect at method reporting limits.

Trip Blanks

Trip blanks were not submitted for this sampling event.

Equipment Rinsate Blanks

Equipment rinsate blanks were not submitted for this sampling event.

SURROGATE RECOVERY RESULTS

The samples were spiked with surrogate compounds to evaluate laboratory performance on individual samples. Surrogate results associated with samples that were diluted were not evaluated for percent recovery.

In report 1609-344, the NWTPH-Dx laboratory duplicate surrogate percent recoveries were not evaluated due to sample matrix interference. No action was required.

In report 1609-398, the USEPA Method 8270D SIM surrogate terphenyl-d14 exceeded the upper percent recovery acceptance limit of 117, at 133%. The remaining surrogates had acceptable percent recovery. The exceedance was minor; thus, no results were qualified.

In report 1609-399, the USEPA Method 8270D SIM surrogate pyrene-d10 result exceeded the upper percent recovery acceptance limit due to matrix interference. The remaining two surrogates had acceptable percent recovery; thus, no results were qualified.

All remaining surrogate results were within percent recovery acceptance limits.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS

Matrix spike/matrix spike duplicate (MS/MSD) results are used to evaluate laboratory precision and accuracy. All MS/MSD samples were extracted and analyzed at the required frequency. All MS/MSD results were within acceptance limits for percent recovery and relative percent differences (RPDs).

LABORATORY DUPLICATE RESULTS

Duplicate results are used to evaluate laboratory precision. All duplicate samples were extracted and analyzed at the required frequency. All laboratory duplicate RPDs were within acceptance limits. In report 1609-344, the NWTPH-Dx laboratory duplicate RDP control limit was not reported. The diesel standard RPD was 26%; the reviewer confirmed that the RPD met acceptance criteria.

LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RESULTS

A laboratory control sample/laboratory control sample duplicate (LCS/LCSD) is spiked with target analytes to provide information on laboratory precision and accuracy. The LCS/LCSD samples were extracted and analyzed at the required frequency. All LCS/LCSD results were within acceptance limits for percent recovery and RPD.

FIELD DUPLICATE RESULTS

Field duplicate samples measure both field and laboratory precision. Field duplicate samples were not submitted for analysis.

CONTINUING CALIBRATION VERIFICATION RESULTS

Continuing calibration verification (CCV) results are used to demonstrate instrument precision and accuracy throughout the sample batch. CCV results were reported for NWTPH-Dx and NWTPH-Gx analyses; CCV results were within control limits.

In report 1609-344, USEPA Method 8260C CCV results were not reported. All detected acetone results were flagged by OnSite due to a CCV percent drift exceedance. All detected acetone results have been qualified by the reviewer with "J" as estimated.

Report	Sample	Component	Original Result (mg/kg)	Qualified Result (mg/kg)
1609-344	WSW01-S-6.0	Acetone	0.011	0.011 J
1609-344	NSW01-S-6.0	Acetone	0.0095	0.0095 J
1609-344	ESW01-S-6.0	Acetone	0.015	0.015 J
1609-344	SSW01-S-3.0	Acetone	0.020	0.020 J
1609-344	BASE02-S-10.0	Acetone	0.019	0.019 J

J = the result is an estimated value.
mg/kg = milligrams per kilogram.

In report 1609-345, a USEPA Method 8082A CCV analyzed on 10/3/2016 (PCBCCV 1003-5) exceeded the percent difference acceptance limits of +/-15% for Aroclor 1260 on column 1, at -16%, and the percent difference acceptance limit of +/-15% for Aroclor 1016 on column 2, at -19%. The percent difference results from the associated column were within acceptance limits; thus, no results were qualified.

REPORTING LIMITS

OnSite used routine reporting limits for non-detect results.

In report 1609-344, the NWTPH-Dx lube oil range organics reporting limit for sample SSW02-S-6.0 was raised due to high concentrations of diesel range organics. No action was required by the reviewer.

In report 1609-345, the NWTPH-Dx diesel range organics reporting limit for sample ST01-3 was raised due to high concentrations of lube oil range organics. No action was required by the reviewer.

In report 1609-398, the NWTPH-Dx lube oil range organics reporting limits for samples WSW02-S-7.5 and NSW02-S-7.5 were raised due to high concentrations of diesel range organics. No action was required by the reviewer.

In report 1609-399, the NWTPH-Dx lube oil range organics reporting limits for samples ST02-2 and ST02-5 were raised due to high concentrations of diesel fuel #2. No action was required by the reviewer.

In report 1609-398, some of the USEPA Method 8260C results for samples WSW02-S-7.5 and NSW02-S-7.5 were reported from dilutions due to matrix interference. The results for toluene, 1,2-dibromoethane, and o-xylene were reported as non-detect with raised reporting limits due to the dilution. No qualification was required.

DATA PACKAGE

The data packages were reviewed for transcription errors, omissions, and anomalies.

In report 1609-344, both hold and several analyses were marked on the chain of custody for sample BASE01-S-10.0. The reviewer confirmed that the analyses for sample BASE01-S-10.0 were put on hold after samples were received by the laboratory.

In report 1609-344, several samples were reported with an additional hyphen in the sample name (e.g., BASE02—S-10.0). The samples were also reported with the correct sample name for other analyses in the same report. No action was required.

In report 1609-345, analytical methods for methyl tert-butyl ether and naphthalenes were changed from USEPA 8260B to USEPA 8021B and from USEPA 8260B to USEPA 8270D SIM, respectively, after receipt by the laboratory. No action was required by the reviewer.

In report 1609-398, some analyses were added after samples were received by the laboratory. The additional analyses requested were recorded on the chain of custody by the laboratory.

No additional issues were found.

REFERENCES

OnSite. 2015. Quality assurance manual. OnSite Environmental, Inc. Redmond, Washington.

USEPA. 1986. Test methods for evaluating solid waste: physical/chemical methods. EPA-530/SW-846 Update V. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. September (revision 1, July 2014).

USEPA. 2014a. USEPA contract laboratory program, national functional guidelines for inorganic Superfund data review. EPA 540/R-013/001. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation. August.

USEPA. 2014b. USEPA contract laboratory program, national functional guidelines for Superfund organic methods data review. EPA 540/R-014/002. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation. August.

APPENDIX I

CEMEX DISPOSAL CERTIFICATE

Ticket List By Customer\Order\Product

Date From 08/01/2016 **To** 10/08/2016
Location(s) 1876
Order: 41080041

Date	TicketNo	Delivery Address	Vehicle	TimeIn	TicketTime	Qty	Unit	Ship	Cash	Void
Scale Tickets										
WYSER CONSTRUCTION INC-VARIOUS VARIOUS										
41080041										
1192508										
9/28/16	1876088969	P:76:NORTH CASCADE FORD	WC30T,WYSER CONSTRUCTION	0:00:00	11:12:00	25.85	TON			
9/29/16	1876088982	P:76:NORTH CASCADE FORD	LL4,L&L TRANSPORT	8:44:00	8:58:00	27.23	TON	R		
9/29/16	1876088986	P:76:NORTH CASCADE FORD	WC30T,WYSER CONSTRUCTION	9:34:00	9:46:00	27.62	TON	R		
9/29/16	1876088990	P:76:NORTH CASCADE FORD	LL4T,L&L TRANSPORT	0:00:00	11:24:00	31.29	TON			
9/29/16	1876088997	P:76:NORTH CASCADE FORD	WC30T,WYSER CONSTRUCTION	0:00:00	13:00:00	30.96	TON			
9/29/16	1876088998	P:76:NORTH CASCADE FORD	LL4T,L&L TRANSPORT	0:00:00	14:20:00	29.44	TON			
9/30/16	1876089000	P:76:NORTH CASCADE FORD	LL4T,L&L TRANSPORT	8:45:00	8:58:00	29.88	TON	R		
9/30/16	1876089001	P:76:NORTH CASCADE FORD	LL4T,L&L TRANSPORT	0:00:00	11:30:00	32.04	TON			
9/30/16	1876089002	P:76:NORTH CASCADE FORD	LL4T,L&L TRANSPORT	0:00:00	14:41:00	30.23	TON			
10/3/16	1876089004	P:76:NORTH CASCADE FORD	LL4T,L&L TRANSPORT	8:42:00	8:57:00	30.23	TON	R		
10/3/16	1876089005	P:76:NORTH CASCADE FORD	WC30T,WYSER CONSTRUCTION	9:11:00	9:27:00	21.34	TON	R		
10/3/16	1876089009	P:76:NORTH CASCADE FORD	LL4T,L&L TRANSPORT	0:00:00	11:58:00	31.36	TON			
10/3/16	1876089011	P:76:NORTH CASCADE FORD	LL4,L&L TRANSPORT	0:00:00	15:12:00	11.08	TON	R		
10/5/16	1876089045	P:76:NORTH CASCADE FORD	LL4T,L&L TRANSPORT	9:53:00	10:05:00	28.45	TON	R		
10/6/16	1876089067	P:76:NORTH CASCADE FORD	LL4T,L&L TRANSPORT	7:13:00	7:28:00	29.51	TON	R		
10/6/16	1876089074	P:76:NORTH CASCADE FORD	WC30T,WYSER CONSTRUCTION	9:37:00	9:57:00	28.66	TON	R		
10/6/16	1876089076	P:76:NORTH CASCADE FORD	LL4T,L&L TRANSPORT	0:00:00	10:28:00	30.69	TON			
10/6/16	1876089081	P:76:NORTH CASCADE FORD	WC30T,WYSER CONSTRUCTION	0:00:00	12:46:00	28.92	TON			
10/6/16	1876089086	P:76:NORTH CASCADE FORD	LL4T,L&L TRANSPORT	0:00:00	13:29:00	30.87	TON			

Date	TicketNo	Delivery Address	Vehicle	TimeIn	TicketTime	Qty	Unit	Ship	Cash	Void
10/7/16	1876089103	P:76:NORTH CASCADE FORD	LL4T,L&L TRANSPORT	10:35:00	10:48:00	33.66	TON	R		
10/7/16	1876089111	P:76:NORTH CASCADE FORD	LL4T,L&L TRANSPORT	0:00:00	15:07:00	31.90	TON			
Product Totals	**21**				**Qty**	**601.21**	**TON**			
Order Totals	**21**				**Qty**	**601.21**	**TON**			
Customer Totals	**21**				**Qty**	**601.21**	**TON**			
Grand Total	**21**				**Qty**	**601.21**	**TON**			

APPENDIX J

SANITARY SEWER DISCHARGE DOCUMENTATION

INDUSTRIAL WATER DISCHARGED TO THE CITY OF SEDRO-WOOLLEY SEWER SYSTEM

Date:	10-10-16
Location:	116 West Ferry Street, North Cascade Ford site
Project:	Fuel tank removal-site clean-up
Site Manager:	Darren Ness
Company:	Wyser Construction Company 19015 109th Ave SE Snohomish, WA 98296 Darren@wyserdirt.com

Meter reading at start:	159,664
Meter reading at end:	177,882
Total gallons discharged:	18,218

Billing Details:

18,218 gallons /7.48 gallons per cuft = 2,436 cuft

Base rate: first 750 cuft = $57.46

Volume rate: 2,436-750=1,686 cuft x 5.40/100 cuft=$ 91.04

Total owing: $148.50

APPENDIX K

BACKFILL DOCUMENTATION

Materials Testing & Consulting, Inc.
Geotechnical Engineering • Special Inspection • Materials Testing • Environmental Consulting

Client: Wyser Construction
Address: 19015 109th Ave. SE
Snohomish, WA. 98270
Attn: Darren Ness
Revised on:

Date: October 1, 2016
Project: North Cascade Ford
Project #: 16B190-01
Sample #: B16-1130
Sample date: September 28, 2016

As requested MTC, Inc. has performed the following test(s) on the sample referenced above. The testing was performed in accordance with current applicable AASHTO or ASTM standards as indicated below. The results obtained in our laboratory were as follows below or on the attached pages:

	Test(s) Performed:	Test Results		Test(s) Performed:	Test Results
X	Sieve Analysis	Pass		Sulfate Soundness	
X	Proctor	140.5 pcf at 6.5%		Bulk Density & Voids	
	Sand Equivalent			WSDOT Degradation	
	Fracture Count				
	Moisture Content				
	Specific Gravity, Coarse				
	Specific Gravity, Fine				
	Hydrometer Analysis				
	Atterberg Limits				

If you have any questions concerning the test results, the procedures used, or if we can be of any further assistance please call on us at the number below.

Respectfully Submitted,
Cheryl Meredith
WABO Supervising Laboratory Technician

Materials Testing & Consulting, Inc.

Geotechnical Engineering • Special Inspection • Materials Testing • Environmental Consulting

Sieve Report

Project: North Cascade Ford
Project #: 16B190-01
Client: Wyser Construction
Source: Not reported
Sample#: B16-1130

Date Received: 28-Sep-16
Sampled By: Other
Date Tested: 29-Sep-16
Tested By: C. Meredith

ASTM D-2487 Unified Soils Classification System
SP-SM, Poorly graded Sand with Silt and Gravel
Sample Color:
brown

ACCREDITED
Certificate #: 1366.01, 1366.02

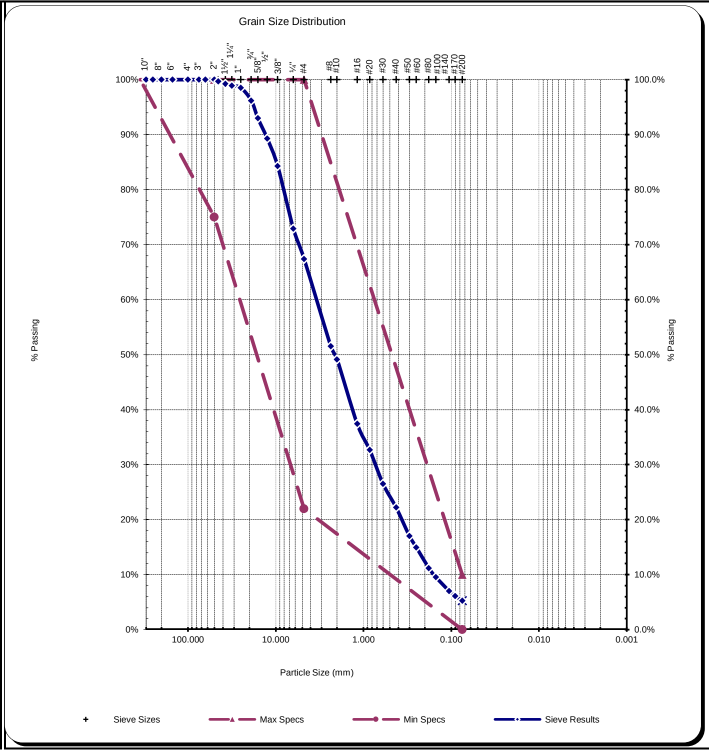
ASTM D-2216, ASTM D-2419, ASTM D-4318, ASTM D-5821

Specifications
2016 WSDOT 9-03.10 Gravel Base
Sample Meets Specs ? **Yes**

$D_{(5)}$ = 0.071 mm	% Gravel =	32.6%	Coeff. of Curvature, C_C =	0.96
$D_{(10)}$ = 0.158 mm	% Sand =	62.1%	Coeff. of Uniformity, C_U =	23.00
$D_{(15)}$ = 0.251 mm	% Silt & Clay =	5.3%	Fineness Modulus =	4.10
$D_{(30)}$ = 0.741 mm	Liquid Limit =	n/a	Plastic Limit =	n/a
$D_{(50)}$ = 2.126 mm	Plasticity Index =	n/a	Moisture %, as sampled =	n/a
$D_{(60)}$ = 3.634 mm	Sand Equivalent =	n/a	Req'd Sand Equivalent =	
$D_{(90)}$ = 13.159 mm	Fracture %, 1 Face =	n/a	Req'd Fracture %, 1 Face =	
Dust Ratio = 19/80	Fracture %, 2+ Faces =	n/a	Req'd Fracture %, 2+ Faces =	

ASTM C-136, ASTM D-6913

Sieve Size US	Sieve Size Metric	Actual Cumulative Percent Passing	Interpolated Cumulative Percent Passing	Specs Max	Specs Min
12.00"	300.00		100%		
10.00"	250.00		100%		
8.00"	200.00		100%		
6.00"	150.00		100%		
4.00"	100.00		100%		
3.00"	75.00		100%		
2.50"	63.00		100%		
2.00"	50.00	100%	100%	100.0%	75.0%
1.75"	45.00		100%		
1.50"	37.50		99%		
1.25"	31.50		99%		
1.00"	25.00	99%	99%		
3/4"	19.00	96%	96%		
5/8"	16.00		93%		
1/2"	12.50	89%	89%		
3/8"	9.50	84%	84%		
1/4"	6.30		73%		
#4	4.75	67%	67%	100.0%	22.0%
#8	2.36		52%		
#10	2.00	49%	49%		
#16	1.18		37%		
#20	0.850	33%	33%		
#30	0.600		27%		
#40	0.425	22%	22%		
#50	0.300		17%		
#60	0.250	15%	15%		
#80	0.180		11%		
#100	0.150	10%	10%		
#140	0.106		7%		
#170	0.090		6%		
#200	0.075	5.3%	5.3%	10.0%	0.0%



Comments: ____________________

Reviewed by: ____________________

Materials Testing & Consulting, Inc.

Geotechnical Engineering • Special Inspection • Materials Testing • Environmental Consulting

Proctor Report

Project: North Cascade Ford
Project #: 16B190-01
Client: Wyser Construction
Source: Not reported
Sample#: B16-1130

Date Received: 28-Sep-16
Sampled By: Other
Date Tested: 29-Sep-16
Tested By: C. Meredith

Unified Soils Classification System, ASTM D-2487
SP-SM, Poorly graded Sand with Silt and Gravel
Sample Color
brown

Sample Prepared: Moist: X Dry:
Manual:
Mechanical: X

Test Standard: ASTM D698:
ASTM D 1557: X
AASHTO T 99:
AASHTO T 180:
Method B

Assumed Sp. Gr. 2.85

Point Number	Percent Moisture	Dry Density
1	5.0 %	132.7
2	7.1 %	135.3
3	9.0 %	134.5
4	11.3 %	131.0

ACCREDITED
Certificate #: 1366.01, 1366.02

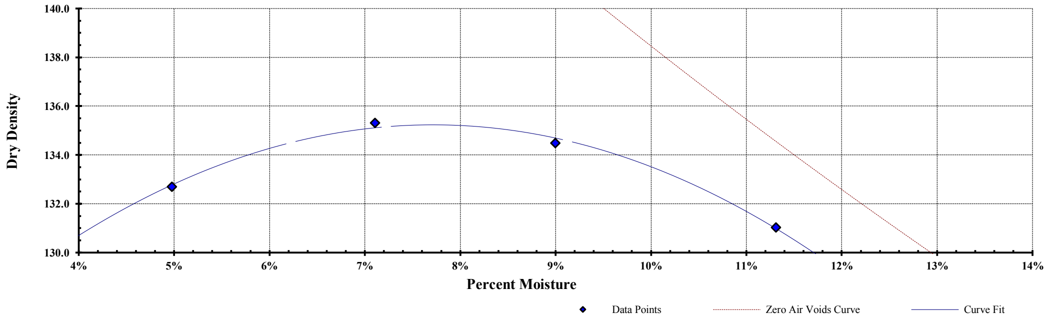
Uncorrected Proctor Value

Max. Dry Density		Optimum Moist.
135.2	**lbs/ft³**	**7.7 %**

Value w/ Oversize Correction Applied

Max. Dry Density		Optimum Moist.
140.5	**lbs/ft³**	**6.5%**

Moisture Density Relationship



ASTM C-136

Sieve US	Size mm	Percent Passing	Specifications Max	Min
12.00"	300.00			
10.00"	250.00			
8.00"	200.00			
6.00"	150.00			
4.00"	100.00			
3.00"	75.00			
2.50"	63.00			
2.00"	50.00	100 %	100 %	75.0 %
1.75"	45.00			
1.50"	37.50			
1.25"	31.50			
1.00"	25.00	99 %		
3/4"	19.00	96 %		
5/8"	16.00			
1/2"	12.50	89 %		
3/8"	9.50	84 %		
1/4"	6.30			
#4	4.75	67 %	100 %	22.0 %
#8	2.36			
#10	2.00	49 %		
#16	1.18			
#20	0.850	33 %		
#30	0.600			
#40	0.425	22 %		
#50	0.300			
#60	0.250	15 %		
#80	0.180			
#100	0.150	10 %		
#140	0.106			
#170	0.090			
#200	0.075	5.3 %	10.0 %	0.0 %

ASTM D-4718, Misc. Oversize Correction Values

% Oversize Mat'l: 16%

% Oversize Retained	Corrected Density	Optimum Moisture
5%	136.9	7.3%
10%	138.6	7.0%
15%	140.3	6.6%
20%	142.0	6.2%
25%	143.9	5.9%
30%	145.7	5.5%

Specs: 2016 WSDOT 9-03.10 Gravel Base **Meets Specs?** **Yes**

% Gravel:	32.6%	C_C:	0.96	$D_{(10)}$:	0.158
% Sand:	62.1%	C_U:	23.00	$D_{(30)}$:	0.741
% Silt&Clay:	5.3%	FM:	4.10	$D_{(60)}$:	3.634
LL:	n/a	PL:	n/a	PI:	n/a
Sand Equivalent:	n/a	Req'd Sand Equivalent:			
Fracture %, 1 Face:	n/a	Req'd Fracture %, 1 Face:			
Fracture %, 2+ Faces:	n/a	Req'd Fracture %, 2+ Faces:			

Comments: ____________________

Reviewed by: ____________________

Maul, Foster & Alongi, Inc. **Import/Export** **MFA-16-1474**

North Cascade Ford UST Decommissioning

DATE	**Export Concrete**	**Export Asphalt**	**Export Carbon**	**Export Class 3 Soil**	**Export Gasoline/ Heating Oil**	**Export Waste Water**	**Import: Pit Run**	**Import: 2 1/2" x 3/4"**	**Import: 1 1/4" Rock**	**Import: Pea Gravel**
Sept. 2016										
9/26/2016	6.95 ton√									
9/27/2016					1,000 gal					
9/27/2016					1,000 gal					
9/28/2016				25.85 ton√						
9/29/2016				146.54 ton√						
9/30/2016				92.15 ton√						
	6.95 ton			***264.54 ton***						
Oct. 2016										
10/3/2016				94.01 ton√						
10/4/2016		13.45 ton√					181.69 ton√	61.03 ton √		
10/5/2016				28.45 ton√			215.57 ton√			
10/6/2016		30.71 ton√		148.65 ton√			117.88 ton√			
10/7/2016				65.56 ton√			92.05 ton√		61.79 ton√	
		44.16 ton		***336.67 ton***			***607.19 ton***	***61.03 ton***	***61.79 ton***	
10/12/2016		10.09 ton√								
10/13/2016			3,000 Lbs.			1,000 Gal.				
		10.09 ton	***3,000 Lbs.***			***1,000 Gal.***				
Sub Total Tons	**6.95 ton**	**54.25 ton**		**601.21 ton**	**1,000 gal**		**607.19 ton**	**61.03 ton**	**61.79 ton**	
			3,000 Lbs.		**1,000 gal**	**1,000 Gal**				
Sub Total yds										

APPENDIX L

COMPACTION TESTING REPORTS

Materials Testing & Consulting, Inc.

Geotechnical Engineering & Consulting • Special Inspection • Materials Testing • Environmental Consulting

Engineered Assurance Since 1981

North Cascade Ford - 16B190-01 - IPD-Soil Compaction: Report #D38076

CLIENT Wyser Construction, Inc

DATE 10/06/2016

PROJECT LOCATION 116 W Ferry Street
Sedro Woolley WA

PERMIT #

Inspection Information:

Inspection Date: 10/06/2016 **Time Onsite:** 12:55 PM **Weather Conditions:** Overcast 60F

Inspection Performed: IPD-Soil Compaction

Field Data:

Work / Location: Tire Center Backfill

Gauge Standard MS: 613

Equipment ID & Serial #: Troxler 3430D, Ser. #19286

Gauge Standard DS: 1694

Test Samples:

	Sample #:	Description:	Proctor Value(pcf):	Optimum Moisture and Oversize Rock Correction:
1.	B16-1130	SP-SM, Poorly graded sand with silt and gravel	140.5	6.5%

TEST METHOD ☒ ASTM D-1557 /AASHTO T-180

In Place Density Test Results (ASTM D-6938):

Test #	Mode / Depth	Location of Test	Elev.	Wet Dens.	Dry Dens.	Moist %	Sample #	% Comp.	% Reqd.
1	8	N end of area	-4' BFG	144.9	133.4	8.6	1	94.9	95
2	8	S end of area	-4' BFG	144.3	133.1	8.4	1	94.7	95
3	8	NW end of area	-3' BFG	142.4	133.7	6.5	1	95.2	95
4	8	SE end of area	-3' BFG	144.1	136.1	5.9	1	96.9	95

☐ Native Soils

☒ Imported Fills

Soils consistent with Proctor ● Yes ○ No

Soils found to be firm and stable; and to the best of our knowledge, meet compaction ● Yes ○ No

Contractor notified of results ● Yes ○ No

Remarks:

MTC onsite per client's request to test for compaction of backfill material in vacinity of Tire Center.

Soils were placed via dozer and compacted with a Hoepack in approximately one foot lifts.

All soils tested met the required 95% compaction and were firm and unyielding. Contractor was notified of results.

Images:

UPLOADED: 10/06/2016 14:06:00

REPORTED BY: Greg Moran REVIEWED BY: Curtis Shear, Project Manager

Materials Testing & Consulting, Inc.

Geotechnical Engineering & Consulting • Special Inspection • Materials Testing • Environmental Consulting

Engineered Assurance Since 1981

North Cascade Ford - 16B190-01 - IPD-Soil Compaction: Report #D38081

CLIENT	Wyser Construction, Inc	**DATE**	10/07/2016
PROJECT LOCATION	116 W Ferry Street Sedro Woolley WA	**PERMIT #**	

Inspection Information:

Inspection Date: 10/07/2016 **Time Onsite:** 9:19 am **Weather Conditions:** Overcast 60F

Inspection Performed: IPD-Soil Compaction

Field Data:

Work / Location: Tire Center Backfill

Gauge Standard MS: 696

Equipment ID & Serial #: Troxler 3430B, Ser. #19828

Gauge Standard DS: 1841

Test Samples:

	Sample #:	Description:	Proctor Value(pcf):	Optimum Moisture and Oversize Rock Correction:
1.	B16-1130	SP-SM, Poorly graded sand with silt and gravel	140.5	6.5%

TEST METHOD ☒ ASTM D-1557 /AASHTO T-180

In Place Density Test Results (ASTM D-6938):

Test #	Mode / Depth	Location of Test	Elev.	Wet Dens.	Dry Dens.	Moist %	Sample #	% Comp.	% Reqd.
1	6	NW corner	-2' BFG	145.8	135.9	7.3	1	96.7	95
2	8	N end	-1' BFG	145.4	134.5	8.1	1	95.7	95
3	8	S end	AFG	149.8	137.8	8.7	1	98.1	95

☐ Native Soils

☒ Imported Fills

Soils consistent with Proctor ● Yes ○ No

Soils found to be firm and stable; and to the best of our knowledge, meet compaction ● Yes ○ No

Contractor notified of results ● Yes ○ No

Remarks:

MTC onsite per client's request to test for compaction of imported backfill.

Soils were placed via excavator and compacted with a Hoepack.

All soils tested met the required 95% compaction and were firm and unyielding.

Contractor was notified of results.

Images:

UPLOADED: 10/07/2016 14:02:00

REPORTED BY: Greg Moran REVIEWED BY: Curtis Shear, Project Manager

APPENDIX M

IN SITU BIOREMEDIATION PRODUCT DOCUMENTATION

OXYGEN
RELEASE
COMPOUND

ORC Advanced® Pellets Technical Specification

ORC Advanced Pellets are a dust-minimizing, dry application, pelletized form of the widely-used ORC Advanced controlled-release oxygen compound.

They are designed specifically for the treatment of dissolved-phase petroleum hydrocarbons through direct application into excavations, petroleum storage tank pits, trenches and backfill.

Oxygen is released from ORC Advanced for a period of 9 to 12 months *in situ*.

Example of ORC Advanced Pellets

$$CaO(OH)_2 + H_2O \rightarrow \tfrac{1}{2} O_2 + Ca(OH)_2 + H_2O$$

ORC Advanced is a formulation of calcium oxyhydroxide which, upon hydration, releases oxygen and forms simple calcium hydroxide and water.

For a list of treatable contaminants with the use of ORC Advanced, view the Range of Treatable Contaminants Guide.

Chemical Composition

- Calcium Oxyhydroxide
- Calcium Hydroxide
- Monopotassium Phosphate
- Ammonium Phosphate Dibasic

Properties

- Pellet size: 3-10 mm
- Contains micro-nutrients such as nitrogen, phosphorous, and potassium (N,P,K) which can be beneficial to aerobic biodegradation processes

OXYGEN
RELEASE
COMPOUND

ORC Advanced® Pellets Technical Specification

Storage and Handling Guidelines

Storage
Store in a cool, dry place out of direct sunlight
Store in original tightly closed container
Store in a well-ventilated place
Do not store near combustible materials
Store away from incompatible materials
Provide appropriate exhaust ventilation in places where dust is formed

Handling
Minimize dust generation and accumulation
Keep away from heat
Routine housekeeping should be instituted to ensure that dust does not accumulate on surfaces
Observe good industrial hygiene practices
Take precaution to avoid mixing with combustibles
Keep away from clothing and other combustible materials
Avoid contact with water and moisture
Avoid contact with eyes, skin, and clothing
Avoid prolonged exposure
Wear appropriate personal protective equipment

Applications

- *In situ* or *ex situ* out of the bag
- Direct application into open excavations, petroleum storage tank pits and trenches
- Direct application to contaminated backfill or contaminated soils
- *Ex situ* biopile applications (requires a source of hydration)

Health and Safety

Wash thoroughly after handling. Wear protective gloves, eye protection, and face protection.
Please review the Material Safety Data Sheet for additional storage, usage, and handling requirements here: ORC Advanced SDS.

REGENESIS

www.regenesis.com
1011 Calle Sombra, San Clemente CA 92673
949.366.8000

APPENDIX C

CONCEPTUAL SITE MODEL

MEMORANDUM

To: Mike Warfel, Washington State Department of Ecology

Date: November 21, 2018

From: Jim Maul, LHG

Project: 0747.01.09

RE: Revised Conceptual Site Model
North Cascade Ford site, 116 West Ferry Street, Sedro-Woolley, Washington
FSID: 58313566, CSID: 12075, VCP No.: NW3031

On behalf of VSF Properties, LLC (VSF), Maul Foster & Alongi, Inc. (MFA) has prepared this memorandum to update the conceptual site model (CSM) presented in the preliminary remedial investigation and feasibility study (RI/FS) for the North Cascade Ford property at 116 West Ferry Street in Sedro-Woolley, Washington (the Property) (see Figure 1) (MFA, 2015). This memorandum synthesizes relevant updates to the CSM for the Property by incorporating information gained during data gap investigations performed since completion of the preliminary RI/FS.

BACKGROUND

The Property and an adjacent property to the north that is owned by the Burlington Northern Santa Fe Railway Company (BNSF) are included in the North Cascade Ford site (the Site). The Site is currently enrolled in the Washington State Department of Ecology's Voluntary Cleanup Program. Given the restricted access to the BNSF property, VSF is now pursuing a property-specific No Further Action (NFA) opinion. This memorandum has been prepared to fulfill the reporting requirements for a property-specific NFA-likely opinion for the Property issuance of such an opinion.

In 2015, MFA prepared a preliminary RI/FS for the Property and developed a preliminary CSM using the information obtained during previous investigations at the Site (MFA, 2015). Two data gap investigations conducted at the Site (MFA, 2017a,b) since completion of the preliminary RI/FS provided additional information that has enabled refinement of the CSM for the Property.

CONCEPTUAL SITE MODEL

Components of the CSM that have been updated based on information gained since completion of the preliminary RI/FS are discussed below. The CSM for the Property is provided as Figure 2.

Source Characterization

Chemical detections indicate that multiple hazardous-substance releases have occurred at the Property. Chemicals of interest were detected in association with three areas of concern (i.e., AOCs 1 through 3), as discussed in the most recent data gap investigation report (MFA, 2017b).

Fate and Transport of Contaminants

Since completion of the preliminary RI/FS, additional information on the fate and transport of chemicals on the Property has been gained through the installation and sampling of additional groundwater monitoring wells. Additional wells were installed at the Property to better understand groundwater flow direction and the interaction between shallow and deep groundwater at the Property. The monitoring well network has been expanded from three to eight monitoring wells since completion of the preliminary RI/FS (see Figure 1).

Previous monitoring events indicated a consistent southeast groundwater flow (MFA, 2015). However, water levels measured from the expanded monitoring well network suggested a groundwater was present in the central portion of the Property, beneath the auto sales and service building (see Figures 5-1 and 5-2 of MFA, 2017b). Therefore, to better assess the underlying lithology and potential influences on localized groundwater flow at the Property, two cross sections were prepared to illustrate subsurface conditions along two perpendicular profiles at the Property (see Figures 3 and 4). The cross-sectional transects are aligned from west to east (transect A-A') and north to south (transect B-B') (see Figure 1). Features shown on the cross sections include geologic units, well screens, water levels observed during well installation, and the inferred water table measured from the well network on May 31, 2017 (see Figures 3 and 4). Based on the information provided in the cross sections, silt lenses appear at varying depths and are interbedded in a thick unit of silty sand to poorly graded sand. These silt lenses appear to affect the top of the groundwater table at the Property. The intermittent presence of the silt units interacting with the relatively higher permeability silty sand to poorly graded sand and the top of the water table, as illustrated on the cross sections, suggests that localized variations in groundwater flow are the result of differing, localized infiltration rates and groundwater ponding. The lithology presented in the cross sections confirms that a dominant groundwater flow pattern at the Property remains uncertain and, instead, supports the presence of localized flow variations resulting from varying transmissivity of lithology beneath the Property. Therefore, localized groundwater flow variations present at the Property may result in dissolved-phase contamination movement throughout the subsurface in varying localized directions.

The cross sections also indicate that there is no contiguous confining unit that creates distinct shallow and deep water-bearing zones but, rather, a single, shallow water-bearing zone comprising intermittent, low-transmissivity silt units (see Figures 3 and 4).

The other fate and transport mechanisms discussed in the preliminary RI/FS have not changed and are retained for the Property (MFA, 2015).

Terrestrial Ecological Evaluation

A simplified terrestrial ecological evaluation (TEE) presented for the Property in the preliminary RI/FS determined that the Site does not pose a substantial threat to potential ecological receptors (MFA, 2015). Taking into consideration information gained through completion of the data gap investigations, the TEE exclusion remains applicable for the Property. Therefore, soil analytical results have not been compared to ecological screening values.

Potential Receptors and Exposure Pathways

A beneficial water use determination was conducted during the preliminary RI/FS (MFA, 2015). As discussed above, based on regional topography and on hydrogeological conditions observed on the Property, the following surface water and shallow groundwater conditions were revised for the Property (the region of study):

> Localized groundwater flow variations influence shallow groundwater; there is no dominant groundwater flow direction.

The remaining components of the beneficial water use determination presented in the preliminary RI/FS are unchanged.

There has been no change to the receptors and the potentially complete exposure pathways at the Property that were presented in the preliminary RI/FS (MFA, 2015).

Cleanup Level Development

Potentially complete exposure pathways have not changed, nor have the MTCA cleanup levels (CULs) relied on for the Property, since the completion of the preliminary RI/FS (MFA, 2015). Therefore, the CUL development presented in the preliminary RI/FS is retained for the Property.

REFERENCES

MFA. 2015. Preliminary remedial investigation and feasibility study, North Cascade Ford property, Sedro-Woolley, Washington. Maul Foster & Alongi, Inc., Bellingham, Washington. December 9.

MFA. 2017a. Letter (re: 2016 data gap investigation results, North Cascade Ford property, Sedro-Woolley, Washington) to L. Setchell, Helsell Fetterman LLP, from H. Good and J. Clary, Maul Foster & Alongi, Inc., Bellingham, Washington. January 24.

MFA. 2017b. Supplemental data gap investigation report, North Cascade Ford site, Sedro-Woolley, Washington. Maul Foster & Alongi, Inc., Bellingham, Washington. August 18.

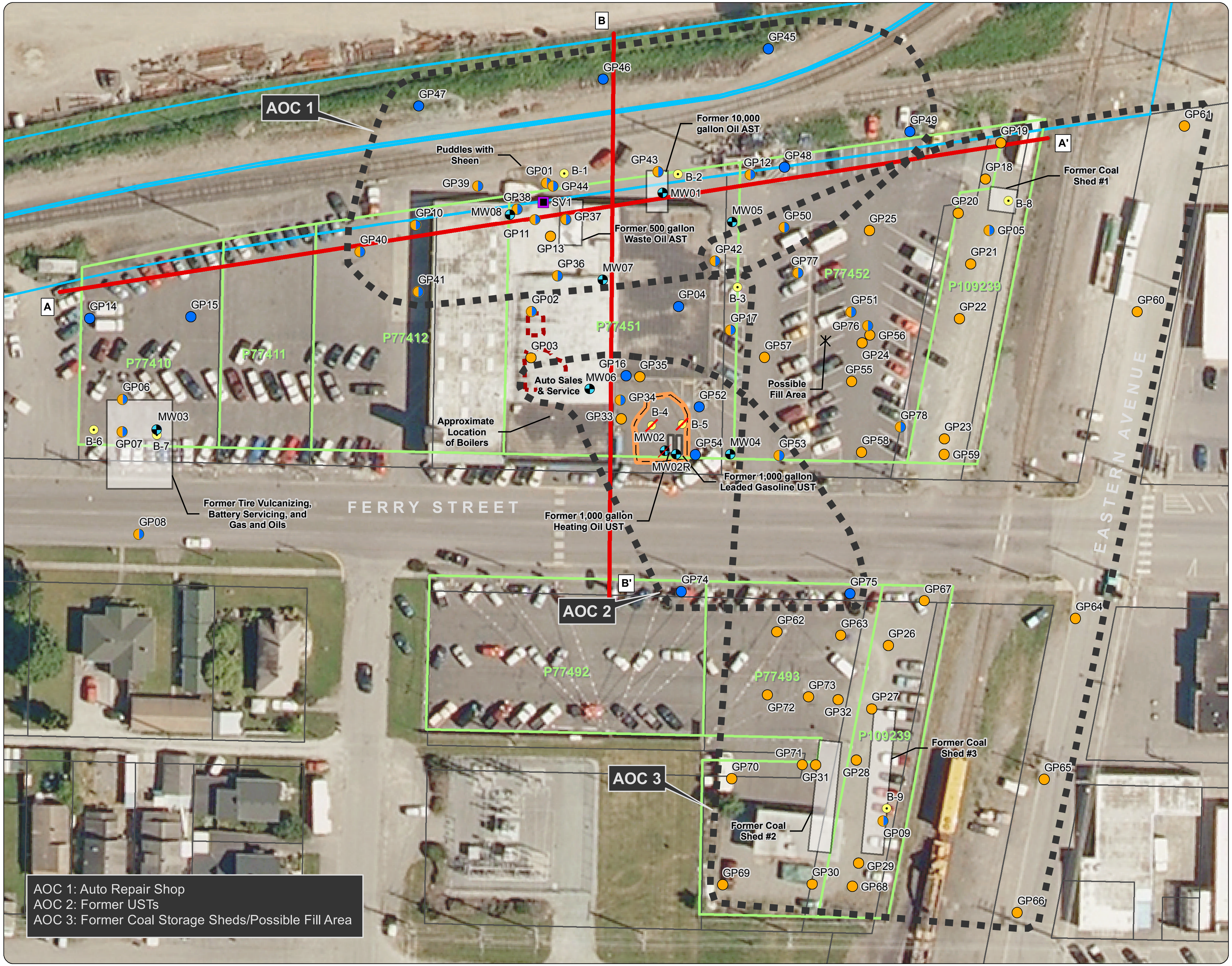
ATTACHMENTS:

Figure 1—Cross-Section Transects
Figure 2—Conceptual Site Model
Figure 3—Geologic Cross-Section A-A'
Figure 4—Geologic Cross-Section B-B'

cc: Larry Setchell, Helsell Fetterman, LLP
Frank Chmelik and Holly Stafford; Chmelik, Sitkin & Davis, PS

ATTACHMENTS

Path: X:\0747.01\Projects\09\Fig1_Cross_Section_Transects.mxd
Print Date: 11/15/2018
Approved By: H. Good
Produced By: abixby
Project: 0747.01.07



AOC 1: Auto Repair Shop
AOC 2: Former USTs
AOC 3: Former Coal Storage Sheds/Possible Fill Area

Figure 1
Cross Section Transects

North Cascade Ford Property
116 West Ferry Street
Sedro-Woolley, Washington

Legend

- ▢ UST Removal Excavation Area
- ▢ Hoist Removal Excavation Area
- 🟩 Property Parcel
- ▢ BNSF-owned Parcel
- ■ Sub-slab Soil Vapor Probe
- ⊕ Monitoring Well Location
- ⊕ Monitoring Well Location (decommissioned)
- ⊙ Phase II ESA Boring Location
- ⊙ Phase II ESA Boring Location (soil removed)
- ● MFA Boring, Groundwater
- ● MFA Boring, Soil
- ◐ MFA Boring, Soil and Groundwater
- — Cross Section Transect

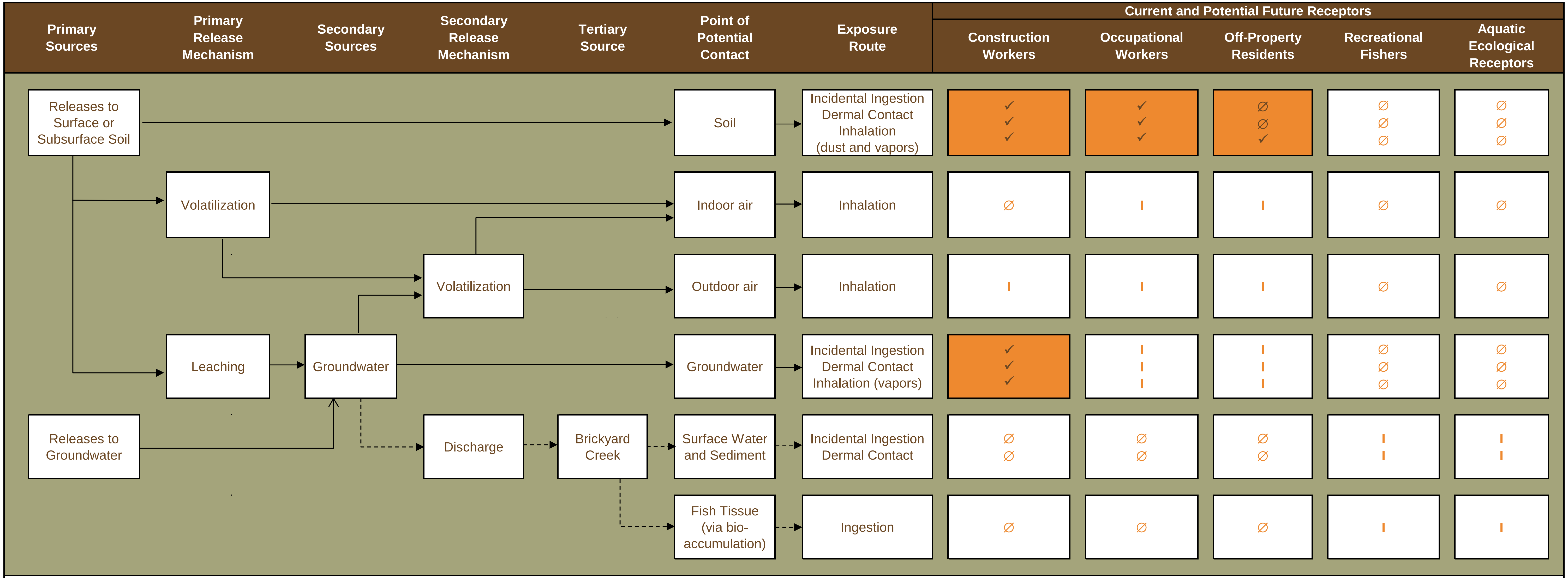
NOTES:
AOC boundaries represent the extent of investigation locations included in the assessment of environmental impacts associated with potential releases within each AOC and are not necessarily representative of the extent of contamination associated with each AOC.
The surveyed Property parcel boundaries do not coincide with the adjacent parcel boundaries obtained from Skagit County; therefore, there is an overlap between the Property and BNSF parcels.
AOC = area of concern.
AST = aboveground storage tank.
BNSF = Burlington Northern Santa Fe Railway.
ESA = environmental site assessment.
MFA = Maul Foster & Alongi, Inc.
Property = North Cascade Ford Property
UST = underground storage tank.

0 31.5 63
Feet

Source: Aerial photograph obtained from ArcGIS Online. Property parcel boundaries surveyed by Wilson Engineering, LLC. Adjacent parcel boundaries obtained from Skagit County.

MAUL FOSTER ALONGI
p. 971 544 2139 | www.maulfoster.com

Figure 2
Conceptual Site Model
North Cascade Ford Property
116 West Ferry Street, Sedro-Woolley, Washington

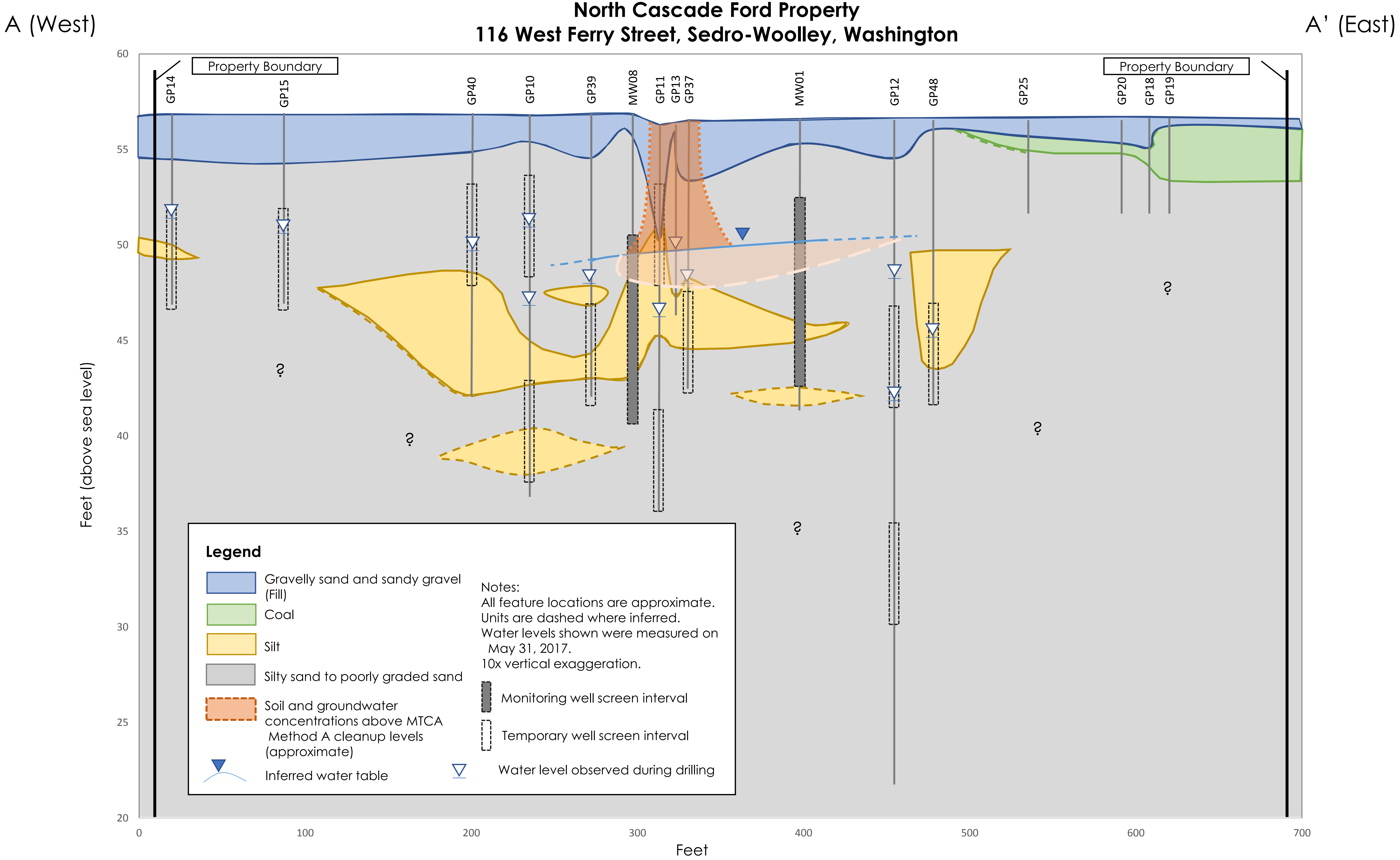


Point of Potential Contact	Exposure Route	Construction Workers	Occupational Workers	Off-Property Residents	Recreational Fishers	Aquatic Ecological Receptors
Soil	Incidental Ingestion Dermal Contact Inhalation (dust and vapors)	✓ ✓ ✓	✓ ✓ ✓	∅ ∅ ✓	∅ ∅ ∅	∅ ∅ ∅
Indoor air	Inhalation	∅	I	I	∅	∅
Outdoor air	Inhalation	I	I	I	∅	∅
Groundwater	Incidental Ingestion Dermal Contact Inhalation (vapors)	✓ ✓ ✓	I I I	I I I	∅ ∅ ∅	∅ ∅ ∅
Surface Water and Sediment	Incidental Ingestion Dermal Contact	∅ ∅	∅ ∅	∅ ∅	I I	I I
Fish Tissue (via bio-accumulation)	Ingestion	∅	∅	∅	I	I

Notes:

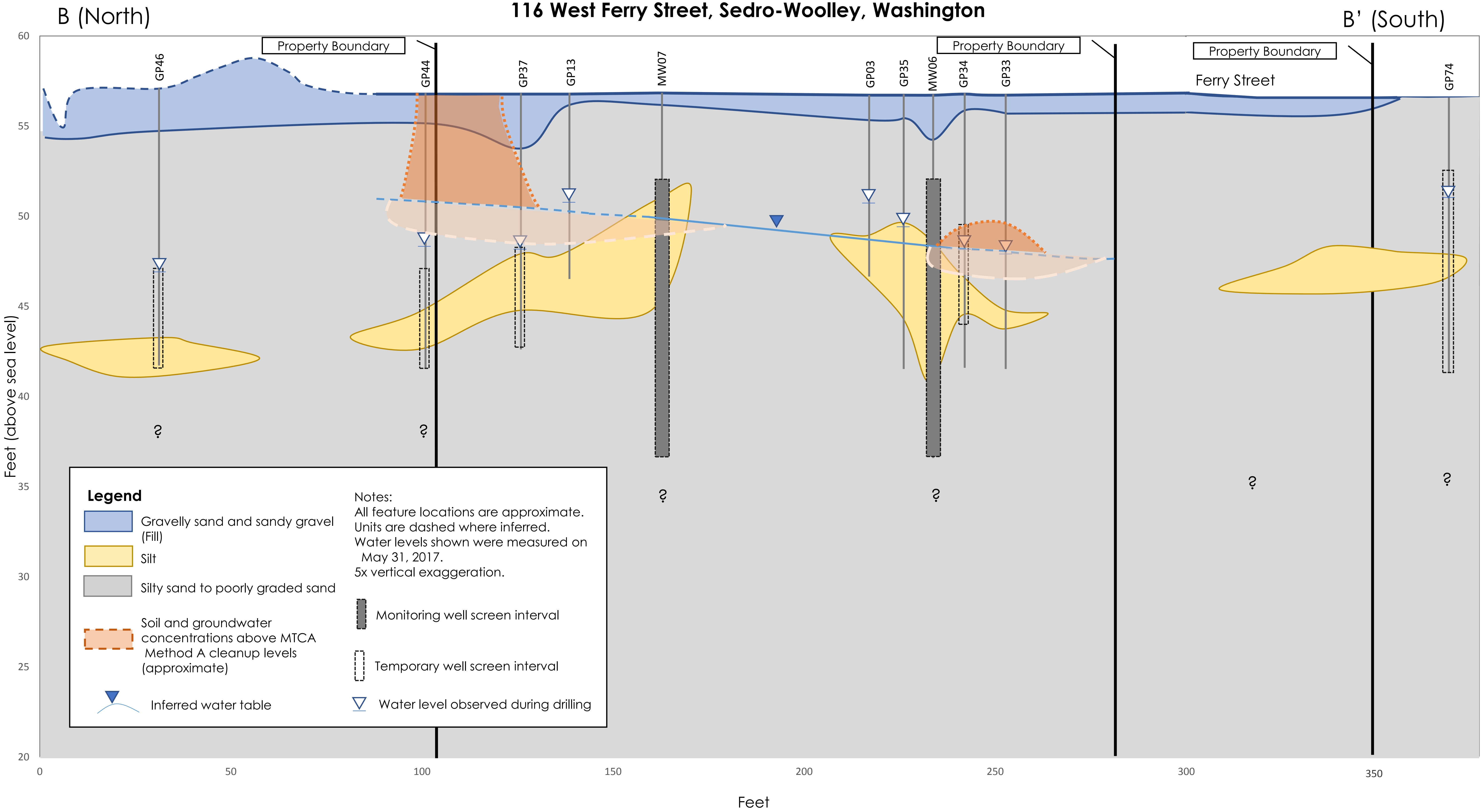
Primary pathway ⟶
Potential pathway - - →
Potentially Complete exposure route ✓
Incomplete exposure route ∅
Insignificant exposure route I

Figure 3
Geologic Cross-Section A-A'
North Cascade Ford Property
116 West Ferry Street, Sedro-Woolley, Washington



Notes:
All feature locations are approximate.
Units are dashed where inferred.
Water levels shown were measured on May 31, 2017.
10x vertical exaggeration.

Figure 4
Geologic Cross-Section B-B'
North Cascade Ford Property
116 West Ferry Street, Sedro-Woolley, Washington



Notes:
All feature locations are approximate.
Units are dashed where inferred.
Water levels shown were measured on May 31, 2017.
5x vertical exaggeration.